Installation and operating manual GB/en

Smoke control damper

Type EK-JZ

according to EN12101-8

Declaration of performance DoP / EK-JZ / 004

TROX® TECHNIK

The art of handling air

Read the instructions prior to performing any task!

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General information

About this manual

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

This operating and installation manual is intended for use by fitting and installation companies, in-house technicians, technical staff, instructed persons, and qualified electricians or air conditioning technicians.

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

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

This manual must be given to the system owner when handing over the system. The system owner must include the manual with the system documentation. The manual must be kept in a place that is accessible at all times.

Illustrations in this manual are mainly for information and may differ from the actual design.

Copyright

TROX Technical Service

To ensure that your request is processed as quickly as possible, please keep the following information ready:

- Product name
- TROX order number
- Delivery date
- Brief description of the fault

Online	*www.troxtechnik.com*
Phone	+49 2845 202-400

Limitation of liability

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

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

- Non-compliance with this manual
- Incorrect use
- Operation or handling by untrained individuals
- Unauthorised modifications
- Technical changes
- Use of non-approved replacement parts

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

The obligations agreed in the order, the general terms and conditions, the manufacturer's terms of delivery, and the legal regulations in effect at the time the contract is signed shall apply.

We reserve the right to make technical changes.

Warranty claims

The provisions of the respective general delivery terms apply to warranty claims. For purchase orders placed with TROX GmbH, these are the regulations in section "VI. Warranty claims" of the Delivery Terms of TROX GmbH, see *www.trox.de/en/* .

Safety notes

Symbols are used in this manual to alert readers to areas of potential hazard. Signal words express the degree of the hazard.

Comply with all safety instructions and proceed carefully to avoid accidents, injuries and damage to property.

DANGER!
Imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING!
Potentially hazardous situation which, if not avoided, may result in death or serious injury.

CAUTION!
Potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE!
Potentially hazardous situation which, if not avoided, may result in property damage.

ENVIRONMENT!
Environmental pollution hazard.

Tips and recommendations

Useful tips and recommendations as well as information for efficient and fault-free operation.

Safety notes as part of instructions

Safety notes may refer to individual instructions. In this case, safety notes will be included in the instructions and hence facilitate following the instructions. The above listed signal words will be used.

Example:

1. Loosen the screw.
2.
   CAUTION!
   Danger of finger entrapment when closing the lid.

   Be careful when closing the lid.
3. Tighten the screw.

Specific safety notes

The following symbols are used in safety notes to alert you to specific hazards:

Warning signs	Type of danger
⚠	Warning – danger zone.

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1 Safety

1.1 General safety notes

Sharp edges, sharp corners and thin sheet metal parts

CAUTION!

Danger of injury from sharp edges, sharp corners and thin sheet metal parts!

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

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

Electrical voltage

DANGER!

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

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

1.2 Correct use

- Type EK-JZ smoke control dampers are used in smoke and heat exhaust systems to remove smoke and heat. EK-JZ smoke control dampers may be used with the following systems:
  – pressure differential systems
  – mechanical (i.e. powered) smoke exhaust systems
  – natural smoke and heat exhaust systems
  – heat exhaust systems
- Operation of smoke control dampers is allowed only in compliance with the declaration of performance (DoP) and the technical data in this installation and operating manual.
- Modifying the smoke control damper or using replacement parts that have not been approved by TROX is not permitted.

Incorrect use

WARNING!

Danger due to incorrect use!

Incorrect use of the smoke control damper can lead to dangerous situations.

Never use the smoke control damper:

– in areas with potentially explosive atmospheres
– outdoors without sufficient protection against the effects of weather and outside of temperature limits
– in atmospheres where chemical reactions, whether planned or unplanned, may cause damage to the smoke control damper or lead to corrosion

1.3 Qualified staff

WARNING!

Danger of injury due to insufficiently qualified individuals!

Incorrect use may cause considerable injury or damage to property.

– Only specialist personnel must carry out work.

Personnel:

- Skilled qualified electrician
- Specialist personnel

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

Specialist personnel
Specialist personnel are individuals who have sufficient professional or technical training, knowledge and actual experience to enable them to carry out their assigned duties, understand any potential hazards related to the work under consideration, and recognise and avoid any risks involved.

2 Technical data

2.1 General data

Nominal sizes B x H	200 × 230 – 1200 × 2030 mm
Casing length	250 mm
Flow rate range at maximum upstream velocity	Up to 920 l/s or 3310 m³/h
	Up to 29230 l/s or 105235 m³/h
Differential pressure range	Pressure level 2, -1000...500 Pa
Operating temperature	-30 °C...50 °C the temperature should not fall below the dew point
Upstream velocity with uniform upstream and downstream flow	■ ≤ 20 m/s to B 1200 × H 1830 mm ■ ≤ 12 m/s at maximum dimensions, otherwise technical clarification necessary.
Closed damper blade air leakage	EN 1751, Class 3
Casing leakage	EN 1751, Class C
EC conformity	■ EU Construction Products Regulation no. 305/2011 ■ EN 12101-8 – Smoke and heat control systems – Smoke control dampers ■ EN 1366-10 – Fire resistance tests for service installations – Smoke control dampers ■ EN 1366-2 – Fire resistance tests for service installations – Part 2: Fire dampers ■ EN 13501-4 – Fire classification of construction products and building elements – Fire resistance tests on components of smoke control ■ EN 1751 – Ventilation for buildings – Air terminal devices
Declaration of performance	DoP / EK-JZ / 004

Rating plate

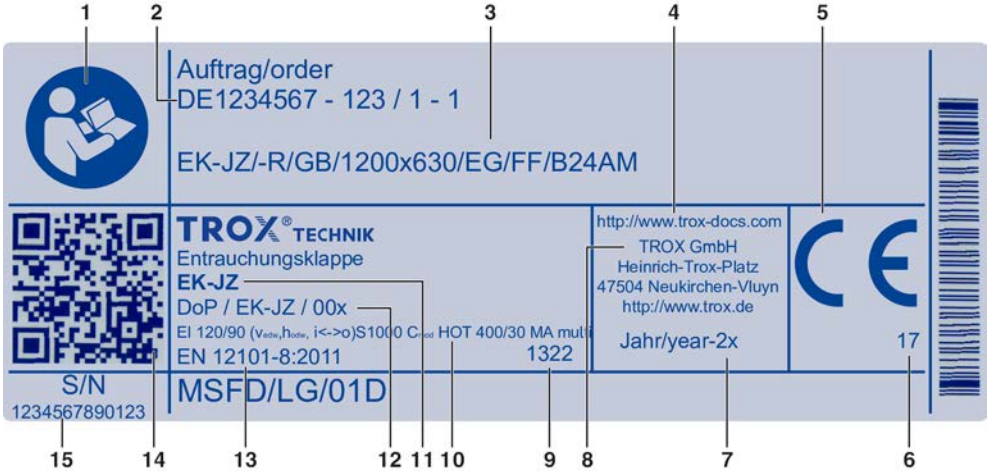


Fig. 1: Smoke control damper rating plate (example)

1 Note regarding the observance of the operating manual.
2 Order number
3 Order code
4 Website from which the verification documents can be downloaded
5 CE mark
6 The last two digits of the year in which the CE marking was affixed
7 Year of manufacture
8 Manufacturer's address
9 Notified body
10 Regulated characteristics; the fire resistance class depends on the application and may vary
↳ *Chapter 5.1 'Installation situations' on page 14*
11 Type
12 No. of the declaration of performance
13 Number of the European standard and year of its publication
14 QR code to call the documentation
15 Product identification number

2.2 Dimensions and weight

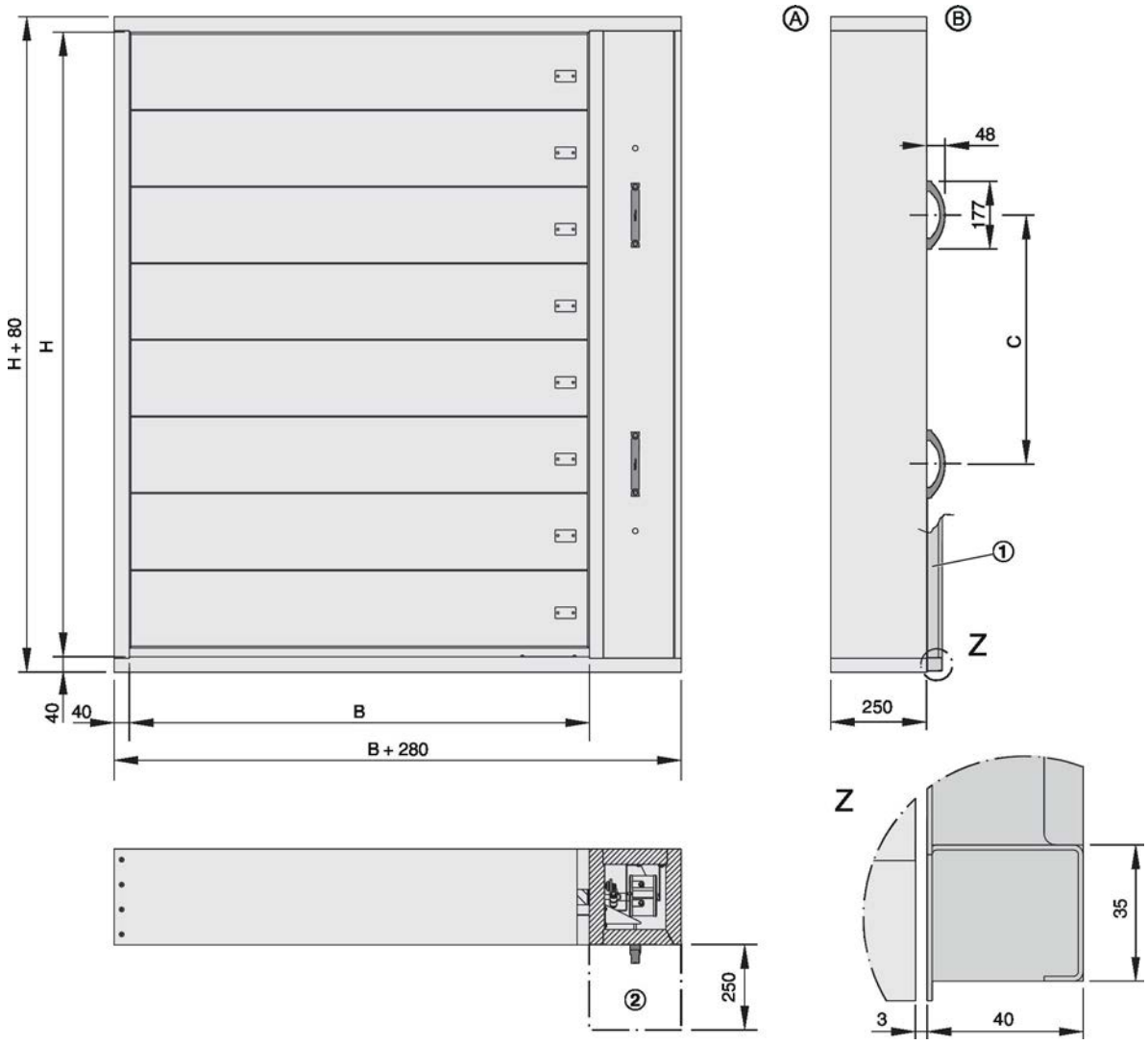


Fig. 2: EK-JZ

B x H = nominal size = area exposed to the airflow
① Connecting subframe for smoke extract duct (steel, optional)
② Keep clear to provide access to the actuator encasing
Ⓐ Installation side
Ⓑ Operating side

Dimensions and weight

Dimensions [mm]			Number	
B	H	C	Damper blade	Handles
200..1200 *	230	–	1	1
	430		2	1
	630		3	1
	830		4	1
	1030		5	1
	1230		6	1
	1430	550	7	2
	1630	650	8	2
	1830		9	2
	2030		10	2

Grid dimensions 50 mm

Weight [kg]										
B	H [mm]									
[mm]	230	430	630	830	1030	1230	1430	1630	1830	2030
200	21	29	37	46	54	62	71	79	87	95
250	22	31	39	48	56	65	73	82	91	99
300	23	32	41	50	59	67	76	85	94	103
350	24	33	43	53	61	70	79	88	98	107
400	25	35	44	54	63	73	82	92	101	111
450	27	36	46	56	66	75	85	95	105	114
500	28	38	48	58	68	78	88	98	108	118
550	29	39	50	61	70	81	91	101	112	122
600	30	41	51	62	73	83	94	105	115	126
650	31	42	53	64	75	86	97	108	119	130
700	32	44	55	66	77	89	100	111	122	134
750	34	45	57	69	80	91	103	114	126	137
800	35	47	58	70	82	94	106	118	129	141
850	36	48	60	72	84	97	109	121	133	145
900	37	49	62	75	87	99	112	124	136	149
950	38	51	64	77	89	102	115	127	140	153
1000	39	52	65	78	91	104	117	130	143	156
1050	40	54	67	80	94	107	120	134	147	160
1100	42	55	69	83	96	110	123	137	150	164
1150	43	57	71	85	98	112	126	140	154	168
1200	44	58	72	87	101	115	129	143	158	172

3 Transport and storage

Delivery check

Check delivered items immediately after arrival for transport damage and completeness. In case of any damage or an incomplete shipment, contact the shipping company and your supplier immediately.

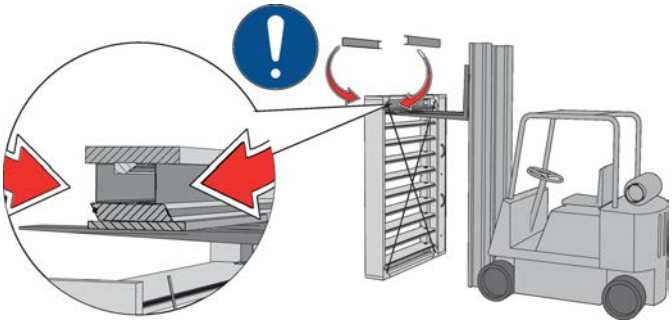
A complete shipment includes:

- Smoke control damper(s)
  - Attachments/accessories, if any
- Installation and operating manual (one per shipment)

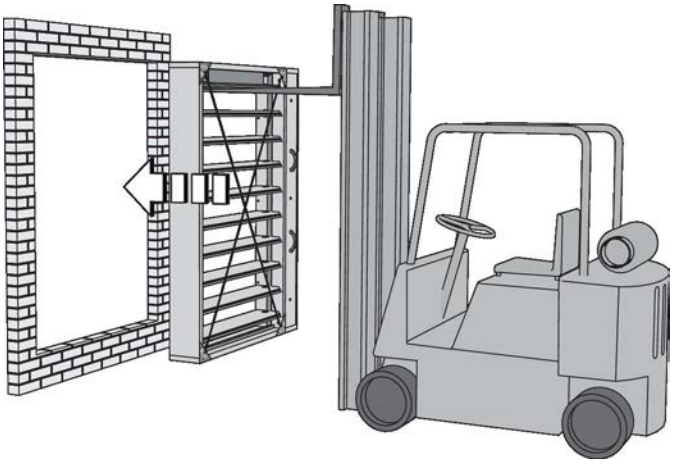
Transport on site

- If possible, take the product in its transport packaging up to the installation location.
- Smaller dampers can be lifted and placed in the installation opening by two people. Ask someone to give you a hand.
- Dampers which are supplied with U channel sections as a transport aid have to be moved with suitable lifting equipment, e.g. a forklift truck.

1. Unpack the damper and place it upright on the floor. Do not remove the straps yet.
   Diagonal tension straps from H≥1230 x B≥700

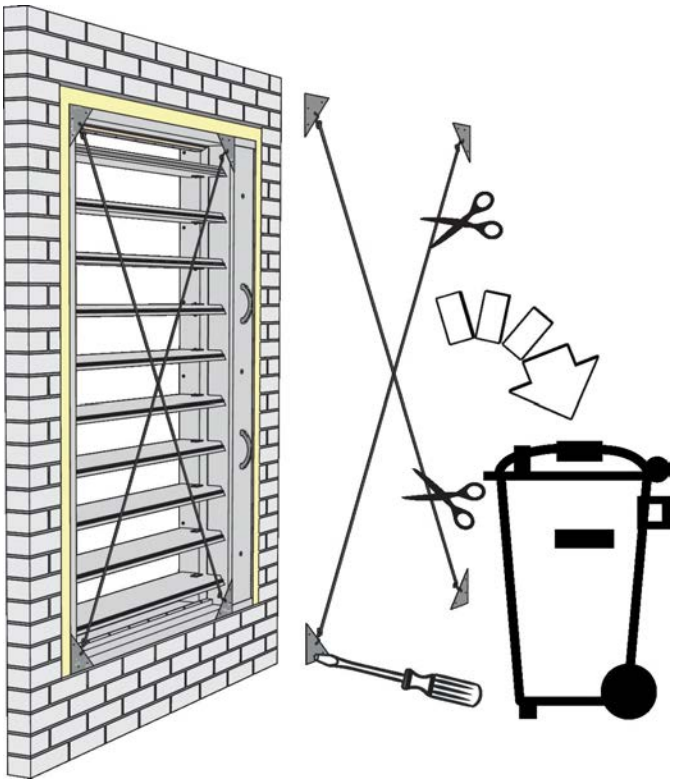


2. Place the U channel sections between the uppermost damper blade and the casing.



3. Move the fork carefully underneath the uppermost damper blade, then lift it. Put a piece of wood or anything similar between the damper blade and the fork so as not to damage the damper blade.

   Carefully lift the smoke control damper with the forklift truck and place it in the installation opening.



4. Once you have installed the smoke control damper, remove the straps; in case of mortar-based installation, remove the straps only after the mortar has cured. Remove the corner protectors. Dispose of the straps and corner protectors.

Bearing

For temporary storage please note:

- Remove any plastic wrapping.
- Protect the product from dust and contamination.

- Store the product in a dry place and away from direct sunlight.
- Do not expose the unit to the effects of weather (not even in its packaging).
- Do not store the product below -30 °C or above 50 °C.

Packaging

Properly dispose of packaging material.

4 Parts and function

Smoke control dampers are used in mechanical smoke extract systems. They are used for extracting smoke gases and for providing additional supply air to one or more fire compartments.

Smoke control dampers are essentially made from calcium silicate boards, and the electric actuator and the optional control module are encased so that the functional reliability is ensured even in the event of a fire.

Regular maintenance of the smoke control damper is required to ensure its functional reliability ↳ *9 'Maintenance' on page 81* .

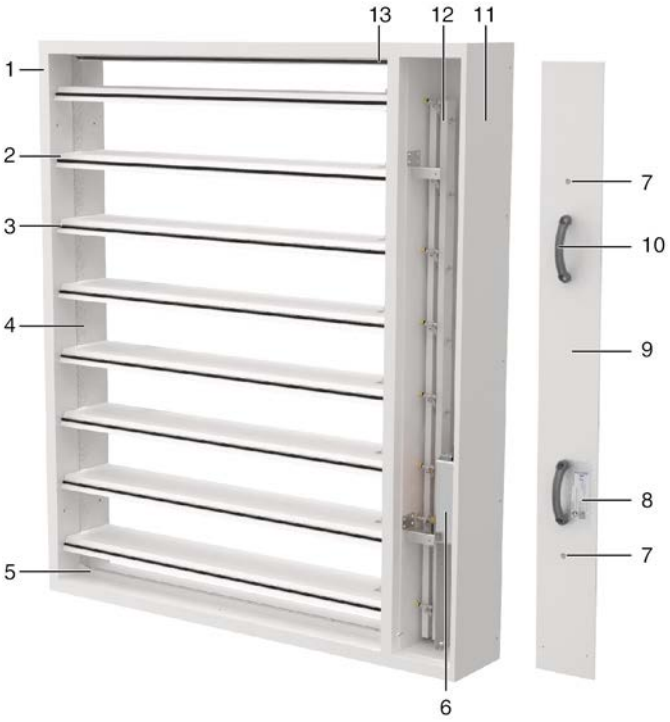


Fig. 3: EK-JZ smoke control damper

1 Casing
2 Damper blades
3 Damper blade profile seal
4 Side seal
5 Travel stop, bottom
6 Actuator
7 Cover fixing
8 Rating plate
9 Cover of the actuator encasing (cover removed)
10 Handle (to remove the cover)
11 Actuator encasing
12 Linkage
13 Travel stop, top

Smoke extract

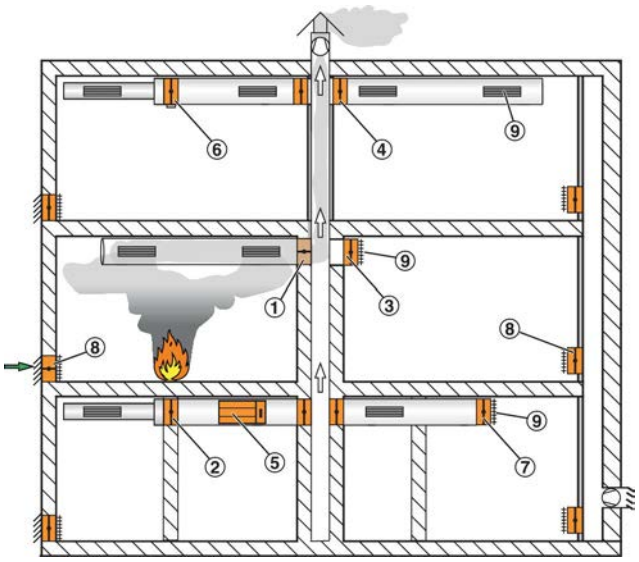


Fig. 4: Smoke extract system

① EK-JZ in a solid shaft wall
② EK-JZ in a solid wall and a duct
③ EK-JZ on a solid shaft wall
④ EK-JZ on a vertical smoke extract duct (shaft)
⑤ EK-JZ on a horizontal smoke extract duct
⑥ EK-JZ in a horizontal smoke extract duct
⑦ EK-JZ at the end of a horizontal smoke extract duct
⑧ EK-JZ as additional supply air inlet
⑨ Cover grilles

During normal operation Type EK-JZ smoke control dampers remain closed. For smoke extract, the smoke control dampers in the affected fire compartment fully open so that smoke can be extracted. All other smoke control dampers remain closed.

In the event of a fire, smoke control dampers that are used as additional supply air inlets in the affected fire compartment also open so that smoke can be extracted. To ensure the creation of a layer that is nearly free from smoke, smoke control dampers used as additional supply air inlets should be installed near the ground.

The control input signal for the actuator may come from a duct smoke detector or from the central fire alarm system. Using cables with specific circuit integrity for the supply voltage ensures that the actuator is supplied with voltage even in the event of a fire and hence that its function and the communication are maintained.

Supply air and smoke extraction in ventilation systems

When authorised by building authorities or authorised bodies, smoke extract and supply air applications as well as ventilation can be enabled in combined systems with smoke control dampers. Depending on the system layout, the damper blade can be fully opened, fully closed or in the intermediate position. Depending on where the dampers are installed, country-specific regulations may apply to ventilation applications.

5 Installation

5.1 Installation situations

The table lists the various EK-JZ installation types; for details on the performance level see the declaration of performance.

Installation locations described here may be combined with other installation location characteristics. For example, a smoke control damper may be installed on a vertical smoke extract duct where a horizontal smoke extract duct branches off.

Supporting construction	Construction	Installation location	Installation type	Performance level	Installation information
Solid wall	■ Concrete, aerated concrete, brick walls ■ d ≥ 100 mm ■ ρ ≥ 500 kg/m³ ■ Direct mounting of several dampers possible ■ Ring gap wet ≤ 150 mm in combination wet and dry with HT sealing tape ≤ 5 mm ■ Distance to load-bearing structural elements ≥ 3 – 5 mm ■ Connection to thermally insulated smoke extract ducts with proof of usability, tested in accordance with EN 1366-8 ■ Connection by means of metal connection frames to smoke extract ducts with proof of usability for individual sections, tested according to EN 1366-9 ■ with vertical or horizontal damper blade shaft	In a solid wall (wall is not part of the smoke extract duct)	N	EI 120 (V_{ew}, i↔o) S	28
			T / N	EI 120 (V_{ew}, i↔o) S	25
			T	EI 90 (V_{ew}, i↔o) S	
Solid shaft wall as part of a smoke extract duct		In a shaft wall (the shaft is part of a smoke extract duct)	N T; N is possible on one side	EI 120 (V_{edw}, i↔o) S	25
		On a shaft wall (the shaft is part of a smoke extract duct)	T		40
Lightweight shaft wall	■ Plasterboard fire barrier 2 x 20 mm ■ d ≥ 90 mm	In a shaft wall (the shaft is part of a smoke extract duct)	T/N	EI 90 (V_{edw}, i↔o) S	46

T = dry mortarless installation, N = mortar-based installation, LE = as specified for the duct

Supporting construction	Construction	Installation location	Installation type	Performance level	Installation information
Lightweight partition wall	■ Plasterboard fire barrier 2 x 12.5 mm ■ d ≥ 100 mm	In a lightweight partition wall, the wall is not part of the smoke extract duct	T/N	EI 90 (V_{ew}, i↔o) S	48
Solid ceiling slabs and other structures that are part of the smoke extract duct	■ Concrete, aerated concrete ■ d ≥ 150 mm ■ ρ ≥ 550 kg/m³ ■ Connection to thermally insulated smoke extract ducts with proof of usability, tested in accordance with EN 1366-8 ■ Connection by means of metal connection frames to smoke extract ducts with proof of usability for individual sections, tested according to EN 1366-9	in solid ceiling slab	N	EI 120 (h_{odw}, i↔o) S	50
Fire-resistant vertical smoke extract duct	■ Firestop board (calcium silicate) ■ d ≥ 35 mm	on a vertical duct	LE	EI 120 (h_{od}, V_{ed}, i↔o) S	52
		in a vertical duct			54
Fire-resistant horizontal smoke extract duct	■ ρ ≥ 500 kg/m³ ■ Perimeter strips (i.e. on four sides) ■ Adjoined installation of two dampers is possible ■ Connection to thermally insulated smoke extract ducts with proof of usability, tested in accordance with EN 1366-8 ■ Connection by means of metal connection frames to smoke extract ducts with proof of usability for individual sections, tested according to EN 1366-9	on a horizontal duct			56
		in a horizontal duct			58
		at the end of a horizontal duct			60
		on top of/under a horizontal duct			62

T = dry mortarless installation, N = mortar-based installation, LE = as specified for the duct

5.2 Safety notes regarding installation

Sharp edges, sharp corners and thin sheet metal parts

CAUTION!

Danger of injury from sharp edges, sharp corners and thin sheet metal parts!

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

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

5.3 General installation information

NOTICE!

Be careful to not damage the smoke control damper

– Protect the smoke control damper from contamination and damage.
– Cover the flange openings and the actuator (e.g. with plastic) to protect them from mortar and dripping water.

Please note:

- Install the smoke control damper without torsion (horizontal/vertical).
- Make sure that no loads are imposed on the casing as this may impair the function of the smoke control damper.
- Mortar-based installation: The installation gap must be large enough so that mortar can be filled in even in case of thicker walls/ceilings.
- Smoke control damper and electric actuator (encasing) must remain accessible for maintenance.

Installation position

The smoke control damper can be installed so that the damper blade shaft installation position is horizontal or vertical. Since special seals must be installed at the factory for installation in vertical damper blade shaft installation position, a vertical installation position must be specified when ordering.

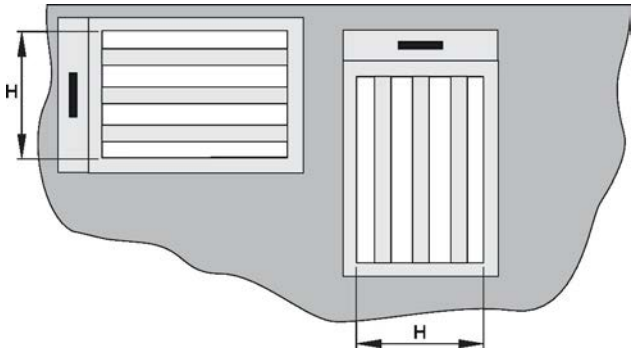


Fig. 5: EK-JZ, horizontal and vertical installation position

Before installation, check whether the damper blade is intended for the intended installation position, this is indicated on the order code of the type plate:

Order characteristic 0	- Installation only in the horizontal installation
Order characteristic V	- Installation in the vertical or horizontal installation position

The following accessories can be selected under order characteristic V to facilitate installation or for smaller installation spaces:

- Upper (special) HT seal
- Upper (special) and side HT seals
- Upper (special) HT seal and fixing tabs (quantity depends on B x H)
- Upper (special) and side HT seals and fixing tabs (quantity depends on B x H)

Details of the order code are described in the product brochure or on the website.

The position of the actuator casing is not critical (left, right, top, bottom), but the mechanism must remain accessible for maintenance.

Requirements for wall systems

EK-JZ smoke control dampers may be installed in wall systems if these walls have been erected in compliance with regulations and the manufacturers' instructions, and if the information on the respective installation situation applies and the following requirements are met.

Provide any installation openings according to the installation details in this manual.

Solid walls or solid shaft walls

- Solid walls or solid shaft walls made of, for example, concrete, aerated concrete or bricks, gross density $\geq$ 500 kg/m³.
- Wall thickness W $\geq$ 100 mm.
- Provide each installation opening according to the local and structural conditions and with regard to the dimensions of the smoke control damper.

Lightweight partition walls with metal support structure

- Lightweight partition wall with metal support or steel support structure, with European classification to EN 13501-2 or equivalent national classification.
- Cladding on both ends made from plasterboard fire barriers.
- Wall thickness W ≥ 100 mm.
- ≤ 625 mm distance between metal studs.
- Create an installation opening with trimmers (studs and noggings).
- Trim panels and a support extension must be provided and screw-fixed to the support structure.
- Additional layers of cladding (if stated in the usability certificate for the wall) and double stud constructions are approved.
- Connect the metal sections near the installation opening according to the installation details in this manual.

Shaft walls with metal support structure

- Shaft walls or additional leaves with metal support structure or steel support structure, with European classification to EN 13501-2 or equivalent national classification.
- Cladding on one side made from plasterboard fire barriers.
- Wall thickness W ≥ 90 mm (cladding according to installation details).
- ≤ 625 mm distance between metal studs.
- Be sure to follow the manufacturers' instructions for the height, width and thickness of walls.
- Create an installation opening with trimmers (studs and noggings).
- Trim panels and a support extension must be provided and screw-fixed to the support structure.
- Ensure accessibility to the shaft from the rear.

5.3.1 Installation materials

Mineral wool infill

Unless stated otherwise in the installation details, use mineral wool with a gross density or compact density of ≥ 80 kg/m³ and a melting point of ≥ 1000 °C.

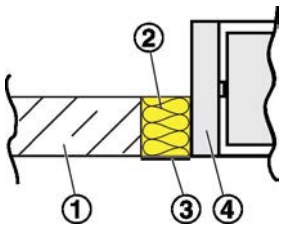


Fig. 6: Installation gap

① Wall
② Mineral wool
③ Ablative coating (if required)
④ EK-JZ

For a smooth look you can apply ablative coating of one of the following types to the mineral wool in the installation gap:

- Hilti:
  - Ablative coating CFS-CT
- Hensel:
  - Ablative coating HENSOMASTIK 5 KS Farbe
- Promat:
  - Ablative coating Promastopp-CC

Acceptable mortars for mortar-based installation

In case of mortar-based installation, the open spaces between the fire damper casing and the wall or ceiling slab must be closed off with mortar. Entrapped air is to be avoided. The mortar bed depth should be equal to the thickness of the wall but must be at least 100 mm.

The following mortars are acceptable:

- DIN 1053: Groups II, IIa, III, IIIa; fire protection mortar of groups II, III
- EN 998-2: Classes M 2.5 to M 10 or fire protection mortar of classes M 2.5 to M 10
- Equivalent mortars that meet the requirements of the above standards, gypsum mortar or concrete

Fixing tab for wall installation

With mortar bed widths of s ≥20 mm, attach a fixing tab to the damper casing and spread open prior to mortar-fixing.

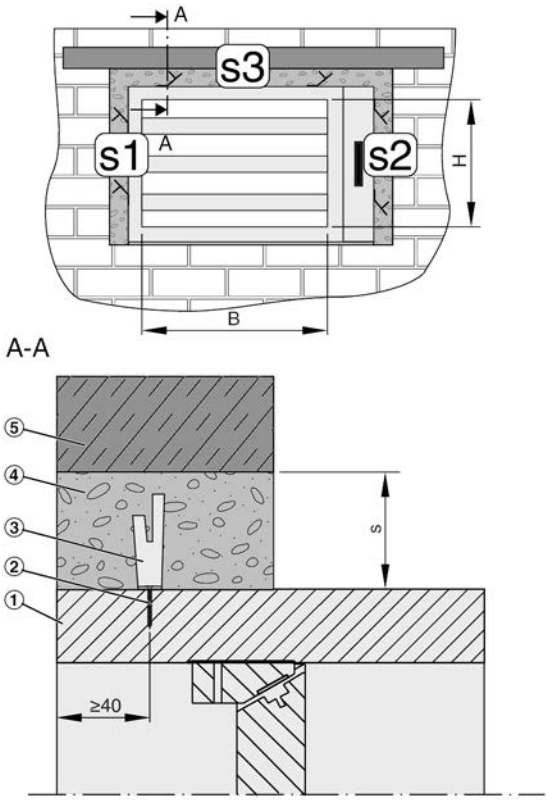


Fig. 7: EK-JZ mortar-based installation with fixing tab

1 EK-JZ
2 Chipboard screw ∅3x25 mm (accessories)
3 Fixing tab (accessories)
4 Mortar bed
5 Solid shaft wall or solid wall
s Mortar bed width (installation gap)

The fixing tab is not needed if the installation of the damper is partly dry and mortarless and there is a screw connection in the installation gap S1 and S3.

Fixing tab for ceiling slab installation

Before the subframe is mortared in, the fixing tabs on the casing must be bent and spread.

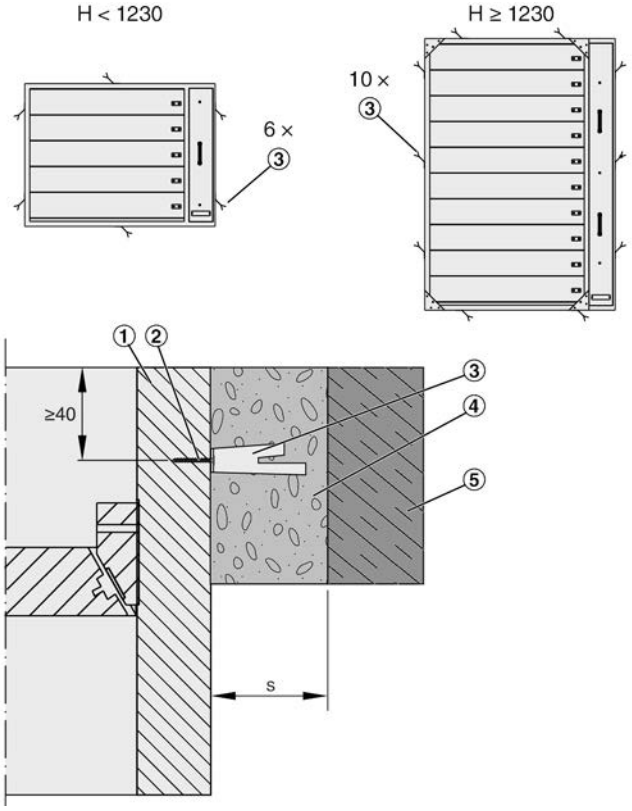


Fig. 8: EK-JZ mortar-based installation with fixing tab

1 EK-JZ
2 Chipboard screw ∅3x25 mm (accessories)
3 Fixing tab (accessories)
4 Mortar bed
5 Solid ceiling slab
s Mortar bed width (installation gap)

High-temperature sealing tape

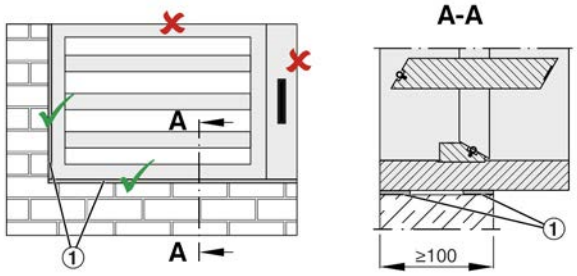


Fig. 9: Affixing the sealing tape

Affix the high-temperature sealing tape (Fig. 9 /1) with trim panel thickness (flush at front and rear) to the casing (if necessary, mark the trim panel thickness beforehand). **Do not glue the ceramic fibre paper onto the wall or trim.**

Permitted use (depending on installation situation)

- Lower casing
- Casing on non-drive side

The high-temperature sealing tape (melting point 1200 °C) is – unless otherwise agreed – included in the supply package.

Special high-temperature sealing tape

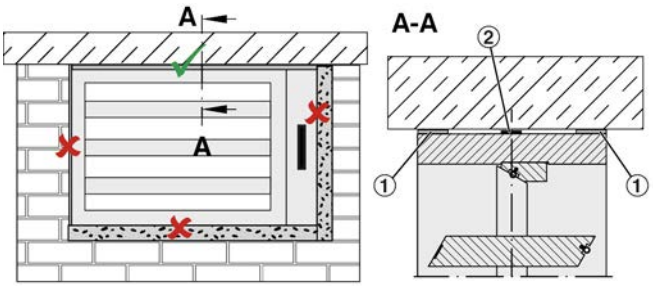


Fig. 10: Affixing the sealing tape

Adhere the high-temperature sealing tape (Fig. 10 /1) in the width of the casing, stick the intumescent seal (Fig. 10 /2) centrally on the damper casing. **Do not glue the ceramic fibre paper onto the wall or trim.**

Permitted use, depending on installation situation, *'Installation gap variants for solid walls and solid shaft walls' on page 24*

The high-temperature sealing tape (melting point 1200°C) and intumescent seal are – unless otherwise agreed – included in the supply package.

Impregnation and coating

Impregnation (included in the supply package unless otherwise agreed) or coating of the smoke control damper for colour adjustment is acceptable if:

- Mass per unit area ≤ 1.0 kg/m²
- or thickness ≤ 1.0 mm
- Apply only to calcium silicate surfaces, never to a seal
- **Impregnation**
  - Promat GmbH - Impregnation 2000
  - Promat GmbH - SR Impregnation
  - Promat GmbH - Tunnel Impregnation
- **Coating**
  - Commercially available emulsion paint

5.3.2 Fixing points

The casing of the smoke control damper has pre-drilled connection points that are used to screw-fix the damper to the wall.

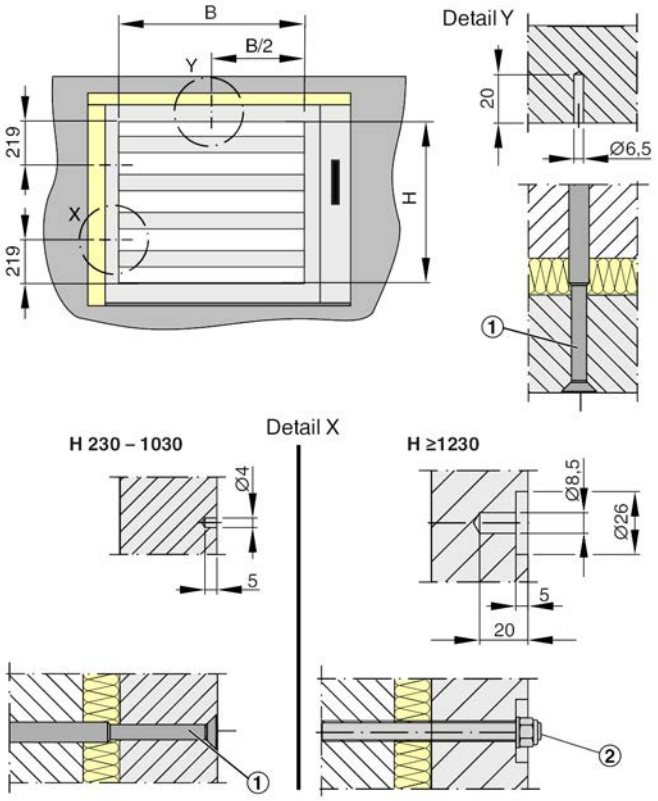


Fig. 11: EK-JZ pre-drilled attachment options

1 E.g., concrete screw with countersunk head
2 Threaded bolts with nut and washer M8

Note: The fixing elements must not protrude on the inside of the casing. Contact with the damper blade will damage the damper blade and the entire damper will need to be replaced.

Additional fixing points

If the pre-drilled fixing points cannot be used or additional drilled holes are needed, these must be provided as follows in the casing.

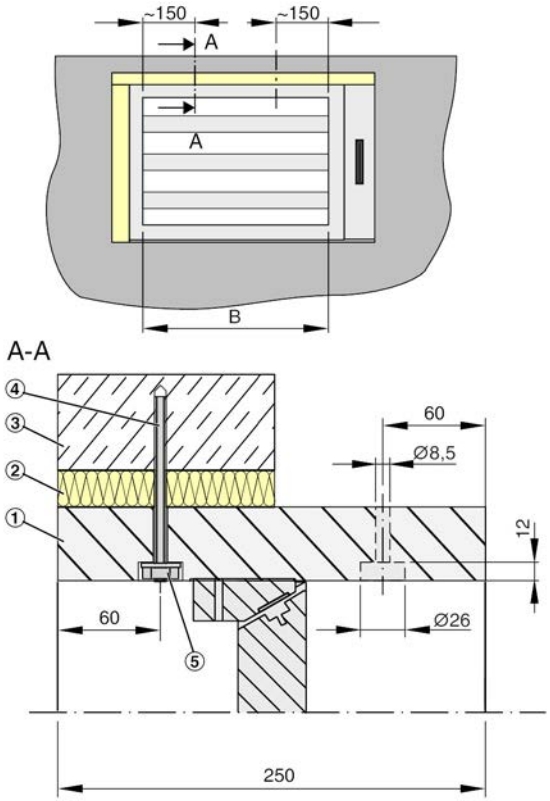


Fig. 12: Create additional fixing options

1 EK-JZ
2 Mineral wool or high-temperature sealing tape
3 Solid shaft wall or solid wall
4 Wallplug with fire safety engineering certification and threaded bolts M8
5 Washer, nut M8

Number of fixing points

B < 800 mm - 1 fixing point

B ≥ 800 mm - 2 fixing point

Note: The fixing elements must not protrude on the inside of the casing. Contact with the damper blade will damage the damper blade and the entire damper will need to be replaced.

5.3.3 Adjoined damper installation

For the installation of several dampers in one installation opening, the following points must be observed:

- Installation only into solid walls or solid shaft walls.
- Damper blade installation position: horizontal or vertical *'Installation position' on page 16*
- Installation gaps according to the general installation descriptions.
- Screw the dampers together as described below.

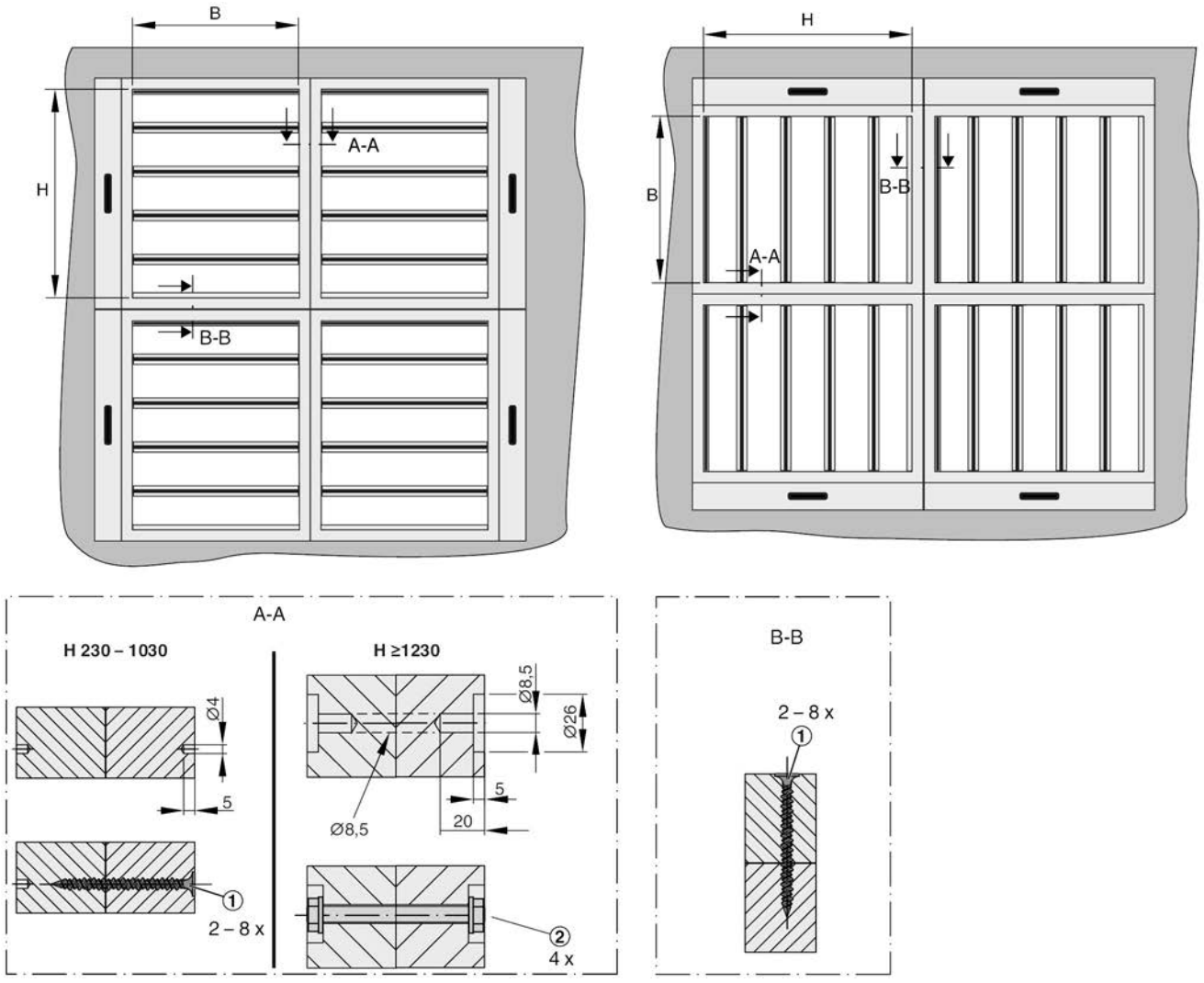


Fig. 13: EK-JZ damper to damper, multiple, horizontal and vertical damper blade installation position

1 Dry wall screw 4.5 x 70 mm or 5.0 x 70 mm
2 Hexagon head screw M8 x 90 mm or threaded rod M8 with washers and nuts

Detail A-A:
The damper casing (H-side) opposite the actuator encasing has markings that indicate where the screw holes to join dampers have to be drilled. If additional or alternative fixing points are required, these must be provided as described under *5.3.2 'Fixing points' on page 20*.

Detail B-B:
In the damper casing (B-side), the screw connections can be set free, screw spacing approx. 200 mm, edge distance approx. 40 mm. Screw in the screws offset and from the direction of both dampers.

5.4 Solid walls or solid shaft walls

5.4.1 Installation opening

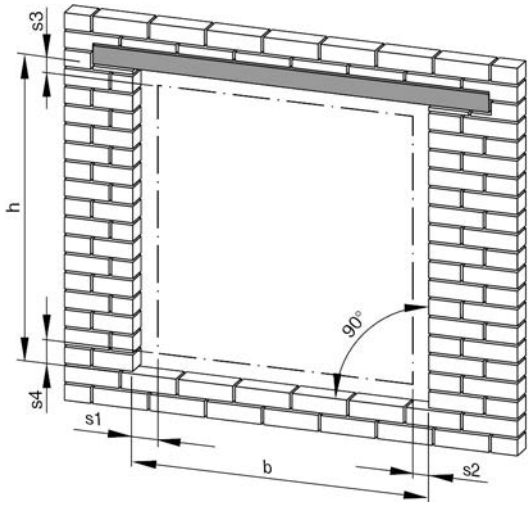
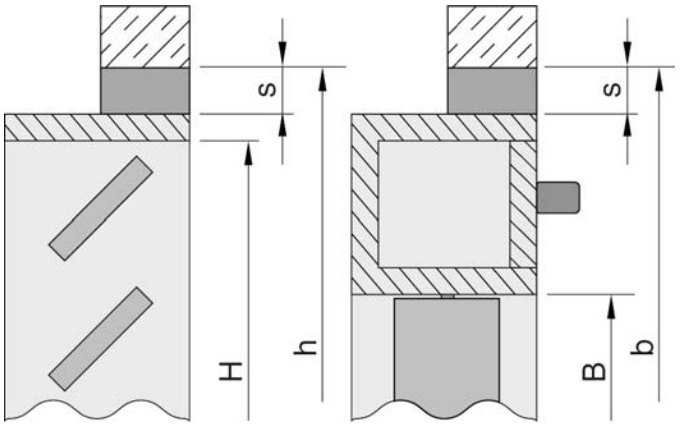
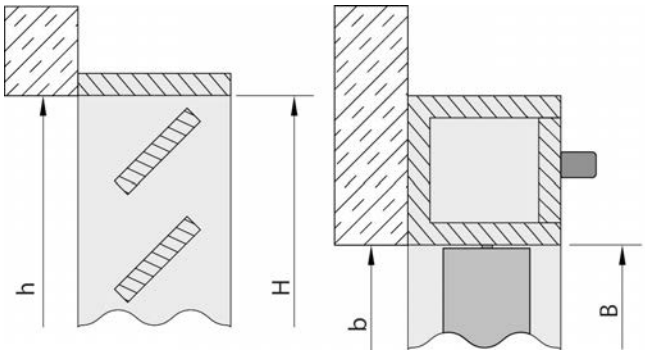


Fig. 14: Ideal installation opening

in **solid wall or shaft wall**	**on** **solid wall, shaft wall or fire-resistant smoke extract duct**
	
b = [B + 280 mm] + s1 + s2	b = nominal width B
h = [H + 80 mm] + s3 + s4	h = nominal height H
b / h= [nominal size B / H + damper casing] + installation gap The installation gap (s) is dependent on the filling material used: Fibre paper: 3-5 mm Mortar: up to 150 mm Mineral wool: 10 to 40 mm	Ideally, the installation opening is equal to the nominal size of the smoke control damper. For installation on a wall, however, the installation opening may also be smaller than the nominal size of the damper, for example, when no damper standard height fits the installation opening exactly. In such a case you have to make sure that there is enough clearance to install the damper.

S1 - S4 ‘*Installation gap variants for solid walls and solid shaft walls*’ *on page 24*

Adapting the installation opening in solid walls and shaft walls

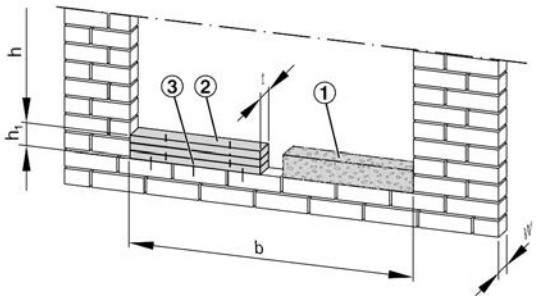


Fig. 15: Installation opening with concrete or calcium silicate boards for height adjustment

t = W (100 mm min., 250 mm max.)
h1 See Table

To adapt the height of the installation opening you can fill in concrete (Fig. 15 /1) or calcium silicate boards (Fig. 15 /2) at the bottom.

Be sure to attach the boards to each other and also to attach them to the brick structure. To do so, use glue or screws (Fig. 15 /3); screws should be at ≤200 mm from each other.

Boards	Thickness [mm]	h_1 [mm]
Promatect MT	40	40 - 200
Promatect LS	35	35 - 210
Promatect H	25	25 - 200
Promatect H	10 - 20	10 - 100

Glue: Promat K84

Additional information upon request.

Installation depths of EK-JZ in solid wall

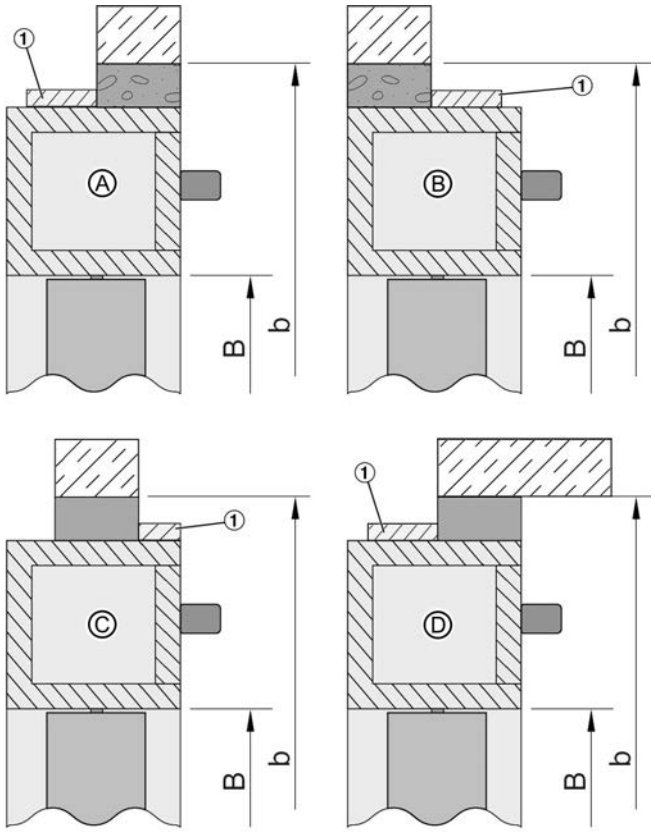


Fig. 16: Installation depths (drawn: cut from above)

A Operating side flush
B Reverse side flush
C Central position
D Mortar bed flush with operating side
1 **Fire-rated PROMATECT®-LS board 20 x 100 mm around the perimeter, only required with EI 120 S**

Installation gap variants for solid walls and solid shaft walls

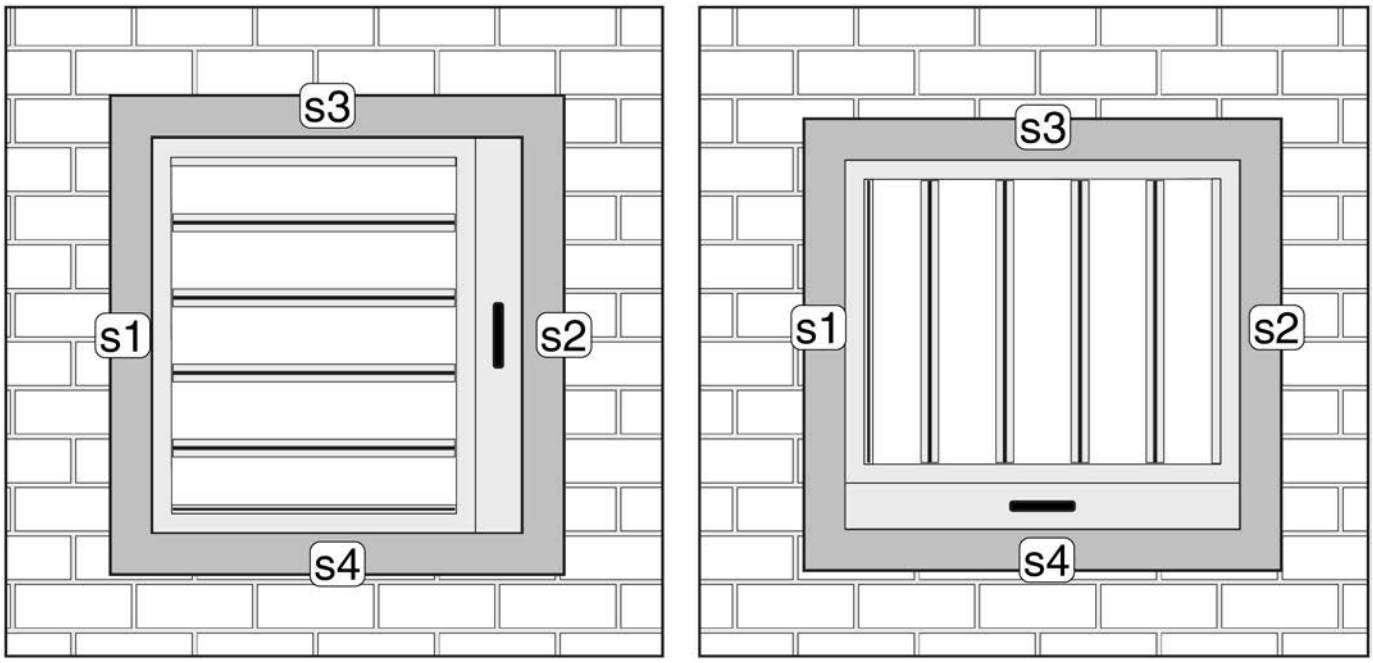


Fig. 17: EK-JZ installation gap variants for solid walls

	Classification	Installation gap			
		s1	s2	s3	s4
1	EIS120	Mortar	Mortar	Mortar	Mortar
2	EIS120	Mortar	Mortar	Mortar	HT sealing tape
3	EIS120	HT sealing tape	Mortar	Mortar	HT sealing tape
4	EIS90 EIS120*	Mineralwool	Mineralwool	Mineralwool	HT sealing tape
5	EIS90 EIS120*	Mineralwool	Mortar	Mineralwool	HT sealing tape
6	EIS90 EIS120*	HT sealing tape	Mineralwool	Mineralwool	HT sealing tape
7	EIS120	HT sealing tape	Mortar	Special HT sealing tape	Mortar
8	EIS120	HT sealing tape	Mineralwool	Special HT sealing tape	Mortar
9	EIS120	Mortar	Mortar	Special HT sealing tape	Mortar

HT sealing tape = high-temperature sealing tape

Special HT sealing tape = high-temperature sealing tape + intumescent seal

* Only with solid shaft walls as part of a smoke extract duct

5.4.2 Installation type dry, mortarless / dry, mortarless - mortar-based

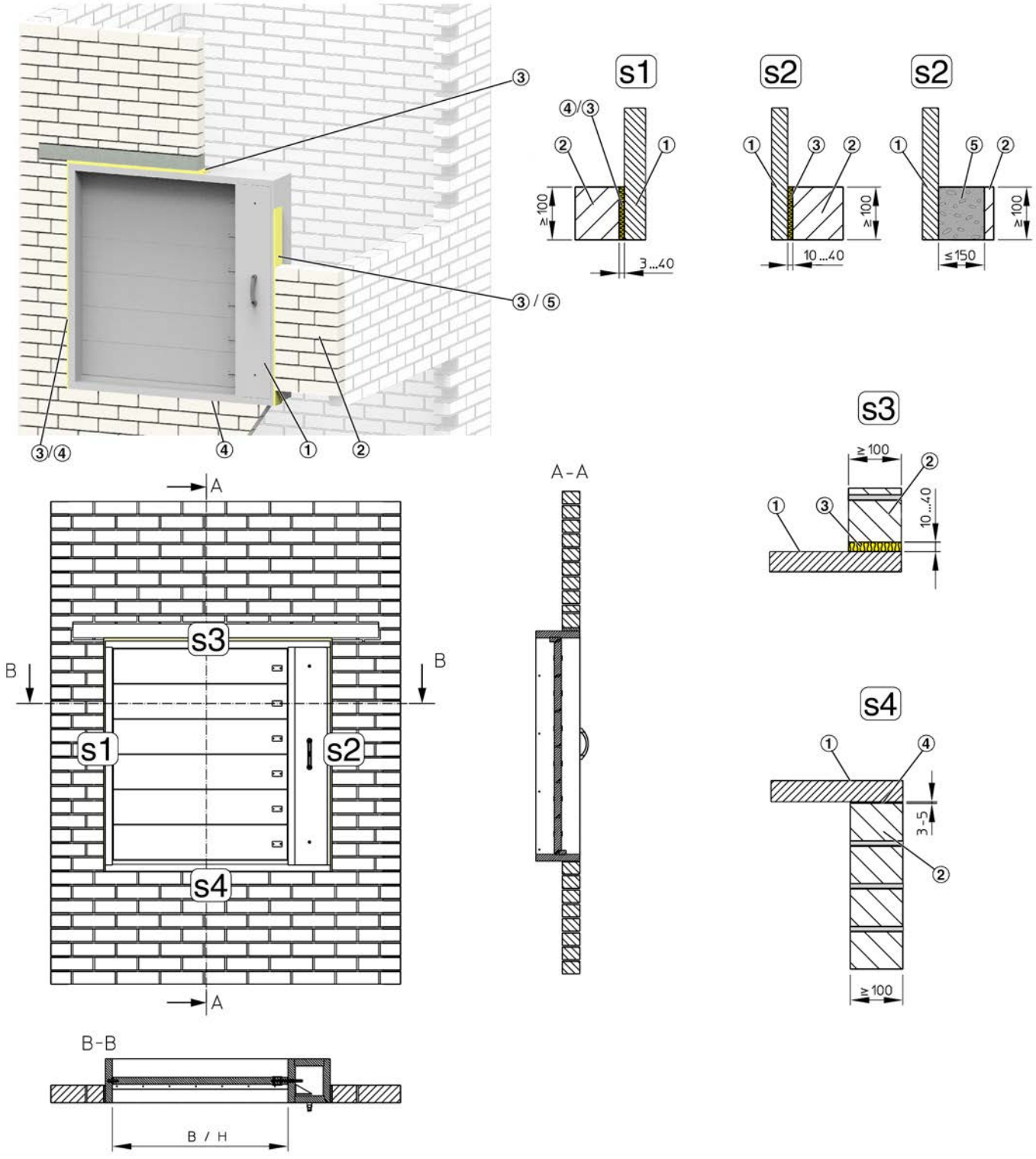


Fig. 18: Installation dry, mortarless or dry, mortarless - mortar-based in solid wall or solid shaft wall

1 EK-JZ (vertical or horizontal installation position)
2 Solid wall or solid shaft wall made from bricks, concrete or aerated concrete
3 Mineral wool ↳ *'Mineral wool infill' on page 17*
4 High-temperature sealing tape ↳ *'High-temperature sealing tape' on page 18*
5 Mortar ↳ *'Acceptable mortars for mortar-based installation' on page 17*

Installation gap	Filling material	Installation gap width [mm]		
		Min.	Max.	Recommended
S1	Mineral wool or	10	40	20
	High-temperature sealing tape	3	5	3
S2	Mineral wool or	10	40	20
	Mortar	20 [1)]	150	50
S3	Mineral wool	10	40	20
S4	High-temperature sealing tape	3	5	3

1) The gap must be large enough so that the mortar-mix can be filled in. We recommend a gap of at least 20 mm.

Personnel:

- Specialist personnel

Materials:

- Mineral wool *'Mineral wool infill' on page 17*
- High-temperature sealing tape *'High-temperature sealing tape' on page 18*
- Mortar *'Acceptable mortars for mortar-based installation' on page 17*
- Screws and anchors suitable for the type of wall

Requirements:

- Solid walls or solid shaft walls, e.g. concrete, aerated concrete, bricks, gross density ≥ 500 kg/m³ and W ≥ 100 mm

Installation

1. Create an installation opening according to *5.4.1 'Installation opening' on page 22* . The installation opening has to be rectangular, with smooth surfaces (± 5 mm). If the surfaces are not smooth, use mortar to make them smooth.
2. On the left trim panel (S_1) affix high-temperature sealing tape (Fig. 18 /4) to the damper frame (wall thickness) or use mineral wool (Fig. 18 /3), see table above for thickness.
3. On the smoke control damper on the lower side of the damper frame, affix the high-temperature sealing tape (Fig. 18 /4) (wall thickness), *18* .
4. Insert the smoke control damper with the affixed high-temperature sealing tape in the installation opening and press it against the trim panel S1. Make sure that the damper is vertical; use wedges to hold the damper in the correct position; the damper has to be installed without torsion (check the diagonal length; allowed tolerance: 2 mm).

   Installation depths, see *'Installation depths of EK-JZ in solid wall' on page 23*
5. Drill screw holes at the fixing points marked on the damper frame, then screw fix the smoke control damper to the wall. Be careful when you tighten the screws; do not exercise any tension as this may damage the damper frame.

   NOTE: Screw the smoke control damper into the holes marked on the frame. Do not use any screws anywhere else on the damper frame as they may prevent the damper blades from closing properly. Fixing point in H part only from H ≥ 1230 mm. Additional fixing points, *5.3.2 'Fixing points' on page 20* .
6. Fill the installation gap on the top (S_3) with mineral wool.
7. Fill the installation gap on the right (S_2) with mineral wool or close off with mortar. If the gap is wider than 40 mm, it has to be filled with mortar. Fill the gap with mortar, ideally until it is as thick as the wall, but at least 100 mm.

   Do not leave any gaps or spaces between the damper and the wall. If you have used any objects to facilitate damper installation, e.g. wedges, remove them now. Fill any remaining hollow spaces with mineral wool or mortar.
8. Connect the smoke extract ducts (installation side and operating side) to the smoke control damper, *6 'Smoke extract duct and cover grille' on page 65* .

If the operating side is not connected to a duct, a cover grille is required ↬ *6.4 'Cover grilles' on page 67* .

5.4.3 Installation type mortar-based / dry, mortarless - mortar-based

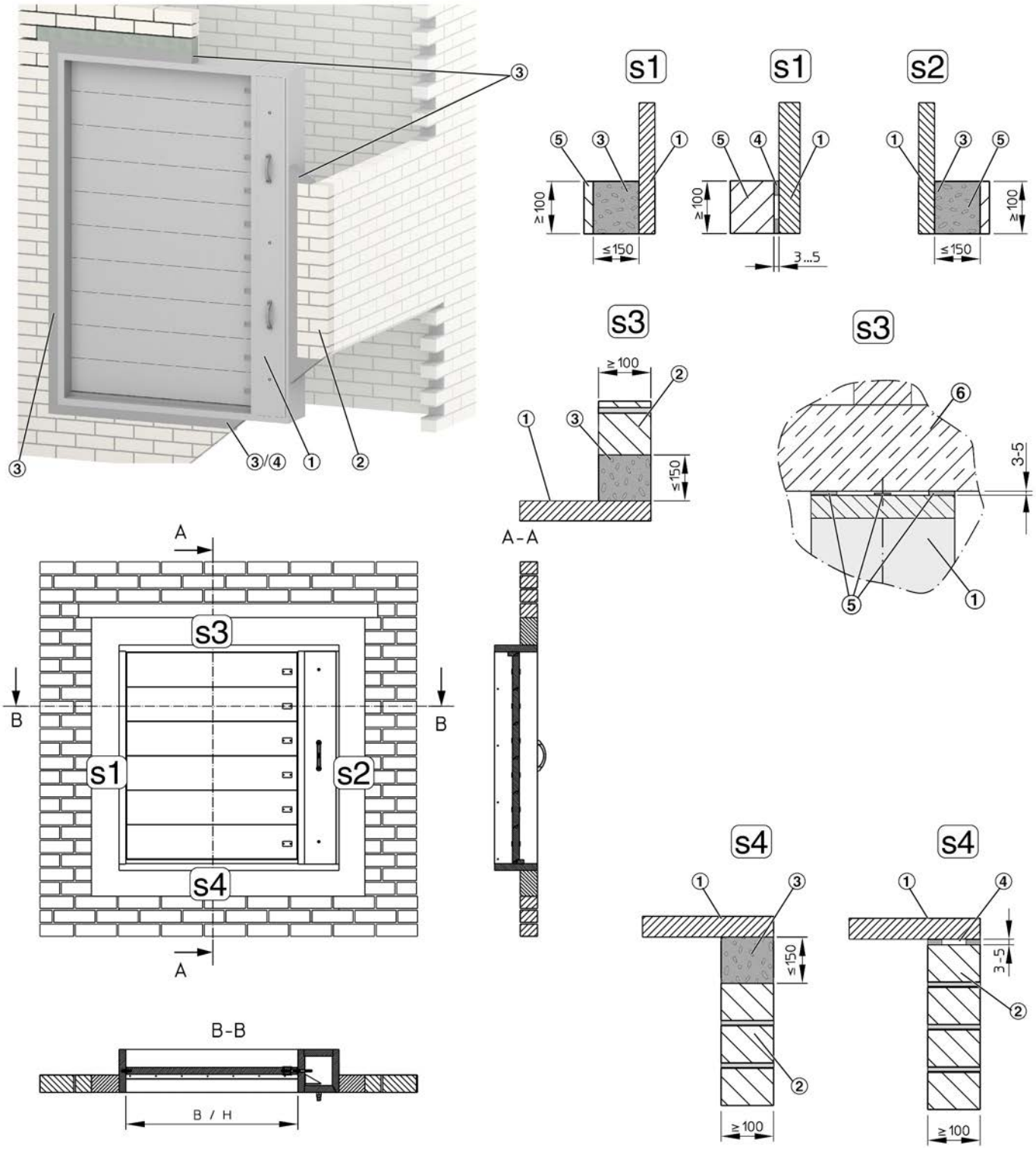


Fig. 19: Mortar-based installation in solid wall or solid shaft wall

1 EK-JZ (vertical or horizontal installation position)
2 Solid wall or solid shaft wall made from bricks, concrete or aerated concrete
3 Mortar, ↳ *'Acceptable mortars for mortar-based installation' on page 17*
4 High-temperature sealing tape ↳ *'High-temperature sealing tape' on page 18*
5 Special high temperature sealing tape (with intumescent seal)
6 Ceiling slab

Installation gap	Filling material	Installation gap width [mm]		
		Min.	Max.	Recommended
S1	High-temperature sealing tape or	3	5	3
	Mortar	20 1)	150	50
S2	Mortar	20 1)	150	50
S3	Special high-temperature sealing tape or	3	5	3
	Mortar	20 1)	150	50
S4	High-temperature sealing tape or	3	5	3
	Mortar	20 1)	150	50

1) The gap must be large enough so that the mortar-mix can be filled in. We recommend a gap of at least 20 mm.

Personnel:

- Specialist personnel

Materials:

- High-temperature sealing tape *'High-temperature sealing tape' on page 18*
- Special high temperature sealing tape (with intumescent seal) *'Special high-temperature sealing tape' on page 19*
- Mortar *'Acceptable mortars for mortar-based installation' on page 17*
- Screws and anchors suitable for the type of wall

Requirements:

- Solid walls or solid shaft walls, e.g. concrete, aerated concrete, bricks, gross density ≥ 500 kg/m³ and W ≥ 100 mm

Installation

1. Create an installation opening according to *5.4.1 'Installation opening' on page 22* . The installation opening has to be rectangular, with smooth surfaces (± 5 mm). If the surfaces are not smooth, use mortar to make them smooth.
2. Attach fixing tab to the smoke control damper, *'Fixing tab for wall installation' on page 18* .
3. Depending on the installation type, affix the high-temperature sealing tape (Fig. 18 /4) to the smoke control damper on the bottom of the damper frame (wall thickness), *18* or apply a mortar bed to the lower trim panel (S4).
4. Insert the smoke control damper (with affixed high-temperature sealing tape) into the installation opening and align. Make sure that the damper is vertical; use wedges to hold the damper in the correct position; the damper has to be installed without torsion (check the diagonal length; allowed tolerance: 2 mm).

   Installation depths, see *'Installation depths of EK-JZ in solid wall' on page 23*
5. Close off any remaining gaps with mortar. Fill the gap with mortar, ideally until it is as thick as the wall, but at least 100 mm.

   NOTE: With mortar bed widths from ≥40 mm, fixing tabs must be used according to the manufacturer's guidelines, *'Fixing tab for wall installation' on page 18*

   Do not leave any gaps or spaces between the damper and the wall. If you have used any objects to facilitate damper installation, e.g. wedges, remove them now. Fill any remaining hollow spaces with mineral wool or mortar.
6. Drill screw holes at the fixing points marked on the damper frame, then screw fix the smoke control damper to the wall. Be careful when you tighten the screws; do not exercise any tension as this may damage the damper frame, *5.3.2 'Fixing points' on page 20*

NOTE: Use only the marked holes in the damper frame to screw-fix the smoke control damper. Do not use any screws anywhere else on the damper frame as they may prevent the damper blades from closing properly. Fixing points on the H section only from H ≥ 1230 mm.

7. Connect the smoke extract ducts (installation side and operating side) to the smoke control damper, *6 'Smoke extract duct and cover grille' on page 65* .

   If the operating side is not connected to a duct, a cover grille is required *6.4 'Cover grilles' on page 67* .

5.4.3.1 Side by side

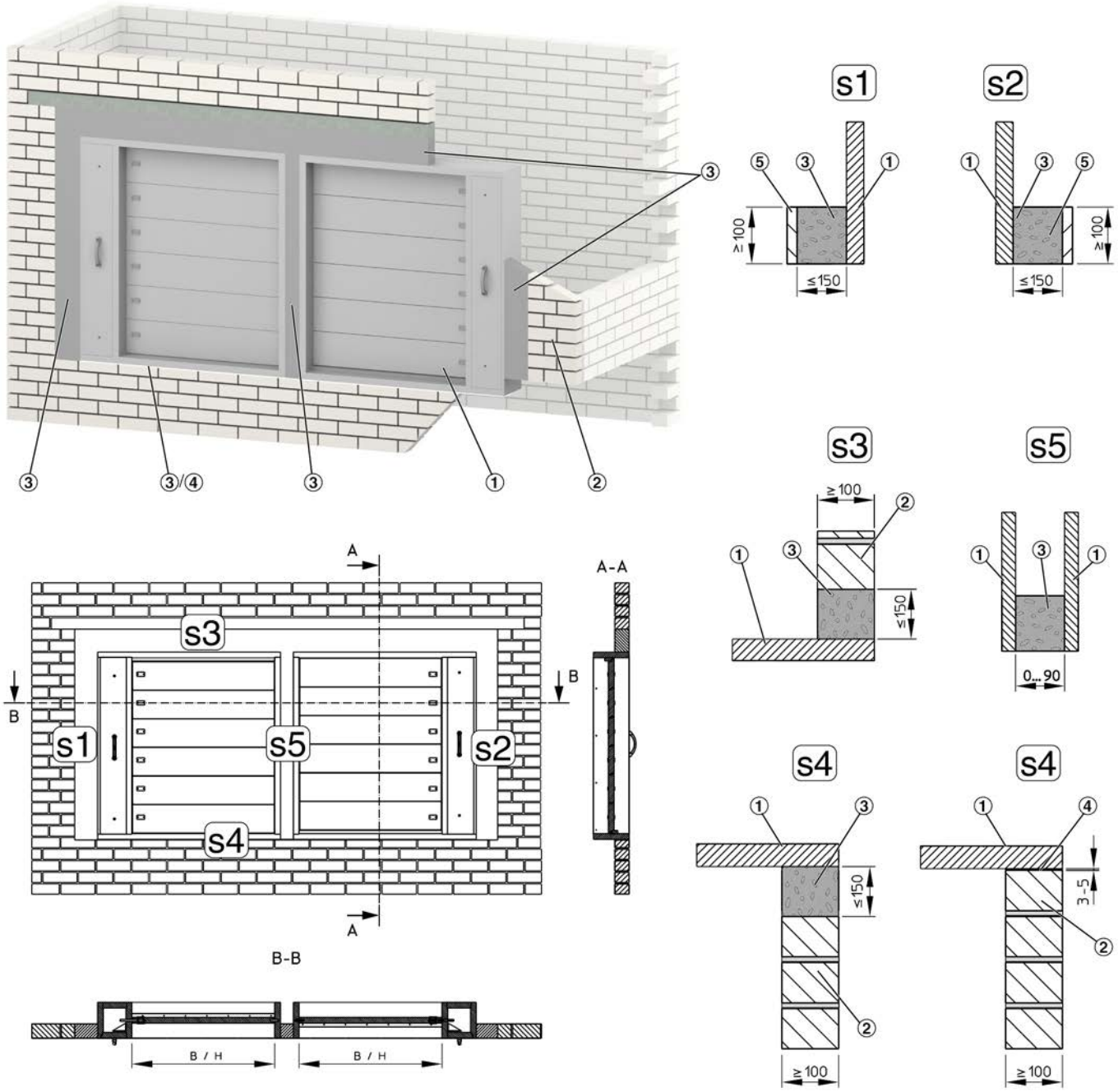


Fig. 20: Mortar-based installation side by side in solid wall or in solid shaft wall

1 EK-JZ (vertical or horizontal installation position)
2 Solid wall or solid shaft wall made from bricks, concrete or aerated concrete
3 Mortar, ↳ *'Acceptable mortars for mortar-based installation' on page 17*
4 High-temperature sealing tape ↳ *'High-temperature sealing tape' on page 18*

Installation gap	Filling material	Installation gap width [mm]		
		Min.	Max.	Recommended
S1	Mortar	20 1)	150	50
S2	Mortar	20 1)	150	50
S3	Special high-temperature sealing tape (construction Fig. 19 /5) or	3	5	3
	Mortar	20 1)	150	50
S4	High-temperature sealing tape or	3	5	3
	Mortar	20 1)	150	50
S5	Mortar	20 2)	90	50

1) The gap must be large enough so that the mortar-mix can be filled in. We recommend a gap of at least 20 mm.
2) With a damper on damper, there is no need for installation gap S5, here the dampers have to be screw fixed to one another, *5.3.3 'Adjoined damper installation' on page 21*

Personnel:

- Specialist personnel

Materials:

- High-temperature sealing tape *'High-temperature sealing tape' on page 18*
- Special high temperature sealing tape (with intumescent seal) *'Special high-temperature sealing tape' on page 19*
- Special high temperature sealing tape (with intumescent seal)
- Mortar *'Acceptable mortars for mortar-based installation' on page 17*
- Screws and anchors suitable for the type of wall

Requirements:

- Solid walls or solid shaft walls, e.g. concrete, aerated concrete, bricks, gross density ≥ 500 kg/m³ and W ≥ 100 mm

NOTICE!

Installation note for external walls!

In external walls, only dampers with an impregnated construction must be installed.

Installation

1. Create an installation opening according to *5.4.1 'Installation opening' on page 22* . The installation opening has to be rectangular, with smooth surfaces (± 5 mm). If the surfaces are not smooth, use mortar to make them smooth.
2. Attach fixing tab to the smoke control damper, *'Fixing tab for wall installation' on page 18* .
3. Depending on the installation type, affix the high-temperature sealing tape (Fig. 18 /4) to the smoke control damper on the bottom of the damper frame (wall thickness), *18* or apply a mortar bed to the lower trim panel (S4).
4. Insert the smoke control damper (with affixed high-temperature sealing tape) into the installation opening and align. Make sure that the damper is vertical; use wedges to hold the damper in the correct position; the damper has to be installed without torsion (check the diagonal length; allowed tolerance: 2 mm).

   Installation depths, see *'Installation depths of EK-JZ in solid wall' on page 23*
5. Close off the installation gap (S_1 + S_2 + S_3) with mortar. Fill the gap with mortar, ideally until it is as thick as the wall, but at least 100 mm.

   Do not leave any gaps or spaces between the damper and the wall. If you have used any objects to facilitate damper installation, e.g. wedges, remove them now. Fill any remaining hollow spaces with mortar.

6. Connect the smoke extract ducts (installation side and operating side) to the smoke control damper, *6 ‘Smoke extract duct and cover grille’ on page 65* .

   If the operating side is not connected to a duct, a cover grille is required *6.4 ‘Cover grilles’ on page 67* .

5.4.3.2 On top of each other

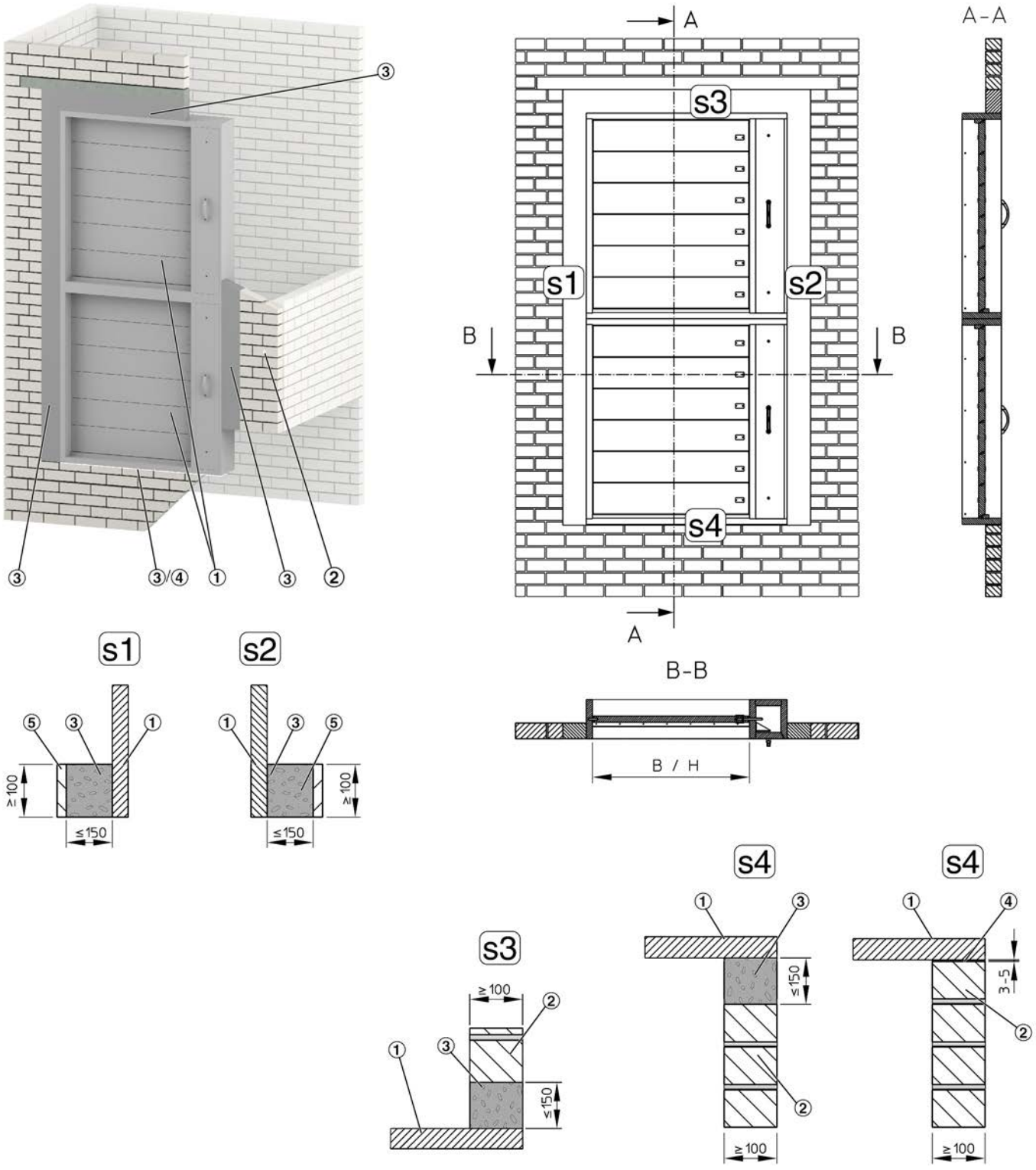


Fig. 21: Mortar-based installation on top of one another in solid wall or solid shaft wall

1 EK-JZ (vertical or horizontal installation position)
2 Solid wall or solid shaft wall made from bricks, concrete or aerated concrete
3 Mortar, ↳ *'Acceptable mortars for mortar-based installation' on page 17*
4 High-temperature sealing tape ↳ *'High-temperature sealing tape' on page 18*

Installation gap	Filling material	Installation gap width [mm]		
		Min.	Max.	Recommended
S1	Mortar	20 1)	150	50
S2	Mortar	20 1)	150	50
S3	Special high-temperature sealing tape (construction Fig. 19 /5) or	3	5	3
	Mortar	20 1)	150	50
S4	High-temperature sealing tape or	3	5	5
	Mortar	20 1)	150	50

1) The gap must be large enough so that the mortar-mix can be filled in. We recommend a gap of at least 20 mm. Reinforcement should meet structural requirements.

Personnel:

- Specialist personnel

Materials:

- High-temperature sealing tape *'High-temperature sealing tape' on page 18*
- Special high temperature sealing tape (with intumescent seal) *'Special high-temperature sealing tape' on page 19*
- Mortar *'Acceptable mortars for mortar-based installation' on page 17*
- Screws and anchors suitable for the type of wall

Requirements:

- Solid walls or solid shaft walls, e.g. concrete, aerated concrete, bricks, gross density ≥ 500 kg/m³ and W ≥ 100 mm

Installation

1. Create an installation opening according to *5.4.1 'Installation opening' on page 22* . The installation opening has to be rectangular, with smooth surfaces (± 5 mm). If the surfaces are not smooth, use mortar to make them smooth.
2. *With smaller dampers up to H 1230 mm (6 damper blades), the dampers can be screw fixed and inserted into the installation opening, 5.3.3 'Adjoined damper installation' on page 21 . With larger dampers, we recommend inserting the dampers one after the other into the installation opening and fixing the top damper with fixing tabs.*

   Depending on the installation type, affix the high-temperature sealing tape (Fig. 18 /4) to the smoke control damper on the bottom of the damper frame (wall thickness), *18* or apply a mortar bed to the lower trim panel (S4).
3. Attach fixing tab to the smoke control damper, *'Fixing tab for wall installation' on page 18* .
4. Insert the smoke control damper(s) (with affixed high-temperature sealing tape) into the installation opening and align. Make sure that the damper is vertical; use wedges to hold the damper in the correct position; the damper has to be installed without torsion (check the diagonal length; allowed tolerance: 2 mm).

   Installation depths, see *'Installation depths of EK-JZ in solid wall' on page 23*
5. Close off the installation gap (S_1 + S_2 + S_3) with mortar. Fill the gap with mortar, ideally until it is as thick as the wall, but at least 100 mm.

   Do not leave any gaps or spaces between the damper and the wall. If you have used any objects to facilitate damper installation, e.g. wedges, remove them now. Fill any remaining hollow spaces with mineral wool or mortar.

6. ▸ Connect the smoke extract ducts (installation side and operating side) to the smoke control damper, *6 'Smoke extract duct and cover grille' on page 65* .

   If the operating side is not connected to a duct, a cover grille is required *6.4 'Cover grilles' on page 67* .

5.4.4 Multiple arrangement with common air duct

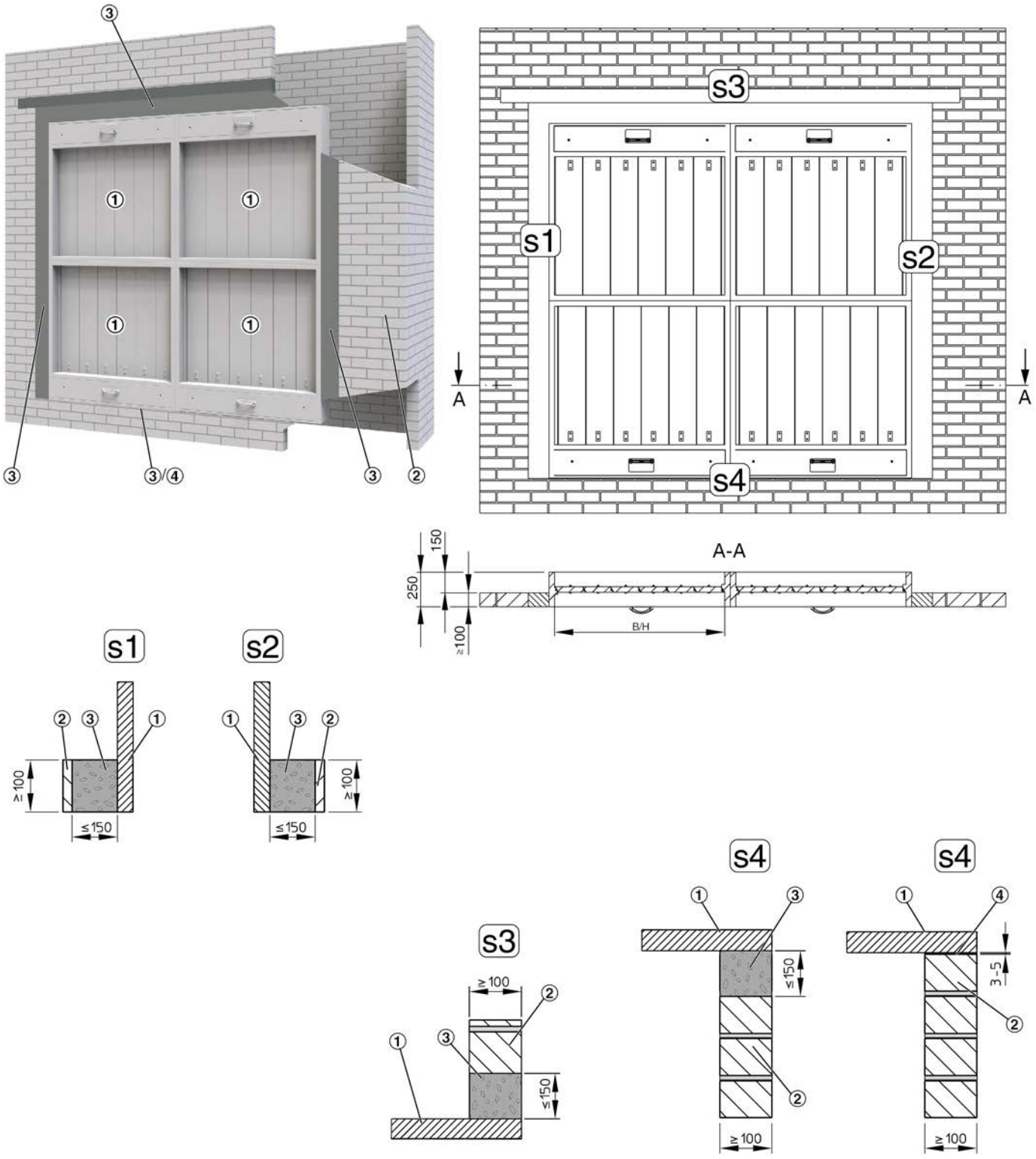


Fig. 22: EK-JZ quadruple arrangement, mortar-based installation in solid wall or solid shaft wall

1 EK-JZ (vertical or horizontal installation position)
2 Solid wall or solid shaft wall made from bricks, concrete or aerated concrete
3 Mortar, ↳ *'Acceptable mortars for mortar-based installation' on page 17*
4 High-temperature sealing tape ↳ *'High-temperature sealing tape' on page 18*

Other variants with six or more dampers are also permitted; design drawings are available from TROX on request.

Installation gap	Filling material	Installation gap width [mm]		
		Min.	Max.	Recommended
S1	Mortar	20 1)	150	50
S2	Mortar	20 1)	150	50
S3	Special high-temperature sealing tape (construction Fig. 19 /5) or	3	5	3
	Mortar	20 1)	150	50
S4	High-temperature sealing tape or	3	5	5
	Mortar	20 1)	150	50

1) The gap must be large enough so that the mortar-mix can be filled in. We recommend a gap of at least 20 mm. Reinforcement should meet structural requirements.

Personnel:

- Specialist personnel

Materials:

- High-temperature sealing tape *'High-temperature sealing tape' on page 18*
- Special high temperature sealing tape (with intumescent seal) *'Special high-temperature sealing tape' on page 19*
- Mortar *'Acceptable mortars for mortar-based installation' on page 17*
- Screws and anchors suitable for the type of wall

Requirements:

- Solid walls or solid shaft walls, e.g. concrete, aerated concrete, bricks, gross density ≥ 500 kg/m³ and W ≥ 100 mm

Installation

1. Create an installation opening according to *5.4.1 'Installation opening' on page 22* . The installation opening has to be rectangular, with smooth surfaces (± 5 mm). If the surfaces are not smooth, use mortar to make them smooth.
2. *With smaller dampers up to H 1230 mm (6 damper blades), the dampers can be screw fixed and inserted into the installation opening,* *5.3.3 'Adjoined damper installation' on page 21* *. With larger dampers, we recommend inserting the dampers one after the other into the installation opening and fixing the top damper with fixing tabs.*

   Depending on the installation type, affix the high-temperature sealing tape (Fig. 18 /4) to the smoke control damper on the bottom of the damper frame (wall thickness), *18* or apply a mortar bed to the lower trim panel (S4).
3. Attach fixing tab to the smoke control damper, *Chapter 5.6 'Lightweight partition wall' on page 48* .
4. Insert the smoke control damper(s) (with affixed high-temperature sealing tape) into the installation opening and align. Make sure that the damper is vertical; use wedges to hold the damper in the correct position; the damper has to be installed without torsion (check the diagonal length; allowed tolerance: 2 mm).

Installation depths, see ↳ *'Installation depths of EK-JZ in solid wall' on page 23*

5. Close off the installation gap (S_1 + S_2 + S_3) with mortar. Fill the gap with mortar, ideally until it is as thick as the wall, but at least 100 mm.

   Do not leave any gaps or spaces between the damper and the wall. If you have used any objects to facilitate damper installation, e.g. wedges, remove them now. Fill any remaining hollow spaces with mineral wool or mortar.

6. Connect the smoke extract ducts (installation side and operating side) to the smoke control damper, ↳ *6 'Smoke extract duct and cover grille' on page 65* .

   If the operating side is not connected to a duct, a cover grille is required ↳ *6.4 'Cover grilles' on page 67* .

5.4.5 On solid walls/shaft walls

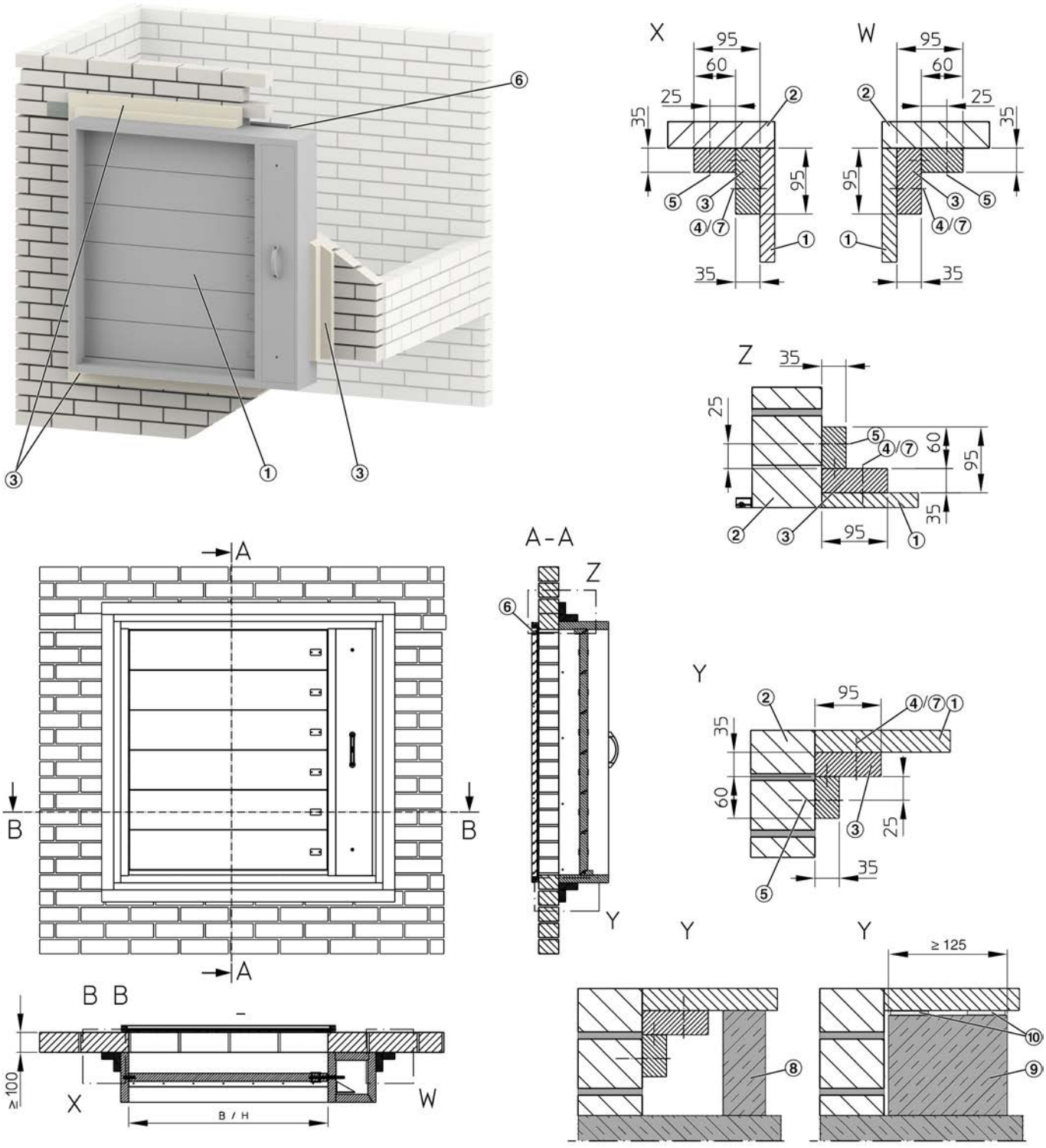


Fig. 23: Dry mortarless installation on solid external wall or solid shaft wall

1 EK-JZ (for external wall with impregnated construction)
2 Solid external wall or solid shaft wall made from bricks, concrete or aerated concrete
6 Attach a cover grille or weather hood for external wall!
7 Steel wire clip ≤ 63/11.2/1.5 mm
8 Installation on the concrete floor, on a concrete plinth or on the fully bricked up space underneath the damper

3 Angle section made from strips of fire-rated PROMATECT®-LS board d = 35 mm or equivalent, glued to the joints between the angle sections and between the angle sections and the damper frame, e.g. with K84 or equivalent
4 Dry wall screw 4 × 70 mm (by others)
5 Screw connection with permitted anchor ∅ < 6 mm (on site) distance between screws < 200 mm
9 Installation with a suitable load-bearing support, e.g. a mounting system or a block of stone of the same width as the damper
10 High-temperature sealing tape *'High-temperature sealing tape' on page 18*

Personnel:

- Specialist personnel

Materials:

- Fire-rated PROMATECT®-LS board d = 35 mm or equivalent
- PROMAT® glue K84 or equivalent
- Steel staples ≥ 63/11.2/1.5 mm
- Dry wall screws 4 × 70 mm
- High-temperature sealing tape *'High-temperature sealing tape' on page 18*
- Screws and anchors suitable for the type of wall

Requirements:

- Solid external walls or solid shaft walls made of, for example, concrete, aerated concrete, bricks, gross density ≥ 500 kg/m³ and W ≥ 100 mm

Installation

1. Create an installation opening according to *5.4.1 'Installation opening' on page 22*. The installation opening has to be rectangular, with smooth surfaces (± 5 mm). If the surfaces are not smooth, use mortar to make them smooth.
2. Use two strips of fire-rated board to make an angle section (Fig. 23 /3), then fix the angle section to the underside of the smoke control damper.
3. Place the smoke control damper in front of the installation opening. If necessary, support the damper (e.g. with trestles or stones).

> **CAUTION!**
> The weight of the smoke control damper has to be supported; no load must be imposed on the smoke extract duct. Be sure to support or suspend the damper *5.9 'Suspending the smoke control damper' on page 64*.

4. Fit angle sections to the remaining three sides of the smoke control damper.

   Apply glue (e.g., K84, Promat or equivalent) to the joints (Fig. 29 /2) between the angle sections and between the angle sections and the damper casing, then fix the angle sections with dry wall screws 4 × 70 mm to the damper casing (pre-drill holes, ∅ 3 mm), ≤ 200 mm distance between screws.

   Attach the angle section with screw connection and permitted anchor ∅ < 6 mm (on site) to the wall with a distance between screws of < 200 mm.
5. Connect the smoke extract ducts (installation side and operating side) to the smoke control damper, *6 'Smoke extract duct and cover grille' on page 65*.

   If the operating side is not connected to a duct, a cover grille is required *6.4 'Cover grilles' on page 67*.

5.4.6 On solid walls/shaft walls under the ceiling slab

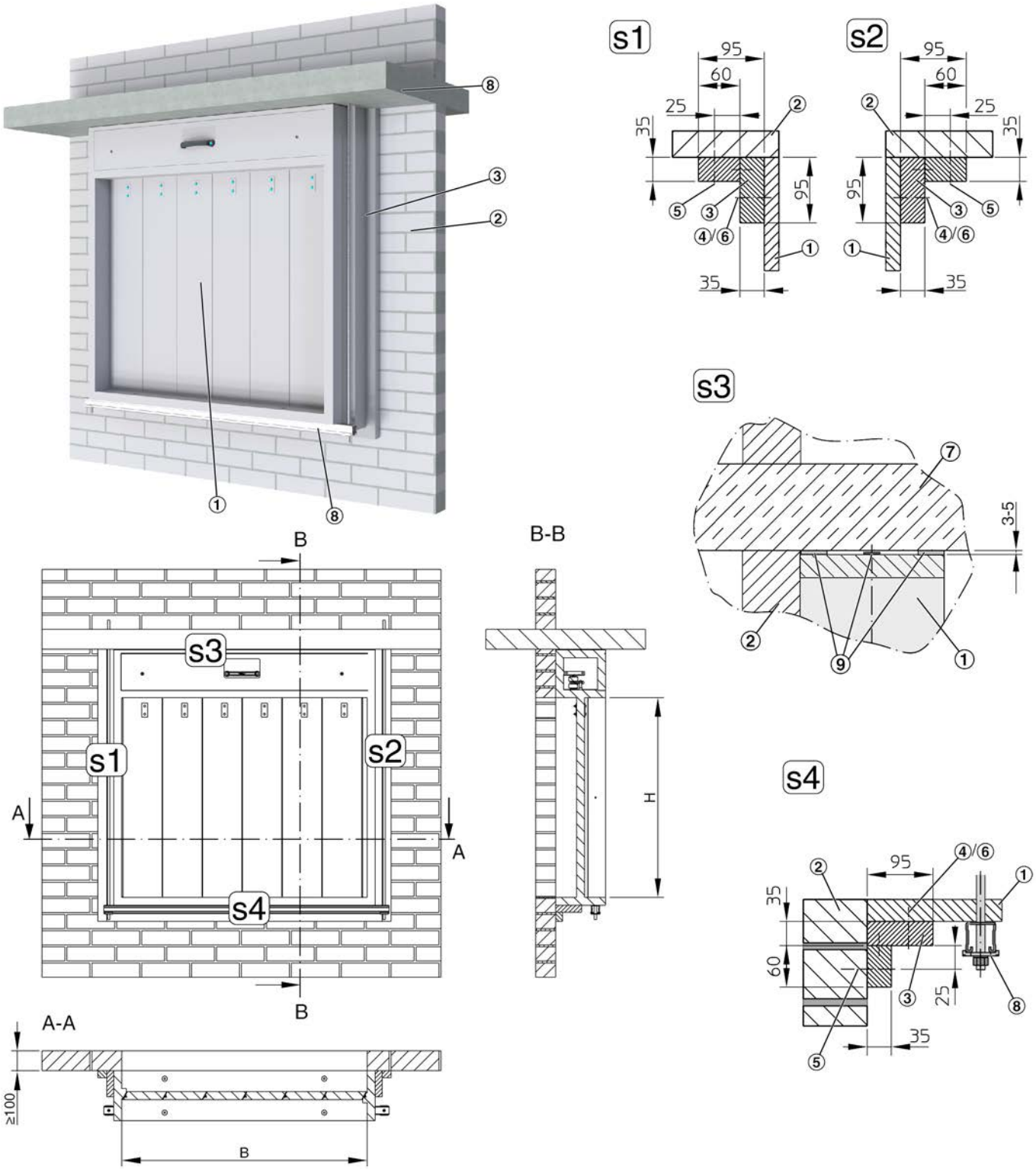


Fig. 24: EK-JZ on shaft wall/wall with reduced distance to ceiling slab

1 EK-JZ with vertical or horizontal installation damper blade shaft
2 Solid wall or solid shaft wall made from bricks, concrete or aerated concrete
6 Steel wire clip ≤ 63/11.2/1.5 mm
7 Solid ceiling slab
8 Suspension, not required if actuator encasing is at the bottom.
9 Special high-temperature sealing tape

3 Angle section made from strips of fire-rated PROMATECT®-LS board d = 35 mm or equivalent, glued to the joints between the angle sections and between the angle sections and the damper frame, e.g. with K84 or equivalent
4 Dry wall screw 4 × 70 mm (by others)
5 Screw connection with permitted anchor ∅ < 6 mm (on site) distance between screws < 200 mm

Personnel:

- Specialist personnel

Materials:

- Fire-rated PROMATECT®-LS board d = 35 mm or equivalent
- PROMAT® glue K84 or equivalent
- Steel staples ≥ 63/11.2/1.5 mm
- Dry wall screws 4 × 70 mm
- High-temperature sealing tape *'High-temperature sealing tape' on page 18*
- Special high temperature sealing tape (with intumescent seal) *'Special high-temperature sealing tape' on page 19*
- Screws and anchors suitable for the type of wall

Requirements:

- Solid external walls or solid shaft walls made of, for example, concrete, aerated concrete, bricks, gross density ≥ 500 kg/m³ and W ≥ 100 mm
- **Classification:** EIS 90, in concrete shafts EIS120

Installation

1. Create an installation opening according to *5.4.1 'Installation opening' on page 22*. The installation opening has to be rectangular, with smooth surfaces (± 5 mm). If the surfaces are not smooth, use mortar to make them smooth.
2. Stick the high-temperature sealing tape (Fig. 23 /10) and the intumescent seal (Fig. 23 /9) to the damper casing, observing the corresponding installation position of the damper..
3. Use two strips of fire-rated board to make an angle section (Fig. 23 /3), then fix the angle section to the underside of the smoke control damper.
4. Place the smoke control damper in front of the installation opening and suspend it there. Not required if the actuator encasing is placed at the bottom.
5. Fit angle sections to the remaining three sides of the smoke control damper.

   Apply glue (e.g., K84, Promat or equivalent) to the joints (Fig. 29 /2) between the angle sections and between the angle sections and the damper casing, then fix the angle sections with dry wall screws 4 × 70 mm to the damper casing (pre-drill holes, ∅ 3 mm), ≤ 200 mm distance between screws.

   Attach the angle section with screw connection and permitted anchor ∅ < 6 mm (on site) to the wall with a distance between screws of < 200 mm.
6. Connect the smoke extract ducts (installation side and operating side) to the smoke control damper, *6 'Smoke extract duct and cover grille' on page 65*.

   If the operating side is not connected to a duct, a cover grille is required *6.4 'Cover grilles' on page 67*.

5.4.7 Lift for fire and rescue service

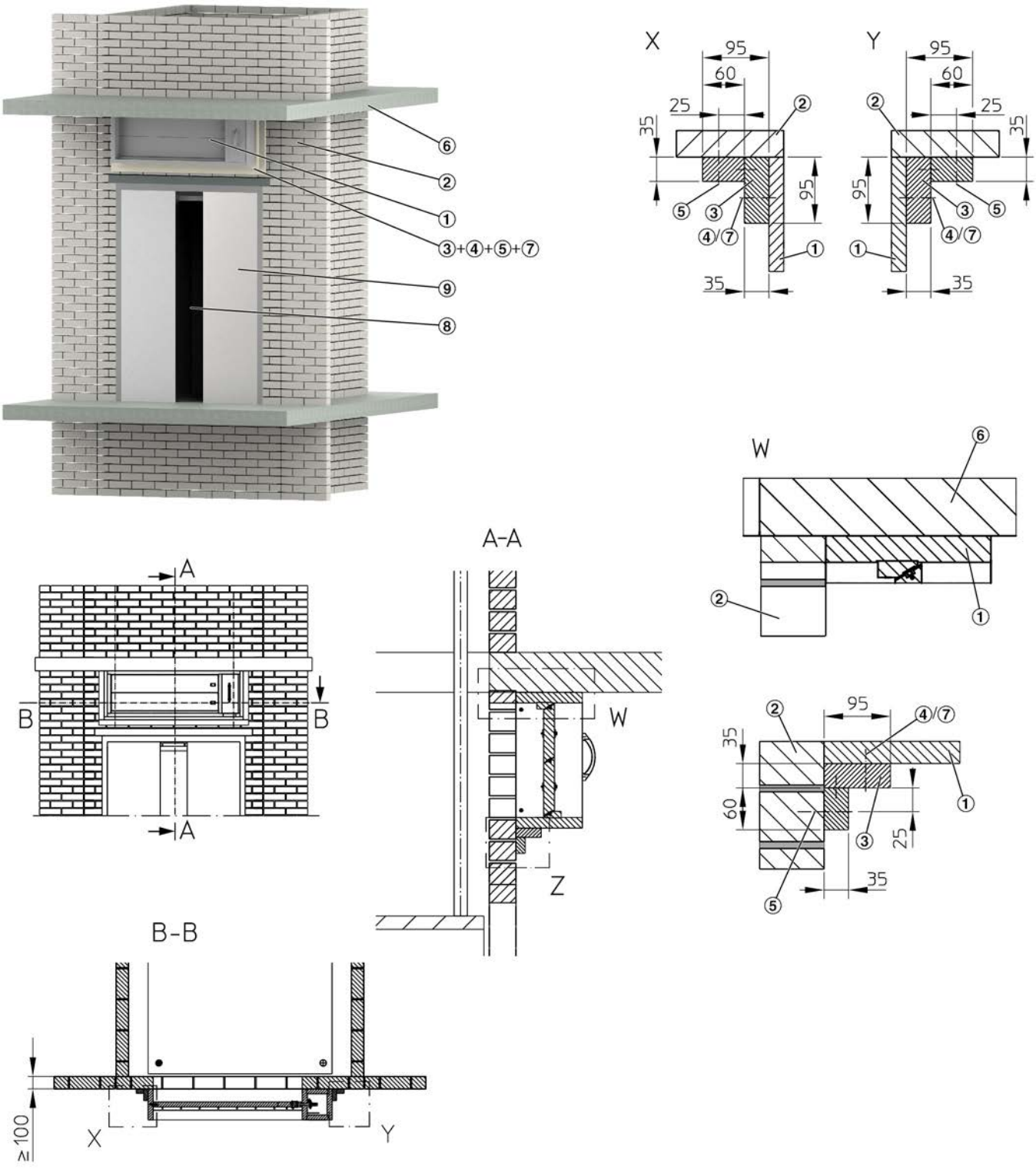


Fig. 25: Dry mortarless installation in solid shaft wall (lift for fire and rescue service)

1 EK-JZ
2 Solid shaft wall made from bricks, concrete or aerated concrete
3 Angle section made from strips of fire-rated PROMATECT®-LS board d = 35 mm or equivalent, glued to the joints between the angle sections and between the angle sections and the damper frame, e.g. with K84 or equivalent
6 Ceiling slab
7 Steel wire clip ≤ 63/11.2/1.5 mm
8 Lift
9 Lift door

4 Dry wall screw 4 × 70 mm (by others)
5 Screw connection with permitted anchor ∅ < 6 mm (on site) distance between screws < 200 mm

Personnel:

- Specialist personnel

Materials:

- Fire-rated PROMATECT®-LS board d = 35 mm or equivalent
- PROMAT® glue K84 or equivalent
- Steel staples ≥ 63/11.2/1.5 mm
- Dry wall screws 4 × 70 mm
- Screws and anchors suitable for the type of wall

Requirements:

- Solid walls made of, for example, concrete, aerated concrete or masonry, gross density ≥ 500 kg/m³ and W ≥ 100 mm

Installation

1. Create an installation opening according to *5.4.1 'Installation opening' on page 22*. The installation opening has to be rectangular, with smooth surfaces (± 5 mm). If the surfaces are not smooth, use mortar to make them smooth.
2. Use two strips of fire-rated board to make an angle section (Fig. 25 /3), then fix the angle section to the underside of the smoke control damper.
3. Place the smoke control damper in front of the installation opening.

   CAUTION!
   The weight of the smoke control damper has to be supported; no load must be imposed on the smoke extract duct. Be sure to support or suspend the damper *5.9 'Suspending the smoke control damper' on page 64*.
4. Fit angle sections to the remaining three sides of the smoke control damper. The upper angle section is not needed if the damper is mounted directly underneath the ceiling slab.

   Apply glue to the joints (Fig. 25 /2) between the angle sections and between the angle sections and the casing (e. g. K84, Promat or equivalent) then fix the angle sections with dry wall screws 4 × 70 mm to the damper casing (pre-drill holes ∅ 3 mm), distance between screws ≤ 200 mm.

   Attach the angle section with screw connection and permitted anchor ∅ < 6 mm (on site) to the wall with a distance between screws of < 200 mm.
5. Connect the smoke extract ducts (installation side and operating side) to the smoke control damper, *6 'Smoke extract duct and cover grille' on page 65*.

   If the operating side is not connected to a duct, a cover grille is required *6.4 'Cover grilles' on page 67*.

5.5 Lightweight shaft wall

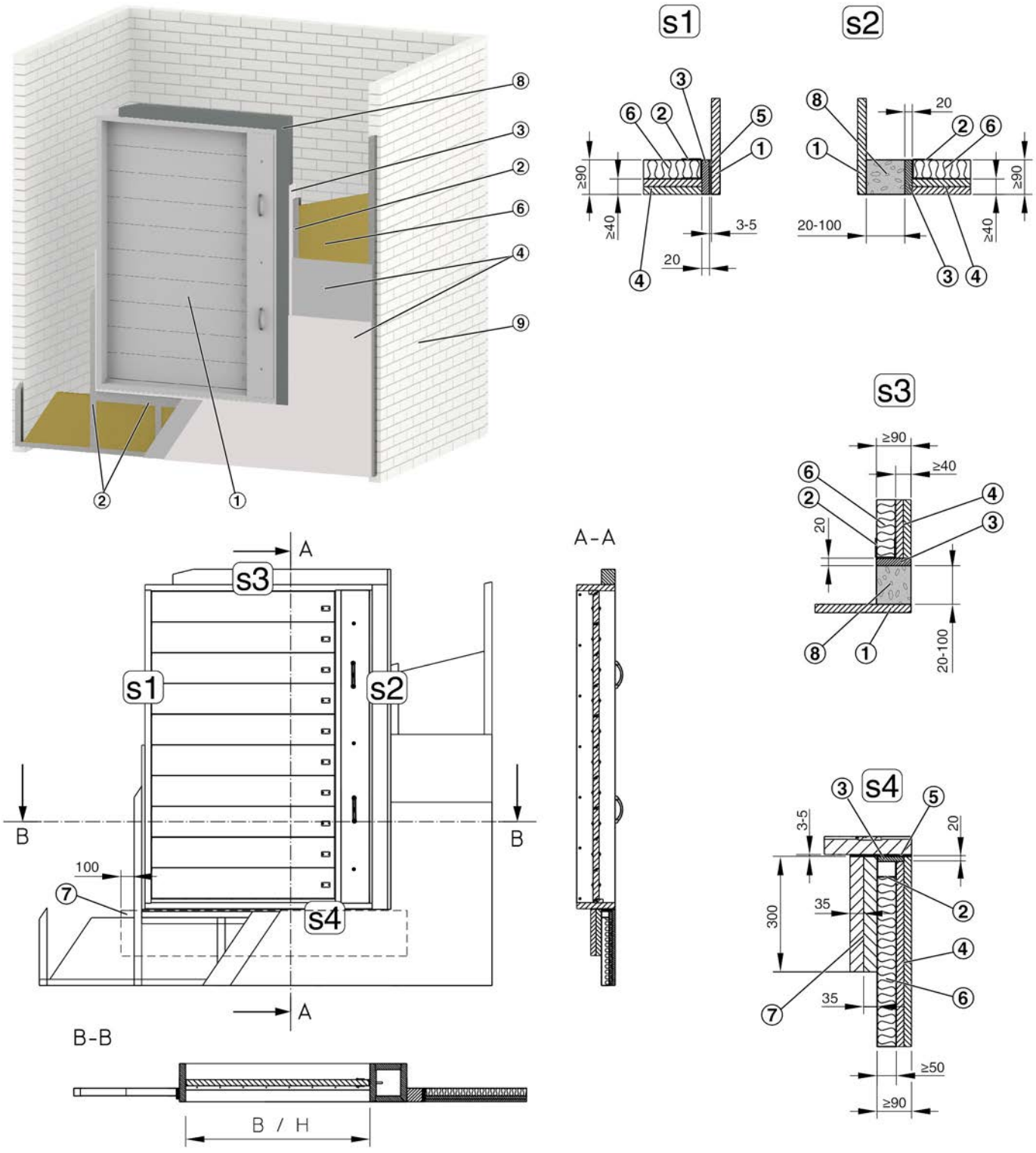


Fig. 26: Installation in lightweight shaft wall

1 EK-JZ
2 Metal stud system
3 Trim panels made of fire-rated plasterboard fire barriers
4 Cladding made of fire-rated plasterboard fire barriers
5 High-temperature sealing tape *'High-temperature sealing tape' on page 18*
6 Mineral wool
7 Reinforcing board made from calcium silicate panels
8 Mortar, *'Acceptable mortars for mortar-based installation' on page 17*
9 Solid shaft wall made from bricks, concrete or aerated concrete

Personnel:

- Specialist personnel

Materials:

- Fire-rated PROMATECT®-LS board
- Dry wall screws
- High-temperature sealing tape *'High-temperature sealing tape' on page 18*

Requirements:

- Lightweight shaft walls made from fire-rated plasterboard fire barriers

Installation

1. Create an installation opening according to *5.4.1 'Installation opening' on page 22* . The installation opening has to be rectangular, with smooth surfaces (± 5 mm).
2. Create trim panels (Fig. 26 /3).
3. Create reinforcing board (Fig. 26 /7):
   Fasten the first board layer to the metal profiles on the back (standard upright and change), drywall screw with drill point 3.9 x 55 mm.
   Screw the second board layer onto the first layer with drywall screws 4.5 x 70 mm.
4. On the smoke control damper on the lower side of the damper frame, affix the high-temperature sealing tape (Fig. 18 /4) (wall thickness), *18* .
5. Insert the smoke control damper (with the affixed high-temperature sealing tape) into the installation opening and align. Make sure that the damper is vertical; use wedges to hold the damper in the correct position; the damper has to be installed without torsion (check the diagonal length; allowed tolerance: 2 mm).
6. Drill screw holes at the fixing points marked on the damper frame, then screw fix the damper to the wall, *5.3.2 'Fixing points' on page 20* . Be careful when you tighten the screws; do not exercise any tension as this may damage the damper frame.

   NOTE: Screw the smoke control damper into the holes marked on the frame. If additional or alternative fixing points are required, these must be provided as described under *5.3.2 'Fixing points' on page 20* . Fixing points on the H section only from H ≥ 1230 mm.
7. Close off the installation gap (S_2 + S_3) with mortar. Fill the gap with mortar, ideally until it is as thick as the wall, but at least 100 mm.

   Do not leave any gaps or spaces between the damper and the wall. If you have used any objects to facilitate damper installation, e.g. wedges, remove them now. Fill any remaining hollow spaces with mortar.
8. Connect the smoke extract ducts (installation side and operating side) to the smoke control damper, *6 'Smoke extract duct and cover grille' on page 65* .

   If the operating side is not connected to a duct, a cover grille is required *6.4 'Cover grilles' on page 67* .

5.6 Lightweight partition wall

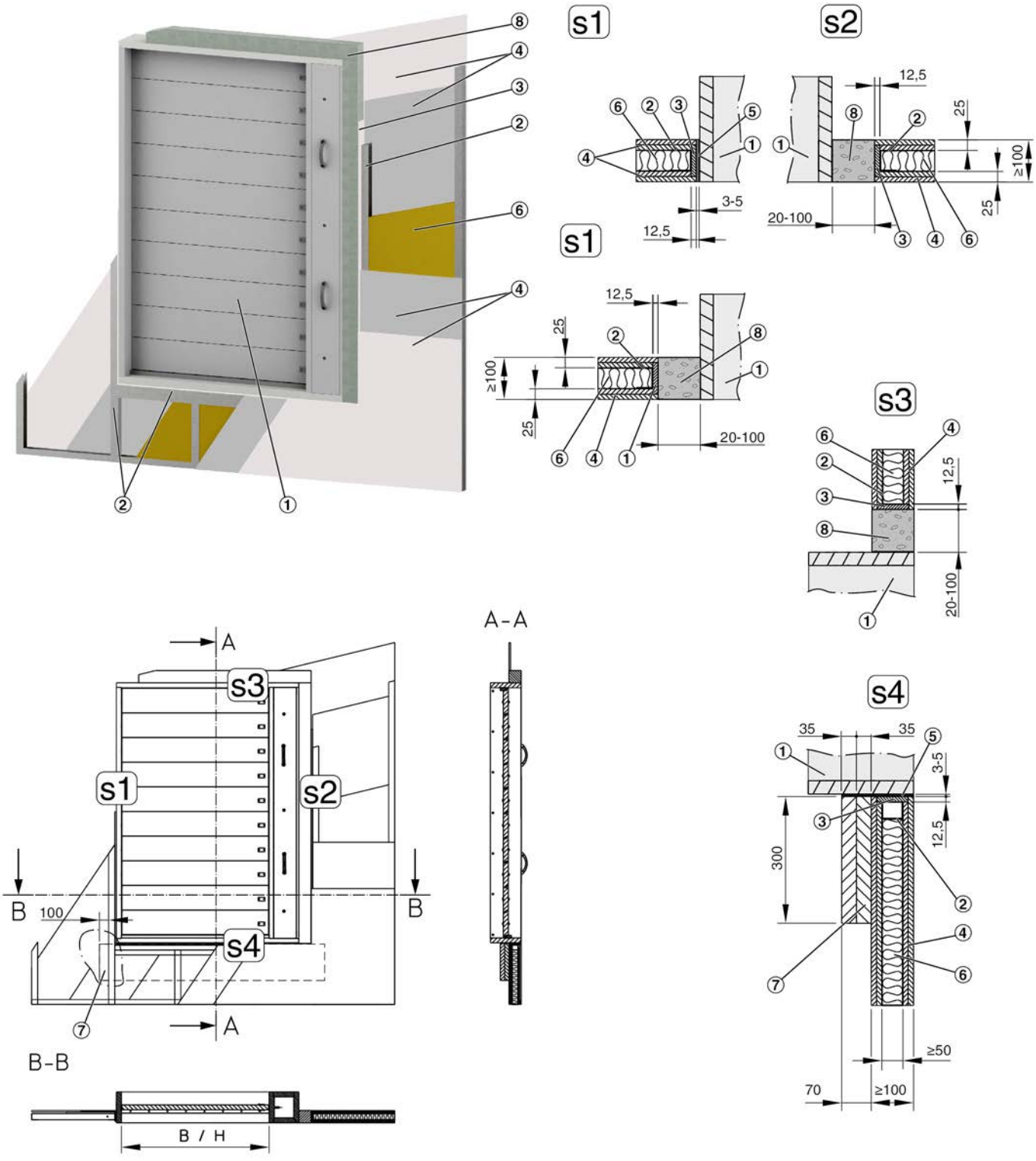


Fig. 27: Installation in lightweight partition wall

1 EK-JZ
2 Metal stud system
3 Trim panel made of fire-rated plasterboard fire barrier
4 Cladding made of fire-rated plasterboard fire barrier
5 High-temperature sealing tape ↳ *'High-temperature sealing tape' on page 18*
6 Mineral wool
7 Reinforcing board made from calcium silicate panels
8 Mortar, ↳ *'Acceptable mortars for mortar-based installation' on page 17*

Personnel:

- Specialist personnel

Materials:

- Fire-rated PROMATECT®-LS board
- Dry wall screws
- High-temperature sealing tape ↬ *'High-temperature sealing tape' on page 18*

Requirements:

- Lightweight shaft walls made from calcium silicate

Installation

1. Create an installation opening according to ↬ *5.4.1 'Installation opening' on page 22* . The installation opening has to be rectangular, with smooth surfaces (± 5 mm). If the surfaces are not smooth, use mortar to make them smooth.
2. Create trim panels (Fig. 27 /3).
3. Create reinforcing board (Fig. 27 /7):
   Fasten the first board layer to the metal profiles on the back (standard upright and change), drywall screw with drill point 3.9 x 70 mm.
   Screw the second board layer onto the first layer with drywall screws 4.5 x 70 mm.
4. Glue the high-temperature sealing tape to the smoke control damper on the underside of the damper frame (Fig. 18 /4) (wall thickness), ↬ *18* .
5. Attach the fixing tab to the smoke control damper (installation gap S_2 and S_3), ↬ *'Fixing tab for wall installation' on page 18* .
6. Insert the smoke control damper (with the affixed high-temperature sealing tape) into the installation opening and align. The damper has to be installed without torsion (check the diagonal length; allowed tolerance: 2 mm).

   Install the damper so that the operating side is flush with the wall (A-A section).
7. Drill screw holes at the fixing points marked on the damper frame, then screw fix the damper to the wall, ↬ *5.3.2 'Fixing points' on page 20* . Be careful when you tighten the screws; do not exercise any tension as this may damage the damper frame.

   NOTE: Screw the smoke control damper into the holes marked on the frame. If additional or alternative fixing points are required, these must be provided as described under ↬ *5.3.2 'Fixing points' on page 20* . Fixing points on the H section only from H ≥ 1230 mm.
8. Close off the installation gap (S_2 + S_3) with mortar. Fill the gap with mortar, ideally until it is as thick as the wall, but at least 100 mm.

   Do not leave any gaps or spaces between the damper and the wall. If you have used any objects to facilitate damper installation, e.g. wedges, remove them now. Fill any remaining hollow spaces with mortar.
9. Drill screw holes at the fixing points marked on the damper frame, then screw fix the smoke control damper to the wall. Be careful when you tighten the screws; do not exercise any tension as this may damage the damper frame.

   NOTE: Use only the marked holes in the damper frame to screw-fix the smoke control damper. Do not use any screws anywhere else on the damper frame as they may prevent the damper blades from closing properly. Fixing points on the H section only from H ≥ 1230 mm.
10. Connect the smoke extract ducts (installation side and operating side) to the smoke control damper, ↬ *6 'Smoke extract duct and cover grille' on page 65* .

    If the operating side is not connected to a duct, a cover grille is required ↬ *6.4 'Cover grilles' on page 67* .

5.7 Solid ceiling slabs

5.7.1 Installation type, mortar-based

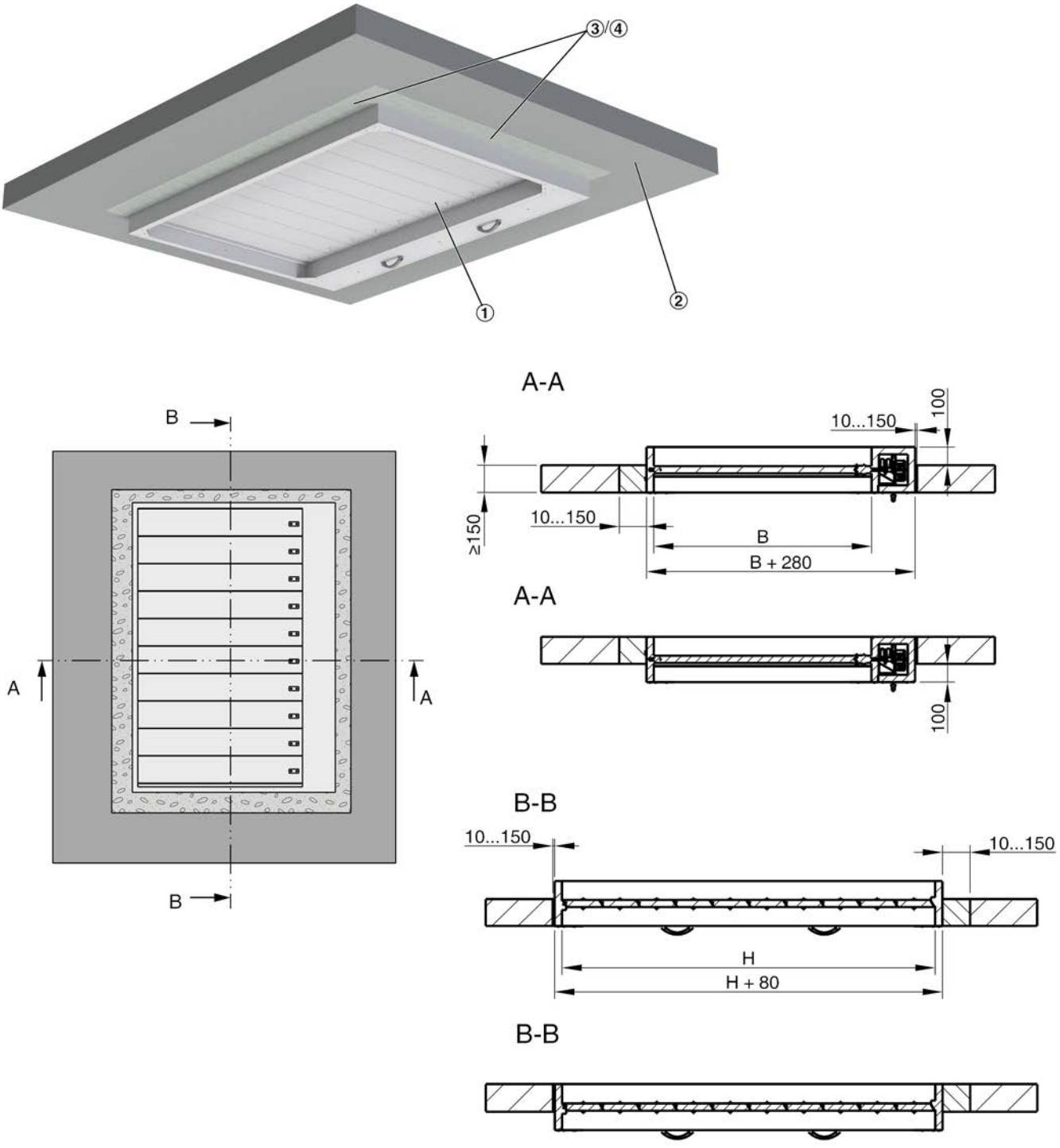


Fig. 28: Mortar-based installation into the ceiling slab

1 EK-JZ (operating side above or below the ceiling)
2 Solid ceiling slab of concrete or aerated concrete
3 Mortar, *'Acceptable mortars for mortar-based installation' on page 17*
4 Fixing tab

Installation gap	Filling material	Installation gap width [mm]		
		Min.	Max.	Recommended
S	Mortar	10 1)	150	50

1) The gap must be large enough so that the mortar-mix can be filled in. We recommend a gap of at least 20 mm.

Personnel:

- Specialist personnel

Materials:

- Mortar *'Acceptable mortars for mortar-based installation' on page 17*

Requirements:

- Solid ceiling slabs, e.g. of concrete, aerated concrete, gross density ≥ 550 kg/m³ and D ≥ 150 mm
- Distance to load-bearing structural elements ≥ 40 mm
- Distance between EK-JZ and EK-JZ ≥ 200 mm

Installation

1. Create an installation opening in the ceiling slab, dimensions Fig. 28 .
2. Attach fixing tab to the smoke control damper, *'Fixing tab for ceiling slab installation' on page 18* .
3. Prepare a formwork under the installation opening to support the gap filling (of the mortar).
4. Insert the smoke control damper into the installation opening (operating side above or below the ceiling slab) and ensure it cannot fall. The damper has to be installed without torsion (check the diagonal length; allowed tolerance: 2 mm).
5. Close off any remaining gaps with mortar. Fill the gap with mortar, ideally until it is as thick as the ceiling slab, but at least 150 mm.

   Do not leave any gaps or spaces between the smoke control damper and the ceiling. If you have used any objects to facilitate damper installation, e.g. wedges, remove them now. Fill any remaining hollow spaces with mortar.
6. Do not remove the formwork until the mortar has hardened.
7. Connect the smoke extract ducts (installation side and operating side) to the smoke control damper, *6 'Smoke extract duct and cover grille' on page 65* .

   If the operating side is not connected to a duct, a cover grille is required *6.4 'Cover grilles' on page 67* .

5.8 Fire-resistant smoke extract ducts

5.8.1 Installation on vertical smoke extract ducts

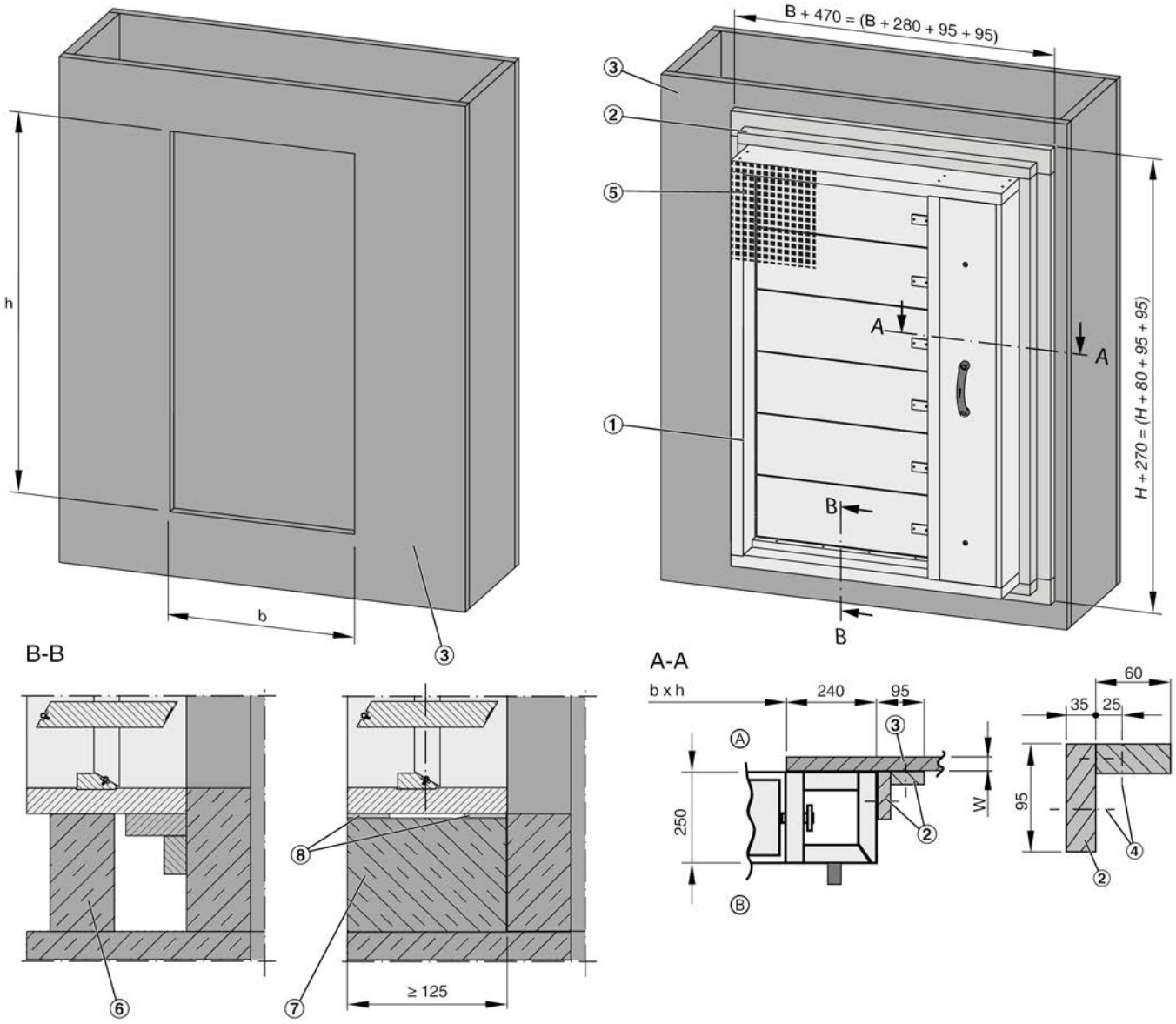


Fig. 29: Installation on a vertical smoke extract duct (shaft)

1	EK-JZ
2	Angle section made from strips of fire-rated PROMATECT®-LS board d = 35 mm or equivalent
3	Calcium silicate smoke extract duct
4	Dry wall screw 4 × 70 mm or steel wire clamps ≥ 63/11.2/1.5 mm (to be performed by others)
5	Cover grille, only if no ducts are connected
6	Installation with a suitable load-bearing support, e.g. a mounting system or a block of stone of the same width as the damper
7	Installation on the concrete floor, on a concrete plinth or on the fully bricked up space underneath the damper
8	Ceramic fibre paper strip
h × b	Installation opening = B x H
W	Wall thickness ≥ 35 mm

Personnel:

- Specialist personnel

Materials:

- Fire-rated PROMATECT®-LS board d = 35 mm or equivalent
- Steel staples ≥ 63/11.2/1.5 mm
- Dry wall screws 4 × 70 mm

Requirements:

- Smoke extract duct, fire-resistant, tested to EN 1366-8, gross density ≥ 500 kg/m³, wall thickness ≥ 35 mm

Installation

1. Create an installation opening according to Fig. 29 .
2. Use two strips of fire-rated board to make an angle section (Fig. 29 /2), then fix the angle section to the underside of the smoke control damper.
3. Place the smoke control damper in front of the installation opening. If necessary, support the damper (e.g. with trestles or stones).

   ⚠ CAUTION!
   The weight of the smoke control damper has to be supported; no load must be imposed on the smoke extract duct. Be sure to support or suspend the damper *5.9 'Suspending the smoke control damper' on page 64* .
4. Fit angle sections to the remaining three sides of the smoke control damper.

   Apply glue (e.g. K84, Promat or equivalent) to the joints (Fig. 29 /2) between the angle sections and between the angle sections and the damper casing, then fix the angle sections with dry wall screws 4 × 70 mm to the damper casing (pre-drill holes, ∅ 3 mm), ≤ 150 mm distance between screws.

   Use dry wall screws 4 × 70 mm to fix the angle sections to the smoke extract duct, ≤ 150 mm distance between screws.
5. Connect the smoke extract ducts (installation side and operating side) to the smoke control damper (Fig. 29 /5), *6 'Smoke extract duct and cover grille' on page 65* .

   If the operating side is not connected to a duct, a cover grille is required *6.4 'Cover grilles' on page 67* .

5.8.2 in vertical smoke extract ducts

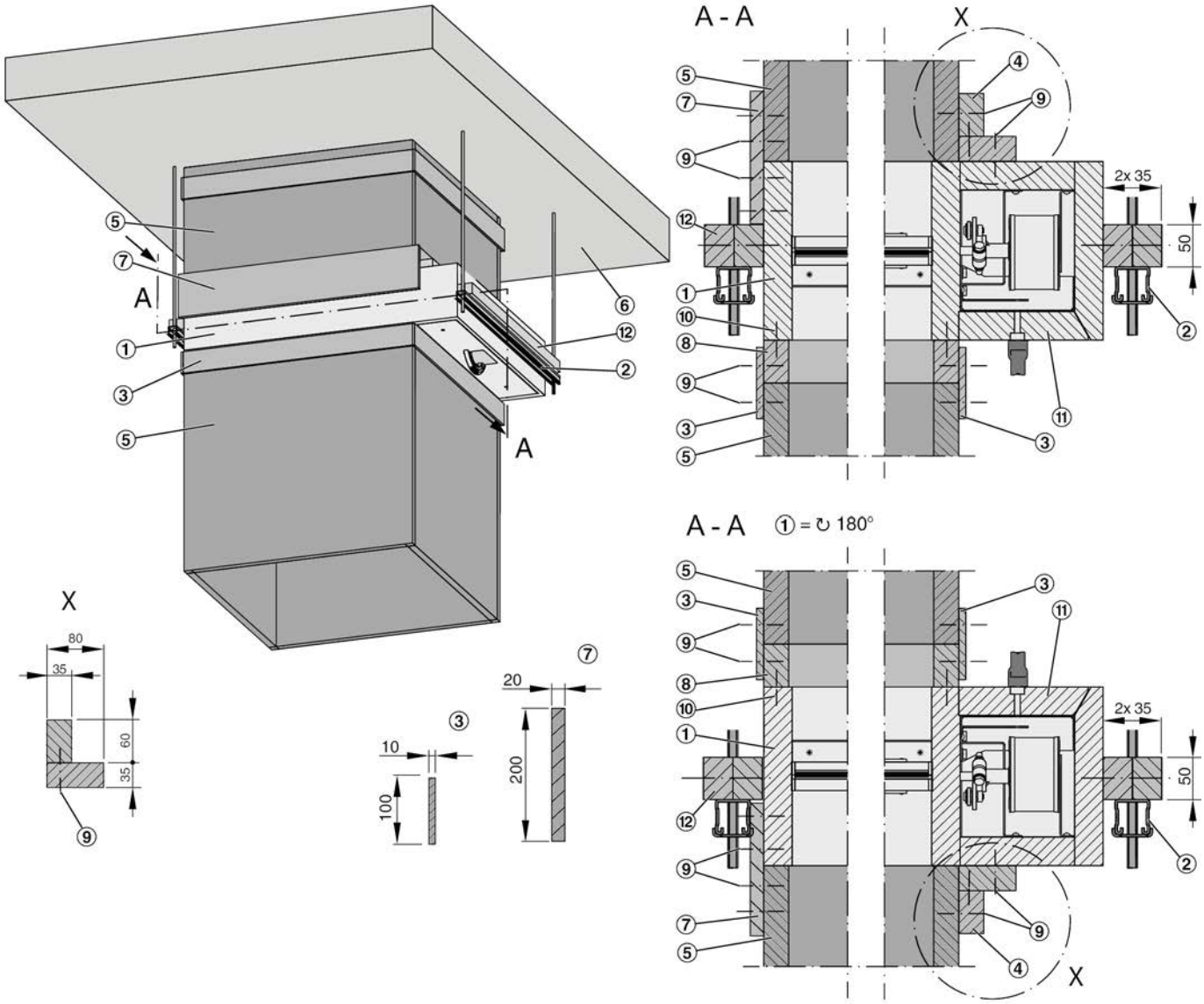


Fig. 30: Installation in a fire-resistant vertical smoke extract duct, operating side at top or bottom (see cross-sections)

① EK-JZ
② Suspension
③ Connecting strip (socket) made of fire-rated PROMATECT board d =10 mm
④ Angle section made of fire-rated PROMATECT board d = 35 mm
⑤ Smoke extract ducts for multi compartments
⑥ Solid ceiling slab
⑦ Connecting strip (socket) made of fire-rated PROMATECT board d =20 mm
⑧ Connecting subframe made of fire-rated PROMATECT board d = 35 mm x 60 mm
⑨ Steel staples ≥ 63/11.2/1.5 mm
⑩ Dry wall screw
⑪ Cover of the actuator encasing
⑫ Reinforcing board for suspension made of fire-rated PROMATECT board d =35 mm

Personnel:

- Specialist personnel

Materials:

- Fire-rated PROMATECT®-LS board, AD or L500 d = 35 / 20 / 10 mm
- Adhesive K48 or equivalent
- Steel staples ≥ 63/11.2/1.5 mm
- Dry wall screws
- Suspension

Requirements:

- Smoke extract duct, fire-resistant, tested to EN 1366-8, gross density ≥ 500 kg/m³, wall thickness ≥ 35 mm
- Connection by means of metal connection frame to smoke extract ducts possible for a single section according to EN 1366-9 (Pos. 5). Connection by means of metal connection frames of other metal cable types, which are subsequently thermally insulated, is possible.

Installation

1. Create and suspend a fire-resistant smoke extract duct according to the manufacturer's instructions.
2. Attach a connecting subframe (Fig. 30 /8) to the smoke control damper on the operating side.
3. Attach the reinforcing board (Fig. 30 /12) to the smoke control damper.
4. Place the smoke control damper on the fire-resistant smoke extract duct and suspend the damper *5.9 'Suspending the smoke control damper' on page 64* .
5. Connect an angle section (Fig. 30 /4) between the actuator encasing of the smoke control damper and the fire-resistant smoke extract duct. Glue the joints to each other and to the casing.

   Be sure to follow the manufacturer's instructions.
6. If the smoke extract duct and smoke control damper are flush, the damper can be connected with connecting strips (Fig. 30 /3 and /7).
7. Connect the smoke extract ducts (installation side and operating side) to the smoke control damper, *6 'Smoke extract duct and cover grille' on page 65* .

   If the operating side is not connected to a duct, a cover grille is required, *6.4 'Cover grilles' on page 67* .

5.8.3 On a horizontal smoke extract duct

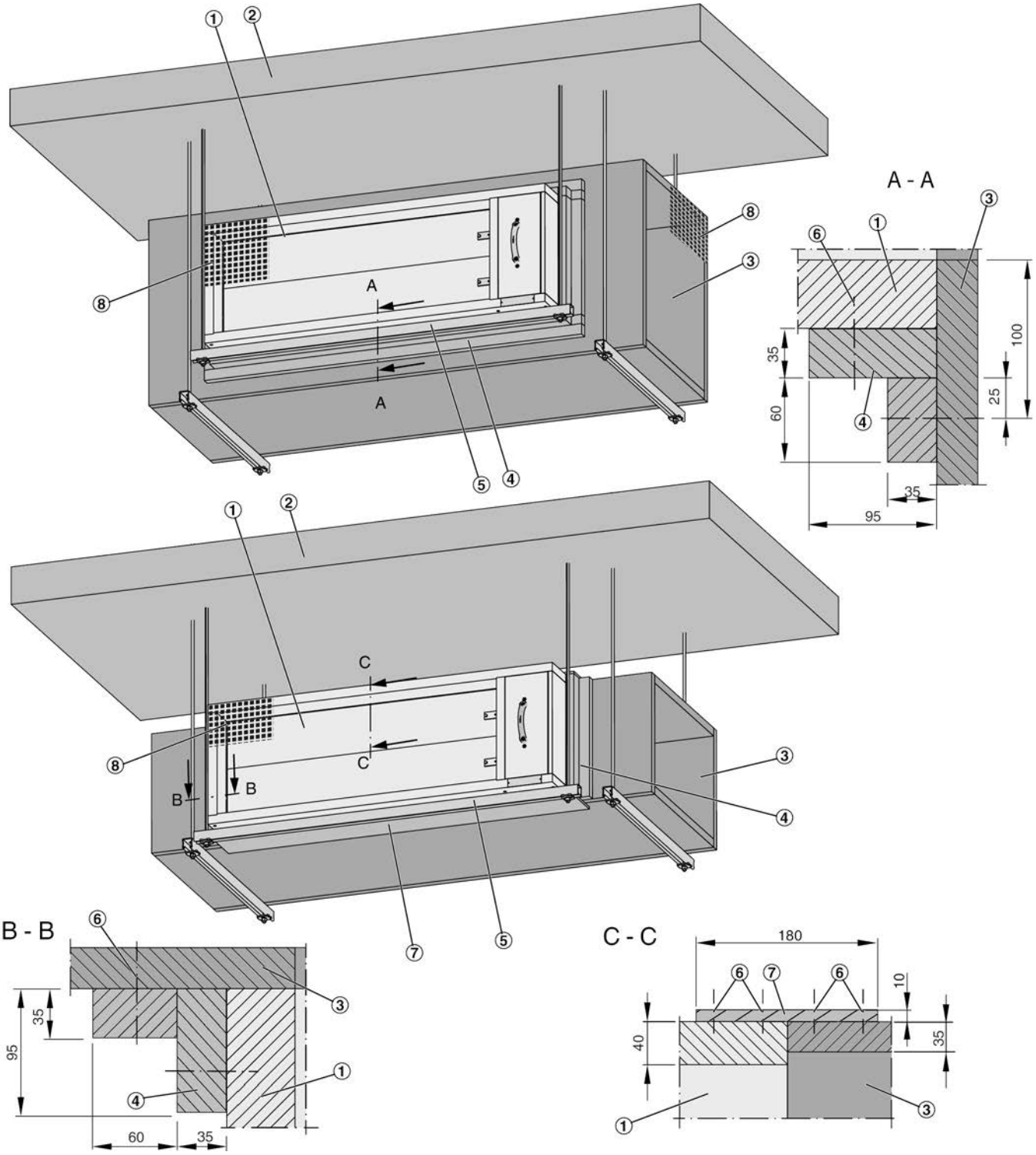


Fig. 31: Installation in a fire-resistant horizontal smoke extract duct

① EK-JZ
② Solid ceiling slab
③ Fire-resistant smoke extract duct
④ Angle section made from strips of fire-rated PROMATECT®-LS board d = 35 mm or equivalent
⑤ Suspension system ↳ *5.9 'Suspending the smoke control damper' on page 64*
⑥ Steel staples ≥ 63/11.2/1.5 mm
⑦ Connecting strips according to instructions from the manufacturer of the smoke extract duct ↳ *6 'Smoke extract duct and cover grille' on page 65*
⑧ Cover grille (only if the damper is not connected to a smoke extract duct)

Personnel:

- Specialist personnel

Materials:

- Fire-rated PROMATECT®-LS board d = 35 mm or equivalent
- Steel staples ≥ 63/11.2/1.5 mm
- Suspension

Requirements:

- Smoke extract duct, fire-resistant, tested to EN 1366-8, gross density ≥ 500 kg/m³, wall thickness ≥ 35 mm

Installation

1. Create and suspend a fire-resistant smoke extract duct according to the manufacturer's instructions.
2. Place the smoke control damper on the fire-resistant duct and suspend the damper *5.9 'Suspending the smoke control damper' on page 64* .
3. Connect the fire-resistant smoke extract duct to the smoke control damper by placing an angle section between the duct and the damper *6 'Smoke extract duct and cover grille' on page 65* .

   Be sure to follow the manufacturer's instructions.
4. If the smoke extract duct and the smoke control damper are of the same height, you can use a connecting strip (Fig. 31 /7) instead of an angle section.
5. Connect the smoke extract ducts (installation side and operating side) to the smoke control damper (Fig. 31 /8), *6 'Smoke extract duct and cover grille' on page 65* .

   If the operating side is not connected to a duct, a cover grille is required, *6.4 'Cover grilles' on page 67* .

5.8.4 In a horizontal smoke extract duct

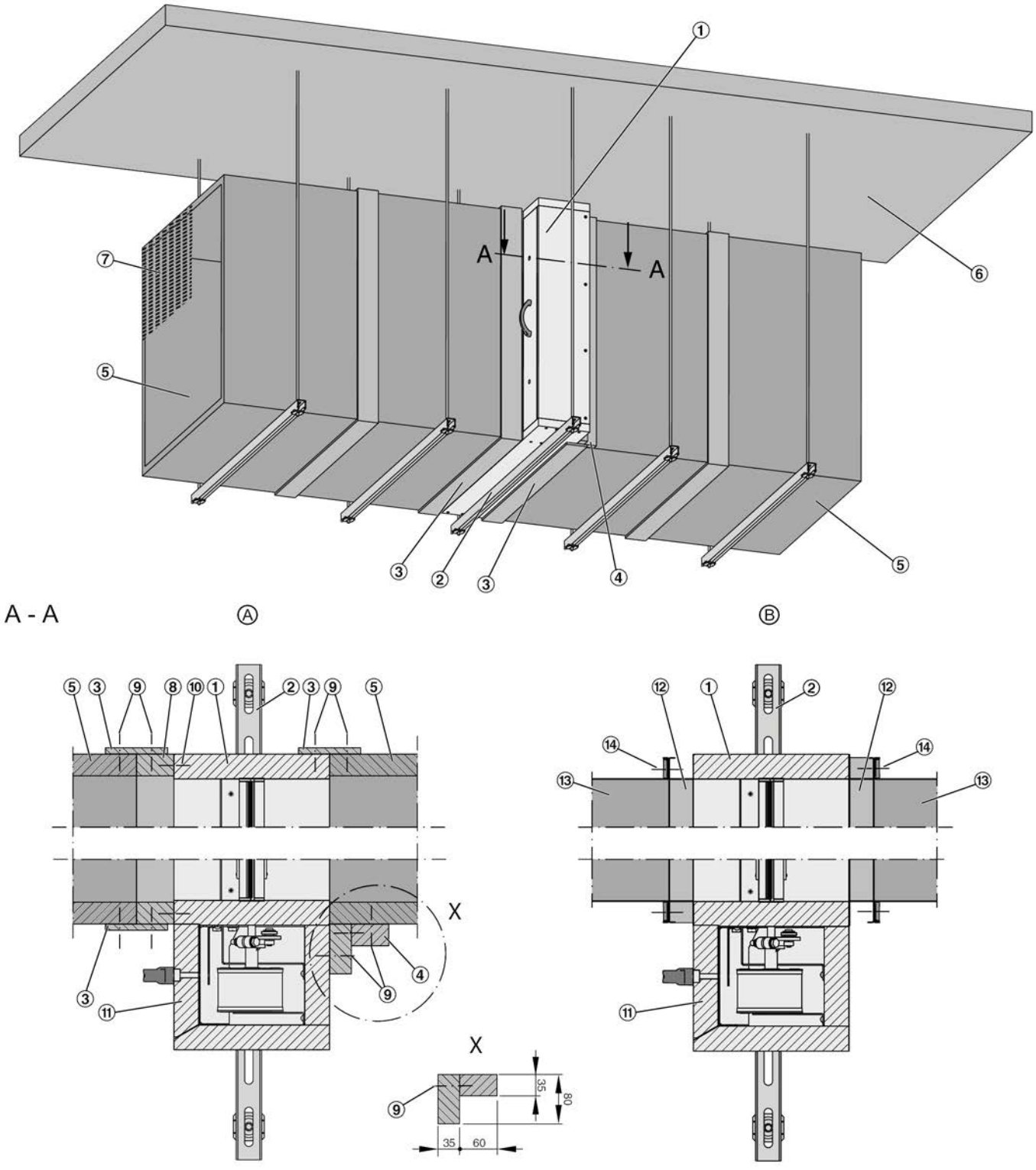


Fig. 32: Installation in a horizontal smoke extract duct

Ⓐ Installation in smoke extract ducts for multiple compartments
Ⓑ Installation in smoke extract ducts for a single compartment
① EK-JZ
② Suspension
③ Connecting strips according to instructions from the manufacturer of the smoke extract duct
⑦ Cover grille (at the end of a smoke extract duct)
⑧ Connecting subframe made from fire-rated PROMATECT®-LS board d = 35 mm x 60 mm or equivalent (by others)
⑨ Steel staples ≥ 63/11.2/1.5 mm
⑩ Dry wall screw
⑪ Cover of the actuator encasing
⑫ Connecting subframe (optional)

④ Angle section made from strips of fire-rated PROMATECT®-LS board d = 35 mm or equivalent
⑤ Smoke extract ducts for multi compartments
⑥ Solid ceiling slab
⑬ Smoke extract ducts for a single compartment
⑭ Screws

Personnel:

- Specialist personnel

Requirements:

- Smoke extract duct, fire-resistant, tested to EN 1366-8, gross density ≥ 500 kg/m³, wall thickness ≥ 35 mm
- Adjoined installation of dampers is approved, ↳ *5.3.3 'Adjoined damper installation' on page 21*
- The actuator encasing must remain accessible for maintenance even after installation (cover, Fig. 32 /11).

Connection of smoke extract ducts:

- EN 1366-8 (for multiple compartments)
- EN 1366-9 (for a single compartment)

Installation in smoke extract ducts for multiple compartments

1. Create a connecting subframe (Fig. 32 /8) of the required length from fire rated PROMATECT®-LS board, d = 35 mm x 60 mm, or equivalent (by others). Use dry wall screws (Fig. 32 /10) to connect it to the operating side of the smoke control damper. Set the screws (∅6 x 100 mm, Fig. 32 /10) along the perimeter (predrill holes ∅4 mm), set screws at a distance of ≤250 mm, distance from the edge either 80 mm (H section) or 60 mm (B section). Countersink screw heads!
2. Create and suspend a fire-resistant smoke extract duct according to the manufacturer's instructions.
3. Place the smoke control damper on the fire-resistant duct and suspend the damper ↳ *5.9 'Suspending the smoke control damper' on page 64* .
4. Fix an angle section (Fig. 32 /4) between the actuator encasing and the smoke extract duct.
5. Connect the fire-resistant smoke extract duct to the smoke control damper with a connecting strip (Fig. 32 /3) ↳ *6 'Smoke extract duct and cover grille' on page 65* .

   Be sure to follow the manufacturer's instructions.

Installation in smoke extract ducts for a single compartment

1. Suspend the smoke control damper (Fig. 32 /1) with connecting subframes on both sides (optional; Fig. 32 /12) ↳ *5.9 'Suspending the smoke control damper' on page 64* .
2. Lead the smoke extract duct (Fig. 32 /13) up to the smoke control damper, on both sides, and suspend it.
3. Screw-fix (Fig. 32 /14) the smoke extract duct to the connecting subframe.

5.8.5 At the end of a horizontal smoke extract duct

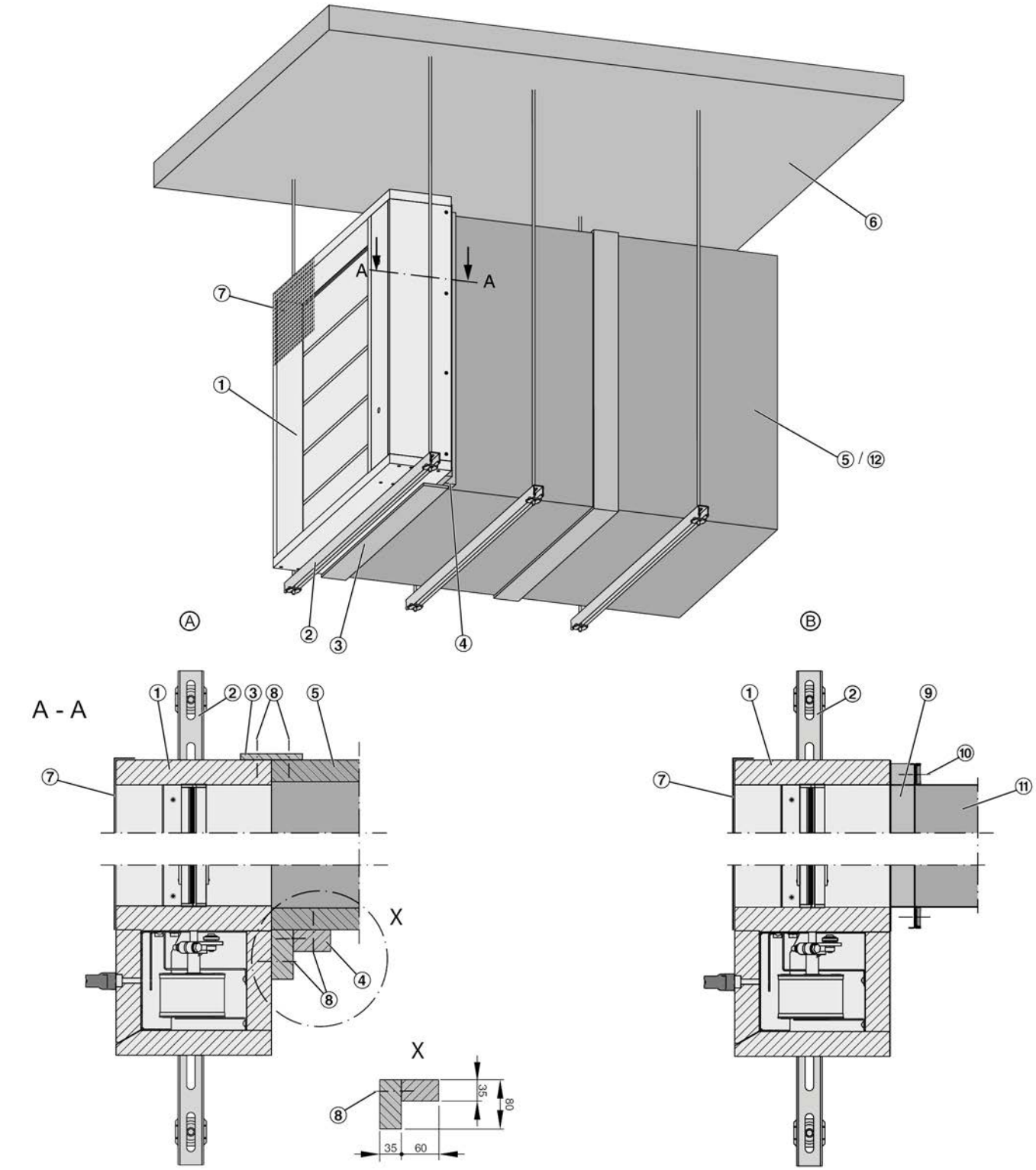


Fig. 33: Installation at the end of a horizontal smoke extract duct

Ⓐ Installation at the end of a fire-resistant smoke extract duct
Ⓑ Installation at the end of a sheet steel smoke extract duct
① EK-JZ
② Suspension system
⑥ Solid ceiling slab
⑦ Cover grilles
⑧ Steel staples ≥ 63/11.2/1.5 mm
⑨ Connecting subframe (optional)
⑩ Screws
⑪ Sheet steel smoke extract duct

③ Connecting strips according to instructions from the manufacturer of the smoke extract duct
④ Angle section made from strips of fire-rated PROMATECT®-LS board d = 35 mm or equivalent
⑤ Fire-resistant smoke extract duct

Personnel:

- Specialist personnel

Requirements:

- Smoke extract duct, fire-resistant, tested to EN 1366-8, gross density ≥ 500 kg/m³, wall thickness ≥ 35 mm
- Adjoined installation of dampers is approved

Connection of smoke extract ducts:

- EN 1366-8 (for multiple compartments)
- EN 1366-9 (for a single compartment)

Installation in smoke extract ducts for multiple compartments

1. ▸ Create and suspend a fire-resistant smoke extract duct according to the manufacturer's instructions.
2. ▸ Place the smoke control damper on the fire-resistant duct and suspend the damper ↬ *5.9 'Suspending the smoke control damper' on page 64* .
3. ▸ Fix an angle section (Fig. 33 /4) between the actuator encasing and the smoke extract duct.
4. ▸ Connect the fire-resistant smoke extract duct to the smoke control damper with a connecting strip (Fig. 33 /3) ↬ *6 'Smoke extract duct and cover grille' on page 65* .

   Be sure to follow the manufacturer's instructions.

Installation in smoke extract ducts for a single compartment

1. ▸ Suspend the smoke control damper (Fig. 33 /1) with connecting subframes on both sides (optional; Fig. 33 /9) ↬ *5.9 'Suspending the smoke control damper' on page 64* .
2. ▸ Lead the smoke extract duct (Fig. 33 /11) up to the smoke control damper and suspend it.
3. ▸ Screw-fix (Fig. 33 /10) the smoke extract duct to the connecting subframe.

If the operating side is not connected to a duct, a cover grille is required, ↬ *6.4 'Cover grilles' on page 67* .

5.8.6 On/under a horizontal smoke extract duct

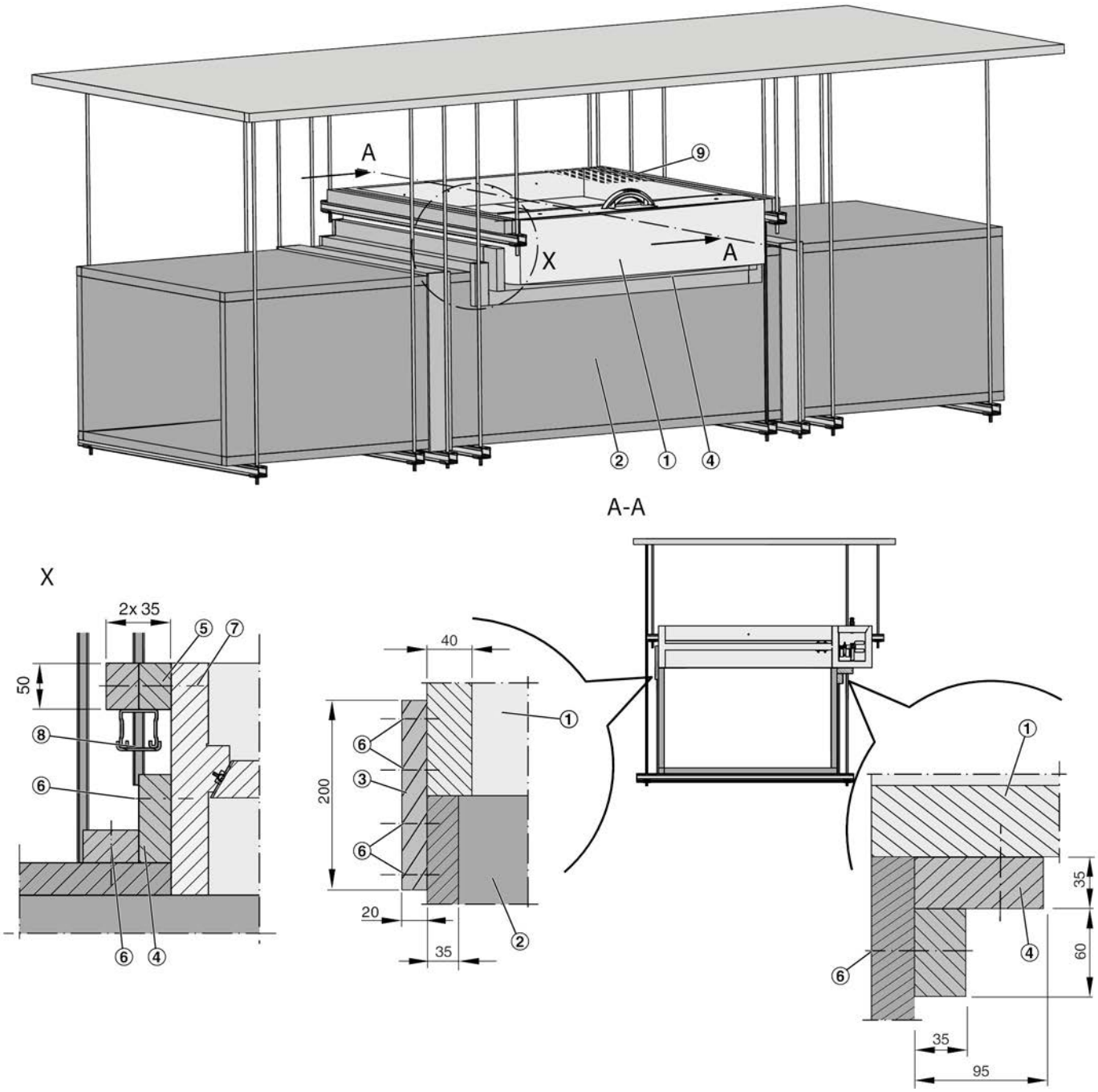


Fig. 34: Installation on a fire-resistant horizontal smoke extract duct

① EK-JZ
② Fire-resistant smoke extract duct
③ Connecting strips according to instructions from the manufacturer of the smoke extract duct ↳ *6 'Smoke extract duct and cover grille' on page 65*
④ Angle section made from strips of fire-rated PROMATECT®-LS board d = 35 mm or equivalent
⑤ Reinforcing strip
⑥ Steel staples ≥ 63/11.2/1.5 mm
⑦ Dry wall screw
⑧ Suspension system ↳ *5.9 'Suspending the smoke control damper' on page 64*
⑨ Cover grille (only if the damper is not connected to a smoke extract duct)

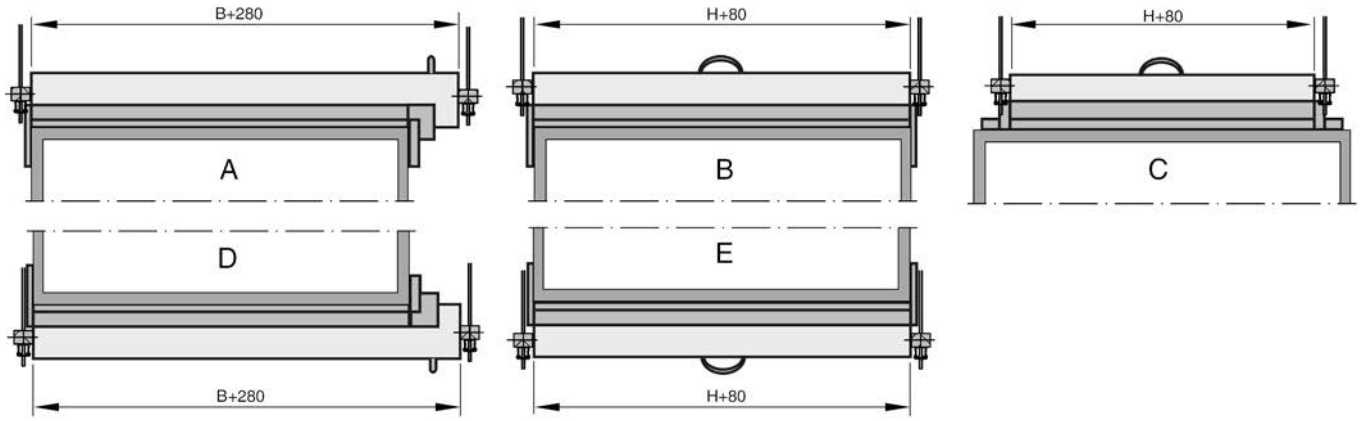


Fig. 35: EK-JZ installation variants on and under fire-resistant smoke extract duct

A On the duct, B-dimension crosswise to the duct
B On the duct, H-dimension crosswise to the duct H-dimension flush with duct
C On the duct, H-dimension crosswise to the duct, H-dimension smaller than duct
D Under the the duct, B-dimension crosswise to the duct
E Under the duct, H-dimension crosswise to the duct H-dimension flush with duct

Personnel:

- Specialist personnel

Materials:

- Fire-rated PROMATECT®-LS board d = 35 mm or equivalent
- Steel staples ≥ 63/11.2/1.5 mm
- Suspension

Requirements:

- Smoke extract duct, fire-resistant, tested to EN 1366-8, gross density ≥ 500 kg/m³, wall thickness ≥ 35 mm

Installation

1. ▸ Create and suspend a fire-resistant smoke extract duct according to the manufacturer's instructions.
2. ▸ Place the smoke control damper on or under the fire-resistant smoke extract duct ↬ *5.9 'Suspending the smoke control damper' on page 64* .
3. ▸ Connect the fire-resistant smoke extract duct to the smoke control damper by placing an angle section (Fig. 34 /4) between the duct and the damper ↬ *6 'Smoke extract duct and cover grille' on page 65* .

   Be sure to follow the manufacturer's instructions.
4. ▸ If the smoke extract duct and smoke control damper are flush, the damper can be connected with connecting strips (Fig. 34 /3).
5. ▸ Connect the smoke extract ducts (installation side and operating side) to the smoke control damper, ↬ *6 'Smoke extract duct and cover grille' on page 65* .

   If the operating side is not connected to a duct, a cover grille (Fig. 34 /8) must be installed on the damper, ↬ *6.4 'Cover grilles' on page 67* .

5.9 Suspending the smoke control damper

5.9.1 General

Smoke control dampers can be suspended from solid ceiling slabs using adequately sized threaded rods. Load the suspension system only with the weight of the smoke control damper.

Ducts must be suspended separately.

Suspension systems longer than 1.5 m require fire-resistant insulation.

Size of threaded rods

Thread	M8	M10	M12	M14	M16	M20
Fmax [N] per threaded rod	219	348	505	690	942	1470
Maximum loading [kg] per threaded rod	22	35	52	70	96	150

5.9.2 Fixing the unit to the ceiling slab

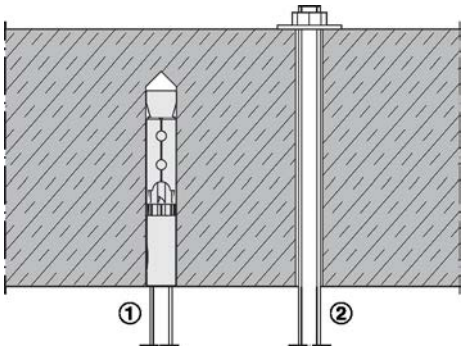


Fig. 36: Fixing to the ceiling slab

1 Fire-rated anchor (with suitability certificate)
2 Push through installation

Use only fire-rated steel anchors with suitability certificate. Instead of anchors, you can use threaded rods and secure them using nuts and washers.

5.9.3 Suspended installation

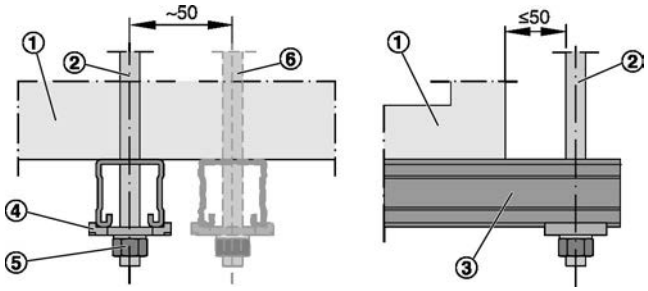


Fig. 37: Suspended installation

① Smoke control damper
② Threaded rod M8-M20
③ Hilti mounting rail MQ 41 × 3 or equivalent
④ Hilti MQZ-L drilled plate or equivalent
⑤ Nut, M8-M20, galvanised steel
⑥ Additional suspension (only if necessary)

5.10 After installation

- Remove the straps (in case of mortar-based installation, do this only after the mortar has cured)
- Check that the diagonal length of the damper is correct.
- Clean the smoke control damper.
- Test the function of the smoke control damper.
- Connect the smoke extract duct.
- Make electrical connections.

6 Smoke extract duct and cover grille

Construction of the duct

Smoke control dampers for multi compartments may be used with ducts that have been tested to EN 1366-9 (Single compartment smoke extraction ducts) and to EN 1366-8 (Smoke extraction ducts) and that are constructed either from materials of the same density ($\rho \approx 520$ kg/m³) as the tested material or from the same material with a greater density or thickness.

Smoke extract ducts made from Promatect AD 40 or Promatect L 500 boards ($\rho \approx 500$ kg/m³) may also be used.

Smoke extract ducts with national general building inspectorate licences

Smoke extract ducts can also be connected with a national general building inspectorate licence or a national general appraisal certificate. If the smoke control damper is not exposed to mechanical forces, the functional stability of the smoke control damper is not affected (connection according to assembly and operating manual of the smoke control damper). The sizing of the smoke extract duct used remains the responsibility of the system installer and the system owner and must be approved with the respective national authority.

6.1 Smoke extract ducts for multi compartments

Calcium silicate smoke extract duct

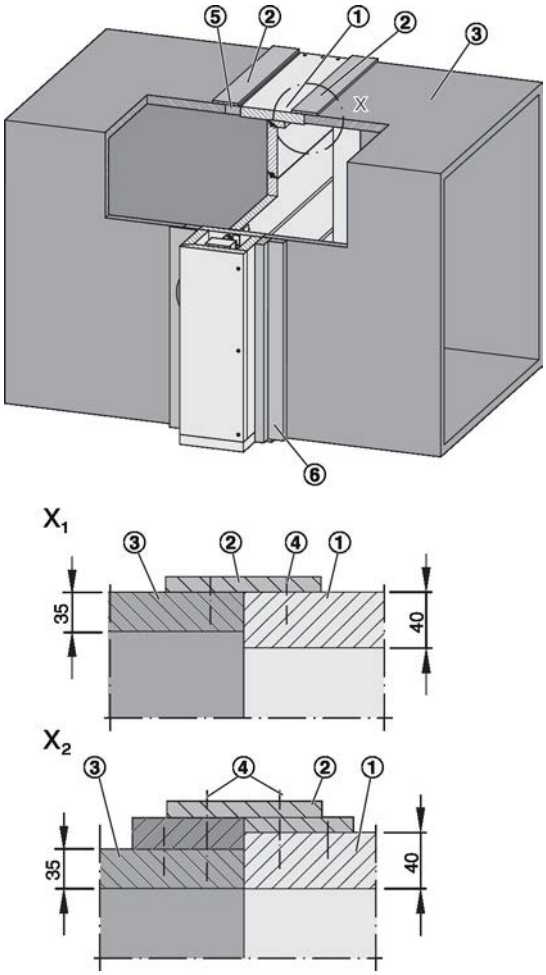


Fig. 38: EK-JZ connection to a calcium silicate smoke extract duct

X_1 Smoke extract duct and EK-JZ flush on the outside
X_2 Smoke extract duct and EK-JZ flush on the inside
① EK-JZ
② Connecting strips according to instructions from the manufacturer of the smoke extract duct
③ Calcium silicate smoke extract duct
④ Steel staples
⑤ Connecting subframe for smoke extract duct (by others)
⑥ Angle section from fire-rated PROMATECT®-LS/-L500 boards d = 35 mm or equivalent

6.2 Smoke extract duct for a single compartment

Sheet steel smoke extract duct

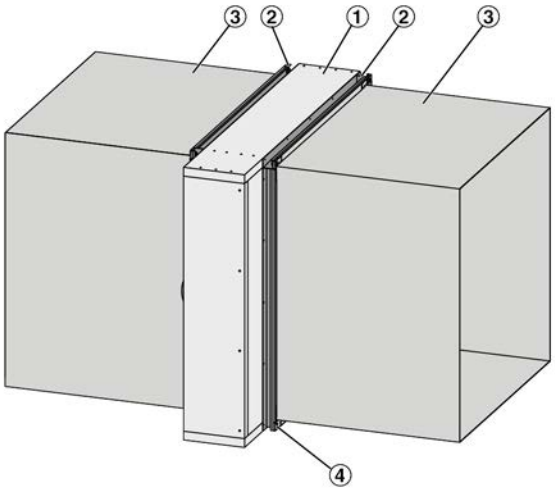


Fig. 39: EK-JZ with connecting subframe and smoke extract duct made of sheet steel

① EK-JZ
② Connecting subframe (optional), see order code for Attachments 1 (F)
③ Sheet steel smoke extract duct
④ Screw connection: M8 screws

Assembly of connecting subframe: Attach the frame to EK-JZ and mark or drill. Fix the connecting subframe with screws ∅5 x 50 mm (supply package) to EK-JZ (pre-drill ∅3.5 mm).

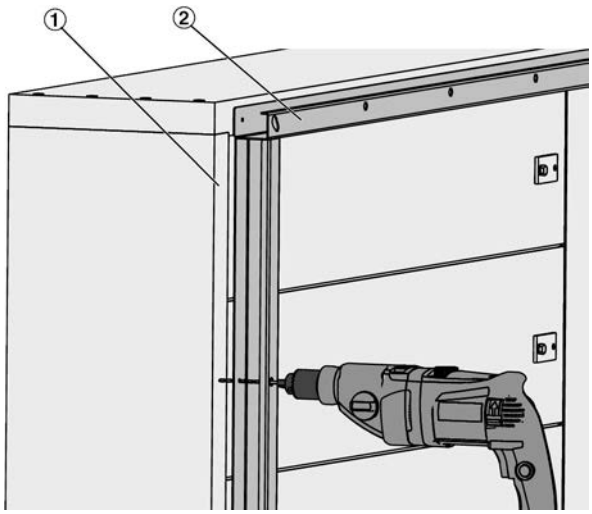


Fig. 40: Assembly of the connecting subframe

① EK-JZ
② Connecting subframe (optional), see order code for Attachments 1 (F)

As ducts may expand and walls may become deformed in the event of a fire, we recommend using flexible connectors when connecting the damper to sheet steel smoke extract ducts. The flexible connectors should meet the specifications for the sheet steel smoke extract duct. Be sure to follow the manufacturer's instructions.

6.3 Inspection access

The interior of the smoke control damper must remain accessible for maintenance. Depending on the installation configuration it may be necessary to provide additional inspection panels in the connecting ducts.

6.4 Cover grilles

If no smoke extract duct is connected to the smoke control damper, a cover grille is required to protect that side of the damper.

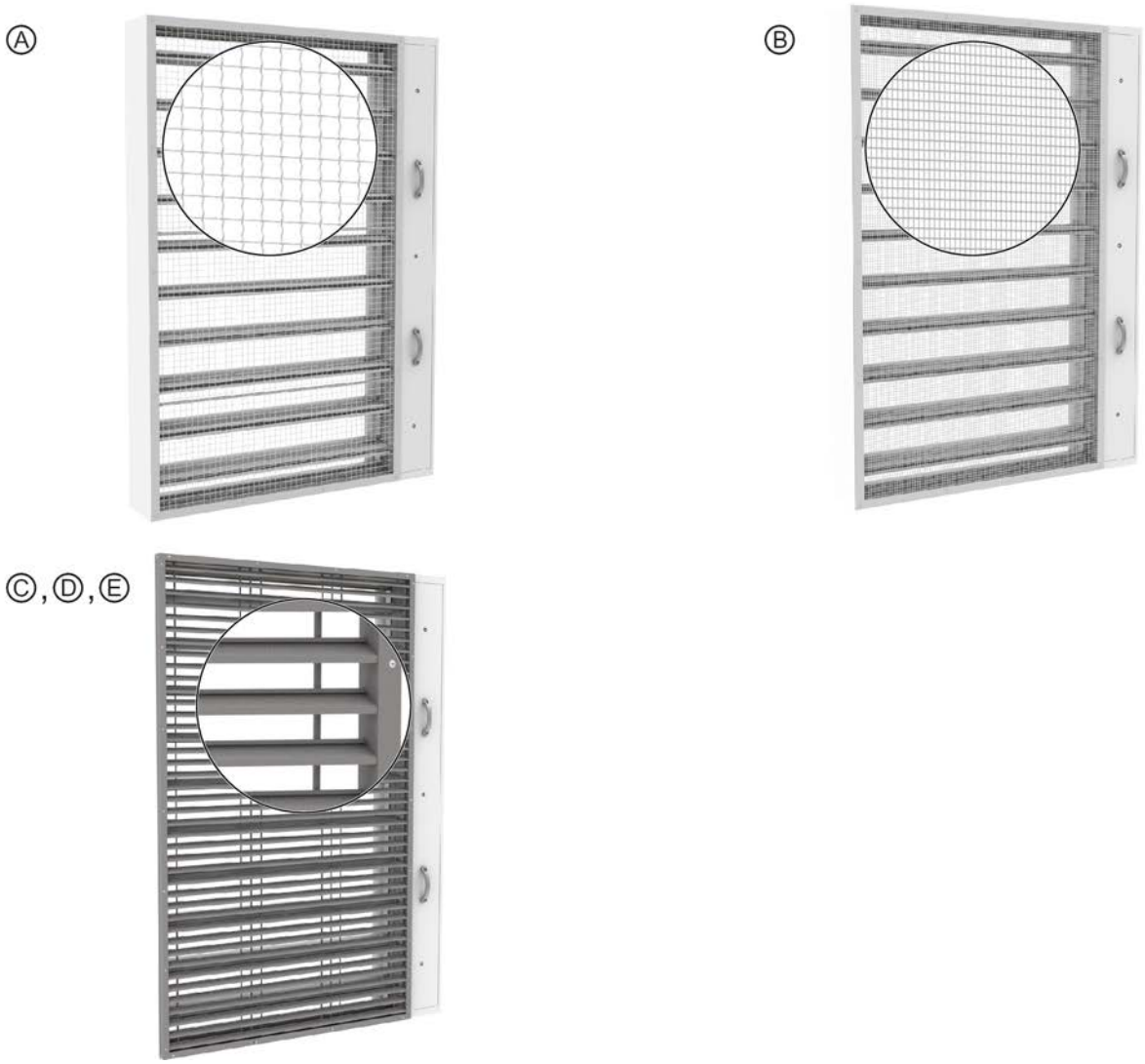


Fig. 41: EK-JZ cover grilles

Grilles	Description	Free area
A[1)]	Crimped wire mesh 20 x 20 mm	85%
B[1)]	Square perforated metal plate 10 x 10 mm	70%
C[2)]	Aluminium grille with slanted blades	70%
D[2)]	Aluminium grille with crimped wire mesh 20 x 20 mm	60%
E[2)]	Aluminium grille with welded wire mesh 6 x 6 mm	55%

1) No temperature limit

2) Aluminium mesh: up to the strength limit of the aluminium, as the temperature rises the strength drops. Cold air flowing in counteracts the loss of strength.

6.4.1 Crimped wire mesh (A) and perforated plate (B)

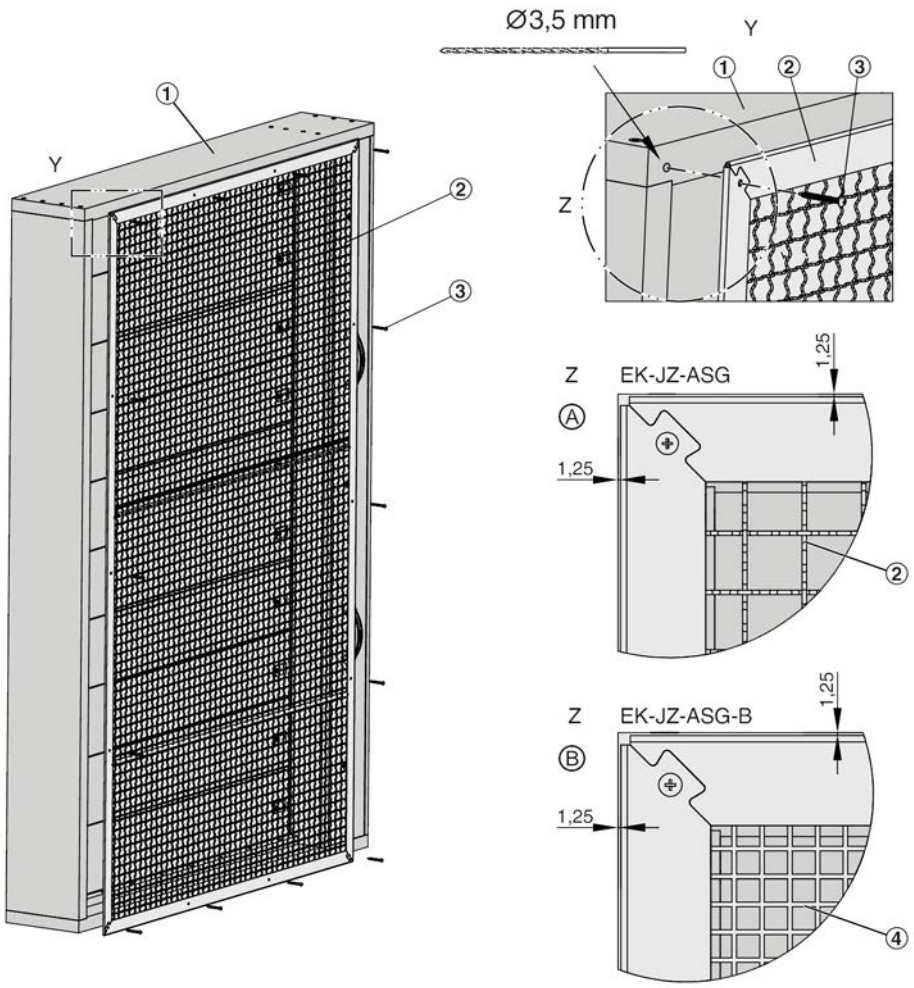


Fig. 42: Assembly of crimped wire mesh or perforated metal facing on EK-JZ

1 EK-JZ
2 Crimped wire mesh (A)
3 Pre-drill holes for chipboard screws ∅5 × 50 mm, screws with ∅3.5 mm
4 Perforated metal facing (B)

6.4.2 Aluminium grille with slanted blades (C, D, E)

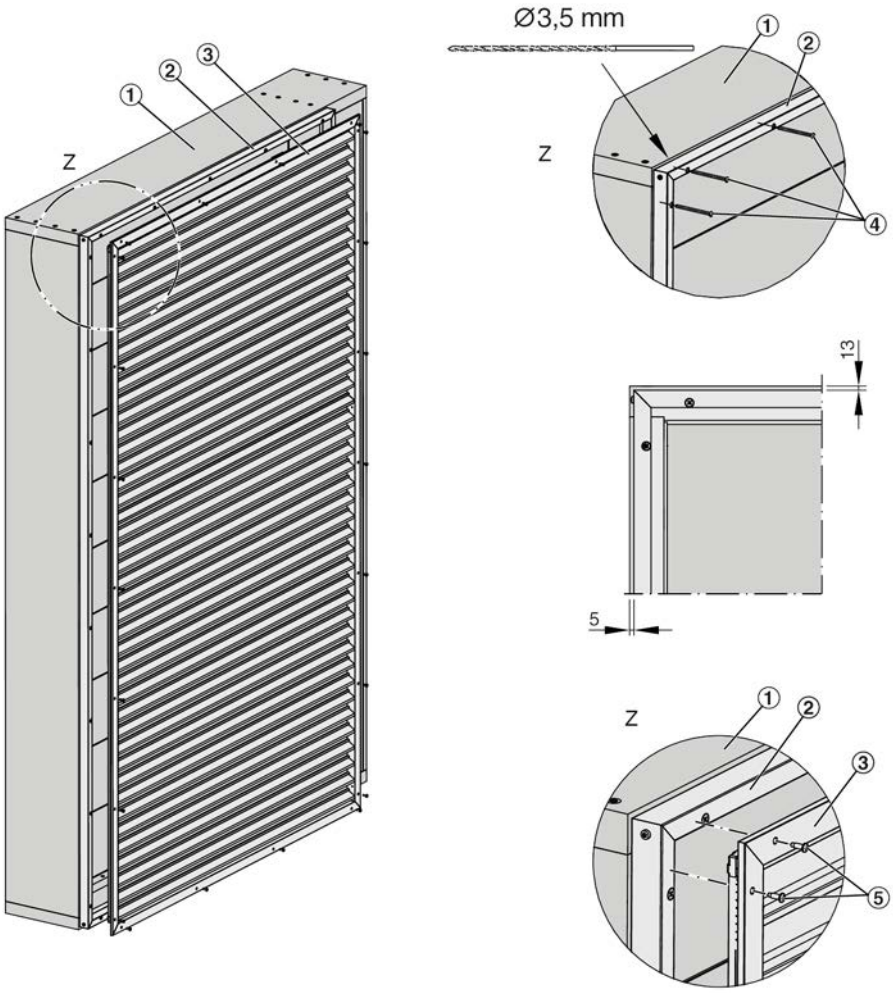


Fig. 43: Assembly of aluminium grille with slanted blades on EK-JZ

1 EK-JZ
2 Mounting frame
3 Aluminium grille
4 Pre-drill holes for chipboard screw ∅5 × 80 mm, screws with ∅ 3.5 mm
5 Drilling screw ∅4.2 × 13

7 Electrical connection

7.1 General safety notes

Personnel:

- Skilled qualified electrician

DANGER!

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

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

7.2 Wiring and connection to the central BMS

- The smoke control damper may be equipped with a 230 V AC or a 24 V AC/DC actuator. See the performance data on the actuator rating plate.
- Several actuators can be connected in parallel as long as the performance specifications are taken into consideration.
- Make electrical connections according to the examples below.

Electric cables and system

For manual release (MA), the electric cables and system must have at least 30 minutes circuit integrity. Depending on where a damper is installed, country-specific regulations may apply.

Actuators with 24 V AC/DC

Safety transformers must be used. The connecting cables are fitted with plugs. This ensures quick and easy connection to the TROX AS-i bus system. For connection to the terminals, shorten the connecting cable.

Feeding the cable into the actuator encasing

To feed the cable into the actuator encasing, a drilled hole of the exact size is required (∅cable +1 mm). Do not drill a hole into the cover! Before you start drilling, remove the cover and make sure that no parts (e.g. control module) can be damaged by the drill.

A wire clamping bracket is required.

For manual release (MA) we recommend using a ceramic terminal to connect the AS-i cable to the actuator cable or to the cable of the AS-i module.

7.3 Actuators

7.3.1 B24

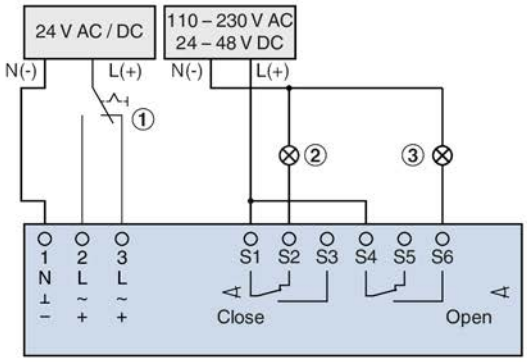


Fig. 44: Wiring example 24 V AC / DC

① Switch for opening and closing, to be provided by others
② Indicator light for CLOSED position, to be provided by others
③ Indicator light for OPEN position, to be provided by others

Technical data for open/close actuators

Order code detail		B24		
Actuator		**BEN24-ST TR**	**BEE24-ST TR**	**BE24-ST TR**
Supply voltage		AC 19.2...28.8 V, 50/60 Hz / DC 21.6...28.8 V, 50/60 Hz		
Power consumption – when running		3 W	2.5 W	12 W
Power consumption – when idle		0.1 W		0.5 W
Power consumption rating		6 VA	5 VA	18 VA
		8.2 A, Imax. (5 ms)		8.2 A, Imax. (5 ms)
Torque		15 Nm	25 Nm	40 Nm
Run time		< 30 s (90°)	< 60 s (90°)	< 60 s (90°)
Limit switch	Type of contact	2 changeover contacts		
	Switch rating	1 mA...3 A (0.5 A inductive),		1 mA...6 (0.5 A inductive),
	Switching voltage	5 VDC...250 VAC		
	Open	5°		3°
	Close	80°		87°
IEC protection class		III (SELV)		
Protection level		IP 54		
Operating temperature		-30...55 °C		
Connecting cable	Actuator	1 m, 3 x 0.75 mm², halogen-free		
	Limit switch	1 m, 6 x 0.75 mm², halogen-free		
CE conformity according to		2014/30/EU, 2014/35/EU		

7.3.2 B230

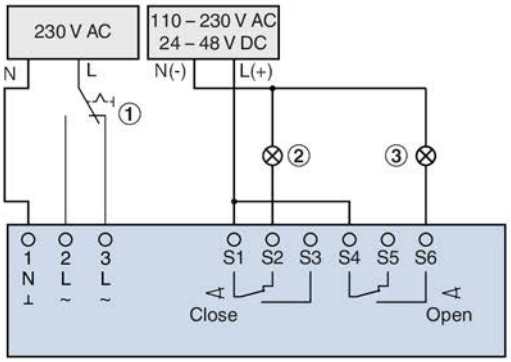


Fig. 45: Wiring example 230 V AC

① Switch for opening and closing, to be provided by others
② Indicator light for CLOSED position, to be provided by others
③ Indicator light for OPEN position, to be provided by others

Technical data for open/close actuators

Order code detail		**B230**		
Actuator		**BEN230 TR**	**BEE230 TR**	**BE230 TR**
Supply voltage		AC 198 … 264 V 50/60 Hz		
Power consumption – when running		4 W	3.5 W	8 W
Power consumption – when idle		0.4 W		0.5 W
Power consumption rating		7 VA	6 VA	15 VA
		4 A, Imax. (5 ms)		7.9 A, Imax. (5 ms)
Torque		15 Nm	25 Nm	40 Nm
Run time		< 30 s (90°)	< 60 s (90°)	< 60 s (90°)
Limit switch	Type of contact	2 changeover contacts		
	Switch rating	1 mA...3 A (0.5 A inductive),		1 mA...6 A (0.5 A inductive),
	Switching voltage	5 V DC...250 V AC		
	Open	5°		3°
	Close	80°		87°
IEC protection class		II		
Protection level		IP 54		
Operating temperature		-30...55 °C		-30...50 °C
Connecting cable	Actuator	1 m, 3 x 0.75 mm², halogen-free		
	Limit switch	1 m, 6 x 0.75 mm², halogen-free		
CE conformity according to		2014/30/EU, 2014/35/EU		

7.3.3 B24-SR

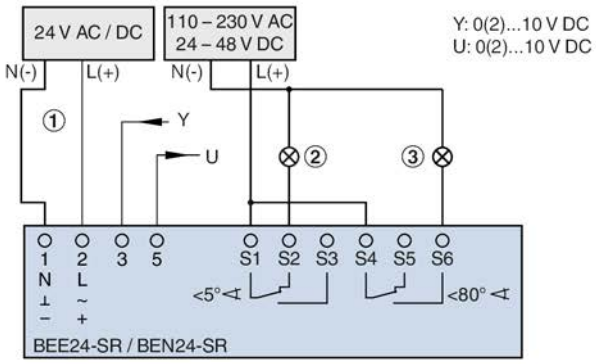


Fig. 46: Wiring example 24 V AC / DC, modulating

① Switch for opening and closing, to be provided by others
② Indicator light for CLOSED position, to be provided by others
③ Indicator light for OPEN position, to be provided by others

Y Input signal
U Output signal

Technical data, modulating actuators

Order code detail		B24-SR	
Actuator		**BEN24-SR TR**	**BEE24-SR TR**
Supply voltage		AC 19.2...28.8 V, 50/60 Hz / DC 21.6...28.8 V, 50/60 Hz	
Power consumption – when running		3 W	3 W
Power consumption – when idle		0.3 W	
Power consumption rating		6.5 VA	5.5 VA
		8.2 A, Imax. (5 ms)	
Torque		15 Nm	25 Nm
Run time		< 30 s (90°)	< 60 s (90°)
Work area Y		2...10 V DC	
Input resistance		100 kΩ	
Position feedback signal		2...10 V DC, max. 0.5 mA	
Positional accuracy		±5%	
Limit switch	Type of contact	2 changeover contacts	
	Switch rating	1 mA...3 A (0.5 A inductive), AC 250 V	
IEC protection class		III (SELV)	
Protection level		IP 54	
Operating temperature		-30...55 °C	
Connecting cable	Actuator	1 m, 4 x 0.75 mm², halogen-free	
	Limit switch	1 m, 6 x 0.75 mm², halogen-free	
CE conformity according to		2014/30/EU, 2014/35/EU	

7.4 Actuator with control module

Smoke control dampers in a smoke extract system can be activated individually or as part of an overall system and according to the control matrix set up for the event of a fire. In this case the control system of the mechanical smoke extract system or pressurisation system also controls and monitors the status of the dampers. If there are integral communication modules fitted inside the encasing, they can be connected to the actuator and establish the communication with the control system as well as the power supply.

7.4.1 TROXNETCOM B24A, B24AM, B24AS

- A controller (master) communicates with the control modules (slaves, up to 31 per master)
- Free bus topology of the two-wire cable for data and energy
- Simple and intelligent wiring system

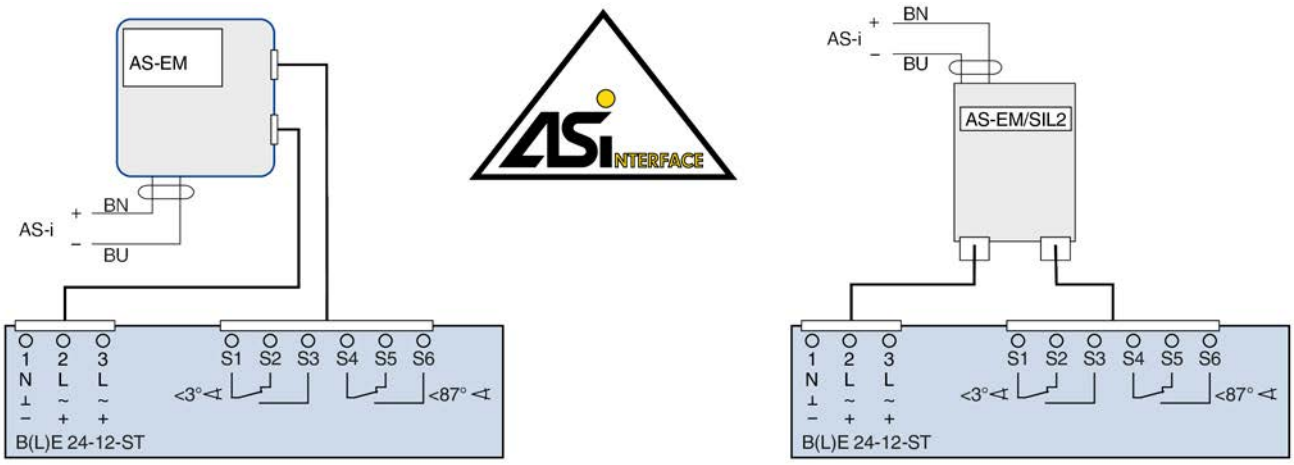


Fig. 47: Wiring example for attachments B24A and B24AS

BN Brown (+)
BU Blue (–)

The actuator and the AS-i control module are factory wired.

An AS-i bus (+/–) is used for both voltage supply and signals.

The connecting cables of the AS-EM/SIL module are fitted with wire end ferrules.

Technical data for the actuator, ↳ *7.3.2 'B230' on page 72* , ↳ *Chapter 7.3.1 'B24' on page 71* .

Technical data for the control module

Order code detail	B24A	B24AM	B24AS
Control module	**AS-EM/EK**	**AS-EM/M**	**AS-EM/SIL2**
Supply voltage	26.5 – 31.6 V DC		
Current consumption	450 mA	450 mA	< 400 mA from AS-i
Max. current load per output	400 mA	400 mA	340 mA
Max. current load per module	400 mA	400 mA	340 mA
Interfaces	4 inputs/3 outputs	4 inputs/3 outputs	2 outputs with transistor (typically 24 V DC from AS-i, voltage range 18 – 30 V)
Operating temperature	-5 to 75 °C	-5 to 75 °C	-20 to 70 °C
Storage temperature	-5 to 75 °C	-5 to 75 °C	-20 to 75 °C
Protection level, IEC protection class	IP 42	IP 42	IP 54
AS-i profile	S7.A.E	S7.A.E	S-7.B.E (Safety at Work) and S7.A.E (motor module)

7.4.2 B24BKNE

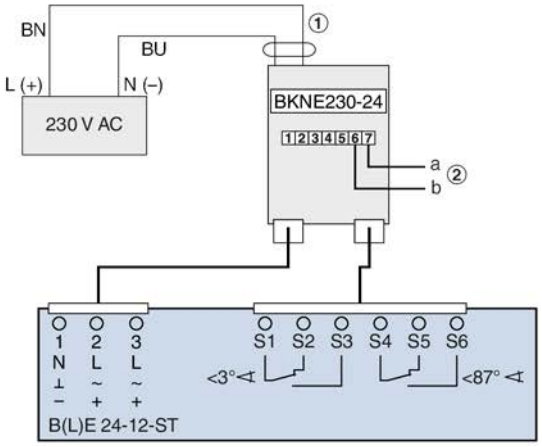


Fig. 48: Wiring example for attachment B24BKNE

BN Brown L (+)
BU Blue N (–)

① Supply voltage
② 2-wire cable (signal)

The actuator and the control module are factory wired.

Connect the supply voltage to the connecting cable (approx. 1 m, with ferrules). 2-wire cable for signals (terminals 6 and 7).

Technical data for the actuator, *7.3.2 'B230' on page 72*, *Chapter 7.3.1 'B24' on page 71*.

Technical data for the control module

Order code detail	B24BKNE
Control module	**BKNE230-24**
Nominal voltage	AC 230 V 50/60 Hz
Functional range	AC 198...264 V
Rating	19 VA (including actuator)
Power consumption	10 W (including actuator)
Mains cable	Cable, 1 m (free of halogens, without plug)
2-wire cable	Screw terminals for wires, 2 x 1.5 mm²
Recommended cable	JE-H (St) Bd FE180/E30-E90
IEC protection class	II (protective insulation)
Ambient temperature (normal operation)	–30...+50 °C
Storage temperature	–40...+80 °C

7.4.3 SLC technology - B24C

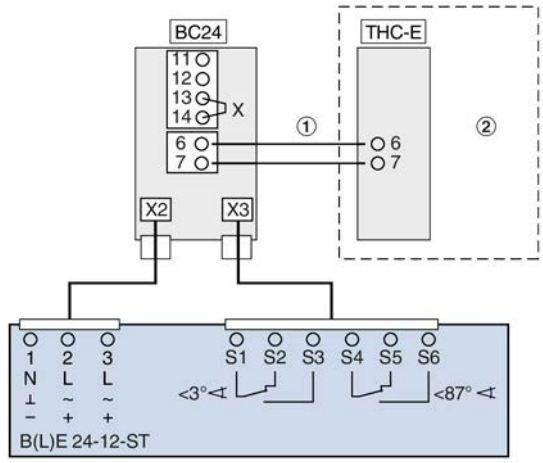


Fig. 49: B24C module

1 2-wire cable for supply voltage and signal
2 (THC-E, by others)
X2 Socket for an actuator
X3 Sockets for limit switches
6 / 7 2-wire cable to THC-E control module for signals and supply voltage, 2 x 1.5 mm², 150 m max., interchangeable cores
11 Not to be used
12 GND
13 24…27 V DC (30 mA max.)
14 IN

Terminals 12, 13 and 14 – duct smoke detector:

- If you want to connect a duct smoke detector, remove wire link X between terminals 13 and 14.
- You may use terminals 13 and 14 to connect a duct smoke detector or any other volt-free control contact, e.g. a fire alarm system. When the contact opens, the damper blades move to the defined safe position. For this case the terminals 13 and 14 of several BC24 modules can be switched in parallel.

The actuator and the control module are factory wired.

Technical data for the actuator, ↳ *7.3.2 'B230' on page 72* , ↳ *Chapter 7.3.1 'B24' on page 71* .

Connection data

Order code detail	B24C
Control module	**BC24**
Supply voltage	Provided by the SLC control module
Power consumption	1 W
Contact load, terminals 13/14	30 mA max.
IEC protection class	III (protective extra-low voltage)

SLC wiring examples (THC-E)

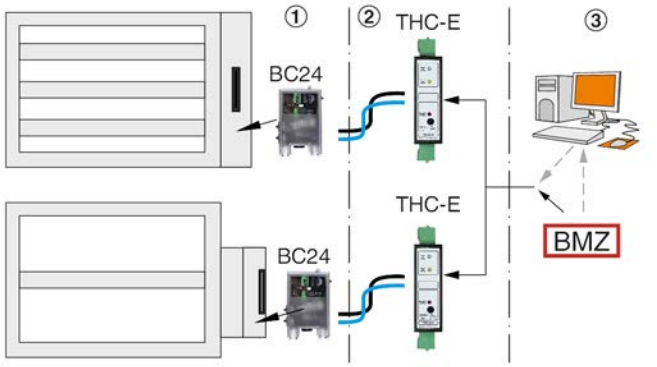


Fig. 50: Control signal from the central BMS

1 EK-JZ with integral control module B24C
2 THC-E (switch cabinet)
3 Fire alarm system and central BMS (if any)

Advantages

- Control of one damper or many dampers simultaneously (in parallel)

Disadvantages

- Wiring is comparatively time consuming

SLC wiring examples (SLC24-8E)

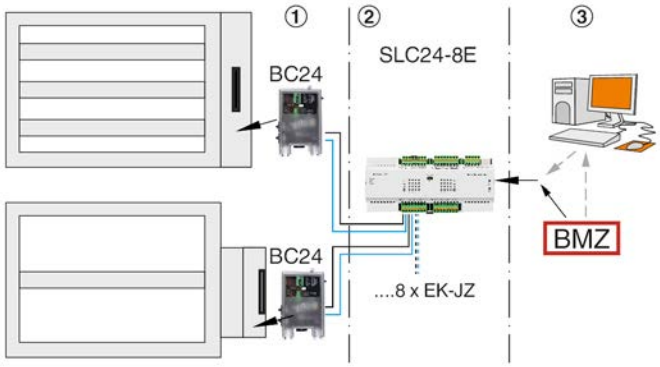


Fig. 51: Control signal from the central BMS

1 EK-JZ with integral control module B24C
2 SLC24-8E (switch cabinet)
3 Fire alarm system and central BMS (if any)

Advantages

- Quick and easy wiring

Disadvantages:

- Only parallel control of several dampers

7.4.4 B24D and B230D

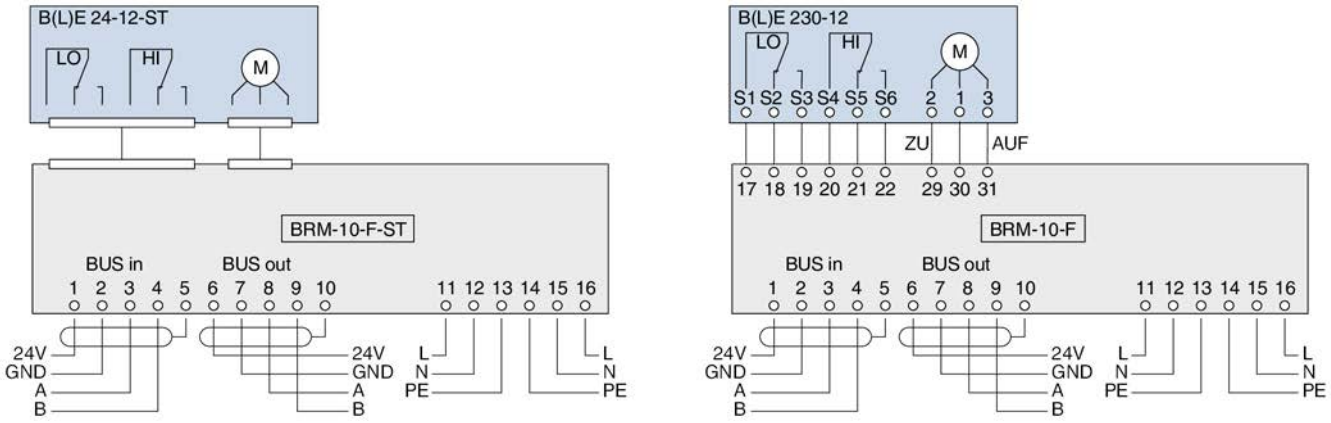


Fig. 52: Wiring example for attachments B24D and B230D

Check whether the damper blades move correctly from OPEN to CLOSED during commissioning.

The mode switch allows you to choose one of the following operating modes:

- Automatic (damper is controlled via the bus; status LEDs are not active)
- Maintenance (damper is controlled via the bus; status LEDs are not active)
- NC contact, manual (bus commands are overridden)
- NO contact, manual (bus commands are overridden)

The actuator and the control module are factory wired.

Technical data for the actuator, *7.3.2 'B230' on page 72* , *Chapter 7.3.1 'B24' on page 71* .

Technical data

Order code detail		**B24D**	**B230D**
Control module		**BRM-10-F-ST**	**BRM-10-F**
Electrical data	Supply voltage	18 – 32 V DC (typically 24 V)	
	Current consumption	5 mA (typically), 26 mA max. (for 100 ms when relays close)	
	Protection level	IP 20 (EN 60529)	
	IEC protection class	II	
Construction	Digital inputs	2 for feedback from limit switches (volt-free)	
	Digital outputs	1 for signalling to the fire damper	
Outputs	Actuator	24 V DC	24 / 230 V AC
	Permanent current, max.	AC 5 A	DC 5 A
	Switch-on current, max. (< 15 ms)	AC 8 A	DC 8 A
	Switch rating	1250 VA / 150 W	
Terminals for damper input	Max. cross-sectional area of conductors	Solid core: 0.08 – 2.5 mm² Multi-strand (without ferrule): 0.08 – 2.5 mm² Multi-strand (insulated ferrule): 0.25 – 1.5 mm² Multi-strand (non-insulated ferrule): 0.25 – 2.5 mm²	
	Max. current, terminals	10A	
	Pre fuse	MCB, 10 A, characteristic B	

Order code detail		B24D	B230D
Control module		**BRM-10-F-ST**	**BRM-10-F**
Terminals for bus, feedback, damper output	Cross-sectional areas of conductors	Solid core: 0.2 – 1.5 mm² Multi-strand (without ferrule): 0.2 – 1.5 mm² Multi-strand (insulated ferrule): 0.25 – 0.75 mm² Multi-strand (non-insulated ferrule): 0.25 – 1.5 mm²	
Ambient conditions	Ambient temperature	0 to 45 °C	
	Ambient humidity	0 – 90%	

8 Commissioning/functional test

8.1 Commissioning

Before commissioning, each smoke control damper must be inspected to determine and assess its actual condition, ↳ *'Inspection, maintenance and repair measures' on page 82* .

The movement of the damper blades may over time lead to grooves in the side seals (where the blades meet the casing); this does not impair the function of the damper. The damper blades seals adapt themselves to the seal and can compensate for the smallest deviations.

Important: Install the smoke control damper without torsion (horizontal/vertical).

8.2 Functional test

General

Smoke control dampers must be checked regularly. A functional test involves closing the smoke control damper and opening it again. This is typically done with an input signal from the central fire alarm system.

9 Maintenance

General safety notes

⚠ DANGER!

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

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

⚠ CAUTION!

Danger due to inadvertently actuating the smoke control damper. Inadvertent actuation of the damper blade or other parts can lead to injuries.

Make sure that the damper blade cannot be released inadvertently.

Regular care and maintenance ensure operational readiness, functional reliability, and long service life of the smoke control dampers.

The system owner is responsible for the maintenance of the smoke control damper. The system owner is responsible for creating a maintenance plan, for defining the maintenance goals, and for the functional reliability of the equipment.

Functional test

The functional reliability of the smoke control damper must be tested at least every six months; this has to be arranged by the system owner. If two consecutive tests, one 6 months after the other, are successful, the next test can be conducted one year later.

The functional test must be carried out in compliance with the basic maintenance principles of the following standards:

- EN 12101-8
- EN 13306
- EN 15423
- Depending on where dampers are installed, country-specific regulations may apply.

Maintenance

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

Inspection

Smoke control dampers must be inspected before commissioning. After commissioning, the function has to be tested in regular intervals. Local requirements and building regulations must be complied with.

The inspection measures to be taken are listed in *‘Inspection, maintenance and repair measures’ on page 82*.

The test of each smoke control damper must be documented and evaluated. If the requirements are not fully met, suitable remedial action must be taken.

Repair

For safety reasons, repair work must only be carried out by expert qualified personnel or the manufacturer. Only original replacement parts are to be used. A functional test is required after any repair work *8 ‘Commissioning/functional test’ on page 80*.

Any repair must be documented.

Cleaning

All surfaces of TROX components and systems, with the exception of electronic parts, may be wiped with a dry or damp cloth. All surfaces may also be cleaned with an industrial vacuum cleaner. To avoid any scratches, a soft brush should be used on the suction inlet. Use a soft brush to clean the seals. Do not use cleaning agents that contain chlorine. Equipment for removing stubborn contamination, e.g. scrubbing sponges or scouring cream, may damage the surfaces and must not be used.

Inspection, maintenance and repair measures

Interval	Maintenance work	Personnel
A	Accessibility of the smoke control damper ■ Internal and external accessibility – Provide access	Specialist personnel
	Installation of the smoke control damper ■ Installation according to the operating manual ↳ *5 'Installation' on page 14* – Install the smoke control damper correctly	Specialist personnel
	Connection of smoke extract ducts/cover grille/flexible connector ↳ *6 'Smoke extract duct and cover grille' on page 65* ■ Connection according to this manual – Establish correct connection	Specialist personnel
	Supply voltage for the actuator ■ Power supply according to the actuator rating plate – Provide correct voltage	Skilled qualified electrician
A / B	Check of the smoke control damper for damage ■ Smoke control damper, damper blades and seal have to be intact – Repair or replace the smoke control damper	Specialist personnel
	Functional test of the smoke control damper ↳ *8.2 'Functional test' on page 80* ■ Actuator function OK (damper blades close and open) – Determine and eliminate the cause of the fault – Replace actuator – Repair or replace the smoke control damper	Specialist personnel
C	Cleaning the smoke control damper ■ No contamination in the interior or on the exterior of the smoke control damper – Remove contamination	Specialist personnel

Interval

A = Commissioning

B = Regularly

The functional reliability of smoke control dampers must be tested at least every six months. If two consecutive tests are successful, the next test can be conducted one year later.

C = As required, depending on the degree of contamination

Maintenance work

Item to be checked

- Required condition
  - Remedial action if necessary

10 Decommissioning, removal and disposal

Final decommissioning

- Switch off the ventilation system.
- Switch off the power supply.

Removal

DANGER!

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

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

1. ▸ Disconnect the wiring.
2. ▸ Remove the smoke extract ducts.
3. ▸ Remove the smoke control damper.

Disposal

ENVIRONMENT!

Risk of harm to the environment due to incorrect disposal of goods and packaging!

Incorrect disposal can harm the environment.

Have electronic waste and electronic components disposed of by an approved specialist disposal company.

For disposal the smoke control damper must be completely disassembled.

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