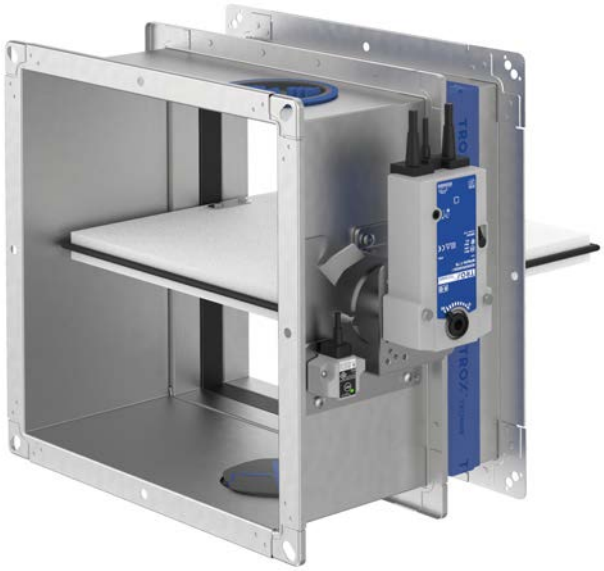
# Fire damper

## Type FKA2-EU

according to Declaration of Performance
DoP / FKA2-EU / DE / 002



Read the instructions prior to performing any task!

TROX® TECHNIK
The art of handling air

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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 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 and Payment 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. |

# 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

- The fire damper is used as an automatic shut-off device to prevent fire and smoke from spreading through ducting.
- The fire damper is suitable for supply and extract air in HVAC systems.
- The fire damper may be used in potentially explosive atmospheres if appropriate special accessories are used with it and if the product bears the CE conformity marking according to Directive 94/9/EC. Fire dampers for use in potentially explosive atmospheres are marked for the zones for which they have been approved.
- Operation of the fire dampers is allowed only in compliance with installation regulations and the technical data in this installation and operating manual.
- Modifying the fire 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 fire damper can lead to dangerous situations.

Never use the fire damper

– without specially approved attachments in areas with potentially explosive atmospheres
– as a smoke control damper
– outdoors without sufficient protection against the effects of weather
– in atmospheres where chemical reactions, whether planned or unplanned, may cause damage to the fire 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 × H** | 200 × 100 – 1500 × 800 mm * |
| **Casing lengths L** | 305 and 500 mm |
| **Volume flow rate range** | Up to 14400 l/s or 51840 m³/h |
| **Differential pressure range** | Up to 2000 Pa |
| **Temperature range** [1, 3] | -20 °C to 50 °C |
| **Release temperature** | 72 °C or 95 °C (for warm air ventilation systems) |
| **Upstream velocity** [2] | ≤ 8 m/s with fusible link,<br>≤ 12 m/s with spring return actuator |
| **Closed blade air leakage** | EN 1751, Class 2 |
| **Casing air leakage** | EN 1751, Class C; (B + H) ≤ 700, Class B |
| **EC conformity** | ■ Construction Products Regulation (EU) No. 305/2011<br>■ EN 15650 – Ventilation for buildings – Fire dampers<br>■ EN 13501-3 – Classification: Fire resistant ducts and fire dampers [4]<br>■ EN 1366-2 – Fire resistance tests for installations: Fire dampers<br>■ EN 1751 Ventilation for buildings – Air terminal devices |
| **Declaration of performance** | DoP / FKA2-EU / DE / 002 |

[1)] Temperatures may differ for units with attachments. Details for other applications are available on request.

[2)] Data applies to uniform upstream and downstream conditions for the fire damper.

[3)] Condensation and the intake of humid fresh air have to be avoided as otherwise operation will be impaired or not possible.

[4)] Leakage rate of the fire damper system tested at 300 Pa and 500 Pa negative pressure.

* Damper blade with lip seal for sizes 1 and 2, damper blade with travel stop seal for size 3, see table *11* .

**Product sticker**

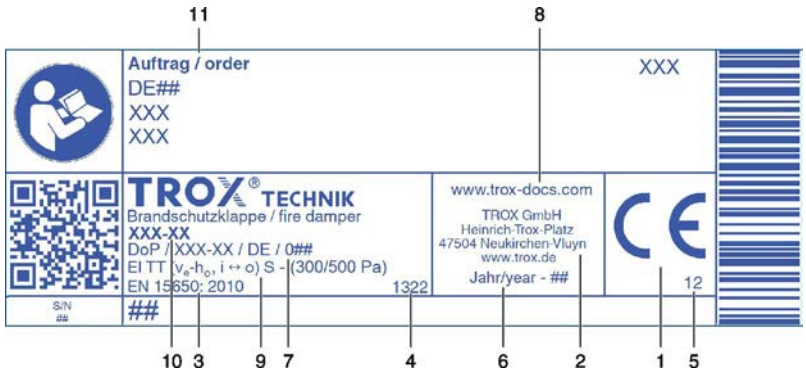



*Fig. 1: Product sticker (example)*

1 CE mark
2 Manufacturer's address
3 Number of the European standard and year of its publication
4 Notified body
5 The last two digits of the year in which the CE marking was affixed
6 Year of manufacture
7 No. of the declaration of performance
8 Website from which the DoP can be downloaded
9 Regulated characteristics; the fire resistance class depends on the application and may vary
10 Type
11 Order number

## 2.2 FKA2-EU with fusible link

**Dimensions and weight**

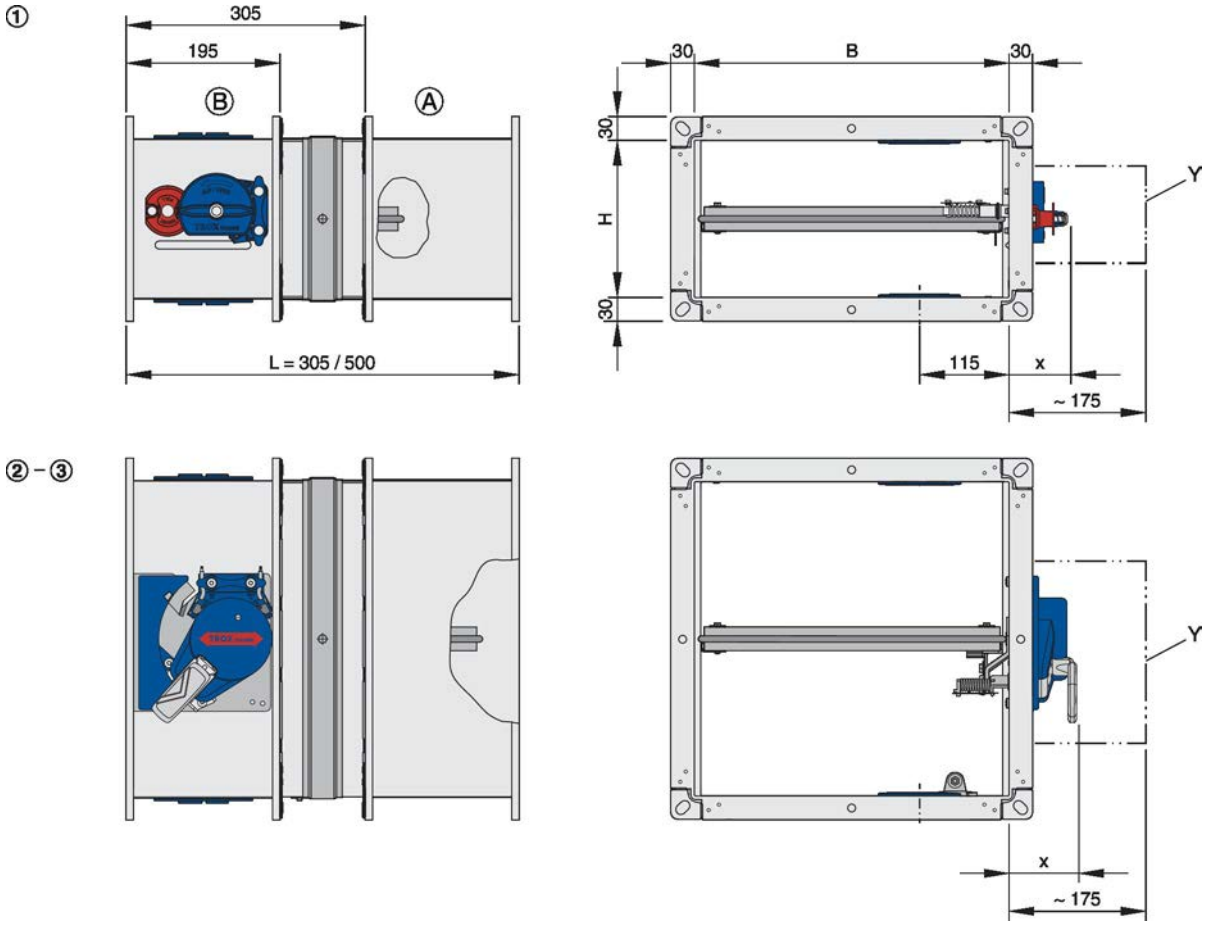



*Fig. 2: FKA2-EU with fusible link*

| | | | |
|---|---|---|---|
| B | Width of the fire damper (side B) | x | 75 mm size 1<br>87 mm size 2 and 3 |
| H | Height of the fire damper (side H) | Ⓐ | Installation side |
| L | Length of the fire damper (casing length) | Ⓑ | Operating side |
| Y | Keep clear to provide access for operation | | |

- Weight of FKA2-EU with fusible link, see table *11* .
- Sizes 1 to 3, see table *11* .

| Limit switches | |
|---|---|
| **Connecting cable length / cross section** | 1 m / 3 × 0.34 mm² |
| **Protection level** | IP 66 |
| **Type of contact** | 1 changeover contact, gold-plated |
| **Maximum switching current** | 0.5 A |
| **Maximum switching voltage** | 30 V DC, 250 V AC |
| **Contact resistance** | approx. 30 mΩ |

| Weight [kg] for casing length L = 305 [mm] / L = 500 [mm] | | | | | | | | | | | | | | | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H | B [mm] | | | | | | | | | | | | | | |
| [mm] | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 | |
| 100 | 4/5 | 5/6 | 6/8 | 7/9 | 8/11 | 9/12 | 10/13 | – | – | – | – | – | – | – | |
| 150 | 4/6 | 5/7 | 7/9 | 8/10 | 9/12 | 10/13 | 11/15 | – | – | – | – | – | – | – | |
| 200 | 5/7 | 6/8 | 7/10 | 9/12 | 10/13 | 11/15 | 12/16 | 15/20 | 16/21 | 21/27 | 23/29 | 24/31 | 26/32 | 27/34 | |
| 250 | 7/9 | 8/10 | 10/12 | 11/14 | 12/16 | 14/18 | 15/19 | 16/21 | 18/23 | 24/29 | 25/31 | 27/33 | 29/35 | 30/38 | [A] |
| 300 | 8/10 | 9/12 | 11/14 | 12/15 | 13/17 | 15/19 | 16/21 | 18/23 | 19/25 | 26/32 | 28/34 | 30/36 | 32/39 | 33/41 | |
| 350 | 8/11 | 10/13 | 11/15 | 13/17 | 15/18 | 16/20 | 18/22 | 24/29 | 26/32 | 28/34 | 30/37 | 32/39 | 34/42 | 36/44 | |
| 400 | 9/11 | 11/13 | 12/16 | 14/18 | 16/20 | 17/22 | 19/24 | 26/31 | 28/34 | 31/37 | 33/39 | 35/42 | 37/45 | 39/47 | |
| 450 | 10/12 | 11/14 | 13/17 | 15/19 | 17/21 | 23/28 | 26/31 | 28/34 | 30/36 | 33/39 | 35/42 | 38/45 | 40/48 | 43/50 | |
| 500 | 10/13 | 12/15 | 14/18 | 16/20 | 18/22 | 25/30 | 27/33 | 30/36 | 33/39 | 35/42 | 36/45 | 40/48 | 43/51 | 46/54 | |
| 550 | – | 15/19 | 18/22 | 21/26 | 24/28 | 26/32 | 29/35 | 32/38 | 35/41 | 37/44 | 40/47 | 43/51 | 46/54 | 49/57 | |
| 600 | – | 16/20 | 19/23 | 22/27 | 25/30 | 28/33 | 31/37 | 34/40 | 37/43 | 40/47 | 43/50 | 46/53 | 49/57 | 52/60 | [B] |
| 650 | – | 17/21 | 20/25 | 23/28 | 27/32 | 30/35 | 33/39 | 36/42 | 39/46 | 42/49 | 45/53 | 48/56 | 51/60 | 55/63 | |
| 700 | – | 18/22 | 21/26 | 25/30 | 28/33 | 31/37 | 35/41 | 38/44 | 41/48 | 44/52 | 48/55 | 51/59 | 54/63 | 58/67 | |
| 750 | – | 19/23 | 22/27 | 26/31 | 29/35 | 33/39 | 36/43 | 40/47 | 43/50 | 47/54 | 50/58 | 54/62 | 57/66 | 61/70 | |
| 800 | – | 20/24 | 24/28 | 27/33 | 31/36 | 34/40 | 38/44 | 42/49 | 45/53 | 49/57 | 53/61 | 56/65 | 60/69 | 64/73 | |

1)Construction with spring return actuator: [A] = Horizontally arranged spring return actuator, [B] = Vertically arranged spring return actuator

| Sizes |
|---|
| 1 |
| 2 |

| Sizes |
|---|
| 3 |

Damper blade with lip seal for sizes 1 and 2, damper blade with travel stop seal for size 3.

**Flange holes**

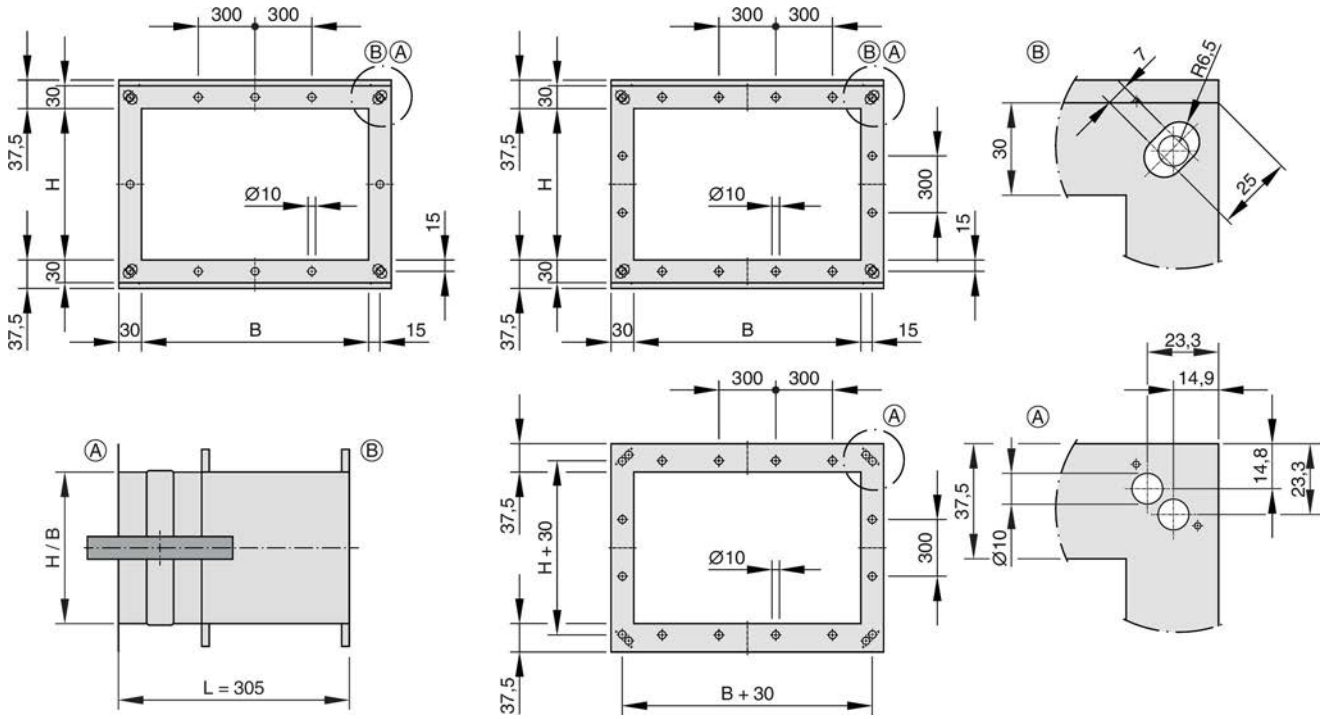



*Fig. 3: Flange holes L = 305 mm – uneven and even number of holes*

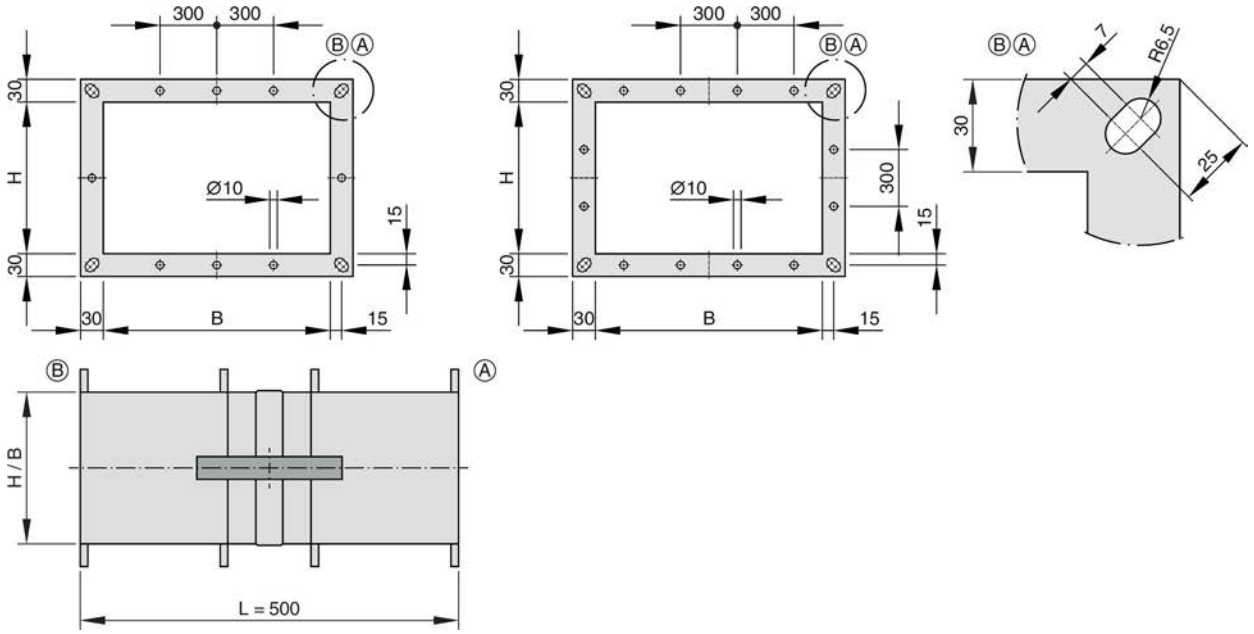



*Fig. 4: Flange holes L = 500 mm – uneven and even number of holes*

| B or H [mm] | 100<br>150 | 200<br>250 | 300<br>350 | 400<br>450 | 500<br>550 | 600 | 650<br>700 | 750<br>800 | 900<br>1000 | 1100<br>1200 | 1300<br>1400 | 1500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of holes each horizontal side* | – | 0 | 0 | 1 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 |
| Number of holes each vertical side* | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 2 | – | – | – | – |

* Number of holes horizontally (B) or vertically (H), but without corner holes; B < 400 mm and H only with corner holes

## 2.3 FKA2-EU with spring return actuator

**Dimensions and weight**

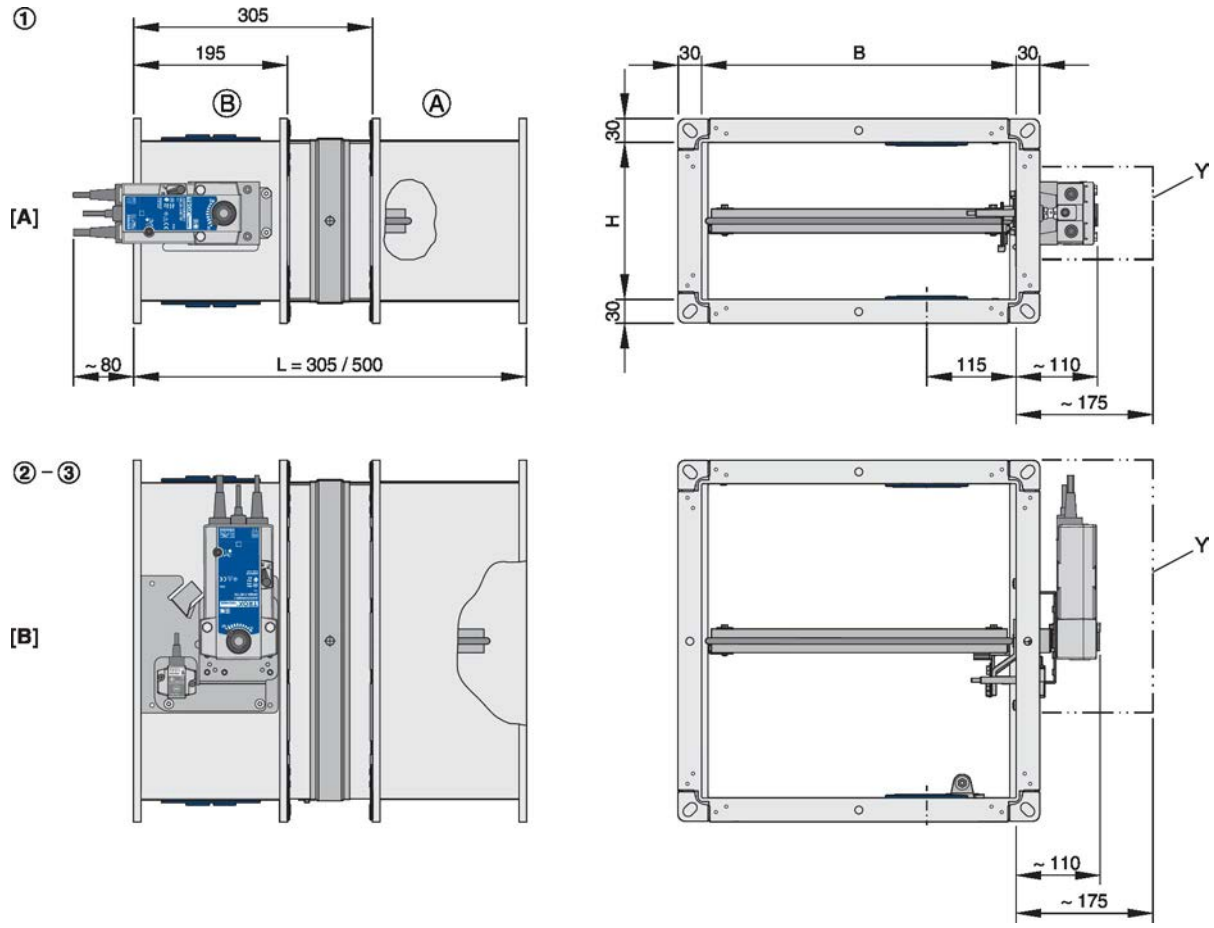



*Fig. 5: FKA2-EU with Belimo spring return actuator*

B Width of the fire damper (side B)
H Height of the fire damper (side H)
L Length of the fire damper (casing length)
[A] Horizontally arranged spring return actuator
[B] Vertically arranged spring return actuator
Y Keep clear to provide access for operation
Ⓐ Installation side
Ⓑ Operating side

- Weight of FKA2-EU with fusible link + approx. 1 kg (BFL... and BFN...), see table *11* .
- Sizes 1 to 3 and arrangement of the spring return actuator [A] or [B], see table *11* .

| Spring return actuator BFL... | | | |
|---|---|---|---|
| **Construction** | | **230-T TR** | **24-T-ST TR** |
| **Supply voltage** | | 230 V AC, 50/60 Hz | 24 V AC/DC, 50/60 Hz |
| **Functional range** | | 198 – 264 V AC | 19.2 – 28.8 V AC<br>21.6 – 28.8 V DC |
| **Power rating** | Spring winding mechanism / hold position | 3.5 W / 1.1 W | 2.5 W / 0.8 W |
| | Rating | 6.5 VA | 4 VA |
| **Running time** | Actuator / spring return | < 60 s / < 20 s | |
| **Limit switch** | Type of contact | 2 changeover contacts | |
| | Switching voltage | 5 – 120 V DC / 5 – 250 V AC | |
| | Switching current | 1 mA – 3 (0.5 inductive) A | |
| | Contact resistance | < 1 Ω (when new) | |
| **IEC protection class / IP protection** | | II / IP 54 | |
| **Storage temperature / ambient temperature** | | -40 – 55 °C / -30 – 55 °C [1] | |
| **Ambient humidity** | | ≤ 95% rh, no condensation | |
| **Connecting cable** | Actuator / limit switch | 1 m, 2 × 0.75 mm² / 1 m, 6 × 0.75 mm² (free of halogens) | |

Spring return actuator type BFL... for size 1.

[1] Up to 75 °C the safe position will definitely be reached.

| Spring return actuator BFN... | | | |
|---|---|---|---|
| **Construction** | | **230-T TR** | **24-T-ST TR** |
| **Supply voltage** | | 230 V AC, 50/60 Hz | 24 V AC/DC, 50/60 Hz |
| **Functional range** | | 198 – 264 V AC | 19.2 – 28.8 V AC<br>21.6 – 28.8 V DC |
| **Power rating** | Spring winding mechanism / hold position | 5 W / 2.1 W | 4 W / 1.4 W |
| | Rating | 10 VA (Imax 4 A @ 5 ms) | 6 VA (Imax 8.3 A @ 5 ms) |
| **Running time** | Actuator / spring return | < 60 s / < 20 s | |
| **Limit switch** | Type of contact | 2 changeover contacts | |
| | Switching voltage | 5 – 120 V DC / 5 – 250 V AC | |
| | Switching current | 1 mA – 3 (0.5 inductive) A | |
| | Contact resistance | < 1 Ω (when new) | |
| **IEC protection class / IP protection** | | II / IP 54 | |
| **Storage temperature / ambient temperature** | | -40 – 55 °C / -30 – 55 °C [1] | |
| **Ambient humidity** | | ≤ 95% rh, no condensation | |
| **Connecting cable** | Actuator / limit switch | 1 m, 2 × 0.75 mm² / 1 m, 6 × 0.75 mm² (free of halogens) | |

Spring return actuator type BFN... for size 2 and 3.

[1] Up to 75 °C the safe position will definitely be reached.

| Spring return actuator BF... | | | |
|---|---|---|---|
| **Construction** | | **230-TN TR** | **24-TN-ST TR** |
| **Supply voltage** | | 230 V AC, 50/60 Hz | 24 V AC/DC, 50/60 Hz |
| **Functional range** | | 198 – 264 V AC | 19.2 – 28.8 V AC<br>21.6 – 28.8 V DC |
| **Power rating** | Spring winding mechanism / hold position | 8.5 W / 3 W | 7 W / 2 W |
| | Rating | 11 VA | 10 VA |
| **Running time** | Actuator / spring return | < 120 s / approx. 16 s | |
| **Limit switch** | Type of contact | 2 changeover contacts | |
| | Switching voltage | 5 – 120 V DC / 5 – 250 V AC | |
| | Switching current | 1 mA ... 6 A | |
| | Contact resistance | < 100 mΩ | |
| **IEC protection class / IP protection** | | II / IP 54 | III / IP 54 |
| **Storage temperature / ambient temperature** | | -40 – 50 °C / -30 – 50 °C [1] | |
| **Ambient humidity** | | ≤ 95% rh, no condensation | |
| **Connecting cable** | Actuator / limit switch | 1 m, 2 × 0.75 mm² / 1 m, 6 × 0.75 mm² (free of halogens) | |

BF actuator optional, weight of FKA2-EU with fusible link + approx. 2 kg

[1] Up to 75 °C the safe position will definitely be reached.

**Dimensions and weight**

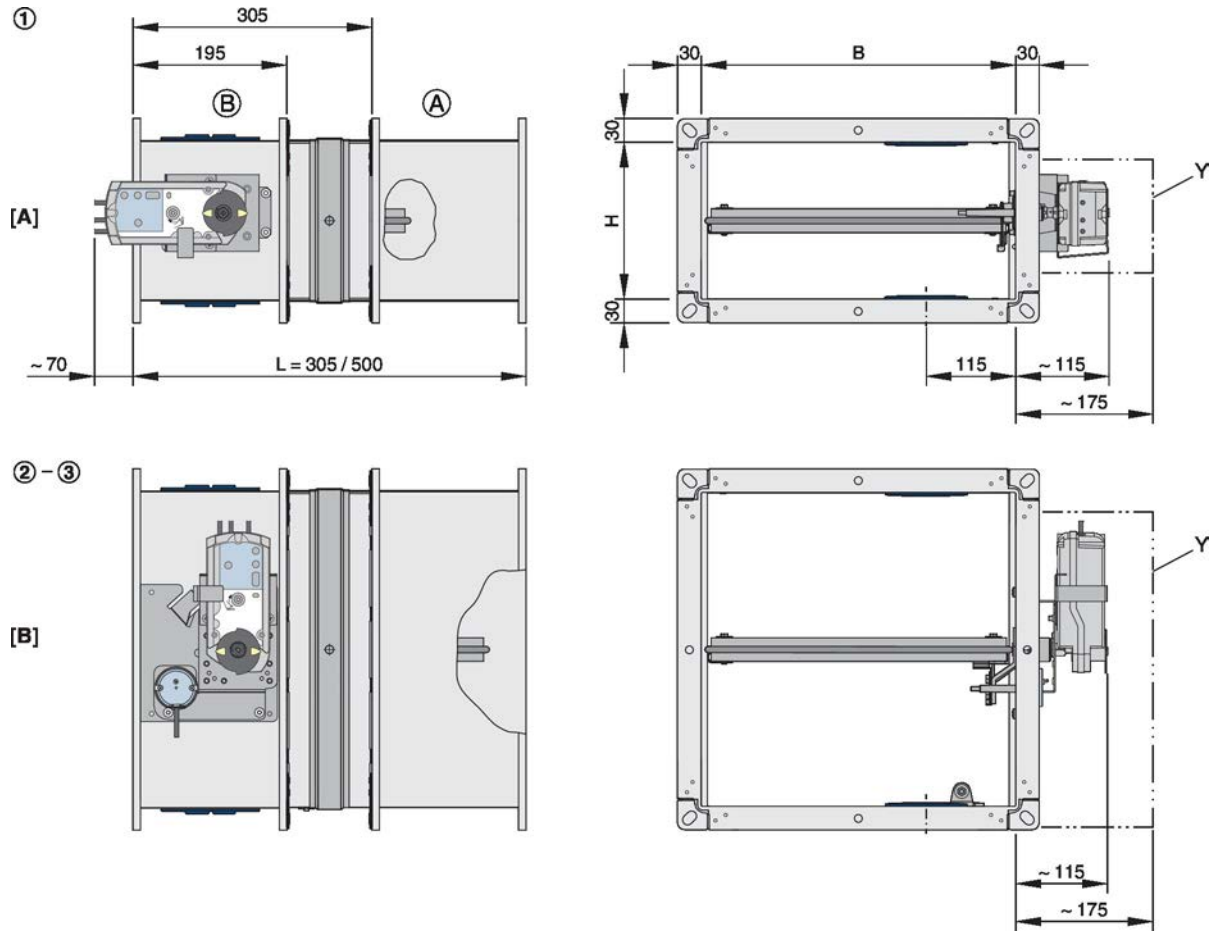



*Fig. 6: FKA2-EU with Siemens spring return actuator*

| | | | |
|---|---|---|---|
| B | Width of the fire damper (side B) | [B] | Vertically arranged spring return actuator |
| H | Height of the fire damper (side H) | Y | Keep clear to provide access for operation |
| L | Length of the fire damper (casing length) | Ⓐ | Installation side |
| [A] | Horizontally arranged spring return actuator | Ⓑ | Operating side |

- Weight of FKA2-EU with fusible link + approx. 1.4 kg (GRA... and GNA...), see table *11* .
- Sizes 1 to 3 and arrangement of the spring return actuator [A] or [B], see table *11* .

| Spring return actuator GRA... | | | |
|---|---|---|---|
| **Construction** | | **326.1E** | **126.1E** |
| **Supply voltage** | | 230 V AC, 50/60 Hz | 24 V AC, 50/60 Hz / 24 – 48 V DC |
| **Functional range** | | 198 – 264 V AC | 19.2 – 28.8 V AC<br>19.2 – 57.6 V DC |
| **Power rating** | Spring winding mechanism | 7 VA / 4.5 W | 5 VA / 3.5 W |
| | Hold position | 3.5 W | 2 W |
| **Running time** | Actuator / spring return | 90 s / 15 s | |
| **Limit switch** | Type of contact | 2 changeover contacts | |
| | Switching voltage | 24 – 230 V AC / 12 – 30 V DC | |
| | Switching current | AC: 6 A (inductive 2 A) / DC: 2 A | |
| **IEC protection class / IP protection** | | II / IP 42 or IP 54* | III / IP 42 or IP 54* |
| **Storage temperature / ambient temperature** | | -20 to 50 °C / -20 to 50 °C | |
| **Ambient humidity** | | < 95% rh, no condensation | |
| **Connecting cable** | Actuator / limit switch | 0.9 m, 6 × 0.75 mm² (free of halogens) | |

Spring return actuator type GRA... for size 1.

*Connecting cable at the bottom

| Spring return actuator GNA... | | | |
|---|---|---|---|
| **Construction** | | **326.1E** | **126.1E** |
| **Supply voltage** | | 230 V AC, 50/60 Hz | 24 V AC, 50/60 Hz / 24 – 48 V DC |
| **Functional range** | | 198 – 264 V AC | 19.2 – 28.8 V AC<br>19.2 – 57.6 V DC |
| **Power rating** | Spring winding mechanism | 7 VA / 4.5 W | 5 VA / 3.5 W |
| | Hold position | 3.5 W | 2 W |
| **Running time** | Actuator / spring return | 90 s / 15 s | |
| **Limit switch** | Type of contact | 2 changeover contacts | |
| | Switching voltage | 24 – 230 V AC / 12 – 30 V DC | |
| | Switching current | AC: 6 A (inductive 2 A) / DC: 2 A | |
| **IEC protection class / IP protection** | | II / IP 42 or IP 54* | III / IP 42 or IP 54* |
| **Storage temperature / ambient temperature** | | -20 to 50 °C / -20 to 50 °C | |
| **Ambient humidity** | | < 95% rh, no condensation | |
| **Connecting cable** | Actuator / limit switch | 0.9 m, 6 × 0.75 mm² (free of halogens) | |

Spring return actuator type GNA... for sizes 2 and 3.

*Connecting cable at the bottom

| Spring return actuator GGA... | | | |
|---|---|---|---|
| **Construction** | | **326.1E** | **126.1E** |
| **Supply voltage** | | 230 V AC, 50/60 Hz | 24 V AC, 50/60 Hz / 24 – 48 V DC |
| **Functional range** | | 198 – 264 V AC | 19.2 – 28.8 V AC<br>19.2 – 57.6 V DC |
| **Power rating** | Spring winding mechanism | 8 VA / 6 W | 7 VA / 5 W |
| | Hold position | 4 W | 3 W |
| **Running time** | Actuator / spring return | 90 s / 15 s | |
| **Limit switch** | Type of contact | 2 changeover contacts | |
| | Switching voltage | 24 – 230 V AC / 12 – 30 V DC | |
| | Switching current | AC: 6 A (inductive 2 A) / DC: 2 A | |
| **IEC protection class / IP protection** | | II / IP 42 or IP 54* | III / IP 42 or IP 54* |
| **Storage temperature / ambient temperature** | | -20 to 50 °C / -20 to 50 °C | |
| **Ambient humidity** | | < 95% rh, no condensation | |
| **Connecting cable** | Actuator / limit switch | 0.9 m, 6 × 0.75 mm² (free of halogens) | |

GGA actuator optional, weight of FKA2-EU with fusible link + approx. 2.5 kg

*Connecting cable at the bottom

### FKA2-EU with Joventa spring return actuator

The FKA2-EU can also be supplied with Joventa spring return actuator on request:

- SFR 2.90 T
- SFR 1.90 T
- SFR 1.90 T SLC

## 2.4 FKA2-EU with spring return actuator and duct smoke detector

**Dimensions and weight**

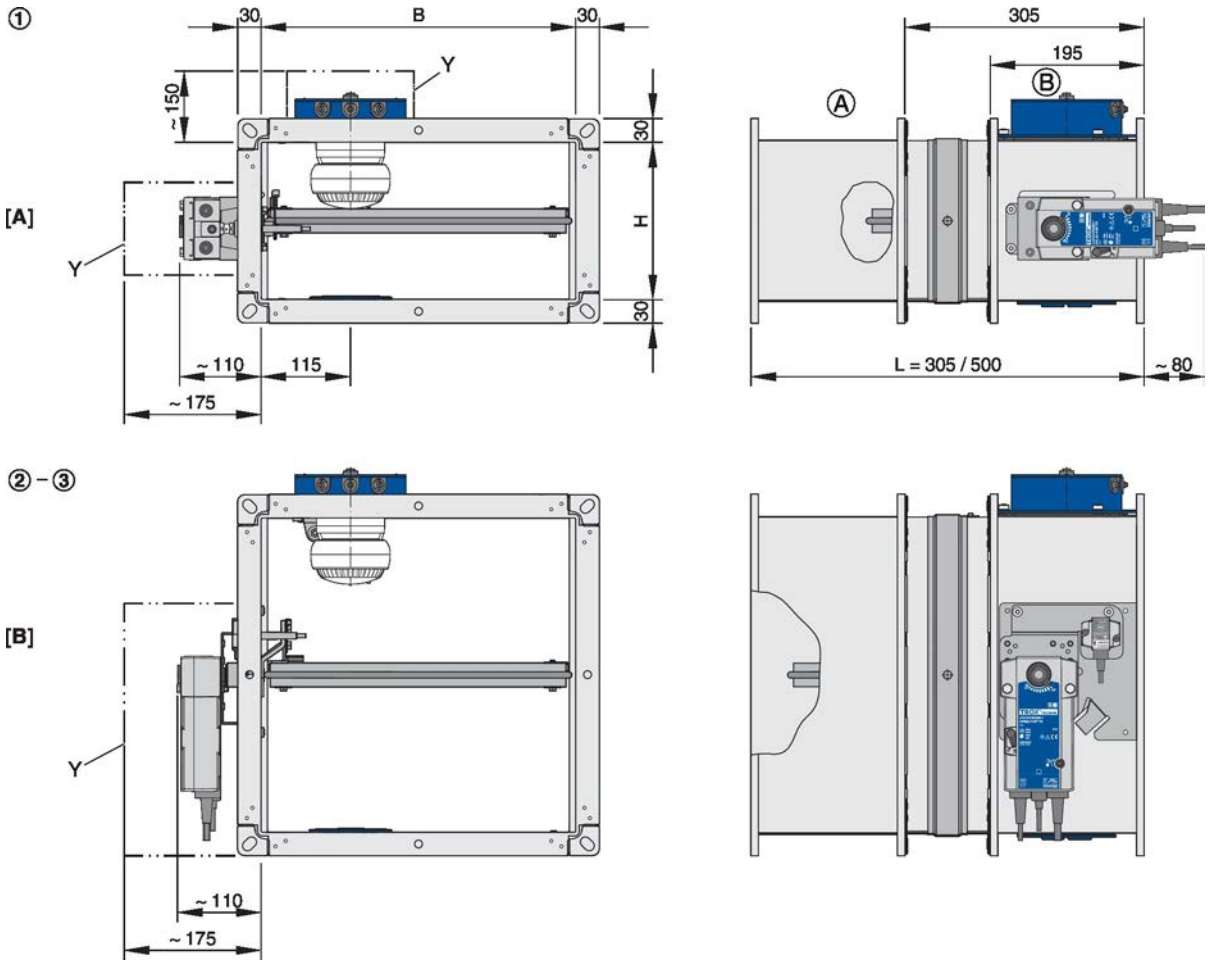



*Fig. 7: FKA2-EU with Belimo spring return actuator and duct smoke detector*

| | | | |
|---|---|---|---|
| B | Width of the fire damper (side B) | [B] | Vertically arranged spring return actuator |
| H | Height of the fire damper (side H) | Y | Keep clear to provide access for operation |
| L | Length of the fire damper (casing length) | Ⓐ | Installation side |
| [A] | Horizontally arranged spring return actuator | Ⓑ | Operating side |

- Weight of FKA2-EU with fusible link + approx. 2.5 kg (BFL... and BFN...), see table ↯ *11* .
- Technical data for spring return actuator, see table ↯ *14* and ↯ *16*
- Sizes 1 to 3 and arrangement of the spring return actuator [A] or [B], see table ↯ *11* .
- The type RM-O-3-D duct smoke detector must be installed in the lower inspection access and arranged at the top when assembling the fire damper. For technical details on the duct smoke detector, see the operating and installation manual for the type RM-O-3-D duct smoke detector.

## 2.5 FKA2-EU with fusible link and cover grille used as an air transfer unit

**Dimensions and weight**

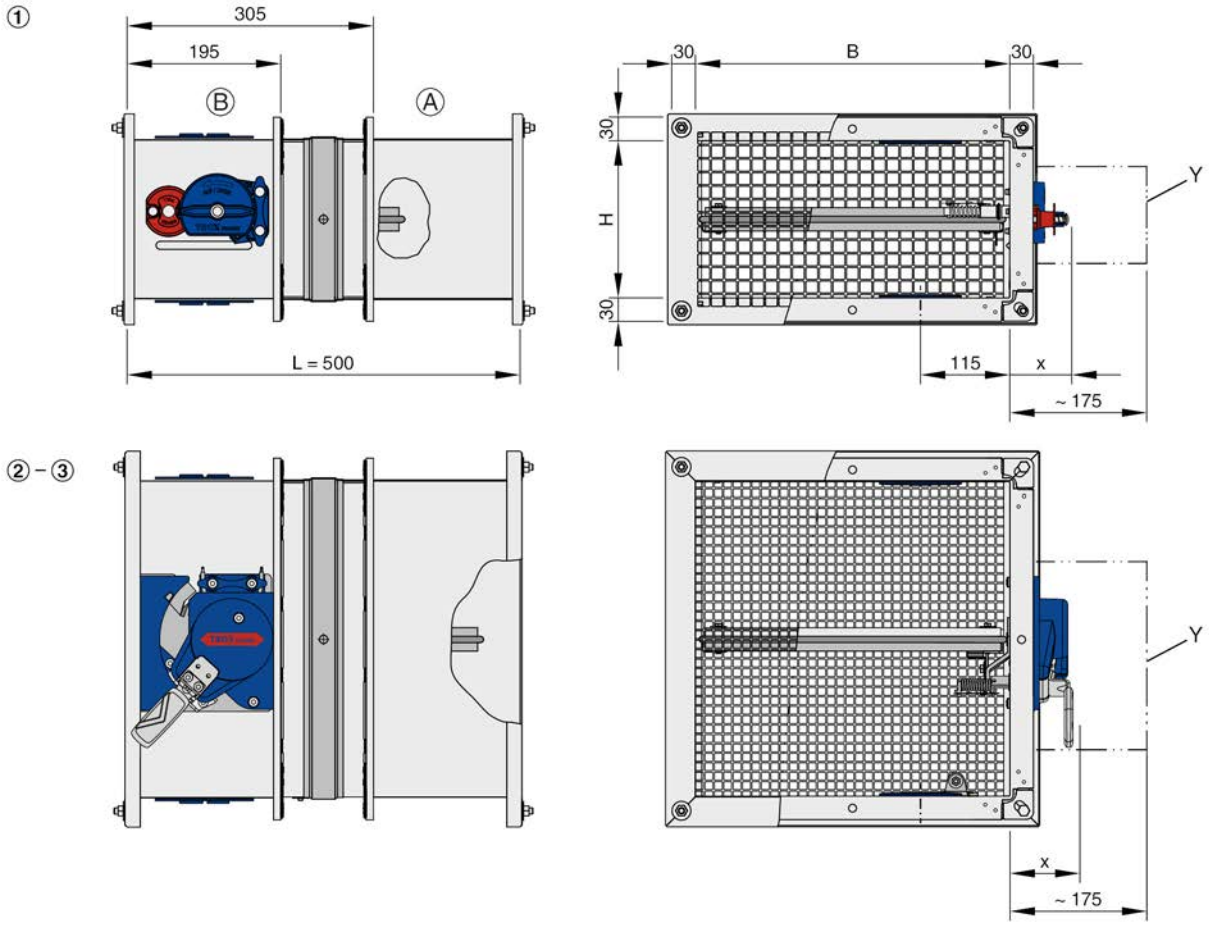



*Fig. 8: FKA2-EU with fusible link and cover grille used as an air transfer unit*

B Width of the fire damper (side B)
H Height of the fire damper (side H)
L Length of the fire damper (casing length)
Y Keep clear to provide access for operation
x 75 mm size 1
87 mm size 2 and 3
Ⓐ Installation side
Ⓑ Operating side

- Sizes 1 to 3, see table *11* .

**Note:** Approvals under building regulations may be required for the use of air transfer units. This must be checked and applied for by others.

## 2.6 FKA2-EU with spring return actuator and duct smoke detector used as an air transfer damper

**Dimensions and weight**

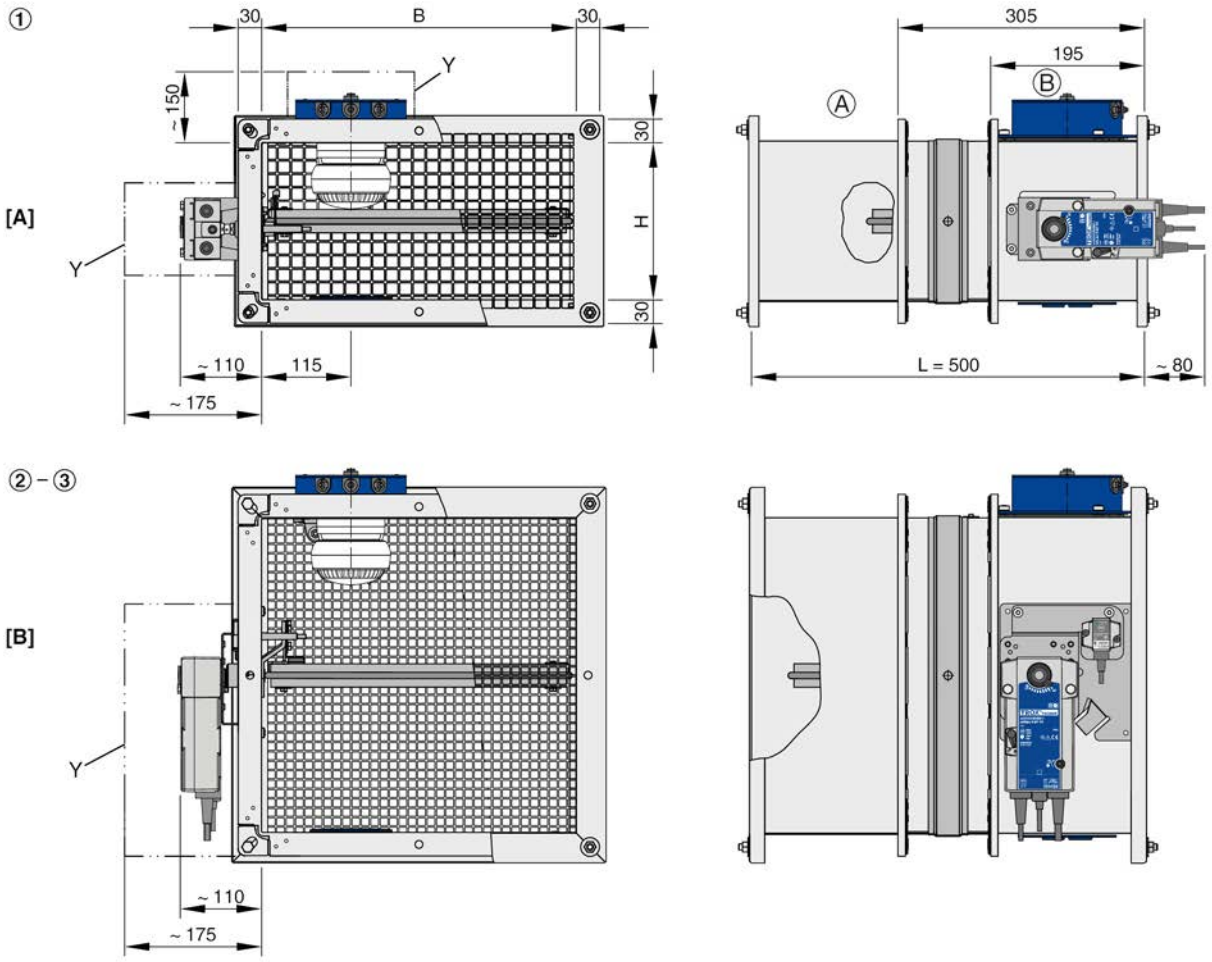



*Fig. 9: FKA2-EU with spring return actuator and duct smoke detector used as an air transfer damper*

| | | | |
|---|---|---|---|
| B | Width of the fire damper (side B) | [B] | Vertically arranged spring return actuator |
| H | Height of the fire damper (side H) | Y | Keep clear to provide access for operation |
| L | Length of the fire damper (casing length) | Ⓐ | Installation side |
| [A] | Horizontally arranged spring return actuator | Ⓑ | Operating side |

- Technical data for spring return actuator, see table ↯ *14* and ↯ *16*
- Sizes 1 to 3 and arrangement of the spring return actuator [A] or [B], see table ↯ *11* .
- The type RM-O-3-D duct smoke detector must be installed in the lower inspection access and arranged at the top when assembling the fire damper. For technical details on the duct smoke detector, see the operating and installation manual for the type RM-O-3-D duct smoke detector.

**Note:** Approvals under building regulations may be required for the use of air transfer openings. This must be checked and applied for by others.

# 3 Supply package, transport and storage

### Supply package

If attachments and accessories are supplied from the factory with the fire dampers, they are already taken into account in the order code.

Depending on the installation situation, supplementary materials for assembly and fixing may be needed to ensure proper installation, e.g. mortar, screws, mineral wool, etc.

Such materials are not included in the supply package, unless they are expressly described as included in the supply package.

The selection of additional attachments or accessories as well as the identification and provision of materials for assembly and fixing is the responsibility of those involved in the building project and must be done taking into account the required classification.

### 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.

- Fire damper
  - Attachments/accessories, if any
- Operating manual (1 per shipment)

***Colour hues on the damper blade***

*The blades of fire dampers are treated with a greenish impregnating agent. Resulting colour hues on the damper blade are due to technical reasons and do not constitute a defect of any kind.*

### Transport on site

If possible, take the product in its transport packaging up to the installation location.

### 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 -40 °C or above 50 °C.

### Packaging

Properly dispose of packaging material.

# 4 Parts and function

Fire dampers are used as safety related components in ventilation systems. The fire damper is used as a shut-off device to prevent fire and smoke from spreading through ducting. During normal operation the damper blade is open to enable air passage through the ventilation system.

If the temperature increases in the event of a fire, the damper blade closes. Release is triggered at 72 °C ( 95 °C in warm air ventilation systems). If the damper blade closes due to a temperature increase (i.e. in the event of a fire), it must not be reopened.

## 4.1 FKA2-EU with fusible link

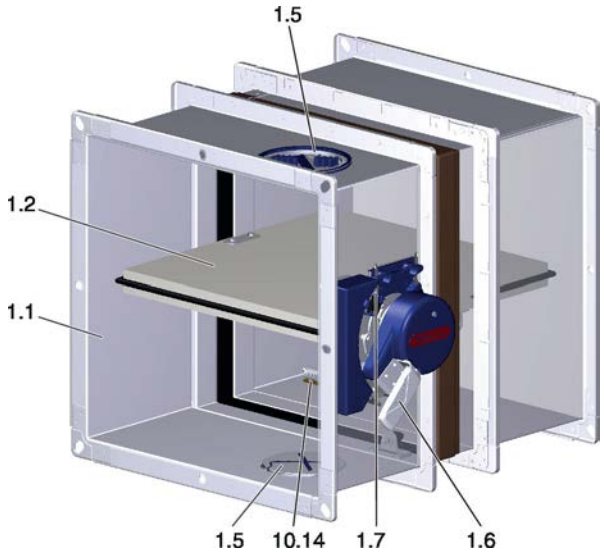



*Fig. 10: FKA2-EU with fusible link*

1.1 Casing (galvanised)
1.2 Damper blade
1.5 Inspection access
1.6 Handle
1.7 Interlock
10.14 Thermal release mechanism with fusible link

### Functional description

In fire dampers with a fusible link, damper closure is triggered by the fusible link. If the temperature inside the fire damper rises to 72 °C or 95 °C, the fusible link triggers a coil spring mechanism. The coil spring mechanism then causes the fire damper to close.

As an option, the fire damper can be either supplied or subsequently fitted with one or two limit switches. The limit switches can signal the damper blade position to the central BMS or fire alarm system. One limit switch each is required for damper blade positions OPEN and CLOSED.

## 4.2 FKA2-EU with spring return actuator

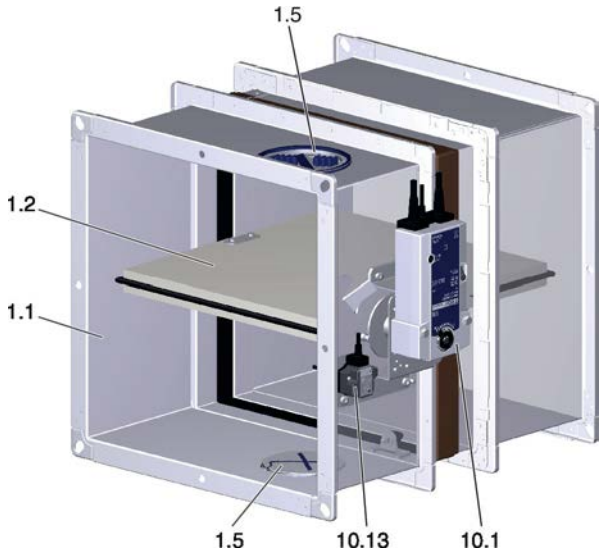



*Fig. 11: FKA2-EU with spring return actuator*

1.1 Casing (galvanised)
1.2 Damper blade
1.5 Inspection access
10.1 Spring return actuator
10.13 Thermoelectric release mechanism with temperature sensor

### Functional description

The spring return actuator enables the motorised opening and closing of the damper blade; it can be activated by the central BMS. Motorised fire dampers can be used to shut off ducts on a regular basis. As long as power is supplied to the actuator, the damper blade remains open. The spring return actuator closes the fire damper when one of the following events occur:

- Temperature in the fire damper > 72 °C or > 95 °C
- Ambient temperature outside the release mechanism > 72 °C
- The power supply is interrupted (power off to close)

As standard, the spring return actuator is equipped with limit switches that can be used to indicate the damper blade position.

## 4.3 FKA2-EU with spring return actuator and duct smoke detector

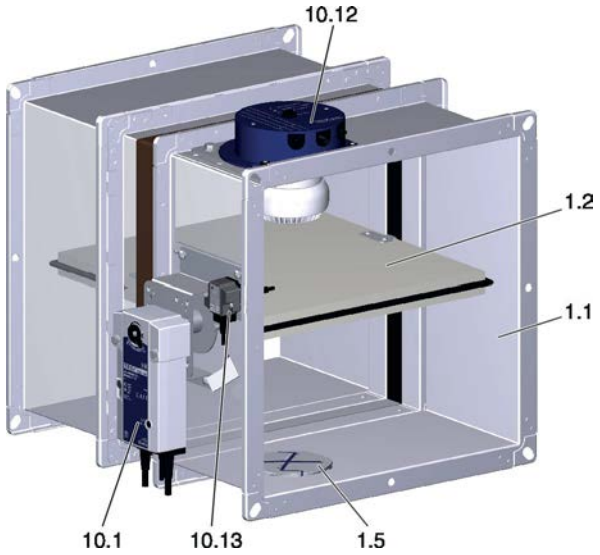



*Fig. 12: FKA2-EU with spring return actuator and duct smoke detector*

1.1 Casing (galvanised)
1.2 Damper blade
1.5 Inspection access
10.1 Spring return actuator
10.12 Duct smoke detector RM-O-3-D (fixed with adapter metal sheet)
10.13 Thermoelectric release mechanism with temperature sensor

### Functional description

If the duct smoke detector detects smoke, the spring return actuator closes the damper blade. This prevents smoke from being transferred via ductwork into adjacent fire compartments even before it reaches a temperature that would trigger the thermoelectric release mechanism.

As long as power is supplied to the actuator, the damper blade remains open. The spring return actuator closes the fire damper when one of the following events occur:

- The duct smoke detector detects smoke
- Temperature in the fire damper > 72 °C
- Ambient temperature outside the release mechanism > 72 °C
- The power supply is interrupted (power off to close)

## 4.4 FKA2-EU with fusible link and cover grille used as an air transfer unit

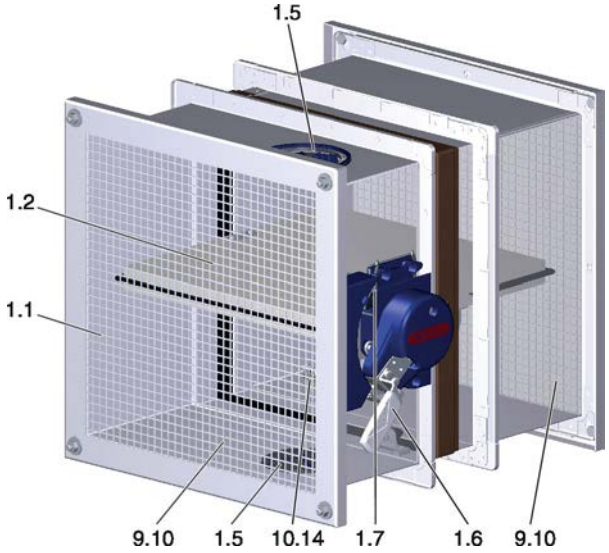



*Fig. 13: FKA2-EU with fusible link and cover grille used as an air transfer unit*

1.1 Casing
1.2 Damper blade
1.5 Inspection access
1.6 Handle
1.7 Interlock
9.10 Cover grilles
10.14 Thermal release mechanism with fusible link

### Functional description

Air transfer units prevent fire and smoke from spreading in buildings. The thermal release mechanism closes the air transfer unit when the release temperature (72 °C) is reached. Smoke can, however, spread below this temperature.

The air transfer unit consists of the FKA2-EU fire damper with a thermal release mechanism for 72 °C and with cover grilles on both sides, but without a duct smoke detector.

**Note:** Approvals under building regulations may be required for the use of air transfer units. This must be checked and applied for by others.

## 4.5 FKA2-EU with spring return actuator and duct smoke detector used as an air transfer damper

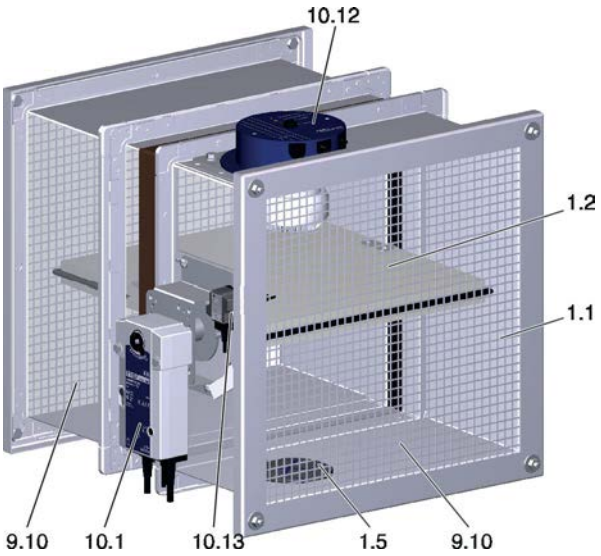



*Fig. 14: FKA2-EU with spring return actuator and duct smoke detector used as an air transfer damper*

1.1 Casing
1.2 Damper blade
1.5 Inspection access
9.10 Cover grilles
10.1 Spring return actuator
10.12 Duct smoke detector RM-O-3-D (fixed with adapter metal sheet)
10.13 Thermoelectric release mechanism with temperature sensor

### Functional description

If the duct smoke detector detects smoke, the spring return actuator closes the damper blade. This prevents smoke from being transferred into adjacent fire compartments even before it reaches a temperature that would trigger the thermoelectric release mechanism. As long as power is supplied to the actuator, the damper blade remains open. The spring return actuator closes the fire damper when one of the following events occur:

- The duct smoke detector detects smoke
- Temperature in the fire damper > 72 °C
- Ambient temperature outside the release mechanism > 72 °C
- The power supply is interrupted (power off to close)

If the duct smoke detector detects smoke, the spring return actuator closes the damper blade. This prevents smoke from being transferred into adjacent fire compartments even before it reaches a temperature that would trigger the thermoelectric release mechanism. As long as power is supplied to the actuator, the damper blade remains open. The spring return actuator closes the fire damper when one of the following events occur:

The air transfer damper consists of the FKA2-EU fire damper with a thermal release mechanism for 72 °C, with cover grilles on both sides and with a duct smoke detector.

**Note:** Approvals under building regulations may be required for the use of air transfer openings. This must be checked and applied for by others.

# 5 Installation

## 5.1 Installation situations

> ***Note***
> *The performance classes of the fire damper and the wall or ceiling slab may differ. The lower performance class determines the performance class of the overall system.*

| Installation situations | | | | | | |
|---|---|---|---|---|---|---|
| **Supporting construction** | **Installation location** | **Minimum thickness [mm]** | **Class of performance EI TT ($v_e$–$h_o$, i ↔ o) S up to** | **Installation type/casing length L [mm]** | | **Chapter** |
| | | | | **305** [1] | **500** | |
| **Solid walls** | in | 100 | EI 120 S | N | N | 48 |
| | | 100 | EI 90 S | N | N | 48 |
| | | 80 [2] | EI 90 S | N | N | 48 |
| | in, combined assembly | 100 | EI 90 S | N | N | 48 |
| | in, multiple mounting | 100 | EI 90 S | N | N | 52 |
| | in, multiple mounting common air duct | 100 | EI 120 S | – | N | 54 |
| | | 100 | EI 90 S | – | N | 54 |
| | in, partly with mineral wool | 100 | EI 90 S | N | N | 57 |
| | on, installation kit WA | 100 | EI 90 S | – | E | 58 |
| | removed, wall mounting, Installation kit WE | 100 | EI 90 S | – | E | 59 |
| | removed, wall penetration, Installation kit WE | 100 | EI 90 S | – | E | 59 |
| | in, fire batt | 100 | EI 120 S | W | W | 63 |
| | | 100 | EI 90 S | W | W | 63 |
| | in, fire batt, multiple mounting | 100 | EI 90 S | W | W | 63 |
| **Metal stud walls** | in | 94 | EI 120 S | N | N | 69 |
| | | 94 | EI 90 S | N | N | 69 |
| | | 94 | EI 60 S | N | N | 69 |
| | | 94 | EI 30 S | N | N | 69 |
| | in, combined assembly | 94 | EI 90 S | N | N | 69 |
| | in, multiple mounting | 94 | EI 90 S | N | N | 75 |
| | in, multiple mounting, common air duct | 94 | EI 120 S | – | N | 77 |
| | | 94 | EI 90 S | – | N | 77 |
| | in, installation kit ES | 94 | EI 120 S | – | E | |

[1] An extension piece may be required

[2] Gypsum wall boards EN 12859

[3] Thickness increased near the installation opening

N = Mortar-based installation

E = Installation kit

W = Fire batt

E = Dry mortarless installation

| Installation situations | | | | | | |
|---|---|---|---|---|---|---|
| **Supporting construction** | **Installation location** | **Minimum thickness [mm]** | **Class of performance EI TT ($v_e$–$h_o$, i ↔ o) S up to** | **Installation type/casing length L [mm]** | | **Chapter** |
| | | | | **305** [1] | **500** | |
| | | 94 | EI 90 S | – | E | *80* |
| | | 94 | EI 60 S | – | E | *80* |
| | | 94 | EI 30 S | – | E | *80* |
| | in, with mineral wool | 94 | EI 60 S | – | T | *82* |
| | in, with plasterboard cladding/ fire-rated plasterboard strips | 94 | EI 90 S | – | T | *83* |
| | removed, wall penetration, Installation kit WE | 94 | EI 90 S | – | E | *84* |
| | in, fire batt | 94 | EI 120 S | W | W | *86* |
| | | 94 | EI 90 S | W | W | *86* |
| | | 80 | EI 60 S | W | W | *86* |
| | | 75 | EI 30 S | W | W | *86* |
| | in, fire batt, Multiple mounting | 94 | EI 90 S | W | W | *86* |
| **Timber stud walls** | in | 130 | EI 120 S | N | N | *92* |
| | | 130 | EI 90 S | N | N | *92* |
| | | 110 | EI 60 S | N | N | *92* |
| | | 105 | EI 30 S | N | N | *92* |
| | in, multiple mounting | 130 | EI 90 S | N | N | *96* |
| | in, multiple mounting, common air duct | 130 | EI 90 S | – | N | *99* |
| | in, installation kit ES | 130 | EI 120 S | E | E | *102* |
| | | 130 | EI 90 S | E | E | *102* |
| | | 110 | EI 60 S | E | E | *102* |
| | | 105 | EI 30 S | E | E | *102* |
| | in, with mineral wool | 130 | EI 60 S | – | T | *104* |
| | in, fire batt | 130 | EI 120 S | W | W | *106* |
| | | 130 | EI 90 S | W | W | *106* |
| | | 110 | EI 60 S | W | W | *106* |
| | | 105 | EI 30 S | W | W | *106* |
| | in, fire batt, Multiple mounting | 130 | EI 90 S | W | w | *106* |
| **Half-timbered constructions** | in | 140 | EI 120 S | N | N | *92* |

[1] An extension piece may be required

[2] Gypsum wall boards EN 12859

[3] Thickness increased near the installation opening

N = Mortar-based installation

E = Installation kit

W = Fire batt

E = Dry mortarless installation

| Installation situations | | | | | | |
|---|---|---|---|---|---|---|
| **Supporting construction** | **Installation location** | **Minimum thickness [mm]** | **Class of performance EI TT ($v_e$–$h_o$, i ↔ o) S up to** | **Installation type/casing length L [mm]** | | **Chapter** |
| | | | | **305** [1] | **500** | |
| | | 110 | EI 30 S | N | N | 92 |
| | in, multiple mounting | 140 | EI 90 S | N | N | 96 |
| | in, multiple mounting, common air duct | 140 | EI 90 S | – | N | 99 |
| | in, installation kit ES | 140 | EI 120 S | – | E | 102 |
| | | 140 | EI 90 S | – | E | 102 |
| | | 110 | EI 30 S | – | E | 102 |
| | in, with mineral wool | 140 | EI 60 S | – | T | 104 |
| | in, fire batt | 140 | EI 120 S | W | W | 106 |
| | | 140 | EI 90 S | W | W | 106 |
| | | 110 | EI 30 S | W | W | 106 |
| | in, fire batt, Multiple mounting | 140 | EI 90 S | W | W | 106 |
| **Solid wood / cross laminated timber walls** | in | 95 | EI 90 S | N | N | 113 |
| | in, installation kit ES | 95 | EI 90 S | – | E | 114 |
| | in, with mineral wool | 95 | EI 60 S | – | T | 115 |
| | in, fire batt | 95 | EI 90 S | W | W | 116 |
| **Shaft wall with metal support structure** | in | 90 | EI 90 S | N | N | 119 |
| | | 80 | EI 90 S | N | N | 119 |
| | | 75 | EI 30 S | N | N | 119 |
| | in, combined assembly | 90 | EI 90 S | N | N | 119 |
| | in, installation kit ES | 90 | EI 90 S | – | E | 124 |
| | | 80 | EI 90 S | – | E | 124 |
| | | 75 | EI 90 S | – | E | 124 |
| **Shaft wall without metal support structure** | in, installation kit ES | 40 | EI 90 S | – | E | 128 |
| **Solid ceiling slabs** | in | 100 (125) [3] | EI 120 S | N | N | 130 |
| | in, multiple mounting | 100 (125) [3] | EI 90 S | N | N | 130 |
| | in, combined assembly | 150 | EI 90 S | N | N | 130 |
| | in, concrete base | 100 | EI 120 S | N | N | 136 |
| | in, with concrete base, Multiple mounting | 100 | EI 90 S | N | N | 136 |

[1] An extension piece may be required

[2] Gypsum wall boards EN 12859

[3] Thickness increased near the installation opening

N = Mortar-based installation

E = Installation kit

W = Fire batt

E = Dry mortarless installation

| Installation situations | | | | | | |
|---|---|---|---|---|---|---|
| **Supporting construction** | **Installation location** | **Minimum thickness [mm]** | **Class of performance EI TT ($v_e$–$h_o$, i ↔ o) S up to** | **Installation type/casing length L [mm]** | | **Chapter** |
| | | | | **305** [1] | **500** | |
| | in, concrete base, combined assembly | 100 | EI 90 S | N | N | *136* |
| | in, combined with wooden beam ceilings | 125 | EI 90 S | N | N | *141* |
| | in, combined solid wood ceiling | 125 | EI 90 S | N | N | *142* |
| | on, installation kit WA | 125 | EI 90 S | – | E | *143* |
| | underneath (horizontal duct), installation kit WE | 125 | EI 90 S | – | E | *144* |
| | in, fire batt | 150 | EI 120 S | W | W | *146* |
| | | 125 | EI 90 S | W | W | *146* |
| | in, fire batt, Multiple mounting | 150 | EI 90 S | W | W | *146* |
| **Solid wood ceilings** | in | 140 | EI 90 S | N | N | *150* |
| | in, with additional cladding | 112.5 | EI 90 S | N | N | *150* |
| | in, installation kit ES | 140 | EI 90 S | – | E | *151* |
| | in, installation kit ES, with additional cladding | 112.5 | EI 90 S | – | E | *151* |
| **Wooden beam ceilings** | in | 167.5 | EI 90 S | N | N | *152* |
| | | 155 | EI 60 S | N | N | *152* |
| | | 142.5 | EI 30 S | N | N | *152* |
| | in, installation kit ES | 167.5 | EI 90 S | – | E | *154* |
| | | 155 | EI 60 S | – | E | *154* |
| | | 142.5 | EI 30 S | – | E | *154* |

[1] An extension piece may be required

[2] Gypsum wall boards EN 12859

[3] Thickness increased near the installation opening

N = Mortar-based installation

E = Installation kit

W = Fire batt

E = Dry mortarless installation

## 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!**

**Risk of damage to the fire damper**

– Protect the fire damper from contamination and damage.
– Cover openings and release mechanism (e.g. with plastic) to protect them from mortar and dripping water.
– Do not remove the transport and installation protection (if any) until installation is complete.

- Control elements, electric actuator and inspection access panel must remain accessible for maintenance.
- Loads imposed on the casing may impair the function of the fire damper. Install and connect the damper in such a way that no loads will be imposed on the installed damper. Ducts of combustible or non-combustible materials may be connected to fire dampers if the ducts have been installed straight and without any torsion.
- Before installation: Perform a functional test, then close the fire damper ↳ *165* .
- The adhesive tape in the installation area must NOT be removed.
- Protect the fire damper from humidity and condensation as they will damage the fire damper.
- The construction variants with stainless steel or powder-coated casing and additionally with an impregnated damper blade meet more critical requirements for corrosion protection.
- If the wall or ceiling is very thick, use an extension piece.
- When installing the FKA2-EU, the statics of the support structure (wall / ceiling) must be ensured by others, even in the event of a fire.
- Unless stated otherwise for a particular installation situation:
  – Each fire damper must be installed in a separate installation opening. The distance between two fire dampers is ≥ 200 mm.
  – The distance from load-bearing structural elements is ≥ 75 mm.
  – A maximum of two fire dampers must be installed in a single installation opening.
  – Fire dampers are allowed to be in mortar-based installation at a distance of ≥ 40 mm from steel beams, wooden beams or wooden ceilings with fire protection claddings. The fire-resistant cladding (panel material) must be manufactured in accordance with a national or European certificate and must lie against the supporting structure without cavities in the area of the fire damper.
- If several fire dampers are used on the same duct, the following has to be ensured: If one damper closes, the maximum permitted upstream velocity for the other fire dampers that remain open must not be exceeded. This has to be ensured by others; it can be ensured, for example, by switching off the fan or by using actuators with limit switches that ensure that not too many dampers close at the same time.
- As ducts may expand and walls may become deformed in the event of a fire, we recommend using flexible connectors for the following installation situations:
  - Lightweight partition walls
  - Lightweight shaft walls
  - Fire batt systems

  The flexible connectors should be installed in such a way that they absorb both tension and compression. Flexible ducts can be used as an alternative.

  Ducting must be installed in such a way that it does not impose any significant loads on the fire damper in the event of a fire. This can be achieved by a non-straight duct, i.e. by bends or elbows, for example. Be sure to comply with the relevant national guidelines and regulations.
- The interior of the fire damper must be accessible for maintenance work and cleaning. For this purpose, the type FKA2-EU fire damper has two inspection accesses ↳ *24* . Depending on the installation configuration it may be necessary to provide additional inspection access points in the connecting ducts.
- Load-bearing components
  Solid ceiling slabs and concrete beams as well as load-bearing solid walls are called load-bearing components.

### After installation

- Clean the fire damper.
- Remove transport and installation protection or the prop, if any. In case of mortar-based installation this protection must not be removed until the mortar has hardened.
- Test the function of the fire damper.
- Connect the ductwork.
- Make electrical connections.

### Equipotential bonding

The flange of the fire damper can be used for equipotential bonding; no holes must be drilled into the damper casing.

In the event of a fire, loads from the equipotential bonding must not affect the fire damper.

### Thermal insulation

When using thermal insulation, especially for outside or exhaust air, fully bonded panel insulation materials made of elastomeric foams (synthetic rubber) of fire rating class B - S3,D0 can be used (e.g. AF / Armaflex or Armaflex Ultima from Armacell). Be sure to comply with the relevant national guidelines and regulations for combustible building materials and smoke formation classes.

Insulation is non-hazardous in terms of fire safety if the following requirements are met:

- The insulation does not impair the function of the fire damper.
- The fire damper remains accessible.
- the inspection accesses and the rating plate are accessible and
- The insulation does not penetrate walls or ceilings.

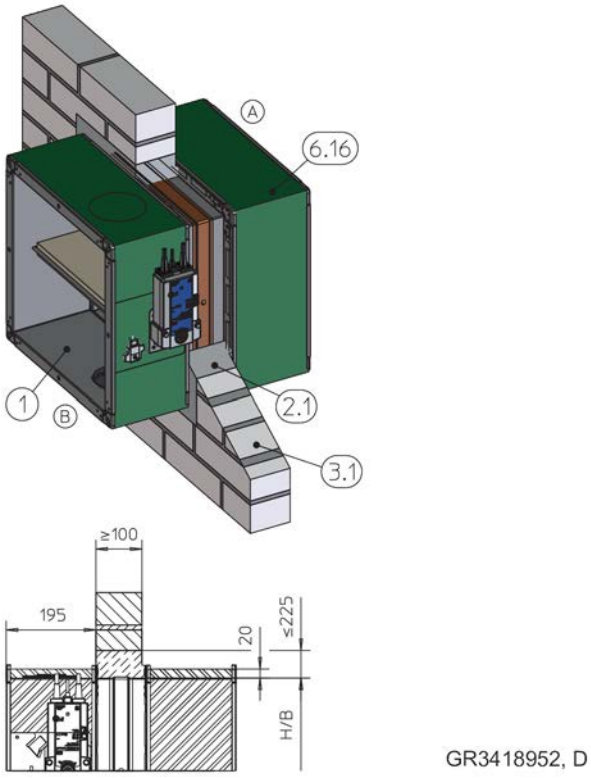



*Fig. 15: Thermal insulation*

1 FKA2-EU
2.1 Mortar
3.1 Solid wall
6.16 Insulation (elastomeric foam, flame-resistant, non-dripping), around the perimeter, actuator and release mechanism as well as inspection accesses must be accessible

**Note:** The installation situation shown is representative of all supporting constructions.

### Extension pieces

To ensure that the fire damper can be connected to the ducting after installation even if the wall or ceiling is fairly thick, the fire damper should be extended with a suitable extension piece (attachment or by others) on the installation side, see also extension pieces *161* .

**Installation positions**

The fire damper may be installed so that the damper blade shaft is horizontal or vertical. The position of the release mechanism is not critical but the mechanism must remain accessible for maintenance (take application-specific restrictions into account).

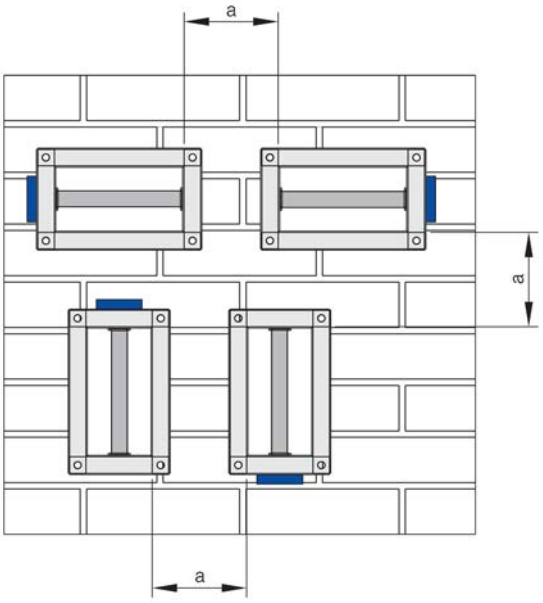



*Fig. 16: Blade shaft horizontal or vertical*

a Minimum distance between two fire dampers. Unless specified otherwise in the respective installation description, the installation is carried out in separate installation openings. The distance between two fire dampers is ≥ 200 mm.

The fire damper with assembled duct smoke detector must be installed in a horizontal installation position, duct smoke detector at the top, (deviations on request).

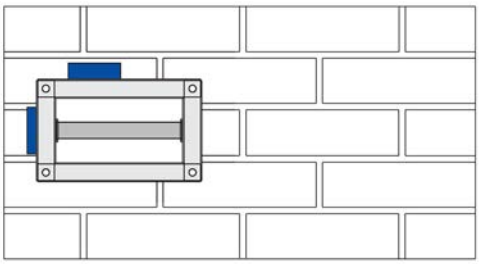


*Fig. 17: Horizontal installation*

### Distances

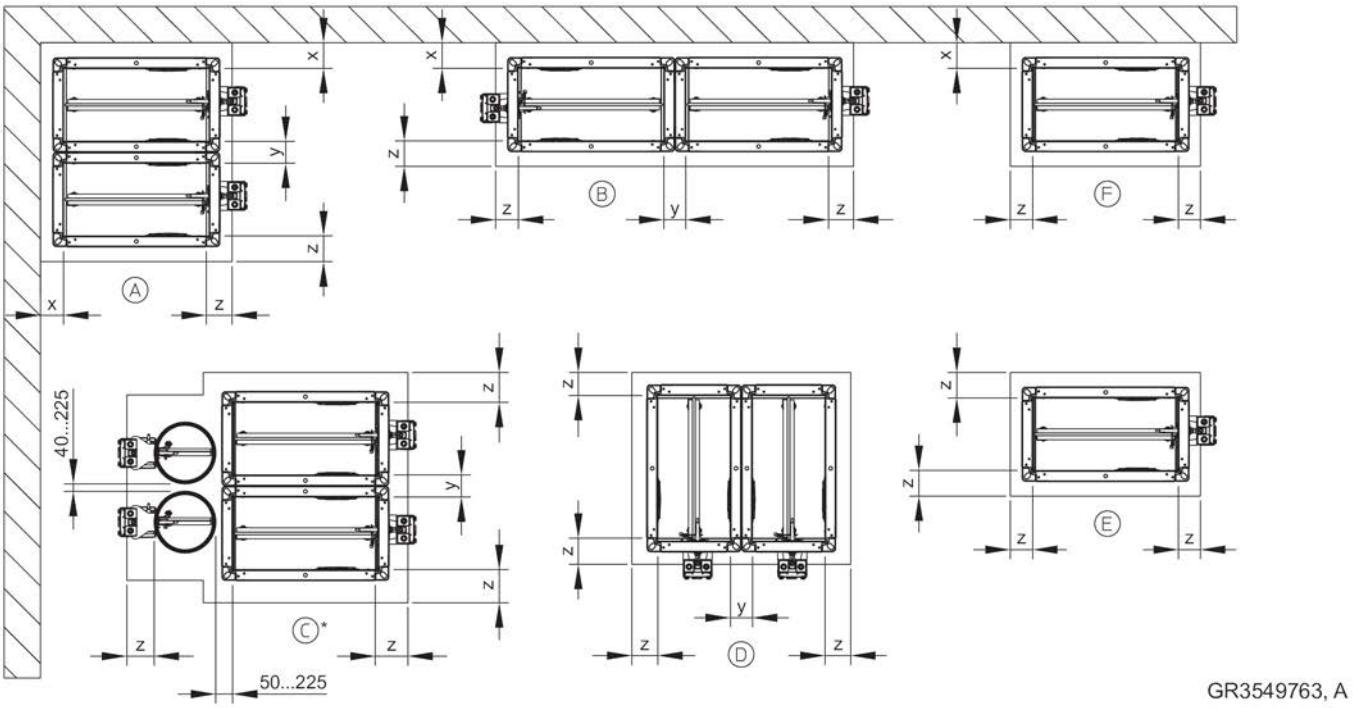



*Fig. 18: Overview of distances*

* mixed installation with fire damper Type FKRS-EU

### Distances (unless otherwise specified in the respective installation details)

| Installation type | x [mm] | y [mm] | z [mm] |
|---|---|---|---|
| Mortar-based installation | 40 – 225 | 60 – 225 | ≤ 225 |
| Fire batt installation | 40 – 600 | ≥ 200 [2] | 40 – 600 |
| Partial mortaring [1] | ~ 50 | 60 – 225 | ≤ 225 |

[1] solid wall only

[2] Installation into separate installation openings

### Installation orientations (see installation details for fire resistance properties)

| Supporting construction | Installation type | | |
|---|---|---|---|
| | Mortar-based installation | Dry mortarless installation | Fire batt installation |
| Solid wall | A – F | | A, B, D – F |
| Gypsum wall boards | E, F | | |
| Lightweight partition wall with metal support | A – F | E, F | A, B, D – F |
| Timber stud wall / half-timbered construction | A, B, D – F | E, F | A, B, D – F |
| Solid wood wall / cross-laminated timber wall | E, F | E, F | E, F |
| Shaft wall | A – F | E, F | |
| Solid ceiling slab | A, B, D – F | | E, F |
| In / in combination with solid wood ceiling | E, F / A, B, D – F | | |
| In / in combination with wooden beam ceiling | E, F / A, B, D – F | | |

**Perimeter gap »s1«**

- With mortar-based installation the perimeter gap »s1« must not exceed 225 mm (wall and ceiling). The perimeter gap »s« must be large enough so that mortar can be filled in even in case of thicker walls or ceilings. Be sure to close larger wall openings or holes beforehand and in a suitable way, i.e. depending on the type of wall. When there are larger openings in the solid ceiling slabs, the dampers must be encased in concrete when the ceiling section is created. The gap must be large enough so that mortar can be filled in. We recommend a gap of at least 20 mm (note the minimum installation opening size). Reinforcement should meet structural requirements.

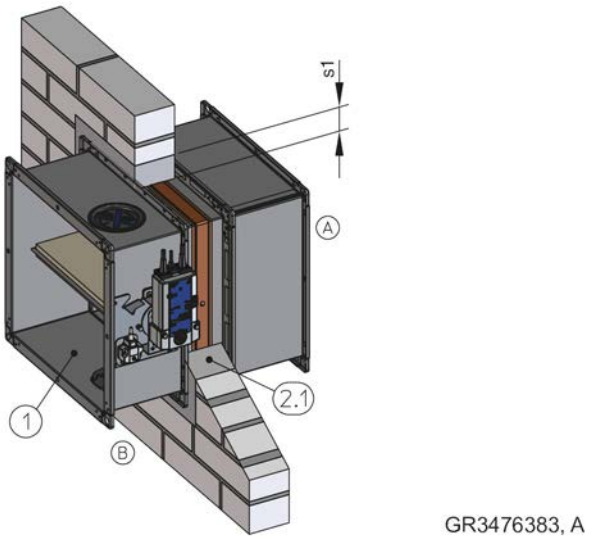



*Fig. 19: Perimeter gap*

1 FKA2-EU
2.1 Mortar
s1 Perimeter gap

Maximum gap widths are based on EN 15882-2. Larger gaps do not have an adverse effect with regard to fire protection and are in our opinion not critical.

- Cover all openings and control elements of the fire damper (e.g. with plastic) to protect them from contamination.
- In case of mortar-based installation it may be necessary to protect the sides of the fire damper casing against deformation, e.g. with a prop.
- Position the fire damper in the centre of the installation opening, then push it in so that the distance between the operating side flange and the wall / ceiling is 195 mm. Connect extension piece or duct if required.
- 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.
- If you install the fire damper as the solid wall or ceiling slab is being completed, perimeter gap »s1« is not required. The open spaces between the fire damper and the wall must be closed off with mortar; for installation into solid ceiling slabs, concrete can be used. Reinforcements should meet structural requirements.
- The mortar bed depth should be equal to the thickness of the wall. If trim panels with appropriate fire resistance are used, a mortar bed depth of 100 mm suffices.

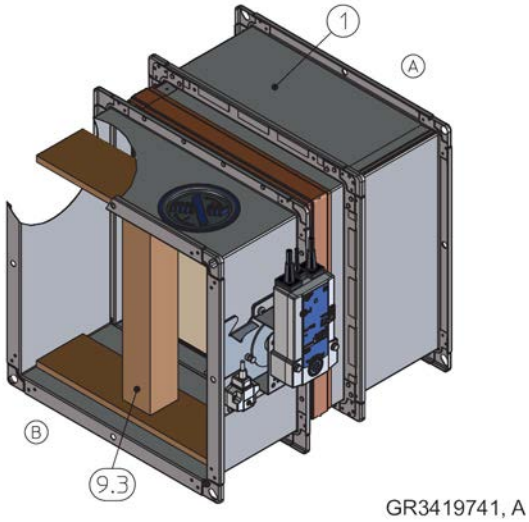



*Fig. 20: FKA2-EU with prop*

1 FKA2-EU
9.3 Prop

Mortar

- 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

### 4-way arrangement with common duct

- Direct assembly of 4 fire dampers and connection/ sealing using blanking plates provided by others.
- The blanking plates (galvanised steel, min. 1 mm, approx. 60 mm wide, L = 2 × W / H + 60 mm) are positioned on a duct seal and screwed on with self-tapping screws spaced approx. 150 mm apart.

### Mineral wool as filling material

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

### Fire-resistant cladding

When you use installation kit WE, the following materials are acceptable for the cladding of fire dampers and ducts:

- Promatect® LS35
- Promatect® L500
- Promatect® AD40

### Installation with installation kit ES

- Casing length L = 500 mm
- The installation kit must be mounted on the fire damper by others, see Figs. Fig. 27 to Fig. 29
- Enough clear space is required for installation of the installation kit.
- The installation kit ES is fastened with dry wall screws ∅ 5.5 mm and brackets, in which case the dry wall screws must always engage with the stud frame. The dry wall screws must be long enough so that the damper can be firmly fastened. The holes of the fixing points on the B side are made in the factory.
- For installation near the floor or ceiling, professionally shorten the installation kit on one side. Then use the brackets that were previously on sides B and fix them in the upper parts of sides H (see installation details). The holes must be pre-drilled to ∅ 4 mm.

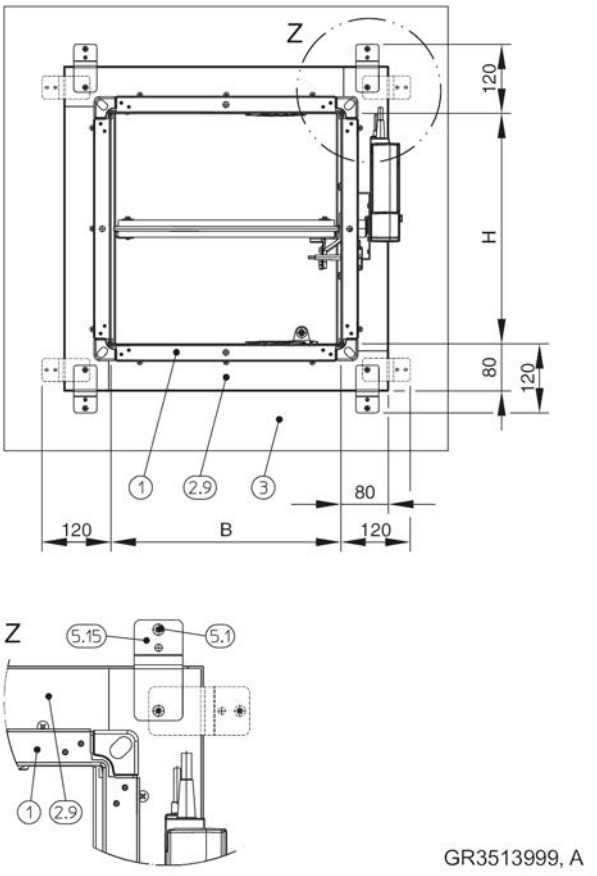



*Fig. 21: Installation kit – free space (with normal installation)*

1 FKA2-EU
2.9 Installation kit ES
3 Wall
5.1 Dry wall screw, to be provided by others
5.15 Bracket

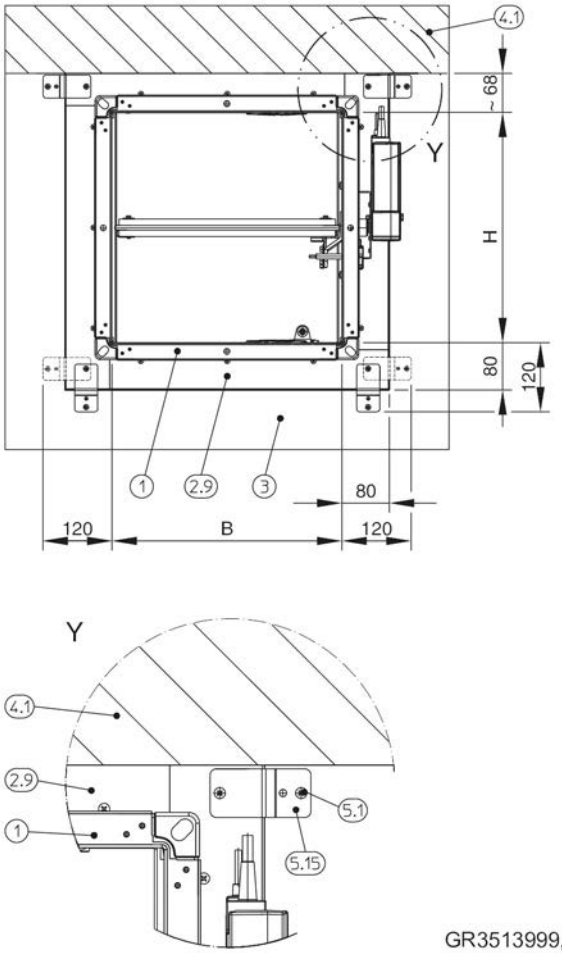



*Fig. 22: Installation kit – free space (for installation near the floor or ceiling)*

1 FKA2-EU
2.9 Installation kit ES (cover plate, shortened by others)
3 Wall
4.1 Solid ceiling slab / solid floor
5.1 Dry wall screw, to be provided by others
5.15 Bracket

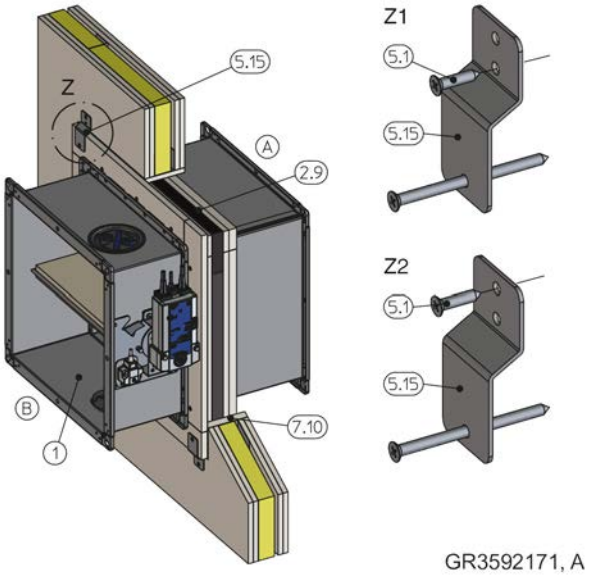



*Fig. 23: Fastening the installation kit to the stud frame*

1 FKA2-EU
2.9 Installation kit ES
5.1 Dry wall screw, to be provided by others
5.15 Bracket
7.10 Trim panels
Z1 Fastening – with or without simple trim panels
Z2 Fastening – with double trim panels

**Installation with installation kit WA on solid walls and ceiling slabs**

- Casing length L = 500 mm
- The installation kit must be mounted on the fire damper by others, see to Fig. 33
- Enough clear space is required to attach the installation kit to the wall, at least 150 mm around the perimeter Cladding and wall / ceiling connection must be made on 4 sides.
- The fire damper is flanged onto a sheet steel duct shortened so as to be flush-mounted in the wall/ ceiling.
- The fire damper is fixed to the wall / ceiling slab and the cladding is fixed with suitable wallplugs with suitability certificate for fire resistance, alternatively using push through installation.
- For additional installation details see corresponding installation situation.

**Installation with installation kit WE remote from walls and ceilings**

- Casing length L = 500 mm
- The installation kit must be mounted on the fire damper by others, see to and Fig. 34
- Installation is carried out on sheet steel ducts without any openings, with fire-resistant cladding.
- The wall / ceiling slab connections as well as lead-throughs must be made according to these instructions. Fittings must be configured according to Promat® specifications.
- Cladding and the wall / ceiling slab connection must be made on 4 sides. Enough clear space is required to attach to the wall, at least 155 mm around the perimeter.
- Fire dampers remote from walls and ceiling slabs must be suspended or fixed, see *157*
- Suspension systems with L ≥ 1.5 m require fire-resistant insulation. This is done with panel materials or mineral wool insulation according to the respective manufacturer's specifications.
- For further installation details and components to be provided by others, see the respective installation situation and the Promat manual.

**Installation with fire batt**

- The distance from the operating side flange to the wall or ceiling has to be 195 mm.
- Fire batt systems consist of two layers of mineral wool slabs, gross density ≥ 140 kg/m³.
- Apply fire-resistant sealant to the cut faces of the mineral wool slabs and fit them tightly into the installation opening. Seal any gaps between the mineral wool slabs and the installation opening, gaps between the cut faces of cut-to-size pieces, and gaps between slabs and the fire damper by applying fire-resistant sealant or coating. Use only sealant or coating that is suitable for the fire batt system.
- Apply ablative coating to the mineral wool slabs, joints, transitions and any imperfections on the coated mineral wool slabs; coating thickness ≥ 2.5 mm.
- No use in combination with a flexible ceiling joint.
- Fix fire dampers on both sides of the wall, see *158* .
- If the ceiling is fairly thick, you may use additional layers of mineral wool slabs on side A.

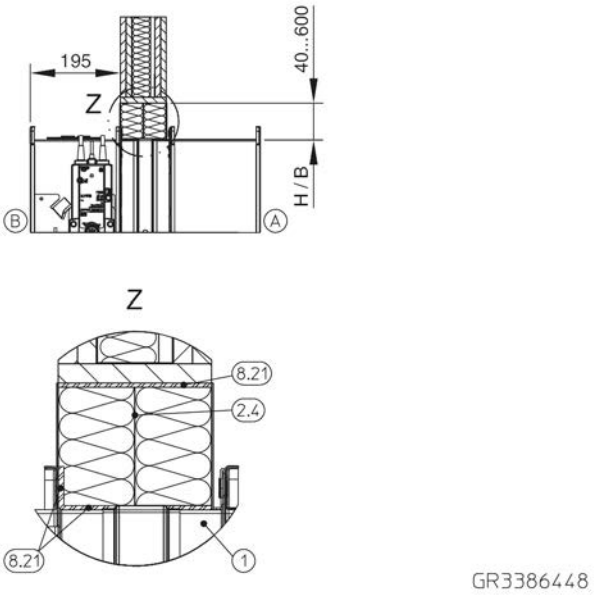



*Fig. 24: Fire-resistant sealant*

1 FKA2-EU
2.4 Coated board system
8.21 Firestop sealant

### Fire batt systems

The following fire batt systems are acceptable (fire batt systems have to be provided by others). As for mineral wool slabs, all slabs that are part of the system and have been approved by the manufacturer may be used.

Promat®

- Ablative coating Promastop®-CC
- Ablative coating Promastop®-I
- Ablative coating Intumex-CSP
- Ablative coating Intumex-AC

Hilti

- Ablative coating CFS-CT
- Ablative coating CP 673
- Fire-resistant sealant CFS-S ACR

HENSEL

- Ablative coating HENSOMASTIK® 5 KS Farbe
- Fire-resistant sealant HENSOMASTIK® 5 KS Spachtel

SVT

- Ablative coating PYRO-SAFE FLAMMOTECT-A Farbe
- Fire-resistant sealant PYRO-SAFE FLAMMOTECT-A Spachtel

OBO Bettermann

- Ablative coating PYROCOAT® ASX Farbe
- Fire-resistant sealant PYROCOAT® ASX Spachtel

Würth

- Ablative coating Würth Ablationsbeschichtung I ('Ablation coating I')

AGI

- Ablative coating PYRO-SAFE Flammotect Combi S90
- Fire-resistant sealant AGI Flammotect COMBI S90

| Fire batt system | B max. [mm] | H max. [mm] |
|---|---|---|
| Promat® | ≤ 3750 | ≤ 1840 |
| Hilti | ≤ 3000 | ≤ 2115 |
| Hensel | ≤ 1900 | ≤ 1400 |

| Fire batt system | B max. [mm] | H max. [mm] |
|---|---|---|
| SVT | | |
| OBO Bettermann | | |
| Würth | | |
| AGI | | |

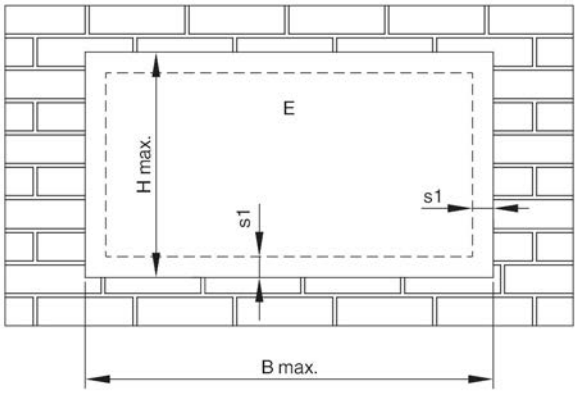



*Fig. 25: Fire batt – installation in solid walls and ceiling slabs, lightweight partition, timber stud wall, half-timbered construction and solid wood walls*

E Installation area

### Dimensions and distances for fire batt systems for wall installation

| Damper combination up to EI 90 S | s1 min. [mm] | s1 max. [mm] |
|---|---|---|
| FKA2-EU | 40 | 600 |

### Requirements for wall and ceiling systems

FKA2-EU fire dampers may be installed in wall and ceiling systems if these walls and ceilings have been erected in compliance with the relevant regulations and according to 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

- Solid walls or compartment walls made of, for example, concrete, aerated concrete, masonry, or solid gypsum wallboards according to EN 12859 (without open spaces), gross density ≥ 350 kg/m³.
- Wall thickness W ≥ 100 mm, solid gypsum wallboards W ≥ 80 mm.
- Provide each installation opening and core drilled holes according to the local and structural conditions and with regard to the dimensions of the fire damper.

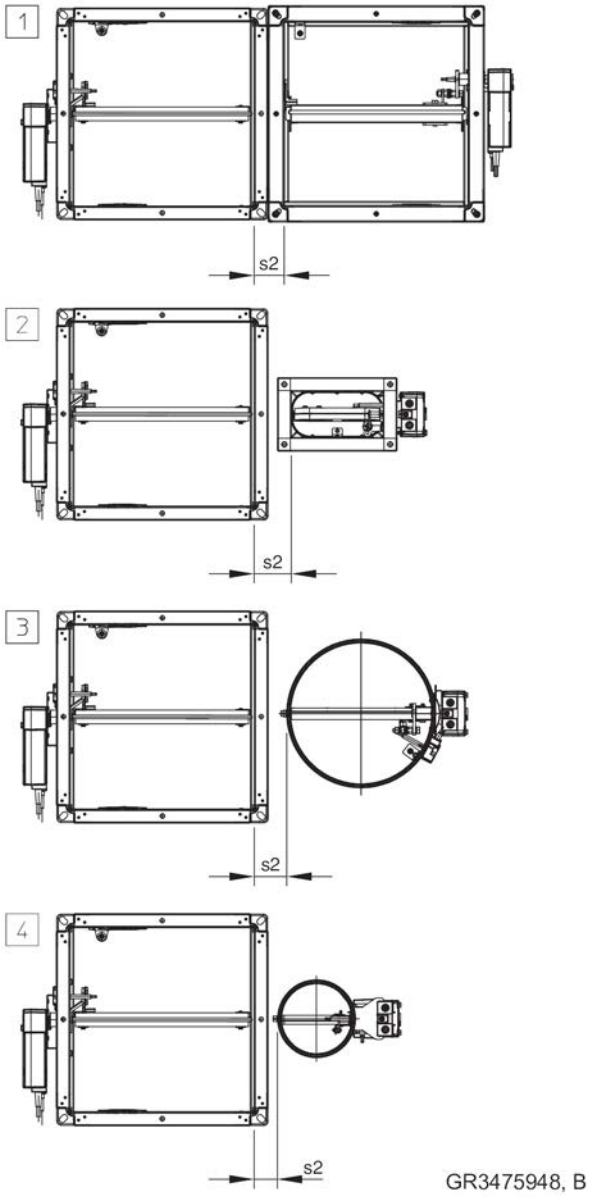



*Fig. 26: Distance from the FKA2-EU to other TROX fire dampers in mortar-based installation*

### Distance between different TROX fire dampers in mortar-based installation in solid walls (one installation opening)

| Item no. | Damper combination up to EI 90 S | s2 [mm] |
|---|---|---|
| 1 | FKA2-EU – FK-EU | 65 – 225 |
| 2 | FKA2-EU – FKS-EU | 80 – 150 |
| 3 | FKA2-EU – FKR-EU | 70 – 120 (80 – 120 with flange construction) |
| 4 | FKA2-EU – FKRS-EU | 50 – 225 |

### Lightweight partition walls with metal support structure

- Lightweight partition walls, safety partition walls or walls to provide radiation protection, with metal support structure or steel support structure (box sections), with European classification to EN 13501-2 or equivalent national classification.
- Cladding on both sides made of gypsum bonded or cement bonded panel materials, fibre-reinforced gypsum or fire-rated calcium silicate boards.
- Wall thickness W ≥ 94 mm, for compartment walls or safety partition walls W ≥ 100 mm.
- Distance between metal support structures ≤ 625 mm; distance between metal support structures in compartment walls ≤ 312.5 mm.
- Compartment walls and safety partition walls may be provided with sheet steel inserts and may require less space between the metal studs.
- Create an installation opening with trimmers (studs and noggings).
- If necessary, provide trim panels and screw-fix them 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.
- If reinforcing boards are required, they must be screwed to the metal support structure at intervals of approx. 100 mm.
- Installation only permitted in non-load-bearing walls (load-bearing wall constructions on request).

**Lightweight partition walls with timber support structure / half-timbered construction**

- Lightweight partition walls, either timber stud walls or half-timbered constructions, with European classification to EN 13501-2 or equivalent national classification.
- Cladding on both sides made of gypsum bonded or cement bonded panel materials, fibre-reinforced gypsum or fire-rated calcium silicate boards.
- Wall thickness W ≥ 130 mm (W ≥ 110 for F60, W ≥ 105 for F30); wall thickness of half-timbered constructions W ≥ 140 mm (W ≥ 110 for F30).
- Erect the timber stud wall or half-timbered construction according to the manufacturer's instructions.
- Additional layers of cladding (if stated in the usability certificate for the wall) and double stud constructions are approved.
- Create an opening in the timber support structure with studs and trimmers.
- Trim panels and reinforcing boards have to be made of cladding material and have to be fixed to the frame.

**Solid wood walls**

- Fire-resistant solid wood walls or cross laminated timber walls with European or national certificate.
- Wall thickness W ≥ 95 mm (with reinforcing board W ≥ 100 mm near the installation opening).
- If required, additional gypsum bonded or cement bonded panel materials or fibre-reinforced gypsum board are permitted.

**Shaft walls with metal support structure**

- Shaft walls or additional leaves with metal support structure or steel support structure (box sections), with European classification to EN 13501-2 or equivalent national classification.
- Cladding on one side made of gypsum bonded or cement bonded panel materials, fibre-reinforced gypsum or fire-rated calcium silicate boards.
- Wall thickness W ≥ 90 mm (W ≥ 75 for F30); cladding / reinforcing boards 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).
- If necessary, provide trim panels and screw-fix them to the support structure
- Installation is carried out with the actuator on the outside of the shaft.
- If reinforcing boards are required, they must be screwed to the metal support structure at intervals of approx. 100 mm.

**Shaft walls without metal support structure**

- Shaft walls without metal support structure, with European classification according to EN 13501-2 or equivalent national classification.
- Cladding on one side made of gypsum bonded or cement bonded panel materials, fibre-reinforced gypsum or fire-rated calcium silicate boards.
- Wall thickness W ≥ 50 mm.
- If reinforcing boards are required, they must be screwed on at intervals of approx. 100 mm.

**Solid ceiling slabs**

- Solid ceiling slabs without open spaces, made of concrete or aerated concrete, gross density ≥ 450 kg/m³.
- Ceiling slab thickness D ≥ 100 mm, thickness increased locally to D ≥ 125 mm (unless specified otherwise in the installation detail).
- Partial solid ceiling slab thickness ≥ 125 mm as combination with fire-resistant wooden beam ceilings (gluelam also) and solid wood ceilings.
- Provide each installation opening according to the local and structural conditions and with regard to the size of the fire damper.

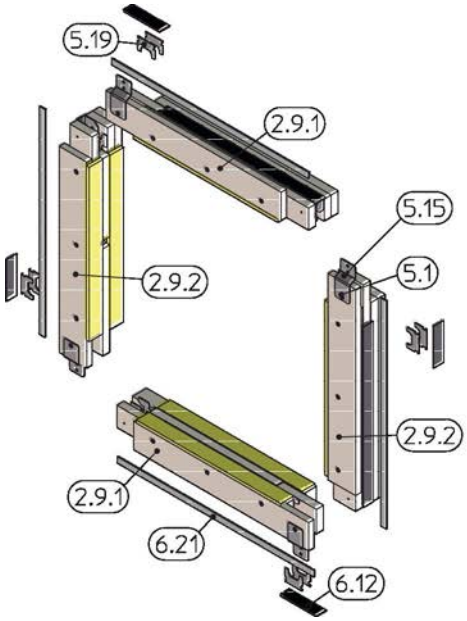
**Solid wood ceilings**

- Solid wood or cross-laminated timber ceilings.
- Ceiling thickness D ≥ 140 mm or D ≥ 112.5 mm with supplementary fire-resistant cladding.

**Wooden beam ceilings**

- Wooden beam or gluelam construction.
- Ceiling thickness D ≥ 142.5 mm (ceiling-dependent) with supplementary fire-resistant cladding.

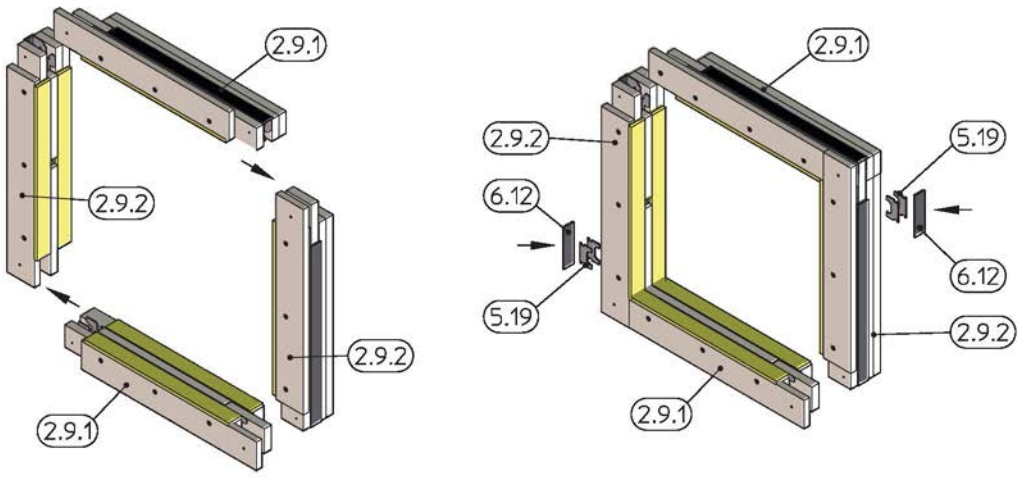
### 5.3.1 Installation kit supply package and assembly ES




GR3387176, A

*Fig. 27: Installation kit supply package ES for dry mortarless installation*

2.9 Installation kit ES
2.9.1 B part (2 ×)
2.9.2 H part (2 ×)
5.1 Dry wall screw 5 × 50 mm (4 – 8 pieces, dependent on the damper size)
5.15 Bracket (4 – 8 pieces, dependent on the damper size)
5.19 Connecting clip (8 pieces)
6.12 Intumescent seal (4 pieces)
6.21 Kerafix 2000 sealing tape




GR3387176, A

*Fig. 28: Assembly of installation kit ES for dry mortarless installation*

2.9 Installation kit ES
2.9.1 B part (2 ×)
2.9.2 H part (2 ×)
5.19 Connecting clip (8 pieces)
6.12 Intumescent seal (4 pieces)

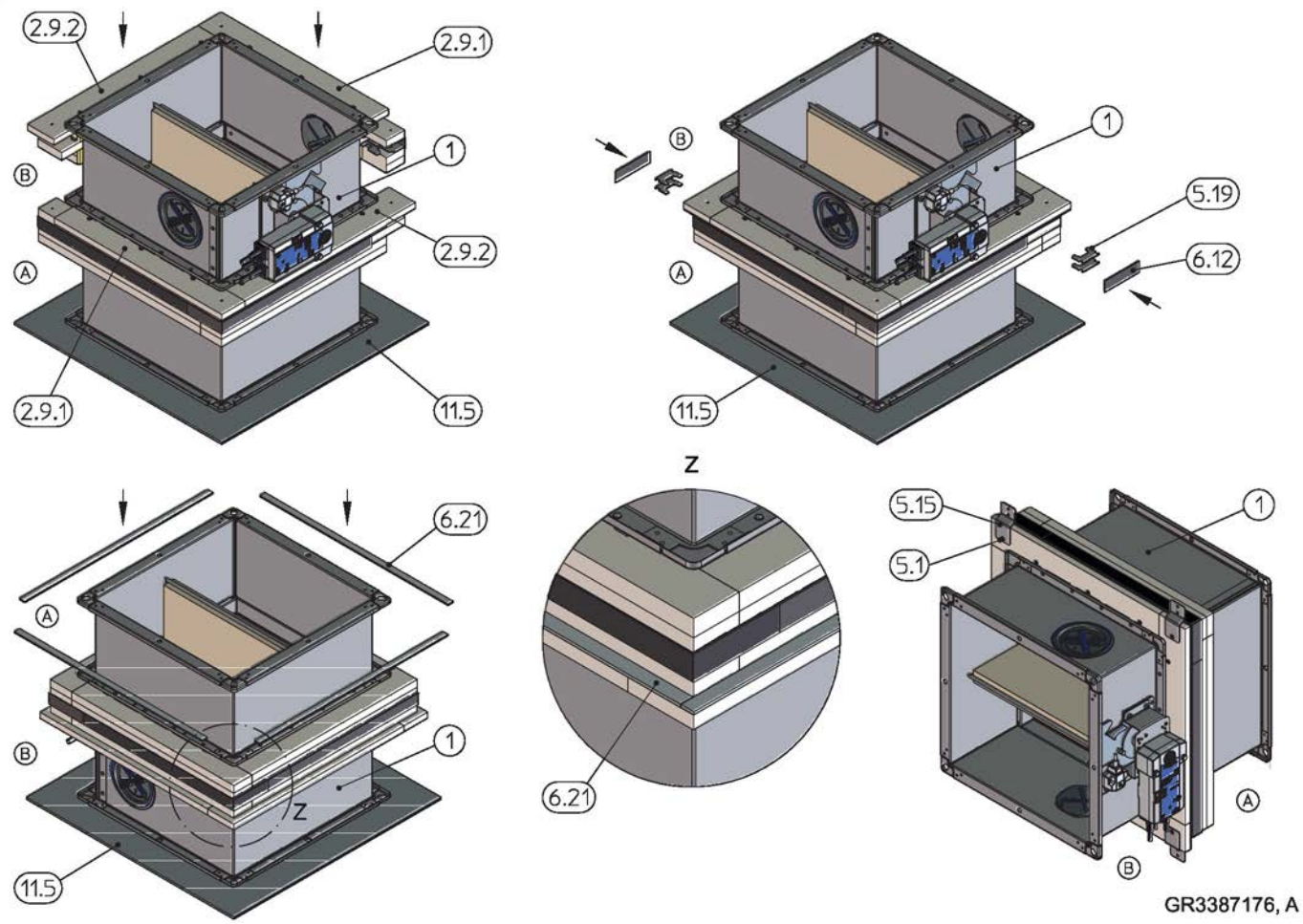



*Fig. 29: Assembly of installation kit ES for dry mortarless installation*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 5.15 | Bracket |
| 2.9 | Installation kit ES | 5.19 | Connecting clip |
| 2.9.1 | B part (2 ×) | 6.12 | Intumescent seal |
| 2.9.2 | H part (2 ×) | 6.21 | Kerafix 2000 sealing tape |
| 5.1 | Dry wall screw 5 × 50 mm | 11.5 | Base |

1. In each case, join one B part (2.9.1) and one H part (2.9.2) and fix with two connecting clips (5.19), then apply intumescent seal (6.12), Fig. 28 .
2. Place the fire damper (1) with the flange on the installation side A on a base (11.5) made of cardboard or wood.
3. Place the two installation kit parts that were joined together beforehand around the fire damper, join them together also and fix with connecting clips (5.19), then apply intumescent seal (6.12).
4. Turn the fire damper (1) with the flange towards operating side B and apply the Kerafix 2000 sealing tape (6.21) along the perimeter.
5. Screw in the brackets (5.15) for fastening to the wall on the installation kit with dry wall screw (5.1). The number and position of the brackets are dependent on the size and correspond with the drilled holes made in the factory.
6. For subsequent assembly and installation steps see the installation details.

### 5.3.2 Installation kit supply package and assembly WA / WE

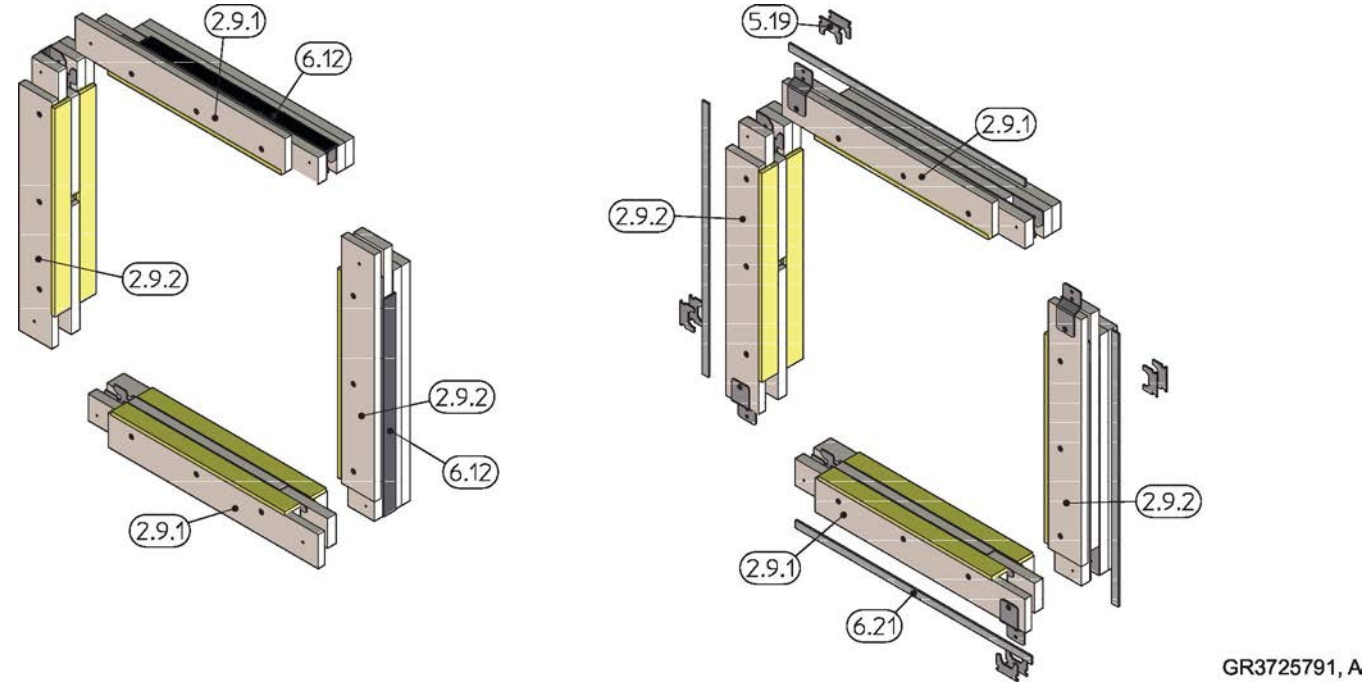



*Fig. 30: Installation kit supply package WA / WE for dry mortarless installation*

2.9 Installation kit ES
2.9.1 B part (2 ×)
2.9.2 H part (2 ×)
5.1 Dry wall screw 5 × 50 mm (4 – 8 pieces, dependent on the damper size)
5.15 Bracket (4 – 8 pieces, dependent on the damper size)
5.19 Connecting clip (8 pieces)
6.12 Intumescent seal (4 pieces), removed by others
6.21 Kerafix 2000 sealing tape

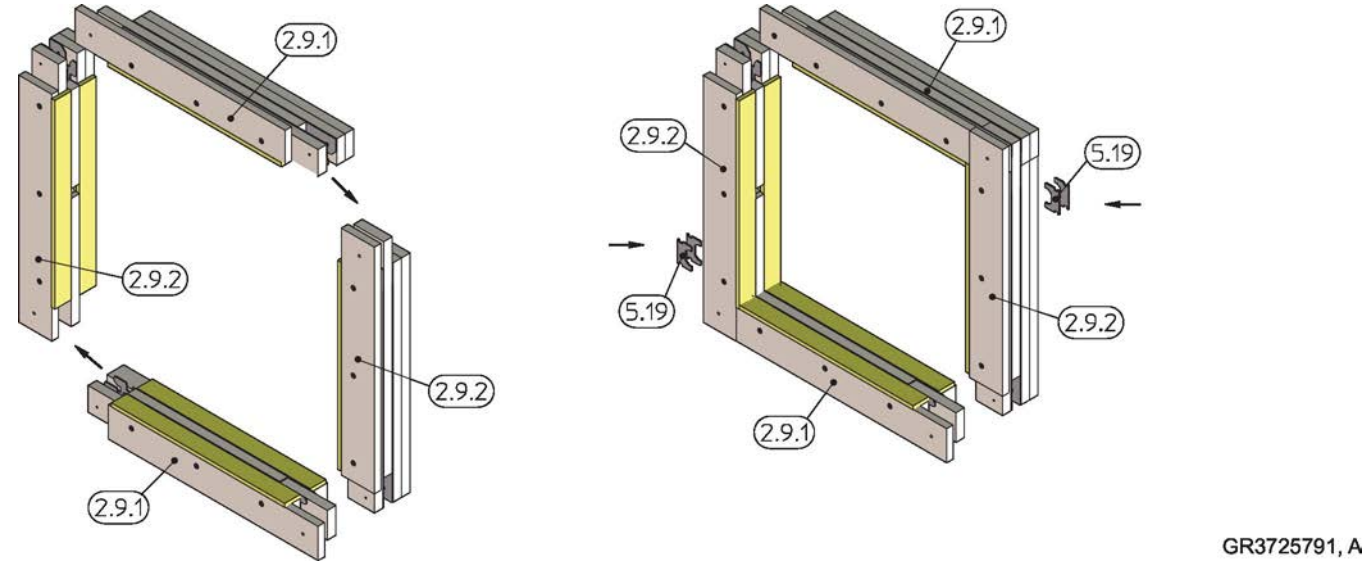



*Fig. 31: Assembly of installation kit WA / WE for dry mortarless installation*

2.9 Installation kit ES
2.9.1 B part (2 ×)
2.9.2 H part (2 ×)
5.19 Connecting clip (4 pieces)

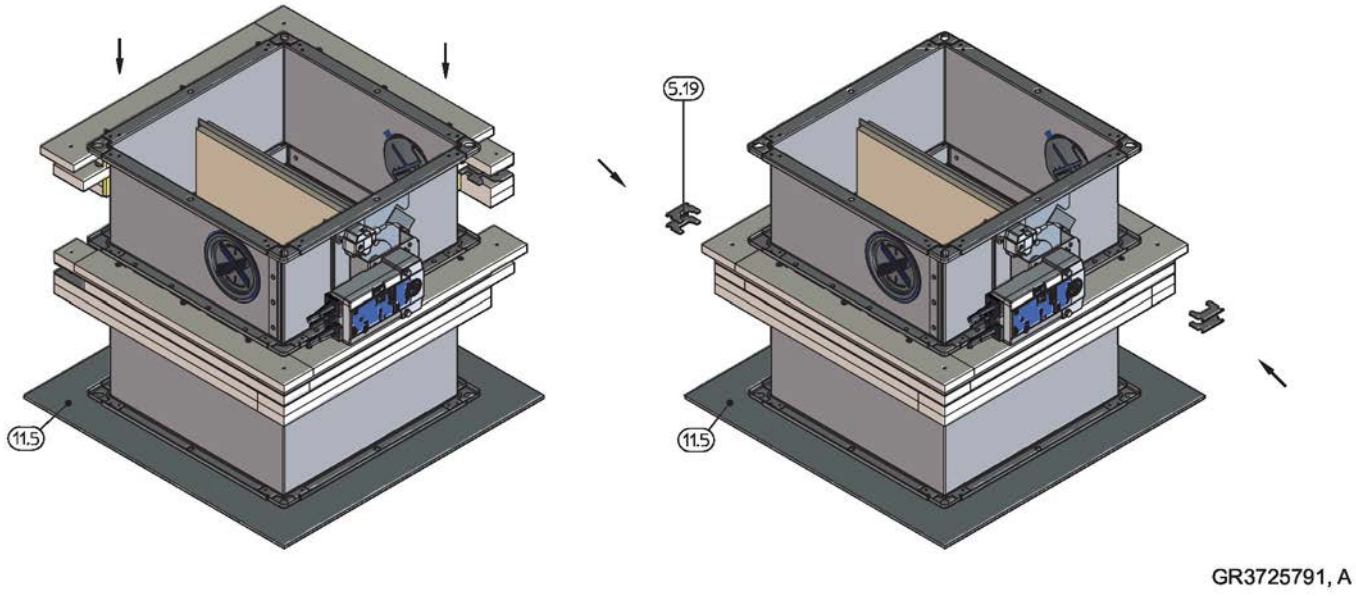



*Fig. 32: Assembly of installation kit WA / WE for dry mortarless installation*

5.19 Connecting clip (4 pieces)
11.5 Base

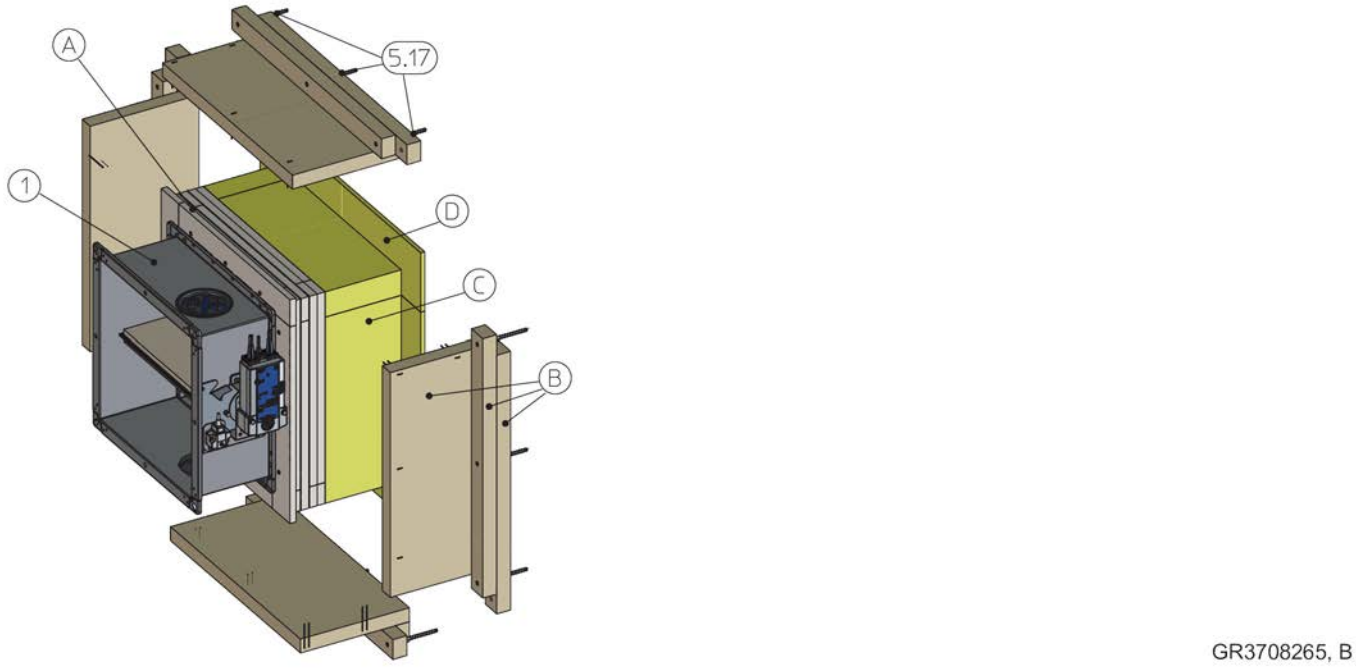



*Fig. 33: Installation kit WA*

1 FKA2-EU
2.5 Installation kit WA, consisting of:
A Installation kit (2 × B part and 2 × H part)
B Panel package (4 ×)
C Mineral wool cut parts (2 × B part and 2 × H part), ≥ 1000 °C, ≥ 80 kg/m³, d = 60 mm
D Mineral wool strips (2 × B part and 2 × H part), ≥ 1000 °C, ≥ 40 kg/m³, t = 10 mm
5.17 Hilti® HUS anchor bolt ∅ 6 mm (120 mm) Alternatively, equivalent anchor bolts with suitability certificate for fire resistance provided by others, matched to the wall / ceiling slab or push through installation

**Installation with installation kit WA**

1. Mount installation kit WA on fire damper, see to Fig. 33
2. Attach (flange-mount) fire damper (1) to duct shortened so as to be flush-mounted in the wall/ceiling.
3. Attach mineral wool (C) and (D) (clamp in).
4. Fix panel packages (B) to the wall / ceiling slab with anchor bolts or push through installation (5.17).
5. Fix panel packages (B) on the installation kit.
6. Further details according to the particular installation description.

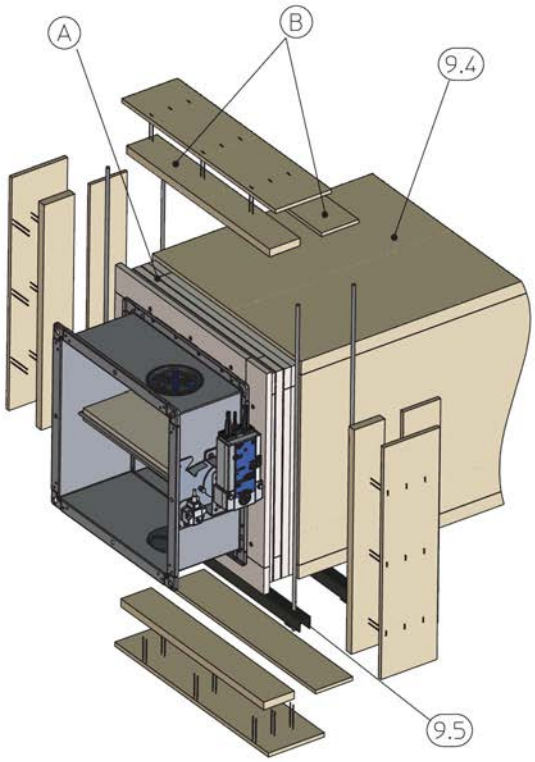



*Fig. 34: Installation kit WE*

1 FKA2-EU
2.6 Installation kit WE, consisting of:
A Installation kit (2 B part and 2 × H part)
B Panel cuts / strips (6 × B side, 6 × H side)
9.4 Sheet steel duct with fire-rated cladding and suspension system according to Promat® manual, construction 478, latest edition (see particular installation situation for further details)
9.5 Suspension (on site to be performed by others), see *157*

**Installation with installation kit WE**

1. Mount installation kit WE on fire damper, see to and Fig. 34
2. Fix fire damper (1) to sheet steel duct and apply fire-resistant cladding according to the details of the respective installation situation.
3. Suspend fire damper and duct from the solid ceiling slab, see *157*
4. Further details according to the particular installation description.

## 5.4 Solid walls

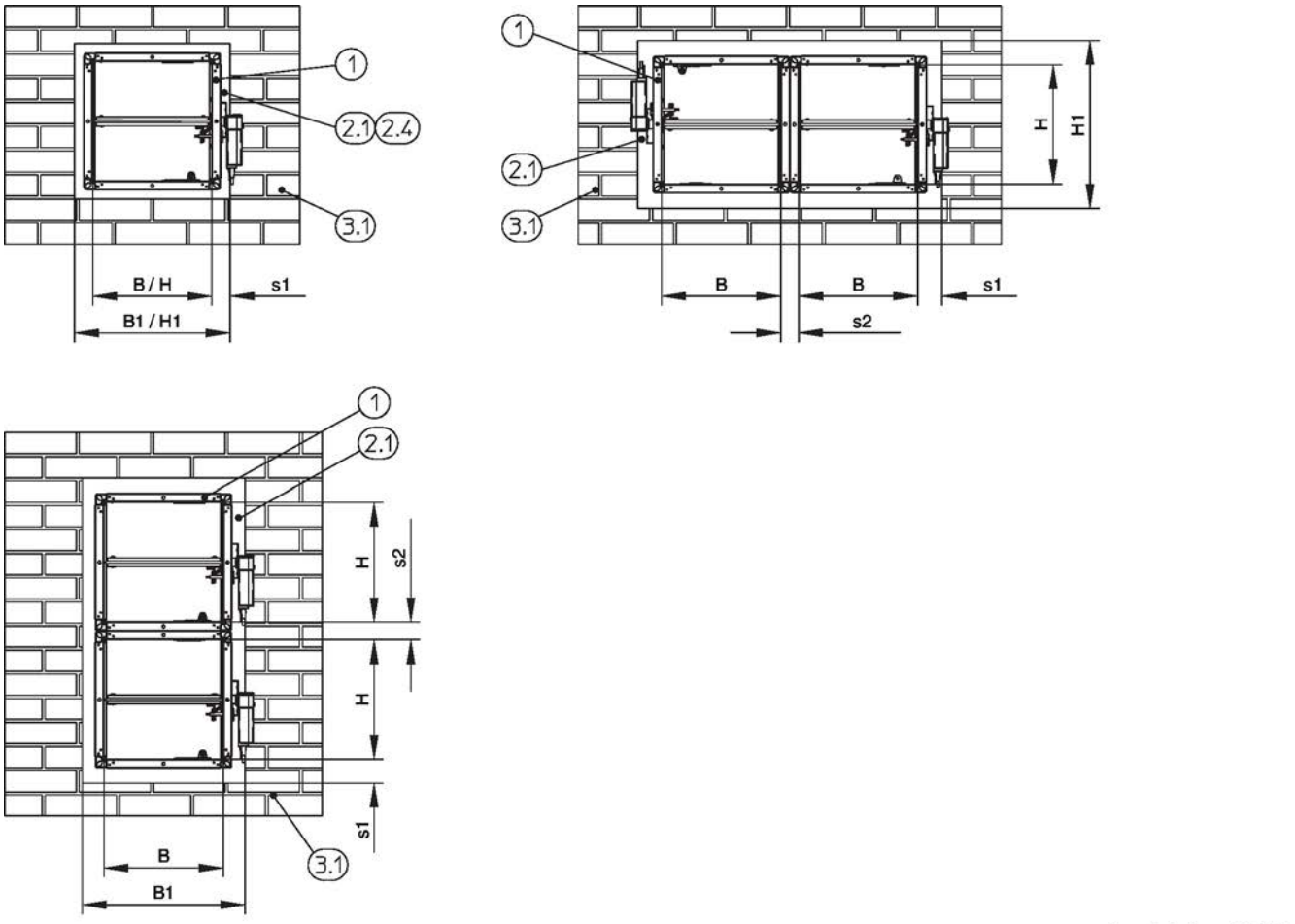



*Fig. 35: Solid walls – arrangement / distances*

1 FKA2-EU
2.1 Mortar
2.4 Coated board system
3.1 Solid wall
s1 Perimeter gap, see 🔗 *35*
s2 Distance between the fire dampers, see 🔗 *34*

**Additional requirements: solid walls**

- Solid wall 🔗 *40*
- Distances and installation orientations, see 🔗 *34*

| Installation type | Installation opening [mm] | | Distance [mm] | |
|---|---|---|---|---|
| | B1 | H1 | s1 | s2 |
| Mortar-based installation | B + 450 max. | H + 450 max. | ≤ 225 | 60 – 225 |
| Dry mortarless installation with fire batt [1] | H + 1200 max. | H + 1200 max. | 40 – 600 | 60 – 600 |

[1)] Observe maximum permitted size of the fire batt!

### 5.4.1 Mortar-based installation

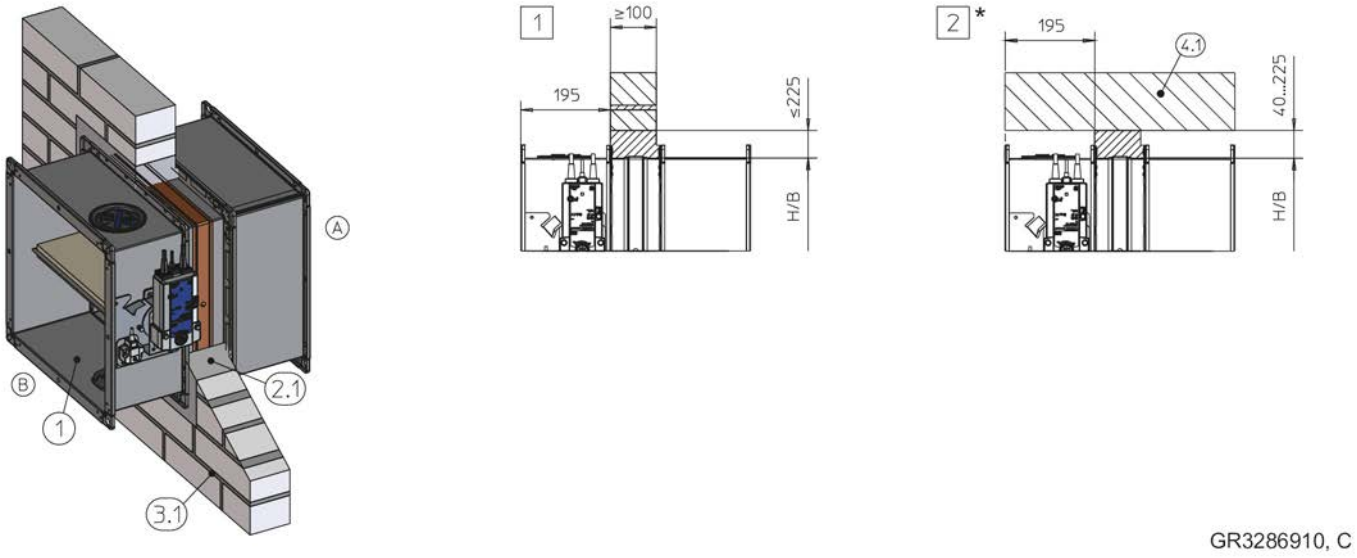



*Fig. 36: Mortar-based installation into a solid wall*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 4.1 | Solid ceiling slab / solid floor |
| 2.1 | Mortar | * | Installation near the floor analogous to 2 |
| 3.1 | Solid wall | 1 2 | Up to EI 120 S |

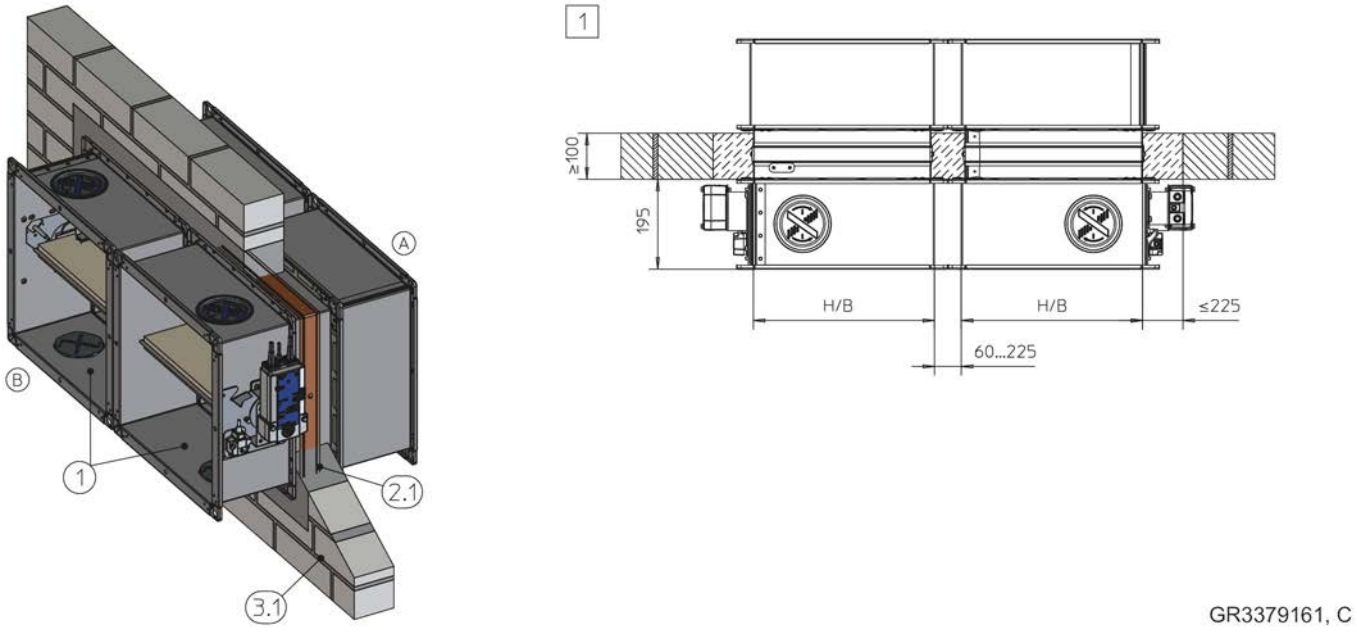



*Fig. 37: Mortar-based installation into a solid wall, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 3.1 | Solid wall |
| 2.1 | Mortar | 1 | Up to EI 120 S |

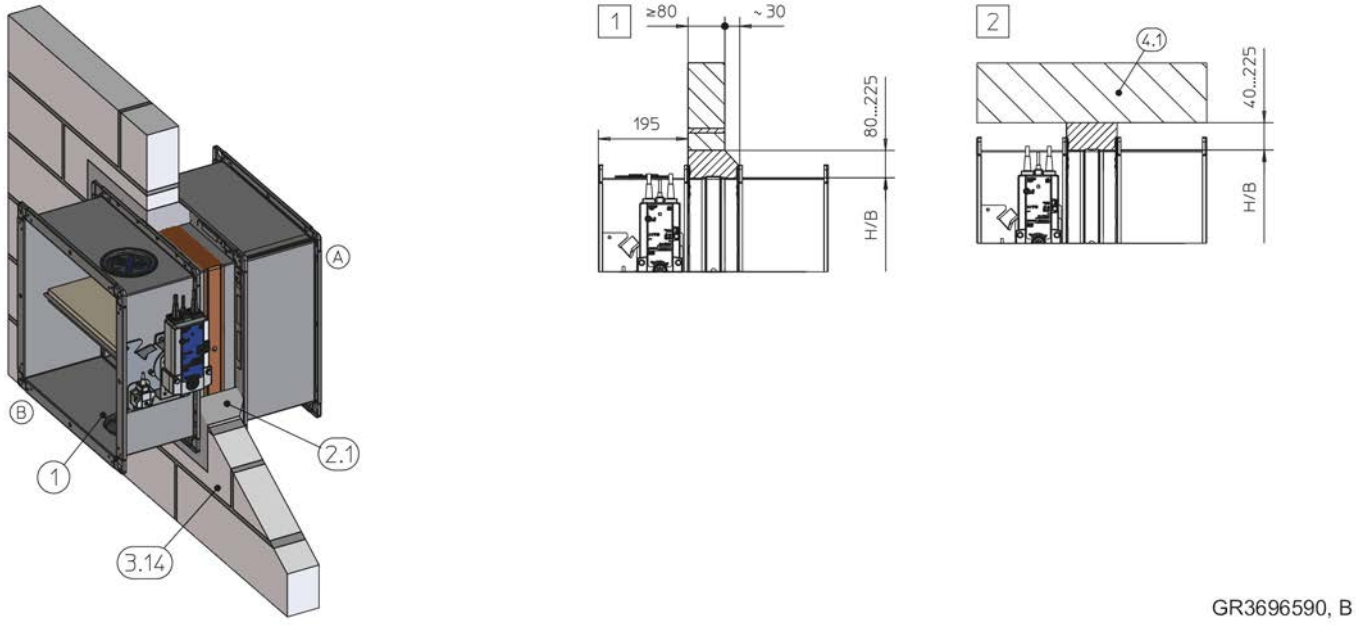



*Fig. 38: Mortar-based installation into a solid wall made of gypsum wall boards*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 4.1 | Solid ceiling slab |
| 2.1 | Mortar | 1 2 | Up to EI 90 S |
| 3.14 | Solid wall made of gypsum ball boards EN 12859 (formerly DIN 18163) | | |

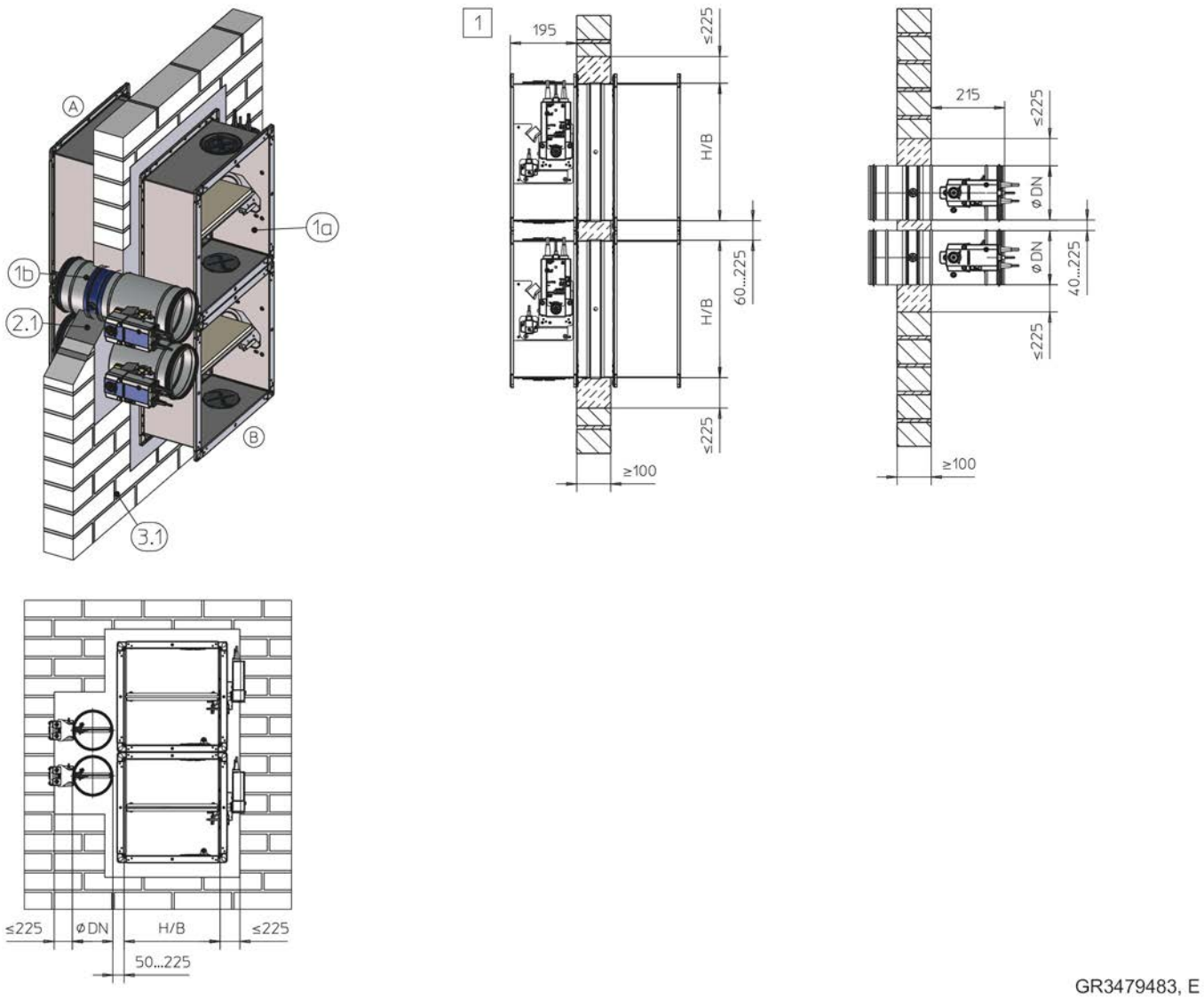



*Fig. 39: Mortar-based installation into a solid wall, combined, FKA2-EU und FKRS-EU*

| | | | |
|---|---|---|---|
| 1a | FKA2-EU up to B × H ≤ 800 × 400 mm | 3.1 | Solid wall |
| 1b | FKRS-EU | 1 | Up to EI 90 S |
| 2.1 | Mortar | | |

**Note:**

- Total fire damper surface area ≤ 1.2 m².
- Alternative installation orientations of side-by-side, under or on top of one another possible. Details are available upon request.
  For installation details FKRS-EU, see the installation and operating manual for this fire damper type.
- Distance to load-bearing structural elements ≥ 40 mm

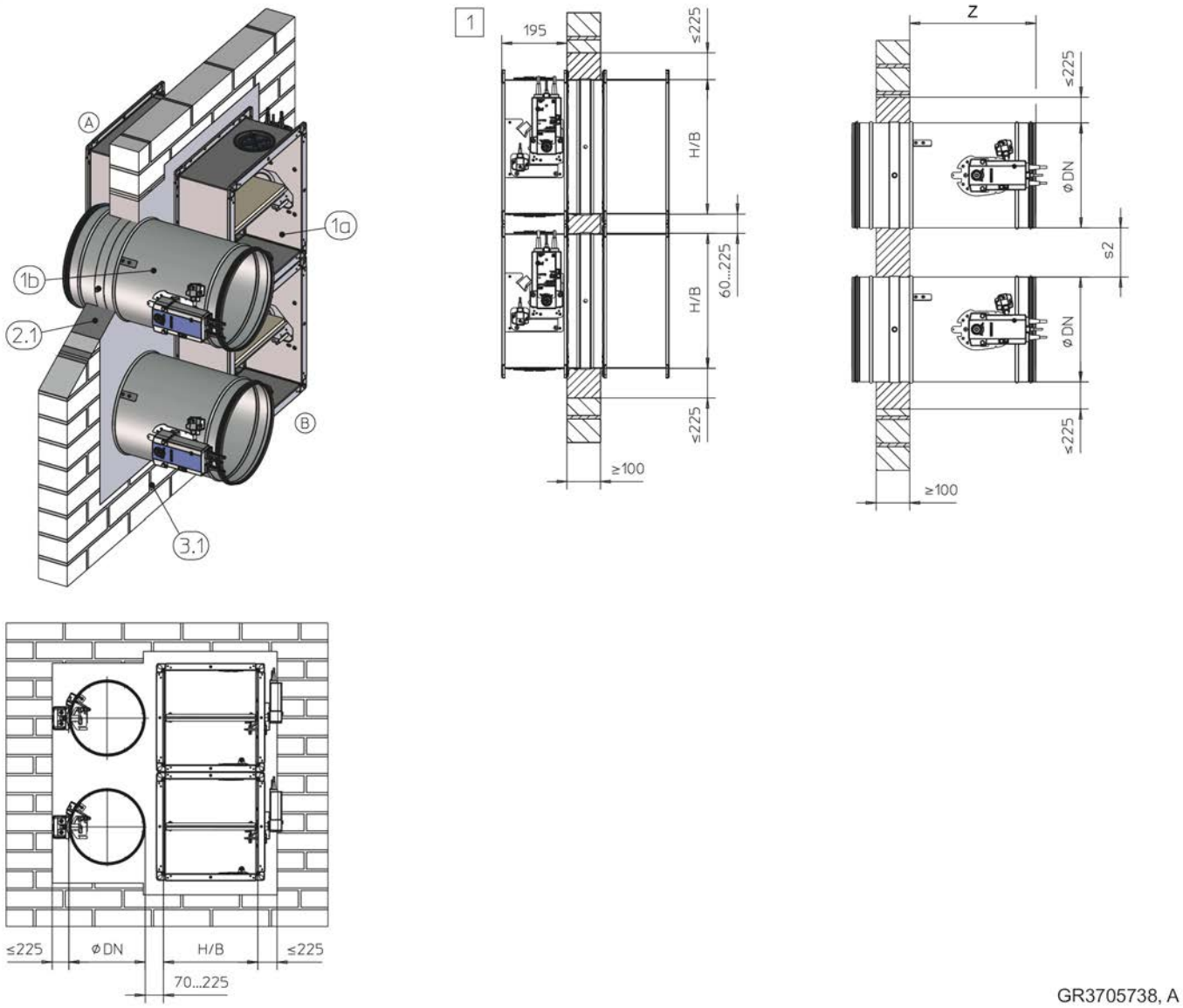



*Fig. 40: Mortar-based installation into a solid wall, combined, FKA2-EU und FKR-EU*

1a FKA2-EU up to B × H ≤ 800 × 400 mm
1b FKR-EU
2.1 Mortar
3.1 Solid wall
Z Spigot construction 370 mm
Flange construction 342 mm
s2 Spigot construction 40 – 225 mm
Flange construction 80 – 225 mm
1 Up to EI 90 S

**Note:**

- Total fire damper surface area ≤ 1.2 m².
- Alternative installation orientations of side-by-side, under or on top of one another possible. Details are available upon request.
  For installation details FKR-EU, see the installation and operating manual for this fire damper type.
- Distance to load-bearing structural elements ≥ 40 mm

**Additional requirements: mortar-based installation into solid walls**

- Solid wall *40*
- Casing length L = 305 or 500 mm

## 5.4.2 Mortar-based installation – multiple occupancy of an installation opening

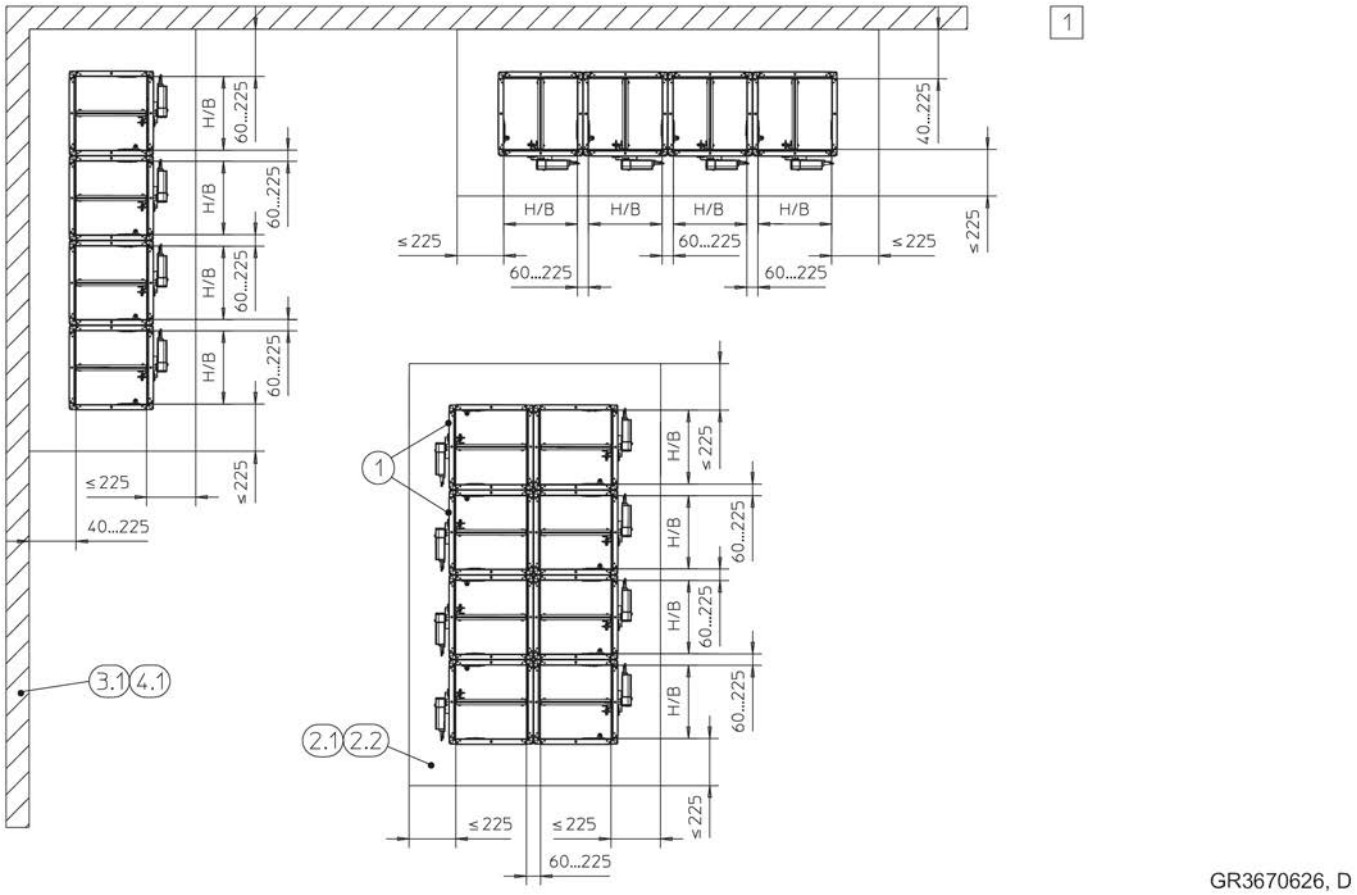



*Fig. 41: Mortar-based installation – multiple occupancy of an installation opening*

1 FKA2-EU
2.1 Mortar
2.2 Concrete
3.1 Solid wall (load-bearing component)
4.1 Solid ceiling slab (load-bearing component)
[1] Up to EI 90 S

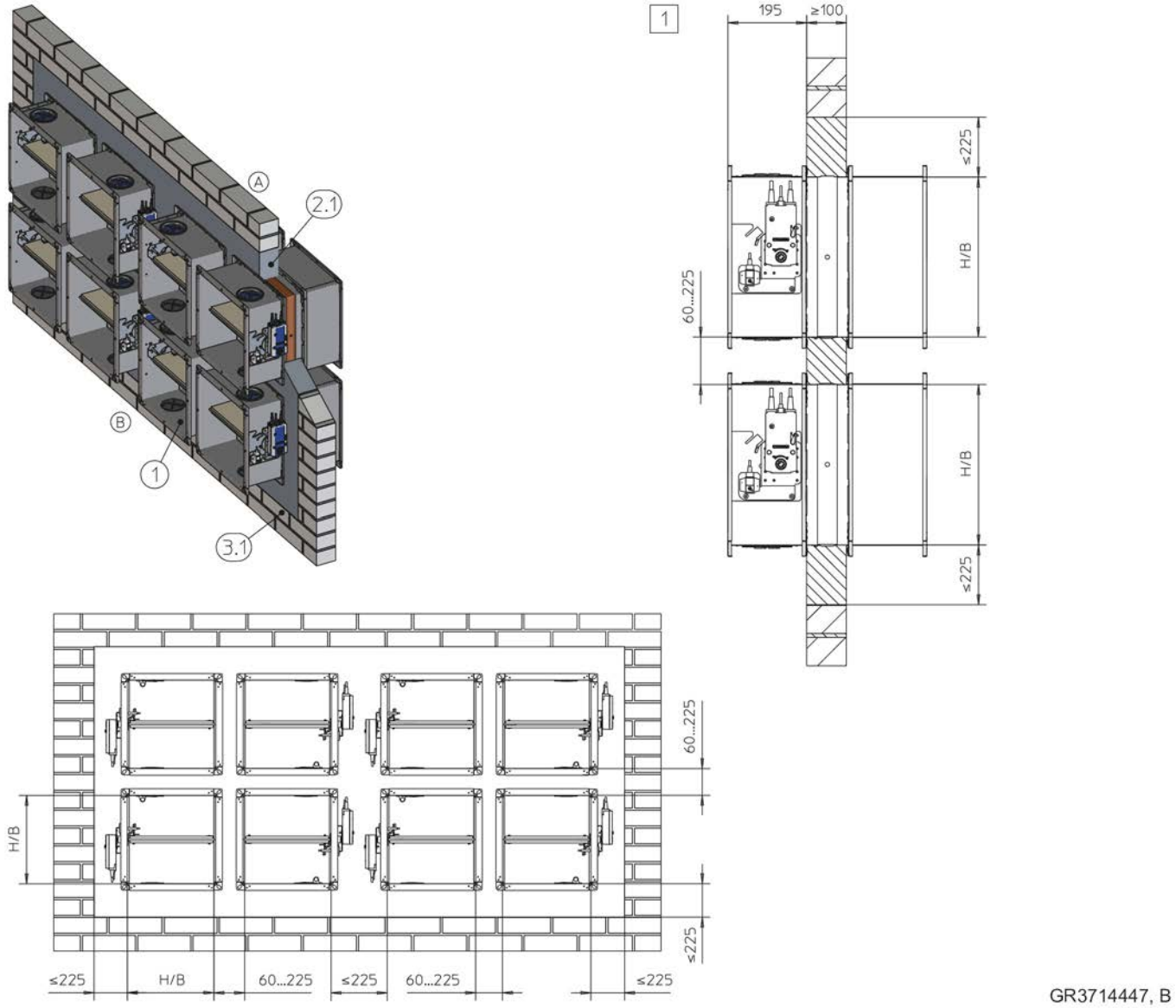



*Fig. 42: Mortar-based installation – multiple occupancy of an installation opening*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 3.1 | Solid wall |
| 2.1 | Mortar | 1 | Up to EI 90 S |

**Additional requirements: mortar-based installation – multiple occupancy of an installation opening**

- Solid wall ↳ *40*
- Casing length L = 305 or 500 mm
- Total fire damper surface area (B × H) ≤ 4.8 $m^2$
- The number of fire dampers in an installation opening is limited by their damper size (B × H) and the overall area of the fire dampers (4.8 $m^2$)
- The dampers can be arranged in one or two rows.
- Distance to load-bearing structural elements ≥ 40 mm
- If the actuators are located between the fire dampers, sufficient free space for inspection must be provided.
- The mortar bed width is not allowed to exceed 225 mm, provide brick partition or lintel if necessary.

### 5.4.3 Mortar-based installation – 4-way arrangement with common duct

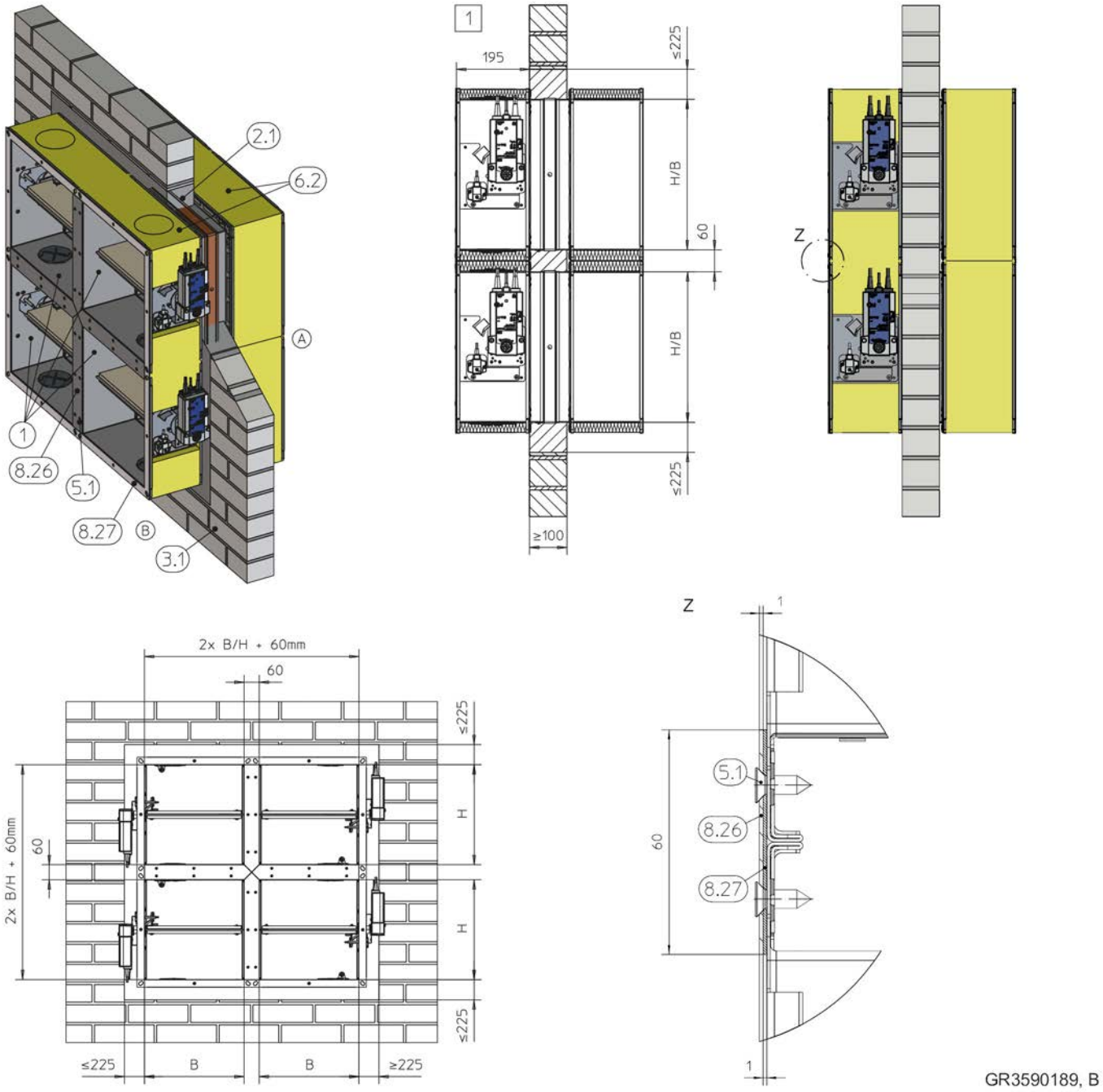



*Fig. 43: Mortar-based installation – 4-way arrangement with common duct*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 6.2 | Mineral wool, ≥ 1000 °C, ≥ 80 kg/m³, thickness ≥ 30 mm |
| 2.1 | Mortar | 8.26 | Blanking plate, t = 1 mm (provided by others) |
| 3.1 | Solid wall | 8.27 | Seal |
| 5.1 | Self-tapping screw, spacing ~ 150 mm | [1] | Up to EI 120 S |

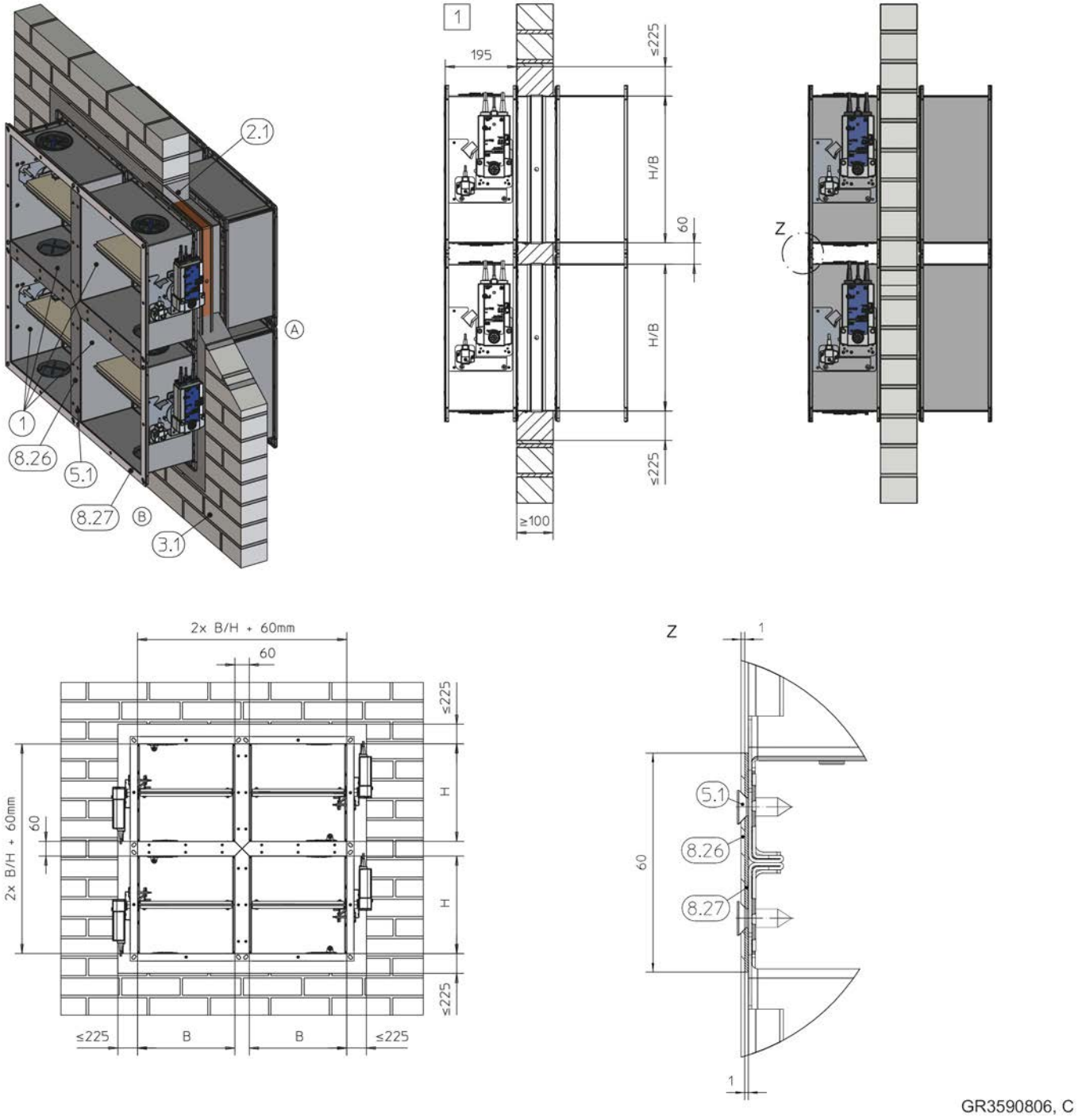



*Fig. 44: Mortar-based installation – 4-way arrangement with common duct*

1 FKA2-EU
2.1 Mortar
3.1 Solid wall
5.1 Self-tapping screw, spacing ~ 150 mm
8.26 Blanking plate, t = 1 mm (provided by others)
8.27 Seal
[1] Up to EI 90 S

**Supplementary requirements: mortar-based installation - 4-way arrangement with common air duct**

- Solid wall *40*
- Casing length L = 500 mm
- 4-way arrangement up to 4.8 $m^2$ total fire damper surface area (common air duct)
- Connection of the dampers to the flanges using blanking plates
- Close off the perimeter gaps and the gaps between the damper casings completely with mortar.
- For EI 120 S, apply mineral wool (6.2) all around the operating and installation side (cut out the control panel so that the function of the damper is not impaired). Inspection accesses and the product sticker must remain accessible.
- Distance to load-bearing structural elements ≥ 40 mm

### 5.4.4 Mortar-based installation with partial mortaring

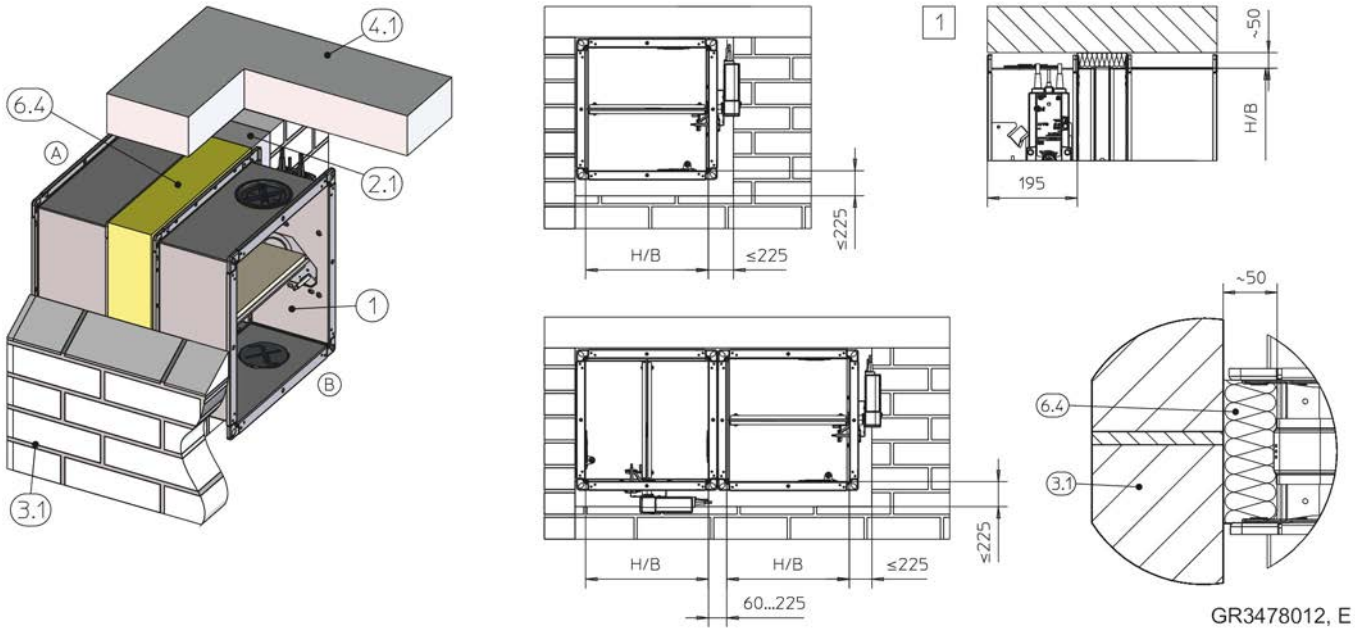



*Fig. 45: Mortar-based installation into a solid wall, with partial mortaring*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 4.1 | Solid ceiling slab |
| 2.1 | Mortar | 6.4 | Mineral wool, ≥ 1000 °C, ≥ 140 kg/m³ |
| 3.1 | Solid wall | 1 | Up to EI 90 S |

**Additional requirements: mortar-based installation into solid walls with partial mortaring**

- Solid wall *40*
- Casing length L = 305 or 500 mm
- Distance between two FKA2-EU in one installation opening 60 – 225 mm

1. The difficult-to-access installation gap between the FKA2-EU and the wall / ceiling must be completely filled with mineral wool between the wall flanges (cut the mineral wool slab to size and clamp it between the flanges without any gaps).
2. Completely close off the remaining gaps (on 2 or 3 sides) with mortar.

### 5.4.5 Dry mortarless installation on a solid wall with installation kit WA

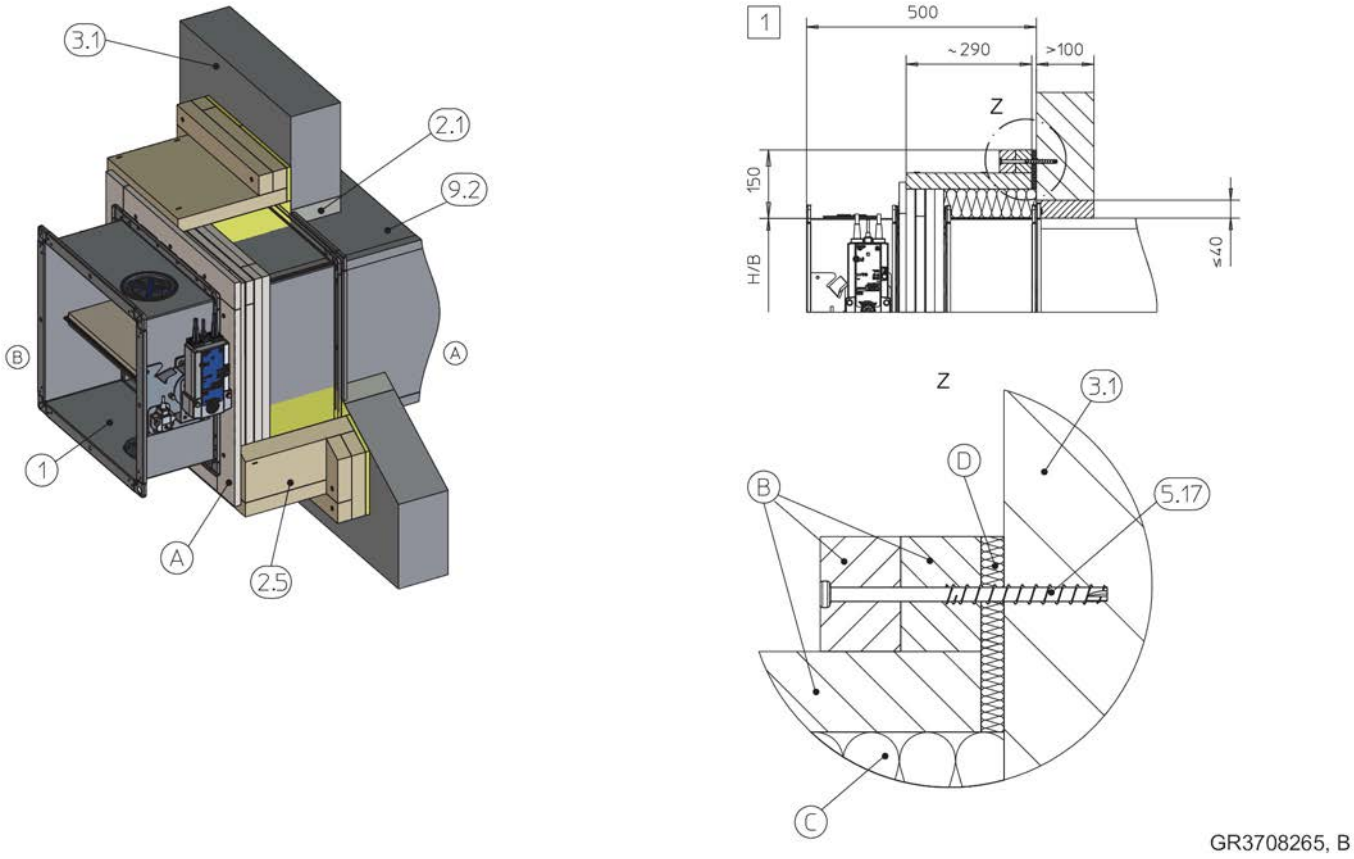



*Fig. 46: Dry mortarless installation on a solid wall with installation kit WA (wall-mounting type)*

1 FKA2-EU
2.1 Mortar
2.5 Installation kit WA, see ↳ *44* , consisting of:
A Installation kit (2 × B part and 2 × H part)
B Panel package (2 × B part and 2 × H part)
C Mineral wool cut parts (2 × B part and 2 × H part), ≥ 1000 °C, ≥ 80 kg/m³, d = 60 mm
D Mineral wool strips (2 × B part and 2 × H part), ≥ 1000 °C, ≥ 40 kg/m³, t = 10 mm
3.1 Solid wall
5.17 Hilti® HUS anchor bolt ∅ 6 mm (120 mm) Alternatively, equivalent anchor bolts with suitability certificate for fire resistance provided by others, matched to the wall / ceiling slab or push through installation
9.2 Extension piece or duct
[1] Up to EI 90 S

**Additional requirements: dry mortarless installation on solid wall with installation kit WA**

- Solid wall ↳ *40*
- Casing length L = 500 mm
- ≥ 150 mm distance from the fire damper to the wall or ceiling slab
- ≥ 300 mm distance between two fire dampers
- Installation of the FKA2-EU with installation kit WA on solid walls and ceiling slabs, see ↳ *37*
- Fix installation kit WA on fire damper, see ↳ *44*

## 5.4.6 Dry mortarless installation remote from solid walls with installation kit WE

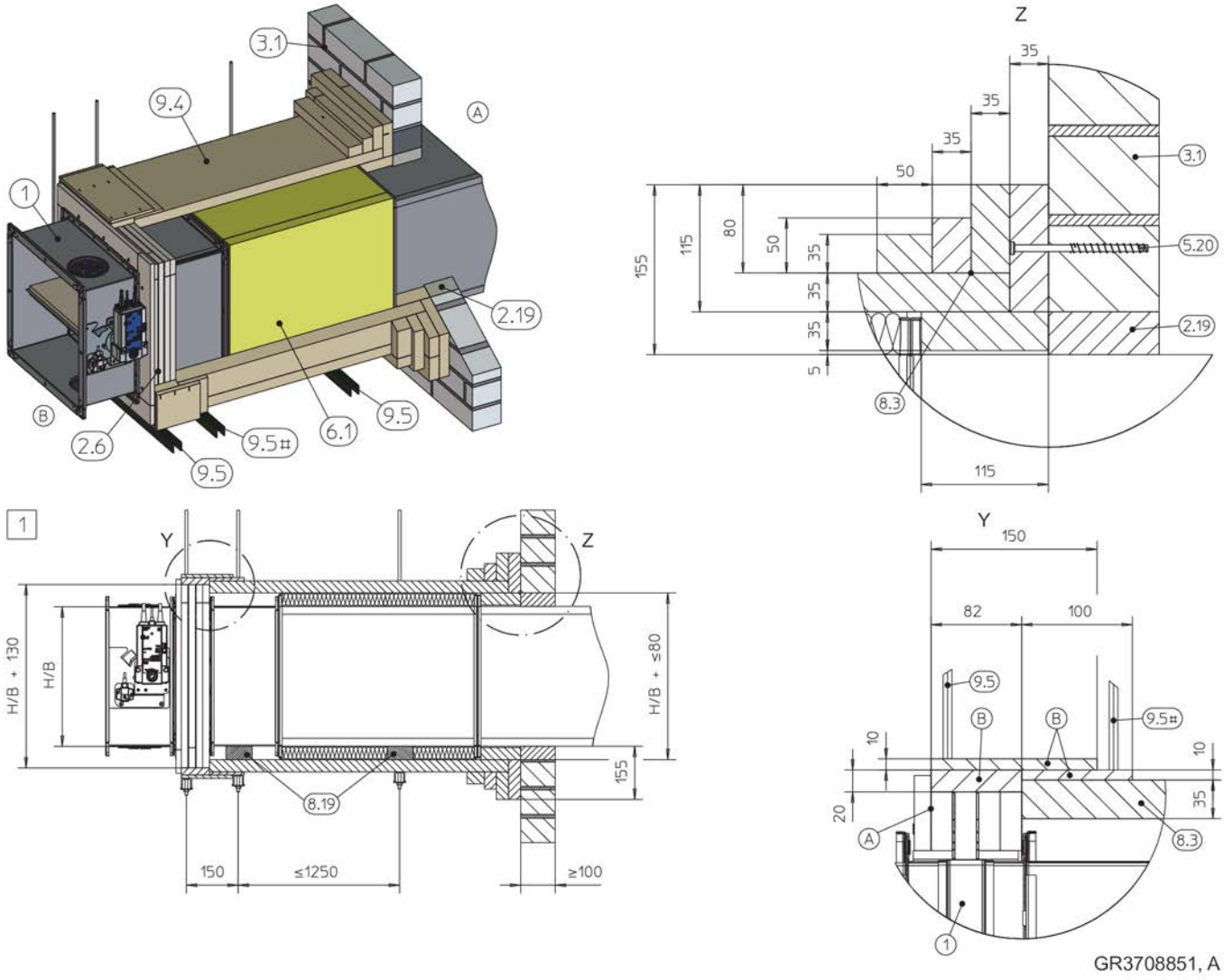
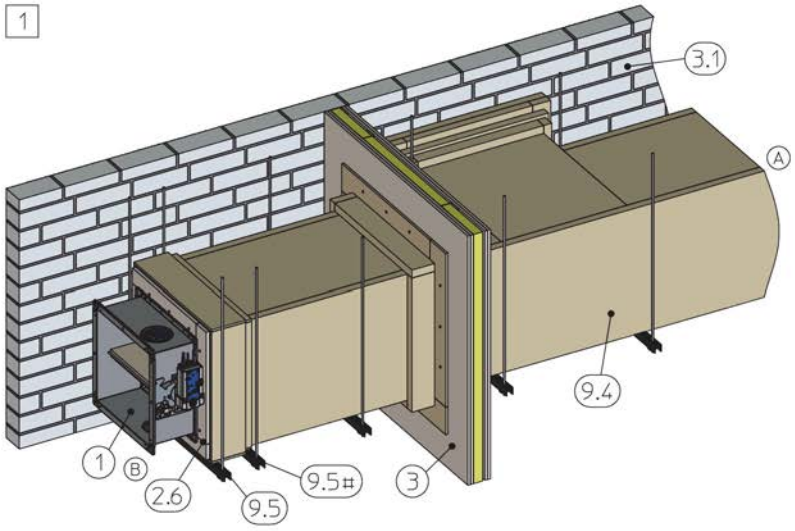



*Fig. 47: Dry mortarless installation remote from solid walls with installation kit WE (wall-mounting type)*

1 FKA2-EU
2.6 Installation kit WE, see ↳ *44* , consisting of:
A Installation kit (2 × B part and 2 × H part)
B Panel cuts / strips (6 × B side and 6 × H side)
2.19 Joint filler (Promat filler®, Promat® ready-to-use filler or mortar according to installation and operating manual)
3.1 Solid wall, wall penetration and wall connector according to Promat® manual, construction 478, latest edition
5.20 Screw, Fischer® FFS 7.5 × 82 mm or equivalent (alternatively push through installation)
6.1 Mineral wool, ≥ 1000 °C, ≥ 40 kg/m³, d = 40 mm, only withB × H > 800 × 400 mm
8.3 PROMATECT®-LS, d = 35 mm
8.19 Overlay made of PROMATECT®-LS, d = 35 mm
9.4 Sheet steel duct with fire-rated cladding and suspension system according to Promat® manual, construction 478, latest edition
9.5 Suspension (on site to be performed by others) of the FKA2-EU, see ↳ *157*
# Damper sizes > 1000 × 600 mm require second suspension point underneath the fire damper at a distance of 150 mm from each other
[1] to EI 90 S (horizontal installation position)




GR3478208, D

*Fig. 48: Dry mortarless installation remote from solid walls with installation kit WE (installation variant)*

1 FKA2-EU
2.6 Installation kit WE, see *44*
3 Lightweight partition wall / solid wall (if any), wall penetration and wall connector according to Promat® manual, construction 478, latest edition
3.1 Solid wall, wall penetration and wall connector according to Promat® manual, construction 478, latest edition
9.4 Sheet steel duct with fire-rated cladding and suspension system according to Promat® manual, construction 478, latest edition (from B × H > 800 × 400 mm plus 6.1)
9.5 Suspension (on site to be performed by others) of the FKA2-EU, see *157*
1 to EI 90 S (horizontal installation position)

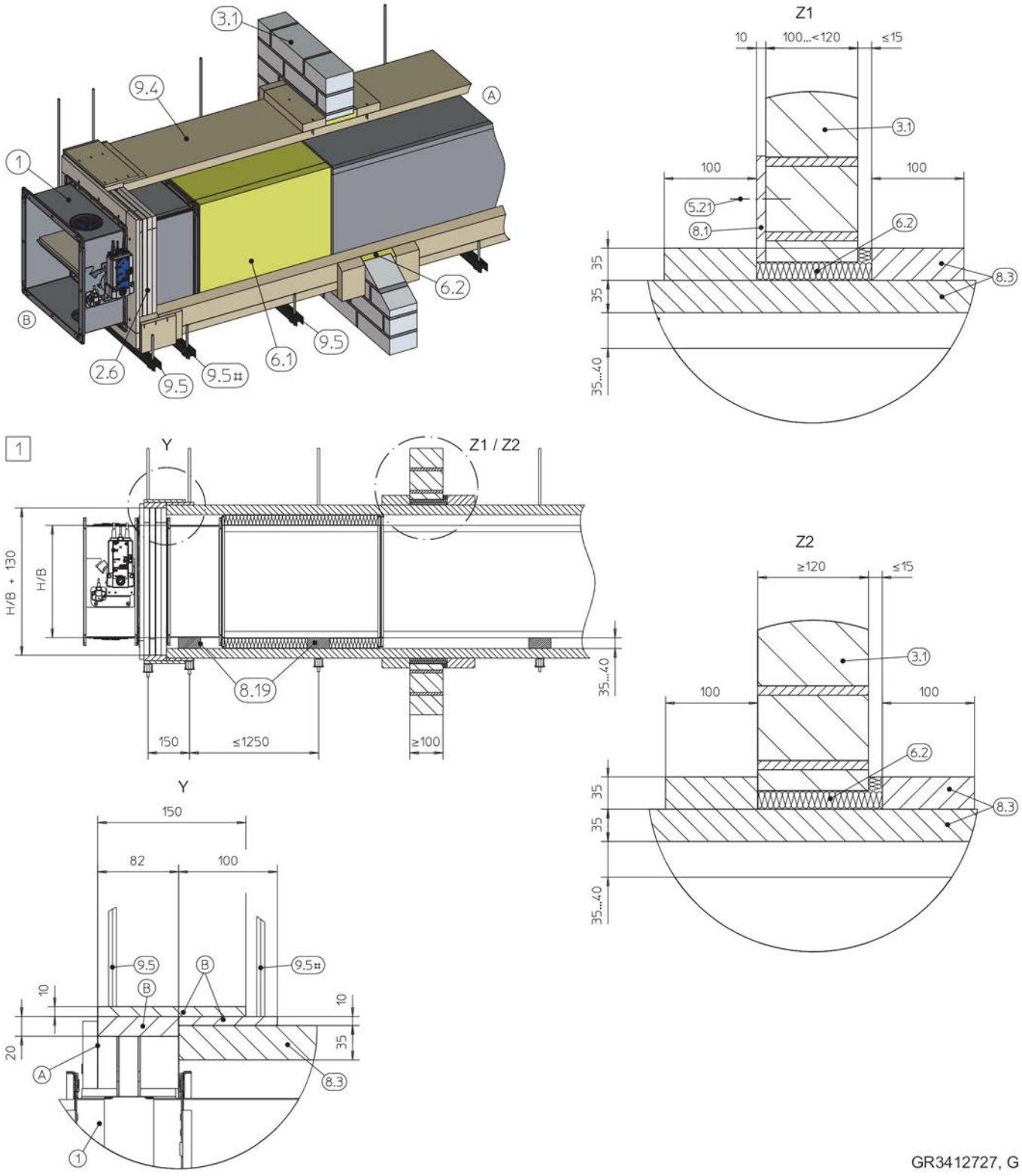



*Fig. 49: Dry mortarless installation remote from solid walls with installation kit WE (wall penetration)*

| | |
|---|---|
| 1 | FKA2-EU |
| 2.6 | Installation kit WE, see 44 , consisting of: |
| A | Installation kit (2 × B part and 2 × H part) |
| B | Panel cuts / strips (6 × B side and 6 × H side) |
| 3.1 | Solid wall, wall penetration according to Promat® manual, construction 478, latest edition |
| 5.21 | Screw / wallplug |
| 6.1 | Mineral wool, ≥ 1000 °C, ≥ 40 kg/m³, d = 40 mm, only from B × H > 800 × 400 mm |
| 6.2 | Mineral wool, ≥ 1000 °C, ≥ 80 kg/m³ |
| 8.1 | PROMATECT®-H, d = 10 mm |
| 8.3 | PROMATECT®-LS, d = 35 mm |
| 8.19 | Overlay made of PROMATECT®-LS, d = 35 mm |
| 9.4 | Sheet steel duct with fire-rated cladding and suspension system according to Promat® manual, construction 478, latest edition |
| 9.5 | Suspension (on site to be performed by others) of the FKA2-EU, see 157 |
| # | Damper sizes > 1000 × 600 mm require second suspension point underneath the fire damper at a distance of 150 mm from each other |
| 1 | to EI 90 S (horizontal installation position) |

**Additional requirements: dry mortarless installation remote from solid walls with installation kit WE**

- Solid wall 40
- Casing length L = 500 mm
- 4-sided panel cladding
- Horizontal installation position
- Sheet steel ducts without any openings, with 4-sided fire-resistant cladding (fittings with cladding according to instructions from Promat®)
- ≥ 155 mm distance from the fire damper to the wall or ceiling slab ( ≥ 110 mm with wall penetration)
- ≥ 310 mm distance between two fire dampers ( ≥ 300 mm with wall penetration)
- Installation of the FKA2-EU with installation kit WE remote from walls and ceiling slabs, see 38
- Fix installation kit WE on fire damper, see 44

**Note:** Fire damper and duct must be suspended 157 .

### 5.4.7 Dry mortarless installation with fire batt

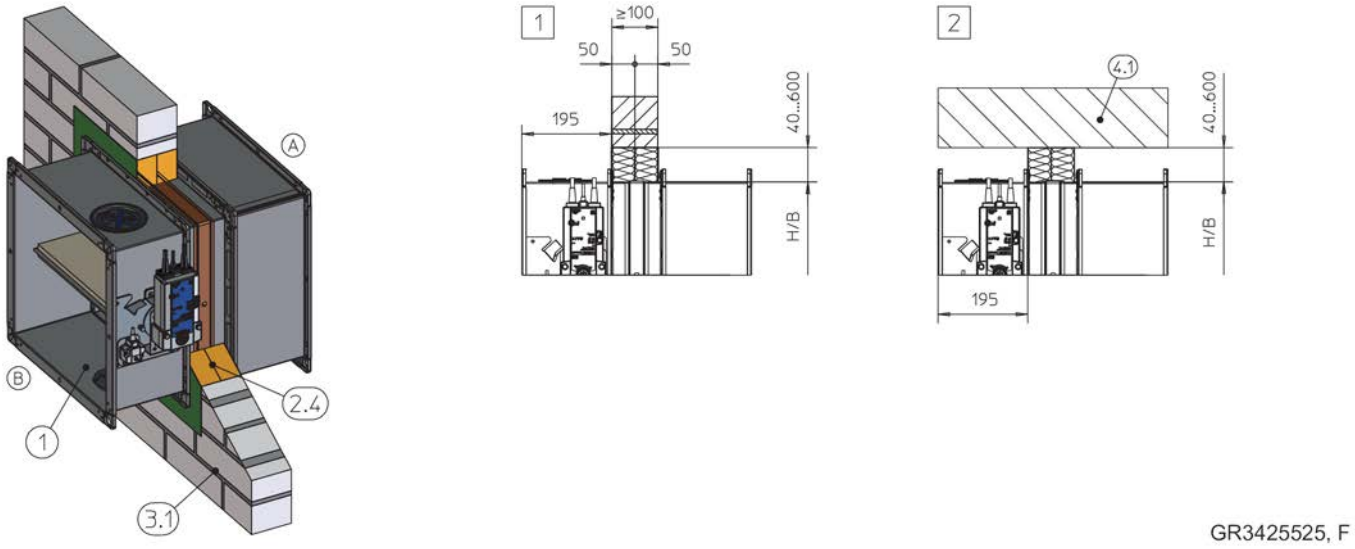



*Fig. 50: Dry mortarless installation with fire batt into a solid wall*

1 FKA2-EU
2.4 Coated board system
3.1 Solid wall
4.1 Solid ceiling slab
[1] [2] to EI 120 S: B × H = 200 × 100 – 800 × 400 mm (horizontal installation position)
Up to EI 90 S:
B × H = 200 × 100 – 1500 × 800 mm

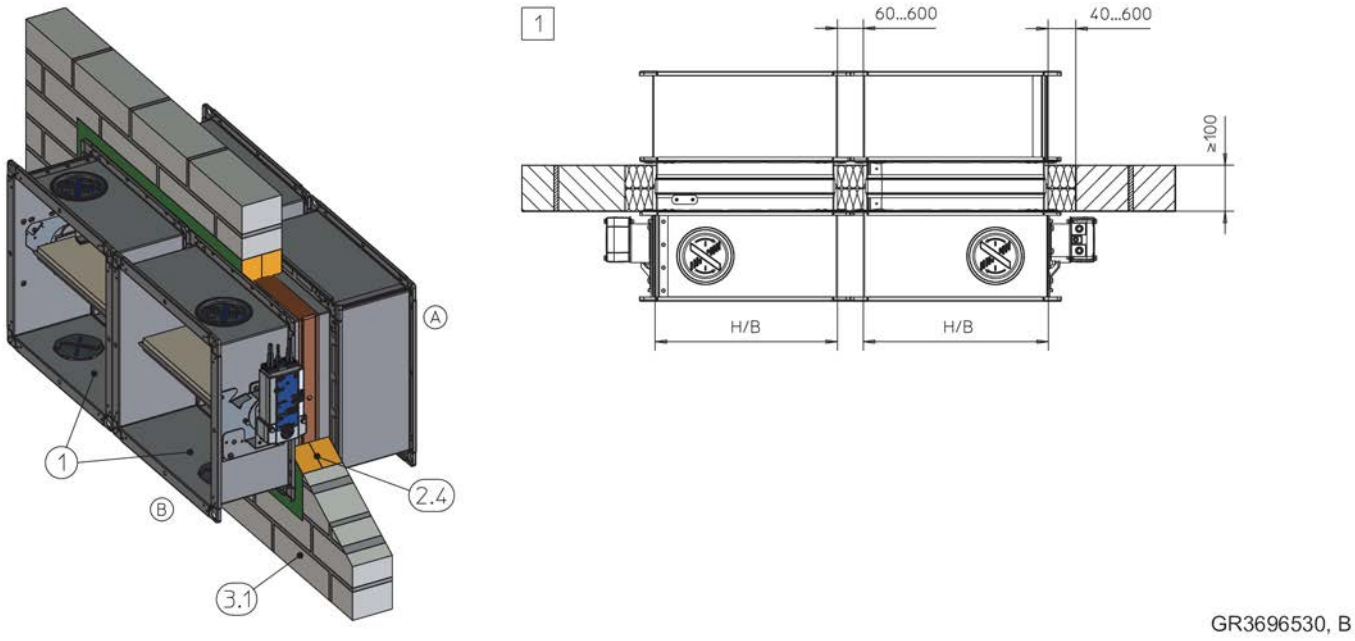



*Fig. 51: Dry mortarless installation into a solid wall, with a fire batt, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)*

1 FKA2-EU
2.4 Coated board system
3.1 Solid wall
[1] Up to EI 90 S

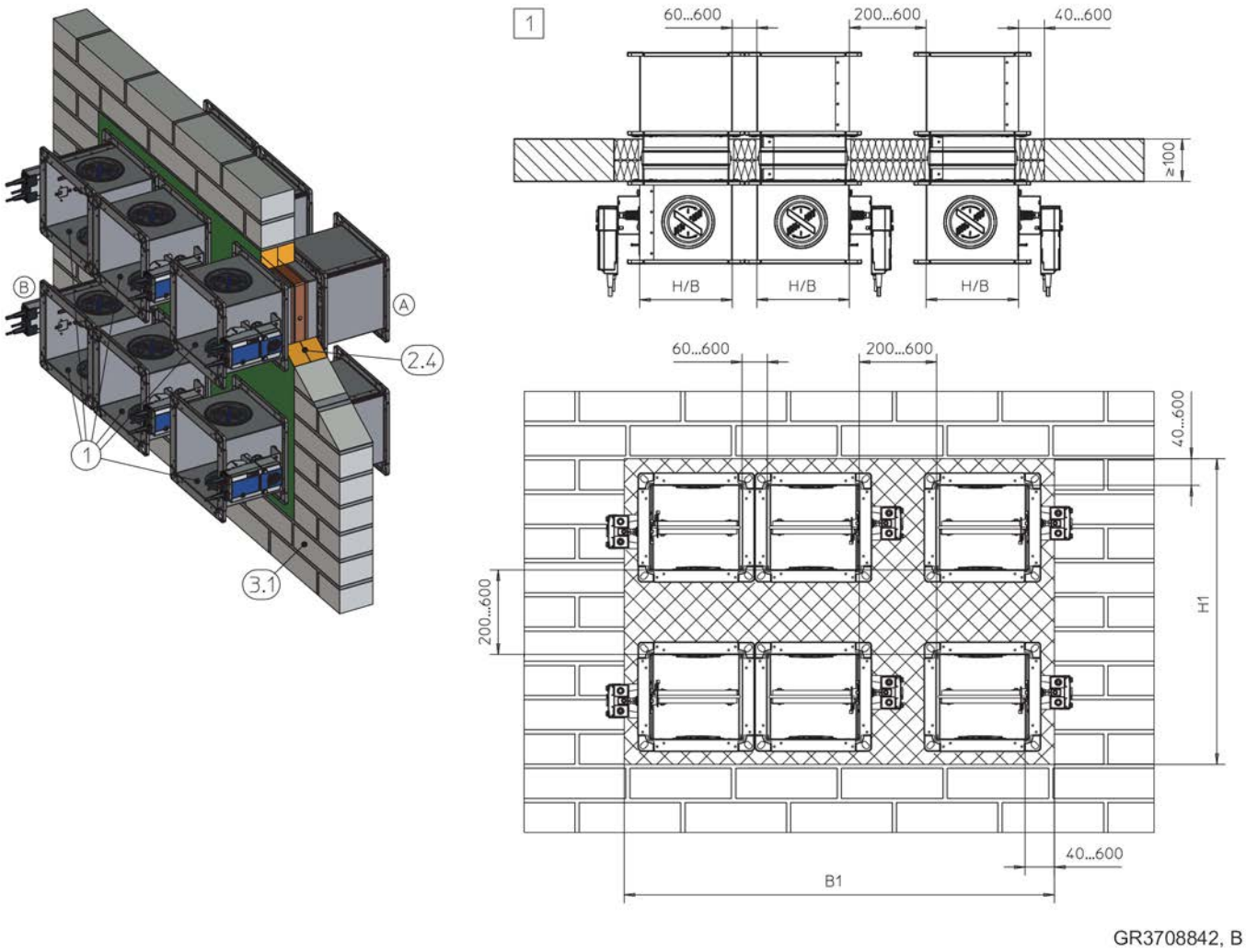



*Fig. 52: Dry mortarless installation into a solid wall, with a fire batt, multiple installation, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 3.1 | Solid wall |
| 2.4 | Coated board system | 1 | Up to EI 90 S |

**Note:**

- The overall area of the fire dampers is limited to 2.4 m².
- The number of fire dampers (arranged in pairs) in the fire batt is limited by their size (B × H) and the overall area of the fire dampers (2.4 m²).
- B1 x H1 maximum penetration seal size depends on the manufacturer
- Distance to load-bearing structural elements ≥ 40 mm

**Additional requirements: dry mortarless installation with fire batt in solid walls**

- Solid wall *40*
- Casing length L = 305 or 500 mm
- Fire batt systems, installation details, distances / dimensions, see *38* f
- Suspension and fixing, see *156*

## 5.5 Lightweight partition walls and compartment walls with metal support structure

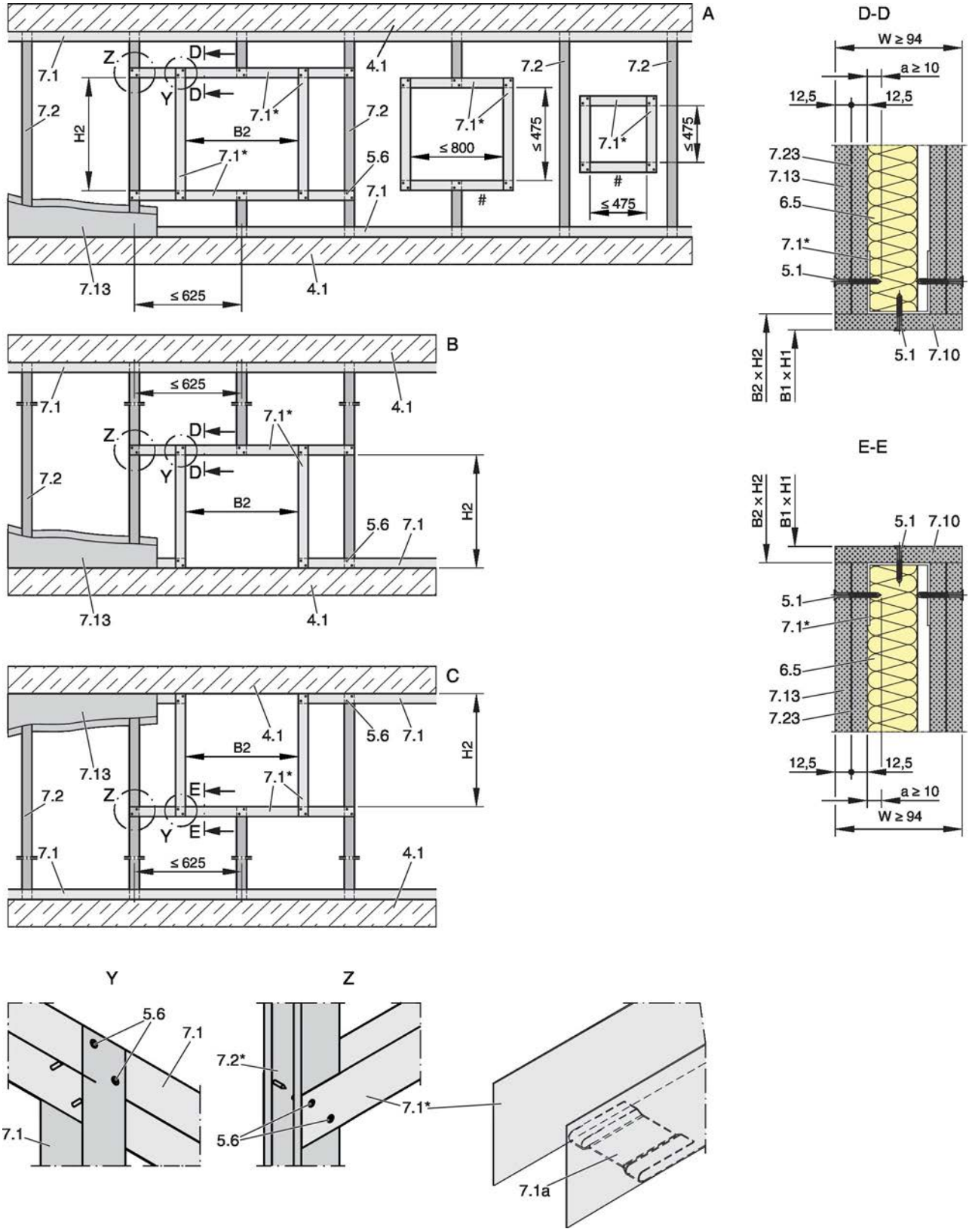



*Fig. 53: Lightweight partition wall with metal support structure and cladding on both sides*

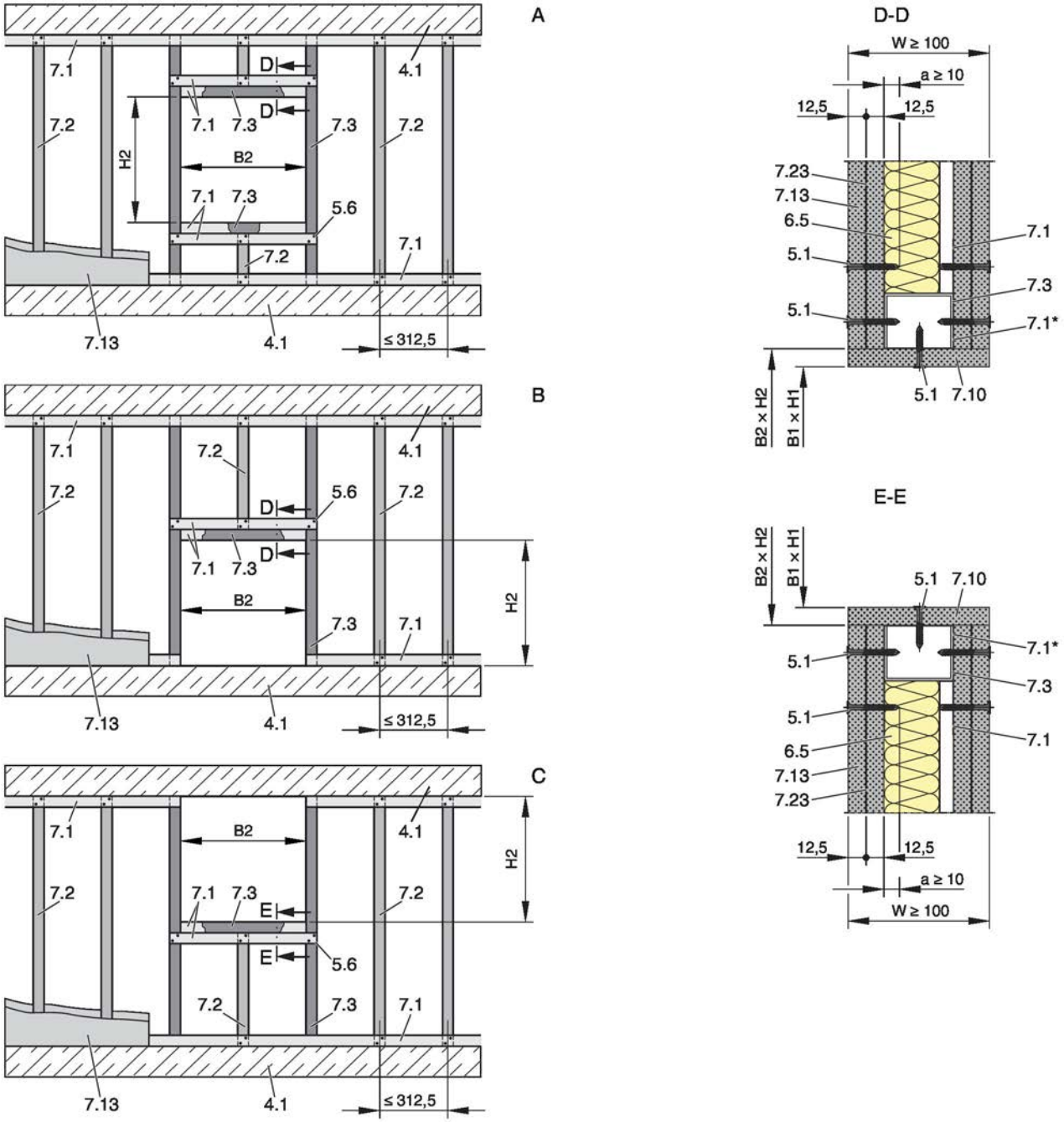



*Fig. 54: Compartment wall with metal support structure and cladding on both sides*

| | |
|---|---|
| A | Lightweight partition wall with metal support structure or steel support structure / compartment wall / safety partition wall |
| B | Lightweight partition wall with metal support structure or steel support structure / compartment wall / safety partition wall, installation near the floor |
| C | Lightweight partition wall with metal support structure or steel support structure / compartment wall / safety partition wall, installation near the ceiling |
| 4.1 | Solid ceiling slab / solid floor |
| 5.1 | Dry wall screw |
| 5.6 | Screw or steel rivet |
| 6.5 | Mineral wool (depending on wall construction) |
| 7.1 | UW section |
| 7.2 | CW section |
| 7.3 | UA section |
| 7.10 | Trim panels according to installation details |
| 7.13 | Cladding |
| 7.23 | Sheet steel insert depending on wall manufacturer (if any) |
| B1 × H1 | Installation opening |
| B2 × H2 | Opening in the metal support structure (without trim panels: B2 = B1, H2 = H1) |
| * | Closed side of metal section must face the installation opening |
| # | Arrangement variable |

7.1a UW section, cut in and bent or cut off

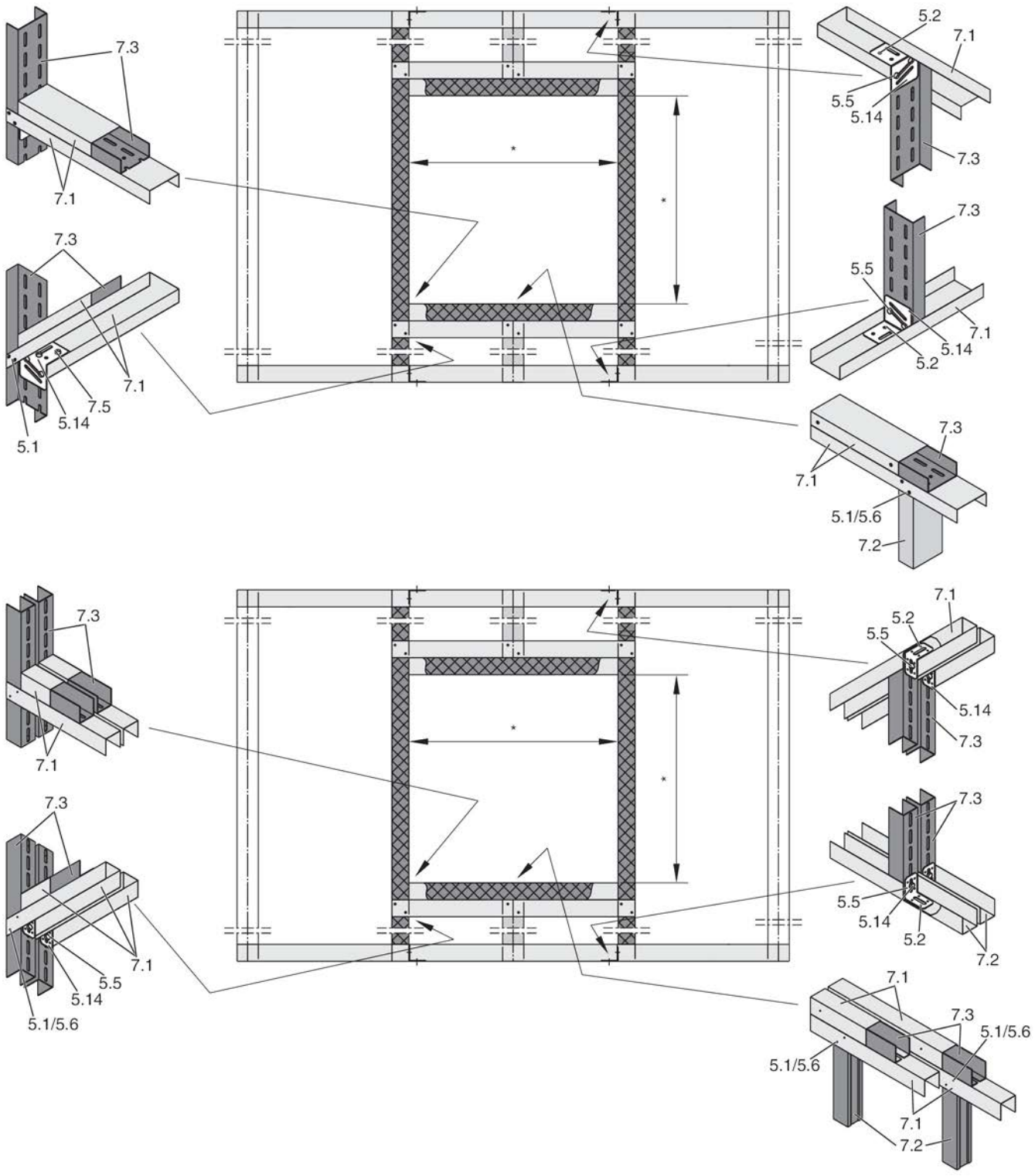



*Fig. 55: Metal support structure of compartment wall, single and double stud system*

| | | | |
|---|---|---|---|
| 5.1 | Dry wall screw | 7.1 | UW section |
| 5.2 | Hexagon head screw M6 | 7.2 | CW section |
| 5.5 | Carriage bolt, L ≤ 50 mm, with washer and nut | 7.3 | UA section |
| 5.6 | Steel rivet | * | Installation opening according to installation details |
| 5.14 | Angle bracket | | |

**Additional requirements: lightweight and compartment walls with metal support structure**

- Lightweight partition wall or compartment wall, see *40*

| Installation type | Installation opening [mm] | | | |
|---|---|---|---|---|
| | B1 | H1 | B2 | H2 |
| Mortar-based installation [1] | B + 450 max. | H + 450 max. | B1 + (trim panels) | H1 + (trim panels) |
| Dry mortarless installation with installation kit ES [1, 2] | B + 140 | H + 140 | | |
| Dry mortarless installation with fire batt [3] | B + 80 to 1200 | H + 80 to 1200 | B1 + (2 × / 4 × trim panels) | H1 + (2 × / 4 × trim panels) |

[1)] Trim panels optionally or corresponding installation details (max. 2 × 12.5 mm / 1 × 25 mm)

[2)] Installation opening tolerance ±2 mm

[3)] Trim panels according to installation details required

**Subsequent installation**

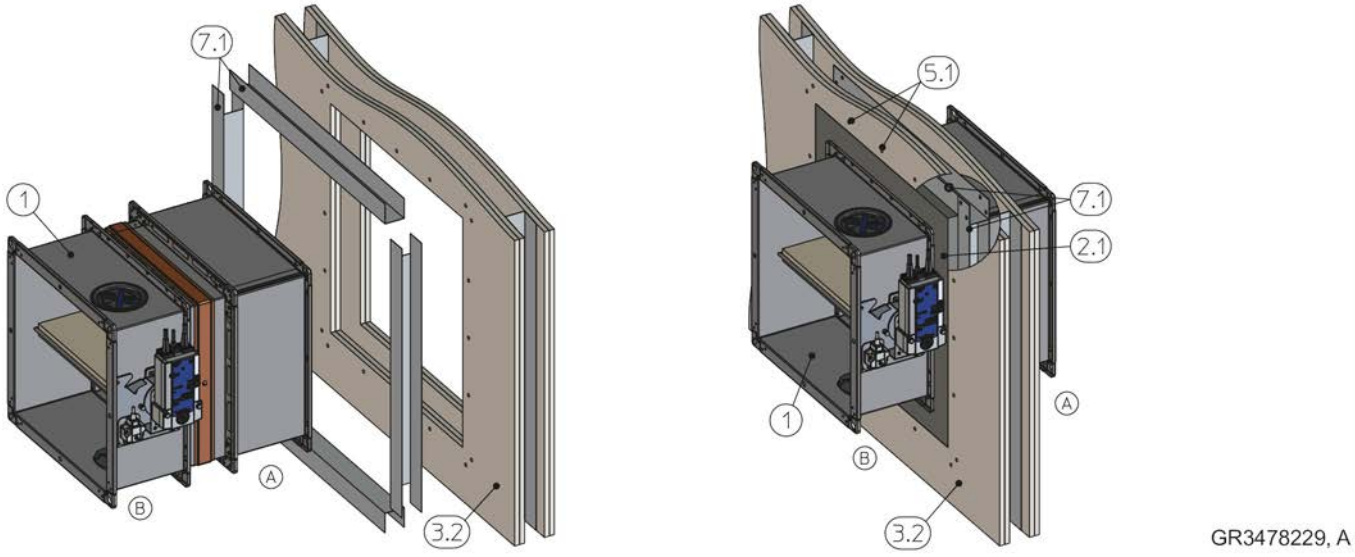



*Fig. 56: Subsequent installation in lightweight partition wall for clear opening ≤ 475 mm between two shelves, mortar-based installation shown (also applicable for dry mortarless installation)*

1 FKA2-EU
2.1 Mortar
3.2 Lightweight partition wall with metal support structure, cladding on both sides
5.1 Dry wall screw, with a distance of ≤ 100 mm
7.1 UW sections, cut to size by others, overlapping

### 5.5.1 Mortar-based installation

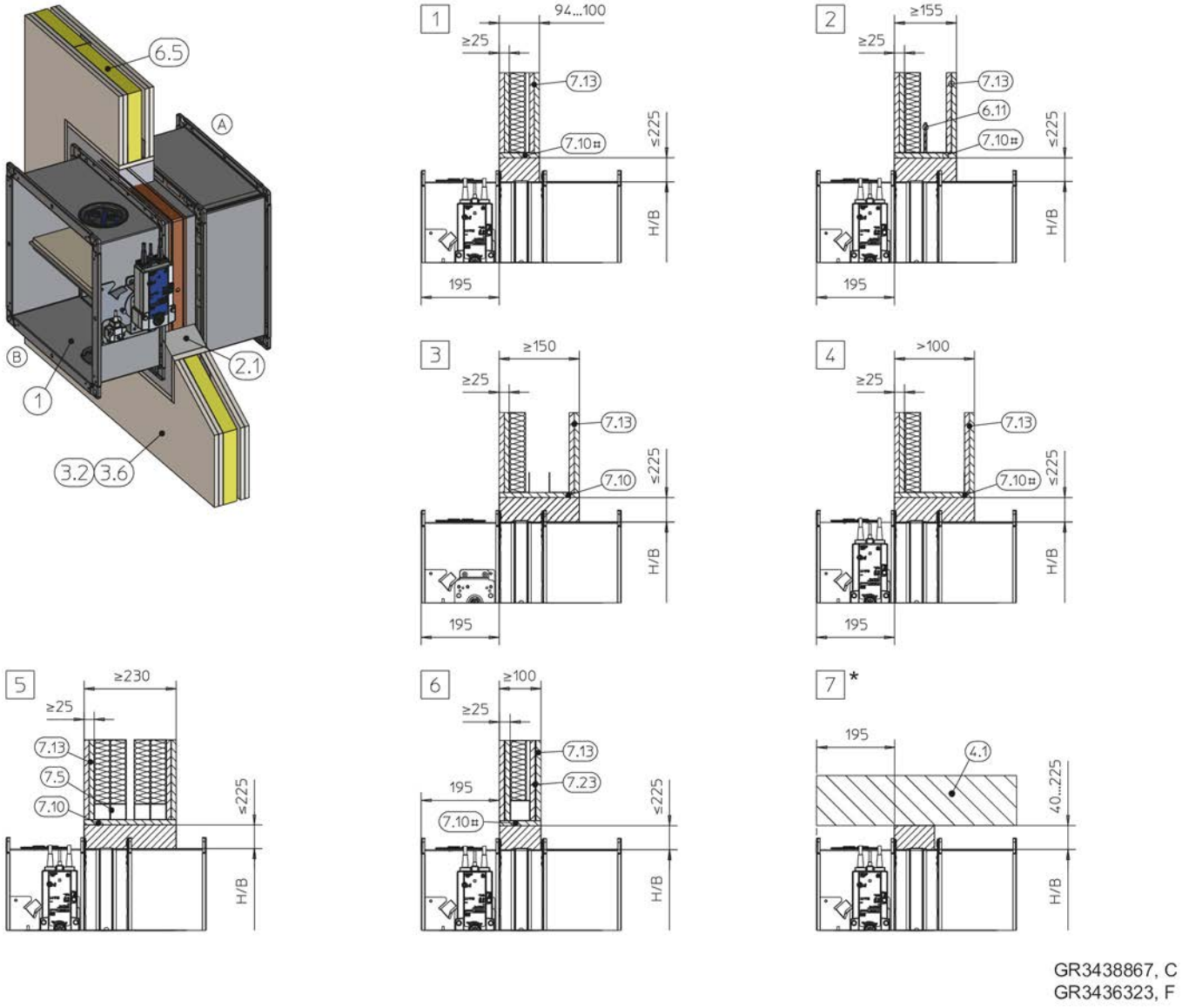



*Fig. 57: Mortar-based installation into a lightweight partition wall, compartment wall or safety partition wall*

| | |
|---|---|
| 1 | FKA2-EU |
| 2.1 | Mortar |
| 3.2 | Lightweight partition wall with metal support structure, cladding on both sides |
| 3.6 | Compartment wall or safety partition wall with metal support structure, cladding on both sides |
| 4.1 | Solid ceiling slab / solid floor |
| 6.5 | Mineral wool (depending on wall construction) |
| 6.11 | Insulating strip (depending on wall construction) |
| 7.5 | Steel support structure (box section) |
| 7.10 | Trim panels |
| 7.13 | Cladding |
| 7.23 | Sheet steel insert depending on wall manufacturer |
| # | optional |
| * | Installation near the floor analogous to 7 |
| 1 – 7 | Up to EI 120 S |

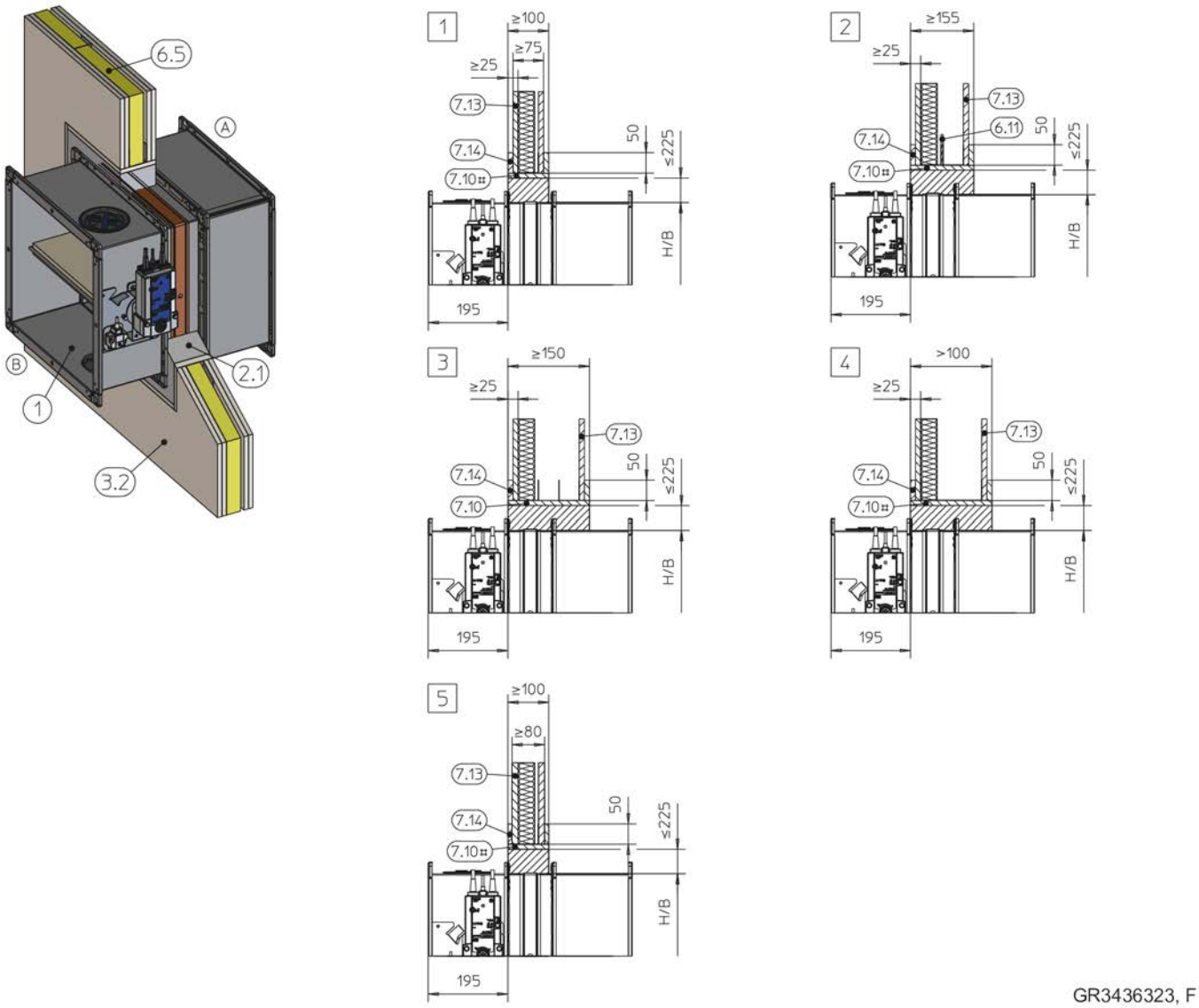



*Fig. 58: Mortar-based installation into a lightweight partition wall*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 7.13 | Cladding |
| 2.1 | Mortar | 7.14 | Reinforcing board of the same material as the wall |
| 3.2 | Lightweight partition wall with metal support structure, cladding on both sides | # | optional |
| 6.5 | Mineral wool (depending on wall construction) | * | Installation near the floor analogous to 7 |
| 6.11 | Insulating strip (depending on wall construction) | 1 – 4 | EI 30 S |
| 7.10 | Trim panels | 5 | Up to EI 60 S |

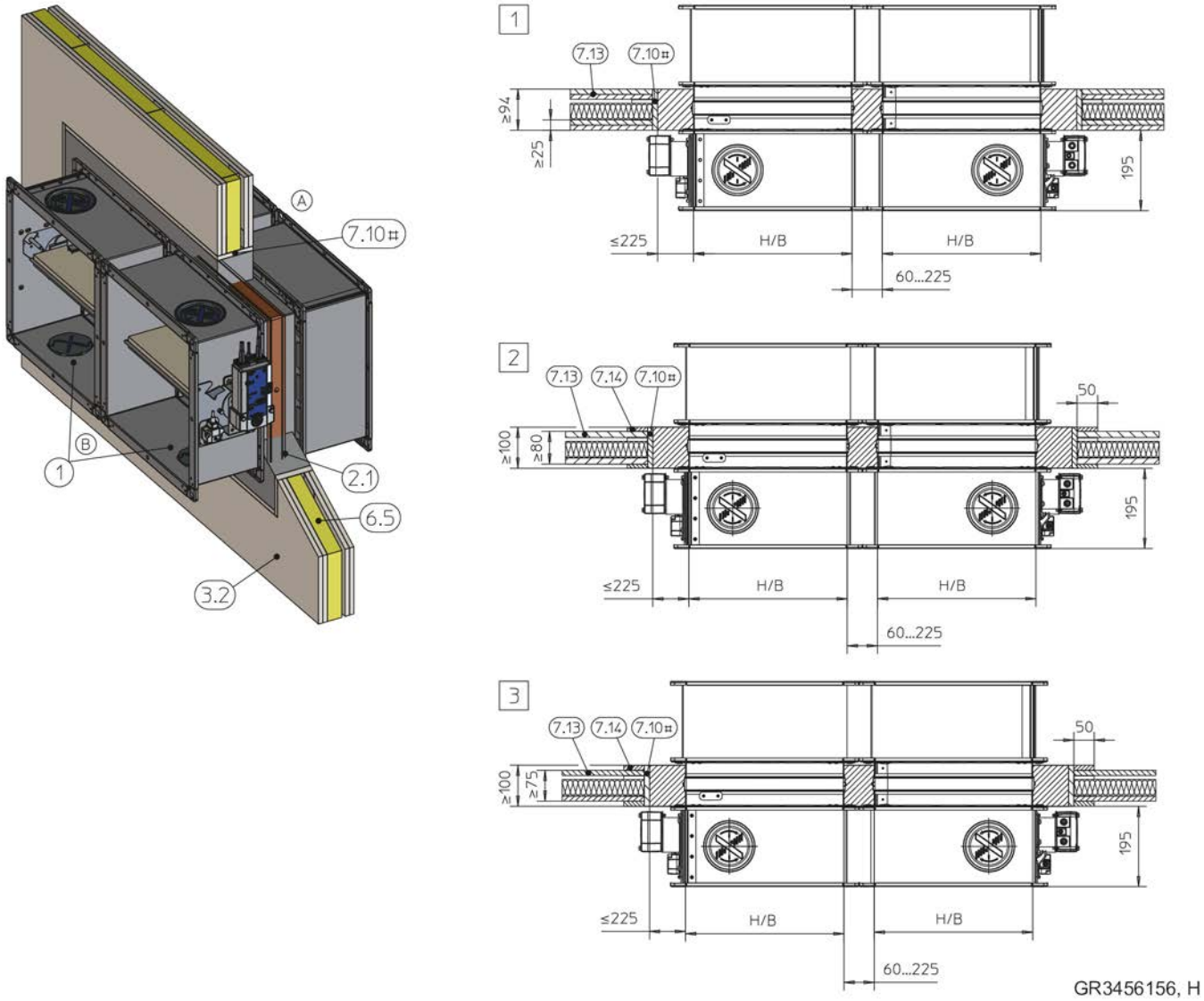



*Fig. 59: Mortar-based installation into a lightweight partition wall, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 7.14 | Reinforcing board of the same material as the wall |
| 2.1 | Mortar | # | according to installation details Fig. 57 and Fig. 58 |
| 3.2 | Lightweight partition wall with metal support structure, cladding on both sides | 1 | Up to EI 120 S |
| 6.5 | Mineral wool (depending on wall construction) | 2 | Up to EI 60 S |
| 7.10 | Trim panels | 3 | EI 30 S |
| 7.13 | Cladding | | |

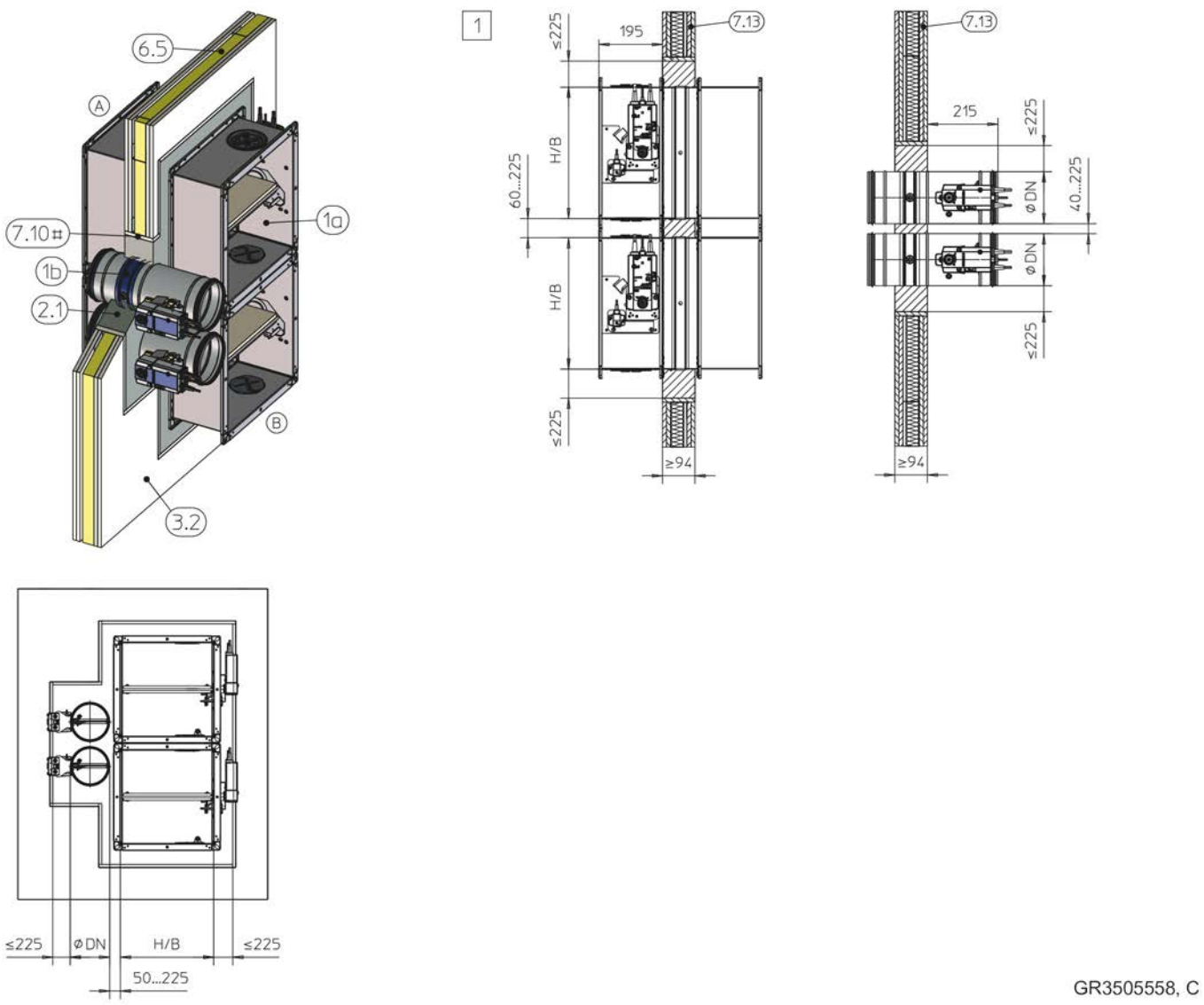



*Fig. 60: Mortar-based installation into a lightweight partition wall, FKA2-EU and FKRS-EU combined*

| | | | |
|---|---|---|---|
| 1a | FKA2-EU up to B × H ≤ 800 × 400 mm | 7.10 | Trim panels |
| 1b | FKRS-EU | 7.13 | Cladding |
| 2.1 | Mortar | # | according to installation details Fig. 57 and Fig. 58 |
| 3.2 | Lightweight partition wall with metal support structure, cladding on both sides | 1 | Up to EI 90 S |
| 6.5 | Mineral wool (depending on wall construction) | | |

**Note:**

- Total fire damper surface area ≤ 1.2 m².
- Alternative installation orientations of side-by-side, under or on top of one another possible. Details are available upon request.
  For installation details FKRS-EU, see the installation and operating manual for this fire damper type.
- Distance to load-bearing structural elements ≥ 40 mm

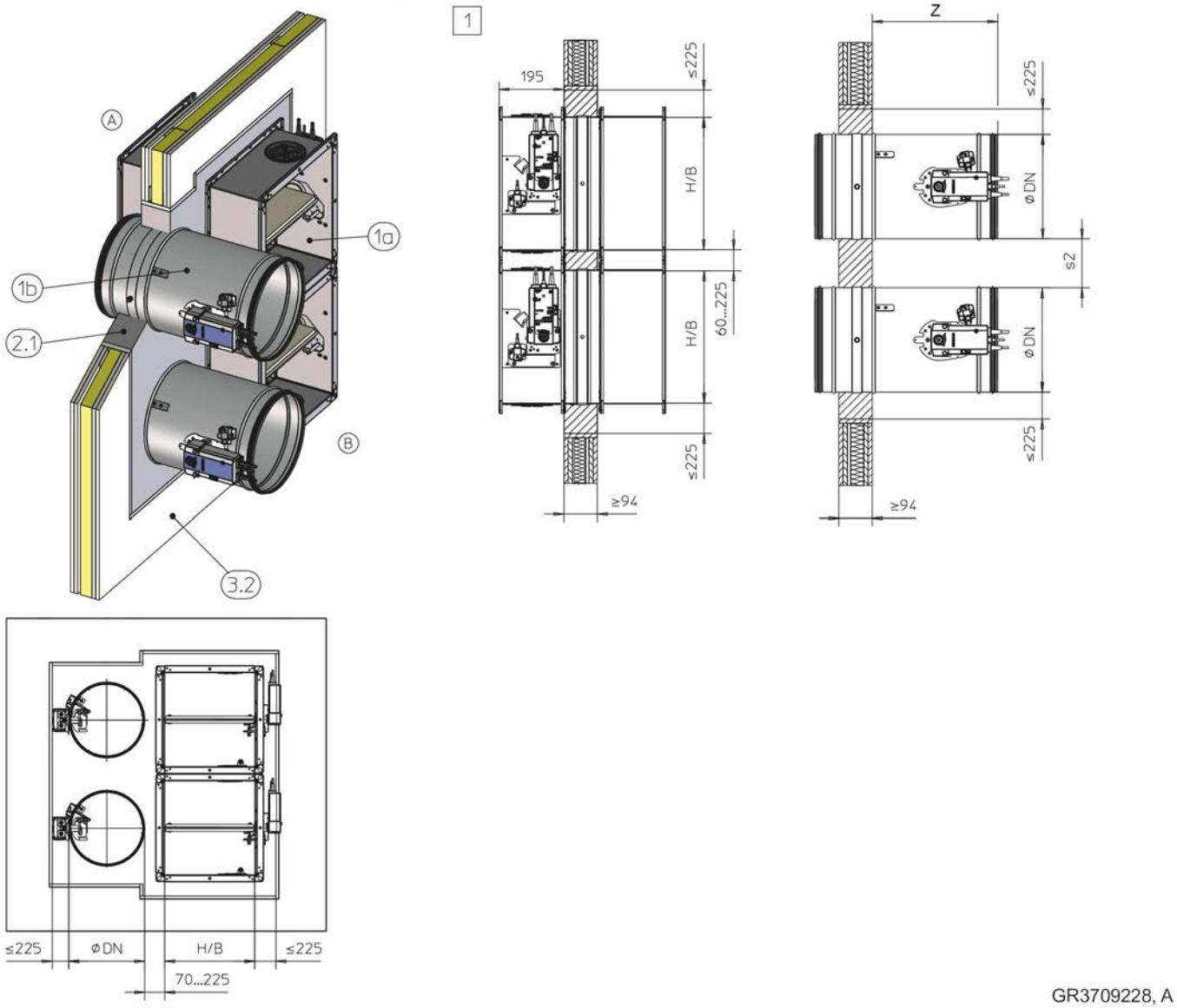



*Fig. 61: Mortar-based installation into a lightweight partition wall, FKA2-EU and FKR-EU combined*

| | | | |
|---|---|---|---|
| 1a | FKA2-EU up to B × H ≤ 800 × 400 mm | | Flange construction 342 mm |
| 1b | FKR-EU | s2 | Spigot construction 40 – 225 mm |
| 2.1 | Mortar | | Flange construction 80 – 225 mm |
| 3.2 | Lightweight partition wall with metal support structure, cladding on both sides | 1 | Up to EI 90 S |
| Z | Spigot construction 370 mm | | |

**Note:**

- Total fire damper surface area ≤ 1.2 m².
- Alternative installation orientations of side-by-side, under or on top of one another possible. Details are available upon request.
  For installation details FKR-EU, see the installation and operating manual for this fire damper type.
- Distance to load-bearing structural elements ≥ 40 mm

**Additional requirements: mortar-based installation into lightweight partition and compartment walls**

- Lightweight partition wall *40*
- Casing lengths L = 305 and 500 mm
- EI 120 S: 60 – 225 mm distance between two FKA2-EU fire dampers of the same size in one installation opening (deviations on request).

- Distance to load-bearing structural elements ≥ 40 mm

### 5.5.2 Mortar-based installation – multiple occupancy of an installation opening

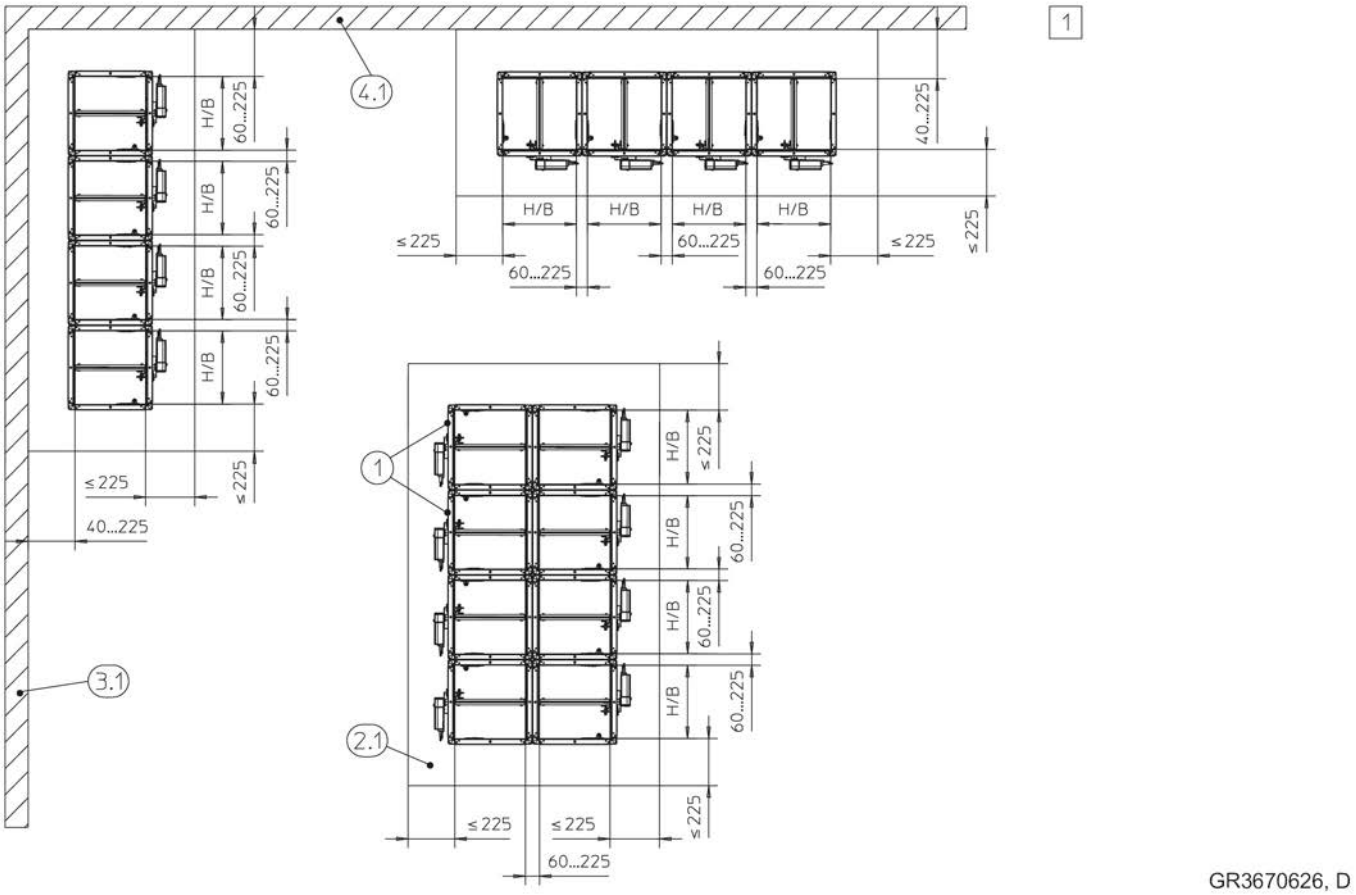



*Fig. 62: Mortar-based installation – multiple occupancy of an installation opening*

1 FKA2-EU
2.1 Mortar
3.1 Solid wall (load-bearing component)
4.1 Solid ceiling slab (load-bearing component)
[1] Up to EI 90 S

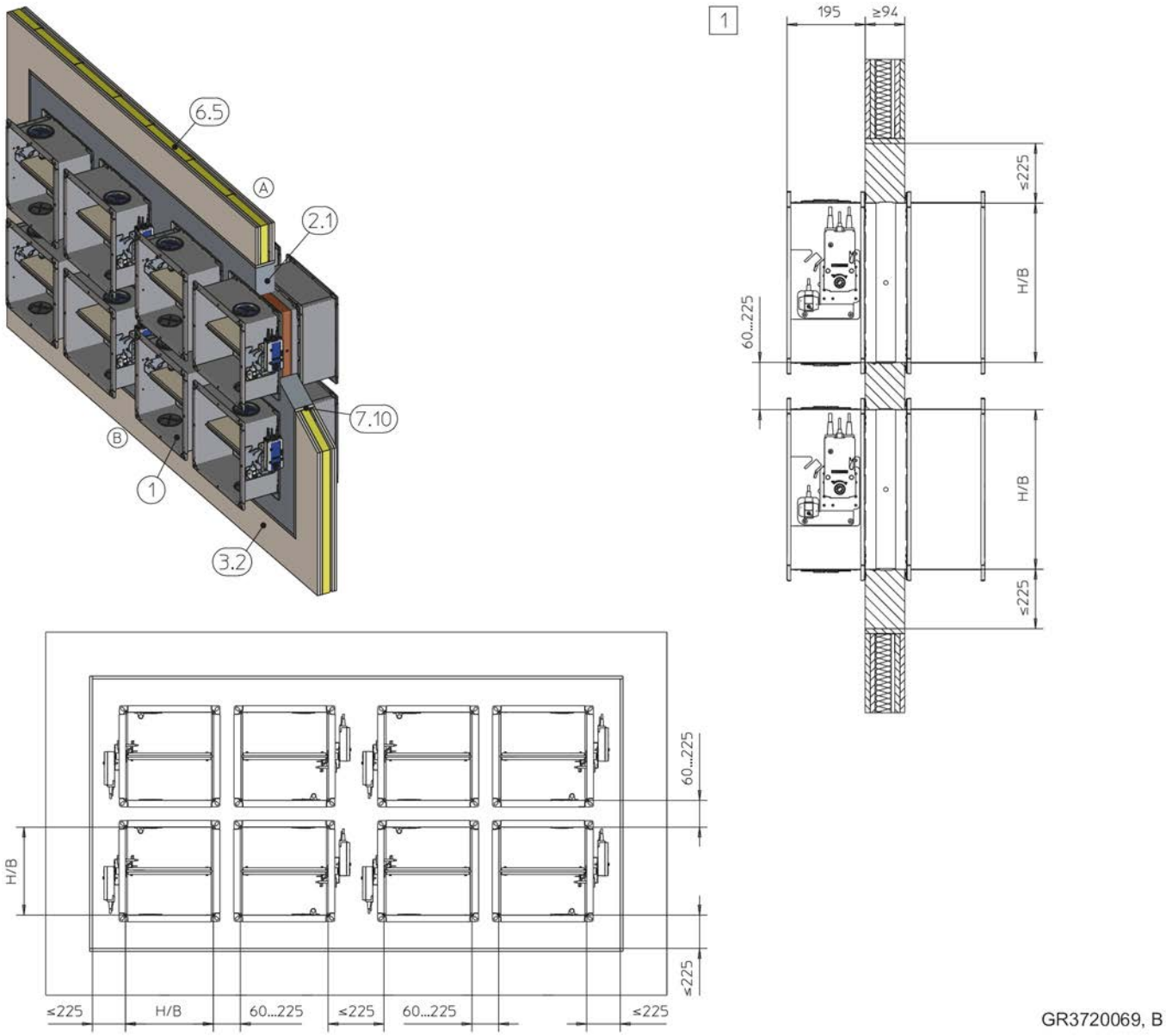



*Fig. 63: Mortar-based installation – multiple occupancy of an installation opening*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 6.5 | Mineral wool (depending on wall construction) |
| 2.1 | Mortar | 7.10 | Trim panels |
| 3.2 | Lightweight partition wall with metal support structure, cladding on both sides | 1 | Up to EI 90 S |

**Additional requirements: mortar-based installation – multiple occupancy of an installation opening**

- Lightweight partition wall (excluding compartment wall), see *40*
- Casing length L = 305 or 500 mm
- Total fire damper surface area (B × H) ≤ 4.8 $m^2$
- The number of fire dampers in an installation opening is limited by their damper size (B × H) and the overall area of the fire dampers (4.8 $m^2$)
- The dampers can be arranged in one or two rows.
- Distance to load-bearing structural elements ≥ 40 mm
- If the actuators are located between the fire dampers, sufficient free space for inspection must be provided.
- The mortar bed width is not allowed to exceed 225 mm, provide separate trimmers if necessary.

### 5.5.3 Mortar-based installation – 4-way arrangement with common duct

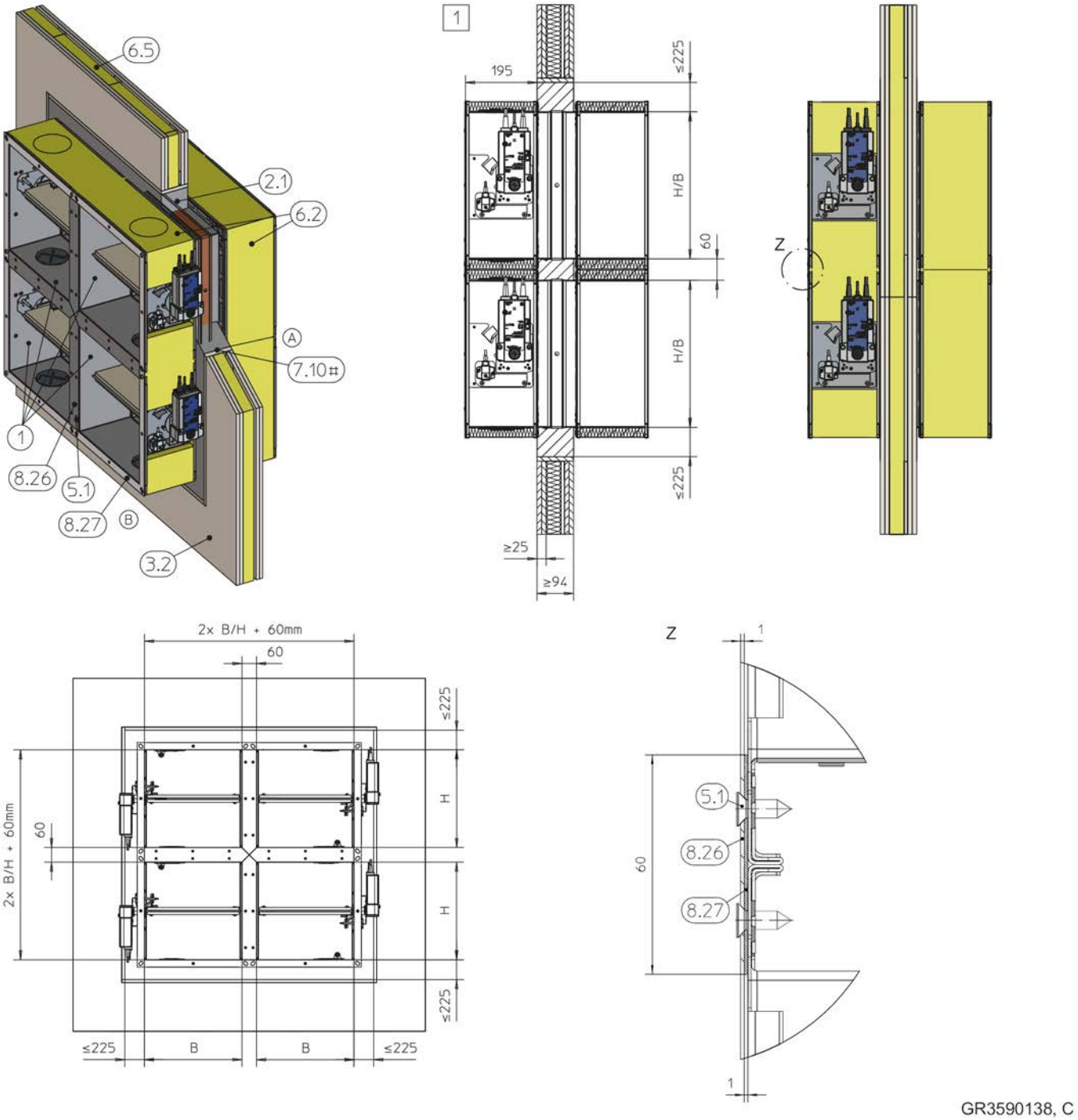



*Fig. 64: Mortar-based installation – 4-way arrangement with common duct*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 7.10 | Trim panels |
| 2.1 | Mortar | 7.13 | Cladding |
| 3.2 | Lightweight partition wall with metal support structure, cladding on both sides | 8.26 | Blanking plate, t = 1 mm (provided by others) |
| | | 8.27 | Seal |
| 5.1 | Self-tapping screw, spacing ~ 150 mm | # | according to installation details Fig. 57 and Fig. 58 |
| 6.2 | Mineral wool, ≥ 1000 °C, ≥ 80 kg/m³, thickness ≥ 30 mm | [1] | Up to EI 120 S |
| 6.5 | Mineral wool (depending on wall construction) | | |

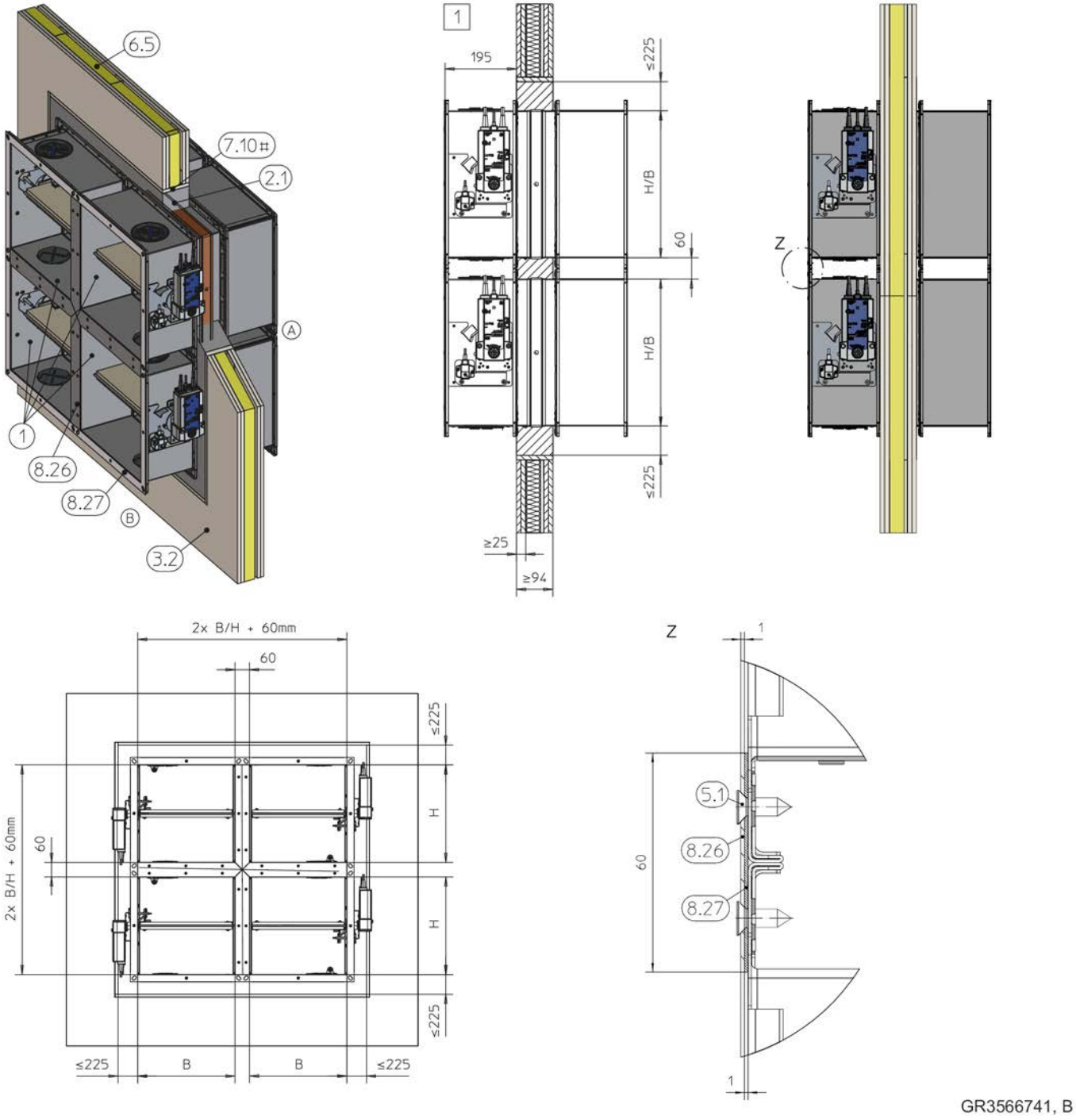



*Fig. 65: Mortar-based installation – 4-way arrangement with common duct*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 7.10 | Trim panels |
| 2.1 | Mortar | 8.26 | Blanking plate, t = 1 mm (provided by others) |
| 3.2 | Lightweight partition wall with metal support structure, cladding on both sides | 8.27 | Seal |
| | | # | according to installation details Fig. 57 and Fig. 58 |
| 5.1 | Self-tapping screw, spacing ~ 150 mm | | |
| 6.5 | Mineral wool (depending on wall construction) | 1 | Up to EI 90 S |

**Supplementary requirements: mortar-based installation - 4-way arrangement with common air duct**

- Lightweight partition wall (excluding compartment wall), see *40*
- Casing length L = 500 mm
- 4-way arrangement up to 4.8 $m^2$ total fire damper surface area (common air duct)
- Connection of the dampers to the flanges using blanking plates
- Close off the perimeter gaps and the gaps between the damper casings completely with mortar.
- For EI 120 S, apply mineral wool (6.2) all around the operating and installation side (cut out the control panel so that the function of the damper is not impaired). Inspection accesses and the product sticker must remain accessible.
- Distance to load-bearing structural elements ≥ 40 mm

### 5.5.4 Dry mortarless installation with installation kit ES

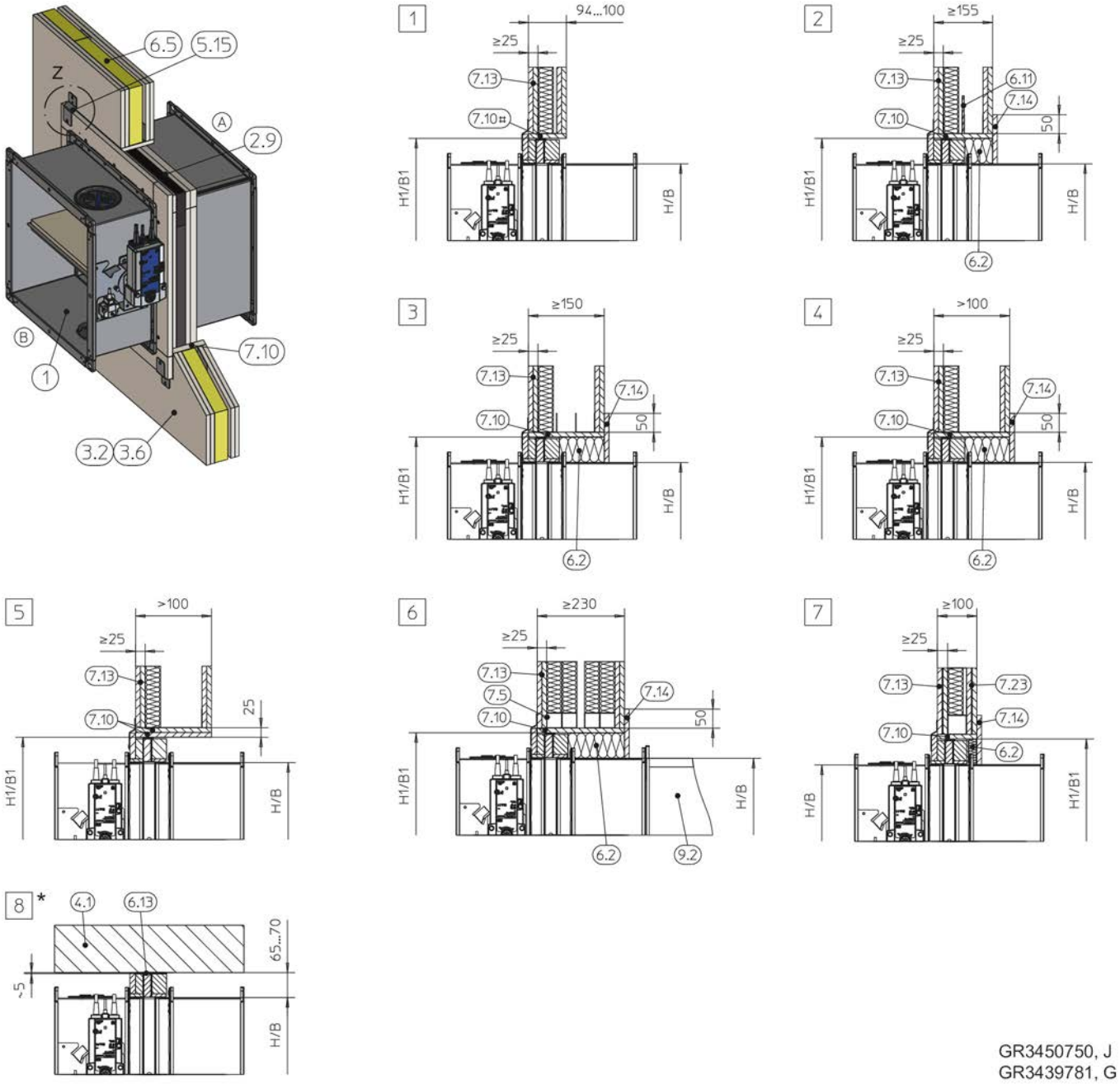



*Fig. 66: Dry mortarless installation into a lightweight partition wall, with installation kit ES*

| | |
|---|---|
| 1 | FKA2-EU |
| 2.9 | Installation kit ES |
| 3.2 | Lightweight partition wall with metal support structure, cladding on both sides |
| 4.1 | Solid ceiling slab / solid floor |
| 5.15 | Bracket |
| 6.2 | Mineral wool, ≥ 1000 °C, ≥ 80 kg/m³ |
| 6.5 | Mineral wool (depending on wall construction) |
| 6.11 | Insulating strip (depending on wall construction) |
| 6.13 | Mineral wool strips A1, filler as an alternative (if required to even out an uneven wall) |
| 7.5 | Steel support structure (box section) |
| 7.10 | Trim panels |
| 7.13 | Cladding |
| 7.14 | Reinforcing board of the same material as the wall |
| 7.23 | Sheet steel insert depending on wall manufacturer |
| 9.2 | Extension piece or duct |
| * | Installation near the floor analogous to 8 |
| # | optional |
| H1/B1 | Installation opening, see table *68* |
| Z | For fixing, see Fig. 21 to Fig. 23 |
| 1 – 8 | Up to EI 120 S:<br>B × H > 800 × 400 – 1500 × 800 mm<br>Up to EI 90 S:<br>B × H = 200 × 100 – 1500 × 800 mm |

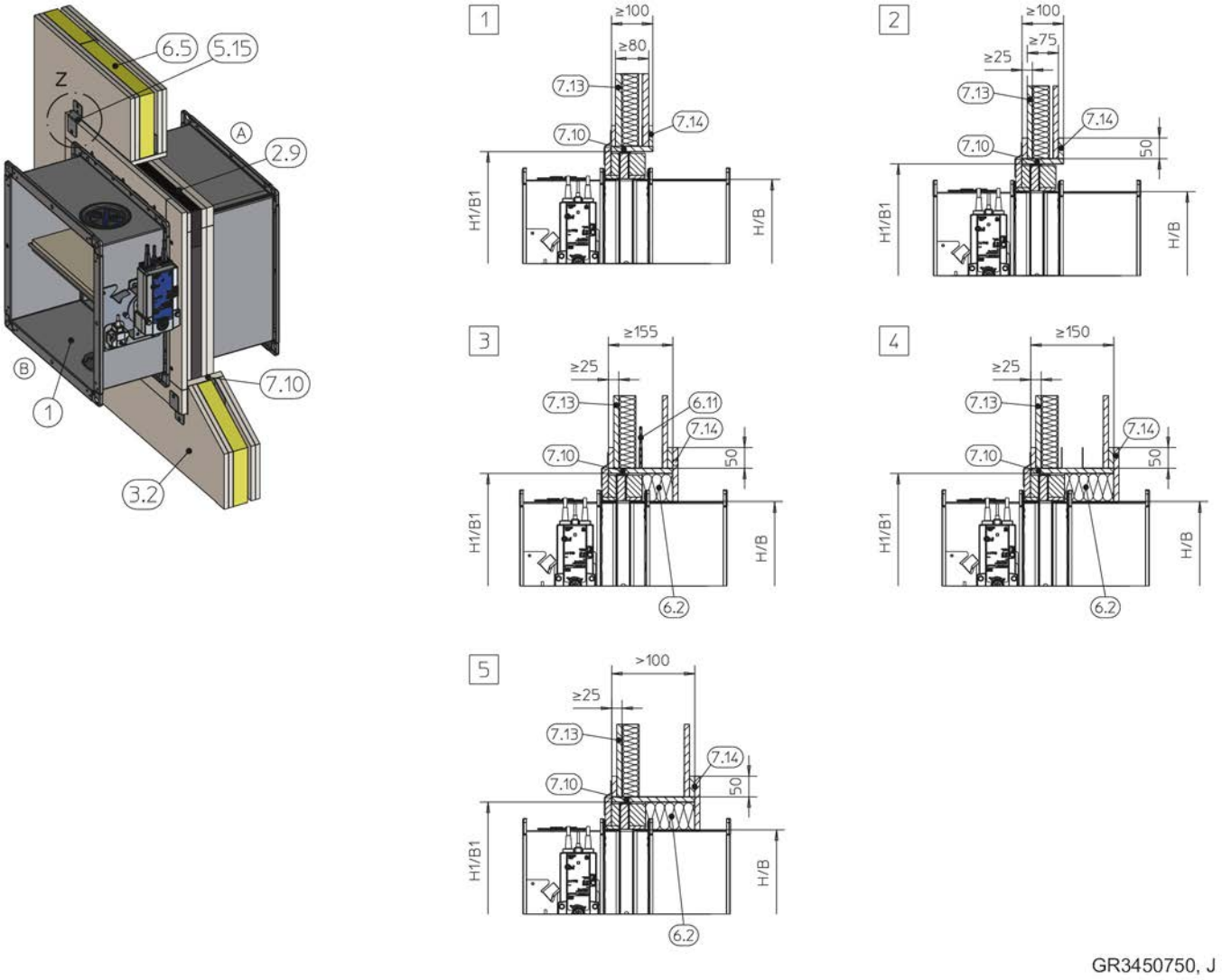



*Fig. 67: Dry mortarless installation into a lightweight partition wall, with installation kit ES*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 7.10 | Trim panels |
| 2.9 | Installation kit ES | 7.13 | Cladding |
| 3.2 | Lightweight partition wall with metal support structure, cladding on both sides | 7.14 | Reinforcing board of the same material as the wall |
| 5.15 | Bracket | H1/B1 | Installation opening, see table *68* |
| 6.2 | Mineral wool, ≥ 1000 °C, ≥ 80 kg/m³ (required for wall thicknesses > 100 mm) | Z | For fixing, see Fig. 21 to Fig. 23 |
| 6.5 | Mineral wool (depending on wall construction) | 1 | Up to EI 60 |
| 6.11 | Insulating strip (depending on wall construction) | 2 – 5 | EI 30 S |

**Additional requirements: dry mortarless installation with installation kit ES in lightweight partition walls**

- Lightweight partition wall *40*
- Casing length L = 500 mm
- Distance from the fire damper to the adjacent structural elements ≥ 110 / 120 mm (depending on the arrangement of brackets, 4-sided metal section)
- 65 – 70 mm distance between the fire damper with a shortened installation kit and load-bearing structural elements, see / , detail 6
- ≥ 200 mm distance between two fire dampers in separate installation openings

- Ensure accessibility from the rear.
- For wall thicknesses > 100 mm, double trim panels can be provided as an alternative to the rear closure from 6.2 and 7.14 (double three-sided trim panels are required for installation near the ceiling).

1. ▸ Mount the installation kit onto the fire damper, see *42* .
2. ▸ Insert the fire damper centred into the installation opening and fix with brackets and dry wall screws to the stud frame, see Fig. 21 to Fig. 23 .

### 5.5.5 Dry mortarless installation with mineral wool

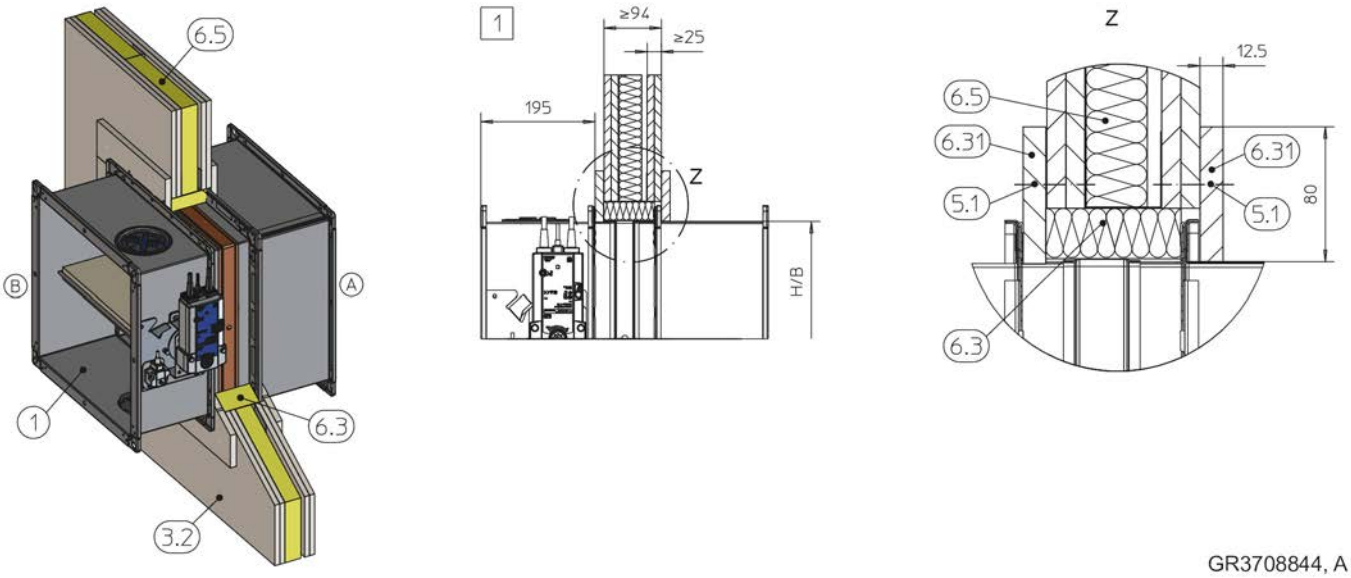



*Fig. 68: Dry mortarless installation into a lightweight partition wall, with mineral wool*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 6.3 | Mineral wool, ≥ 1000 °C, ≥ 100 kg/m³, thickness = 40 mm |
| 3.2 | Lightweight partition wall with metal support structure, cladding on both sides | 6.5 | Mineral wool (depending on wall construction) |
| 4.1 | Solid ceiling slab / solid floor | 6.31 | Fire-rated plasterboard strip, d = 12.5 mm |
| 5.1 | Dry wall screw | 1 | Up to EI 60 S |

**Additional requirements: dry mortarless installation into lightweight partition walls, with mineral wool**

- Lightweight partition wall *40*
- Casing length L = 500 mm
- ≥ 200 mm distance between two fire dampers in separate installation openings
- Distance to load-bearing structural elements ≥ 80 mm

1. ▸ Create a clear opening with B + 74 (±2) mm and H + 86 (±2) mm.
2. ▸ Cut mineral wool strips (6.3) and fire-rated plasterboard strips (6.31) to size.
3. ▸ Place mineral wool strips and fire-rated plasterboard strips around the damper casing on the operating side (B) and fix them (clamp in and fix with filler if necessary).
4. ▸ Slide the fire damper into the installation opening and screw fire-rated plasterboard strips on the operating side (B) to the surrounding metal support structure (screw spacing approx. 150 mm).
5. ▸ Attach the fire-rated plasterboard strips on the installation side (A) and screw them to the surrounding metal support structure (screw spacing approx. 150 mm).

**Note:**

Wall thickness shown = 100 mm. For wall thicknesses > 100 mm, the area between installation side (A) of the fire damper and the installation opening is additionally filled to wall thickness with mineral wool strips (6.3).

## 5.5.6 Dry mortarless installation with plasterboard cladding/fire-rated plasterboard panels

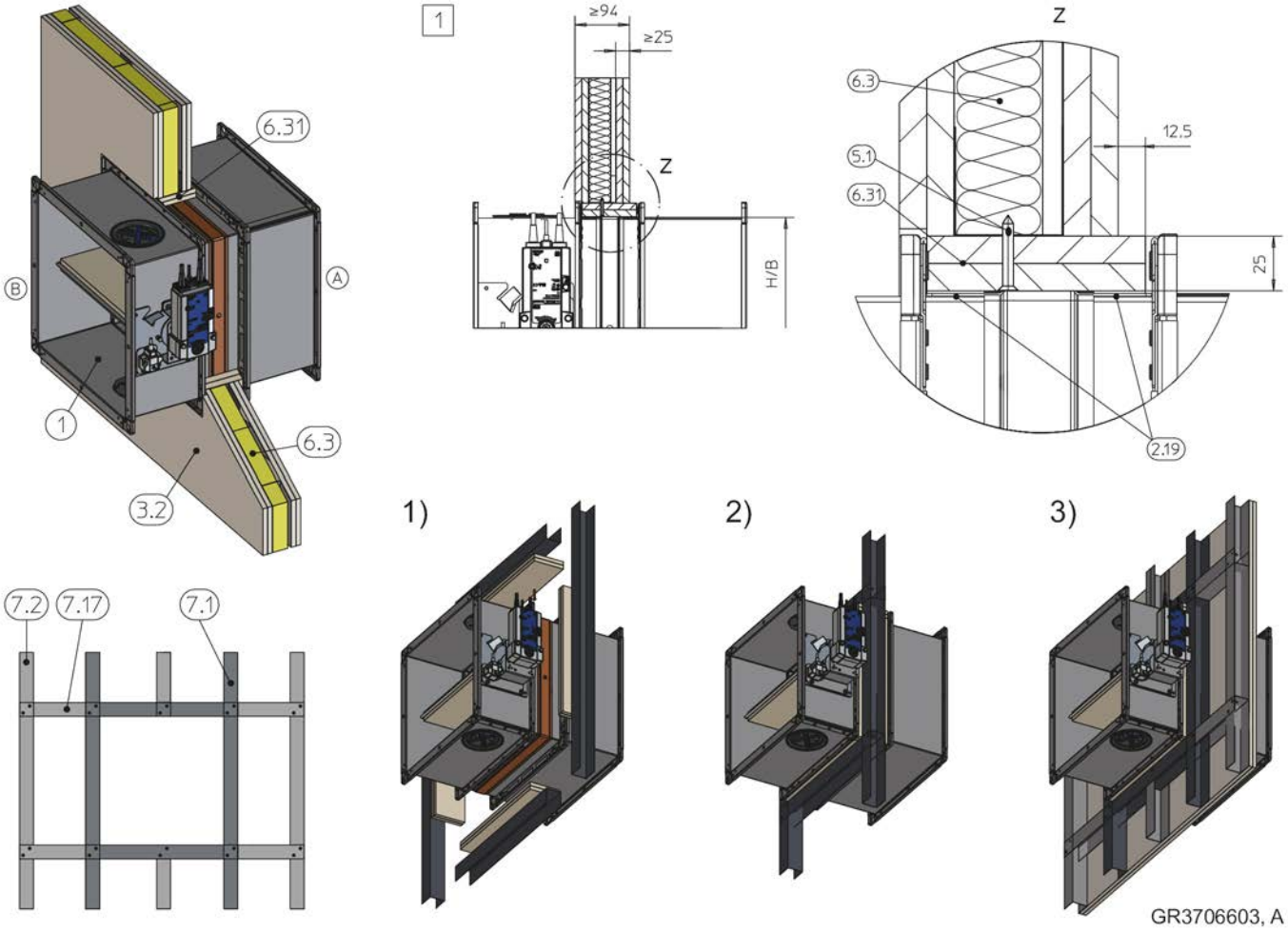



*Fig. 69: Dry mortarless installation with plasterboard cladding/fire-rated plasterboard panels in lightweight partition wall*

| | |
|---|---|
| 1 | FKA2-EU |
| 2.19 | Joint filler or filler |
| 3.2 | Lightweight partition wall with metal support structure, cladding on both sides |
| 5.1 | Dry wall screw |
| 6.3 | Mineral wool, ≥ 1000 °C, ≥ 100 kg/m³ |
| 6.31 | Fire-rated plasterboard or plasterboard cladding strips, d = 12.5 mm, 98 mm wide<br>Cut parts: 4 × B + 16 mm and 4 × H + 33 mm |
| 7.1 | UW section |
| 7.2 | CW section |
| 7.17 | Trimmers, UW section |
| [1] | Up to EI 90 S |

**Additional requirements: dry mortarless installation into lightweight partition walls, with plasterboard cladding/fire-rated plasterboard panels**

- Lightweight partition wall *40*
- Casing length L = 500 mm
- ≥ 200 mm distance between two fire dampers in separate installation openings
- Distance to load-bearing structural elements ≥ 75 mm

1. Make panel cuts without gaps from plasterboard cladding or fire-rated plasterboard strips and screw on with metal sections selected to match the installation opening.
2. Completely fill the grooves on the installation side of the fire damper all around with filler or joint filler (2.19), lay the panel strips on 4 sides around the fire damper and screw the profiles together at the intersection points.
3. Position the fire damper at the desired position in the metal stud wall and screw it to the wall profiles.

### 5.5.7 Dry mortarless installation remote from a lightweight partition wall with installation kit WE

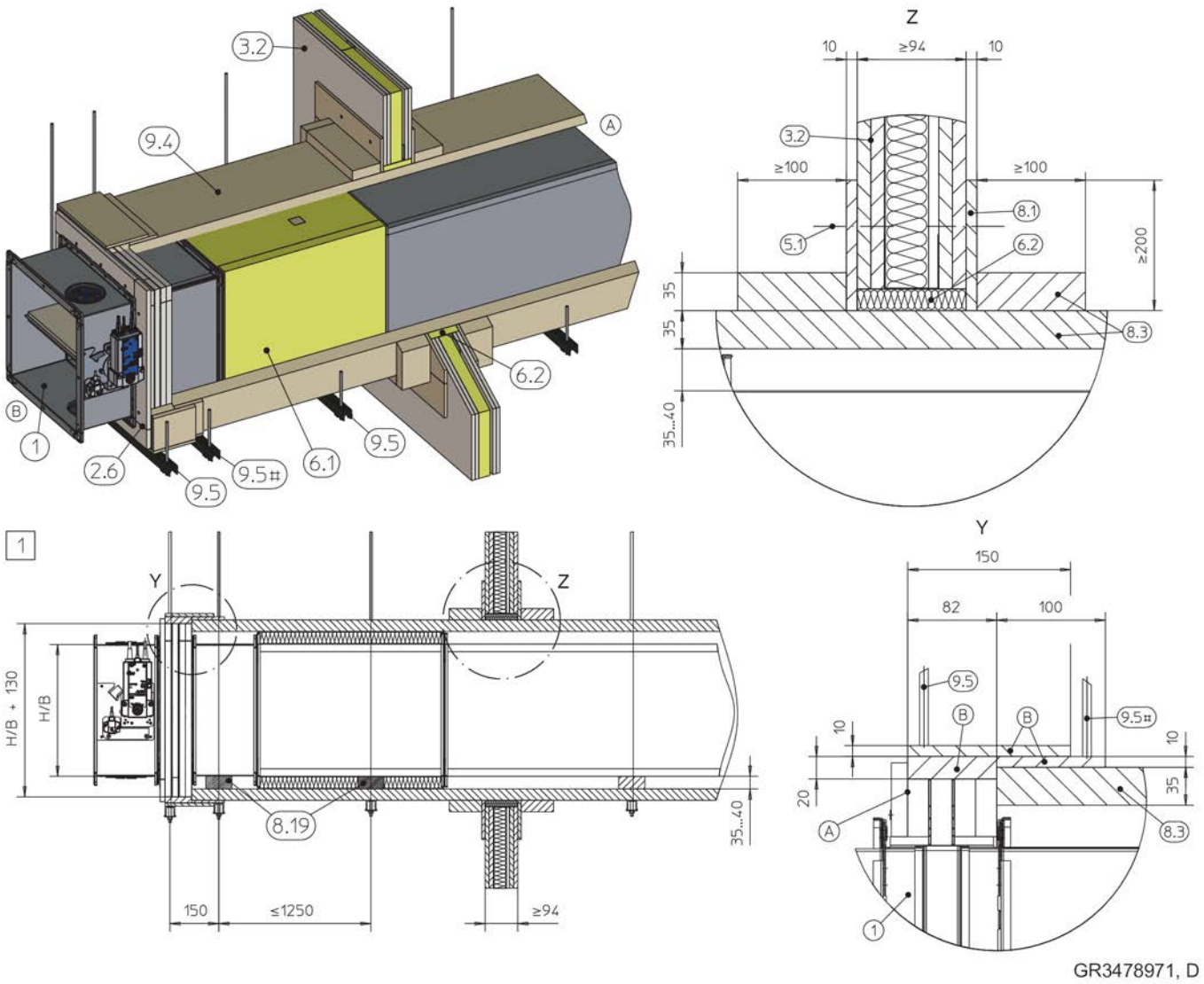



*Fig. 70: Dry mortarless installation remote from a lightweight partition wall with installation kit WE*

1 FKA2-EU
2.6 Installation kit WE, see 🔗 *44*
3.2 Lightweight partition wall with metal support structure, cladding on both sides
5.1 Dry wall screw
6.1 Mineral wool, ≥ 1000 °C, ≥ 40 kg/m³, d = 40 mm, only withB × H > 800 × 400 mm
6.2 Mineral wool, ≥ 1000 °C, ≥ 80 kg/m³, thickness = 20 mm
8.1 Supply package WE
8.2 Supply package WE
8.3 PROMATECT®-LS, d = 35 mm
8.19 Overlay made of PROMATECT®-LS, d = 35 mm
9.4 Sheet steel duct with fire-rated cladding and suspension system according to Promat® manual, construction 478, latest edition
9.5 Suspension (on site to be performed by others) of the FKA2-EU, see 🔗 *157*
# Damper sizes > 1000 × 600 mm require second suspension point underneath the fire damper at a distance of 150 mm from each other
[1] to EI 90 S (horizontal installation position)

**Additional requirements: dry mortarless installation with installation kit WE remote from lightweight partition walls**

- Lightweight partition wall *40*
- Casing length L = 500 mm
- Horizontal installation position
- Sheet steel ducts without any openings, with fire-resistant cladding (fittings with cladding according to instructions from Promat®)
- ≥ 270 mm distance to the wall or ceiling slab
- ≥ 350 mm distance between two fire dampers
- Enough clear space is required to attach the installation kit to the fire damper.
- Installation of the FKA2-EU with installation kit WE remote from walls and ceiling slabs, see *38*
- Fix installation kit WE on fire damper, see *44*

**Note:** Fire damper and duct must be suspended *157* .

### 5.5.8 Dry mortarless installation with fire batt

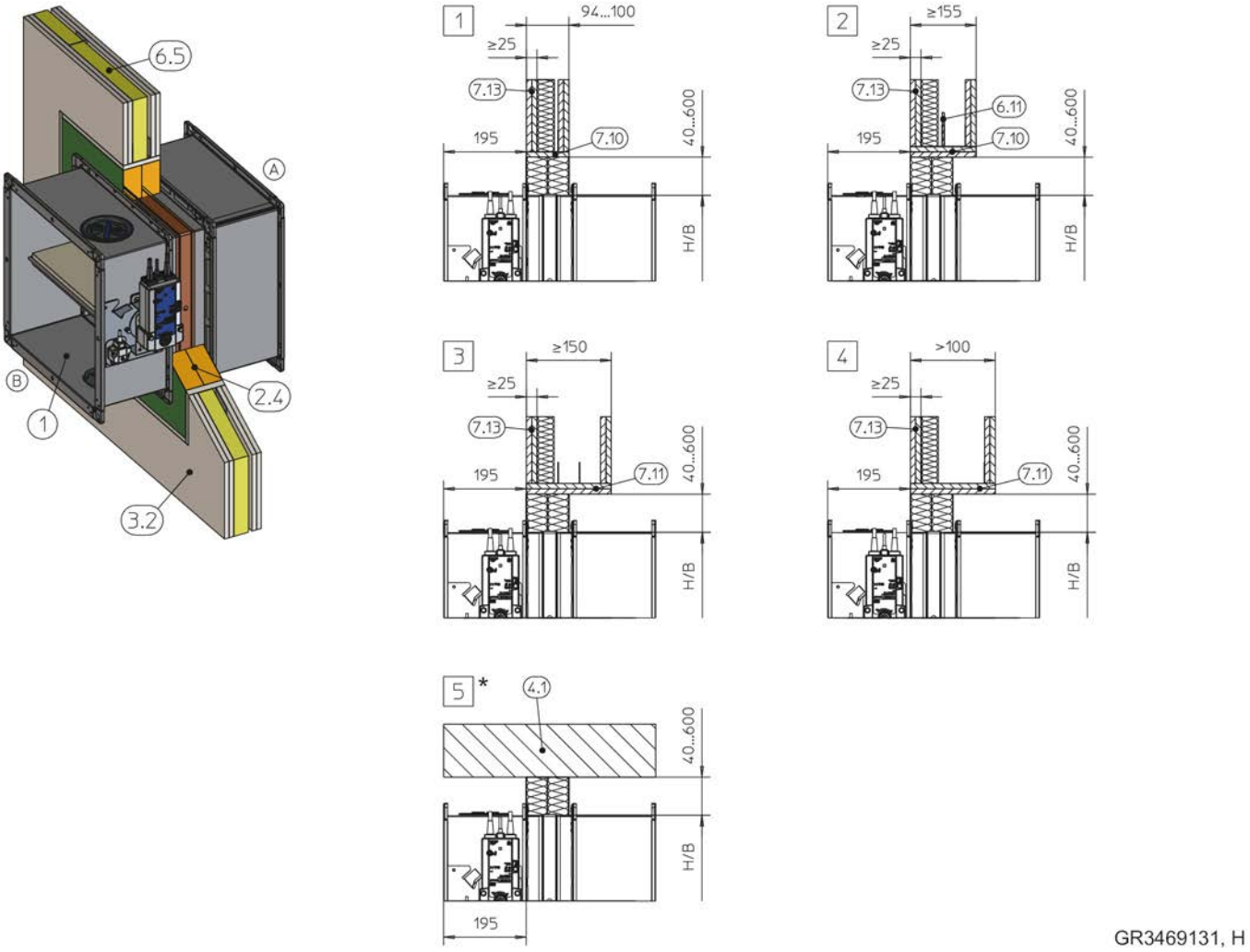
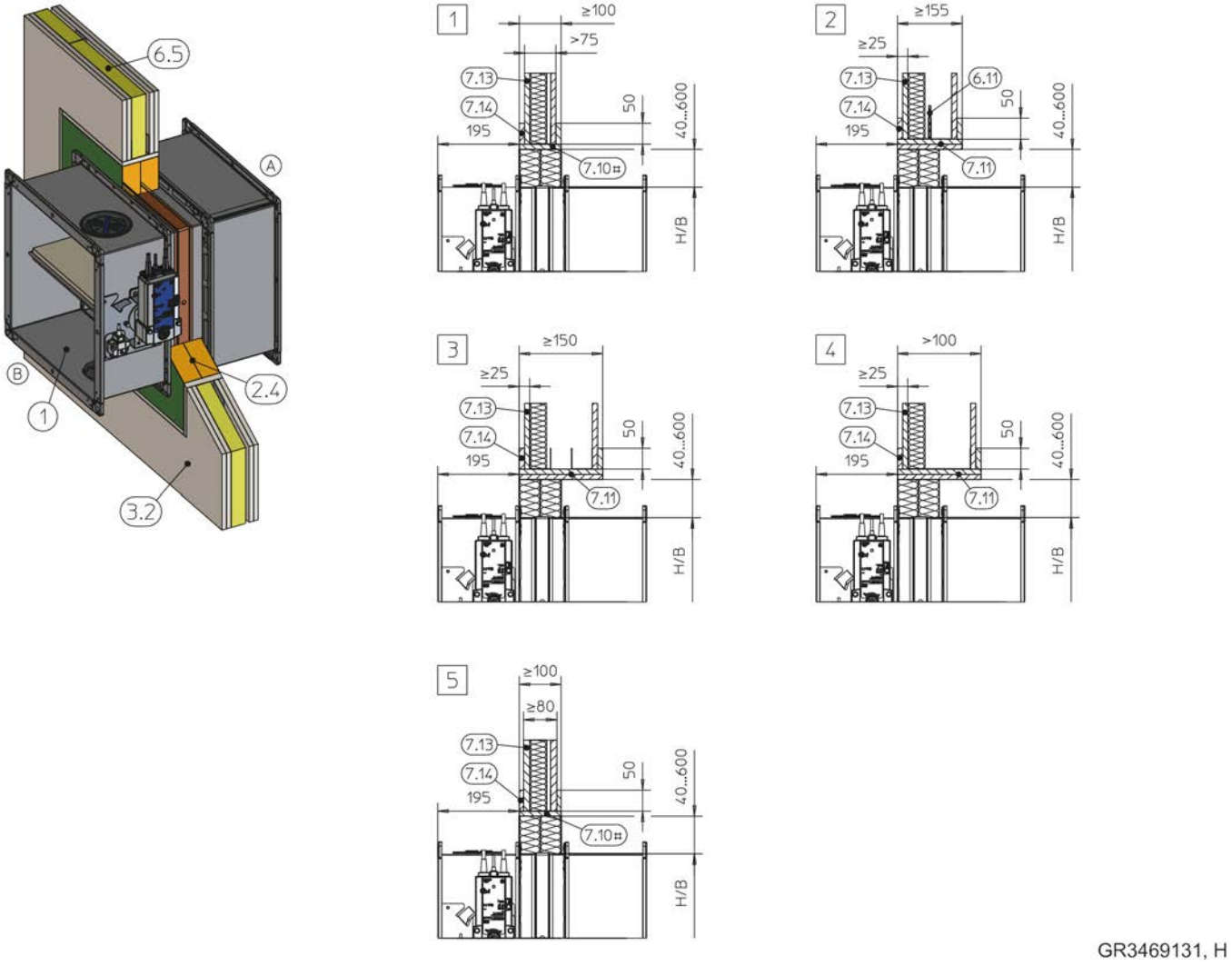



*Fig. 71: Dry mortarless installation into a lightweight partition wall, with a fire batt*

| | |
|---|---|
| 1 | FKA2-EU |
| 2.4 | Coated board system |
| 3.2 | Lightweight partition wall with metal support structure, cladding on both sides |
| 4.1 | Solid ceiling slab / solid floor |
| 6.5 | Mineral wool (depending on wall construction) |
| 6.11 | Insulating strip (depending on wall construction) |
| 7.10 | Trim panels |
| 7.11 | Trim panels, double layer |
| 7.13 | Cladding |
| * | Installation near the floor analogous to 5 |
| 1 – 4 | to EI 120 S:<br>B × H = 200 × 100 – 800 × 400 mm (horizontal installation position)<br>Up to EI 90 S |
| 5 | EI 30 to EI 120 S |




GR3469131, H

*Fig. 72: Dry mortarless installation into a lightweight partition wall, with a fire batt*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 7.11 | Trim panels, double layer |
| 2.4 | Coated board system | 7.13 | Cladding |
| 3.2 | Lightweight partition wall with metal support structure, cladding on both sides | 7.14 | Reinforcing board of the same material as the wall |
| 6.5 | Mineral wool (depending on wall construction) | 1 – 4 | EI 30 S |
| 6.11 | Insulating strip (depending on wall construction) | 5 | Up to EI 60 S |
| 7.10 | Trim panels | | |

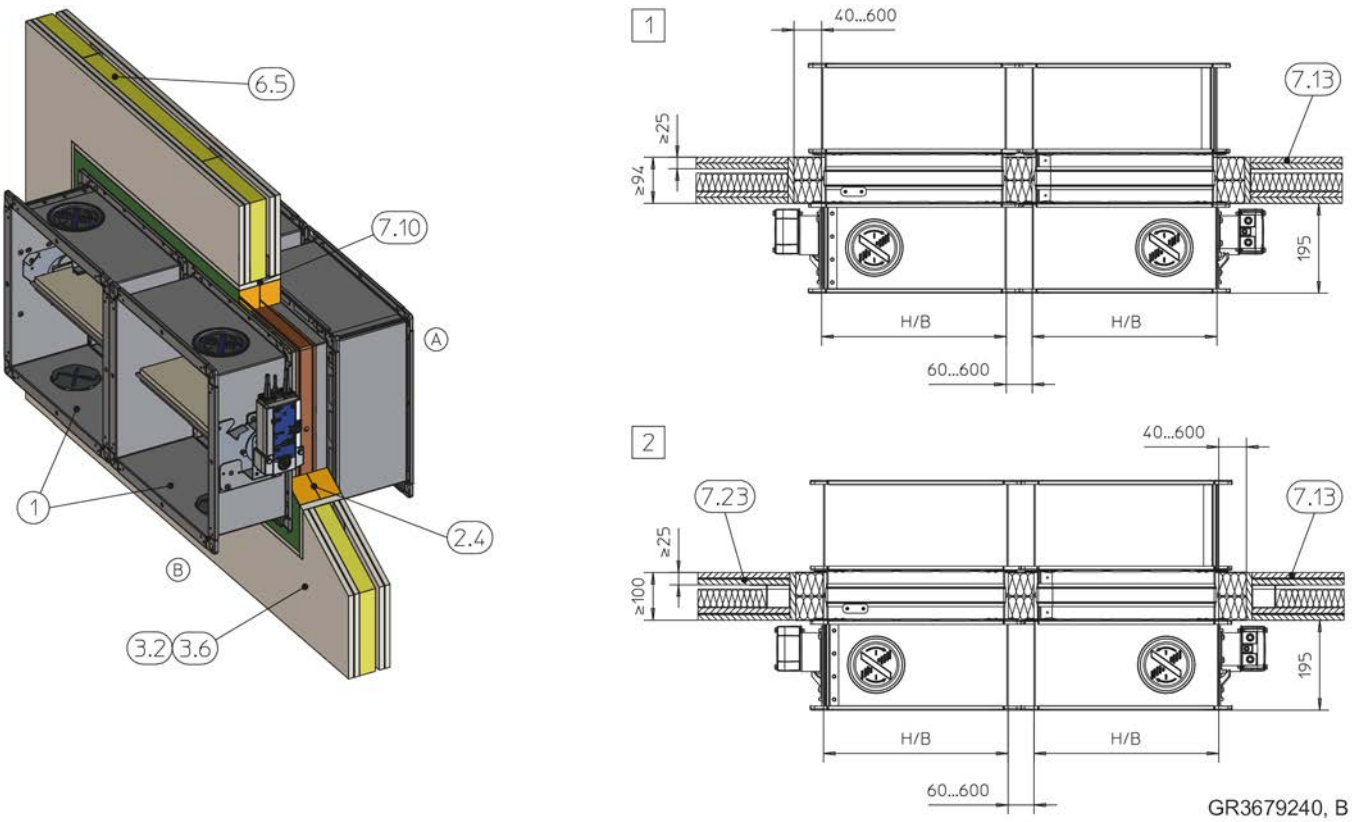



*Fig. 73: Dry mortarless installation into a lightweight partition wall, with a fire batt, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 7.10 | Trim panels |
| 2.4 | Coated board system | 7.13 | Cladding |
| 3.2 | Lightweight partition wall with metal support structure, cladding on both sides | 7.23 | Sheet steel insert depending on wall manufacturer |
| 3.6 | Compartment wall with metal support structure, cladding on both sides | 1 2 | Up to EI 90 S |
| 6.5 | Mineral wool (depending on wall construction) | | |

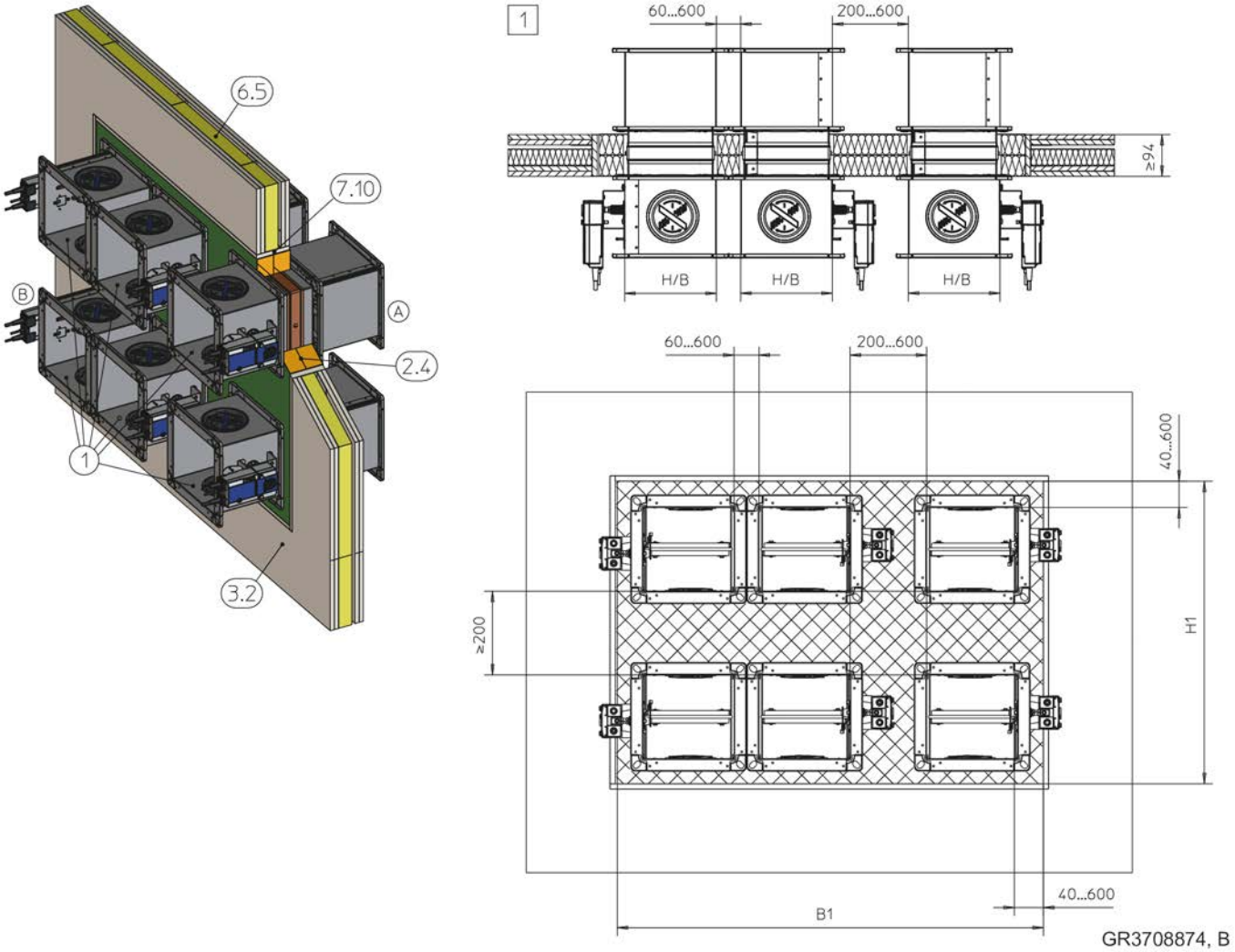



*Fig. 74: Dry mortarless installation into a lightweight partition wall, with a fire batt, multiple installation, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 6.5 | Mineral wool (depending on wall construction) |
| 2.4 | Coated board system | 7.10 | Trim panels |
| 3.2 | Lightweight partition wall with metal support structure, cladding on both sides | [1] | Up to EI 90 S |

**Note:**

- The overall area of the fire dampers is limited to 2.4 m².
- The number of fire dampers in the fire batt is limited by their size (B × H) and the overall area of the fire dampers (2.4 m²).
- B1 x H1 maximum penetration seal size depends on the manufacturer
- Distance to load-bearing structural elements ≥ 40 mm

**Additional requirements: dry mortarless installation into lightweight partition walls, with fire batt**

- Lightweight partition wall *40*
- Casing length L = 305 or 500 mm
- Fire batt systems, installation details, distances / dimensions, see *38* f
- Suspension and fixing, see *156*

## 5.6 Lightweight partition walls with timber support structure

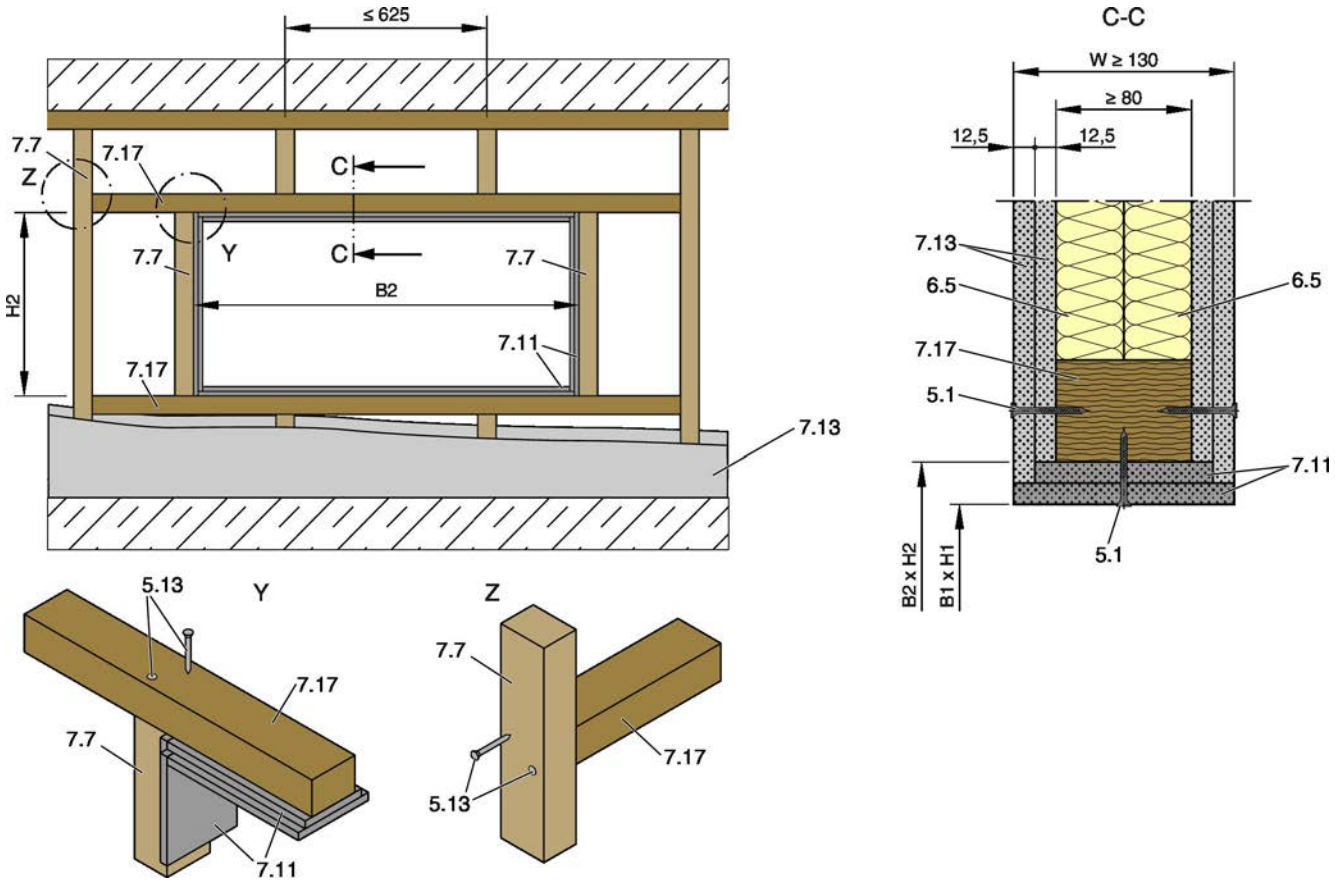



*Fig. 75: Lightweight partition wall with timber support structure and cladding on both sides*

| | |
|---|---|
| 5.1 | Dry wall screw |
| 5.13 | Wood screw or pin |
| 6.5 | Mineral wool (depending on wall construction) |
| 7.7 | Timber stud, at least 60 × 80 mm * |
| 7.11 | Trim panels, double layer, staggered joints |
| 7.13 | Cladding |
| 7.17 | Trimmers, timber stud / nogging, at least 60 × 80 mm * |
| B1 × H1 | Clear installation opening |
| B2 × H2 | Opening in the half-timbered construction |
| * | min. 60 × 60 mm up to EI 60 S |

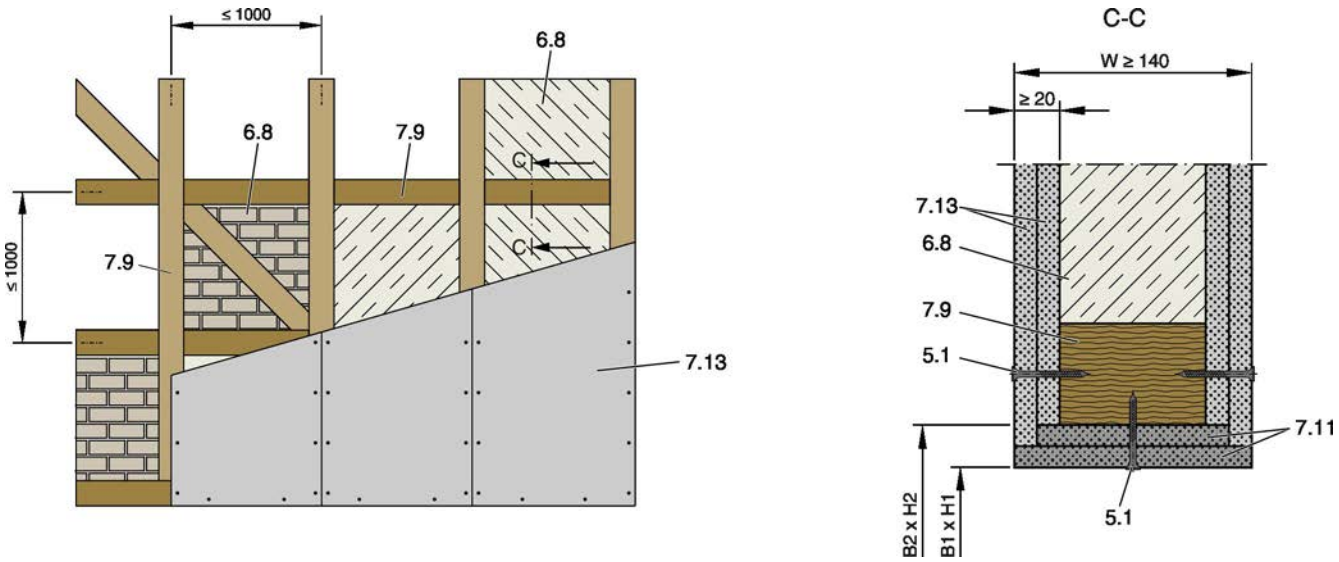



*Fig. 76: Lightweight partition wall, half-timbered construction with cladding on both sides*

5.1 Dry wall screw
6.8 Infill (cavities completely filled with mineral wool ≥ 50 kg/m³, or bricks, aerated concrete, lightweight concrete, reinforced concrete or clay)
7.9 Timber structure
7.11 Trim panels, double layer, staggered joints
7.13 Cladding
B1 × H1 Clear installation opening
B2 × H2 Opening in the half-timbered construction

**Additional requirements: lightweight partition walls with timber studs**

- Timber stud wall or half-timbered construction, *41*

| Installation type | Installation opening [mm] | | | |
|---|---|---|---|---|
| | B1 | H1 | B2 | H2 |
| Mortar-based installation | B + 450 max. | H + 450 max. | B1 + (4 × trim panels) | H1 + (4 × trim panels) |
| Dry mortarless installation with installation kit ES [1] | B + 140 | H + 140 | | |
| Dry mortarless installation with fire batt | B + 80 to 1200 | H + 80 to 1200 | | |

[1] Installation opening tolerance ± 2 mm

### 5.6.1 Mortar-based installation

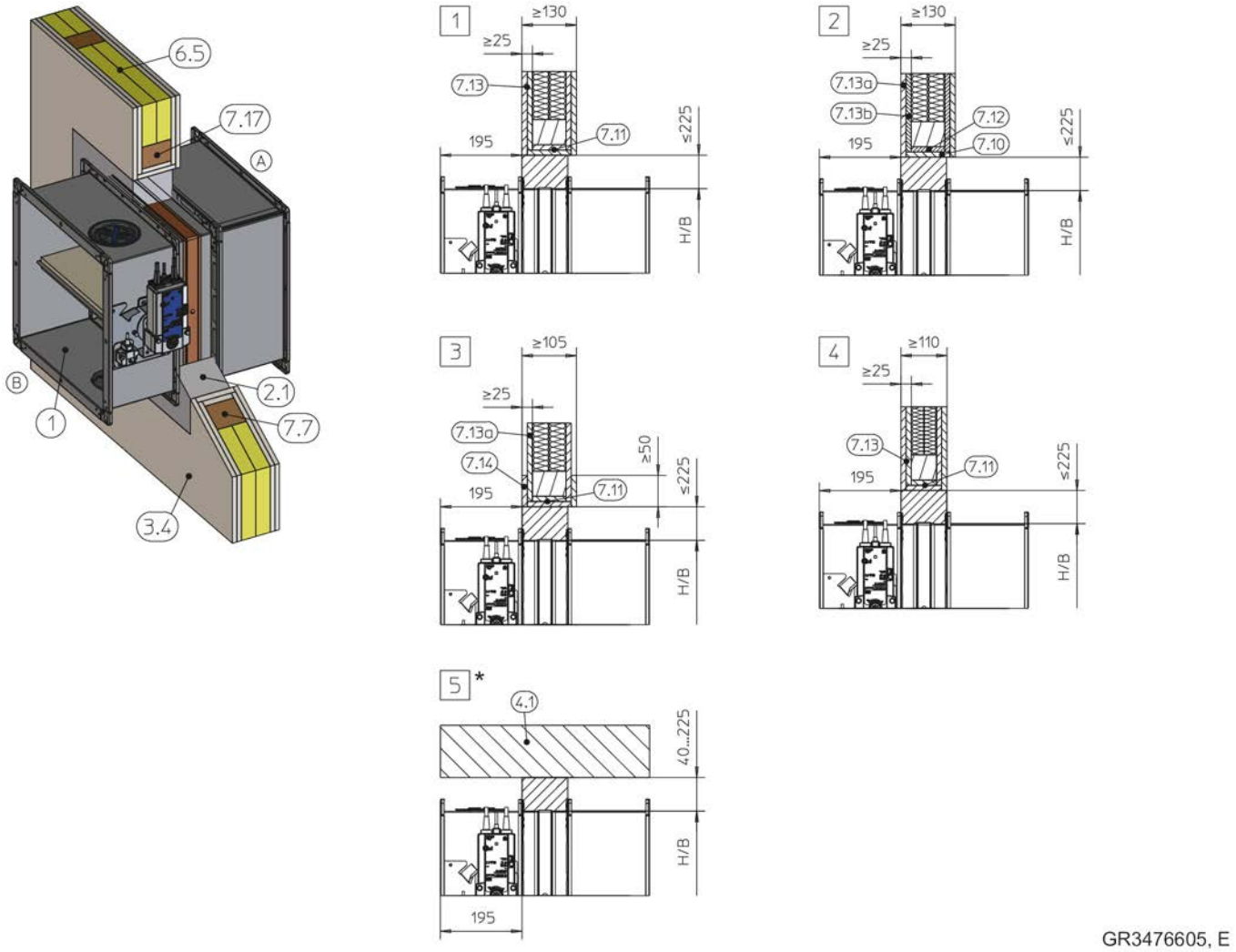



*Fig. 77: Mortar-based installation into a lightweight partition wall with timber support structure*

| | |
|---|---|
| 1 | FKA2-EU |
| 2.1 | Mortar |
| 3.4 | Timber stud wall (also timber panel constructions), cladding on both sides |
| 4.1 | Solid ceiling slab / solid floor |
| 6.5 | Mineral wool (depending on wall construction) |
| 7.7 | Timber stud, min. 60 × 80 mm (min. 60 × 60 mm with F60) |
| 7.10 | Trim panels (fire-resistant) |
| 7.11 | Trim panels, double layer with staggered joints, fire-resistant |
| 7.12 | Trim panels, wood sheet, at least 600 kg/³ |
| 7.13 | Cladding |
| 7.13a | Cladding, fire-resistant |
| 7.13b | Cladding, wood sheet, at least 600 kg/³ |
| 7.14 | Reinforcing board of the same material as the wall |
| 7.17 | Trimmers, timber support structure / nogging, at least 60 × 80 mm (min. 60 × 60 mm with F60) |
| * | Installation near the floor analogous to 5 |
| 1 | Up to EI 120 S |
| 2 3 | EI 30 S |
| 4 | Up to EI 60 S |
| 5 | EI 30 to EI 120 S |

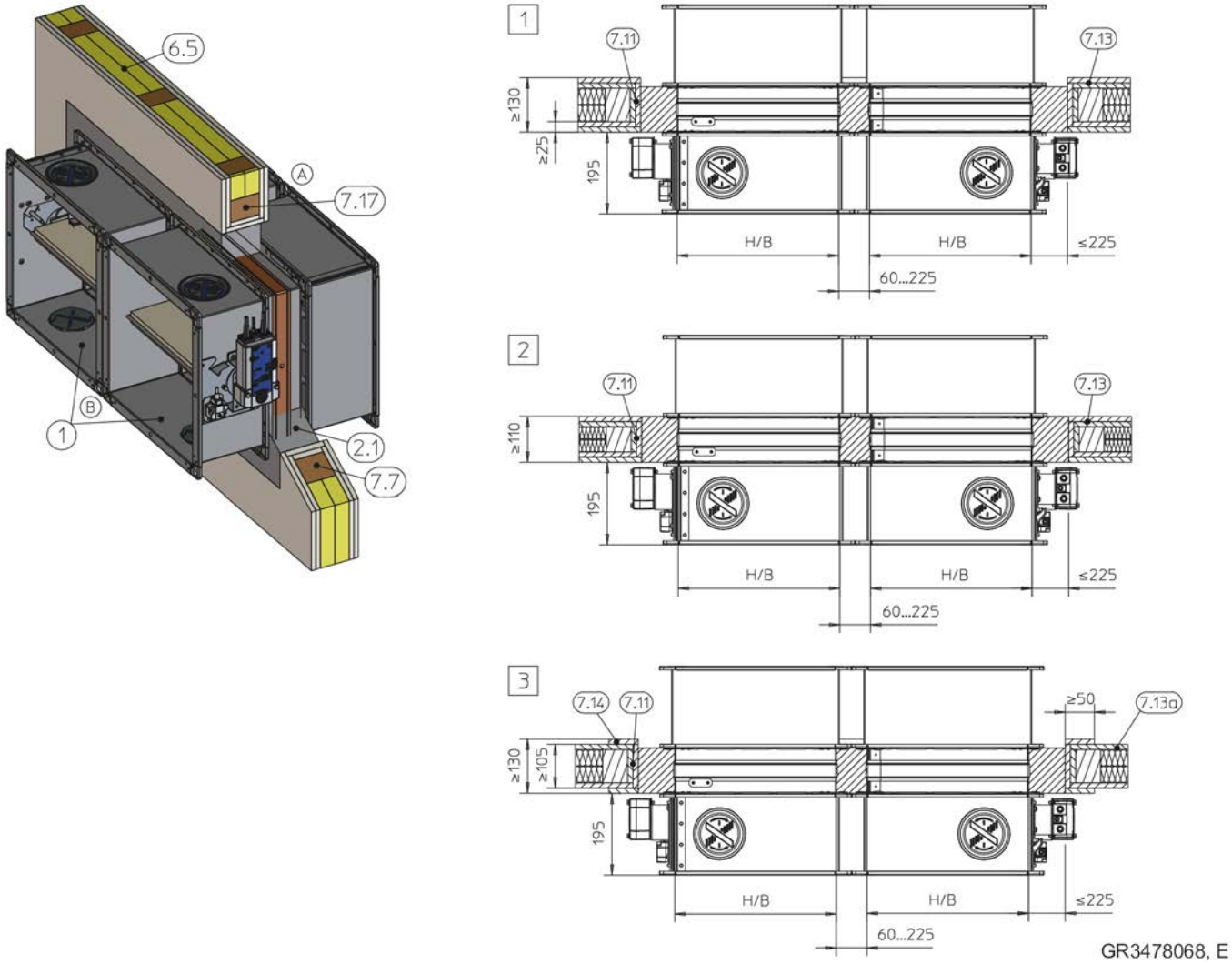



*Fig. 78: Mortar-based installation into a lightweight partition wall with timber support structure, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)*

1 FKA2-EU
2.1 Mortar
3.4 Timber stud wall (also timber panel constructions), cladding on both sides
6.5 Mineral wool (depending on wall construction)
7.7 Timber support structure / nogging, at least 60 × 80 mm (at least 60 × 60 mm with F60)
7.11 Trim panels, double layer with staggered joints, fire-resistant
7.13 Cladding
7.13a Cladding, fire-resistant
7.14 Reinforcing board of the same material as the wall
7.17 Trimmers, timber support structure / nogging, at least 60 × 80 mm (min. 60 × 60 mm with F60)
1 Up to EI 120 S
2 Up to EI 60 S
3 EI 30 S

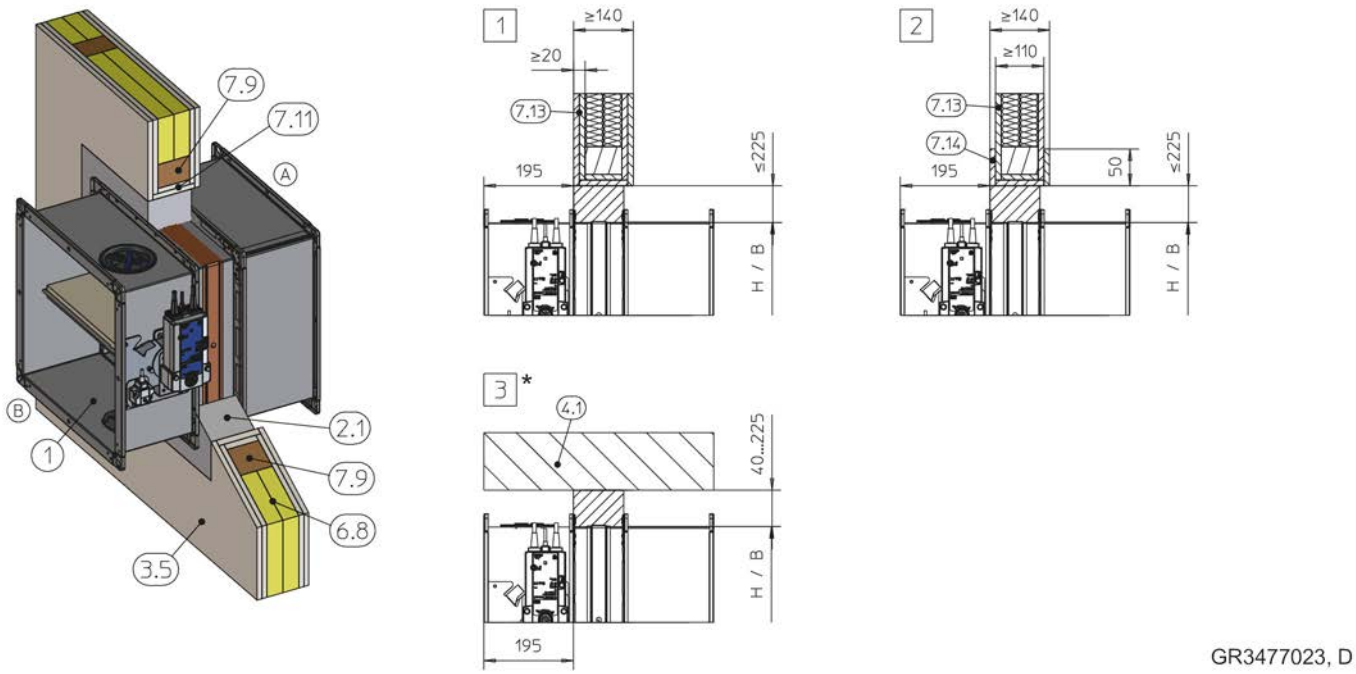



*Fig. 79: Mortar-based installation into a lightweight partition wall, half-timbered construction*

| | |
|---|---|
| 1 | FKA2-EU |
| 2.1 | Mortar |
| 3.5 | Half-timbered construction, cladding on both sides |
| 4.1 | Solid ceiling slab / solid floor |
| 6.8 | Infill (cavities completely filled with mineral wool ≥ 1000 °C, ≥ 50 kg/m³, or bricks, aerated concrete, lightweight concrete, reinforced concrete or clay) |
| 7.9 | Timber structure |
| 7.11 | Trim panels, double layer with staggered joints, fire-resistant |
| 7.13 | Cladding |
| 7.14 | Reinforcing board of the same material as the wall |
| * | Installation near the floor analogous to 3 |
| 1 | Up to EI 120 S |
| 2 | EI 30 S |
| 3 | EI 30 to EI 120 S |

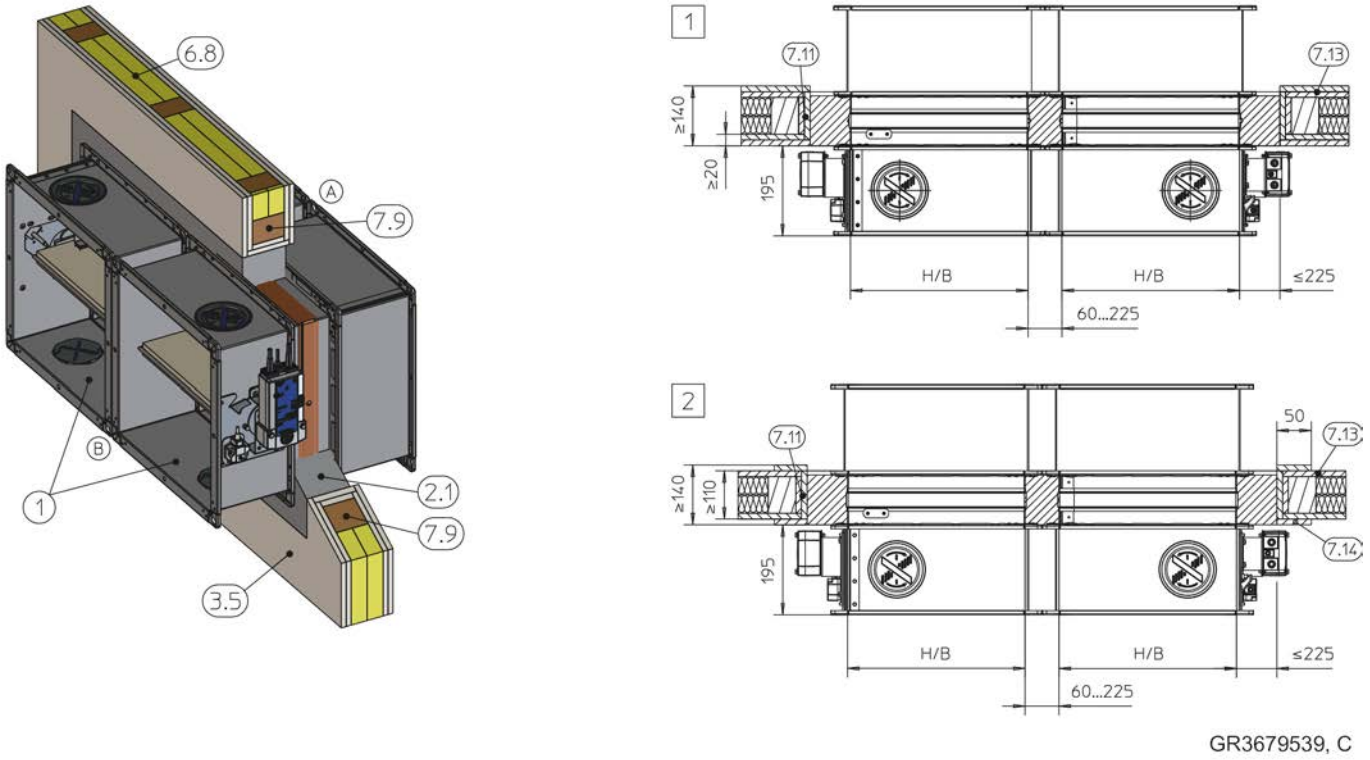



*Fig. 80: Mortar-based installation into a lightweight partition wall with half-timbered construction, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)*

1 FKA2-EU
2.1 Mortar
3.5 Half-timbered construction, cladding on both sides
6.8 Infill (cavities completely filled with mineral wool ≥ 1000 °C, ≥ 50 kg/m³, or bricks, aerated concrete, lightweight concrete, reinforced concrete or clay)
7.9 Timber structure
7.11 Trim panels, double layer with staggered joints, fire-resistant
7.14 Reinforcing board of the same material as the wall
1 Up to EI 120 S
2 EI 30 S

**Additional requirements: mortar-based installation in lightweight partition walls with timber studs**

- Timber stud wall or half-timbered construction, *41*
- Casing lengths L = 305 and 500 mm

## 5.6.2 Mortar-based installation – multiple occupancy of an installation opening

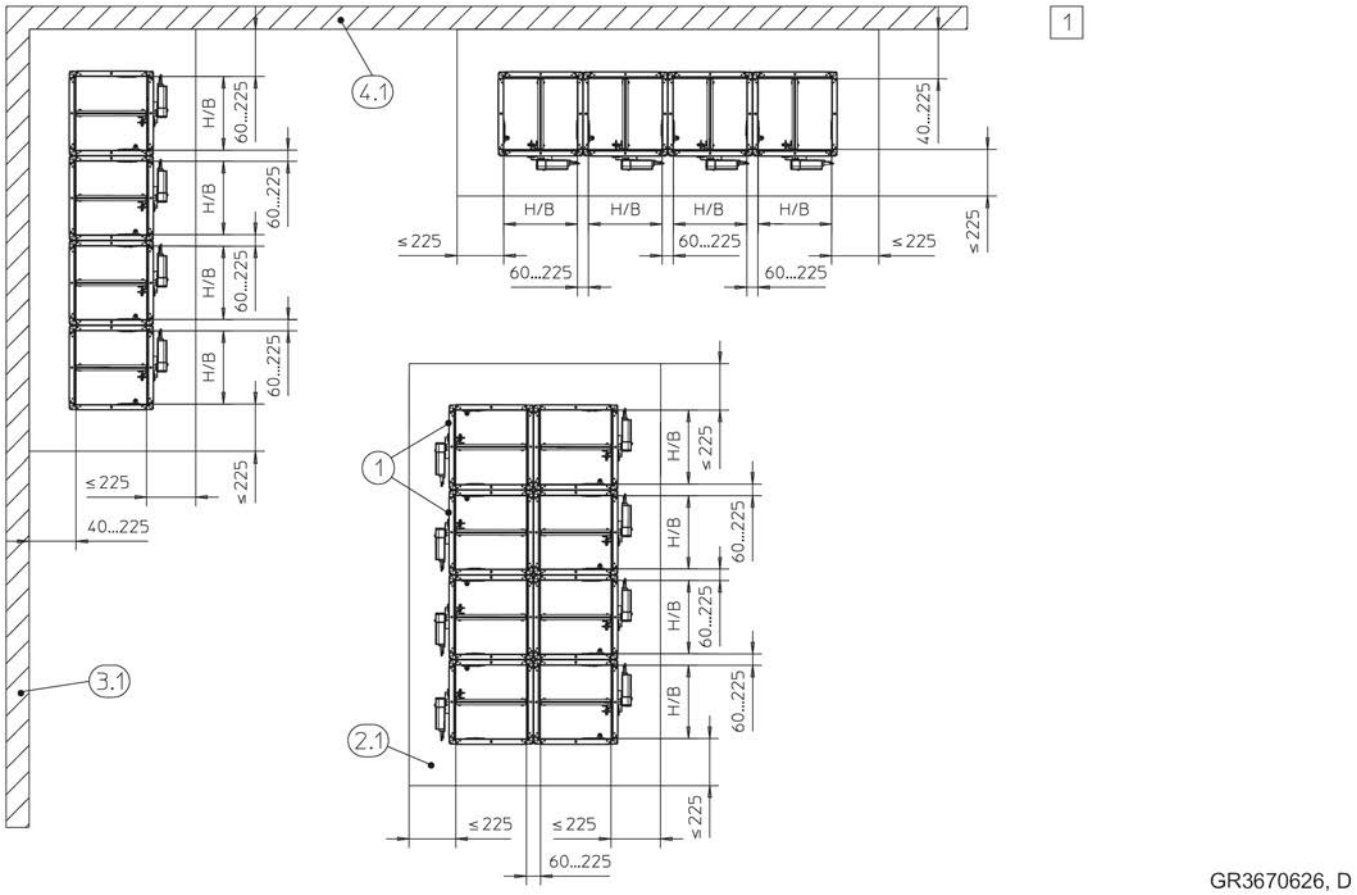



*Fig. 81: Mortar-based installation – multiple occupancy of an installation opening (timber stud wall / half-timbered construction)*

1 FKA2-EU
2.1 Mortar
3.1 Solid wall (load-bearing component)
4.1 Solid ceiling slab (load-bearing component)
[1] Up to EI 90 S

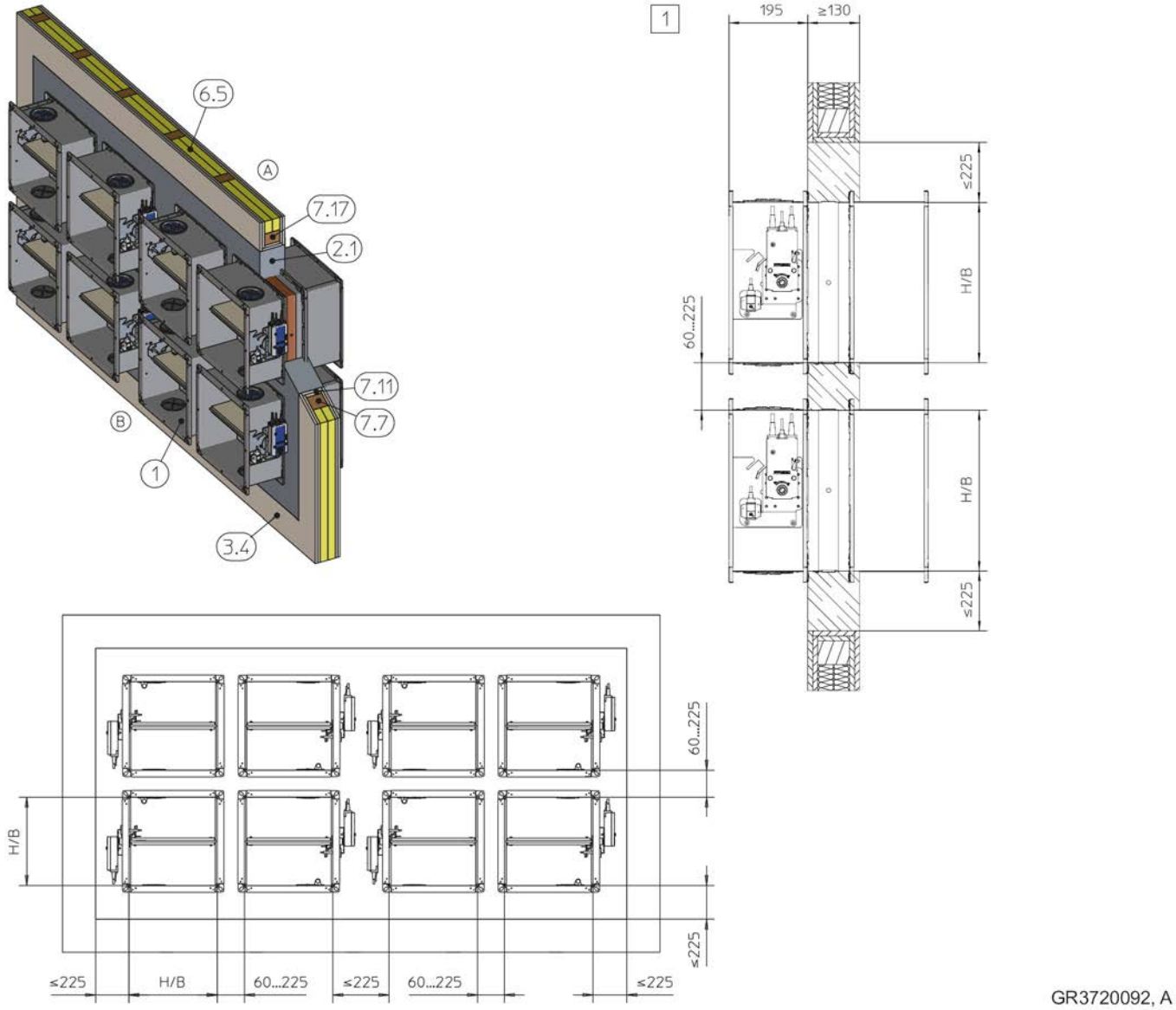



*Fig. 82: Mortar-based installation – multiple occupancy of an installation opening in timber stud wall*

1 FKA2-EU
2.1 Mortar
3.4 Timber stud wall (also timber panel constructions), cladding on both sides
6.5 Mineral wool (depending on wall construction)
7.7 Timber stud, min. 60 × 80 mm (min. 60 × 60 mm with F60)
7.11 Trim panels, double layer with staggered joints, fire-resistant
7.17 Trimmers, timber support structure / nogging, at least 60 × 80 mm (min. 60 × 60 mm with F60)
[1] Up to EI 90 S

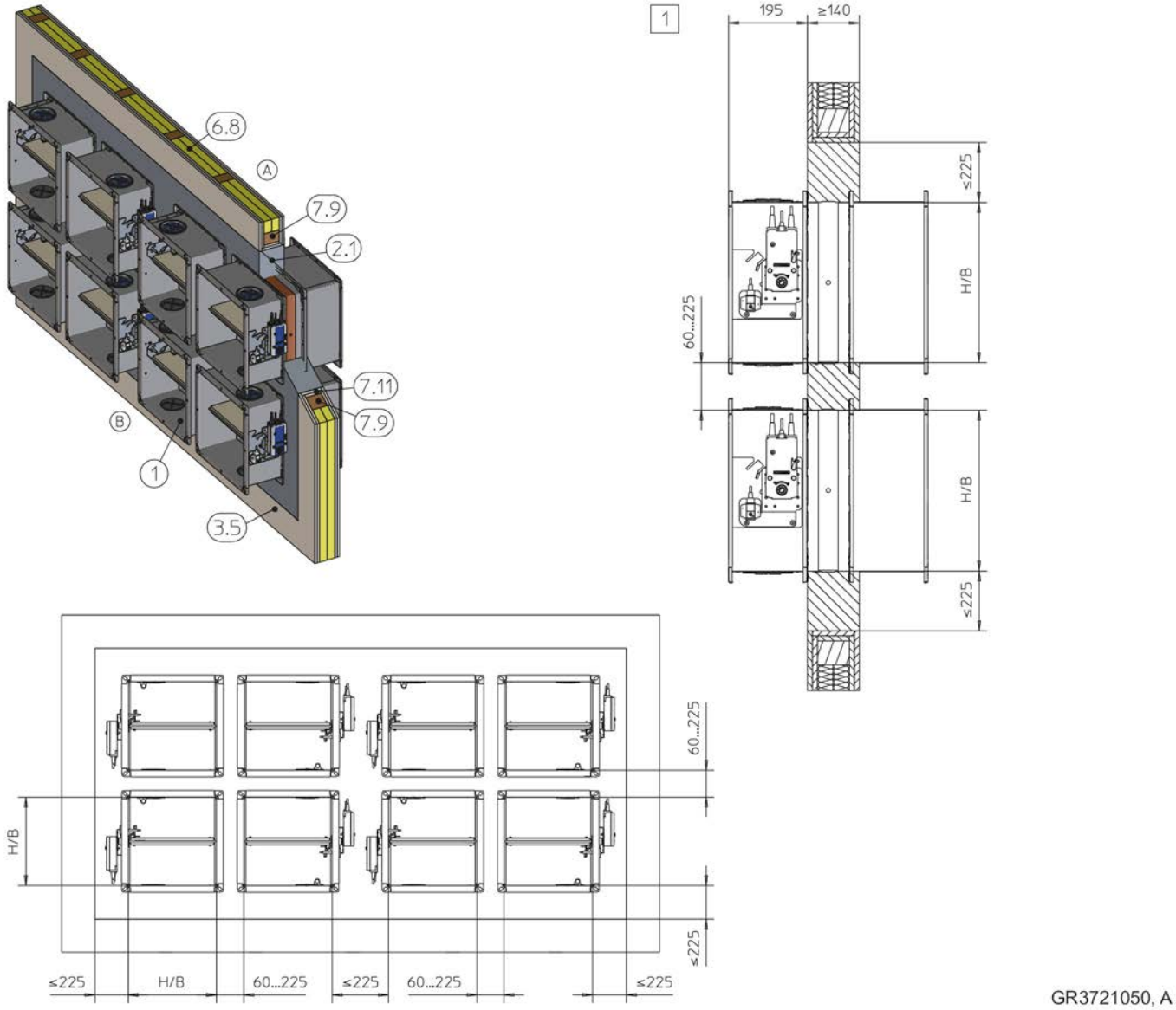



*Fig. 83: Mortar-based installation – multiple occupancy of an installation opening in half-timbered construction*

1 FKA2-EU
2.1 Mortar
3.5 Half-timbered construction, cladding on both sides
6.8 Infill (cavities completely filled with mineral wool ≥ 1000 °C, ≥ 50 kg/m³, or bricks, aerated concrete, lightweight concrete, reinforced concrete or clay)
7.9 Timber structure
7.11 Trim panels, double layer with staggered joints, fire-resistant
[1] Up to EI 90 S

**Additional requirements: mortar-based installation – multiple occupancy of an installation opening**

- Timber stud wall or half-timbered construction, *41*
- Casing length L = 305 or 500 mm
- Total fire damper surface area (B × H) ≤ 4.8 m²
- The number of fire dampers in an installation opening is limited by their damper size (B × H) and the overall area of the fire dampers (4.8 m²)
- The dampers can be arranged in one or two rows.
- Distance to load-bearing structural elements ≥ 40 mm
- If the actuators are located between the fire dampers, sufficient free space for inspection must be provided.
- The mortar bed width is not allowed to exceed 225 mm, provide separate trimmers if necessary.

### 5.6.3 Mortar-based installation – 4-way arrangement with common duct

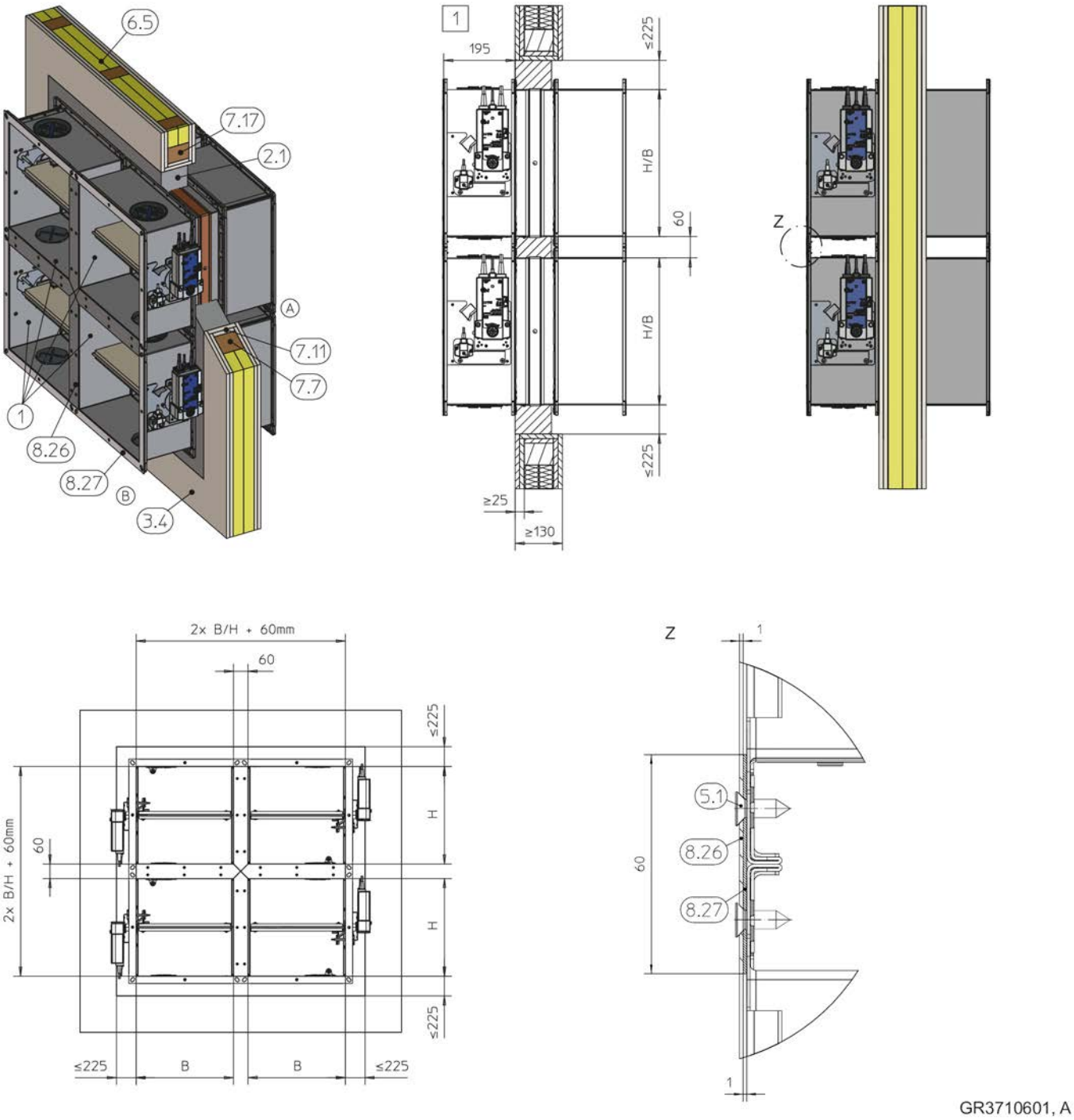



*Fig. 84: Mortar-based installation – 4-way arrangement with common duct*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 7.11 | Trim panels, double layer with staggered joints, fire-resistant |
| 2.1 | Mortar | 7.17 | Trimmers, timber support structure / nogging, at least 60 × 80 mm (min. 60 × 60 mm with F60) |
| 3.4 | Timber stud wall (also timber panel constructions), cladding on both sides | 8.26 | Blanking plate, t = 1 mm (provided by others) |
| 5.1 | Self-tapping screw, spacing ~ 150 mm | 8.27 | Seal |
| 6.5 | Mineral wool (depending on wall construction) | [1] | Up to EI 90 S |
| 7.7 | Timber stud, min. 60 × 80 mm (min. 60 × 60 mm with F60) | | |

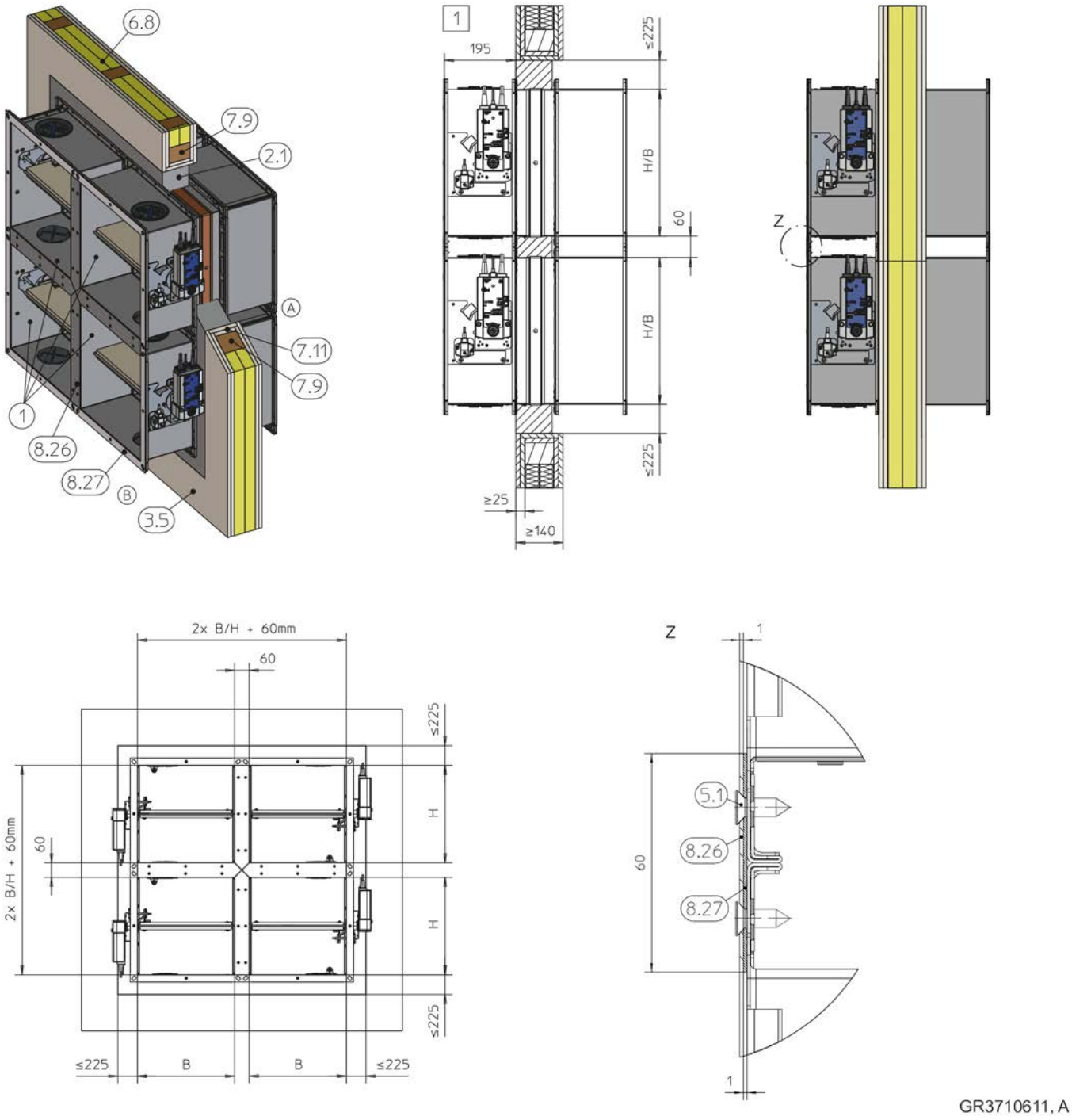



*Fig. 85: Mortar-based installation – 4-way arrangement with common duct*

1 FKA2-EU
2.1 Mortar
3.5 Half-timbered construction, cladding on both sides
5.1 Self-tapping screw, spacing ~ 150 mm
6.8 Infill (cavities completely filled with mineral wool ≥ 1000 °C, ≥ 50 kg/m³, or bricks, aerated concrete, lightweight concrete, reinforced concrete or clay)
7.9 Timber structure
7.11 Trim panels, double layer with staggered joints, fire-resistant
8.26 Blanking plate, t = 1 mm (provided by others)
8.27 Seal
[1] Up to EI 90 S

**Supplementary requirements: mortar-based installation - 4-way arrangement with common air duct**

- Timber stud wall or half-timbered construction, ↳ *41*
- Casing length L = 500 mm
- 4-way arrangement up to 4.8 $m^2$ total fire damper surface area (common air duct)
- Connection of the dampers to the flanges using blanking plates
- Close off the perimeter gaps and the gaps between the damper casings completely with mortar.
- For EI 120 S, apply mineral wool (6.2) all around the operating and installation side (cut out the control panel so that the function of the damper is not impaired). Inspection accesses and the product sticker must remain accessible.
- Distance to load-bearing structural elements ≥ 40 mm

### 5.6.4 Dry mortarless installation with installation kit ES

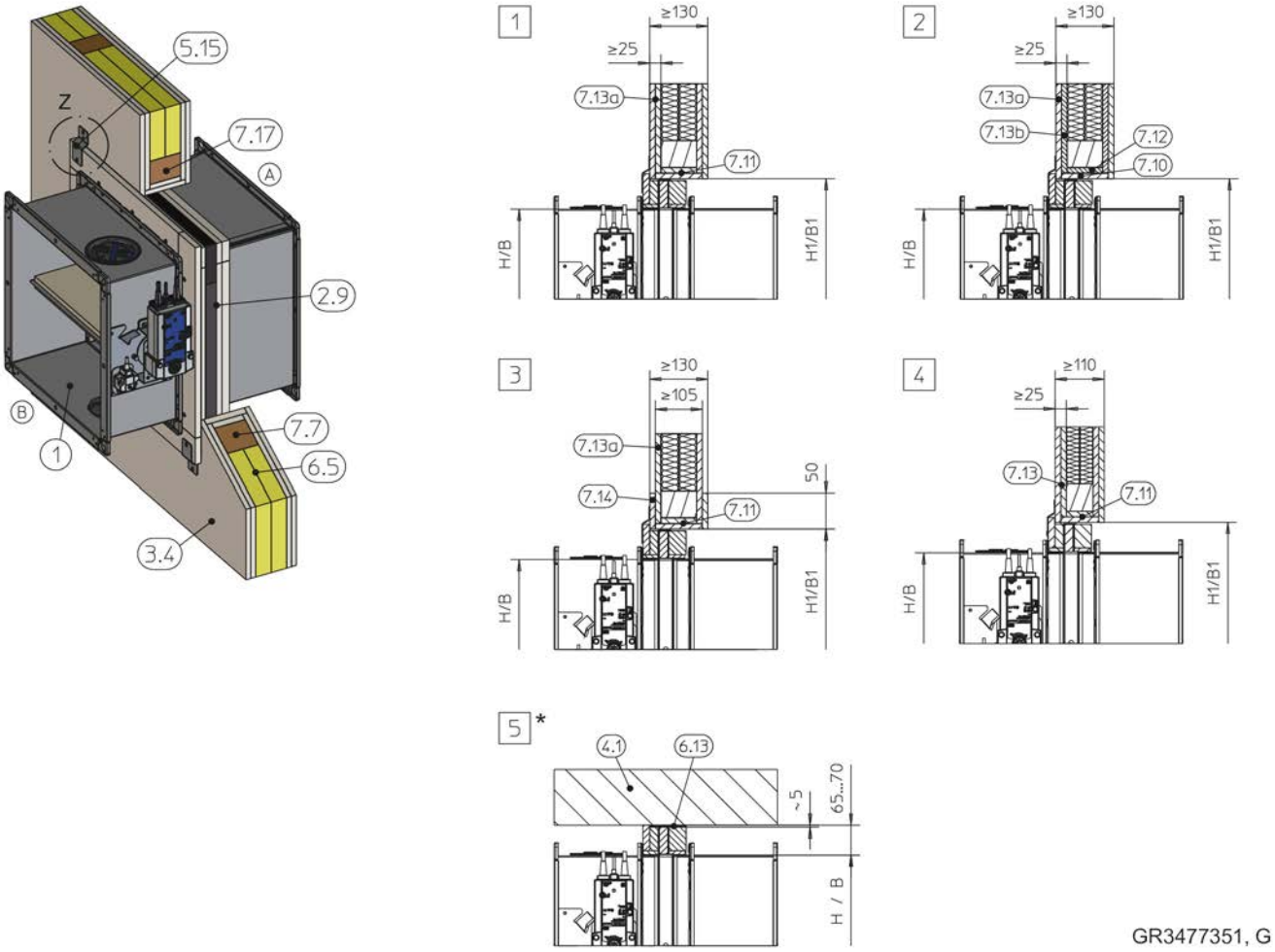



*Fig. 86: Dry mortarless installation into a lightweight partition wall with timber support structure, with installation kit ES*

| | |
|---|---|
| 1 | FKA2-EU |
| 2.9 | Installation kit ES |
| 3.4 | Timber stud wall (also timber panel constructions), cladding on both sides |
| 4.1 | Solid ceiling slab / solid floor |
| 5.15 | Bracket |
| 6.5 | Mineral wool (depending on wall construction) |
| 6.13 | Mineral wool strips A1, filler as an alternative (to even out an uneven floor or ceiling slab) |
| 7.7 | Timber support structure / nogging, at least 60 × 80 mm (at least 60 × 60 mm with F60) |
| 7.10 | Trim panels (fire-resistant) |
| 7.11 | Trim panels, double layer with staggered joints, fire-resistant |
| 7.12 | Trim panels, wood sheet, at least 600 kg/³ |
| 7.13 | Cladding |
| 7.13a | Cladding, fire-resistant |
| 7.13b | Cladding, wood sheet, at least 600 kg/³ |
| 7.14 | Reinforcing board of the same material as the wall |
| 7.17 | Trimmers, timber support structure / nogging, at least 60 × 80 mm (min. 60 × 60 mm with F60) |
| * | Installation near the floor analogous to 5 |
| H1/B1 | Installation opening, see table ↬ *91* |
| Z | For fixing, see Fig. 21 to Fig. 23 |
| 1 | Up to EI 120 S:<br>B × H > 800 × 400 – 1500 × 800 mm<br>Up to EI 90 S:<br>B × H = 200 × 100 – 1500 × 800 mm |
| 2 3 | EI 30 S |
| 4 | Up to EI 60 S |
| 5 | EI 30 to EI 120 S (horizontal installation position) |

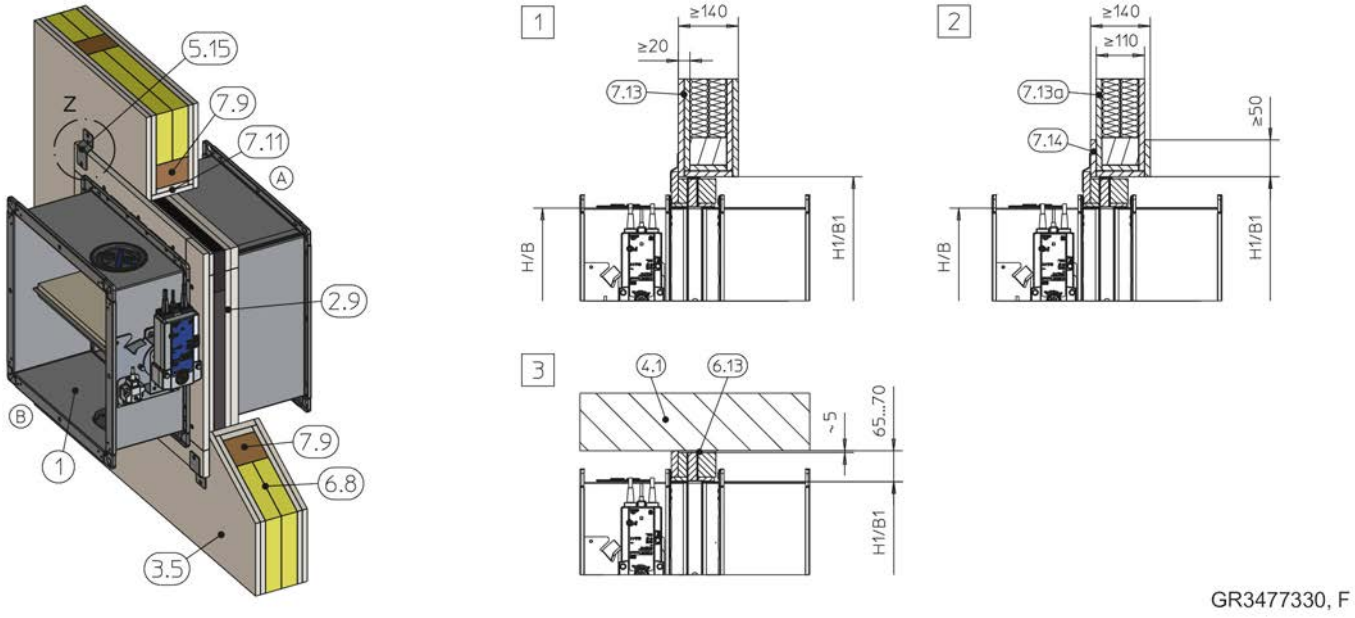



*Fig. 87: Dry mortarless installation into a half-timbered construction, with installation kit ES*

| | |
|---|---|
| 1 | FKA2-EU |
| 2.9 | Installation kit ES |
| 3.5 | Half-timbered construction, cladding on both sides |
| 4.1 | Solid ceiling slab |
| 5.15 | Bracket |
| 6.8 | Infill (cavities completely filled with mineral wool ≥ 1000 °C, ≥ 50 kg/m³, or bricks, aerated concrete, lightweight concrete, reinforced concrete or clay) |
| 6.13 | Mineral wool strips A1, filler as an alternative (to even out an uneven floor or ceiling slab) |
| 7.9 | Timber structure |
| 7.11 | Trim panels, double layer with staggered joints, fire-resistant |
| 7.13 | Cladding |
| 7.13a | Cladding, fire-resistant |
| 7.14 | Reinforcing board of the same material as the wall |
| H1/B1 | Installation opening, see table *91* |
| Z | For fixing, see Fig. 21 to Fig. 23 |
| 1 | Up to EI 120 S:<br>B × H > 800 × 400 – 1500 × 800 mm<br>Up to EI 90 S:<br>B × H = 200 × 100 – 1500 × 800 mm |
| 2 | EI 30 S |
| 3 | EI 30 to EI 120S |

**Additional requirements: dry mortarless installation with installation kit ES in lightweight partition walls with timber studs and half-timbered constructions**

- Timber stud wall or half-timbered construction, *41*
- Casing length L = 500 mm
- ≥ 155 mm distance between the fire damper and adjacent structural elements
- 65 – 70 mm distance between the fire damper with a shortened installation kit and load-bearing structural elements
- ≥ 200 mm distance between two fire dampers in separate installation openings
- Ensure accessibility from the rear.

1. Mount the installation kit onto the fire damper, see *42* .
2. Insert the fire damper centred into the installation opening and fix with brackets and dry wall screws to the timber stud wall / half-timbered construction, see Fig. 21 to Fig. 23 .

## 5.6.5 Dry mortarless installation with mineral wool

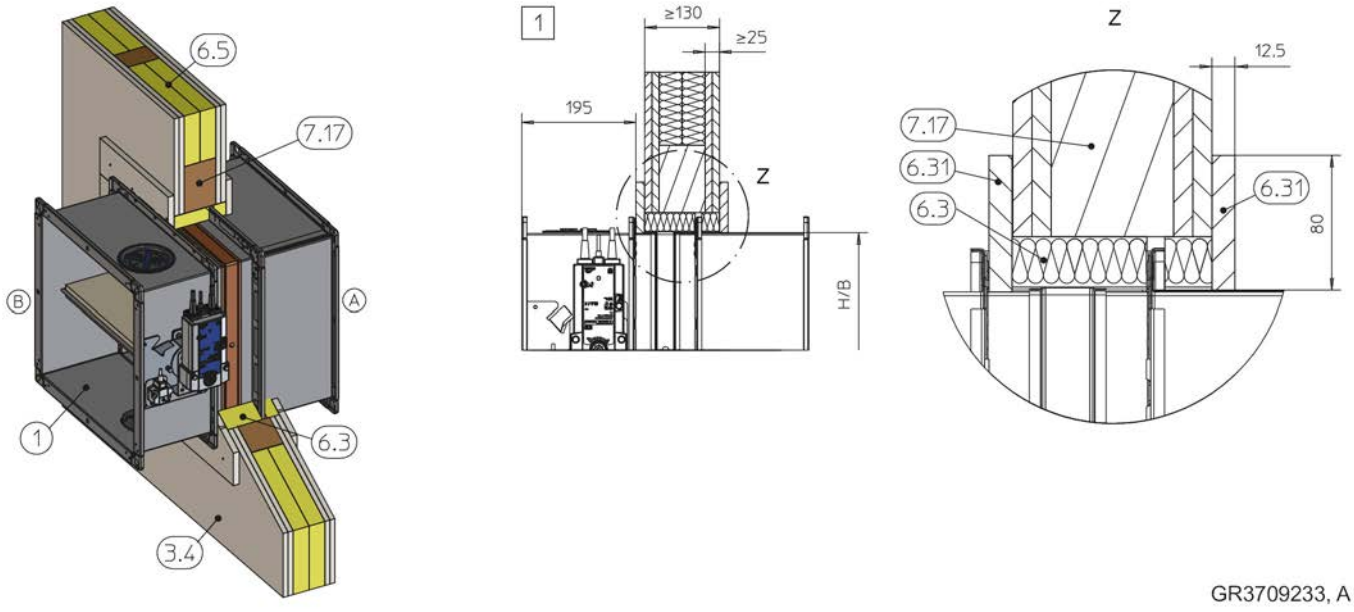



*Fig. 88: Dry mortarless installation with mineral wool into a lightweight partition wall with timber support structure*

1 FKA2-EU
3.4 Timber stud wall (also timber panel constructions), cladding on both sides
6.3 Mineral wool, ≥ 1000 °C, ≥ 100 kg/m³, thickness = 40 mm
6.5 Mineral wool (depending on wall construction)
6.31 Fire-rated plasterboard strip, d = 12.5 mm
7.17 Trimmers, timber stud / nogging, at least 60 × 80 mm
[1] Up to EI 60 S

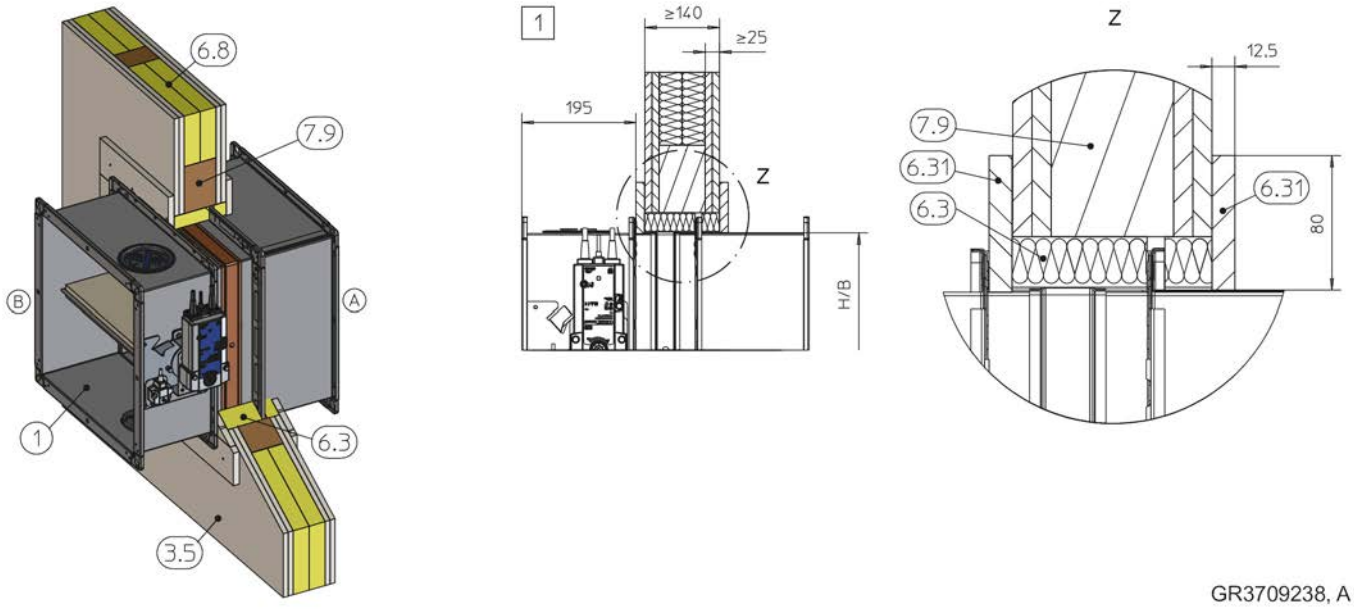



*Fig. 89: Dry mortarless installation into a half-timbered construction, with mineral wool*

1 FKA2-EU
3.5 Half-timbered construction, cladding on both sides
6.3 Mineral wool, ≥ 1000 °C, ≥ 100 kg/m³, thickness = 40 mm
6.8 Infill (cavities completely filled with mineral wool ≥ 1000 °C, ≥ 50 kg/m³, or bricks, aerated concrete, lightweight concrete, reinforced concrete or clay)
6.31 Fire-rated plasterboard strip, d = 12.5 mm
7.9 Timber structure
[1] Up to EI 60 S

**Additional requirements: dry mortarless installation with mineral wool in lightweight partition walls with timber support structure and half-timbered constructions**

- Timber stud wall or half-timbered construction, *41*
- Casing length L = 500 mm
- ≥ 200 mm distance between two fire dampers in separate installation openings
- Distance to load-bearing structural elements ≥ 80 mm

1. Create a clear opening with B + 74 (±2) mm and H + 86 (±2) mm.
2. Cut mineral wool strips (6.3) and fire-rated plasterboard strips (6.31) to size.
3. Place mineral wool strips and fire-rated plasterboard strips around the damper casing on the operating side (B) and fix them (clamp in and fix with filler if necessary).
4. Slide the fire damper into the installation opening and screw fire-rated plasterboard strips on the operating side (B) to the surrounding timber support structure / half-timbered construction (screw spacing approx. 150 mm).
5. Attach the fire-rated plasterboard strips on the installation side (A) and screw them to the surrounding timber support structure / half-timbered construction (screw spacing approx. 150 mm).

## 5.6.6 Dry mortarless installation with fire batt

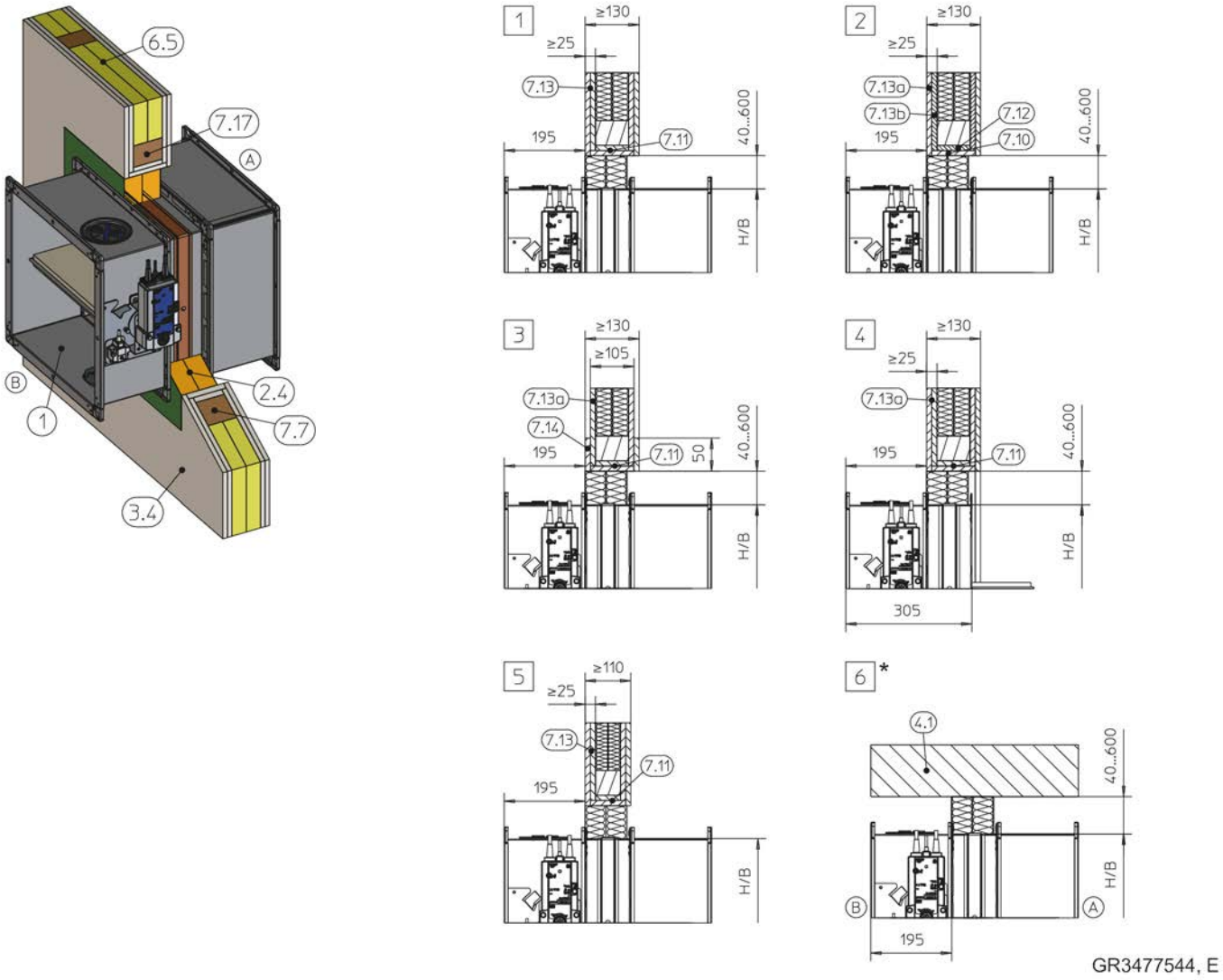



*Fig. 90: Dry mortarless installation with fire batt into a lightweight partition wall with timber support structure*

| | |
|---|---|
| 1 | FKA2-EU |
| 2.4 | Coated board system |
| 3.4 | Timber stud wall (also timber panel constructions), cladding on both sides |
| 4.1 | Solid ceiling slab / solid floor |
| 6.5 | Mineral wool (depending on wall construction) |
| 7.7 | Timber support structure / nogging, at least 60 × 80 mm (at least 60 × 60 mm with F60) |
| 7.10 | Trim panels (fire-resistant) |
| 7.11 | Trim panels, double layer with staggered joints, fire-resistant |
| 7.12 | Trim panels, wood sheet, at least 600 kg/³ |
| 7.13a | Cladding, fire-resistant |
| 7.13b | Cladding, wood sheet, at least 600 kg/³ |
| 7.14 | Reinforcing board of the same material as the wall |
| 7.17 | Trimmers, timber support structure / nogging, at least 60 × 80 mm (min. 60 × 60 mm with F60) |
| * | Installation near the floor analogous to 6 |
| 1 4 | to EI 120 S: B × H = 200 × 100 – 800 × 400 mm (horizontal position)<br>Up to EI 90 S:<br>B × H = 200 × 100 – 1500 × 800 mm |
| 2 3 | EI 30 S |
| 5 | Up to EI 60 S |
| 6 | EI 30 to EI 120 S |

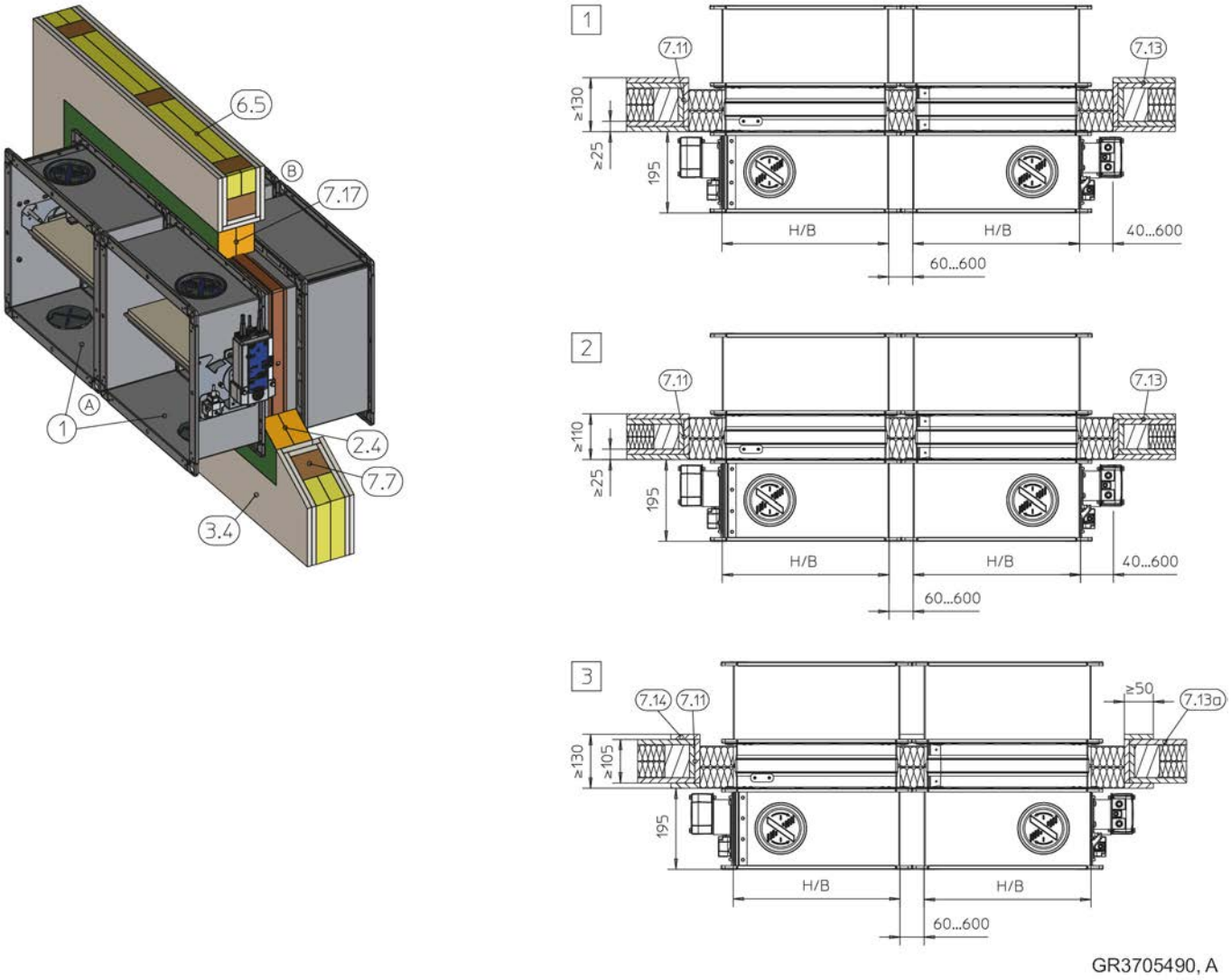



*Fig. 91: Dry mortarless installation into a lightweight partition wall with timber support structure, with a fire batt, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)*

1 FKA2-EU
2.4 Coated board system
3.4 Timber stud wall (also timber panel constructions), cladding on both sides
6.5 Mineral wool (depending on wall construction)
7.7 Timber support structure / nogging, at least 60 × 80 mm (at least 60 × 60 mm with F60)
7.11 Trim panels, double layer with staggered joints, fire-resistant
7.13 Cladding
7.13a Cladding, fire-resistant
7.14 Reinforcing board of the same material as the wall
7.17 Trimmers, timber support structure / nogging, at least 60 × 80 mm (min. 60 × 60 mm with F60)
1 Up to EI 90 S
2 Up to EI 60 S
3 EI 30

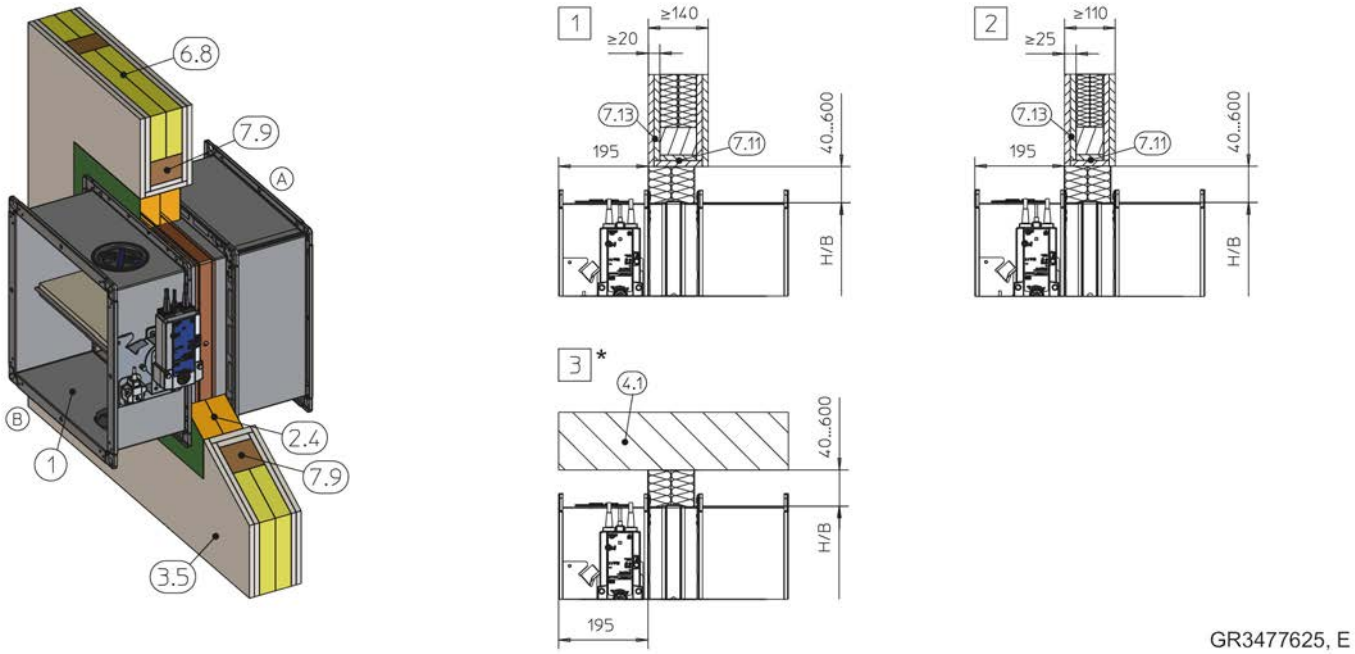



*Fig. 92: Dry mortarless installation with fire batt into a half-timbered construction*

| | |
|---|---|
| 1 | FKA2-EU |
| 2.4 | Coated board system |
| 3.5 | Half-timbered construction, cladding on both sides |
| 4.1 | Solid ceiling slab / solid floor |
| 6.8 | Infill (cavities completely filled with mineral wool ≥ 1000 °C, ≥ 50 kg/m³, or bricks, aerated concrete, lightweight concrete, reinforced concrete or clay) |
| 7.9 | Timber structure |
| 7.11 | Trim panels, double layer with staggered joints, fire-resistant |
| 7.13 | Cladding |
| * | Installation near the floor analogous to 3 |
| 1 4 | to EI 120 S: B × H = 200 × 100 – 800 × 400 mm (horizontal position)<br>Up to EI 90 S:<br>B × H = 200 × 100 – 1500 × 800 mm |
| 2 | EI 30 S |
| 3 | EI 30 S to EI 120 S |

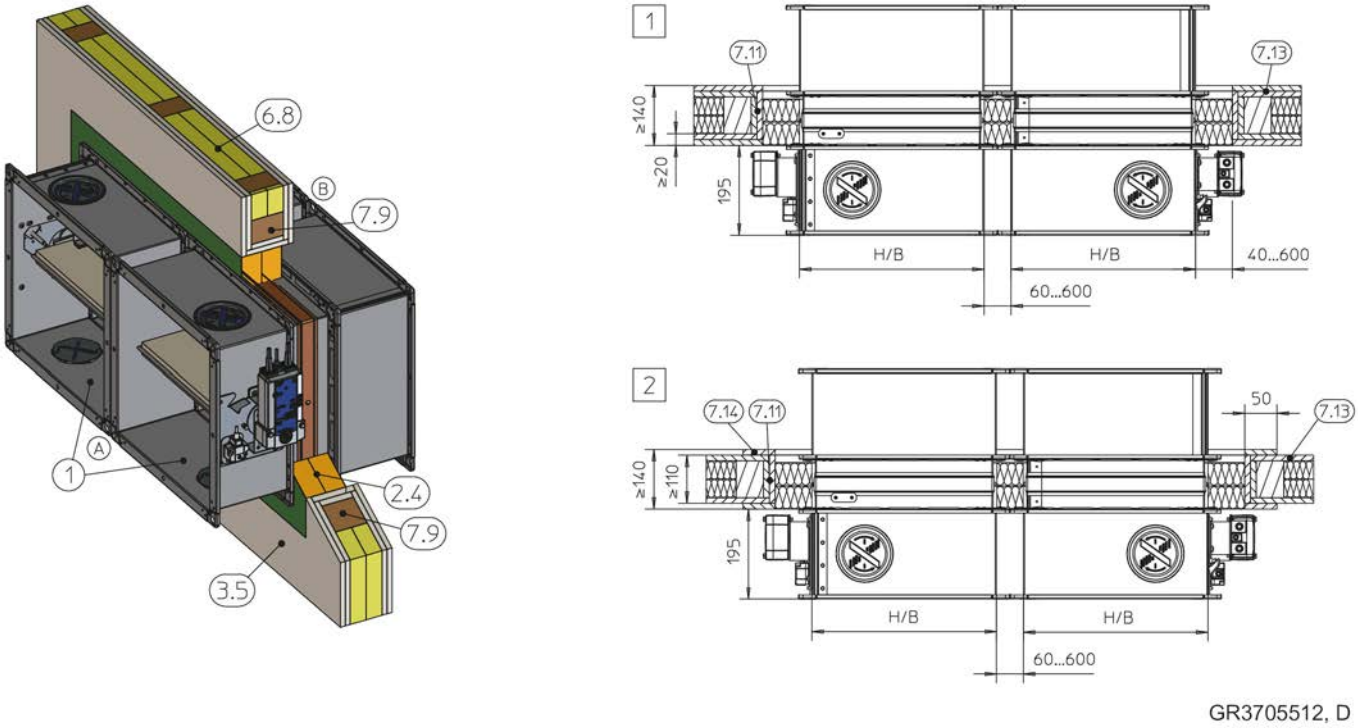



*Fig. 93: Dry mortarless installation into a half-timbered construction, with a fire batt, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)*

1 FKA2-EU
2.4 Coated board system
3.5 Half-timbered construction, cladding on both sides
6.8 Infill (cavities completely filled with mineral wool ≥ 1000 °C, ≥ 50 kg/m³, or bricks, aerated concrete, lightweight concrete, reinforced concrete or clay)
7.9 Timber structure
7.11 Trim panels, double layer with staggered joints, fire-resistant
7.13 Cladding
7.14 Reinforcing board of the same material as the wall
1 Up to EI 90 S
2 EI 30 S

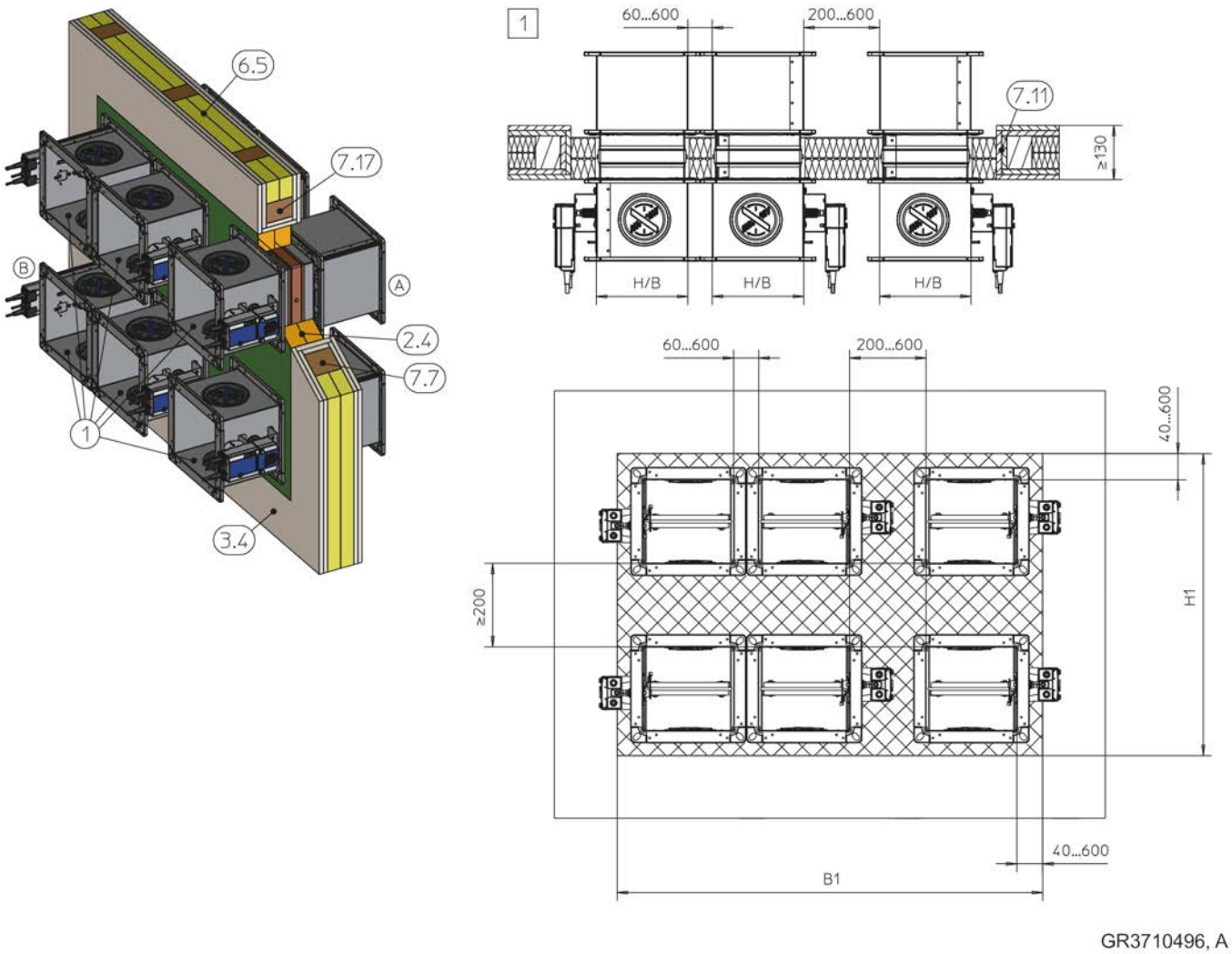



*Fig. 94: Dry mortarless installation into a lightweight partition wall with timber support structure, with a fire batt, multiple installation, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)*

1 FKA2-EU
2.4 Coated board system
3.4 Timber stud wall (also timber panel constructions), cladding on both sides
6.5 Mineral wool (depending on wall construction)
7.7 Timber support structure / nogging, at least 60 × 80 mm (at least 60 × 60 mm with F60)
7.11 Trim panels, double layer with staggered joints, fire-resistant
7.17 Trimmers, timber support structure / nogging, at least 60 × 80 mm (min. 60 × 60 mm with F60)
[1] Up to EI 90 S

**Note:**

- The overall area of the fire dampers is limited to 2.4 m².
- The number of fire dampers in the fire batt is limited by their size (B × H) and the overall area of the fire dampers (2.4 m²).
- B1 x H1 maximum penetration seal size depends on the manufacturer
- Distance to load-bearing structural elements ≥ 40 mm

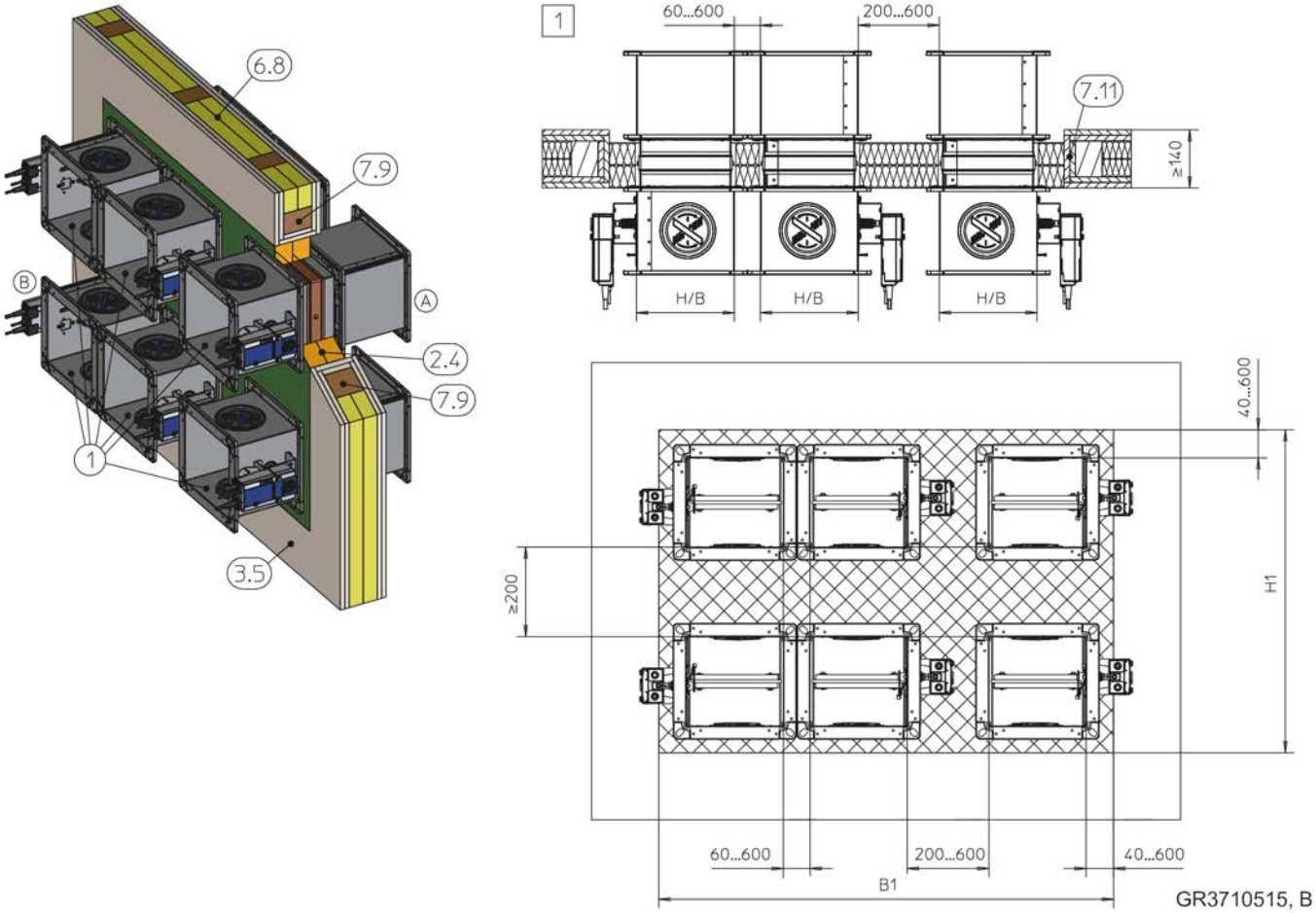



*Fig. 95: Dry mortarless installation into a half-timbered construction, with a fire batt, multiple installation, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)*

1 FKA2-EU
2.4 Coated board system
3.5 Half-timbered construction, cladding on both sides
6.8 Infill (cavities completely filled with mineral wool ≥ 1000 °C, ≥ 50 kg/m³, or bricks, aerated concrete, lightweight concrete, reinforced concrete or clay)
7.9 Timber structure
7.11 Trim panels, double layer with staggered joints, fire-resistant
[1] Up to EI 90 S

**Note:**

- The overall area of the fire dampers is limited to 2.4 m².
- The number of fire dampers in the fire batt is limited by their size (B × H) and the overall area of the fire dampers (2.4 m²).
- B1 x H1 maximum penetration seal size depends on the manufacturer
- Distance to load-bearing structural elements ≥ 40 mm

**Additional requirements: dry mortarless installation with fire batt in lightweight partition walls with timber support structure and half-timbered constructions**

- Timber stud wall or half-timbered construction, *41*
- Casing lengths L = 305 and 500 mm
- EI 120 S: ≥ 200 mm distance between two fire dampers (installation of each fire damper in separate installation opening)
- Fire batt systems, installation details, distances / dimensions, see *38* f
- Suspension and fixing, see *156*

## 5.7 Solid wood walls

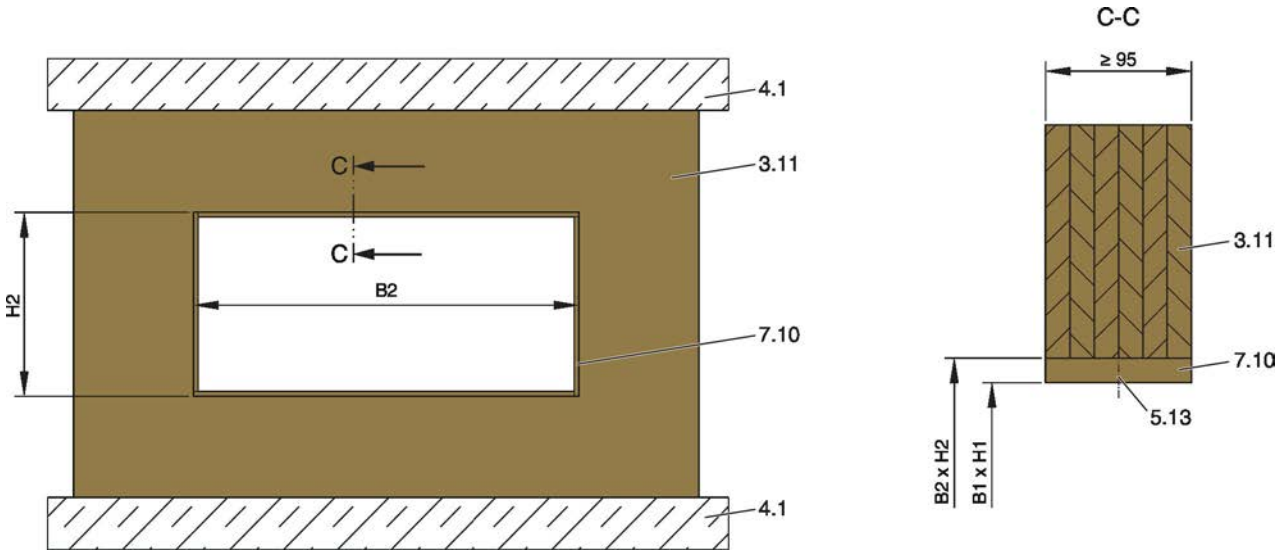



*Fig. 96: Solid wood wall*

3.11 Solid wood wall / CLT wall
4.1 Solid ceiling slab / solid floor
5.13 Wood screw or pin
7.10 Trim panels (optional)
B1 × H1 Clear installation opening
B2 × H2 Opening in a solid wood wall / CLT wall (without trim panels: B2 = B1, H2 = H1)

**Additional requirements: solid wood walls**

- Solid wood wall or CLT wall *41*

| Installation type | Installation opening [mm] | | | |
|---|---|---|---|---|
| | B1 | H1 | B2 | H2 |
| Mortar-based installation | B + 450 max. | H + 450 max. | B1 + (2 × trim panels) | H1 + (2 × trim panels) |
| Dry mortarless installation with installation kit ES [1] | B + 140 | H + 140 | | |
| Dry mortarless installation with fire batt | B + 80 to 1200 | H + 80 to 1200 | | |

[1)] Installation opening tolerance ± 2 mm

### 5.7.1 Mortar-based installation

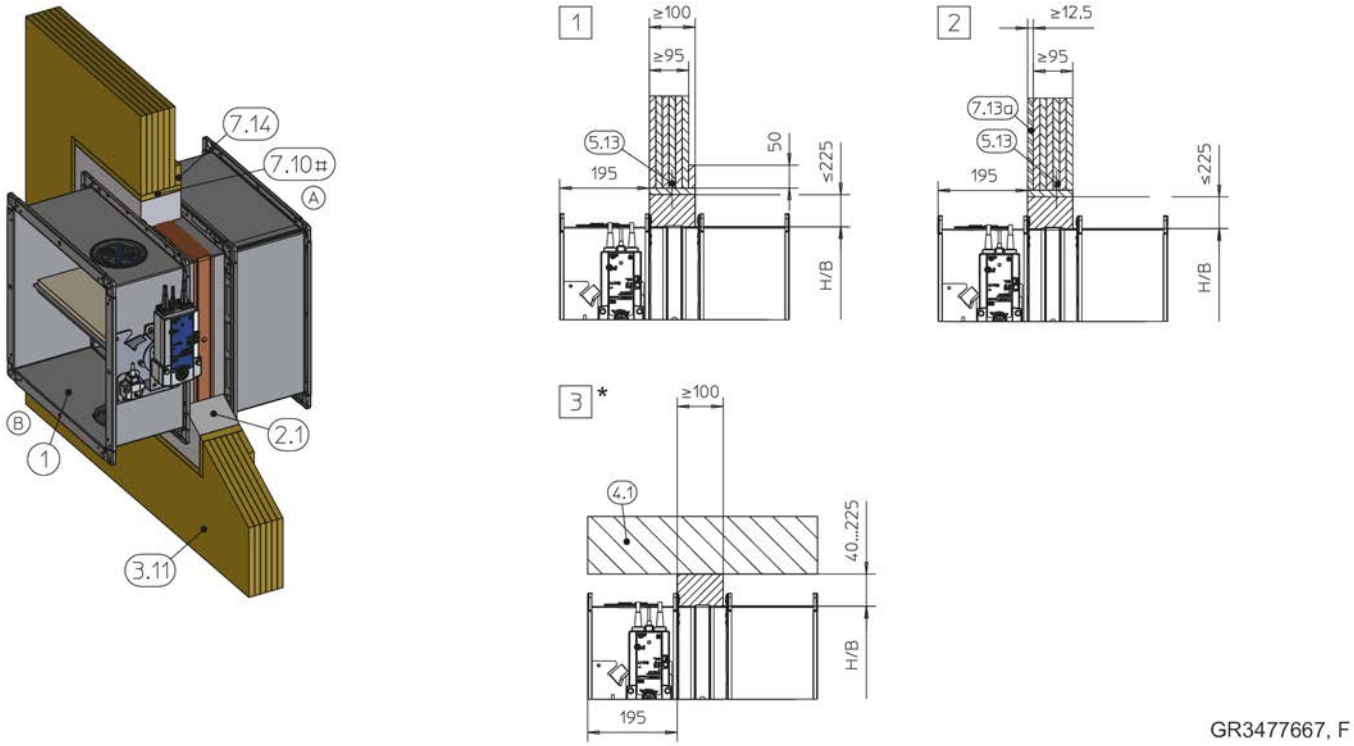



*Fig. 97: Mortar-based installation into a solid wood wall or CLT wall*

| | |
|---|---|
| 1 | FKA2-EU |
| 2.1 | Mortar |
| 3.11 | Solid wood wall / CLT wall |
| 4.1 | Solid ceiling slab / solid floor |
| 5.13 | Wood screw or pin |
| 7.10 | Trim panels |
| 7.13a | Cladding, fire-resistant |
| 7.14 | Reinforcing board of the same material (required on operating or installation side if W < 100 mm) |
| # | optional |
| * | Installation near the floor analogous to 3 |
| 1 – 3 | Up to EI 90 S |

**Additional requirements: mortar-based installation into solid wood walls**

- Solid wood wall or CLT wall *41*
- Casing lengths L = 305 and 500 mm
- ≥ 200 mm distance between two fire dampers in separate installation openings

## 5.7.2 Dry mortarless installation with installation kit ES

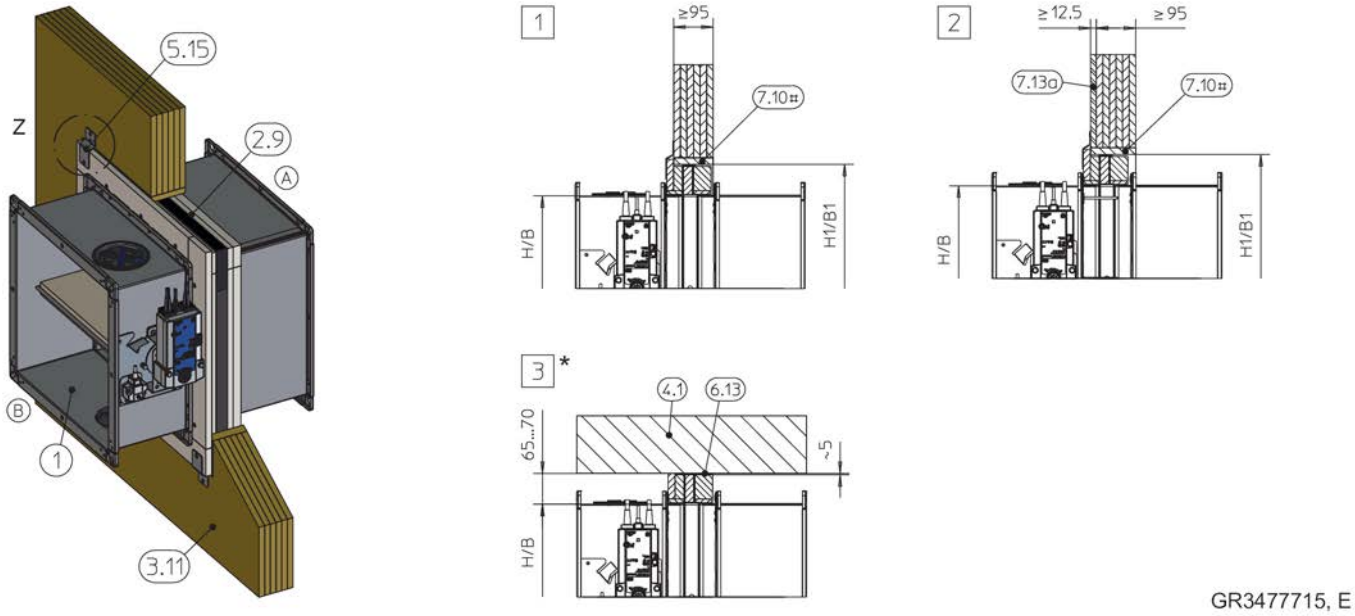



*Fig. 98: Dry mortarless installation into a solid wood wall or CLT wall, with installation kit ES*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 7.13a | Cladding, fire-resistant |
| 2.9 | Installation kit ES | # | optional |
| 3.11 | Solid wood wall / CLT wall | * | Installation near the floor analogous to 3 |
| 4.1 | Solid ceiling slab | H1/B1 | Installation opening, see table *112* |
| 5.15 | Bracket | Z | For fixing, see Fig. 21 to Fig. 23 |
| 6.13 | Mineral wool strips A1, filler as an alternative (to even out an uneven floor or ceiling slab) | 1 – 3 | Up to EI 90 S |
| 7.10 | Trim panels | | |

**Additional requirements: dry mortarless installation with installation kit ES in solid wood walls**

- Solid wood wall or CLT wall *41*
- Casing length L = 500 mm
- Distance from the fire damper to the adjacent parts approx. 80 / 120 mm (depending on the arrangement of brackets)
- 65 – 70 mm distance between the fire damper with a shortened installation kit and load-bearing structural elements, see , detail 3
- ≥ 200 mm distance between two fire dampers in separate installation openings
- Ensure accessibility from the rear.

1. Mount the installation kit onto the fire damper, see *42* .
2. Insert the fire damper centred into the installation opening and fix with brackets and dry wall screws to the solid wood wall, see Fig. 21 to Fig. 23 .

### 5.7.3 Dry mortarless installation with mineral wool

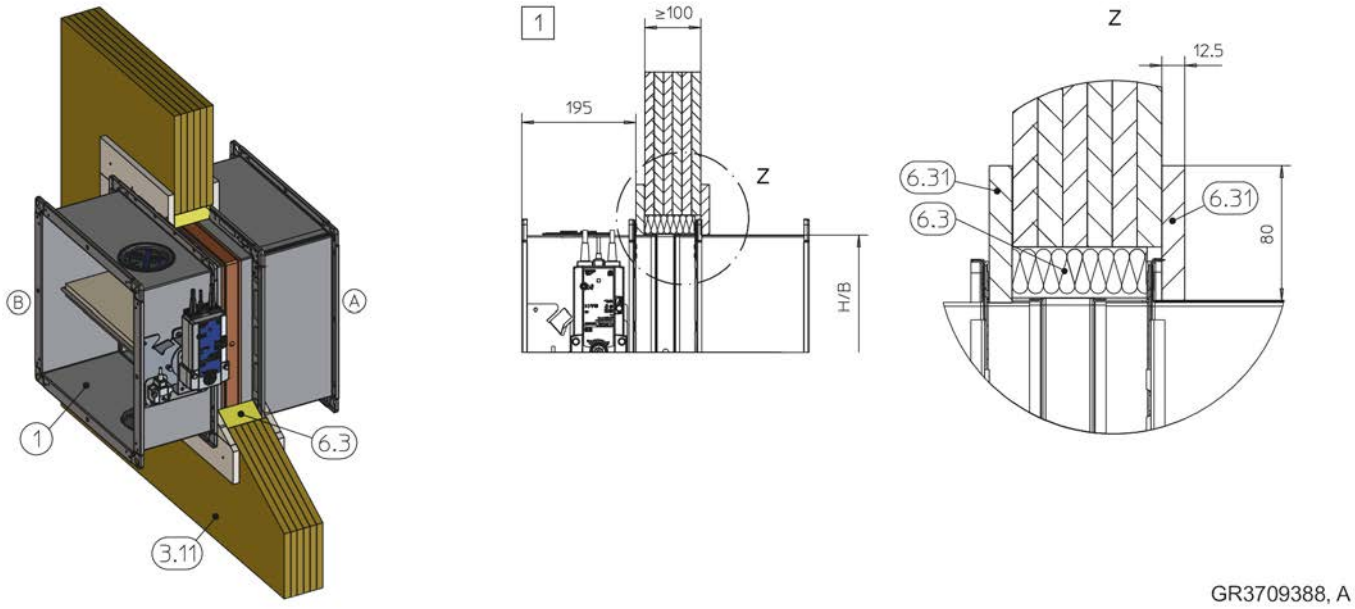



*Fig. 99: Dry mortarless installation into a solid wood or cross laminated timber wall, with mineral wool*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 6.31 | Fire-rated plasterboard strip, d = 12.5 mm |
| 3.11 | Solid wood wall / CLT wall | [1] | Up to EI 60 S |
| 6.3 | Mineral wool, ≥ 1000 °C, ≥ 100 kg/m³ | | |

**Additional requirements: dry mortarless installation with mineral wool in lightweight partition walls with timber support structure and half-timbered constructions**

- Solid wood wall or CLT wall *41*
- Casing length L = 500 mm
- ≥ 200 mm distance between two fire dampers in separate installation openings
- Distance to load-bearing structural elements ≥ 80 mm

1. Create a clear opening with B + 74 (±2) mm and H + 86 (±2) mm.
2. Cut mineral wool strips (6.3) and fire-rated plasterboard strips (6.31) to size.
3. Place mineral wool strips and fire-rated plasterboard strips around the damper casing on the operating side (B) and fix them (clamp in and fix with filler if necessary).
4. Slide the fire damper into the installation opening and screw fire-rated plasterboard strips on the operating side (B) to the wall (screw spacing approx. 150 mm).
5. Attach fire-rated plasterboard strips to the installation side (A) and screw onto the wall (screw spacing approx. 150 mm).

**Note:**

Wall thickness shown = 100 mm. For wall thicknesses > 100 mm, the area between installation side (A) of the fire damper and the installation opening is additionally filled to wall thickness with mineral wool strips (6.3).

## 5.7.4 Dry mortarless installation with fire batt

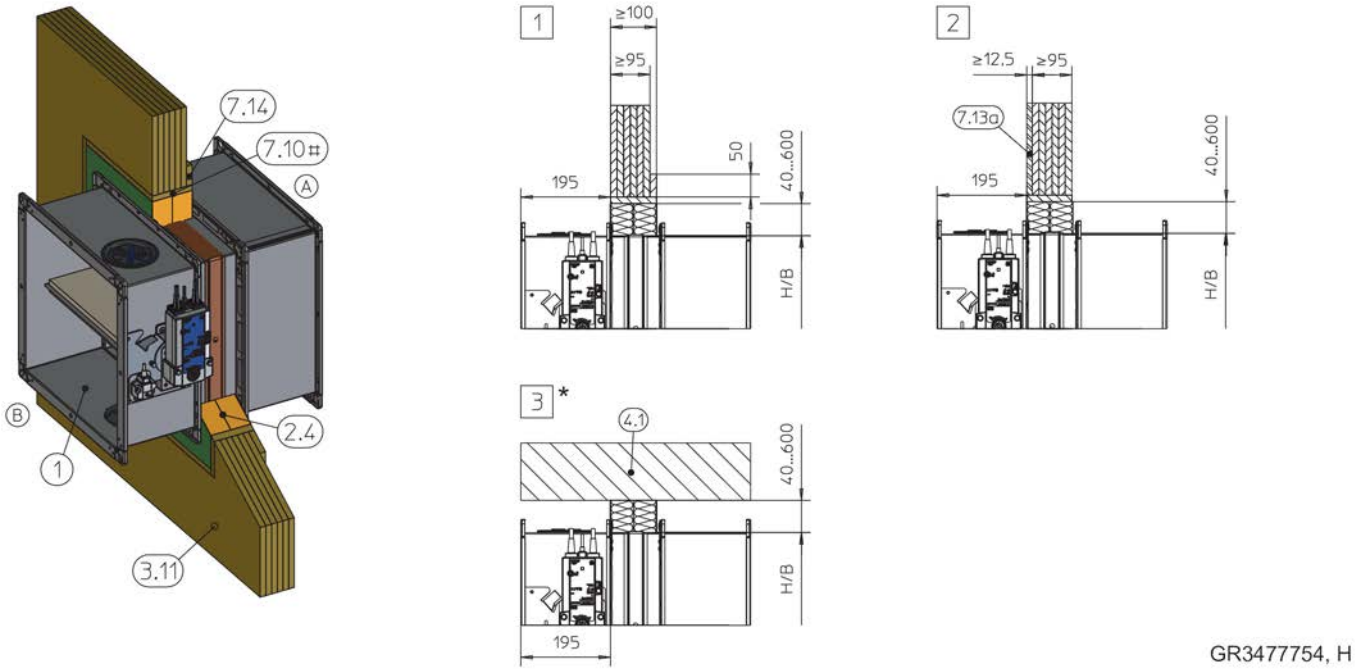



*Fig. 100: Dry mortarless installation into a timber wall or CLT wall, with a fire batt*

| | |
|---|---|
| 1 | FKA2-EU |
| 2.4 | Coated board system |
| 3.11 | Solid wood wall / CLT wall |
| 4.1 | Solid ceiling slab / solid floor |
| 7.10 | Trim panels |
| 7.13a | Cladding, fire-resistant |
| 7.14 | Reinforcing board of the same material as the wall |
| # | optional |
| * | Installation near the floor analogous to 3 |
| 1 – 3 | Up to EI 90 S |

**Additional requirements: dry mortarless installation with fire batt in solid wood walls**

- Solid wood wall or CLT wall ↳ *41*
- Casing length L = 305 or 500 mm
- Fire batt systems, installation details, distances / dimensions, see ↳ *38* f
- ≥ 200 mm distance between two fire dampers in separate installation openings
- Suspension and fixing, see ↳ *156*

## 5.8 Shaft walls with metal support structure

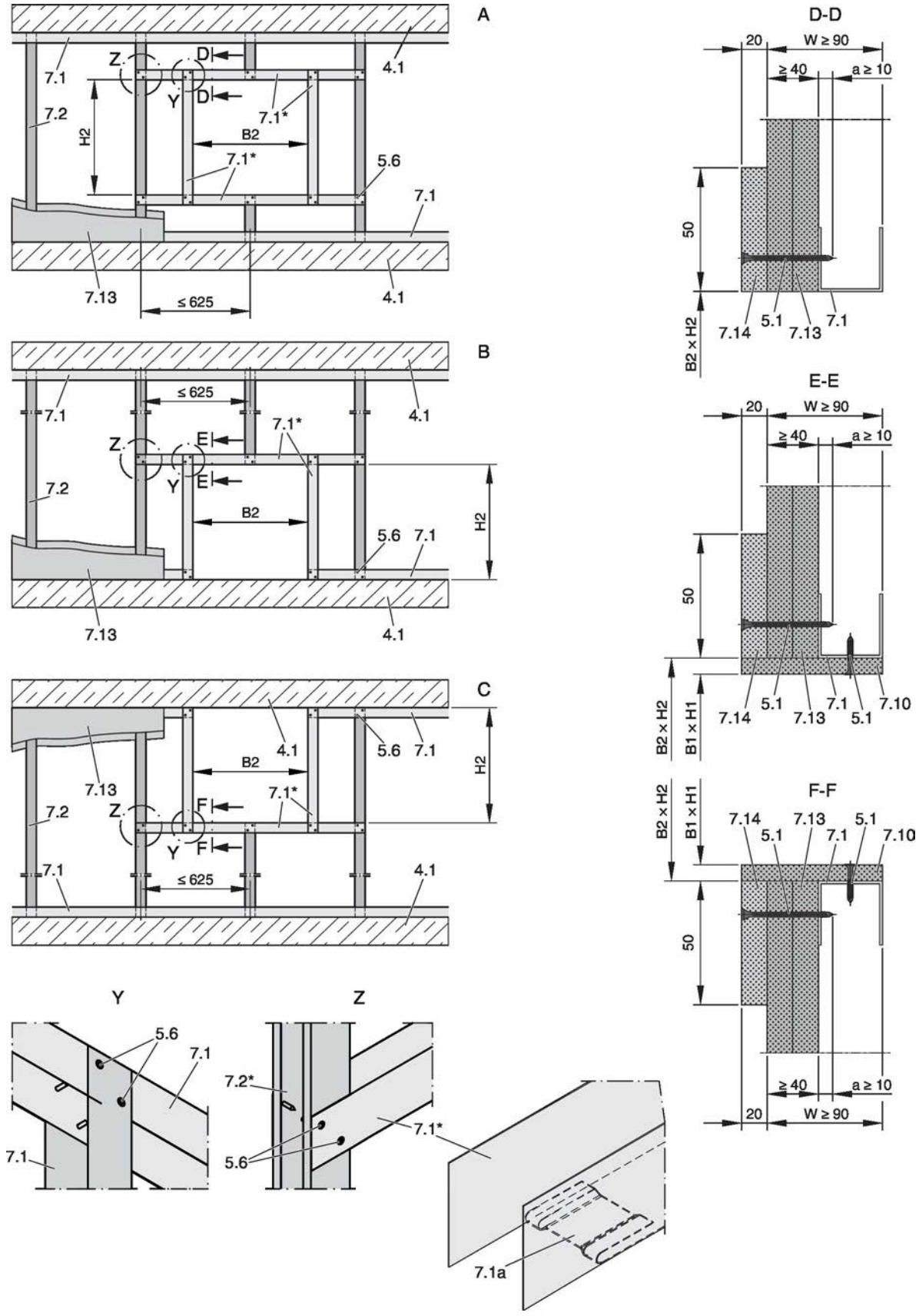



*Fig. 101: Shaft walls with metal support structure and cladding on one side*

| | |
|---|---|
| A | Shaft wall |
| B | Shaft wall, installation near the floor |
| C | Shaft wall, installation near the ceiling |
| 4.1 | Solid ceiling slab / solid floor |
| 5.1 | Dry wall screw |
| 5.6 | Screw or steel rivet |
| 7.1 | UW section |
| 7.1a | UW section, cut in and bent or cut off |
| 7.2 | CW section |
| 7.10 | Optional trim panels, according to installation details |
| 7.13 | Cladding |
| 7.14 | Reinforcing board of the same material as the wall |
| B1 × H1 | Installation opening |
| B2 × H2 | Opening in the metal support structure (without trim panels: B2 = B1, H2 = H1) |
| * | Closed side of metal section must face the installation opening |

**Additional requirements: shaft walls with metal support structure**

- Shaft wall with metal support structure, see *41*

| Installation type | Installation opening [mm] | | | |
|---|---|---|---|---|
| | B1 | H1 | B2 | H2 |
| Mortar-based installation | B + 450 max. | H + 450 max. | B1 + (2 × trim panels) | H1 + (2 × trim panels) |
| Dry mortarless installation with installation kit ES[1, 2] | B + 140 | H + 140 | | |

[1)] Optional trim panels (single layer)

[2)] Installation opening tolerance ± 2 mm

### 5.8.1 Mortar-based installation

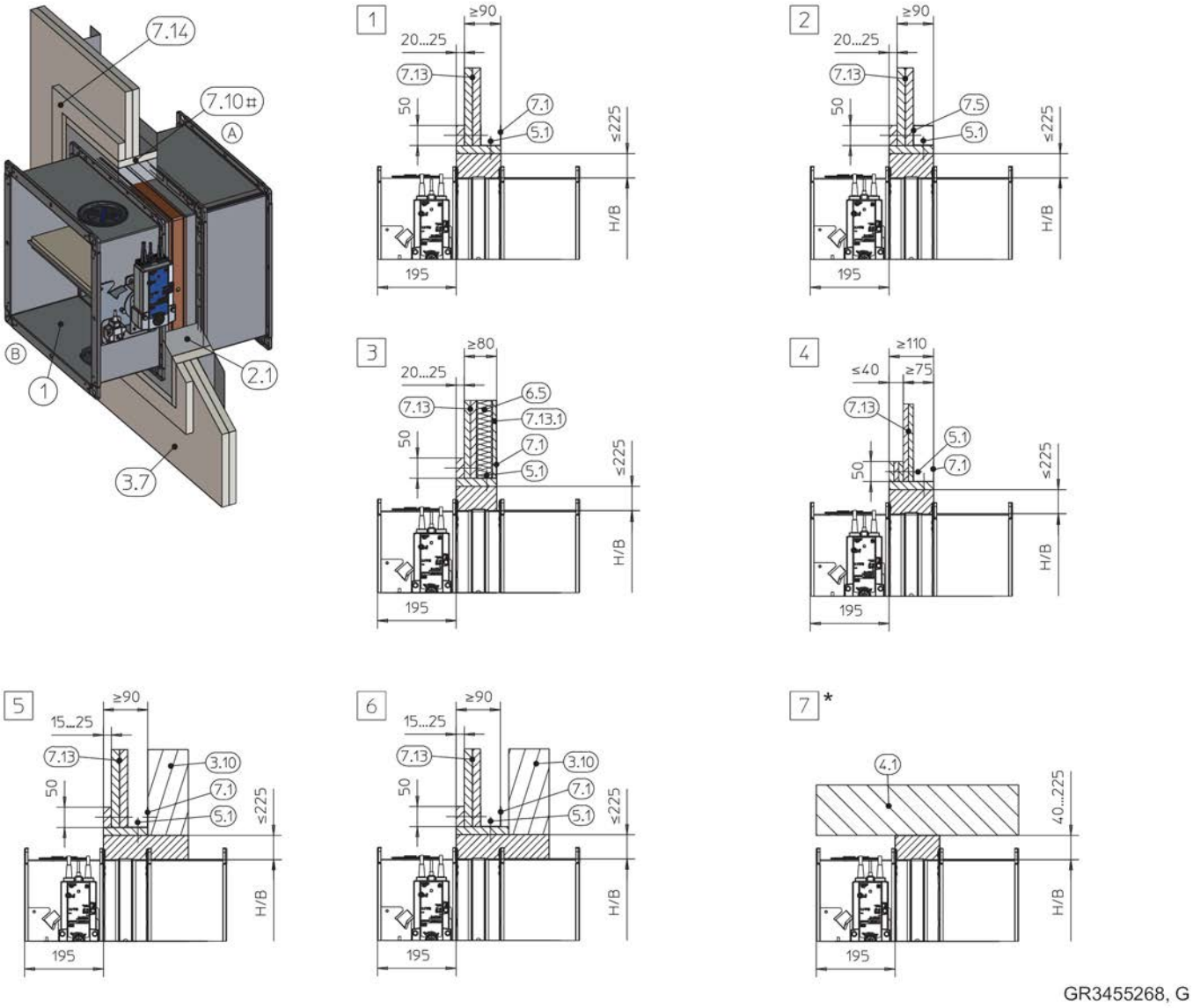



*Fig. 102: Mortar-based installation into shaft wall with metal support structure*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU (actuator on outside of shaft) | 7.10 | Trim panels |
| 2.1 | Mortar | 7.13 | Cladding |
| 3.7 | Shaft wall with metal support structure, cladding on one side | 7.13.1 | Cladding, single-layer, adjusted, fire-resistant |
| 3.10 | Wall without adequate fire resistance rating | 7.14 | Reinforcing board of the same material as the wall |
| 4.1 | Solid ceiling slab / solid floor | # | optional |
| 5.1 | Dry wall screw | * | Installation near the floor analogous to 7 |
| 6.5 | Mineral wool (depending on wall construction) | 1 – 3 | Up to EI 90 S |
| 7.1 | UW section | 4 – 6 | EI 30 S |
| 7.5 | Steel support structure (box section) | 7 | Up to EI 90 S |

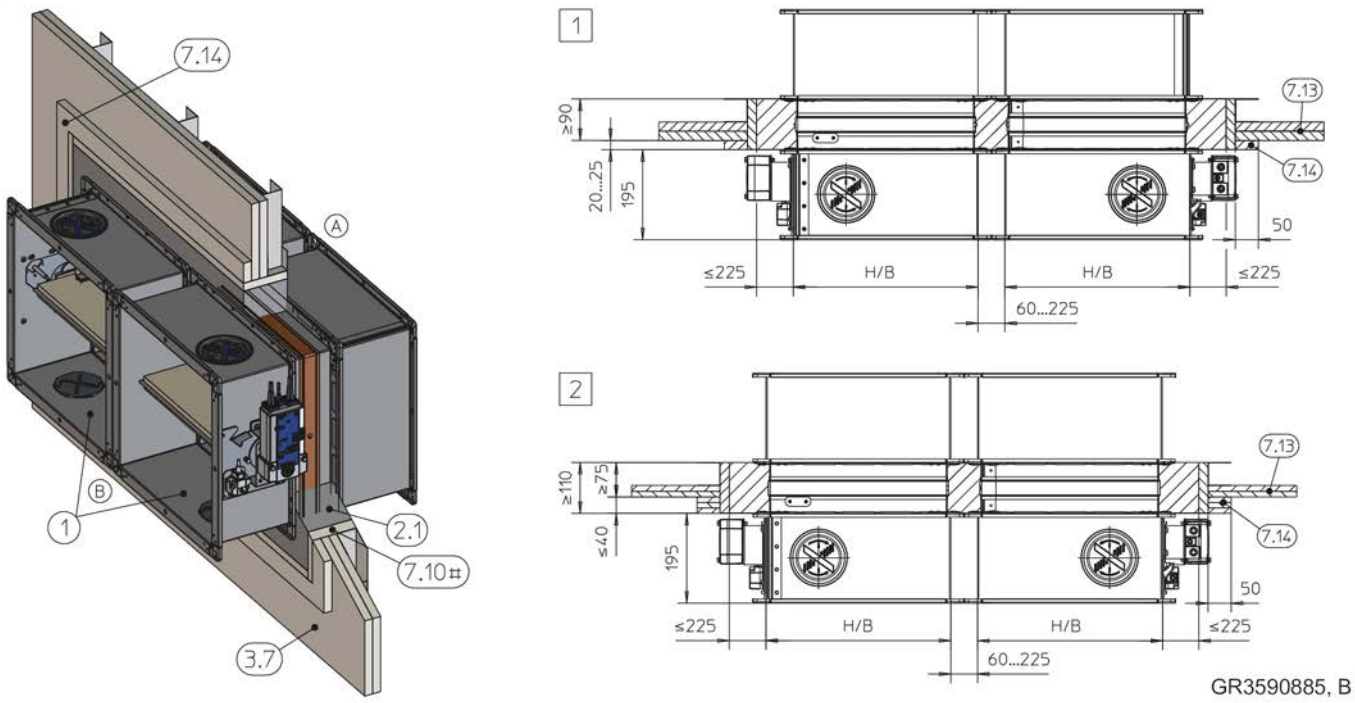



*Fig. 103: Mortar-based installation into a shaft wall, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)*

| | |
|---|---|
| 1 | FKA2-EU |
| 2.1 | Mortar |
| 3.7 | Shaft wall with metal support structure, cladding on one side |
| 7.10 | Trim panels |
| 7.13 | Cladding, two layers |
| 7.14 | Reinforcing board of the same material as the wall |
| # | Optional, according to installation details and |
| 1 | Up to EI 90 S |
| 2 | EI 30 S |

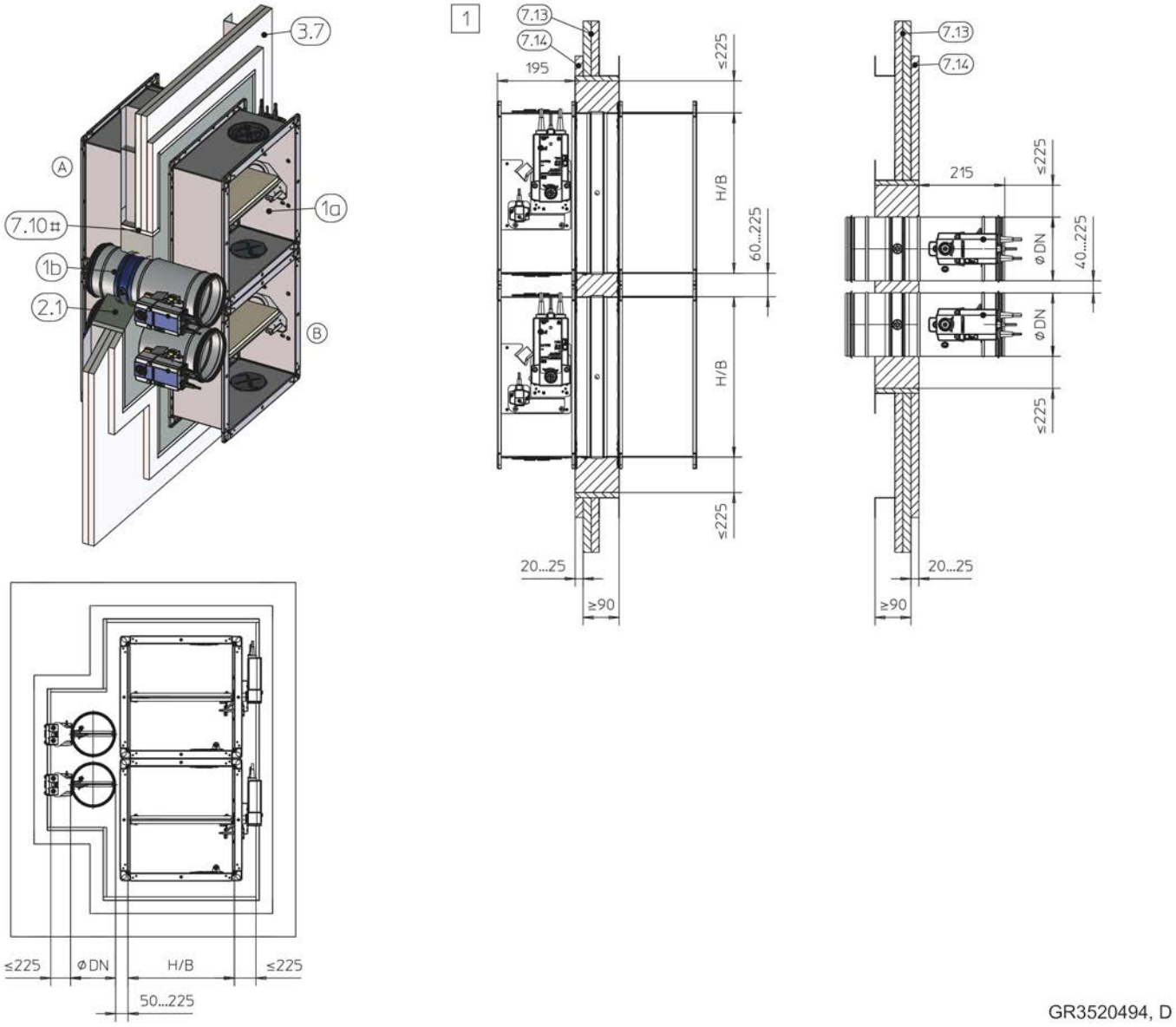



*Fig. 104: Mortar-based installation into a shaft wall, FKA2-EU and FKRS-EU combined*

| | | | |
|---|---|---|---|
| 1a | FKA2-EU up to B × H ≤ 800 × 400 mm | 7.13 | Cladding |
| 1b | FKRS-EU | 7.14 | Reinforcing board of the same material as the wall |
| 2.1 | Mortar | | |
| 3.7 | Shaft wall with metal support structure, cladding on one side | # | optional |
| | | 1 | Up to EI 90 S |
| 7.10 | Trim panels | | |

**Note:**

- Total fire damper surface area ≤ 1.2 m².
- Alternative installation orientations of side-by-side, under or on top of one another possible. Details are available upon request.
  For installation details FKRS-EU, see the installation and operating manual for this fire damper type.
- Distance to load-bearing structural elements ≥ 40 mm

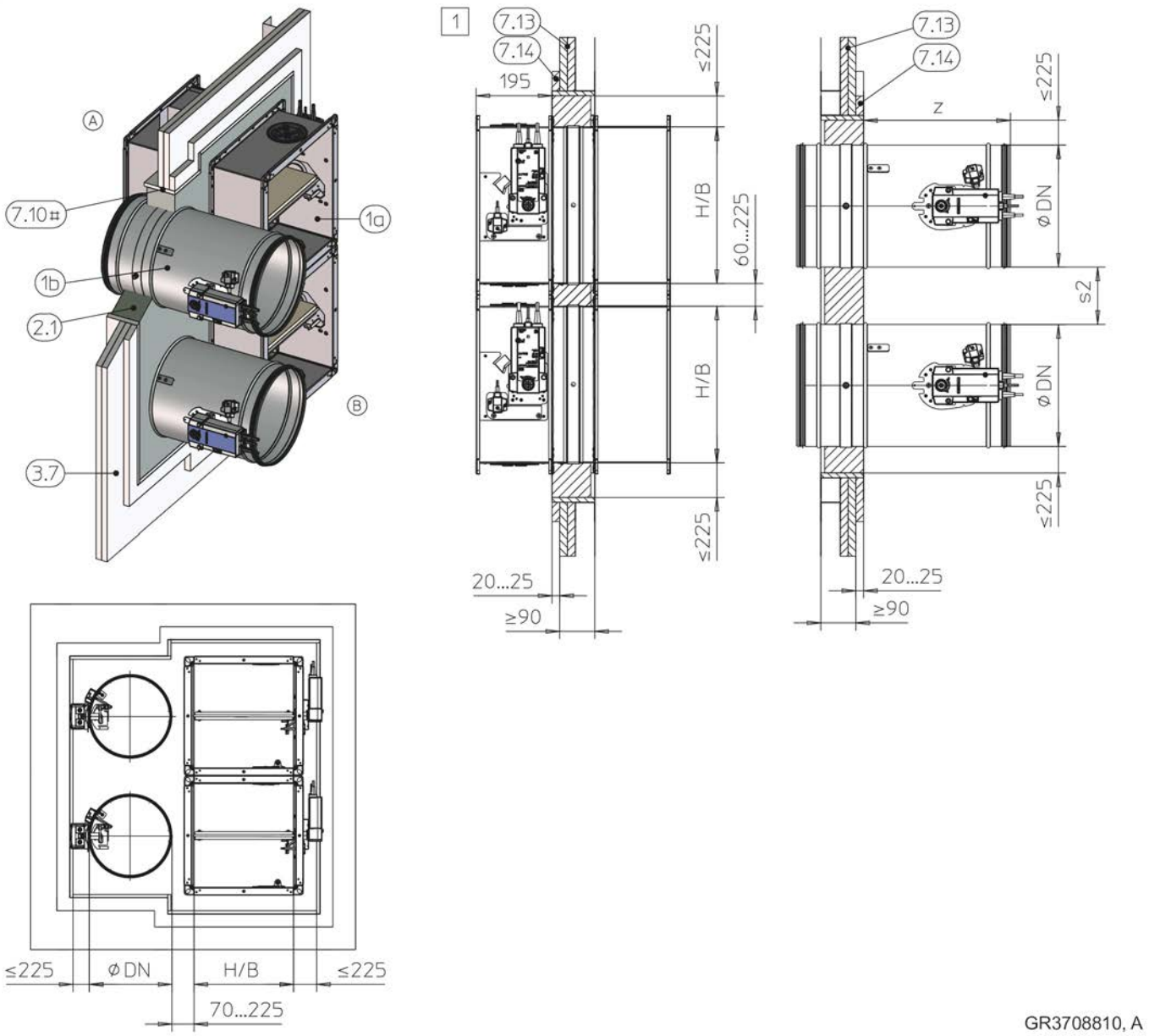



*Fig. 105: Mortar-based installation into a shaft wall, FKA2-EU and FKR-EU combined*

| | |
|---|---|
| 1a | FKA2-EU up to B × H ≤ 800 × 400 mm |
| 1b | FKR-EU |
| 2.1 | Mortar |
| 3.7 | Shaft wall with metal support structure, cladding on one side |
| 7.10 | Trim panels |
| 7.13 | Cladding |
| 7.14 | Reinforcing board of the same material as the wall |
| # | optional |
| s2 | Spigot construction 40 – 225 mm<br>Flange construction 80 – 225 mm |
| z | Spigot construction 370 mm<br>Flange construction 342 mm |
| 1 | Up to EI 90 S |

**Note:**

- Total fire damper surface area ≤ 1.2 m².
- Alternative installation orientations of side-by-side, under or on top of one another possible. Details are available upon request.
  For installation details FKR-EU, see the installation and operating manual for this fire damper type.
- Distance to load-bearing structural elements ≥ 40 mm

**Additional requirements: mortar-based installation into shaft walls with metal support structure**

- Shaft wall with metal support structure, see *41*
- Casing length L = 305 or 500 mm

## 5.8.2 Dry mortarless installation with installation kit ES

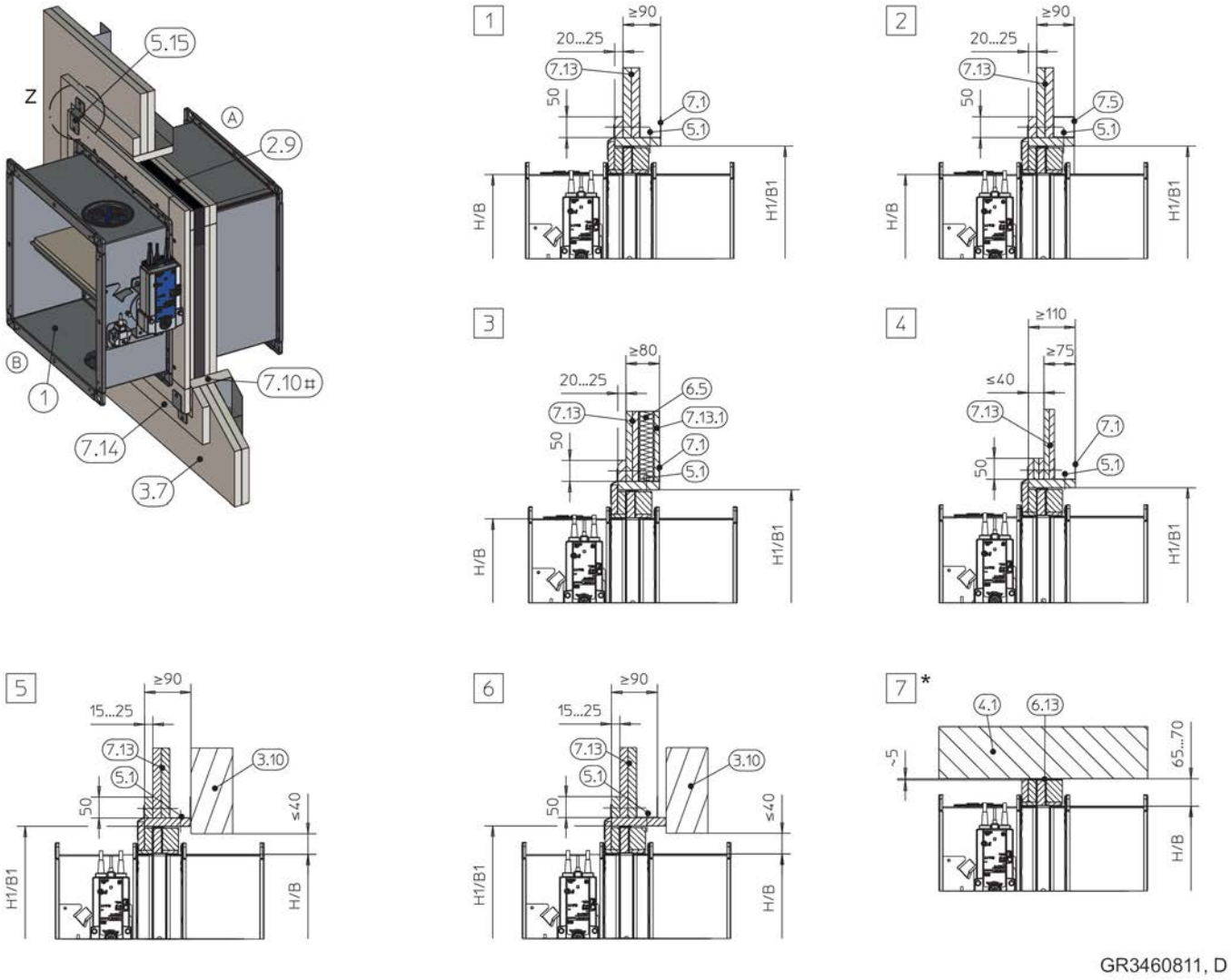



*Fig. 106: Dry mortarless installation with installation kit ES into a shaft wall with metal support structure*

| | |
|---|---|
| 1 | FKA2-EU |
| 2.9 | Installation kit ES |
| 3.7 | Shaft wall with metal support structure, cladding on one side |
| 3.10 | Wall without adequate fire resistance rating |
| 4.1 | Solid ceiling slab / solid floor |
| 5.1 | Dry wall screw, to be provided by others |
| 5.15 | Bracket |
| 6.5 | Mineral wool (depending on wall construction) |
| 6.13 | Mineral wool strips A1, filler as an alternative (to even out an uneven floor or ceiling slab) |
| 7.1 | UW section |
| 7.5 | Steel support structure (box section) |
| 7.10 | Trim panels |
| 7.13 | Cladding |
| 7.13.1 | Cladding, single-layer, adjusted |
| 7.14 | Reinforcing board of the same material as the wall |
| # | optional |
| * | Installation near the floor analogous to 7 |
| H1/B1 | Installation opening, see table *118* |
| Z | For fixing, see Fig. 21 to Fig. 23 |
| 1 – 3 | Up to EI 90 S |
| 4 – 6 | EI 30 S |
| 7 | EI 30 S to EI 90 S |

**Additional requirements: dry mortarless installation with installation kit ES in shaft walls with metal support structure**

- Shaft wall with metal support structure, see 41
- Casing length L = 500 mm
- Distance from the fire damper to the adjacent structural elements ≥ 110 / 120 mm (depending on the arrangement of brackets, 4-sided metal section)
- 65 – 70 mm distance between the fire damper with a shortened installation kit and load-bearing structural elements, see , detail 7
- ≥ 200 mm distance between two fire dampers in separate installation openings
- Ensure accessibility from the rear.

1. Mount the installation kit onto the fire damper, see 42 .
2. Insert the fire damper centred into the installation opening and fix with brackets and dry wall screws to the stud frame, see Fig. 21 to Fig. 23 .

## 5.9 Shaft walls without metal support structure

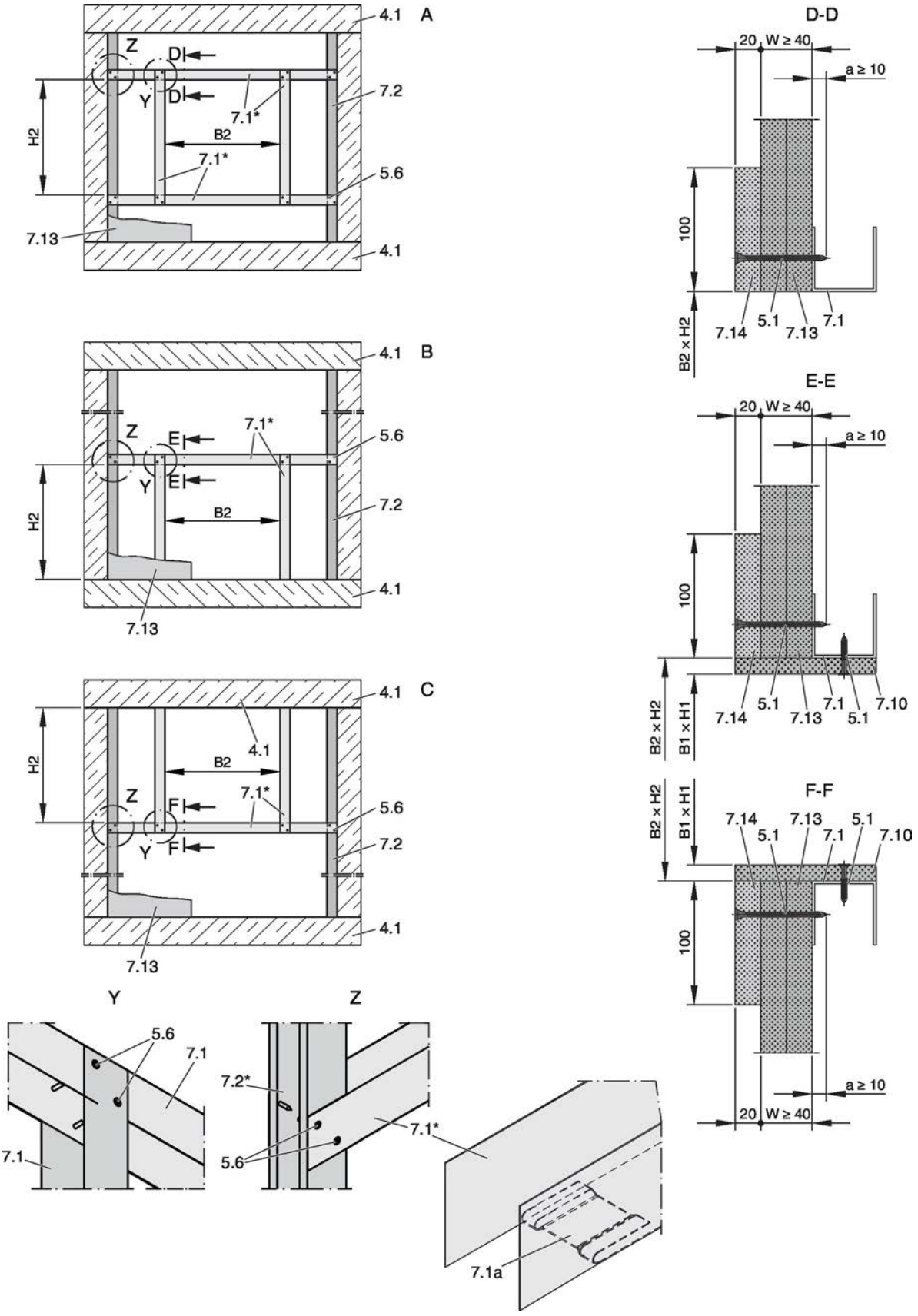



*Fig. 107: Shaft wall without metal support structure and with cladding on one side*

| | |
|---|---|
| A | Shaft wall |
| B | Shaft wall, installation near the floor |
| C | Shaft wall, installation near the ceiling |
| 4.1 | Solid ceiling slab / solid floor |
| 5.1 | Dry wall screw |
| 5.6 | Screw or steel rivet |
| 7.1 | UW section |
| 7.1a | UW section, cut and bent |
| 7.2 | CW section |
| 7.10 | Trim panels, according to installation details |
| 7.13 | Double layer cladding on one side |
| 7.14 | Reinforcing board of the same material as the wall, according to installation details |
| B1 × H1 | Installation opening |
| B2 × H2 | Opening in the metal support structure (without trim panels: B2 = B1, H2 = H1) |
| * | Closed side of metal section must face the installation opening |

**Additional requirements**

- Shaft wall without metal support structure, see *41*

| Installation type | Installation opening [mm] | | | |
|---|---|---|---|---|
| | B1 | H1 | B2 | H2 |
| Dry mortarless installation with dry mortarless installation kit ES[1, 2] | B + 140 | H + 140 | B1 + (2 × trim panels) | H1 + (2 × trim panels) |

[1)] Optional trim panels (12.5 mm max. when used with installation kit ES)

[2)] Installation opening tolerance ± 2 mm

### 5.9.1 Dry mortarless installation with installation kit ES

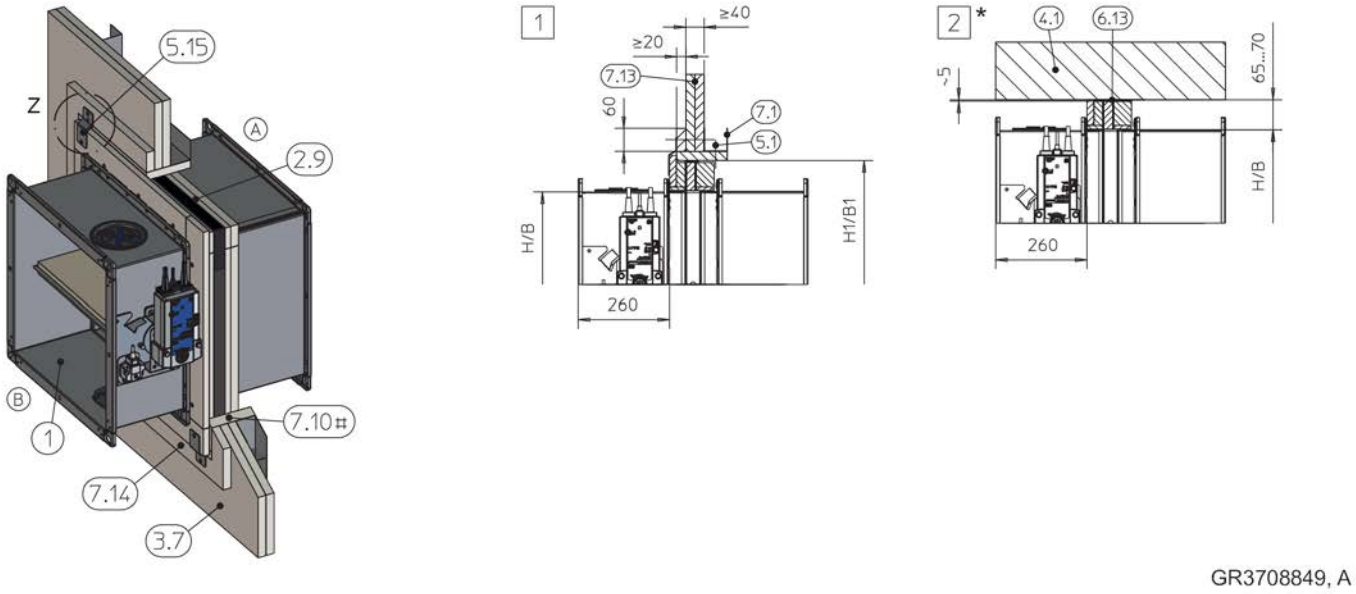



*Fig. 108: Dry mortarless installation with installation kit ES into a shaft wall without metal support structure*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU (actuator on outside of shaft) | 7.10 | Trim panels |
| 2.9 | Installation kit ES | 7.13 | Cladding, fire-resistant |
| 3.9 | Shaft wall without metal support structure, cladding on one side | 7.14 | Reinforcing board of the same material as the wall |
| 4.1 | Solid ceiling slab / solid floor | # | optional |
| 5.1 | Dry wall screw, to be provided by others | * | Installation near the floor analogous to 3 |
| 5.15 | Bracket | H1/B1 | Installation opening, see table *127* |
| 6.13 | Mineral wool strips A1, filler as an alternative (to even out an uneven floor or ceiling slab) | Z | For fixing, see Fig. 21 to Fig. 23 |
| 7.1 | UW section | 1 2 | Up to EI 90 S |

**Additional requirements: dry mortarless installation with installation kit ES in shaft walls without metal support structure**

- Shaft wall without metal support structure, see *41*
- Casing length L = 500 mm
- Distance from the fire damper to the adjacent parts approx. 110 / 120 mm (depending on the arrangement of brackets)
- 65 – 70 mm distance between the fire damper with a shortened installation kit and load-bearing structural elements, see Fig. 108 , detail 3
- ≥ 200 mm distance between two fire dampers in separate installation openings
- Ensure accessibility from the rear.

1. Mount the installation kit onto the fire damper, see *42* .
2. Insert the fire damper centred into the installation opening and fix with brackets and dry wall screws to the shaft wall, see Fig. 21 to Fig. 23 .

## 5.10 Solid ceiling slabs

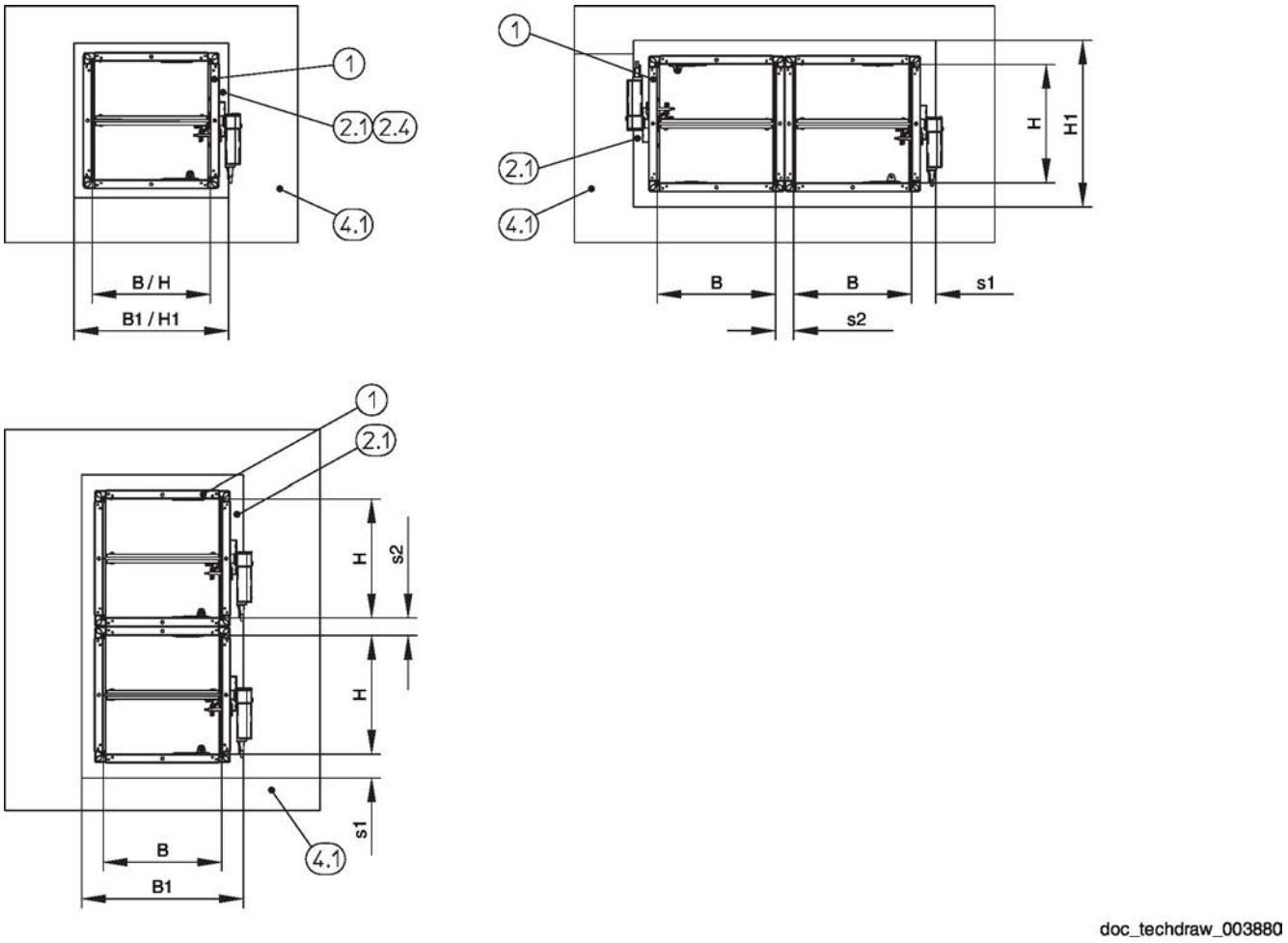



*Fig. 109: Solid ceiling slabs – arrangement / distances*

1 FKA2-EU
2.1 Mortar
2.4 Coated board system
4.1 Solid ceiling slab
s1 Perimeter gap, see *35*
s2 Distance between the fire dampers, see *34*

**Additional requirements: solid ceiling slabs**

- Solid wall *41*
- Distances and installation orientations, see *34*

| Installation type | Installation opening [mm] | | Distance [mm] | |
|---|---|---|---|---|
| | B1 | H1 | s1 | s2 |
| Mortar-based installation | B + 450 max. | H + 450 max. | ≤ 225 | 60 – 225 |

## 5.10.1 Mortar-based installation into solid ceiling slabs

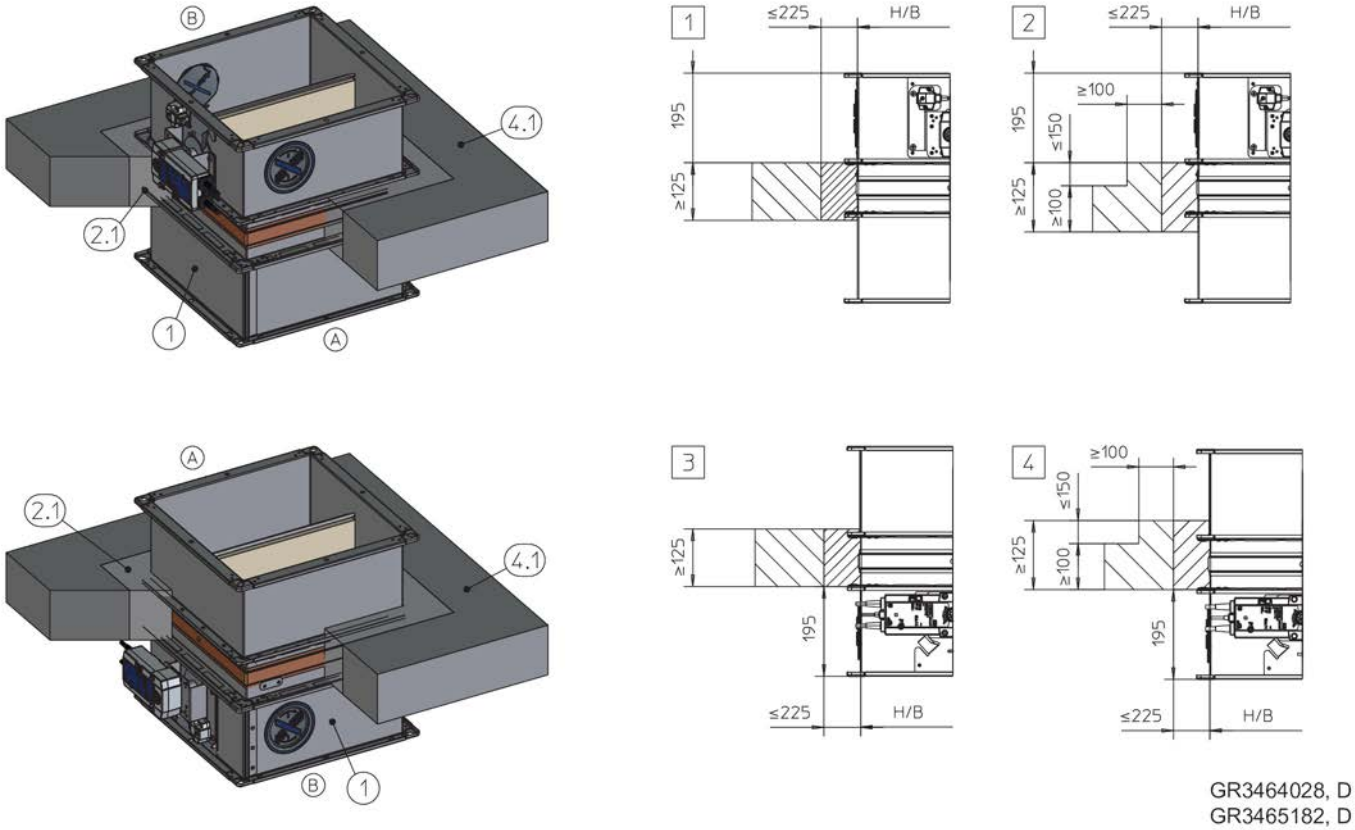



*Fig. 110: Mortar-based installation into a solid ceiling slab, suspended or upright*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 4.1 | Solid ceiling slab |
| 2.1 | Mortar | 1 – 4 | Up to EI 120 S |

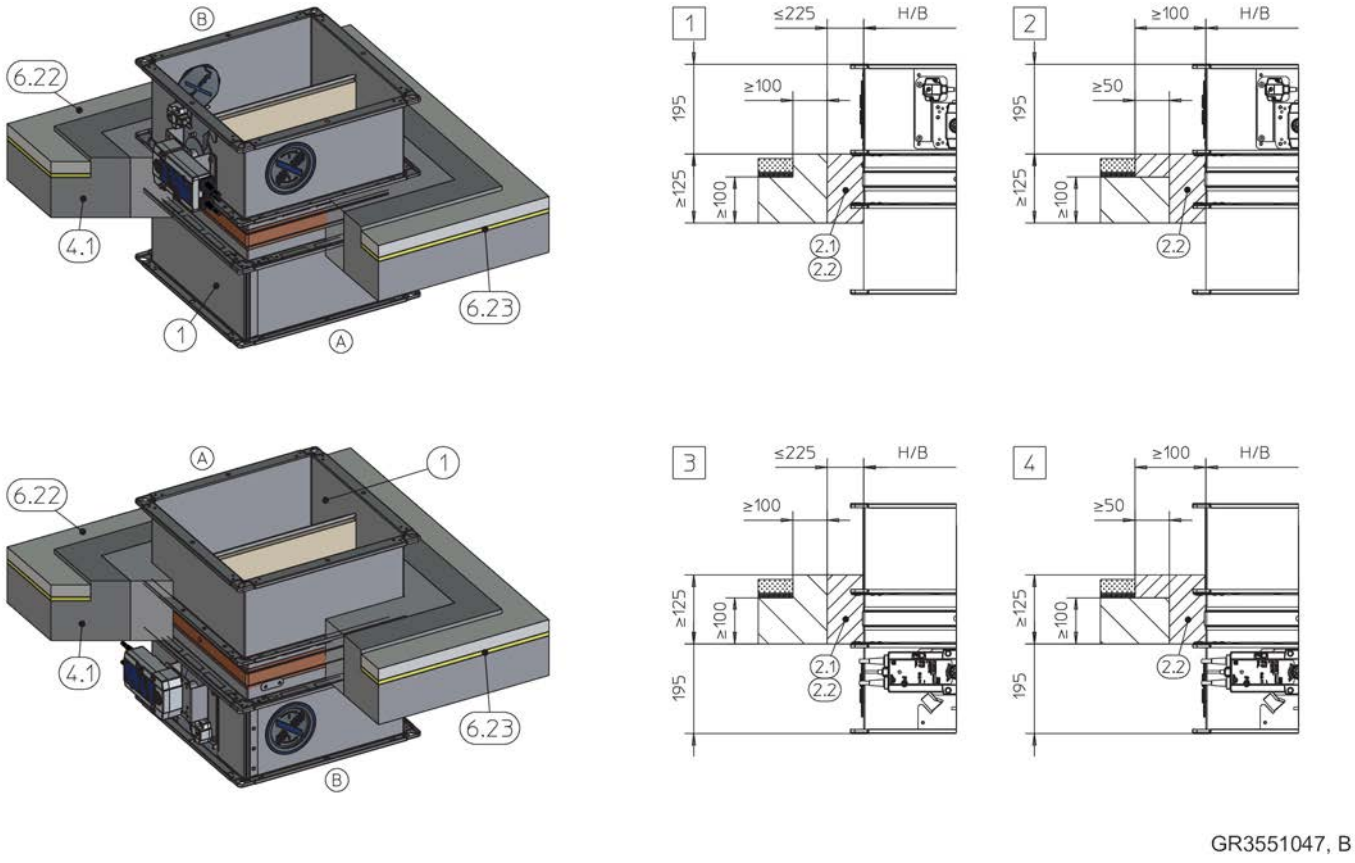



*Fig. 111: Mortar-based installation into a solid ceiling slab with screed and footfall sound insulation, suspended or upright*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 6.22 | Screed |
| 2.1 | Mortar | 6.23 | Footfall sound insulation |
| 2.2 | Reinforced concrete | 1 – 4 | Up to EI 120 S |
| 4.1 | Solid ceiling slab | | |

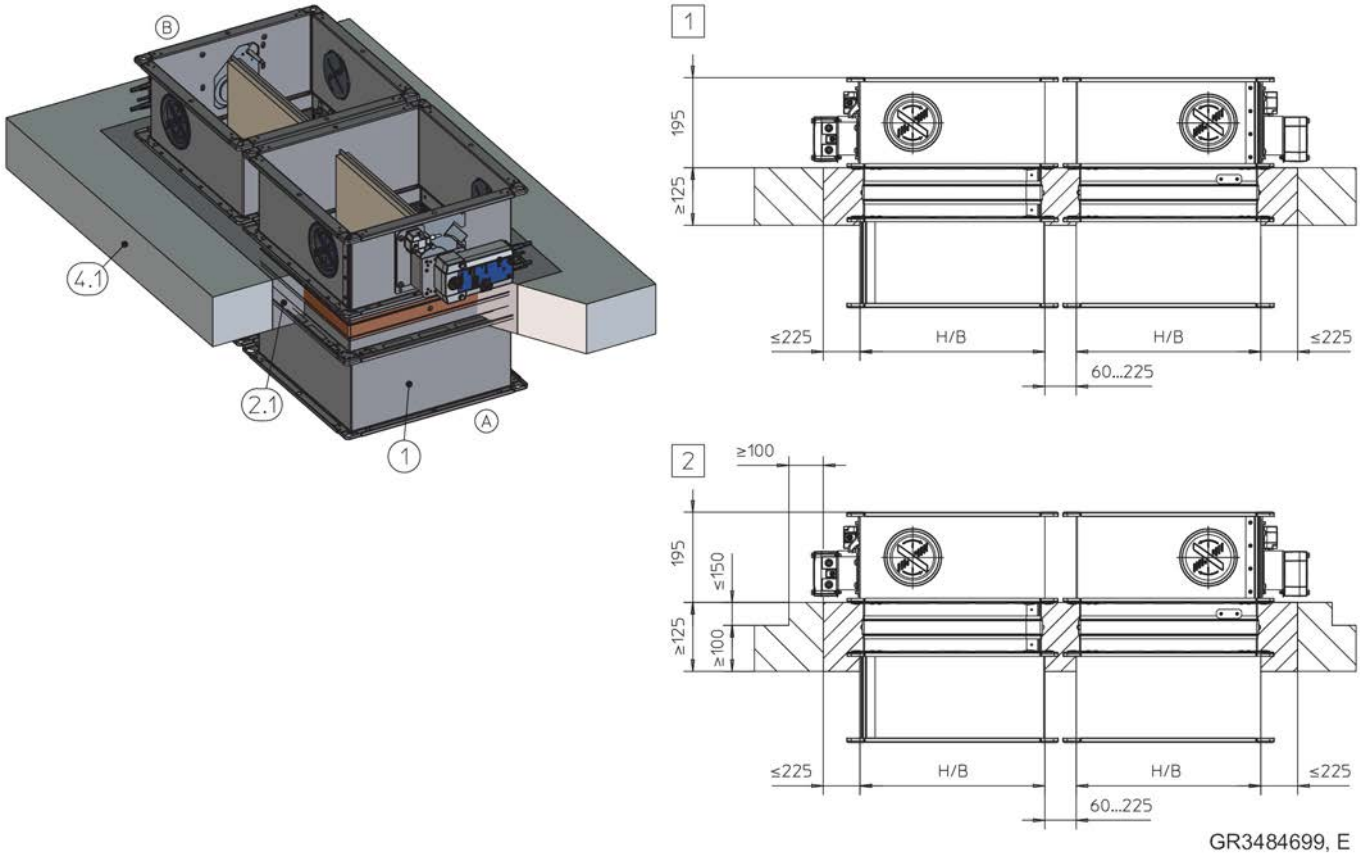



*Fig. 112: Mortar-based installation in solid ceiling slab, "flange to flange", shown upright (also applicable for suspended arrangement)*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 4.1 | Solid ceiling slab |
| 2.1 | Mortar | 1 2 | Up to EI 120 S |

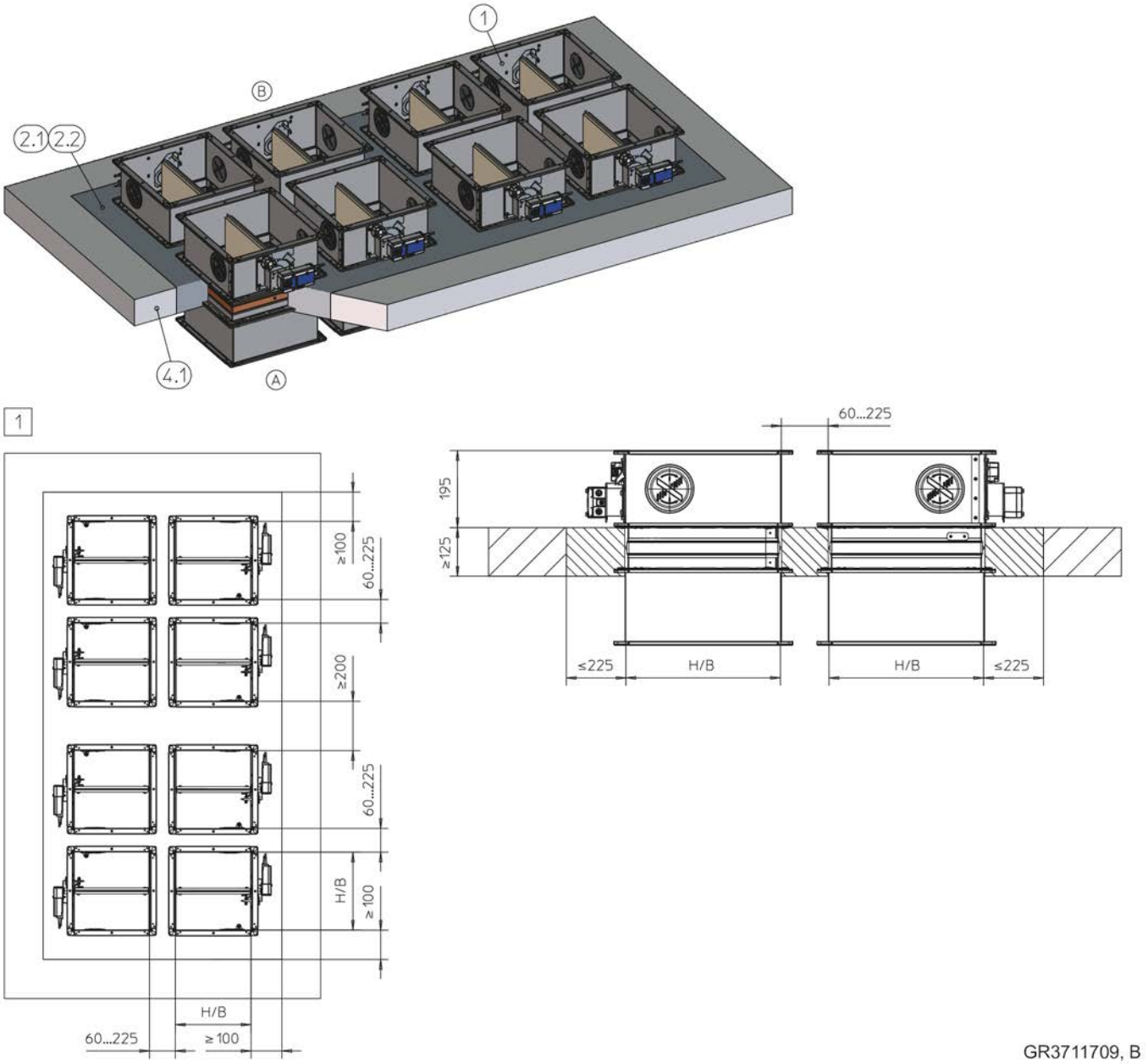



*Fig. 113: Mortar-based installation – multiple occupancy of an installation opening, shown upright (also applicable for suspended arrangement)*

1 FKA2-EU
2.1 Mortar
2.2 Concrete
3.1 Solid ceiling slab
[1] Up to EI 90 S

**Note:**

- The overall area of the fire dampers is limited to 4.8 m².
- The number of fire dampers in an installation opening is limited by their damper size (B × H) and the overall area of the fire dampers (4.8 m²)
- Structural properties of the ceiling construction, including the attachment to the mortar/concrete or any required reinforcement, have to be evaluated and ensured by others.

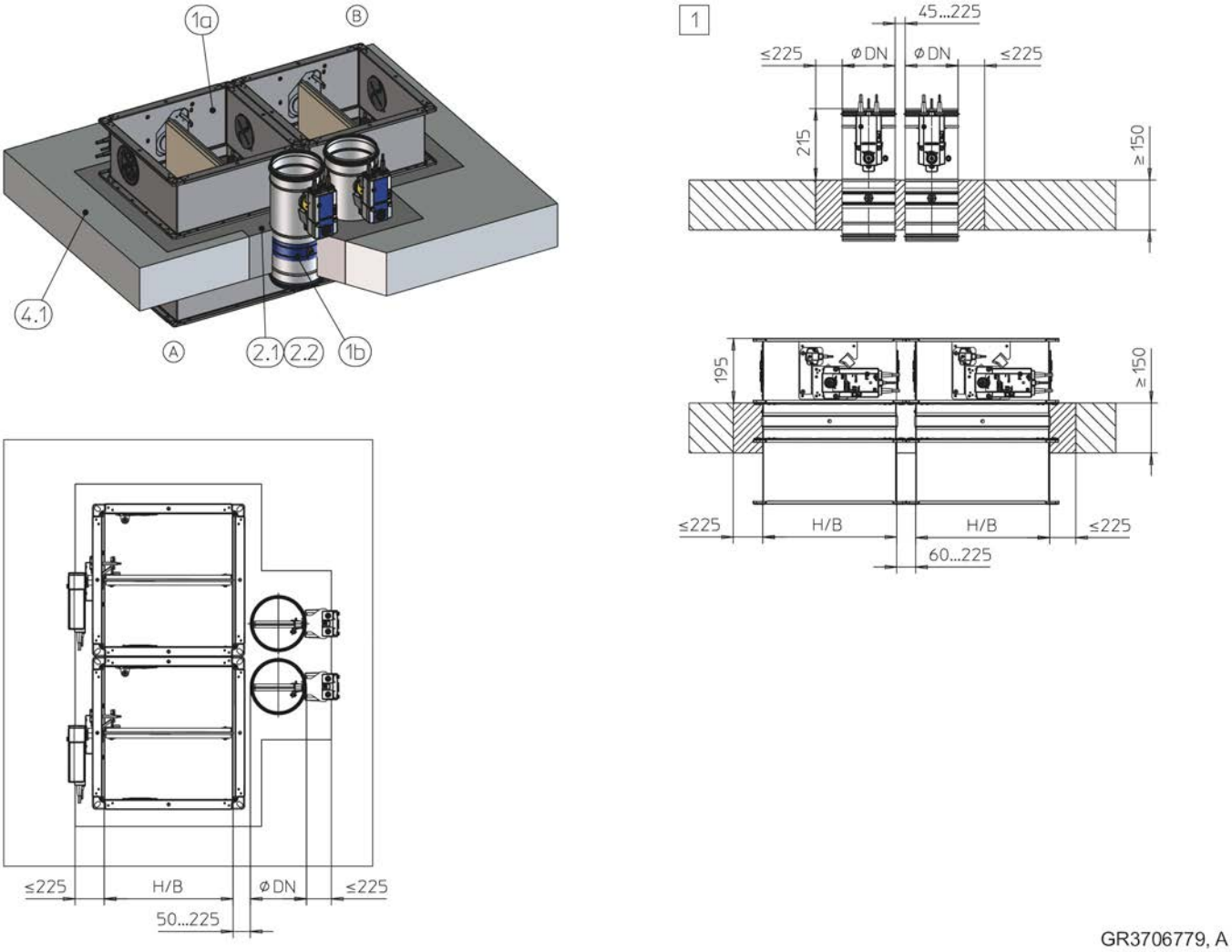



*Fig. 114: Mortar-based installation in solid ceiling slab, combined, FKA2-EU and FKRS-EU, shown upright (also applicable for suspended arrangement)*

| | | | |
|---|---|---|---|
| 1a | FKA2-EU up to B × H ≤ 800 × 400 mm | 2.2 | Concrete |
| 1b | FKRS-EU | 4.1 | Solid ceiling slab |
| 2.1 | Mortar | 1 | Up to EI 90 S |

**Note:**

- Total fire damper surface area ≤ 1.2 m².
- Alternative installation orientations of side-by-side possible. Details are available upon request.
  For installation details FKRS-EU, see the installation and operating manual for this fire damper type.
- Structural properties of the ceiling construction, including the attachment to the mortar/concrete or any required reinforcement, have to be evaluated and ensured by others.

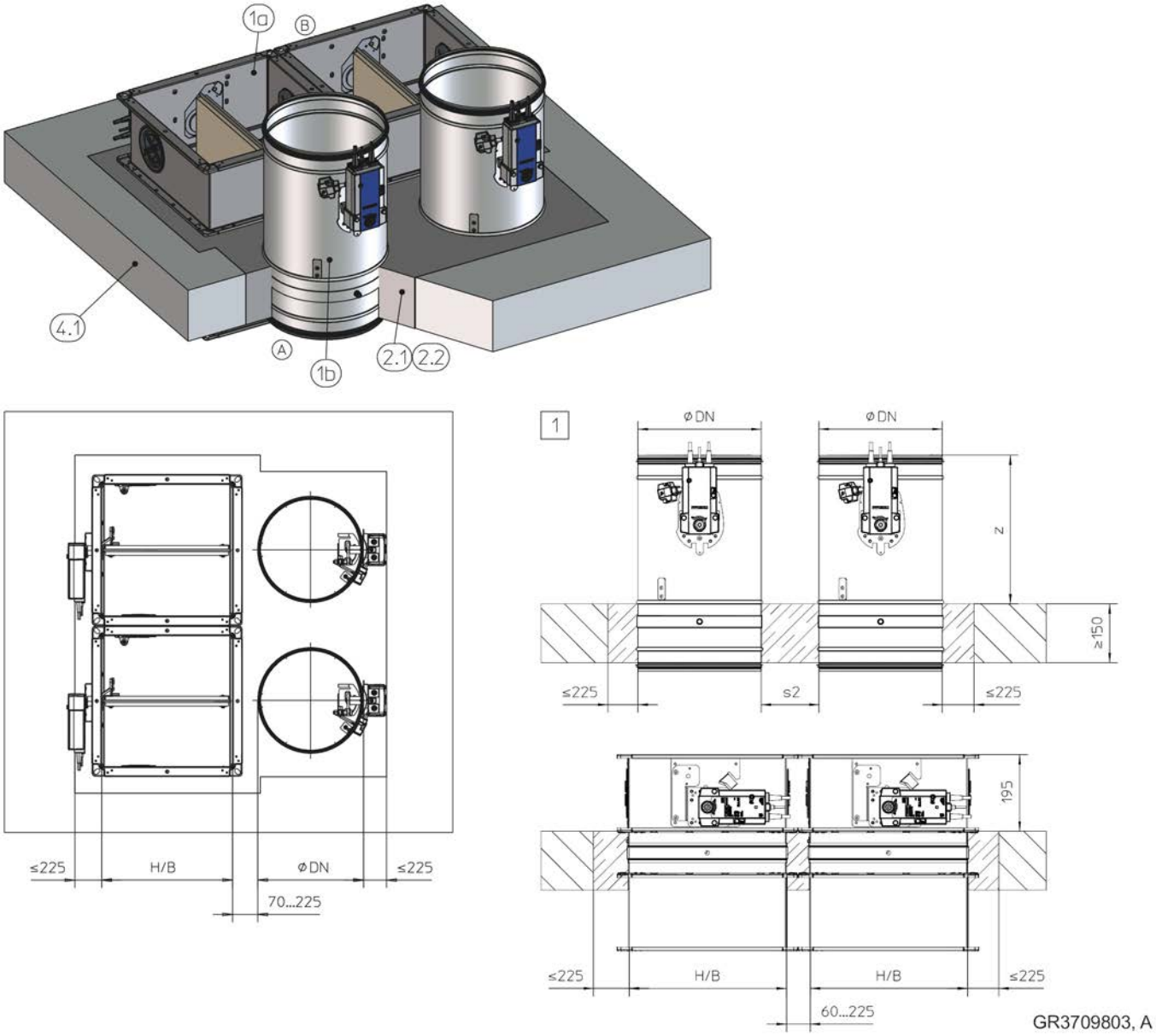



*Fig. 115: Mortar-based installation in solid ceiling slab, combined, FKA2-EU and FKR-EU, shown upright (also applicable for suspended arrangement)*

| | | | |
|---|---|---|---|
| 1a | FKA2-EU up to B × H ≤ 800 × 400 mm | s2 | Spigot construction 40 – 225 mm<br>Flange construction 80 – 225 mm |
| 1b | FKR-EU | | |
| 2.1 | Mortar | z | Spigot construction 370 mm<br>Flange construction 342 mm |
| 2.2 | Concrete | | |
| 4.1 | Solid ceiling slab | 1 | Up to EI 90 S |

**Note:**

- Total fire damper surface area ≤ 1.2 m².
- Alternative installation orientations of side-by-side possible. Details are available upon request.
  For installation details FKR-EU, see the installation and operating manual for this fire damper type.
- Structural properties of the ceiling construction, including the attachment to the mortar/concrete or any required reinforcement, have to be evaluated and ensured by others.

**Additional requirements: mortar-based installation into solid ceiling slabs**

- Solid wall *41*
- Casing length L = 305 or 500 mm
- Distance to load-bearing structural elements ≥ 40 mm

## 5.10.2 Mortar-based installation into a concrete base

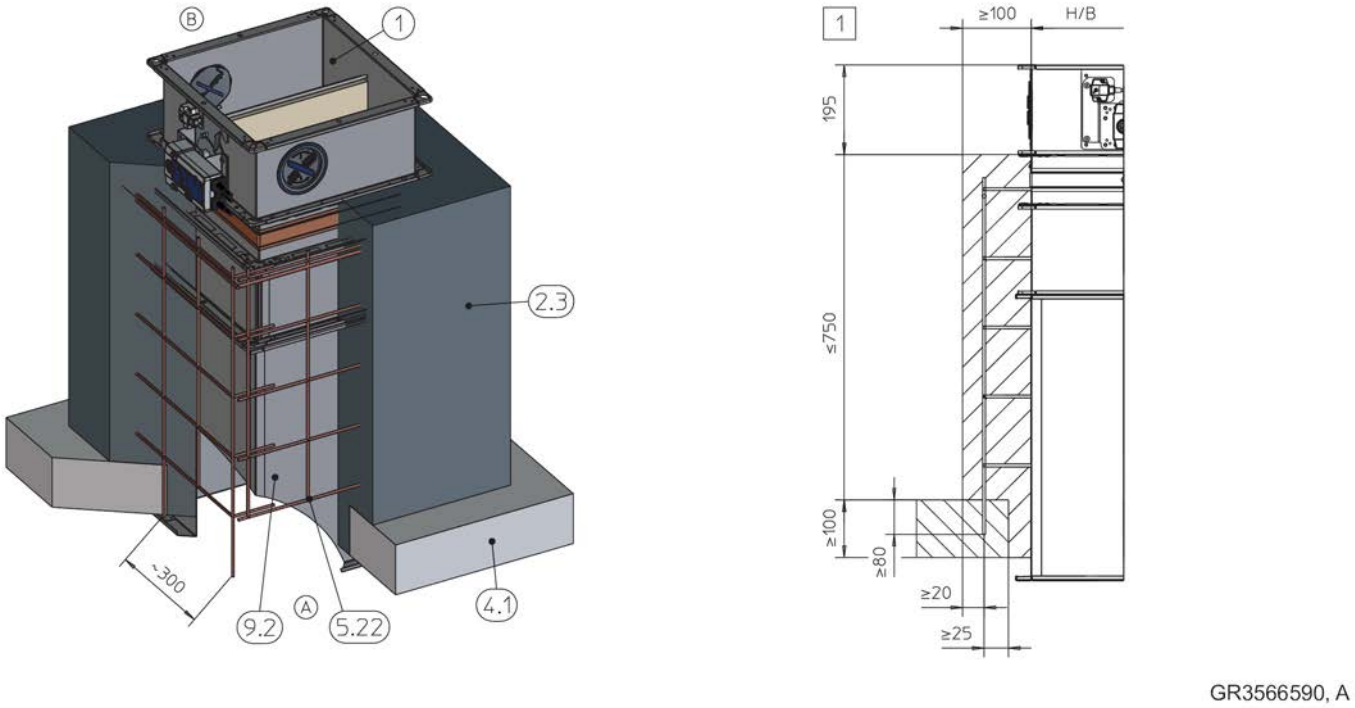



*Fig. 116: Mortar-based installation with concrete base into a solid ceiling slab, upright*

1 FKA2-EU
2.3 Concrete base
4.1 Solid ceiling slab
5.22 Steel fabric, ∅ ≥ 8 mm, mesh aperture 150 mm, or equivalent, for number of fixing points see table
9.2 Extension piece or duct
[1] Up to EI 120 S

**Note:**

- EI 120 S also for two FKA2-EU with spacing 60 – 225 mm.

**Minimum number of fixing points in the bare ceiling**

| H [mm] | B [mm] | | | | |
|---|---|---|---|---|---|
| | ≥ 200 | ≥ 500 | ≥ 800 | ≥ 1100 | ≥ 1400 |
| ≥ 100 | 4 | 6 | 8 | 10 | 12 |
| ≥ 400 | 6 | 8 | 10 | 12 | 14 |
| ≥ 700 | 8 | 10 | 12 | 14 | 16 |

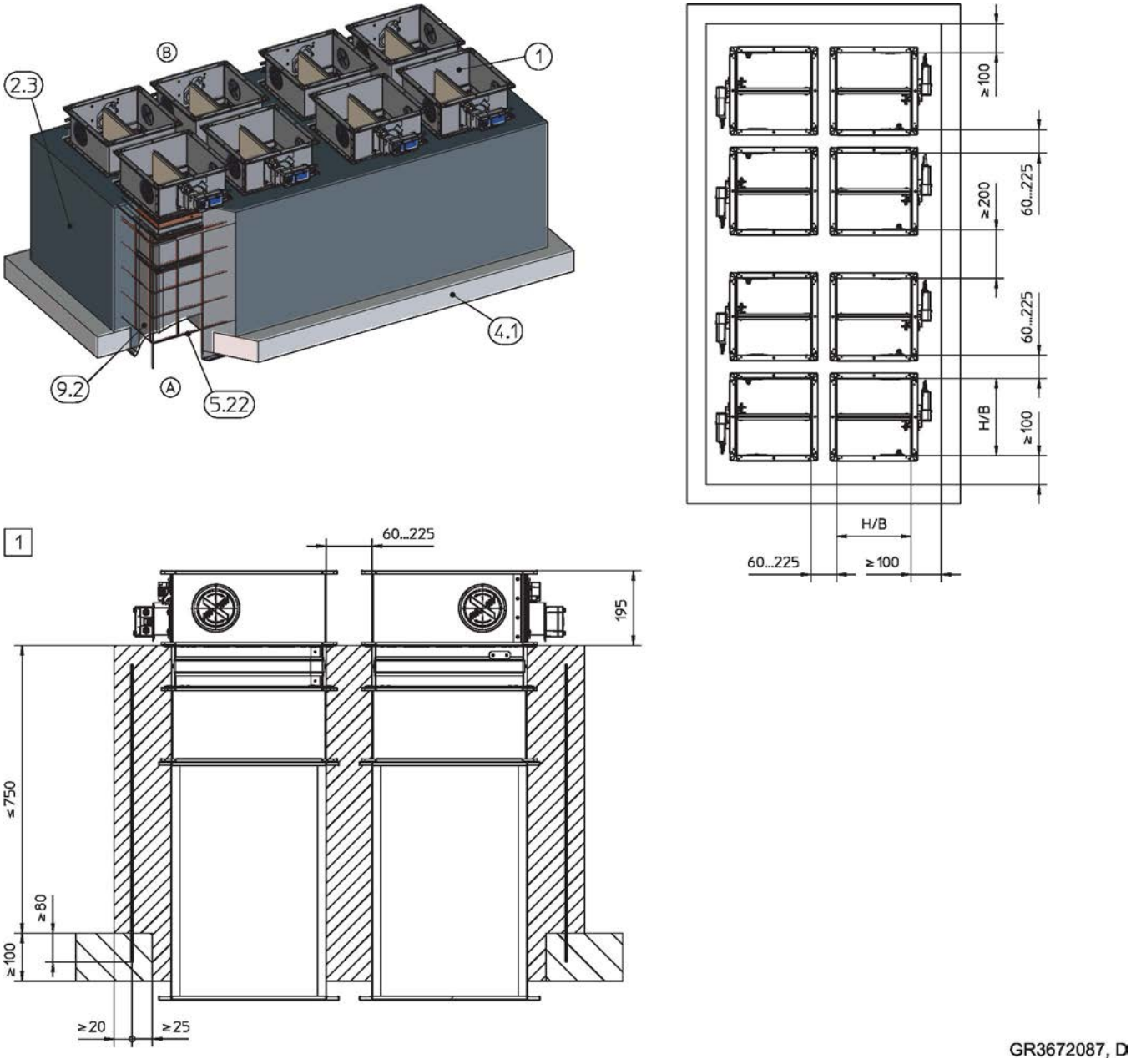



*Fig. 117: Mortar-based installation with concrete base into a solid ceiling slab, upright, multiple occupancy*

1 FKA2-EU
2.3 Concrete base
4.1 Solid ceiling slab
5.22 Steel fabric, ∅ ≥ 8 mm, mesh aperture 150 mm, or equivalent, for number of fixing points see table
9.2 Extension piece or duct
[1] Up to EI 90 S

**Note:**

- Multiple occupancy up to 4.8 m² fire damper area.

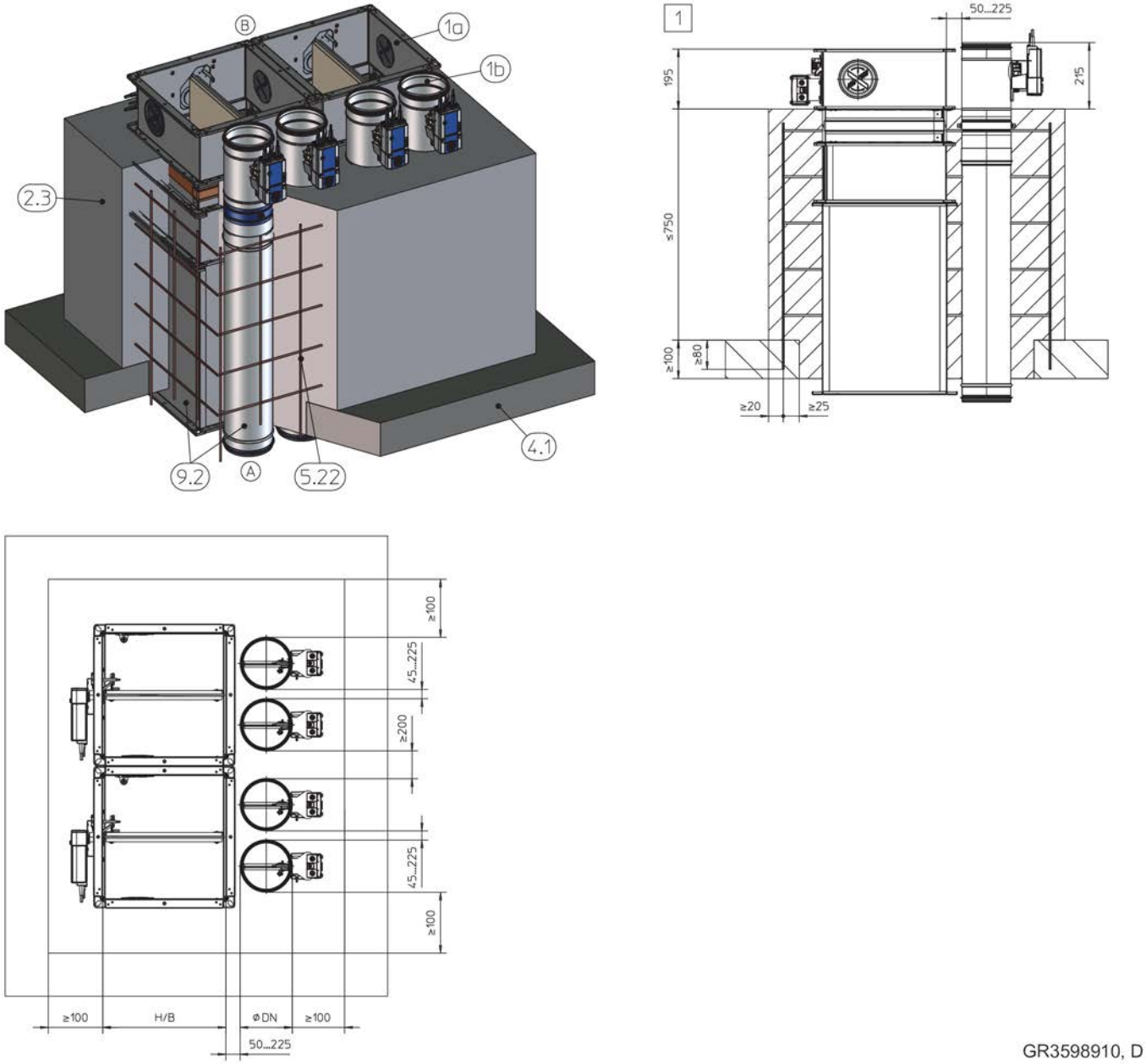



*Fig. 118: Mortar-based installation with concrete base into a solid ceiling slab, upright, combined, FKA2-EU and FKRS-EU*

| | | | |
|---|---|---|---|
| 1a | FKA2-EU up to B × H ≤ 800 × 400 mm | 5.22 | Steel fabric, ∅ ≥ 8 mm, mesh aperture 150 mm, or equivalent, for number of fixing points see table |
| 1b | FKRS-EU | 9.2 | Extension piece or duct |
| 2.3 | Concrete base | 1 | Up to EI 90 S |
| 4.1 | Solid ceiling slab | | |

**Note:**

- Combined configuration up to 1.2 m² fire damper area.

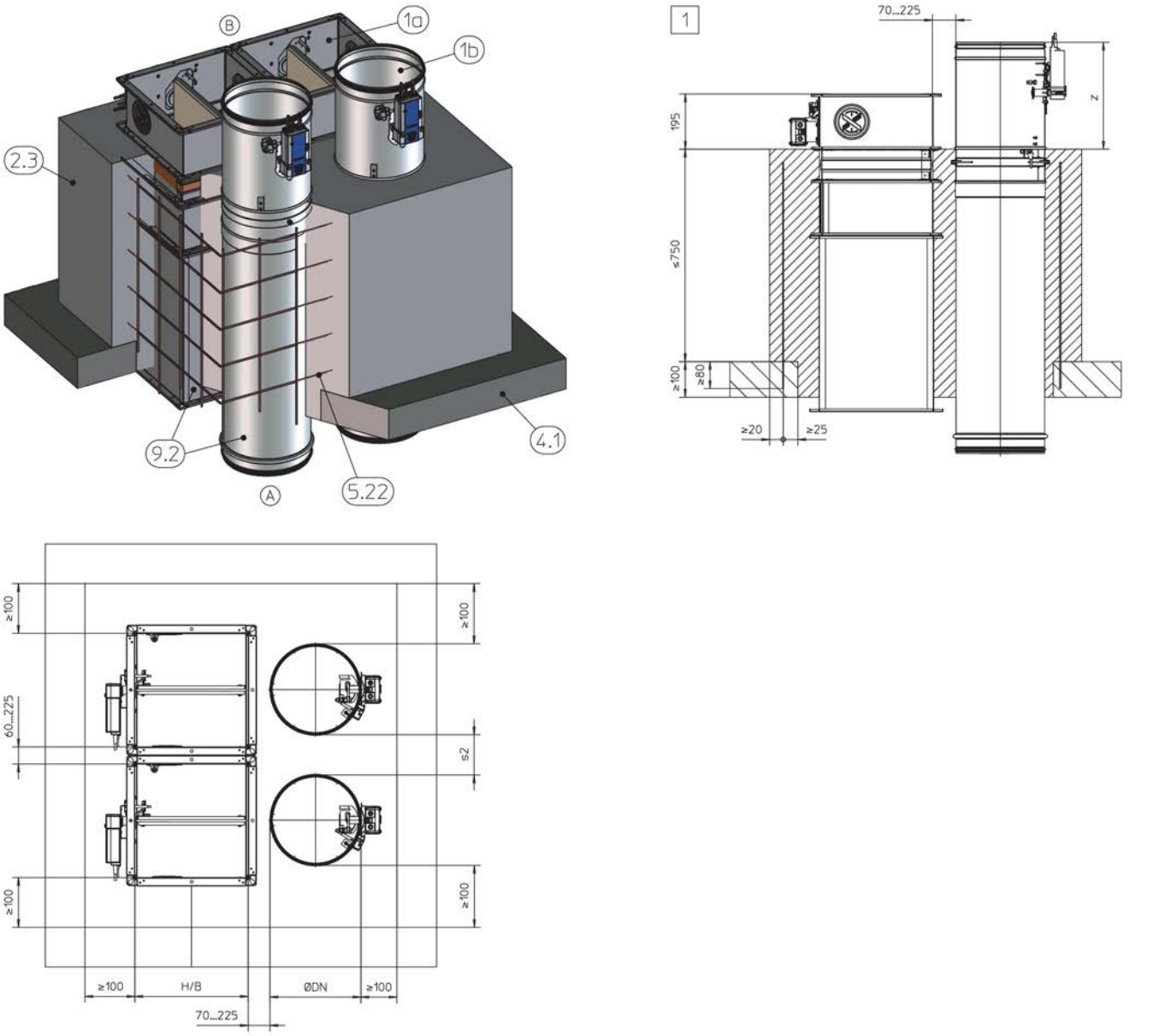



*Fig. 119: Mortar-based installation with concrete base into a solid ceiling slab, upright, combined, FKA2-EU and FKR-EU*

| | | | |
|---|---|---|---|
| 1a | FKA2-EU up to B × H ≤ 800 × 400 mm | s2 | Spigot construction 40 – 225 mm<br>Flange construction 80 – 225 mm |
| 1b | FKR-EU | | |
| 2.3 | Concrete base | Z | Spigot construction 370 mm<br>Flange construction 342 mm |
| 4.1 | Solid ceiling slab | | |
| 5.22 | Steel fabric, ∅ ≥ 8 mm, mesh aperture 150 mm, or equivalent, for number of fixing points see table | 1 | Up to EI 90 S |
| 9.2 | Extension piece or duct | | |

**Note:**

- Combined configuration up to 1.2 m² fire damper area.

**Additional requirements: mortar-based installation into solid ceiling slab with concrete base**

- Solid wall *41*
- Casing length L = 305 or 500 mm
- If the distance to adjacent solid walls is 40 – 100 mm and if the concrete base has been correctly attached, no reinforcement is required on the wall side.
- Concrete bases H ≤ 150 mm do not require reinforcement
- ≥ 60 – 225 mm distance between two FKA2-EU
- Distance to load-bearing structural elements ≥ 40 mm

1. ▸ Screw the fire damper to the existing, dysfunctional fire damper or to the ducting.

   Note: If the fire damper is to be attached to an existing but dysfunctional fire damper, all interior parts of the dysfunctional fire damper, e.g. damper blade, travel stop and control elements, have to be removed. Tightly seal any openings in the old fire damper casing with a sheet metal plate.

2. ▸ Create a concrete base according to Fig. 116 to Fig. 119 or equivalent.

**Multiple occupancy**

- The total fire damper surface area is limited to ≤ 4.8 m²
- The number of fire dampers is limited by their damper size (B × H) and the overall area of the fire dampers (4.8 m²)
- The dampers can be arranged in one or two rows

**Combined installation FKA2-EU - FKRS-EU / FKR-EU**

- ≥ 45 – 225 mm distance between two FKRS-EU. ≥ 200 mm distance between two pairs of FKRS-EU
- ≥ 50 – 225 mm distance from FKRS-EU to fire dampers
- ≥ 70 – 225 mm distance between FKR-EU and fire dampers (80 – 225 mm for flange construction)

## 5.10.3 Mortar-based installation in conjunction with wooden beam ceilings

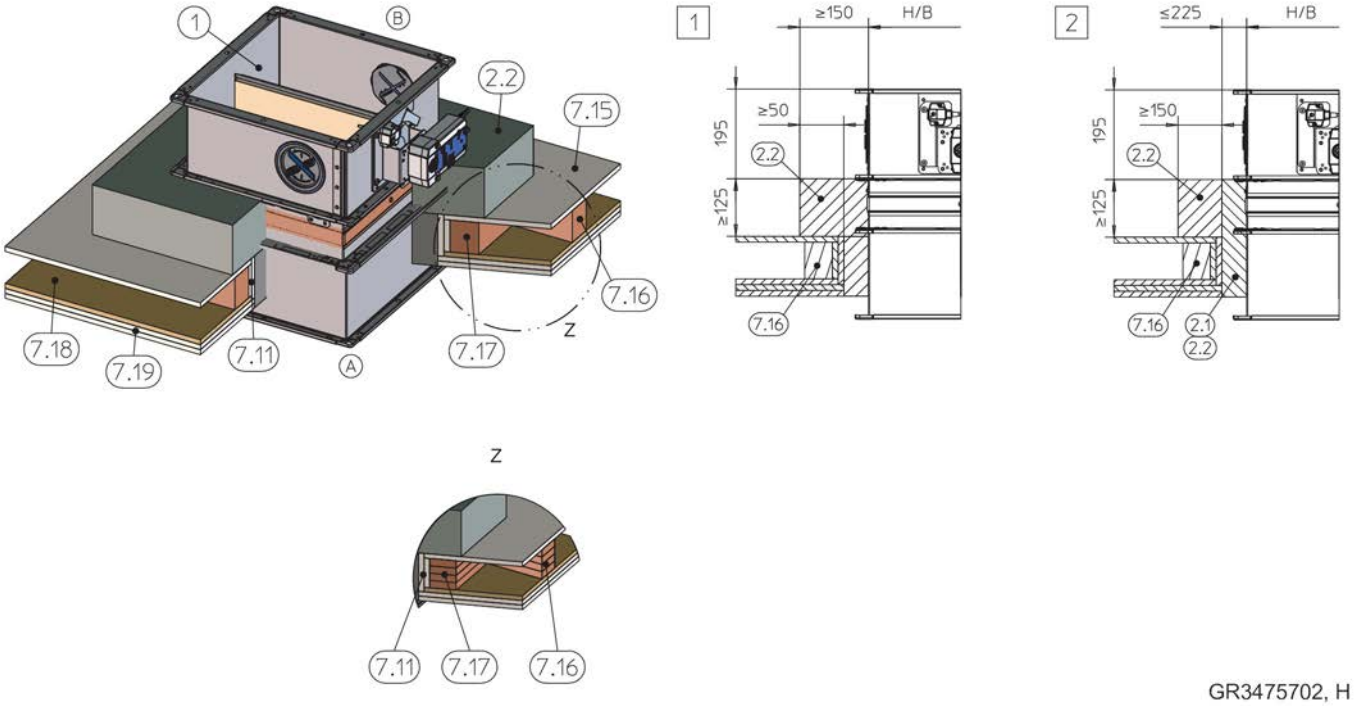



*Fig. 120: Mortar-based installation in solid ceiling slab in conjunction with wooden beam / laminated beam ceilings, upright (illustration as an example, can be used for other ceiling designs with wooden beams)*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 7.16 | Wooden beam / gluelam (reduce distances between wooden beams to the size of the installation opening) |
| 2.1 | Mortar | 7.17 | Trimmers, wooden beam / gluelam |
| 2.2 | Reinforced concrete | 7.18 | Formwork |
| 7.11 | Trim panel, same construction as 7.19 | 7.19 | Fire-resistant cladding (ceiling-dependent) |
| 7.15 | Wooden floorboard / floor tiles (different ceiling construction may be possible) | [1] [2] | Up to EI 90 S |

**Additional requirements: mortar-based installation into solid ceiling slabs in conjunction with wooden beam / laminated beam ceilings**

- Wooden beam / laminated beam ceilings with fire resistance, see *41*
- Casing length L = 305 or 500 mm
- ≥ 60 mm distance between two fire dampers. When you install two fire dampers next to each other into the same opening, the concrete bed between the two fire dampers must not exceed 225 mm.
- Distance to load-bearing structural elements ≥ 40 mm

1. Create the installation opening so that a surrounding concrete cover of at least 50 mm is ensured. Professionally connect the trimmers.
2. Create a partial concrete ceiling around the fire damper, ≥ 150 mm, ≥ 125 mm thick.
3. Structural and fire resistance properties of the ceiling construction, including the attachment to the concrete, have to be evaluated and ensured by others.

## 5.10.4 Mortar-based installation in conjunction with solid wood ceilings

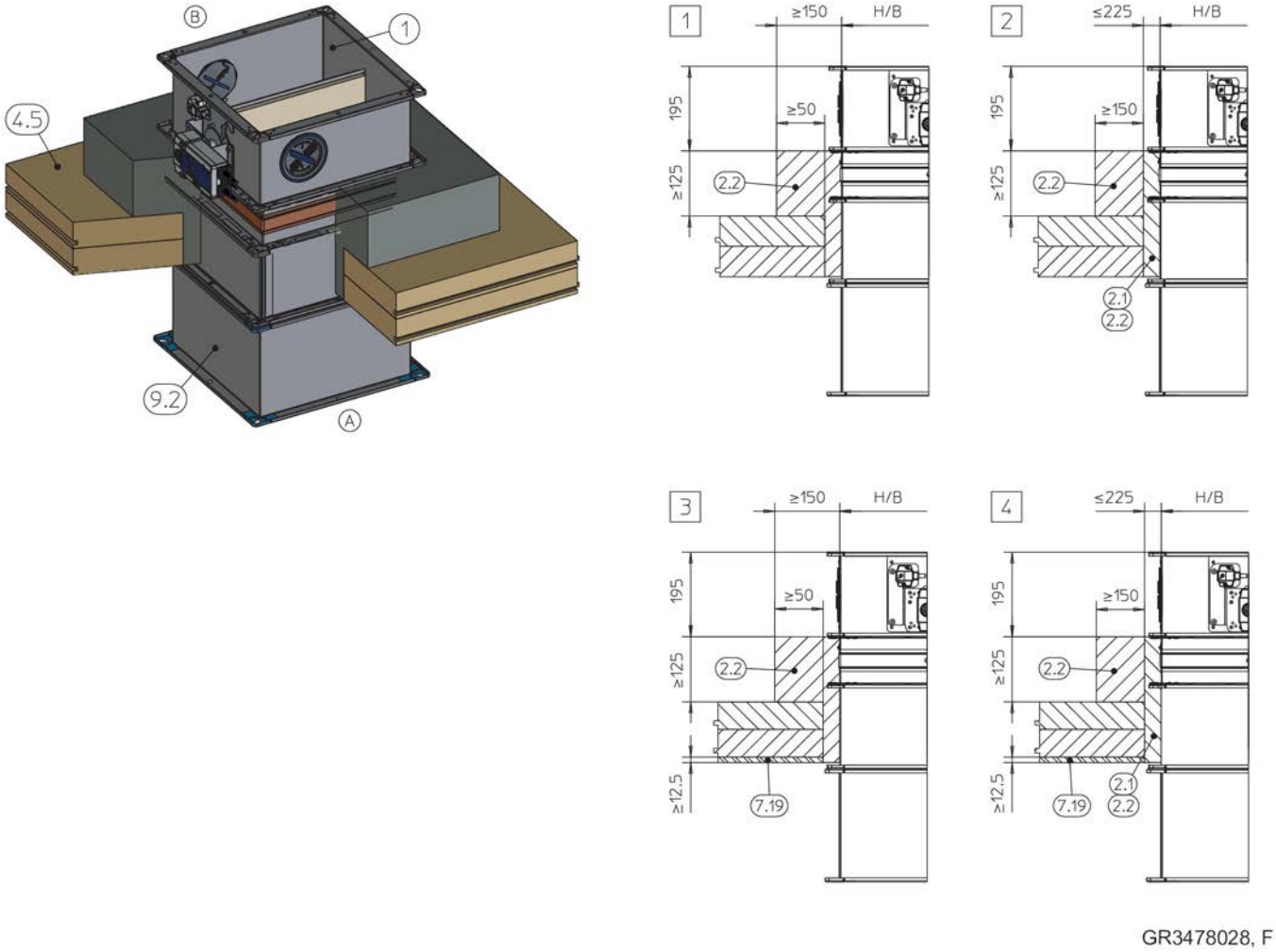



*Fig. 121: Mortar-based installation into a solid ceiling slab with solid wood ceiling, upright (illustration is an example; installation into other types of solid wood ceiling systems may be possible depending on local conditions)*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 7.19 | Fire-resistant cladding |
| 2.1 | Mortar | 9.2 | Extension piece or duct |
| 2.2 | Reinforced concrete | 1 – 4 | Up to EI 90 S |
| 4.5 | Solid wood ceiling | | |

**Additional requirements: mortar-based installation into solid ceiling slabs in conjunction with solid wood ceilings**

- Solid wood ceiling *41*
- Casing length L = 305 or 500 mm
- ≥ 60 mm distance between two fire dampers. When you install two fire dampers next to each other into the same opening, the concrete bed between the two fire dampers must not exceed 225 mm.
- Distance to load-bearing structural elements ≥ 40 mm

1. Create the installation opening so that a surrounding concrete cover of at least 50 mm is ensured.
2. Create a partial concrete ceiling around the fire damper, ≥ 150 mm, ≥ 125 mm thick.
3. Structural and fire resistance properties of the ceiling construction, including the attachment to the concrete, have to be evaluated and ensured by others.

## 5.10.5 Dry mortarless installation on or under a solid ceiling slab with installation kit WA

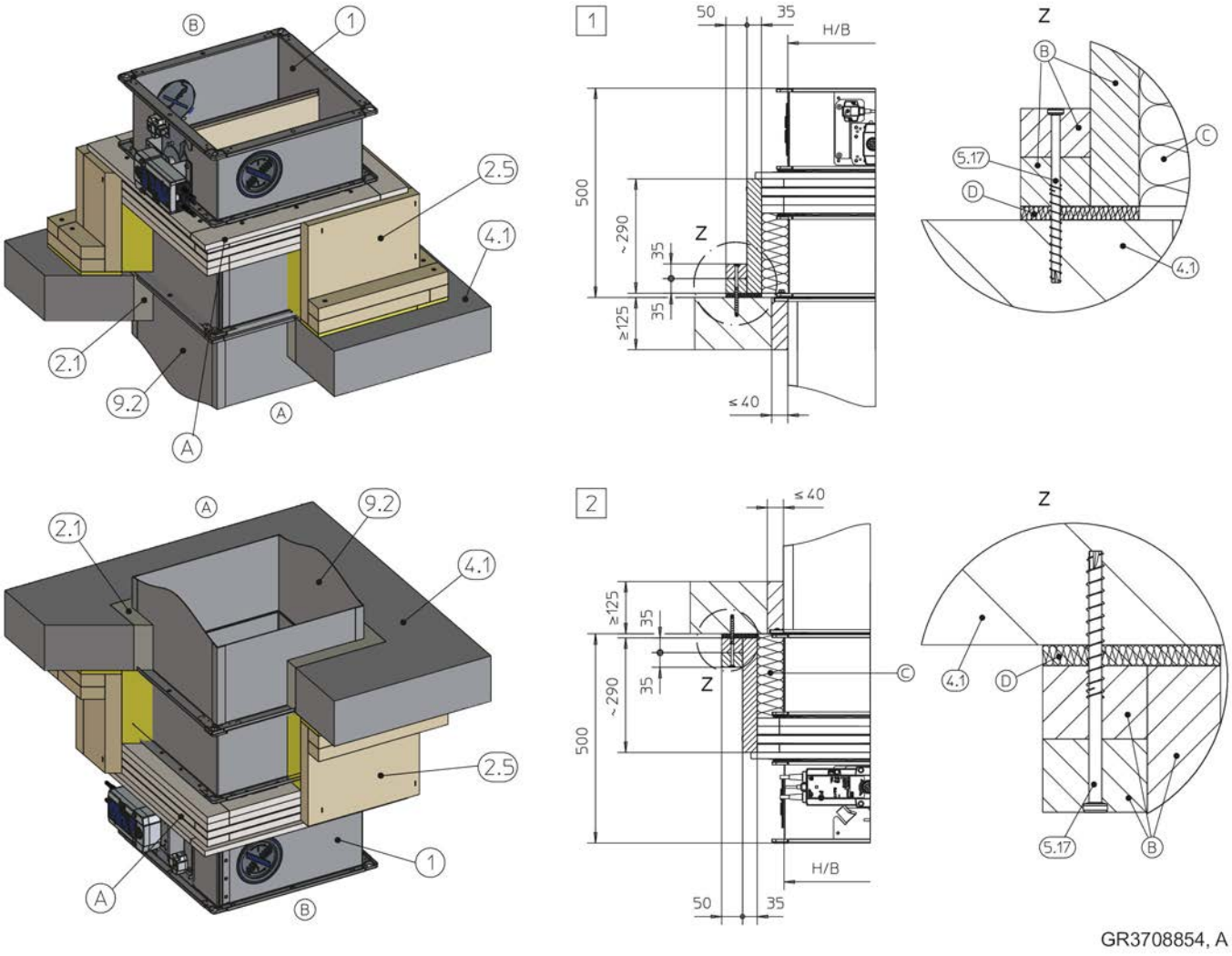



*Fig. 122: Dry mortarless installation on a solid ceiling slab with installation kit WA*

1 FKA2-EU
2.1 Mortar
2.5 Installation kit WA, see 🡆 *44* , consisting of:
A Installation kit (2 × B part and 2 × H part)
B Panel package (2 × B part and 2 × H part)
C Mineral wool cut parts (2 × B part and 2 × H part), ≥ 1000 °C, ≥ 80 kg/m³, d = 60 mm
D Mineral wool strips (2 × B part and 2 × H part), ≥ 1000 °C, ≥ 40 kg/m³, t = 10 mm
4.1 Solid ceiling slab
5.17 Hilti ® HUS anchor bolt ∅ 6 mm (120 mm) Alternatively, equivalent anchor bolts with suitability certificate for fire resistance provided by others, matched to the wall / ceiling slab or push through installation
9.2 Extension piece or duct
1 2 Up to EI 90 S

**Additional requirements: Dry mortarless installation on or under a solid ceiling slab with installation kit WA**

- Solid wall 🡆 *41*
- Casing length L = 500 mm
- 4-sided cladding
- ≥ 150 mm distance from the fire damper to the wall or ceiling slab
- ≥ 300 mm distance between two fire dampers
- Installation of the FKA2-EU with installation kit WA on solid walls and ceiling slabs, see 🡆 *37*
- Fix installation kit WA on fire damper, see 🡆 *44*

## 5.10.6 Dry mortarless installation remote from solid ceiling slabs with installation kit WE

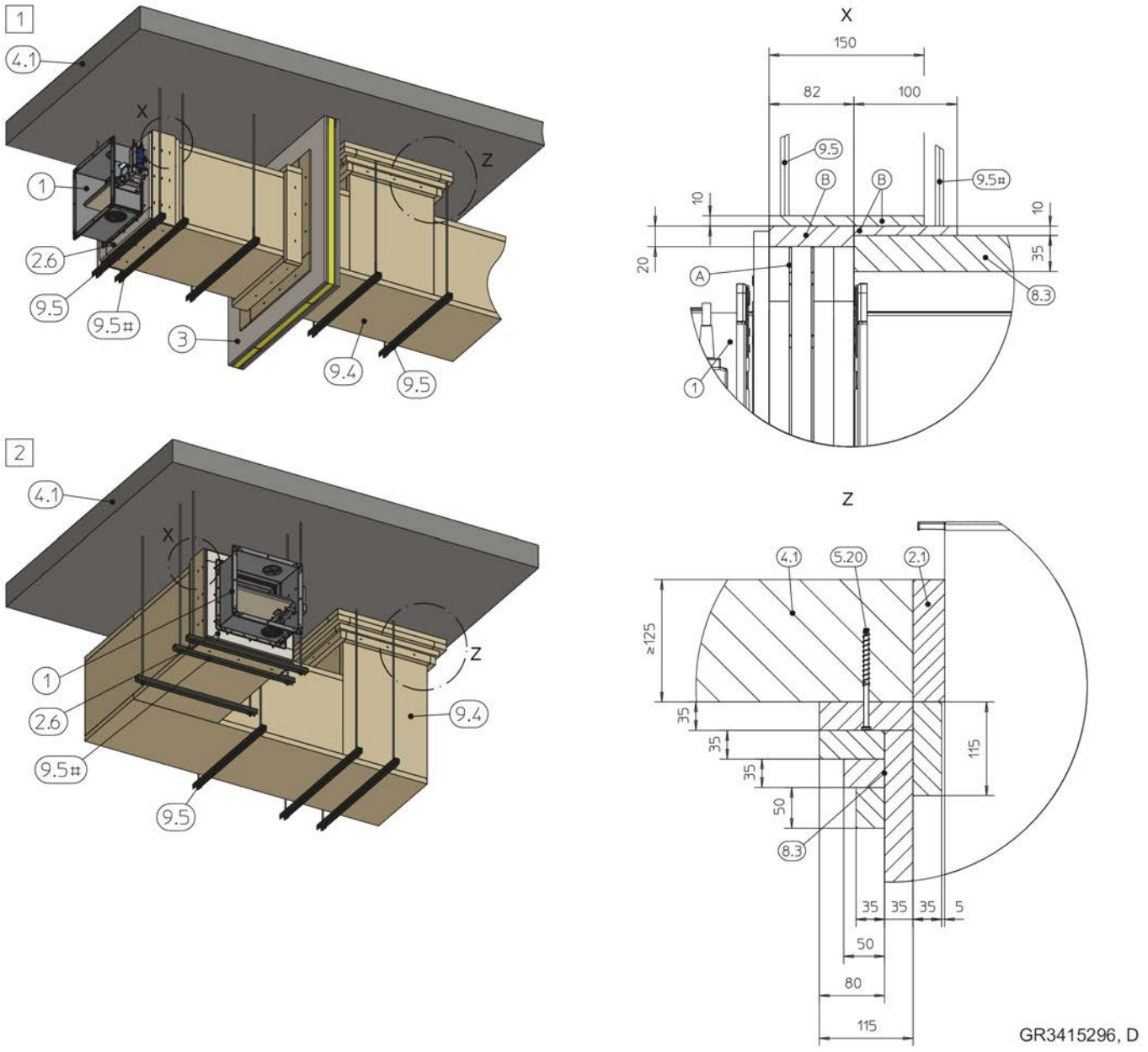



*Fig. 123: Dry mortarless installation remote from solid ceiling slabs*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 5.20 | Screw, Fischer® FFS 7.5 × 82 mm or equivalent (alternatively push through installation) |
| 2.1 | Mortar | 8.3 | PROMATECT®-LS, d = 35 mm |
| 2.6 | Installation kit WE, see 🔗 *44* , consisting of: | 9.4 | Sheet steel duct with fire-rated cladding and suspension system according to Promat® manual, construction 478, latest edition |
| A | Installation kit (2 × B part and 2 × H part) | 9.5 | Suspension (on site to be performed by others) of the FKA2-EU, see 🔗 *157* |
| B | Panel cuts / strips (6 × B side and 6 × H side) | # | Dampers of sizes > 1000 × 600 mm require two suspension points at a distance of 150 mm |
| 3 | Lightweight partition wall or solid wall (if any), wall penetration according to Promat® manual, construction 478, latest version | [1] [2] | to EI 90 S (horizontal installation position) |
| 4.1 | Solid ceiling slab, connection of the cladding to the solid ceiling slab according to Promat® manual, construction 478, latest version | | |

**Additional requirements: dry mortarless installation remote from solid ceiling slabs with installation kit WE**

- Solid wall *41*
- Casing length L = 500 mm
- 4-sided cladding
- Horizontal installation position
- ≥ 155 mm distance from the fire damper to the wall or ceiling slab
- ≥ 310 mm distance between two fire dampers
- Sheet steel duct with fire-resistant cladding made from panel materials *36*
- Installation of the FKA2-EU with installation kit WE remote from walls and ceiling slabs, see
- Fix installation kit WE on fire damper, see *44*
- For further details on making the cladding as well as mineral wool filling and overlays, see *5.4.6 'Dry mortarless installation remote from solid walls with installation kit WE' on page 59*

## 5.10.7 Dry mortarless installation with fire batt

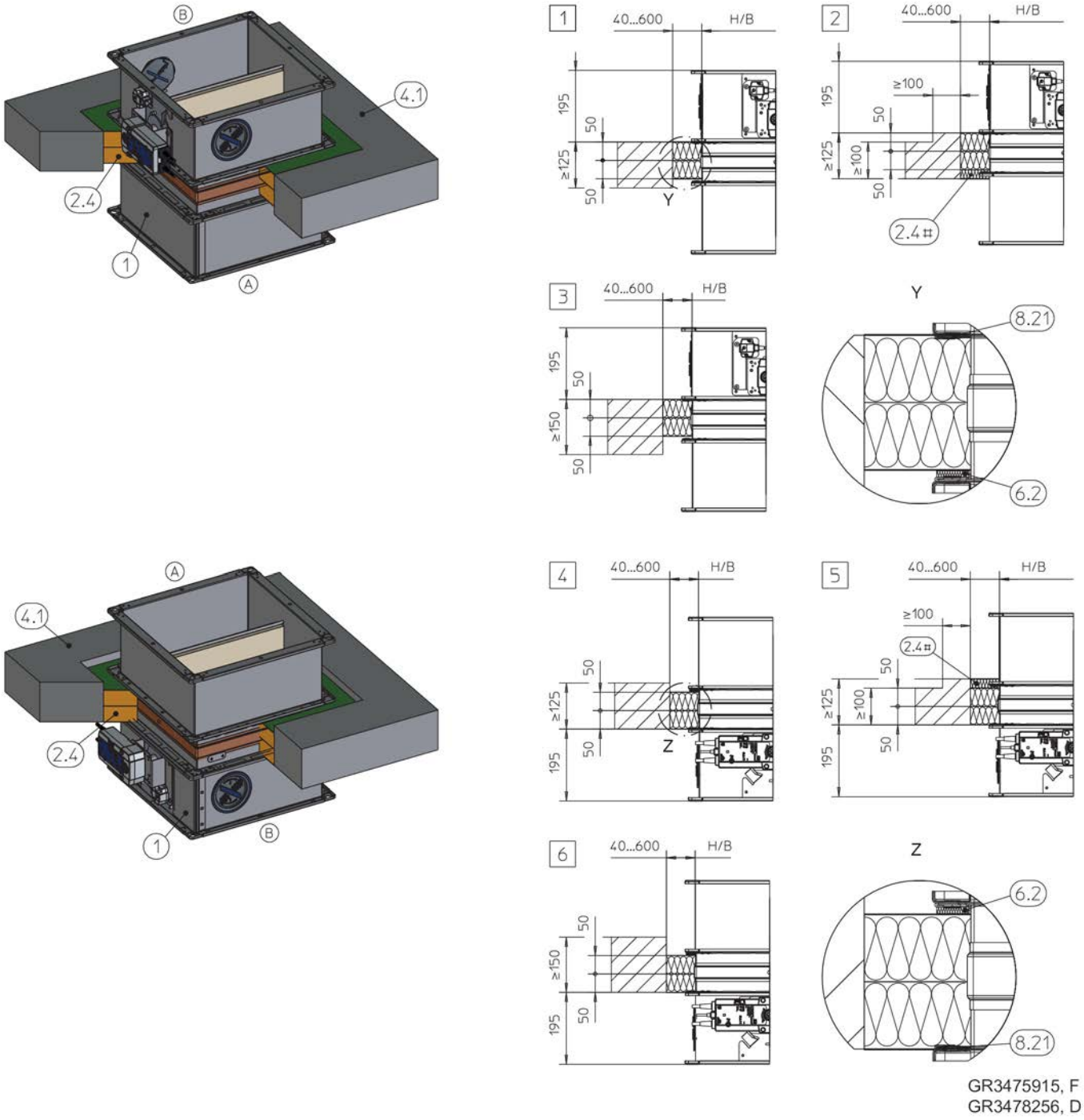



*Fig. 124: Dry mortarless installation into a solid ceiling slab, with a fire batt, upright and suspended*

| | |
|---|---|
| 1 | FKA2-EU |
| 2.4 | Coated board system |
| 4.1 | Solid ceiling slab |
| 6.2 | Mineral wool, ≥ 1000 °C, ≥ 80 kg/m³ |
| 8.21 | Firestop sealant |
| 1 2 4 | Up to EI 90 S |
| 5 | |
| 3 6 | Up to EI 120 S (D ≥ 150 mm):<br>B × H = 200 × 100 – 800 × 400 mm<br>Up to EI 90 S |

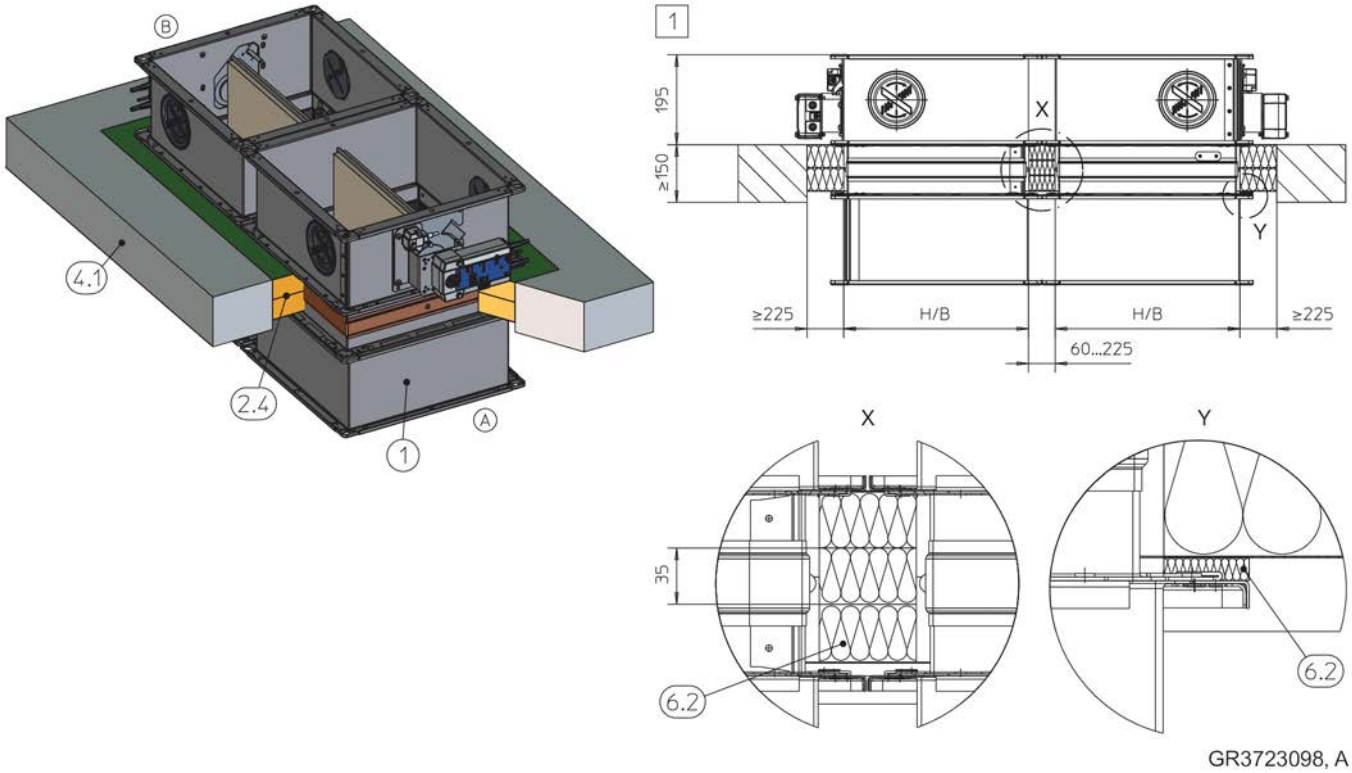



*Fig. 125: Dry mortarless installation in solid ceiling slab with fire batt, "flange to flange", shown upright (also applicable for suspended arrangement)*

1 FKA2-EU
2.4 Coated board system
4.1 Solid ceiling slab
6.2 Mineral wool, ≥ 1000 °C, ≥ 80 kg/m³
[1] Up to EI 90 S

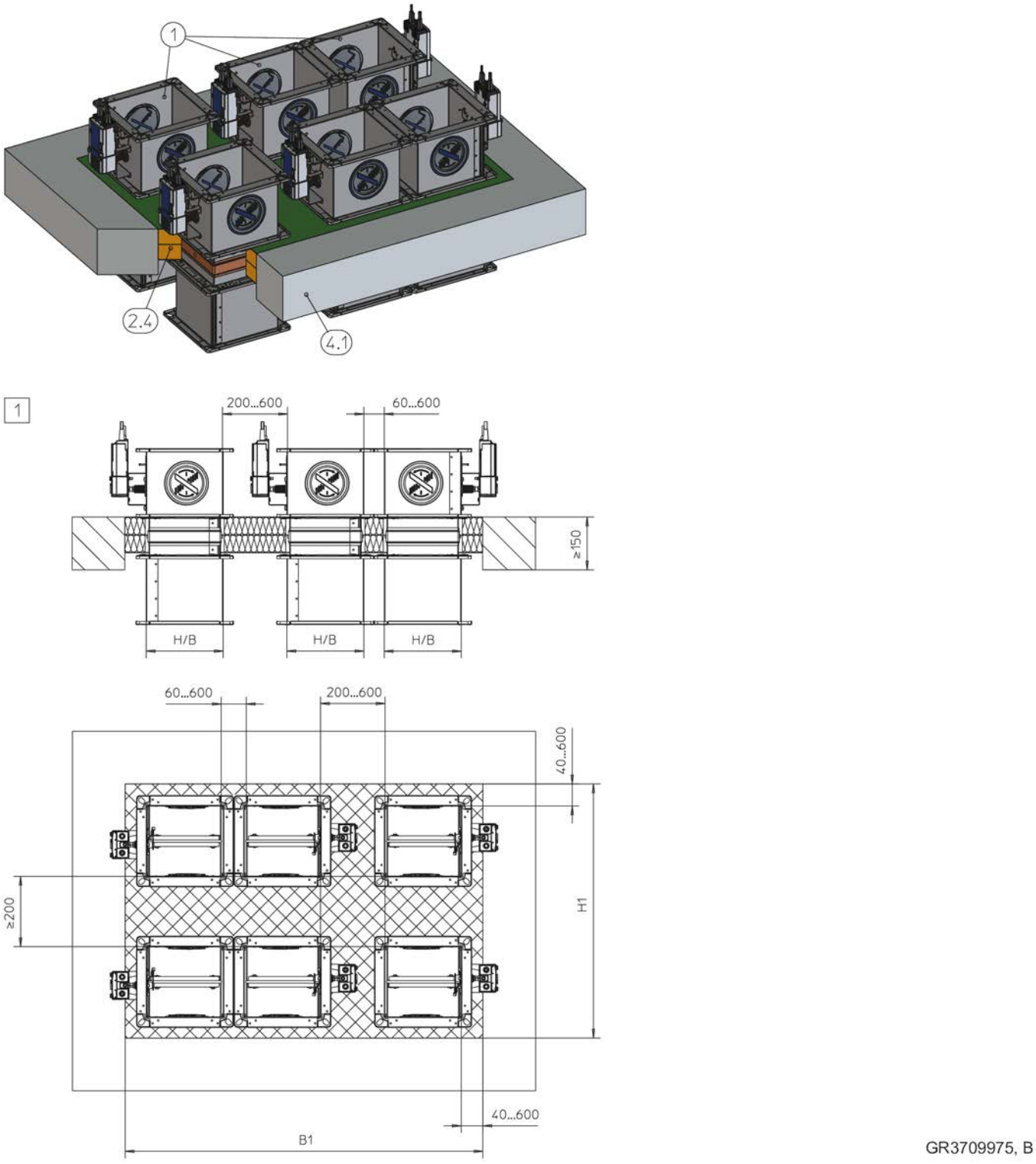



*Fig. 126: Dry mortarless installation in solid ceiling slab with fire batt, multiple installation, "flange to flange", shown upright (also applicable for suspended arrangement)*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 3.1 | Solid ceiling slab |
| 2.4 | Coated board system | [1] | Up to EI 90 S |

**Note:**

- The overall area of the fire dampers is limited to 2.4 m².
- The number of fire dampers (arranged in pairs) in the fire batt is limited by their size (B × H) and the overall area of the fire dampers (2.4 m²).
- B1 x H1 maximum penetration seal size depends on the manufacturer

**Additional requirements: dry mortarless installation with fire batt in solid ceiling slabs**

- Solid wall *41*
- Casing length L = 305 or 500 mm
- Fire batt systems, installation details, distances / dimensions, see *38* f
- Suspension and fixing, see *156*
- Distance to load-bearing structural elements ≥ 40 mm

## 5.11 Solid wood ceilings

### 5.11.1 Mortar-based installation into solid wood ceilings

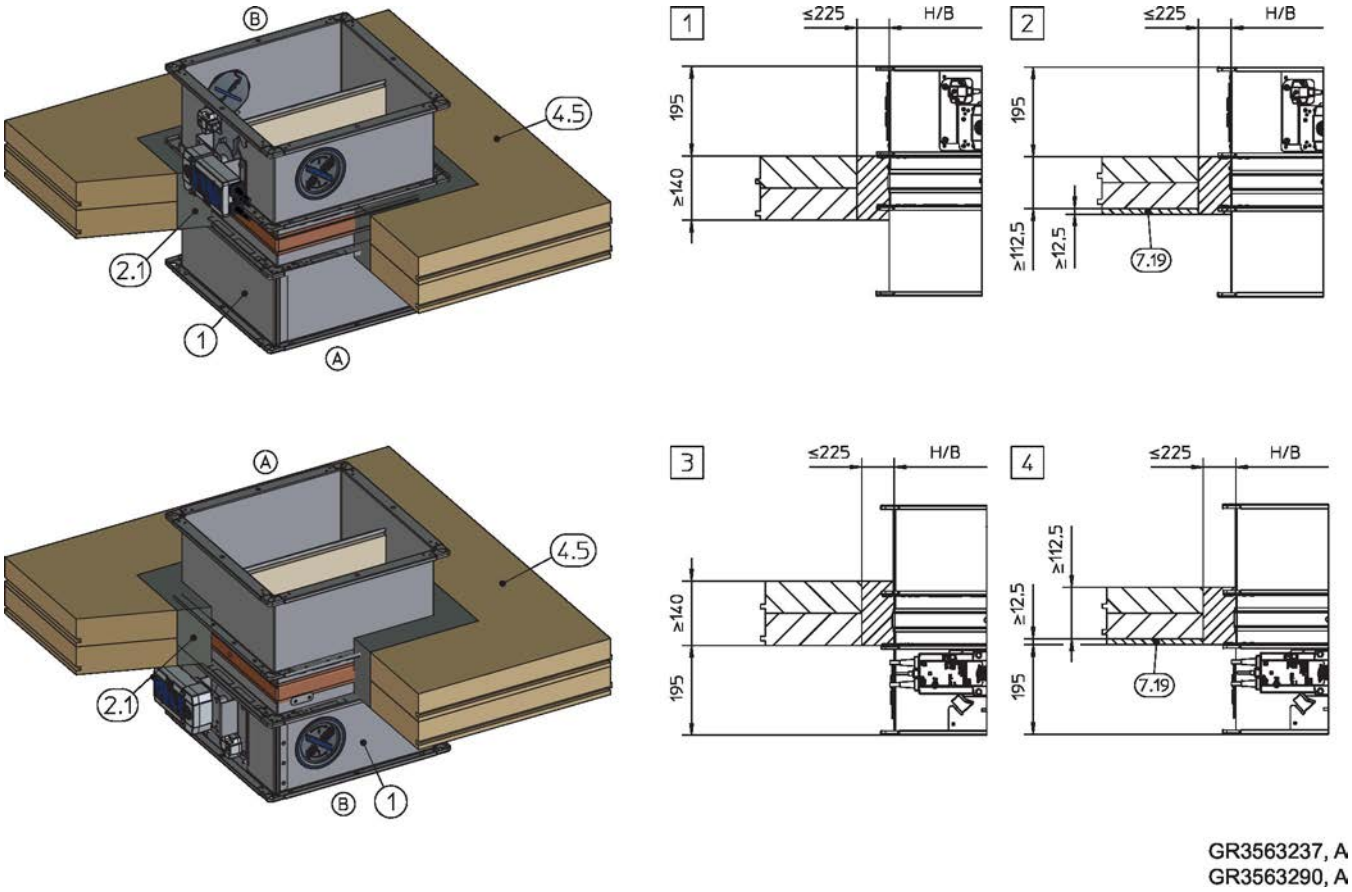



*Fig. 127: Mortar-based installation into a solid wood ceiling, suspended or upright*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 7.19 | Fire-resistant cladding |
| 2.1 | Mortar | 1 – 4 | Up to EI 90 S |
| 4.5 | Solid wood ceiling | | |

**Additional requirements: mortar-based installation into solid wood ceilings**

- Solid wood ceiling *41*
- Casing length L = 305 or 500 mm
- ≥ 75 mm distance from fire damper to load-bearing structural elements
- ≥ 200 mm distance between two fire dampers in separate installation openings

▸ Structural and fire resistance properties of the ceiling construction, including the attachment to the mortar/ concrete or any required reinforcement, have to be evaluated and ensured by others.

## 5.11.2 Dry mortarless installation with installation kit ES into solid wood ceilings

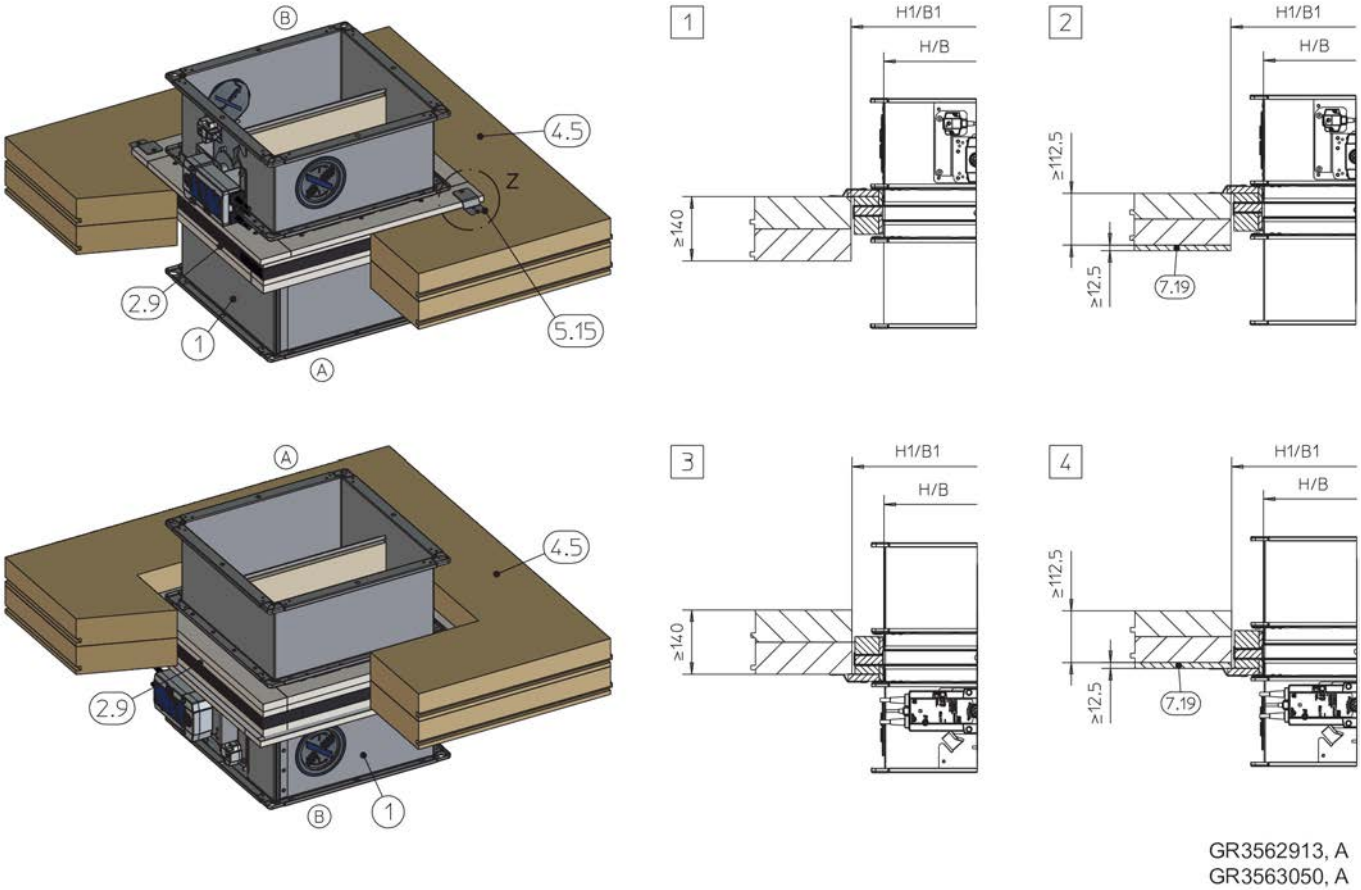



*Fig. 128: Dry mortarless installation with installation kit ES into solid wood ceiling, upright and suspended*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 7.19 | Fire-resistant cladding |
| 2.9 | Installation kit ES | H1/B1 | Clear installation opening B/H + 140 ±2 mm |
| 4.5 | Solid wood ceiling | Z | For fixing, see Fig. 21 to Fig. 23 |
| 5.15 | Bracket | 1 – 4 | Up to EI 90 S |

**Additional requirements: dry mortarless installation with installation kit ES in solid wood ceilings**

- Solid wood ceiling *41*
- Casing length L = 500 mm
- Distance from the fire damper to the adjacent parts approx. 80 / 120 mm (depending on the arrangement of brackets)
- ≥ 200 mm distance between two fire dampers in separate installation openings

1. Mount the installation kit onto the fire damper, see *42* .
2. Insert the fire damper centred into the installation opening and fix with brackets and dry wall screws to the solid wood ceiling, see Fig. 21 to Fig. 23 .

## 5.12 Wooden beam ceilings

### 5.12.1 Mortar-based installation into wooden beam ceilings

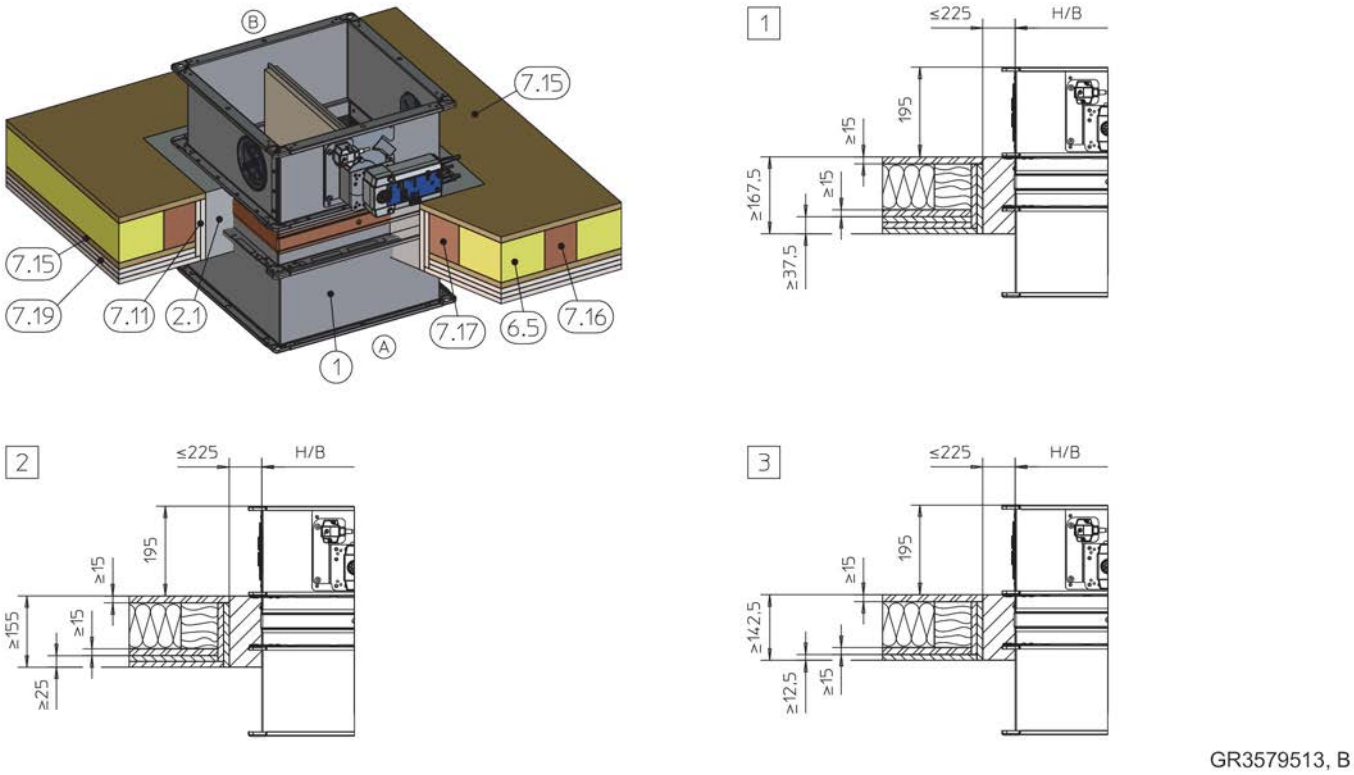



*Fig. 129: Mortar-based installation into wooden beam / laminated beam ceiling, upright (illustration representative, alternative ceiling construction possible on request)*

| | |
|---|---|
| 1 | FKA2-EU |
| 2.1 | Mortar |
| 6.5 | Mineral wool fill if required |
| 7.11 | Trim panel, same construction as 7.19 |
| 7.15 | Wood sheet, at least 600 kg/m³ |
| 7.16 | Wooden beam / gluelam min. 100 × 80 mm (reduce distances between wooden beams to the size of the installation opening) |
| 7.17 | Trimmers, wooden beam / gluelam min. 100 × 80 mm |
| 7.19 | Fire-resistant cladding (ceiling-dependent) |
| 1 | Up to EI 90 S |
| 2 | Up to EI 60 S |
| 3 | EI 30 S |

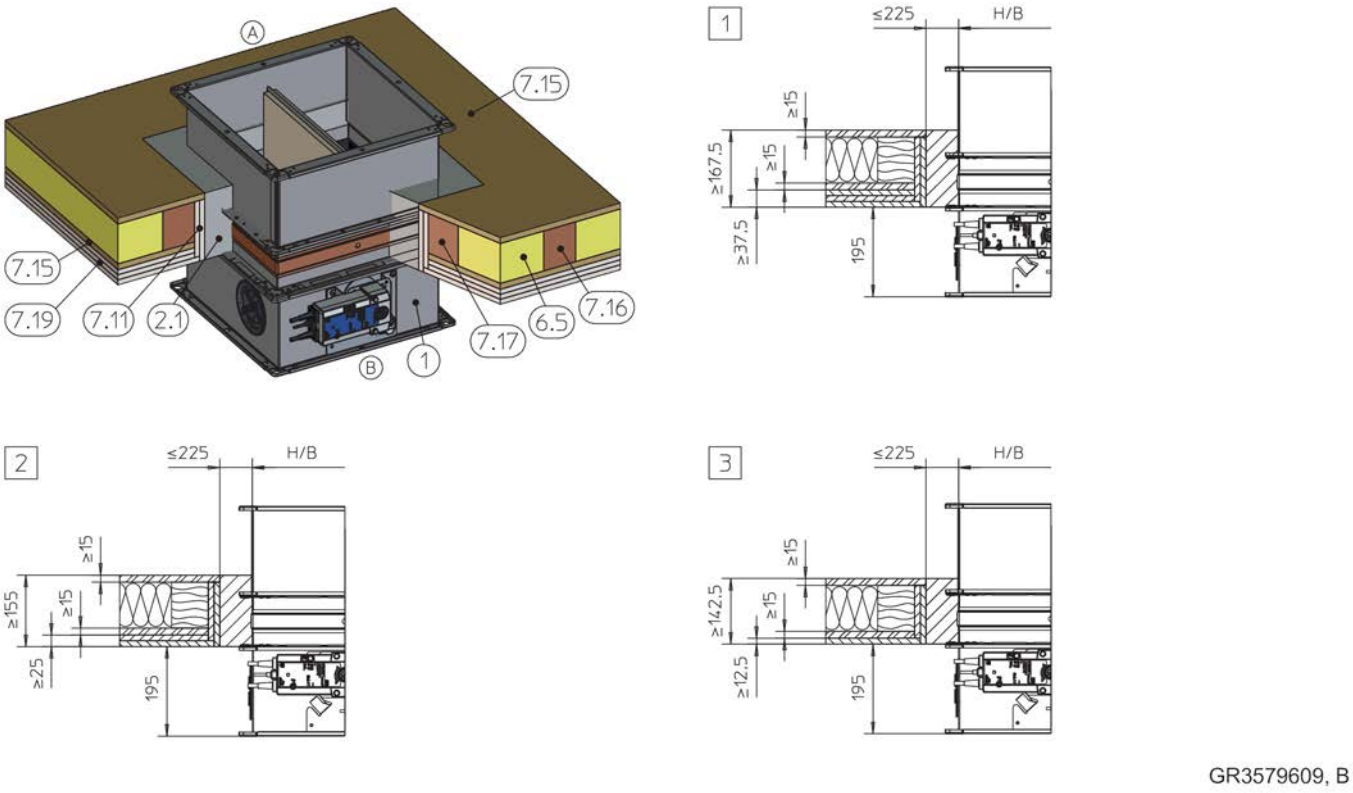



*Fig. 130: Mortar-based installation into wooden beam / laminated beam ceiling, suspended (illustration representative, alternative ceiling construction possible on request)*

| | |
|---|---|
| 1 | FKA2-EU |
| 2.1 | Mortar |
| 6.5 | Mineral wool fill if required |
| 7.11 | Trim panel, same construction as 7.19 |
| 7.15 | Wood sheet, at least 600 kg/m³ |
| 7.16 | Wooden beam / gluelam min. 100 × 80 mm (reduce distances between wooden beams to the size of the installation opening) |
| 7.17 | Trimmers, wooden beam / gluelam min. 100 × 80 mm |
| 7.19 | Fire-resistant cladding (ceiling-dependent) |
| 1 | Up to EI 90 S |
| 2 | Up to EI 60 S |
| 3 | EI 30 S |

**Additional requirements: mortar-based installation into wooden beam / laminated beam ceilings**

- Wooden beam ceiling, see *41*
- Casing length L = 305 or 500 mm
- ≥ 75 mm distance from fire damper to load-bearing structural elements
- ≥ 200 mm distance between two fire dampers in separate installation openings

▸ Structural and fire resistance properties of the ceiling construction, including the attachment to the mortar/ concrete or any required reinforcement, have to be evaluated and ensured by others.

## 5.12.2 Dry mortarless installation with installation kit ES into wooden beam ceilings

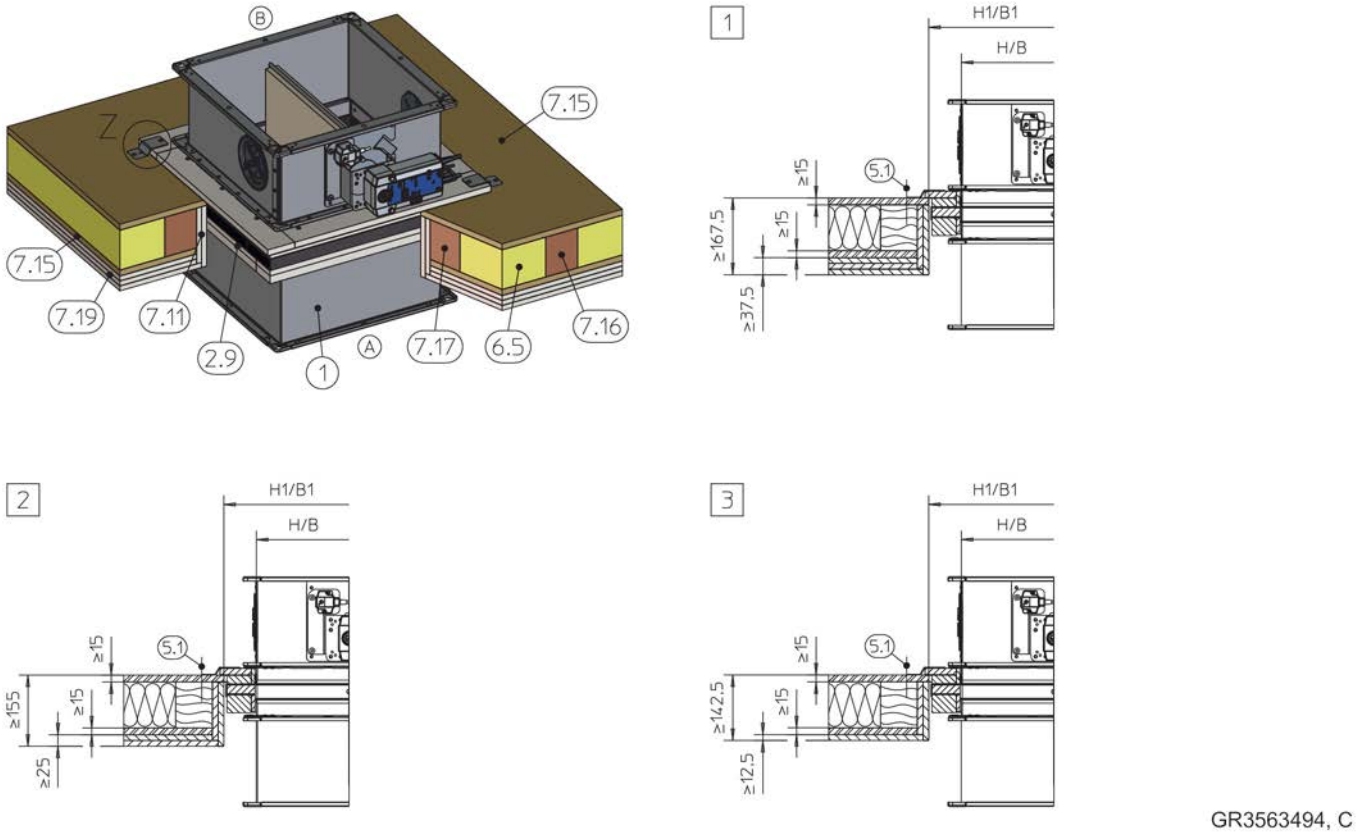



*Fig. 131: Dry mortarless installation with installation kit ES into wooden beam / laminated beam ceiling, upright (illustration representative, alternative ceiling construction possible on request)*

| | |
|---|---|
| 1 | FKA2-EU |
| 2.9 | Installation kit ES |
| 5.1 | Dry wall screw |
| 6.5 | Mineral wool filling depending on ceiling construction |
| 7.11 | Trim panel, d = 25 mm, same construction as 7.19 |
| 7.15 | Wood sheet, at least 600 kg/m³ |
| 7.16 | Wooden beam / gluelam min. 100 × 80 mm (reduce distances between wooden beams to the size of the installation opening) |
| 7.17 | Trimmers, wooden beam / gluelam min. 100 × 80 mm |
| 7.19 | Fire-resistant cladding (ceiling-dependent) |
| H1/B1 | Clear installation opening B/H + 140 ±2 mm |
| Z | For fixing, see Fig. 21 to Fig. 23 |
| 1 | Up to EI 90 S |
| 2 | Up to EI 60 S |
| 3 | EI 30 S |

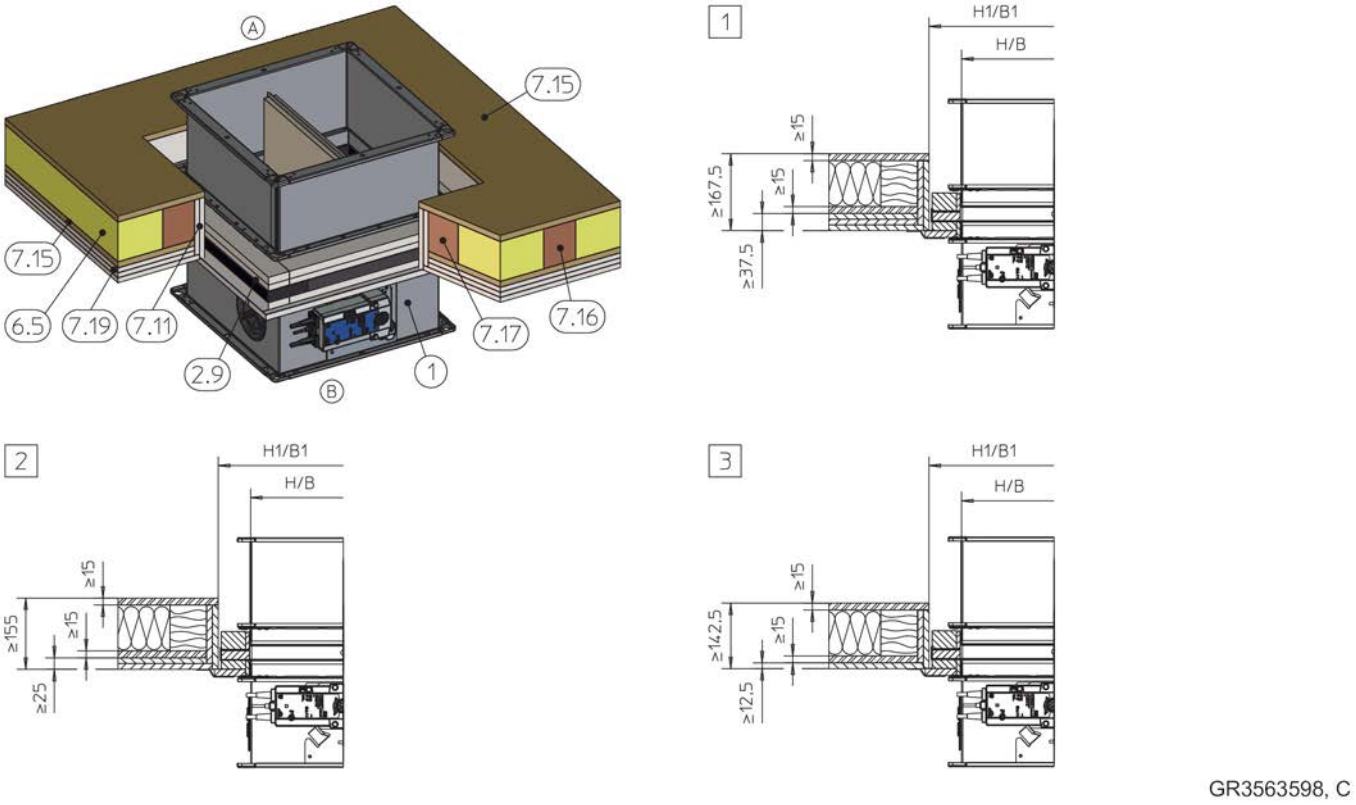



*Fig. 132: Dry mortarless installation with installation kit ES into wooden beam / laminated beam ceiling, suspended (illustration representative, alternative ceiling construction possible on request)*

| | |
|---|---|
| 1 | FKA2-EU |
| 2.9 | Installation kit ES |
| 6.5 | Mineral wool filling depending on ceiling construction |
| 7.11 | Trim panel, d = 25 mm, same construction as 7.19 |
| 7.15 | Wood sheet, at least 600 kg/m³ |
| 7.16 | Wooden beam / gluelam min. 100 × 80 mm (reduce distances between wooden beams to the size of the installation opening) |
| 7.17 | Trimmers, wooden beam / gluelam min. 100 × 80 mm |
| 7.19 | Fire-resistant cladding (ceiling-dependent) |
| H1/B1 | Clear installation opening B/H + 140 ±2 mm |
| Z | For fixing, see Fig. 21 to Fig. 23 |
| 1 | Up to EI 90 S |
| 2 | Up to EI 60 S |
| 3 | EI 30 S |

**Additional requirements: dry mortarless installation with installation kit ES into wooden beam / laminated beam ceilings**

- Wooden beam ceiling, see *41*
- Casing length L = 500 mm
- Distance from the fire damper to the adjacent parts approx. 80 / 120 mm (depending on the arrangement of brackets)
- ≥ 200 mm distance between two fire dampers in separate installation openings

1. Mount the installation kit onto the fire damper, see *42* .
2. Insert the fire damper centred into the installation opening and fix with brackets and dry wall screws to the wooden beam, see Fig. 21 to Fig. 23 .

## 5.13 Fixing the fire damper

### 5.13.1 General

For installation remote from walls and ceilings and installation with fire batt, the fire dampers must be suspended with steel threaded rods (M10 – M12). The rods have to be fixed to the ceiling slab; the required fire resistance must not be compromised. Use only fire-rated steel anchors with suitability certificate. Instead of anchors, you can use threaded rods and secure them using nuts and washers. Secure the threaded rods above the ceiling using steel nuts and washers. Threaded rods up to 1.50 m long do not require any insulation; longer rods do require insulation (according to Promat® work sheet 478, for example). Load the suspension system only with the weight of the fire damper, ducting must be suspended separately. For weights [kg] of FKA2-EU fire dampers, see *11* .

In addition to the fixing systems described in this manual, you may also use fixing systems that have been approved by accredited testing institutes. This applies in particular to the fire damper installation near a wall or in a corner (when angle sections or mounting plates are used).

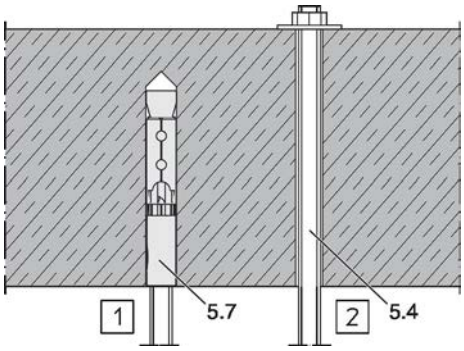



*Fig. 133: Fixing to the ceiling slab*

5.4 Threaded rod
5.7 Fire-rated anchor (with suitability certificate)
1 Fixing with wallplugs with suitability certificate for fire resistance
2 Fixing with threaded rod and push through installation

## 5.13.2 Suspending fire dampers installed remote from solid walls and ceiling slabs

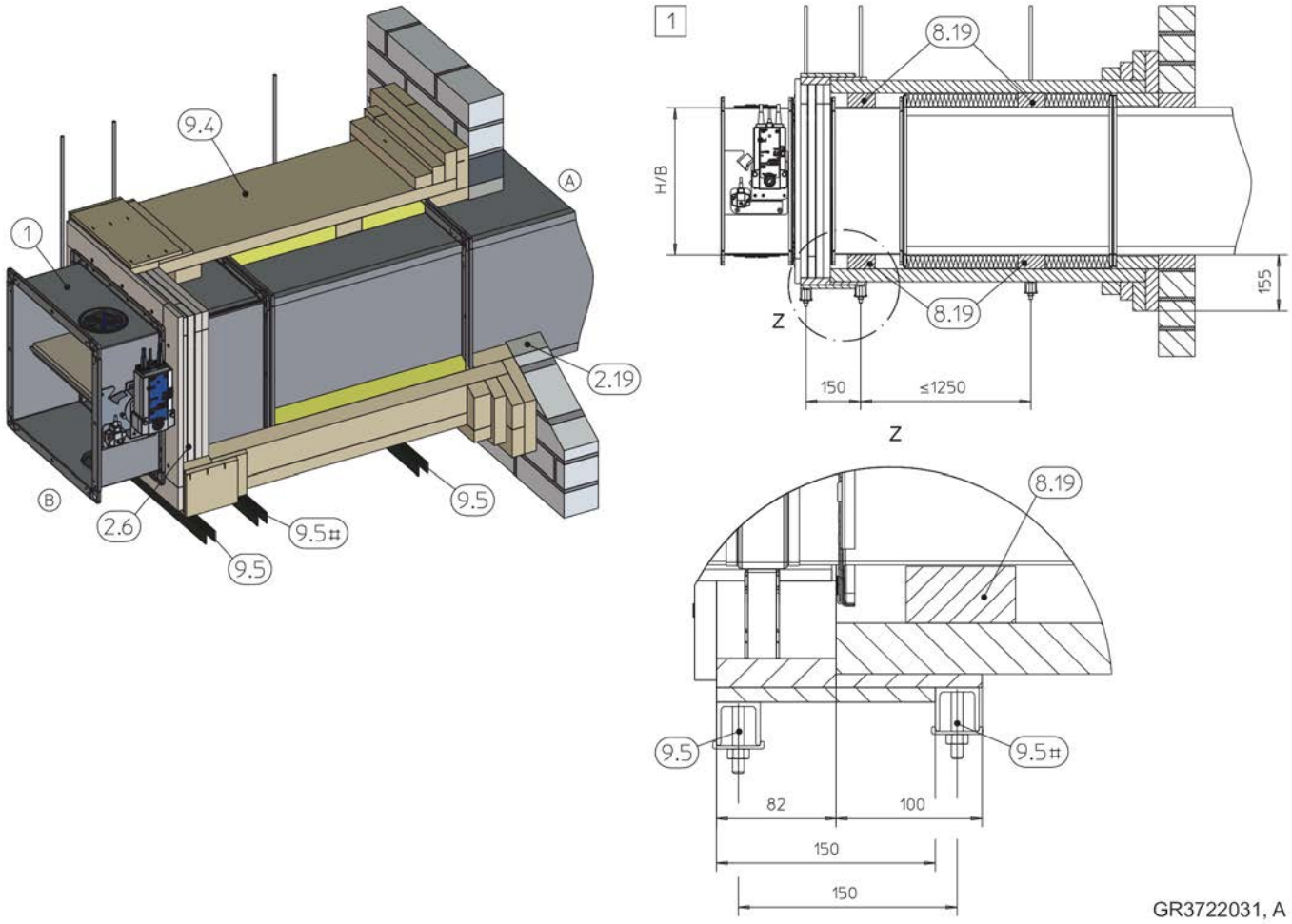



*Fig. 134: Dry mortarless installation with installation kit WE*

1 FKA2-EU
2.6 Installation kit WE, see 📖 *44*
2.19 Joint filler (Promat® filler, Promat® ready-to-use filler or mineral wool, ≥ 1000 °C, ≥ 80 kg/m³ or mortar according to installation and operating manual)
8.19 Overlay PROMATECT®-LS, d = 35 mm
9.4 Sheet steel duct with fire-rated cladding and suspension system according to Promat® manual, construction 478, latest edition
9.5 Suspension system (by others) consisting of:
a Threaded rod
M10: B × H ≤ 800 × 200 mm
M12: B × H ≤ 1000 × 600 mm
M12#: B × H > 1000 × 600 mm
b Hilti® mounting rail MQ 41 × 3 mm or equivalent
c Hilti® drilled plate MQZ L13 or equivalent
days Hexagon nut with washer
# Damper sizes > 1000 × 600 mm require two suspension points underneath the fire damper at a distance of 150 mm from each other
[1] to EI 90 S (horizontal installation position)

### 5.13.3 Fixing the damper when a fire batt is used

**Horizontal duct**

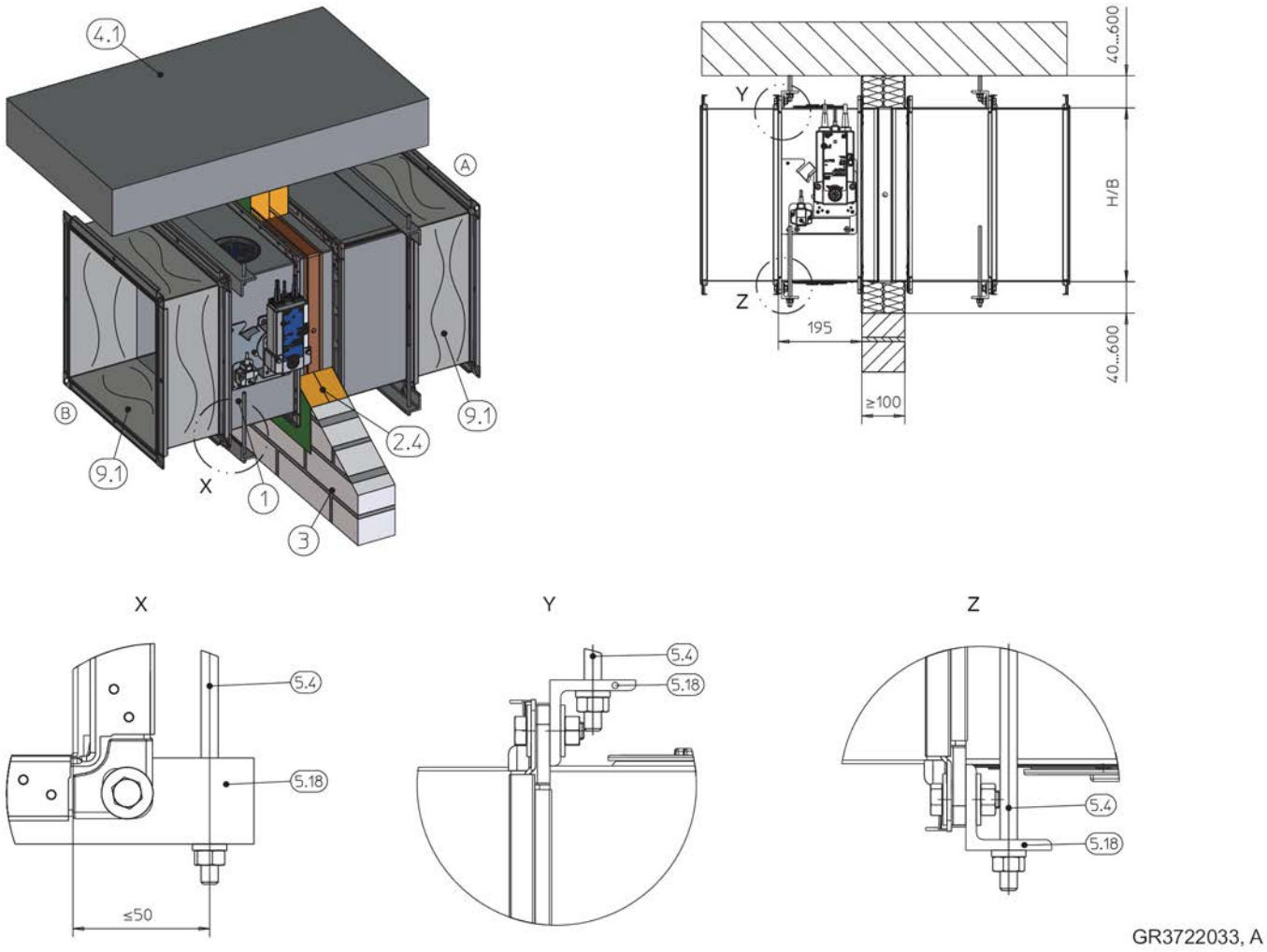



*Fig. 135: Fixing of the FKA2-EU with fire batt installation in walls*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 5.4 | Threaded rod M12 with washer and nut |
| 2.4 | Coated board system | 5.18 | Steel angle section to EN 10056-1, L ≥ 40 mm × 40 mm × 5 mm, galvanised or painted, or equivalent |
| 3 | Wall, solid wall shown | | |
| 4.1 | Solid ceiling slab | 9.1 | Flexible connector (recommended) |

**Note:** Each fire damper has to be suspended both on the operating side and on the installation side. The suspension is carried out in each case above **or** below the flange.

**Vertical duct**

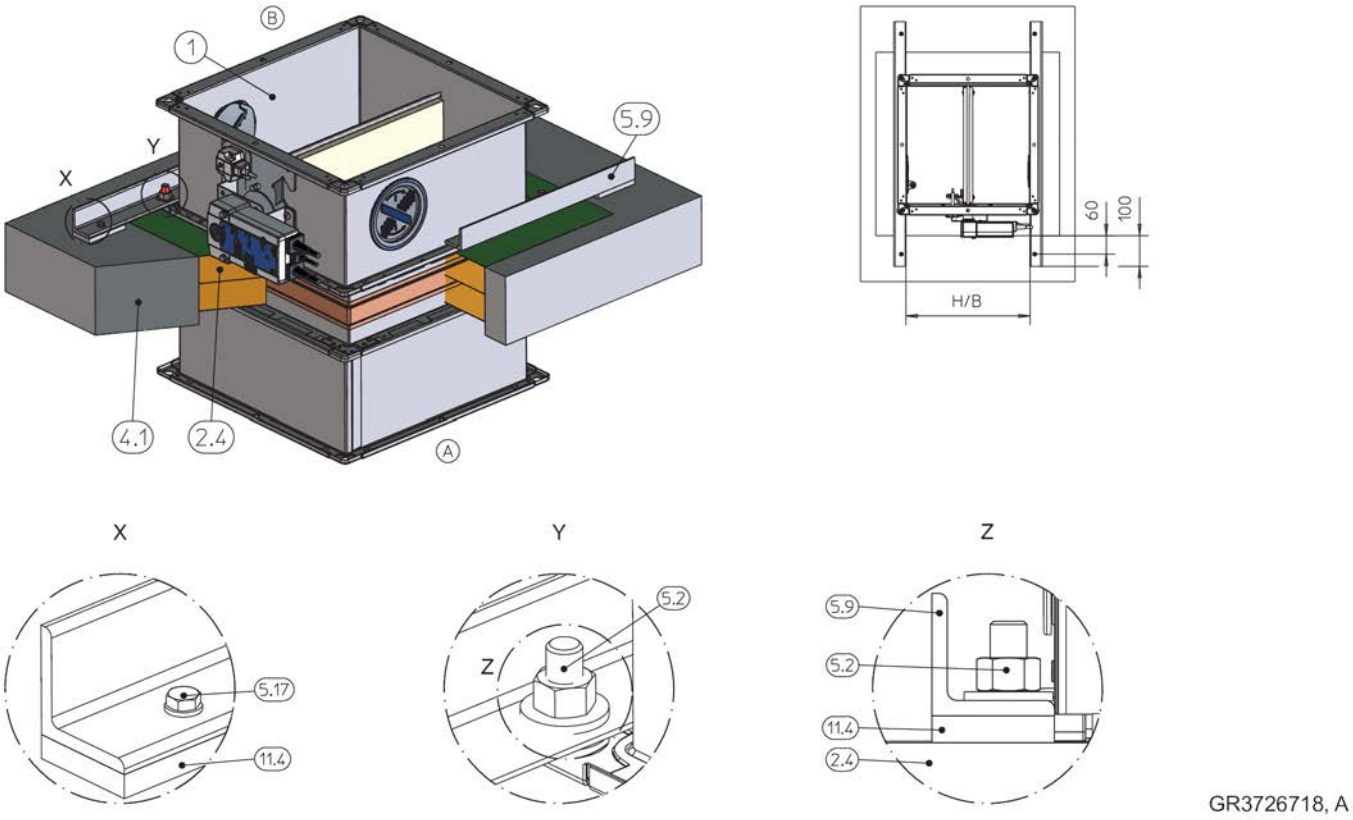



*Fig. 136: Fixing of the FKA2-EU with fire batt installation in a solid ceiling slab, shown upright*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 5.9 | Steel bracket, 40 × 40 × 5 mm |
| 2.4 | Coated board system | 5.17 | Anchor bolt or equivalent (for attachment to the ceiling slab) |
| 4.1 | Solid ceiling slab | | |
| 5.2 | Hexagon head screw M12 with washer and nut | 11.4 | Underlay material, non-combustible, to be provided by others |

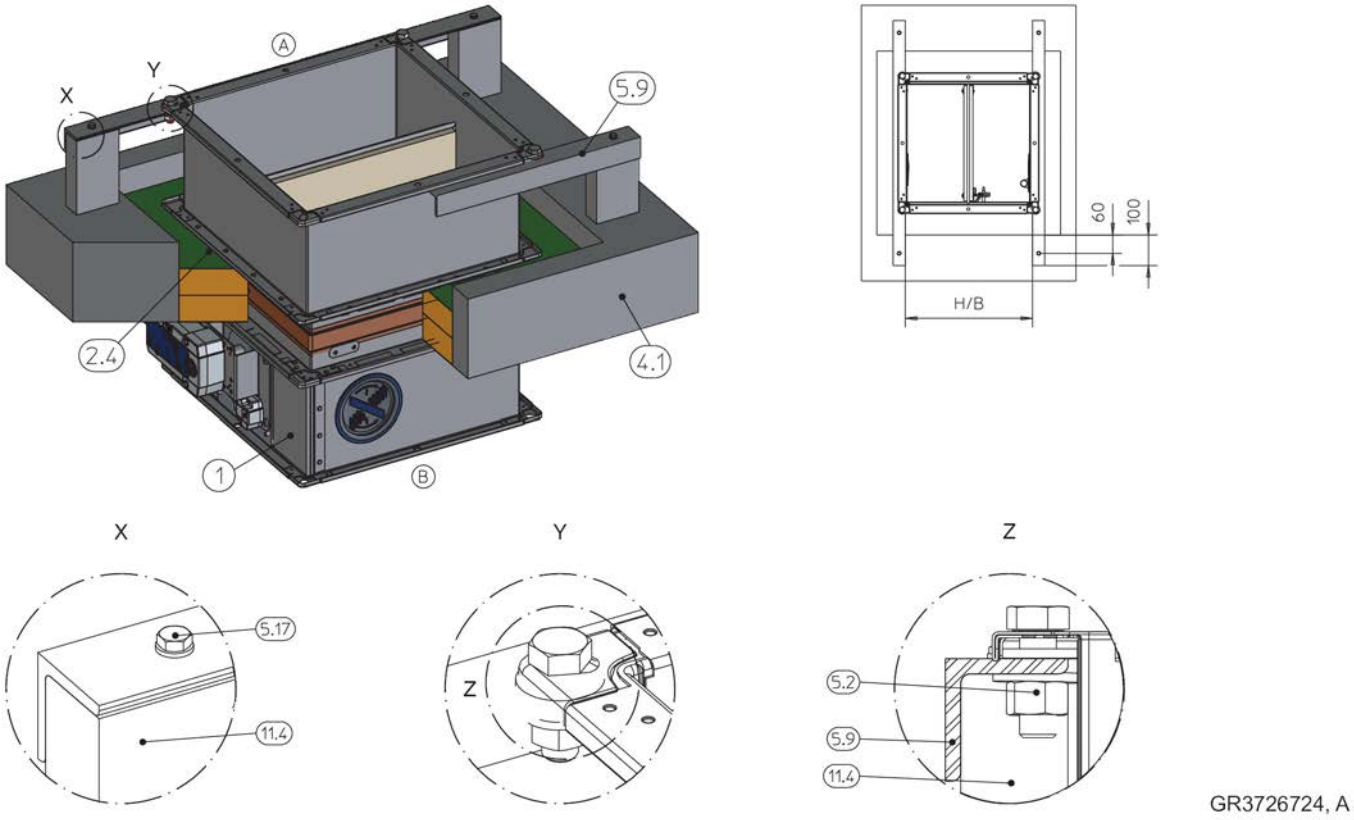



*Fig. 137: Fixing of the FKA2-EU with fire batt installation in a solid ceiling slab, shown suspended*

| | | | |
|---|---|---|---|
| 1 | FKA2-EU | 5.9 | Steel bracket, 40 × 40 × 5 mm |
| 2.4 | Coated board system | 5.17 | Anchor bolt or equivalent (for attachment to the ceiling slab) |
| 4.1 | Solid ceiling slab | | |
| 5.2 | Hexagon head screw M12 with washer and nut | 11.4 | Underlay material, non-combustible, to be provided by others |

# 6 Accessories

**Extension pieces**

When there are cover grilles, circular spigots, flexible connectors, moulds, etc., you may have to use an extension piece for certain heights. See the table for the required lengths.

| Extension pieces [mm] | | | |
|---|---|---|---|
| **L** | **H** | **Operating side** | **Installation side** |
| 305 | 100 – 400 | – | 195 |
| | 405 – 800 | 195 | 2 × 195 |
| 500 | 100 – 400 | – | – |
| | 405 – 800 | 195 | 195 |

| Open blade protrusion [mm] | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **H** | **100** | **150** | **200** | **250** | **300** | **350** | **400** | **450** | **500** | **550** | **600** | **650** | **700** | **750** | **800** |
| **x** | -204 | -179 | -154 | -129 | -104 | -79 | -54 | -29* | -4* | 21* | 46* | 71* | 96* | 121* | 146* |
| **y** | | | | | | | | | | | | | | | |
| **L = 305** | -8* | 17* | 42* | 67* | 92* | 117* | 142* | 167** | 192** | 217** | 242** | 267** | 292** | 317** | 342** |
| **L = 500** | -204 | -179 | -154 | -129 | -104 | -79 | -54 | -29* | -4* | 21* | 46* | 71* | 96* | 121* | 146* |

* One extension piece required

** Two extension pieces required

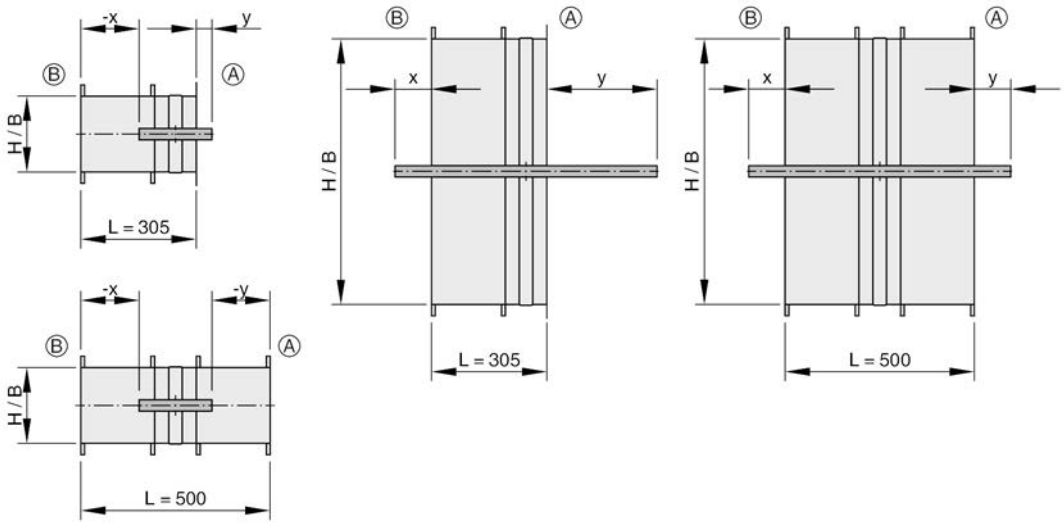



*Fig. 138: Open blade protrusion*

A Installation side
B Operating side

***Note***

*The movement of the damper blade must not be obstructed by any accessory. The distance between the tip of the open damper blade and any accessory must be at least 50 mm.*

### Flexible connectors

Flexible connectors are used to avoid both tension and compression.

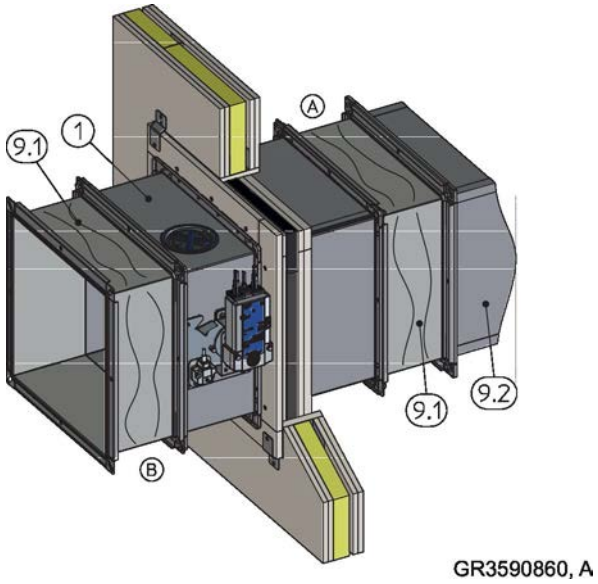



*Fig. 139: Fire damper with flexible connectors*

1 FKA2-EU
9.1 Flexible connector
9.2 Duct

### Circular spigot

For the connection of circular ducts.

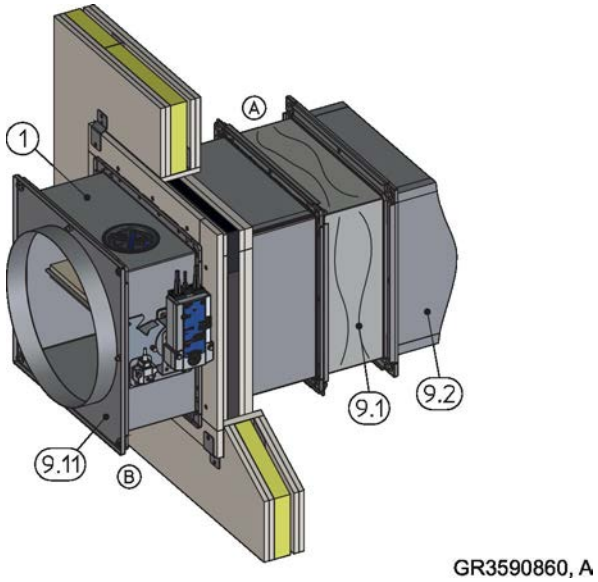



*Fig. 140: Fire damper with circular spigots*

1 FKA2-EU (square)
9.1 Flexible connector
9.2 Duct
9.11 Circular spigot

### Cover grilles

Cover grilles are used on non-ducted ends of fire dampers.

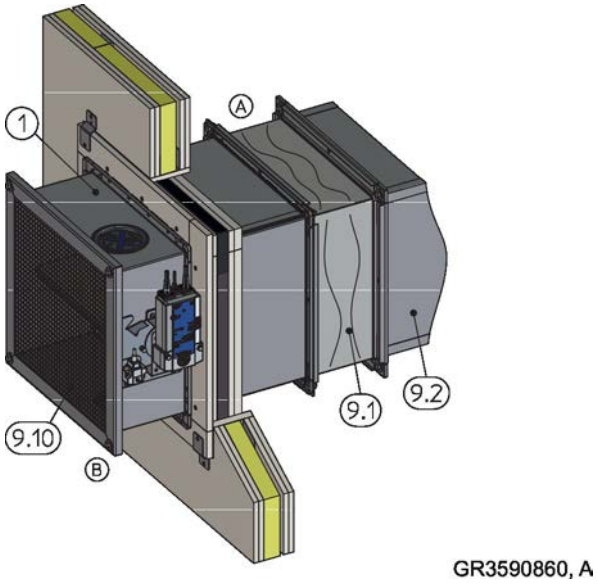



*Fig. 141: Fire damper with cover grille*

1 FKA2-EU
9.1 Flexible connector
9.2 Duct
9.10 Cover grille, galvanised steel, mesh aperture 10 mm

**Profile connecting frame**

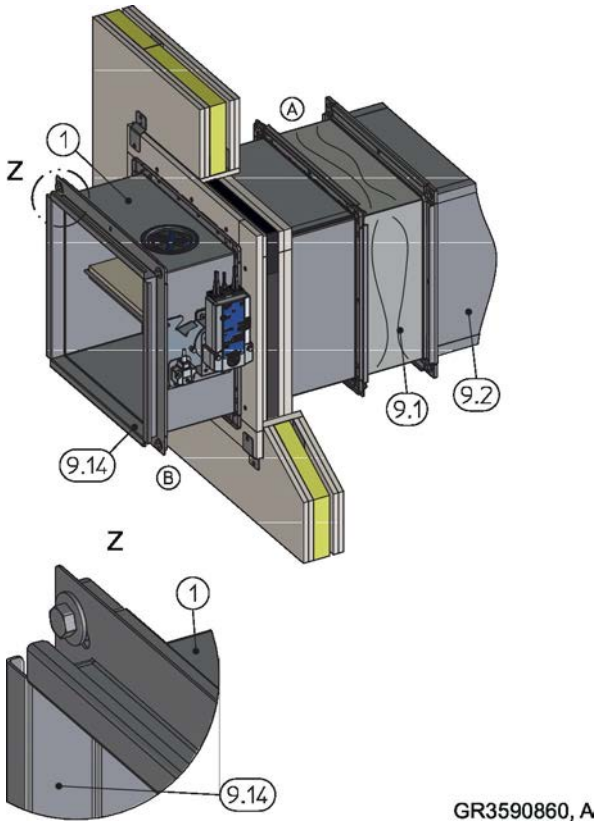



*Fig. 142: Fire damper with profile connecting frame*

1 FKA2-EU
9.1 Flexible connector
9.2 Duct
9.14 Profile connecting frame

# 7 Electrical connection

**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.

## 7.1 Limit switches (fire dampers with fusible link)

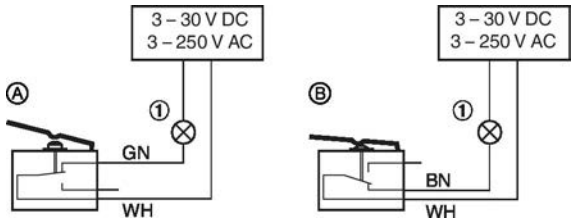



*Fig. 143: Wiring of limit switches, example*

1 Indicator light or relay, to be provided by others
A Type of connection normally closed
B Type of connection normally open

- The limit switches must be connected according to the wiring example Fig. 143
- Indicator lights or relays may be connected as long as the performance specifications are taken into consideration.
- Connection boxes must be fixed to the adjoining structure (wall or ceiling slab). They must not be fixed to the fire damper.

| Type of connection | Limit switch | Damper blade | Electric circuit |
|---|---|---|---|
| A | Not actuated | CLOSED or OPEN position not reached | Closed |
| B | actuated | CLOSED or OPEN position is reached | Closed |

## 7.2 Spring return actuator

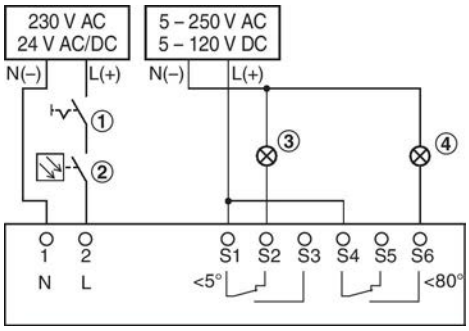



*Fig. 144: Actuator connection, example*

1 Switch for opening and closing, to be provided by others
2 Optional release mechanism, e.g. TROX duct smoke detector Type RM-O-3-D or RM-O-VS-D
3 Indicator light for CLOSED position, to be provided by others
4 Indicator light for OPEN position, to be provided by others

- The fire damper may be equipped with a spring return actuator for a supply voltage of 230 V AC or 24 V AC/DC. See the performance data on the actuator rating plate.
- The spring return actuator must be connected according to the wiring example shown. Several actuators can be connected in parallel as long as the performance specifications are taken into consideration.
- Connection boxes must be fixed to the adjoining structure (wall or ceiling slab). They must not be fixed to the fire damper.

**Note:** For wiring explosion-proof spring return actuator see "Supplementary operating manual for explosion-proof fire dampers Type FKA2-EU".

**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.

## 7.3 Spring return actuator and duct smoke detector RM-O-3-D

**Note:** For connection examples and further details see the RM-O-3-D operating and installation manual

# 8 Functional test

**General**

During operation at normal temperatures, the damper blade is open. A functional test involves closing the damper blade and opening it again.

**⚠ CAUTION!**

Danger of injury when reaching into the fire damper while the damper blade is moving. Do not reach into the fire damper while actuating the release mechanism.

## 8.1 Fire damper with fusible link

### 8.1.1 Fusible link – size 1

**Damper blade position indicator**

The position of the damper blade (1.2) is indicated by the position of the handle (1.6).

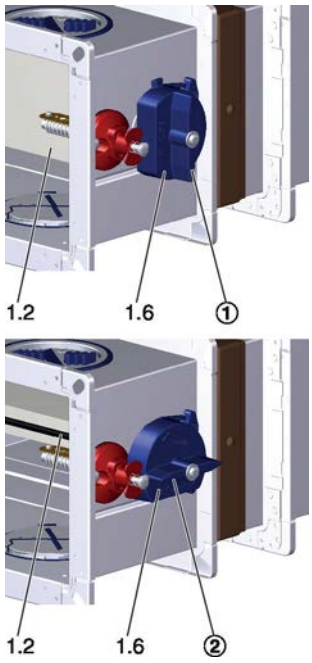



*Fig. 145: Damper blade position indicator*

1. ▸ Damper blade (1.2) is closed
2. ▸ Damper blade (1.2) is open

**Close the fire damper**

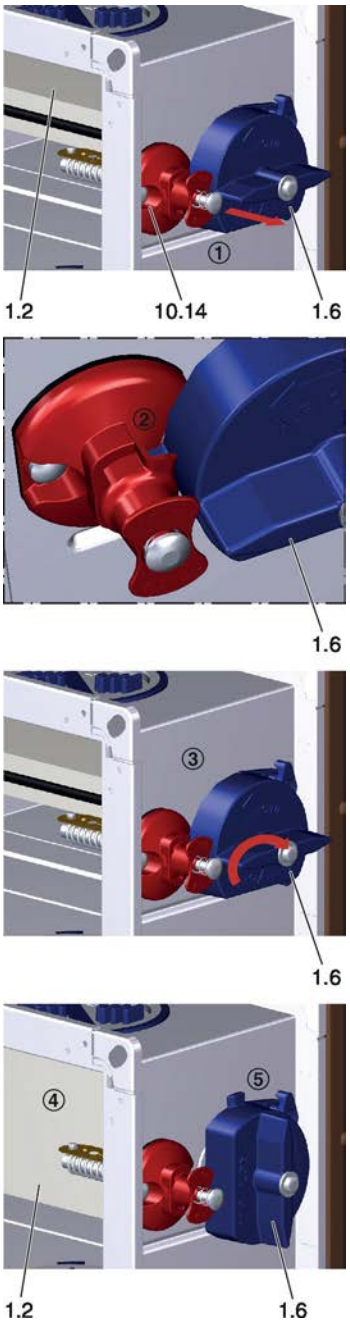



*Fig. 146: Close the fire damper*

**Requirement**

- The damper blade is open.

1. ▸ Pull the knob of the thermal release mechanism (10.14) forwards in the direction of the arrow to release
2. ▸ the handle (1.6).
3. ▸ The handle (1.6) swivels automatically in the direction of the arrow.
4. ▸ The damper blade (1.2) is closed and
5. ▸ the handle (1.6) shows that the damper blade (1.2) is closed.

**Opening the damper blade**

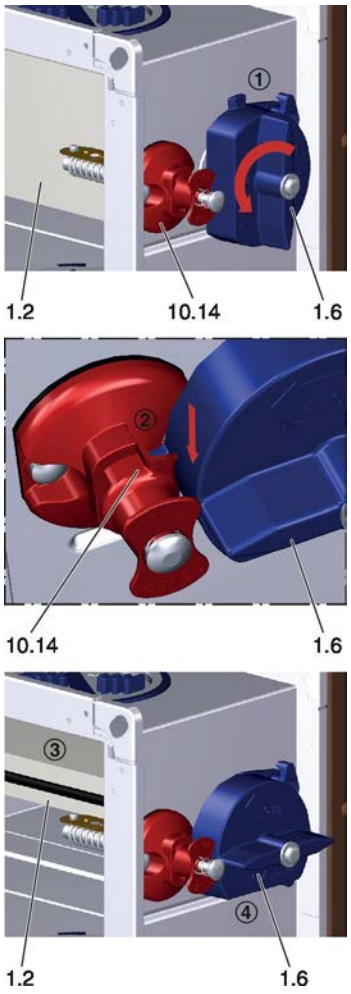



*Fig. 147: Opening the damper blade*

**Requirement**

- The damper blade is closed.

1. ▸ Turn the handle (1.6) in the direction of the arrow (counter-clockwise) until
2. ▸ the handle (1.6) engages behind the knob of the thermal release mechanism (10.14).
3. ▸ The damper blade (1.2) is open and
4. ▸ the handle (1.6) indicates that the damper blade (1.2) is open.

## 8.1.2 Fusible link – size 2 and 3

**Damper blade position indicator**

The position of the damper blade (1.2) is indicated by the red arrow on the cover of the handle (1.6).

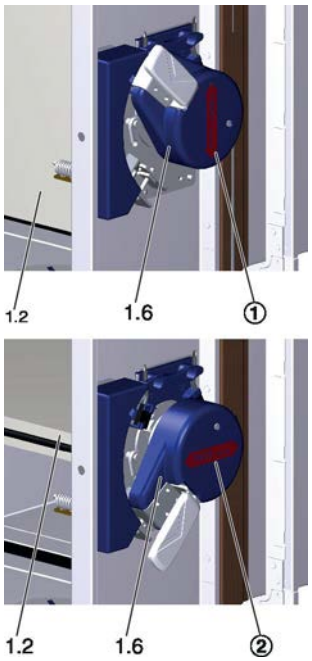



*Fig. 148: Damper blade position indicator*

1. ▸ Damper blade (1.2) is closed.
2. ▸ Damper blade (1.2) is open.

### Close the fire damper

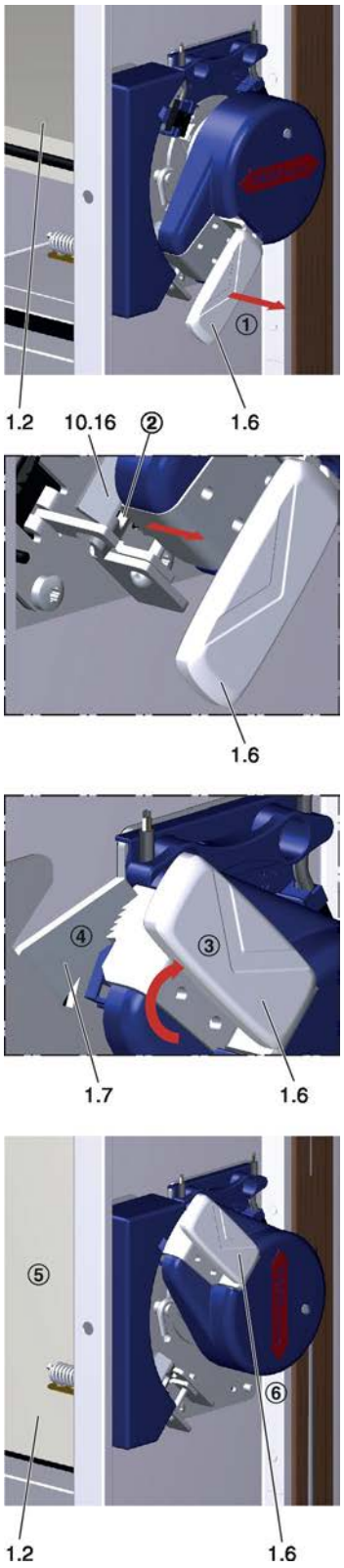



*Fig. 149: Close the fire damper*

**Requirement**

- The damper blade is open.

1. Lift the handle (1.6) in the direction of the arrow so that
2. handle (1.6) no longer protrudes into the opening of the fusible link holder rocker (10.16).
3. The handle (1.6) swivels automatically in the direction of the arrow (clockwise)
4. and clicks into the CLOSED position on the interlock (1.7).
5. The damper blade (1.2) is closed and
6. the red arrow on the cover of the handle (1.6) indicates that the damper blade (1.2) is closed.

### Opening the damper blade

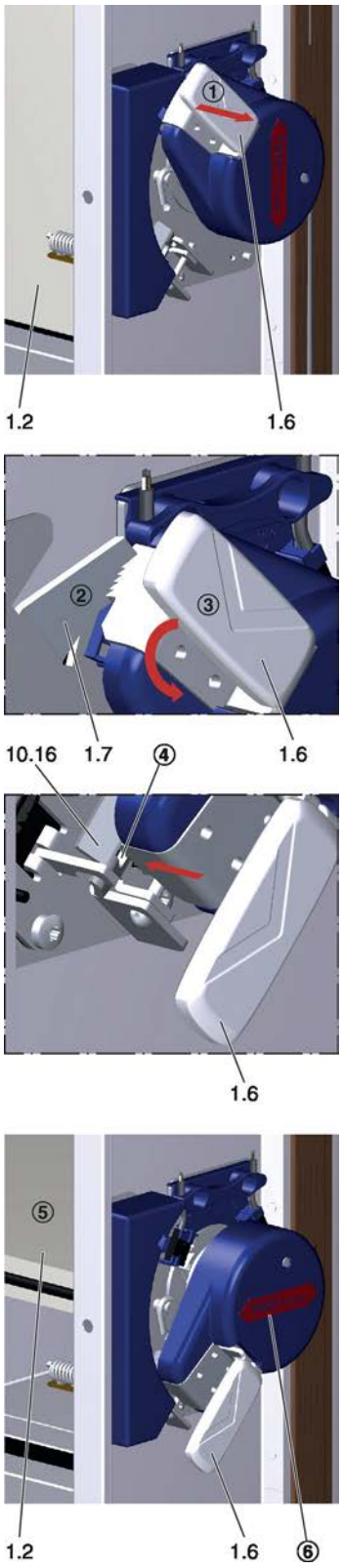



*Fig. 150: Opening the damper blade*

### Requirement

- The damper blade is closed.

1. Lift the handle (1.6) in the direction of the arrow until
2. the handle (1.6) is no longer engaged in the interlock (1.7).
3. Turn the handle (1.6) in the direction of the arrow (counter-clockwise) and do not lift it any more.
4. The handle (1.6) clicks into the OPEN position in the opening of the fusible link holder rocker (10.16).
5. The damper blade (1.2) is open and
6. the red arrow on the cover of the handle (1.6) indicates that the damper blade (1.2) is open.

## 8.2 Fire damper with spring return actuator

### 8.2.1 Spring return actuator – BFL... / BFN...

**Status indicator**


*Fig. 151: Thermoelectric release mechanism BAT*

1 Push button for functional test
2 Indicator light

The indicator light (2) for the thermoelectric release mechanism is illuminated when all of the following conditions apply:

- Power is being supplied.
- The thermal fuses are intact.
- The push button is not being pushed.

**damper blade position indicator**

The position of the damper blade is indicated by the pointer on the actuator.


*Fig. 152: damper blade position indicator*

1 Damper blade is closed
2 Damper blade is open

**Closing/opening the damper blade with spring return actuator**


*Fig. 153: Functional test (FKA2-EU with BFN actuator shown in OPEN position)*

**⚠ CAUTION!**

Danger of injury when reaching into the fire damper while the damper blade is moving. Do not reach into the fire damper while actuating the release mechanism.

**Requirement**

- Power is being supplied

1. ▸ Push the push button (1) and keep it pushed.
   ⇨ This interrupts the power supply, and the damper blade closes.
2. ▸ Check if the damper blade is CLOSED, check running time.
3. ▸ Release the push button (1).
   ⇨ Power is supplied again, and the damper blade opens.
4. ▸ Check if the damper blade is OPEN, check running time.

### Opening the damper blade using the crank handle


*Fig. 154: Functional test (without power supply)*

**DANGER!**

Danger due to malfunction of the fire damper.

If the damper blade has been opened by means of the crank handle (without power supply), it will no longer be triggered by a temperature increase, i.e. in the event of a fire. In other words, the damper blade will not close.

To re-establish its function, connect the power supply.

**Requirement**

- The damper blade is CLOSED

1. Insert the crank handle (1) into the opening for the spring winding mechanism.
2. Turn the crank handle in the direction of the arrow (2) to just short of the travel stop and hold it.
3. Set the interlock (3) to "Lock closed"

   ⇨ The damper blade remains in the OPEN position.
4. Remove the crank handle.

### Close the fire damper


*Fig. 155: Functional test (without power supply)*

**CAUTION!**

Danger of injury when reaching into the fire damper while the damper blade is moving. Do not reach into the fire damper while actuating the release mechanism.

**Requirement**

- The damper blade is OPEN

Set the interlock (3) to "Lock opened"

⇨ The damper blade is released and closes.

## 8.3 Functional test with automatic control unit

**Functional test with automatic control unit**

The function of fire dampers with a spring return actuator can also be tested with an automatic control unit. The control unit should have the following functions:

- Opening and closing fire dampers in regular intervals (intervals to be set by the system owner)
- Monitoring of the actuator running times
- Issuing an alarm when the running times are exceeded and when fire dampers close
- Recording the test results

TROXNETCOM systems such as TNC-EASYCONTROL or AS-interface meet all these requirements. For more informationen see *www.troxtechnik.com* .

TROXNETCOM systems allow for automatic functional tests; they do not replace maintenance and cleaning, which have to be carried out in regular intervals or depending on the condition of the product. The documentation of test results makes trends visible, e.g. the run time of actuators. They may also indicate the need for additional measures which help to maintain the system's function, e.g. removing heavy contamination (dust in extract air systems).

# 9 Commissioning

**Before commissioning**

Before commissioning, each fire damper must be inspected to determine and assess its actual condition. The inspection measures to be taken are listed in the ↳ *on page 176* .

**Operation**

During normal operation the damper blade is open to enable air passage through the ventilation system.

If the temperature in the duct (≥ 72 °C / ≥ 95 °C in warm air ventilation systems) or the ambient temperature (≥ 72 °C) rises in the event of a fire, the thermal release mechanism is triggered. This action closes the damper blade.

***CLOSED fire dampers***

*Fire dampers which close while the ventilation and air conditioning system is running must be inspected before they are opened again in order to ensure their correct function* ↳ *'Inspection' on page 173 .*

# 10 Maintenance

## 10.1 General

### 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 fire 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 fire damper.

The system owner is responsible for the maintenance of the fire 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 fire 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 13306
- DIN 31051
- EN 15423

The function of fire dampers with a spring return actuator can also be tested with an automatic control unit ↳ *'Functional test with automatic control unit' on page 171* .

### Maintenance

The fire damper and the spring return actuator are maintenance-free with regard to wear but fire dampers must still be included in the regular cleaning of the ventilation system.

### Cleaning

The fire damper may be cleaned with a dry or damp cloth. Sticky dirt or contamination may be removed with a commercial, non-aggressive cleaning agent. Do not use abrasive cleaners or tools (e.g. brushes). For disinfection you may use commercially available disinfectants or disinfecting procedures.

### Hygiene

Hygienic requirements are fulfilled in accordance with VDI 6022-1, VDI 3803-1, DIN 1946-4, DIN EN 13779 as well as the Önorm H 6020 and H 6021 and SWKI. The fire damper building materials were tested for resistance to fungi and bacteria in a test of their microbial metabolic potential in accordance with DIN EN ISO 846. The building materials do not promote the growth of microorganisms (fungi, bacteria), thus reducing the risks of infection for people. The fire dampers are resistant to disinfectants[1] and are thus suitable for hospitals and comparable institutions. Disinfection and cleaning is very straightforward. Verification of corrosion resistance was provided in accordance with EN 15650.

[1] Resistance to disinfectants was tested with the disinfectant groups of active substances alcohol and quaternary compounds. These disinfectants correspond with the list from the Robert Koch Institute and were used in accordance with the specifications of the Disinfectant List of the Disinfectant Commission in the Association for Applied Hygiene (VAH).

### Inspection

The fire damper 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 ↳ *on page 176* . The test of each fire 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 ↳ *165* .

## 10.2 Replacing the fusible link

### 10.2.1 Fusible link – size 1

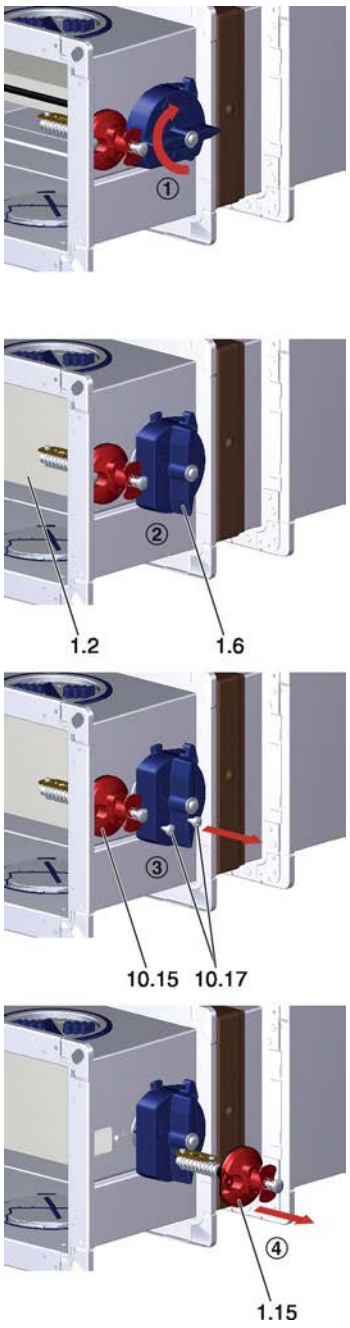



*Fig. 156: Removing the fusible link holder*

1. Close the damper blade.
2. The handle (1.6) shows that the damper blade (1.2) is closed.
3. Loosen the screws (10.17) on the fusible link holder (10.15).
4. Remove the fusible link holder (10.15) from the fire damper.

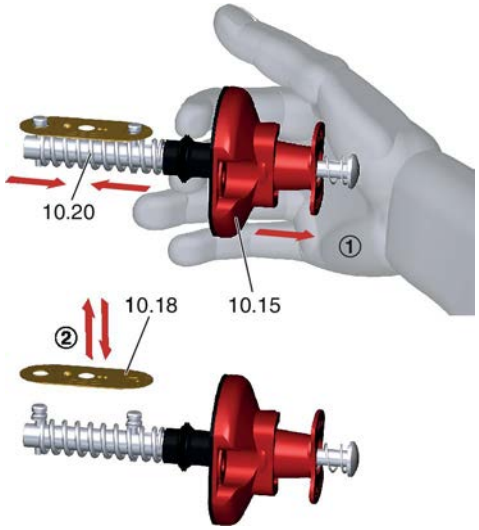



*Fig. 157: Replacing the fusible link*

1. Cover fusible link holder (10.15) as shown and press together in the direction of the arrow to tension the spring (10.20).
2. Remove old fusible link (10.18), hook in new fusible link (10.18).

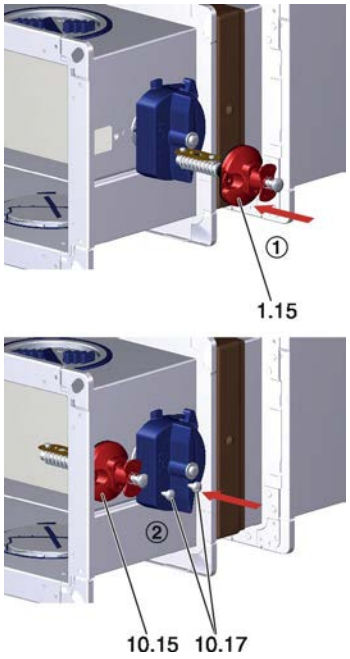



*Fig. 158: Install the fusible link holder*

1. Insert the fusible link holder (10.15) into the fire damper and
2. fasten with screws (10.17).

   ⇨ Carry out functional test.

### 10.2.2 Fusible link – size 2 and 3

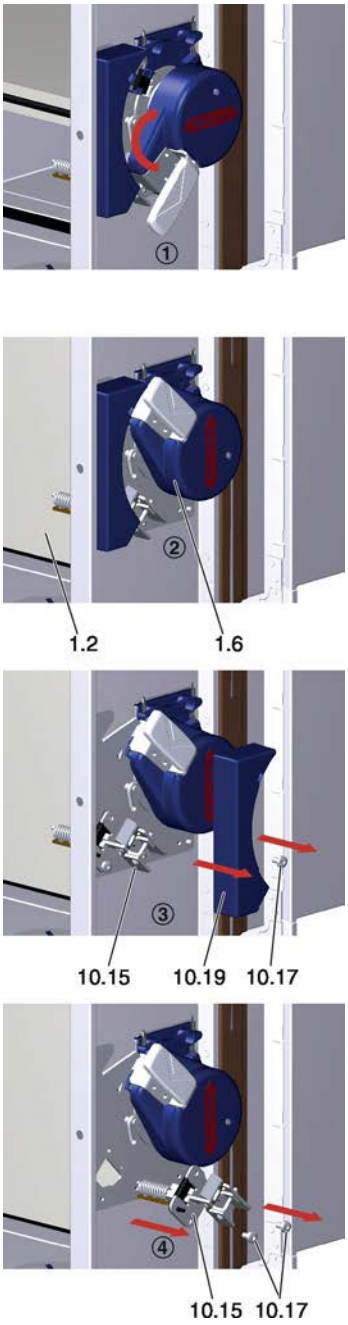



*Fig. 159: Removing the fusible link holder*

1. Close the damper blade.
2. The red arrow on the cover of the handle (1.6) indicates that the damper blade (1.2) is closed.
3. Loosen the screw (10.17) on the fusible link holder (10.15) and pull away the cover (10.19) in the direction of the arrow.
4. Loosen the screws (10.17) on the fusible link holder (10.15) and remove the fusible link holder from the fire damper.

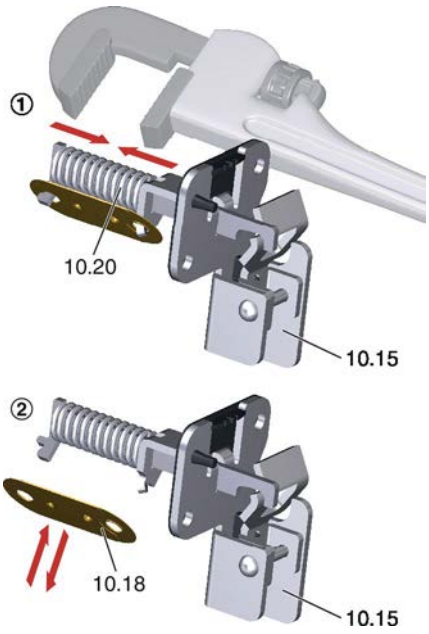



*Fig. 160: Replacing the fusible link*

1. Press together the spring (10.20) of the fusible link holder (10.15) as shown in the direction of the arrow, e.g. with a water pump pliers.
2. Remove old fusible link (10.18), hook in new fusible link (10.18).

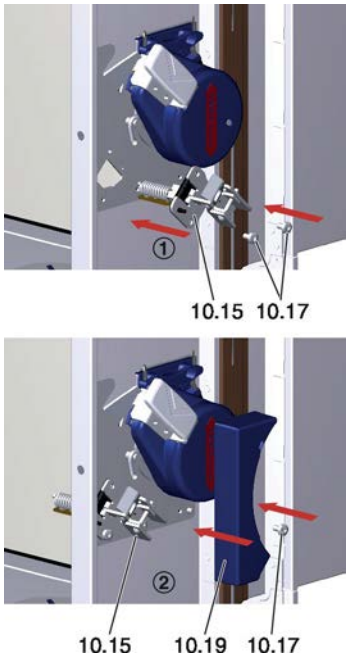



*Fig. 161: Install the fusible link holder*

1. Put fusible link holder (10.15) back into the fire damper and fix it with screws (10.17).
2. Position the cover (10.19) over the fusible link holder (10.15) and fasten with screw (10.17).

   ⇨ Carry out functional test.

## 10.3 Inspection, maintenance and repair measures

| Interval | Measure | Staff |
|---|---|---|
| **A** | Access to the fire damper<br>■ Internal and external accessibility<br>– Provide access | Specialist personnel |
| | Installation of the fire damper<br>■ Installation according to the operating manual *31*<br>– Install the fire damper correctly. | Specialist personnel |
| | Transport and installation protection, if any<br>■ Transport/installation protection has been removed<br>– Remove transport/installation protection | Specialist personnel |
| | Connection of ductwork/cover grille/flexible connector *161*<br>■ Connection according to this manual<br>– Establish correct connection | Specialist personnel |
| | Power supply to the spring return actuator<br>■ Power supply according to spring return actuator rating plate<br>– Provide correct voltage | Skilled qualified electrician |
| **A / B** | Check fire damper for damage<br>■ Fire damper, damper blade and seal must be intact<br>– Replace the damper blade<br>– Repair or replace the fire damper. | Specialist personnel |
| | Function of the release mechanism<br>■ Function OK<br>■ Fusible link intact/no corrosion<br>– Replace the fusible link<br>– Replace the release mechanism | Specialist personnel |
| | Functional test of the fire damper with fusible link *165*<br>■ Fire damper can be opened manually<br>■ Handle can be locked in the OPEN position<br>■ Damper blade closes when triggered manually<br>– Determine and eliminate the cause of the fault<br>– Repair or replace the fire damper.<br>– Replace the release mechanism | Specialist personnel |
| | Functional test of the fire damper with spring return actuator *169*<br>■ Actuator function OK<br>■ Damper blade closes<br>■ Damper blade opens<br>– Determine and eliminate the cause of the fault<br>– Replace the spring return actuator<br>– Repair or replace the fire damper. | Specialist personnel |
| | Function of external duct smoke detector<br>■ Function OK<br>■ Fire damper closes when triggered manually or when smoke is detected<br>■ Fire damper opens after reset<br>– Determine and eliminate the cause of the fault<br>– Repair or replace duct smoke detector | Specialist personnel |

| Interval | Measure | Staff |
|---|---|---|
| C | Cleaning the fire damper<br>■ No contamination in the interior or on the exterior of the fire damper<br>■ No corrosion<br>– Remove contamination with a damp cloth<br>– Remove corrosion or replace part | Specialist personnel |
| | Function of limit switches<br>■ Function OK<br>– Replace the limit switches | Specialist personnel |
| | Function of the external signalling (damper blade position indicator)<br>■ Function OK<br>– Determine and eliminate the cause of the fault | Specialist personnel |

**Interval**

**A = Commissioning**

**B = Regularly**

The functional reliability of fire dampers must be tested at least every six months. If two consecutive tests are successful, the next test can be conducted one year later. The function of fire dampers with a spring return actuator can also be tested with an automatic control unit (remote controlled). The system owner can then set the intervals for local tests.

**C = as required**

**Item to be checked**

- Required condition
  - Remedial action if necessary

# 11 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 ducts.
3. ▸ Close the damper blade.
4. ▸ Remove the fire damper.

**Disposal**

For disposal, the fire damper must be disassembled.

**ENVIRONMENT!**

Dispose of electronic components according to the local electronic waste regulations.

# 12 Explanation

For various installation situations described in this manual you have some choice, e.g. 6.2 6.16 , either (6.2) or (6.16).

| Item no. | Description |
|---|---|
| **1** | **Fire damper** |
| 1.1 | Casing |
| 1.2 | Damper blade (with or without lip seal) |
| 1.3 | Travel stop for OPEN position |
| 1.4 | Travel stop for CLOSED position |
| 1.5 | Inspection access |
| 1.6 | Handle/damper blade position indicator |
| 1.7 | Interlock |
| 1.8 | Lip seal |
| 1.9 | Cover |
| 1.10 | Release tab |
| 1.11 | Flange |

| Item no. | Description |
|---|---|
| **2** | **Materials for fire damper installation** |
| 2.1 | Mortar or gypsum mortar |
| 2.2 | Reinforced concrete / Non-reinforced concrete |
| 2.3 | Reinforced concrete base |
| 2.4 | Coated board system |
| 2.5 | Installation kit WA / WA2 |
| 2.6 | Installation kit WE / WE2 |
| 2.7 | Installation kit WV |
| 2.8 | Installation kit E1/E2 |
| 2.9 | Installation kit ES |
| 2.10 | Installation kit GM |
| 2.11 | Installation kit TQ / TQ2 |
| 2.12 | Installation kit GL / GL2 |
| 2.13 | Installation kit GL100 |
| 2.14 | Lintel |
| 2.15 | |
| 2.16 | Installation subframe |
| 2.17 | Hilti CFS-BL fire stop block |
| 2.18 | Installation block ER with cover plate |

| Item no. | Description |
|---|---|
| **2** | **Materials for fire damper installation** |
| 2.19 | Joint filler (Promat® filler, Promat® ready-to-use putty; mineral wool > 80 kg / m³, > 1000 °C or mortar) |

| Item no. | Description |
|---|---|
| **3** | **Walls** |
| 3.1 | Solid wall |
| 3.2 | Lightweight partition wall with metal support structure, cladding on both sides |
| 3.3 | Lightweight partition wall with steel support structure, cladding on both sides |
| 3.4 | Timber stud wall (also timber panel constructions), cladding on both sides |
| 3.5 | Half-timbered construction, cladding on both sides |
| 3.6 | Compartment wall with metal support structure, cladding on both sides |
| 3.7 | Shaft wall with metal support structure, cladding on one side |
| 3.8 | Shaft wall with steel support structure, cladding on one side |
| 3.9 | Shaft wall without metal support structure, cladding on one side |
| 3.10 | Wall without adequate fire resistance rating |
| 3.11 | Solid wood wall / CLT wall |
| 3.12 | Sandwich panel wall |
| 3.13 | Additional leaf with metal support structure |
| 3.14 | Solid wall made of gypsum wall boards |

| Item no. | Description |
|---|---|
| **4** | **Ceilings** |
| 4.1 | Solid ceiling slab / solid floor |
| 4.2 | Wooden beam ceiling |
| 4.3 | Modular ceiling, Cadolto system |
| 4.4 | Partial concrete ceiling with reinforcement |
| 4.5 | Solid wood ceiling |
| 4.6 | False ceiling |
| 4.7 | Reinforced hollow chamber ceiling |
| 4.8 | Hollow stone ceiling |
| 4.9 | Ribbed ceiling |

| Item no. | Description |
|---|---|
| **4** | **Ceilings** |
| 4.10 | Composite ceiling |
| 4.11 | Historical wooden beam ceiling, fire resistance properties > F 30 |

| Item no. | Description |
|---|---|
| **5** | **Fixing material** |
| 5.1 | Dry wall screw |
| 5.2 | Hexagon head screws, washers, nuts (see installation details) |
| 5.3 | Chipboard screw |
| 5.4 | Threaded rod, galvanised steel (see installation details) |
| 5.5 | Carriage bolt L ≤ 50 mm with washer and nut |
| 5.6 | Screw or rivet, galvanised steel (see installation details) |
| 5.7 | Wallplugs with fire suitability certificate for fire resistance |
| 5.8 | Anchor M8 – M12 |
| 5.9 | Steel bracket |
| 5.10 | Fixing tab |
| 5.11 | Floor mounting plate |
| 5.12 | Cover plate |
| 5.13 | Wood screw or pin |
| 5.14 | Angle bracket |
| 5.15 | Bracket |
| 5.16 | Wall connection frame |
| 5.17 | Anchor bolt |
| 5.18 | L-bracket according to EN 10056-1 galvanised, painted or similar, according to installation detail |
| 5.19 | Connecting clip |
| 5.20 | Screw Fischer® FFS 7.5 × 82 mm or equivalent |
| 5.21 | Screw / wallplug |
| 5.22 | Steel fabric, ∅ ≥ 6 mm, mesh aperture 150 mm or equivalent |
| 5.23 | Clamp, e.g. Hilti MP-MX, Valraven BIS HD 500, or equivalent |

| Item no. | Description |
|---|---|
| **6** | **Filling and coating material** |
| 6.1 | Mineral wool ≥ 1000 °C, ≥ 40 kg/m³ |
| 6.2 | Mineral wool ≥ 1000 °C, ≥ 80 kg/m³ |
| 6.3 | Mineral wool ≥ 1000 °C, ≥ 100 kg/m³ |
| 6.4 | Mineral wool ≥ 1000 °C, ≥ 140 kg/m³ |
| 6.5 | Mineral wool (depending on wall construction) / ceiling construction, mineral wool filling on request |
| 6.6 | |
| 6.7 | Fire batt |
| 6.8 | Infill (cavities completely filled with mineral wool ≥ 1000 °C, ≥ 50 kg/m³, or bricks, aerated concrete, lightweight concrete, reinforced concrete or clay) |
| 6.9 | Fire-resistant sealant suitable for the fire batt system used |
| 6.10 | Ablative coating around the perimeter, thickness 2.5 mm |
| 6.11 | Insulating strip (depending on wall construction) |
| 6.12 | Intumescent seal |
| 6.13 | Mineral wool strips A1, filler as an alternative |
| 6.14 | Armaflex |
| 6.15 | Mineral wool (depending on the flexible ceiling joint) |
| 6.16 | Armaflex AF / Armaflex Ultima |
| 6.17 | Fire batt (Hensel) |
| 6.18 | |
| 6.19 | Mineral wool > 1000 °C, > 80 kg/m³, panel material around the perimeter, leave out the actuator and release mechanism; inspection accesses must remain accessible |
| 6.20 | Sleeve (can be ordered separately) |
| 6.21 | Kerafix 2000 sealing tape |
| 6.22 | Screed |
| 6.23 | Footfall sound insulation |
| 6.24 | Elastomer foam (synthetic rubber) of fire rating class B-S3, D0 |
| 6.25 | Mineral wool or glass wool fill |
| 6.26 | Plaster |
| 6.27 | Holding plate on both sides, 90 × 140 × 1.5 mm |
| 6.28 | ??? |

| Item no. | Description |
|---|---|
| **6** | **Filling and coating material** |
| 6.29 | Mineral wool Paroc HVAC Fire Mat |
| 6.30 | Double layer mineral wool Paroc HVAC Fire Mat 80BLC (80 kg/m³) |
| 6.31 | Fire-rated plasterboard strip, d = 12.5 mm |
| 6.32 | Fire-rated plasterboard strip, d = 20 mm |

| Item no. | Description |
|---|---|
| **7** | **Supporting construction** |
| 7.1 | UW section |
| 7.1a | UW section, cut and bent |
| 7.2 | CW section (metal support structure) |
| 7.3 | UA section |
| 7.4 | Steel channel |
| 7.5 | Steel support structure |
| 7.6 | Perimeter metal section |
| 7.7 | Timber stud, at least 60 × 80 mm |
| 7.8 | Steel girder |
| 7.9 | Timber structure |
| 7.10 | Trim panels (optional) |
| 7.11 | Trim panels, double layer, staggered joints |
| 7.12 | Trim panels, wood sheet, at least 600 kg/³ |
| 7.13 | Cladding / wall cladding |
| 7.13a | Cladding, fire-resistant |
| 7.13b | Cladding, wood sheet, at least 600 kg/³ |
| 7.14 | Reinforcing strip |
| 7.15 | Wooden floorboard / floor tile / wood sheet min. 600 kg/m³ |
| 7.16 | Wooden beam / gluelam |
| 7.17 | Trimmers general |
| 7.18 | Formwork |
| 7.19 | Fire-resistant cladding |
| 7.20 | |
| 7.21 | Ceiling joint strips |
| 7.22 | Ceiling joint section |
| 7.23 | Sheet steel insert depending on wall manufacturer |
| 7.24 | Ceiling design |
| 7.25 | Reinforced concrete support |

| Item no. | Description |
|---|---|
| **7** | **Supporting construction** |
| 7.26 | Hollow stone |
| 7.27 | Profile sheet metal |

| Item no. | Description |
|---|---|
| **8** | **Material for extended applications** |
| 8.1 | PROMATECT®-H strips, d = 10 mm |
| 8.2 | PROMATECT®-H strips, d = 20 mm |
| 8.3 | PROMATECT®-LS board d = 35 mm |
| 8.4 | Hilti mounting rail MQ 41 × 3 or equivalent |
| 8.5 | Hilti drilled plate MQZ L13 or equivalent |
| 8.6 | Hilti fixing band LB26 or equivalent |
| 8.7 | Mounting rail, Würth Varifix 36 × 36 × 2,5, or Müpro MPC 38/40 or equivalent |
| 8.8 | Fixing bracket, Varifix or Müpro MPC or equivalent |
| 8.9 | Bracket, Varifix ANSHWNKL-PRFL36-90GRAD or Müpro mounting bracket 90°, galvanised, or equivalent |
| 8.10 | Large gears |
| 8.11 | Actuator |
| 8.12 | Actuator mounting plate |
| 8.13 | Small gears |
| 8.14 | Connecting cable |
| 8.15 | Adjustment screws |
| 8.16 | Actuator mounting plate |
| 8.17 | Cover |
| 8.18 | Junction box |
| 8.19 | Overlay made of PROMATECT®-LS, d = 35 mm |
| 8.20 | Promaseal®-Mastic intumescent sealant |
| 8.21 | Firestop sealant |
| 8.22 | Calcium silicate board, or alternatively mineral wool ≥ 1000 °C, ≥ 140 kg/m³ |
| 8.23 | Foam rubber seal |
| 8.24 | Retaining plate on both sides, sheet steel ≥ 1 mm thick |
| 8.25 | Bracket, e.g. Hilti MM-B-30 or equivalent |
| 8.26 | Blanking plate, t = 1 mm |

| Item no. | Description |
|---|---|
| **8** | **Material for extended applications** |
| 8.27 | Seal |
| 8.28 | PROMATECT®-H strips, d = 15 mm |

| Item no. | Description |
|---|---|
| **9** | **Accessories** |
| 9.1 | Flexible connector |
| 9.2 | Extension piece or duct |
| 9.3 | Prop |
| 9.4 | Sheet steel duct with fire-rated cladding and suspension system according to Promat® manual, construction 478, latest edition |
| 9.5 | Suspension |
| 9.6 | Repair damper blade |
| 9.7 | Damper blade |
| 9.8 | Rivet axis |
| 9.9 | Plate |
| 9.10 | Cover grilles |
| 9.11 | Circular spigot |
| 9.12 | Clamping ring |
| 9.13 | Reinforcement bracket |
| 9.14 | Profile connecting frame |
| 9.15 | T-piece |

| Item no. | Description |
|---|---|
| **10** | **Release mechanisms** |
| 10.1 | Spring return actuator |
| 10.2 | Spring return actuator Belimo BLF |
| 10.3 | Spring return actuator Belimo BF |
| 10.4 | Spring return actuator Belimo BFN |
| 10.5 | Spring return actuator Belimo BFL |
| 10.6 | Spring return actuator Schischek ExMax (yellow) |
| 10.7 | Spring return actuator Schischek RedMax (magenta) |
| 10.8 | Spring return actuator Siemens GGA |
| 10.9 | Spring return actuator Siemens GRA |
| 10.10 | Spring return actuator Siemens GNA |
| 10.11 | Spring return actuator Joventa SFR |

| Item no. | Description |
|---|---|
| **10** | **Release mechanisms** |
| 10.12 | Duct smoke detector RM-O-3-D |
| 10.13 | Thermoelectric release mechanism with temperature sensor |
| 10.14 | Thermal release mechanism with fusible link, 72 °C / 95 °C |
| 10.15 | Fusible link holder |
| 10.16 | Fusible link holder rocker |
| 10.17 | Screw |
| 10.18 | Fusible link |
| 10.19 | Cover |
| 10.20 | Spring |
| 10.21 | Z-sheet |

| Item no. | Description |
|---|---|
| **11** | **Additions** |
| 11.1 | Cable tray |
| 11.2 | Cable set |
| 11.3 | Pipe collar |
| 11.4 | Underlay material, non-combustible, to be provided by others |
| 11.5 | Base, to be provided by others |
| 11.6 | Cable penetration |

# 13 Index

**T**



**U**



**W**