Fire damper

FKRS-EU

according to Declaration of Performance
DoP / FKRS-EU / DE/ 006

TROX

Read the instructions prior to performing any task!

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Installation and operating manual (translation of the original)
A00000092709, 4, GB/en
05/2025

Valid from 01.07.2024

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 contact information

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

- Product name
- TROX order number and line number
- Delivery date
- Brief description of fault or issue

Online	*www.troxtechnik.com*
Phone	+49 2845 202-0

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.

Claims for material defects

Claims for material defects are subject to the seller's terms of delivery.

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 in the operating instructions

Safety notes can refer to specific, individual instructions. Such safety instructions are embedded in the instructions so that they do not interrupt the flow of reading when carrying out the task. The above listed signal words will be used.

Example:

1. Loosen the screw.
2.
   CAUTION!
   Risk of jamming on the lid!

   Close the lid carefully.
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 – high voltage.
	Warning – danger zone.

1 Safety

1.1 General safety instructions

Sharp edges, sharp corners and thin sheet metal parts

CAUTION!

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

Sharp edges, sharp corners and thin-walled sheet metal parts can cause abrasions and cuts to the skin.

– 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.
– Before working on the electrical system, switch off the supply voltage and secure it against being switched on again.

1.2 Intended 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 ventilation and air conditioning systems
- The use of the fire dampers in potentially explosive atmospheres is permitted with the corresponding special accessories and a CE conformity statement according to ATEX directive 2014/34/EU. Fire dampers for use in areas with potentially explosive atmospheres are marked for the zones for which they have been approved.
- Operation of fire dampers is allowed only in compliance with installation regulations and the technical data in the installation and operating manual.
- Modifying the fire dampers or using replacement parts that have not been approved by TROX is not permitted.

Additional provision for use in Germany:

- Do not use in extract air systems in commercial kitchens.
- For use as an air transfer damper (MFD), see general type approval Z-6.50-2516.
- Use with a combined penetration seal or fire protection block bulkhead requires individual type-approval.
- Installation into solid ceiling slabs with FireShield ® requires a project-related type approval.
- Air transfer dampers (FD) may require a building inspectorate licence. This must be checked and applied for by the client.
- Flame-resistant, non-dripping building materials (elastomer foams) must at least comply with fire rating class C - s2, d0 according to the German MVV TB (2019/1) guideline. The applicable local building regulations must be complied with.

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 adequate 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 Staff qualifications

WARNING!

Danger of injury if insufficiently qualified!

Incorrect use may cause considerable injury or damage to property.

– Only specialist personnel must carry out work.

Personnel:

- Skilled qualified electrician
- Trained 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.

Trained personnel
Trained 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	100 – 315 mm
Casing length L	400 mm
Volume flow rate range	up to 770 l/s / up to 2770 m³/h
Differential pressure range	up to 1500 Pa
Temperature range [1, 3, 4]	-20 °C to 50 °C
Release temperature [4]	72 °C or 95 °C (for warm air ventilation systems)
Upstream velocity [2, 4]	≤ 8 m/s with fusible link, ≤ 10 m/s with spring return actuator
Closed damper blade air leakage air flow	EN 1751, Class 3
Casing air leakage	EN 1751, Class C
Normative basics	■ EU Construction Products Regulation No. 305/2011 ■ EN 15650 – Ventilation for buildings – fire dampers ■ EN 13501-3 – Classification – Part 3: Fire resisting ventilation ducts and fire dampers ■ EN 1366-2 – Fire resistance tests for service installations: fire dampers[5] ■ EN 1751 Ventilation for buildings – Air terminal devices ■ EN 15882-2 Feb. 2023 - Expanded applications ■ EAD 350454-00-1104-v01
Declaration of Performance	DoP / FKRS-EU / DE/ 006

[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 dampers.
[3] Non-condensing operation and without humidity ingress via the outdoor air intake.
[4] For explosion-proof constructions of the FKRS-EU, see additional operating manual.
[5] Leakage rate of the fire damper system tested at 300 Pa and 500 Pa negative pressure.

Product label

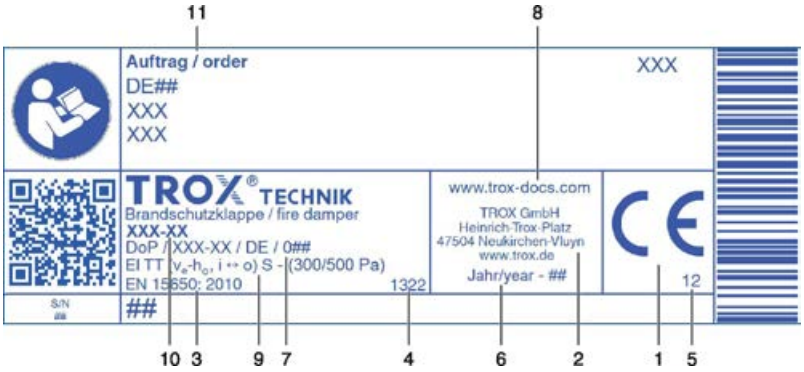


Fig. 1: Product label (example)

1 CE marking
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 Number of the Declaration of Performance
8 Website from which the DoP can be downloaded
9 Details of all regulated characteristics. The fire resistance class depends on the application and may vary ↬ *Chapter 5.1 'Overview of installation situations' on page 26*
10 Type
11 Order number

2.2 FKRS-EU with fusible link

Dimensions and weights

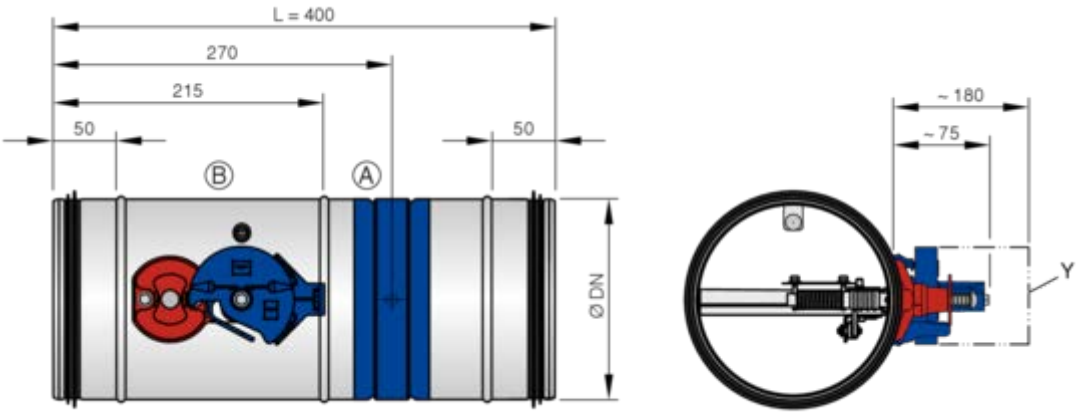


Fig. 2: FKRS-EU with fusible link

Y Keep clear to provide access for operation
A Installation side
B Operating side

Limit switch	
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]										
Nominal size [mm]	**100**	**125**	**150**	**160**	**180**	**200**	**224**	**250**	**280**	**315**
ØDN [mm]	**99**	**124**	**149**	**159**	**179**	**199**	**223**	**249**	**279**	**314**
FKRS-EU with fusible link	1.3	1.6	1.8	2.0	2.3	2.5	2.7	3.3	3.8	4.4
... and installation block ER	5.7	8.6	7.6	7.3	11.0	9.8	13.5	12.1	16.0	15.0
... and installation kit TQ2	5.4	6.1	7.0	7.9	8.8	9.7	10.6	12.0	13.7	15.8
... and installation kit WA2	4.4	5.2	6.1	6.6	7.4	8.2	9.0	10.2	11.7	13.6
... and installation kit WE2	4.4	5.2	6.1	6.6	7.4	8.2	9.0	10.2	11.7	13.6
... and installation kit GL2	4.4	5.2	6.1	6.6	7.4	8.2	9.0	10.2	11.7	13.6
... and installation kit TS2	4.4	5.2	6.1	6.6	7.4	8.2	9.0	10.2	11.7	13.6

2.3 FKRS-EU with spring return actuator

Dimensions and weights

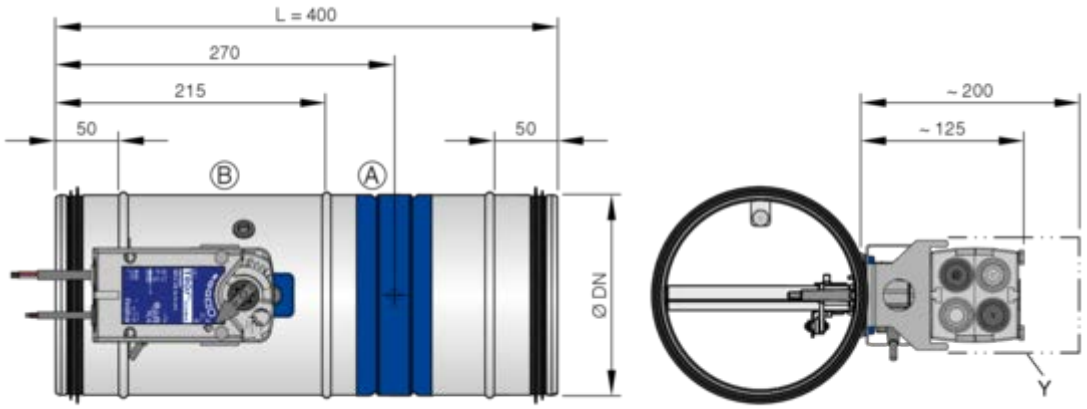


Fig. 3: FKRS-EU with spring return actuator

Y Keep clear to provide access for operation
A Installation side
B Operating side

- Weight of FKRS-EU with fusible link + approx. 1.5 kg, see table *12* .

Spring return actuator			
Construction		**230 V**	**24 V**
Supply voltage		230 V AC/DC, 50/60 Hz	24 V AC/DC, 50/60 Hz
Functional range		198 – 264 V AC/DC	21.6 – 28.8 V AC/DC
Power rating	Spring-winding mechanism / hold position	3.5 – 5.5 W/1.1 – 2.0 W	2.5 – 6.5 W/0.8 – 2.0 W
	Rating	9.5 VA	9 VA
Run time	Actuator / spring return	75 s / 20 s	
Limit switch	Type of contact	2 changeover contacts	
	Switching voltage	5 – 250 V AC/5 – 120 V DC	
	Switching current	1 mA – 3 (0.5 inductive) A	
	Contact resistance	unknown	
IEC protection class / IP protection		II / IP 54	
Storage temperature / ambient temperature		-30 °C to +50 °C	
Ambient humidity		5 – 95% r.h., no condensation	
Connecting cable	Actuator / limit switch	1 m, 2 × 0.75 mm² (free of halogens)/1 m, 6 × 0.75 mm² (free of halogens)	

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

Dimensions and weights

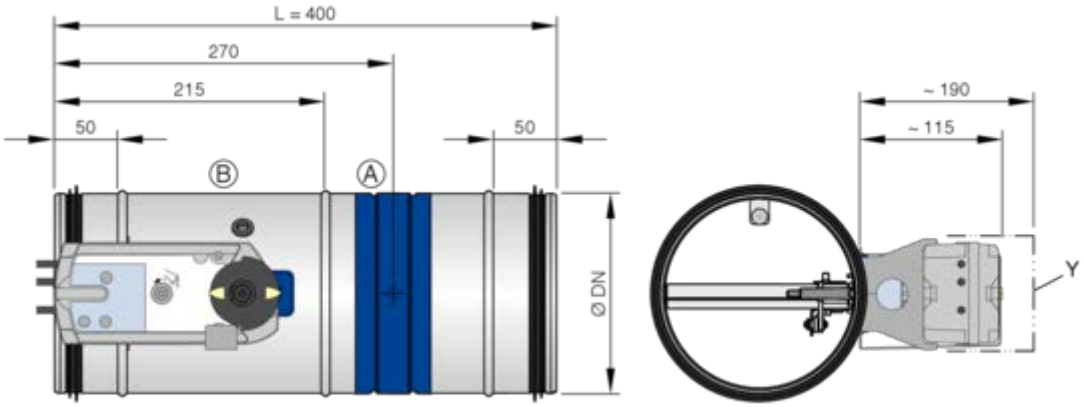


Fig. 4: FKRS-EU with spring return actuator (also suitable for Siemens bus system)

Y Keep clear to provide access for operation
A Installation side
B Operating side

- Weight of FKRS-EU with fusible link + approx. 1 kg, see table *12* .

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 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
Run 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 (2 inductive) 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 – 50 °C / -20 – 50 °C	
Ambient humidity		< 95% rh, no condensation	
Connecting cable	Actuator / limit switch	0.9 m, 2 × 0.75 mm² / 0.9 m, 6 × 0.75 mm² (free of halogens)	

*Connecting cable at the bottom

FKRS-EU with Schischek explosion-proof spring return actuator

The FKRS-EU can also be supplied with Schischek explosion-proof spring return actuator on request:

- ExMax-15-BF-TR
- RedMax-15-BF-TR

For further information, see "Supplementary operating manual for explosion-proof fire dampers Type FKRS-EU".

2.4 FKRS-EU with spring return actuator and smoke detector

Dimensions and weights

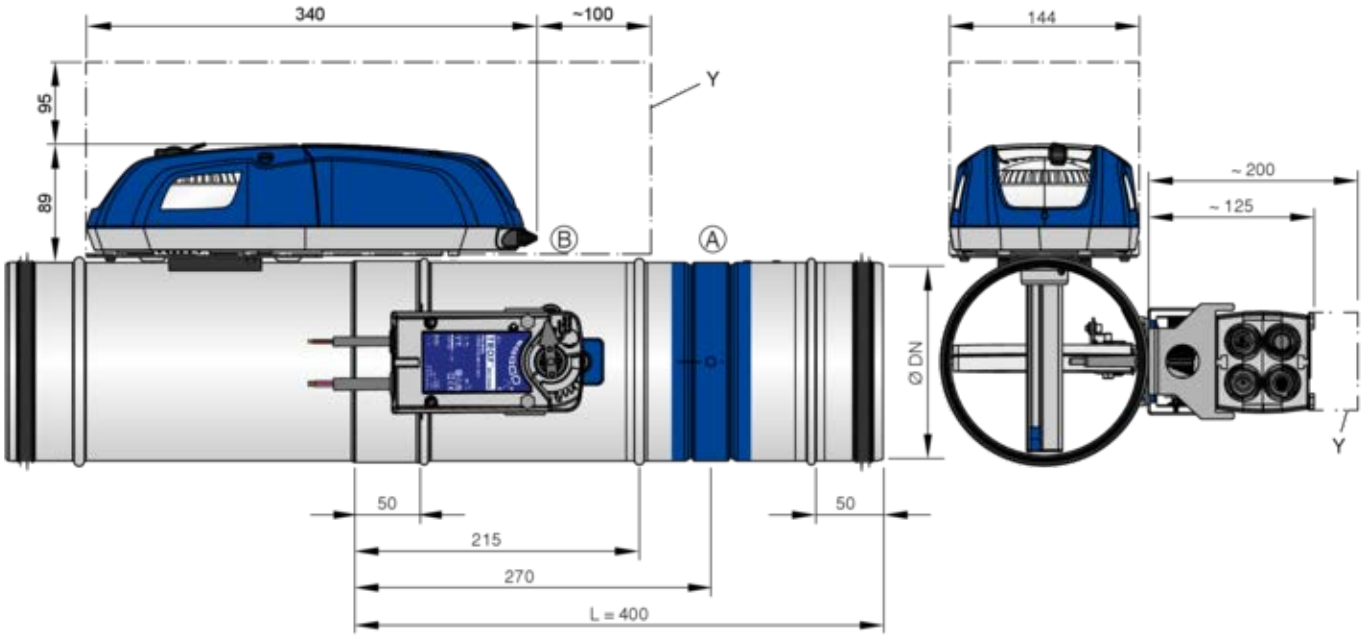


Fig. 5: FKRS-EU with spring return actuator and RM-O-M smoke detector, drawn in a circular duct (on site)

Y Keep clear to provide access for operation
A Installation side
B Operating side

- Technical data for spring return actuator, see table *on page 13*
- The smoke detector type RM-O-M must be arranged in a circular duct at the top on site. For technical information on the smoke detector, see "Installation and operating instructions for smoke detector type RM-O-M".

Dimensions and weights

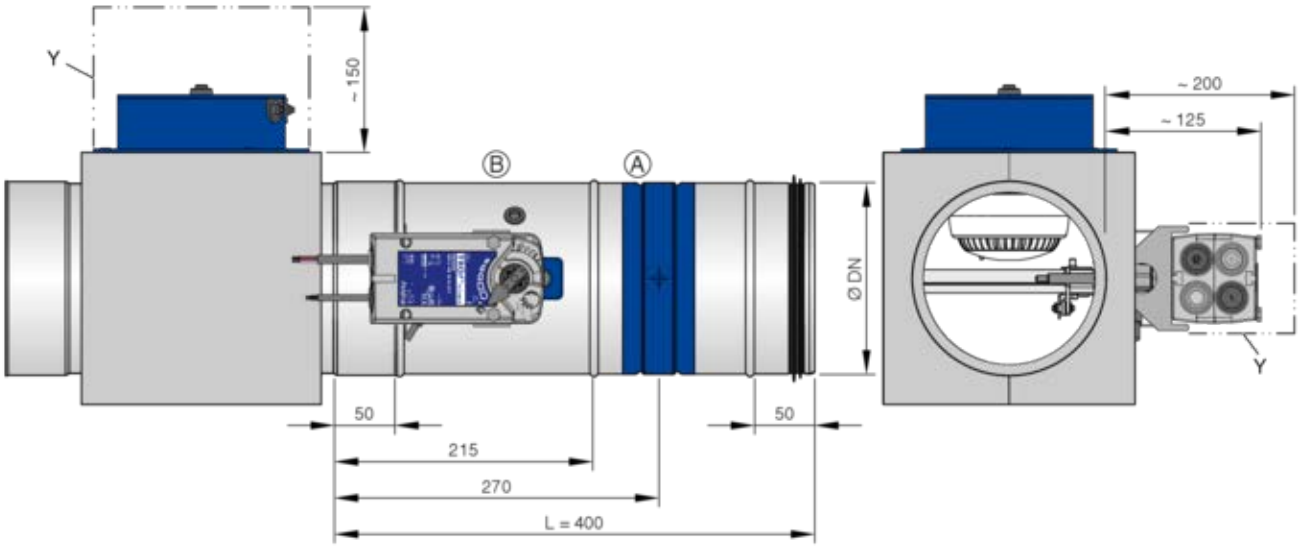


Fig. 6: FKRS-EU with spring return actuator and RM-O-3-D smoke detector, drawn in a rectangular duct (on site)

Y Keep clear to provide access for operation
A Installation side
B Operating side

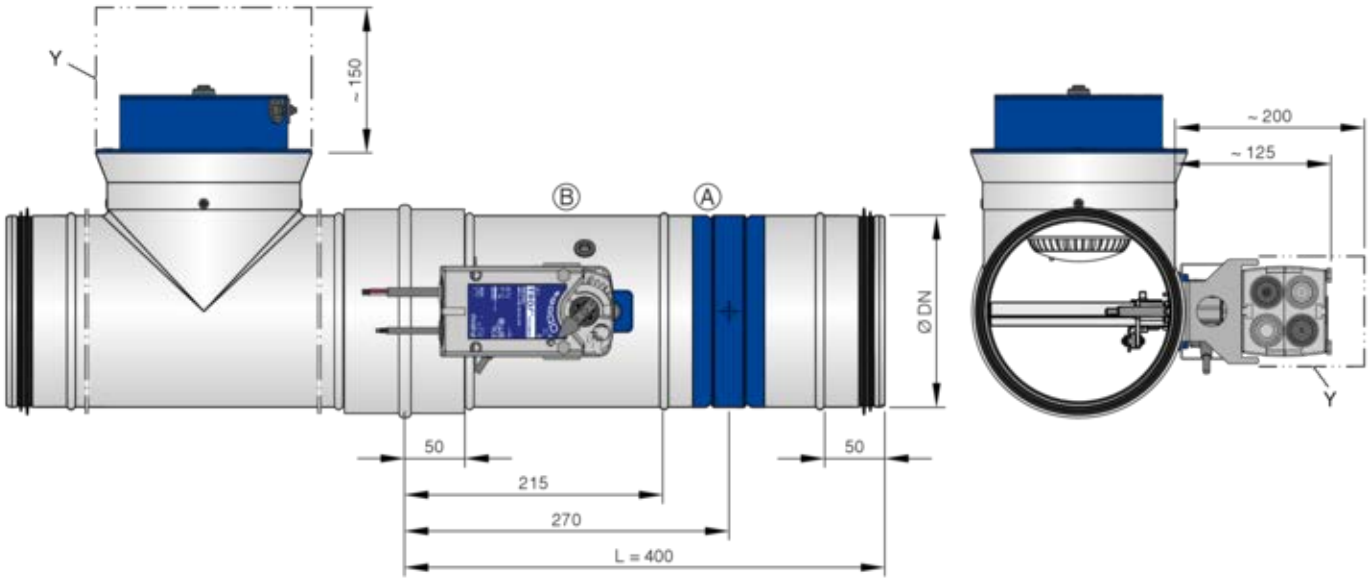


Fig. 7: FKRS-EU with spring return actuator and RM-O-3-D smoke detector, drawn in a circular duct (on site)

Y Keep clear to provide access for operation
A Installation side
B Operating side

- Technical data for spring return actuator, see table *on page 13*
- The duct smoke detector type RM-O-3-D is to be arranged in a rectangular air duct on the top or alternatively in a circular duct in a T-piece on the top. For technical information on the smoke detector, see "Installation and operating instructions for smoke detector type RM-O-3-D".

2.5 FKRS-EU as an air transfer damper (FD)

Dimensions and weights

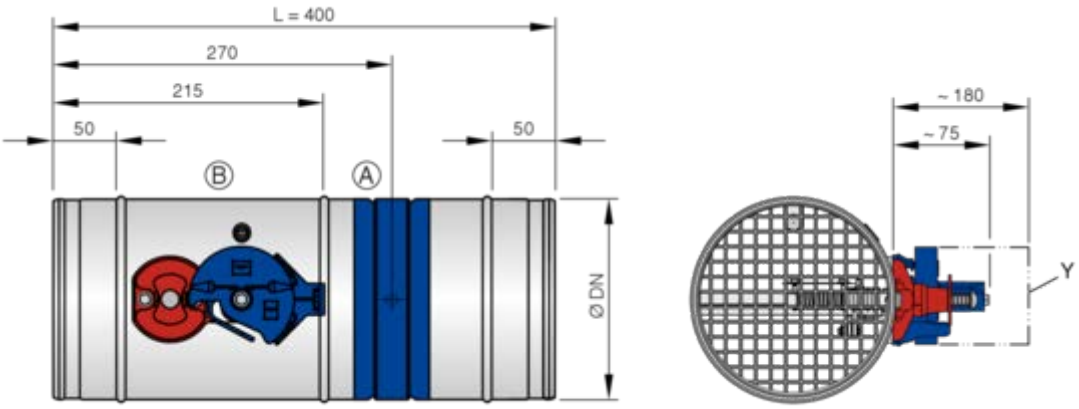


Fig. 8: FKRS-EU with fusible link and cover grilles as an air transfer damper (FD)

Y Keep clear to provide access for operation
A Installation side
B Operating side

Note: Air transfer dampers may require a general building inspectorate licence. This must be checked and applied for by the client.

For installation in Germany, please note:
If a fire damper with only a mechanical shut-off element is to be used as an air transfer damper (FD), the local building regulations apply.
Such air transfer dampers (FD) are usually used in pressure differential systems only.

2.6 FKRS-EU as an air transfer damper (MFD)

Dimensions and weights

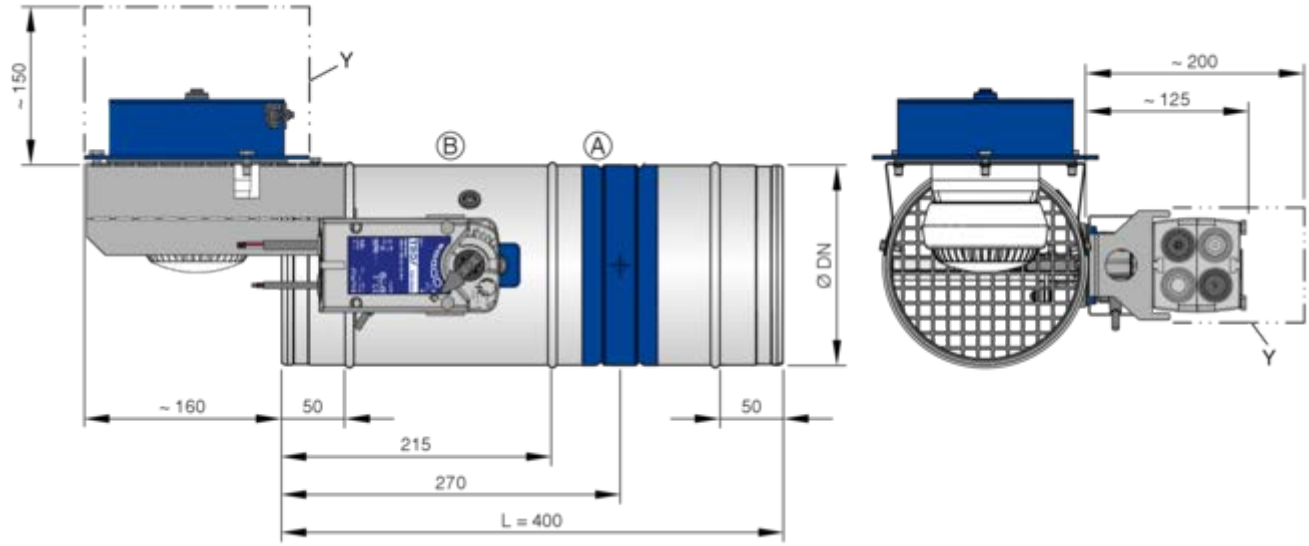


Fig. 9: FKRS-EU with spring return actuator and duct smoke detector as an air transfer damper (MFD)

Y Keep clear to provide access for operation
A Installation side
B Operating side

- Weight of FKRS-EU with fusible link + approx. 2.5 kg, see table *12* .
- Technical data for spring return actuator, see table *on page 13*
- The duct smoke detector type RM-O-3-D is to be placed on top of a console (scope of supply). For technical information on the smoke detector, see "Installation and operating instructions for smoke detector type RM-O-3-D".

Note: For more information on the installation and use of the fire damper as an air transfer damper in Germany see general type approval Z-6.50-2516.

3 Scope of supply, transport and storage

Scope of supply

If attachments and accessories are supplied from the factory with the fire damper, 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 usually included in the supply package (unless stated otherwise).

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 for transport damage and completeness. In case of transport damage or incomplete delivery, inform the forwarding agent and the supplier immediately.

- Fire damper
  - Attachments/accessories, if any
- An operating and installation manual (one per delivery)

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

As far as possible, keep the fire damper in its transport packaging until it reaches the installation location.

Storage

If the device has to be stored temporarily:

- Remove any plastic wrapping.
- Protect it against dust and contamination.
- Store it in a dry place and remote from direct sunlight.
- Do not expose it to the effects of weather (even in its packaging).
- Do not store it below -40 °C or above 50 °C.

Packaging

After unpacking, properly dispose of packaging material.

4 Parts and function

4.1 Function in a ventilation system

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. Closure 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.

4.2 FKRS-EU with fusible link

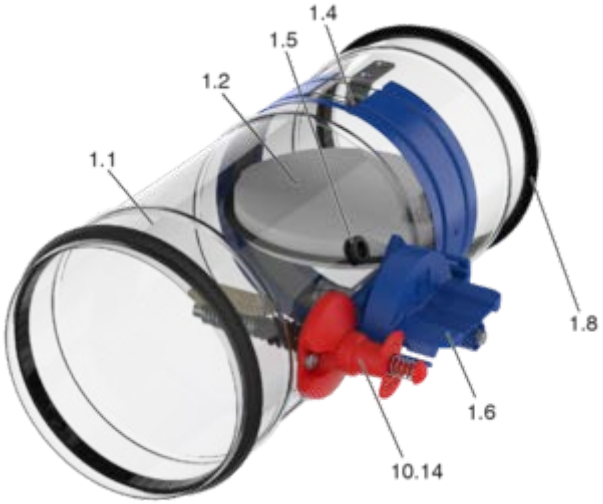


Fig. 10: FKRS-EU with fusible link

1.1 Casing
1.2 Damper blade with ring seal
1.4 Travel stop for CLOSED position
1.5 Inspection access (12 mm)
1.6 Handle/damper blade position indicator
1.8 Lip seal
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.

4.3 FKRS-EU with spring return actuator

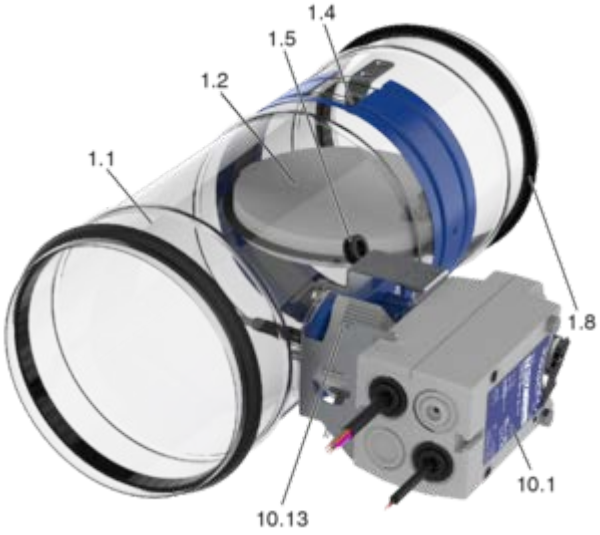


Fig. 11: FKRS-EU with spring return actuator

1.1 Casing
1.2 Damper blade with ring seal
1.4 Travel stop for CLOSED position
1.5 Inspection access (12 mm)
1.8 Lip seal
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.

4.4 FKRS-EU with spring return actuator and smoke detector

Fig. 12: FKRS-EU with spring return actuator and smoke detector RM-O-M

1.1	Casing
1.2	Damper blade with ring seal
1.4	Travel stop for CLOSED position
1.5	Inspection access (12 mm)
1.8	Lip seal
9.2	Rectangular duct, customer supply
10.1	Spring return actuator
10.12	Duct smoke detector RM-O-M
10.13	Thermoelectric release mechanism with temperature sensor

Functional description

The spring return actuator in combination with the smoke detector is used for motorised closing of the fire damper when smoke is detected. 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 fire damper is closed by the spring return actuator if one of the following events occurs:

- Duct smoke detector detects smoke
- Temperature in the fire damper > 72 °C
- Temperature outside the release mechanism > 72 °C
- The power supply is interrupted (closed current principle)
- The RM-O-M smoke detector is installed on site in a circular duct via a bracket (CRD).
- The RM-O-3-D smoke detector must be installed by the customer in a rectangular duct. Fig. 14 . Alternatively, the installation is carried out on-site in a circular duct with T-piece, Fig. 15 . As a rule, the smoke detector is to be positioned at the top. Deviating arrangements are permissible. In Germany, the general building inspectorate licence of the smoke detector must be observed.

Fig. 13: FKRS-EU and RM-O-M in circular duct

1 FKRS-EU
9.2 Circular duct, customer supplied
10.1 Spring return actuator
10.12 Smoke detector RM-O-M, fixed with bracket CRD

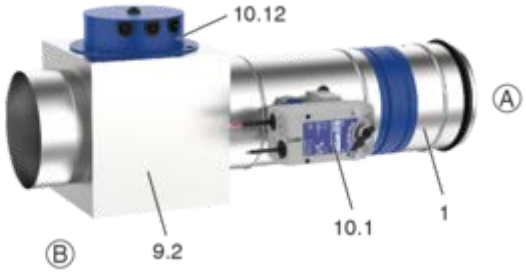


Fig. 14: FKRS-EU and RM-O-3-D in rectangular duct

1 FKRS-EU
9.2 Rectangular duct, customer supplied
10.1 Spring return actuator
10.12 Duct smoke detector RM-O-3-D, fixed via adapter plate

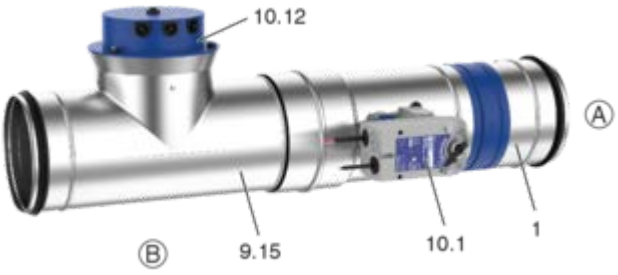


Fig. 15: FKRS-EU and RM-O-3-D in circular duct

1 FKRS-EU
9.15 T-piece or saddle connector, customer supplied
10.1 Spring return actuator
10.12 Duct smoke detector RM-O-3-D, fixed via adapter plate

4.5 FKRS-EU as an air transfer damper (FD)

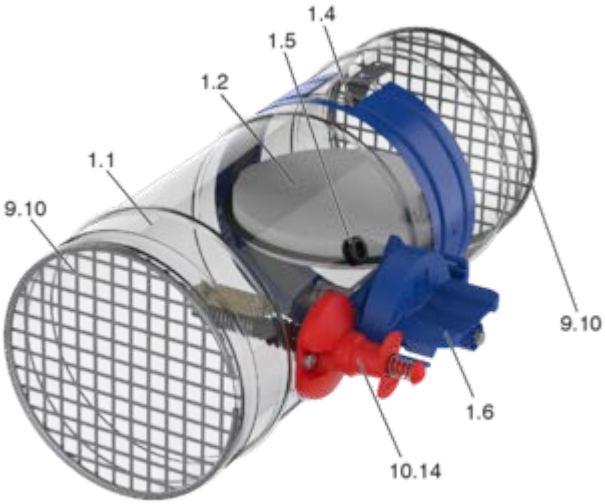


Fig. 16: FKRS-EU as an air transfer damper (FD)

1.1 Casing
1.2 Damper blade with ring seal
1.4 Travel stop for CLOSED position
1.5 Inspection access (12 mm)
1.6 Handle/damper blade position indicator
9.10 Cover grille
10.14 Thermal release mechanism with fusible link

Functional description

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

The air transfer damper consists of the FKRS-EU fire damper with thermal release mechanism 72 °C and cover grilles on both sides. It does not include a duct smoke detector.

Note:
Air transfer dampers (FD) may require a building inspectorate licence. This must be checked and applied for by the client.

For installation in Germany, please note:
If a fire damper with only a mechanical shut-off element is to be used as an air transfer damper (FD), the local building regulations apply. Such air transfer dampers (FD) are usually used in pressure differential systems only.

4.6 FKRS-EU as an air transfer damper (MFD)

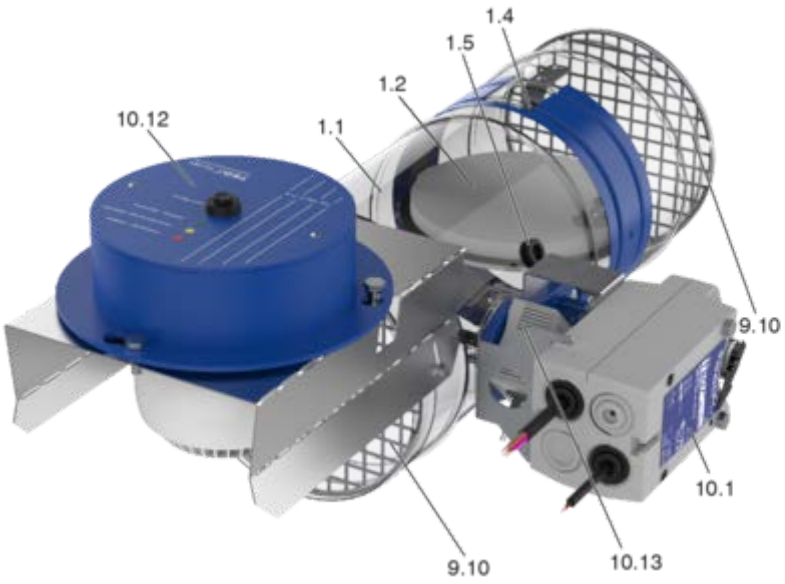


Fig. 17: FKRS-EUas an air transfer damper

1.1 Casing
1.2 Damper blade
1.4 Travel stop for CLOSED position
1.5 Inspection access
9.10 Cover grille
10.1 Spring return actuator
10.12 Duct smoke detector RM-O-3-D (fixed with bracket)
10.13 Thermoelectric release mechanism with temperature sensor

Functional description

The spring return actuator in combination with the smoke detector is used for motorised closing of the fire damper when smoke is detected. This prevents the transfer of smoke to adjacent fire compartments, even below the reaction temperature of the thermoelectric release mechanism. As long as power is supplied to the actuator, the damper blade remains open. The fire damper is closed by the spring return actuator if one of the following events occurs:

- Duct smoke detector detects smoke
- Temperature in the fire damper > 72 °C
- Temperature outside the release mechanism > 72 °C
- The power supply is interrupted (closed current principle)

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

For more information on the installation and use as an air transfer damper (MFD) in Germany, see general type approval Z-6.50-2516.

5 Installation

5.1 Overview of installation situations

> ***Note***
>
> *The performance classes of the fire damper and the wall or ceiling may differ. The lower performance class determines the performance class of the overall system.*
>
> *Fire dampers with stainless steel casing (FKRS-EU-2/... version) have a performance class up to EI 90 S for all subsequent applications due to an update of EN 15882.*

Overview of installation situations					
Supporting construction	**Installation location/construction**	**Minimum thickness [mm]**	**Performance class EI TT (v_e–h_o, i ↔ o) S up to**	**Installation type**	**Chapter**
Solid walls	in	75	EI 120 S [4]	N	*61*
		75	EI 90 S	N	*61*
	in, combined installation	100	EI 90 S	N	*64*
	in, multiple installation	100	EI 90 S	N	*66*
	in, partly with mineral wool	100	EI 90 S	N	*69*
	in, underneath flexible ceiling joint	100	EI 90 S	N	*71*
	in, installation block ER	100	EI 90 S	E	*72*
	in, installation kit TQ2	100	EI 120 S [4]	E	*73*
	on the face of, installation kit WA2	100	EI 90 S	E	*75*
	remote from, wall attachment, installation kit WE2	100	EI 120 S [4]	E	*77*
	remote from, wall penetration, installation kit WE2	100	EI 120 S [4]	E	*82*
	remote from, mineral wool insulation	100	EI 60 S	T	*87*
	remote from, mineral wool insulation, fire batt	100	EI 60 S	T	*88*
	in, fire batt	100	EI 120 S [4]	W [1]	*89*
		100	EI 90 S	W [1]	*89*
		100	EI 60 S	W [1]	*89*
	in, fire batt, multiple installation	100	EI 90 S	W [1]	*92*
	in, combined penetration seal	100	EI 90 S	W [1]	*40*
	in, fire protection block bulkhead	100	EI 90 S	T	*40*

[1] The class of performance depends on the installation details
[2] Thickness increased near the installation opening
[3] Depending on local conditions
[4] Up to EI 90 S with stainless steel casing

N = Mortar-based installation
E = Installation kit
W = Coated board system
T = Dry mortarless installation

Overview of installation situations					
Supporting construction	**Installation location/construction**	**Minimum thickness [mm]**	**Performance class EI TT (v_e–h_o, i ↔ o) S up to**	**Installation type**	**Chapter**
Metal stud walls	in	94	EI 120 S [4]	N [1]	*101*
		94	EI 90 S	N [1]	*101*
		80	EI 60 S	N [1]	*101*
		75	EI 30 S	N [1]	*102*
	in, underneath flexible ceiling joint	94	EI 120 S [4]	N	*101*
	in, combined installation	94	EI 90 S	N [1]	*106*
	in, multiple installation	94	EI 90 S	N [1]	*108*
	in, without installation kit	94	EI 60 S	T	*111*
	in, installation kit TQ2	94	EI 120 S [4]	E [1]	*112*
		94	EI 90 S	E [1]	*112*
		80	EI 60 S	E [1]	*112*
		75	EI 30 S	E	*112*
	in, underneath flexible ceiling joint, installation kit TQ2	94	EI 120 S [4]	E	*112*
	remote from, wall penetration, installation kit WE2	94	EI 90 S	E	*117*
	remote from, wall penetration, mineral wool insulation	94	EI 60 S	T	*122*
	remote from, mineral wool insulation, fire batt	94	EI 60 S	T	*123*
	in, direct installation, installation kit GL2	94	EI 90 S	T	*124*
	in, flexible ceiling joint, installation kit GL2	100	EI 90 S	E	*125*
	in, fire batt	94	EI 120 S [4]	W [1]	*134*
		94	EI 90 S	W [1]	*134*
		80	EI 60 S	W [1]	*134*
		75	EI 30 S	W [1]	*134*
	in, fire batt, multiple installation	100	EI 90 S	W [1]	*140*
	in, combined penetration seal	100	EI 90 S	W [1]	*40*
	in, fire protection block bulkhead	100 – 200	EI 90 S	T	*40*
Timber stud walls	in	130	EI 120 S [4]	N	*146*
		130	EI 90 S	N	*146*

[1] The class of performance depends on the installation details
[2] Thickness increased near the installation opening
[3] Depending on local conditions
[4] Up to EI 90 S with stainless steel casing

N = Mortar-based installation
E = Installation kit
W = Coated board system
T = Dry mortarless installation

Overview of installation situations					
Supporting construction	**Installation location/construction**	**Minimum thickness [mm]**	**Performance class EI TT (v_e–h_o, i ↔ o) S up to**	**Installation type**	**Chapter**
		110	EI 60 S	N	*146*
		105	EI 30 S	N	*146*
	in, combined installation	130	EI 90 S	N	*148*
	in, multiple installation	130	EI 90 S	N	*153*
	in, installation kit TQ2	130	EI 120 S [4]	E	*157*
		110	EI 60 S	E	*157*
		105	EI 30 S	E	*157*
	remote from, mineral wool insulation	130	EI 60 S	T	*159*
	remote from, mineral wool insulation, fire batt	130	EI 60 S	T	*161*
	in, fire batt	130	EI 120 S [4]	W	*163*
		130	EI 90 S	W	*163*
		110	EI 60 S	W	*163*
		105	EI 30 S	W	*163*
	in, fire batt, multiple installation	130	EI 90 S	W [1]	*172*
	in, combined penetration seal	130	EI 90 S	W [1]	*40*
Half-timbered walls	in	140	EI 120 S [4]	N	*149*
		140	EI 90 S	N	*149*
		110	EI 30 S	N	*149*
	in, combined installation	140	EI 90 S	N	*151*
	in, multiple installation	140	EI 90 S	N	*153*
	in, installation kit TQ2	140	EI 120 S [4]	E	*158*
		140	EI 90 S	E	*158*
		110	EI 30 S	E	*158*
	remote from, mineral wool insulation	140	EI 60 S	T	*160*
	remote from, mineral wool insulation, fire batt	140	EI 60 S	T	*162*
	in, fire batt	140	EI 120 S [4]	W	*168*
		140	EI 90 S	W	*168*
		110	EI 30 S	W	*168*
	in, fire batt, multiple installation	140	EI 90 S	W [1]	*172*

[1] The class of performance depends on the installation details
[2] Thickness increased near the installation opening
[3] Depending on local conditions
[4] Up to EI 90 S with stainless steel casing

N = Mortar-based installation
E = Installation kit
W = Coated board system
T = Dry mortarless installation

Overview of installation situations					
Supporting construction	**Installation location/construction**	**Minimum thickness [mm]**	**Performance class EI TT (v_e–h_o, i ↔ o) S up to**	**Installation type**	**Chapter**
Solid wood/CLT walls	in	95	EI 90 S	N	*178*
	in, installation kit TQ2	95	EI 90 S	E	*180*
	remote from, mineral wool insulation	100	EI 60 S	T	*181*
	remote from, mineral wool insulation, fire batt	100	EI 60 S	T	*182*
	in, fire batt	95	EI 90 S	W	*183*
Shaft wall with metal support structure	in	90	EI 90 S	N	*188*
		90	EI 60 S	N	*188*
		90	EI 30 S	N	*188*
	in, combined installation	90	EI 90 S	N	*191*
	in, installation kit TQ2	90	EI 90 S	E	*193*
	on the face of, installation kit WA2	90	EI 90 S	E	*195*
	in, fire batt	90	EI 60 S	W	*196*
Shaft wall without metal support structure	in	90	EI 90 S	N	*200*
	in, installation kit TQ2	90	EI 90 S	E	*201*
	on the face of, installation kit WA2	90	EI 90 S	E	*202*
Sandwich panel walls	in, fire protection block bulkhead	100 – 200	EI 90 S	T	*40*
Solid ceilings	in	100 (150) [2]	EI 120 S [4]	N	*205*
		100	EI 90 S	N	*205*
	in, combined installation	150	EI 90 S	N	*209*
	in, multiple installation	150	EI 90 S	N	*211*
	in, with concrete base	100	EI 120 S [4]	N	*213*
	in, with concrete base, combined installation	100	EI 90 S	N	*214*
	in, with concrete base, multiple installation	100	EI 90 S	N	*216*
	in, hollow tile slabs	150	EI 90 S	N	*219*
	in, hollow core slabs	150	EI 90 S	N	*220*
	in, ribbed ceilings	150 [2]	EI 90 S	N	*221*
	in, composite ceilings	150	EI 90 S	N	*222*
	in, combined with wooden beam ceilings	150	EI 90 S	N	*223*

[1] The class of performance depends on the installation details
[2] Thickness increased near the installation opening
[3] Depending on local conditions
[4] Up to EI 90 S with stainless steel casing

N = Mortar-based installation
E = Installation kit
W = Coated board system
T = Dry mortarless installation

Overview of installation situations					
Supporting construction	**Installation location/construction**	**Minimum thickness [mm]**	**Performance class EI TT (v_e–h_o, i ↔ o) S up to**	**Installation type**	**Chapter**
	in, combined solid wood ceiling	150	EI 90 S	N	*224*
	in, combined lightweight ceiling, Cadoldo system	150	EI 120 S [1, 4]	N	*225*
	in, combined lightweight ceiling, system ADK modular space	125	EI 90 S	N	*226*
	in, combined, FireShield ®	150	EI 90 S	N	*237*
	in, installation block ER	100 (150) [2]	EI 90 S	E	*228*
	on the face of, installation kit WA2	150	EI 90 S	E	*230*
		150	EI 60 S	E	*230*
	underneath (horizontal duct), installation kit WE2	125	EI 90 S	E	*232*
	above (horizontal duct), installation kit WE2	125	EI 90 S	E	*232*
	in, fire batt	100 (150) [2]	EI 120 S [4]	W [1]	*238*
		100 (150) [2]	EI 90 S	W [1]	*238*
Solid wood ceilings	in	140	EI 90 S	N	*241*
		112.5	EI 90 S	N	*241*
	in, installation kit TQ2	140	EI 90 S	E	*242*
		112.5	EI 90 S	E	*242*
	in, installation kit TS2	140	EI 120 S	E	*243*
Wooden panel elements	in	140	EI 90 S	N	*245*
	in, installation kit TQ2	140	EI 90 S	E	*246*
Wooden beam ceilings	in	167.5	EI 90 S	N	*247*
		155	EI 60 S	N	*247*
		142.5	EI 30 S	N	*247*
	in, installation kit TQ2	167.5	EI 90 S	E	*250*
		155	EI 60 S	E	*250*
		142.5	EI 30 S	E	*250*
	in, historic wooden beam ceilings	– [3]	EI 30 S	N	*253*

[1] The class of performance depends on the installation details
[2] Thickness increased near the installation opening
[3] Depending on local conditions
[4] Up to EI 90 S with stainless steel casing

N = Mortar-based installation
E = Installation kit
W = Coated board system
T = Dry mortarless installation

5.2 Safety notes regarding installation

Sharp edges, sharp corners and thin sheet metal parts

CAUTION!

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

Sharp edges, sharp corners and thin-walled sheet metal parts can cause abrasions and cuts to the skin.

– 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 must remain accessible for maintenance.
- Loads imposed on the casing or that hinder the closing of the damper blade may impair the function of the fire damper. This problem should be avoided at all times during installation and while connecting the ducting. 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 ↳ *262* .
- Do NOT remove the product sticker or the adhesive tape from the damper.
- Protect the fire damper from humidity and condensation.
- The construction variants with stainless steel or powder-coated casing and additionally with an impregnated damper blade meet more critical requirements for corrosion protection.
- To ensure that the fire damper can be connected to the ductwork after installation even if the wall or ceiling is fairly thick, you should extend the fire damper with a suitable extension piece (attachment or by others) on the installation side, ↳ *Chapter 6 'Accessories' on page 260* .
- When installing the FKRS-EU, the statics of the supporting construction (wall/ceiling) must be ensured by others, even in the event of a fire.
- The following applies unless stated otherwise in the installation details:
  – Each fire damper is to be installed in its own installation opening. Distance between two fire dampers ≥ 200 mm.
  – The distance to uncovered steel beams is ≥ 75 mm.
  – No more than two fire dampers in the same installation opening.
  – Fire dampers may be installed in mortar-based and coated board system installations at a distance of ≥ 40 mm from wooden beams or wooden ceilings and steel beams with fire protection cladding (reduced distances to other supporting structures may be possible on request). In dry mortarless installation with installation kit TQ2, the distance is 55 mm with a shortened orifice plate. The fire-resistant cladding must be manufactured in accordance with a national or European certificate and must have full surface contact (no cavities) with the supporting structure.
- 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 must be ensured on site by others, e.g., by switching off the fan or by mutual interlocking in the case of the construction with a spring return actuator.
- The interior of the fire damper must be accessible for maintenance and cleaning. For this purpose, Type FKRS-EU fire dampers have an inspection access that is closed with a rubber stopper ↳ *21* . Depending on the installation configuration, it may be necessary to provide additional inspection access points in the connecting ducts.
  As an alternative to the inspection access, we recommend connecting the duct using flexible connectors (fastened with hose clamp) or sliding spigots.
- When mounting two fire dampers side by side and arranging the drives between the fire dampers, provide sufficient clearance for inspection.
- Load-bearing structural elements
  This category includes solid ceilings, concrete beams and load-bearing solid walls.
- Distance to partitioning panels
  The minimum distances between a partitioning panel and other openings or installations, e.g. fire dampers, are usually given in the usability certificates of each partitioning panel. A partitioning panel must not be located in the direct installation area of the fire damper (installation in separate installation opening, exception: combined penetration seal and fire protection brick bulkhead).
- Individual electrical lines used for the power supply/communication of the fire damper may be routed through the mortar bed of the damper during the mortar-based installation.
- Connecting duct and extension piece
  It is possible to insert screws near the spigots for fixing.

After installation

- Clean the fire damper.
- Fire dampers of nominal size 315 mm and without installation block are shipped with a transport and installation protection. In case of mortar-based installation this protection must not be removed until the mortar has hardened. To remove the transport/installation protection, pull it out of the fire damper on the operating side.
- Test the function of the fire damper.
- Connect the ductwork.
- Make electrical connections.

For installation in the UK please note:

The final connection between the fire damper and the HVAC ductwork should include a break-away joint, which will allow collapse of the ductwork during a fire without disturbing the integrity of the fire damper. Break-away or flexible joints (e.g. flexible connectors) should incorporate materials, fixings, clamps, etc, that are manufactured from a non-fire resistant material with a low melting point such as aluminium, plastic, etc.

Flexible connectors

- As ducts may expand and exert forces, 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
  - Fire protection bricks

  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.

Equipotential bonding

The equipotential bond is fixed, for example, with suitable clamps. Alternatively, it is allowable for drilled holes to be made near the spigots.

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

Thermal insulation

As suitable insulating materials, especially for outdoor air or exhaust air components, you can use fully bonded panels made of elastomer foams (synthetic rubber), e.g. Armaflex Ultima from Armacell. Be sure to comply with the relevant national guidelines and regulations for combustible building materials and smoke development 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 remain accessible.
- The insulation does not penetrate walls or ceilings.

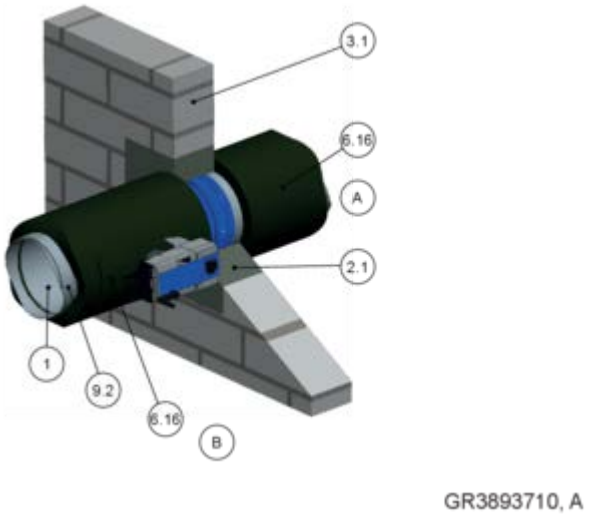


Fig. 18: Thermal insulation

1 FKRS-EU
2.1 Mortar
3.1 Solid wall
6.16 Perimeter insulation (elastomer foam, flame-resistant, non-dripping); actuator and release mechanism, inspection accesses and product sticker must be accessible
9.2 Air duct/extension piece

Note: The installation situation shown applies to all supporting constructions.

For installation in Germany, please note:
In Germany, only insulation materials with a fire behaviour of at least C - s2, d0, may be used according to the specifications of the MVV TB (since 2019/1). This requirement is met by Armaflex Ultima insulation material from Armacell, for example. The applicable local building regulations must be complied with.
For information on the use of elastomer foams see ↳ *'Additional provision for use in Germany:' on page 8* .

The following applies to Great Britain:

The final connection between the fire damper and the ventilation and air conditioning systems should include a break point that allows the ventilation system to collapse in the event of a fire without compromising the integrity of the fire damper. Breakaway or flexible connections (e.g. flexible connectors) should include materials, fixings, clips, etc. made of a non-fire resistant material with a low melting point such as aluminium, plastic, etc.
If an extension piece is required (e.g. due to a thicker wall or a protruding damper blade), the connection between the extension piece and the fire damper must be made without breakable connections.

Installation positions

The fire damper can be installed with the damper blade shaft in any position (0 to 360°). The position of the release mechanism is not critical but the mechanism must remain accessible for maintenance.

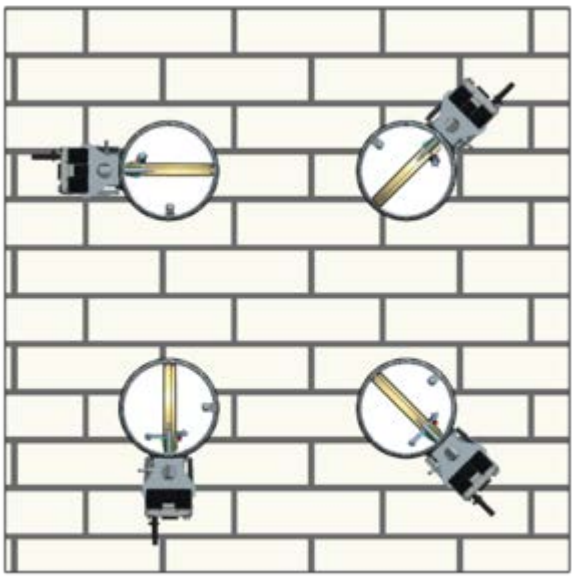


Fig. 19: Installation positions

If a duct smoke detector is installed in the connected duct, it must be positioned at the top.
You may choose a different arrangement as long as you comply with the general building inspectorate licence/ general type certification for the duct smoke detector.

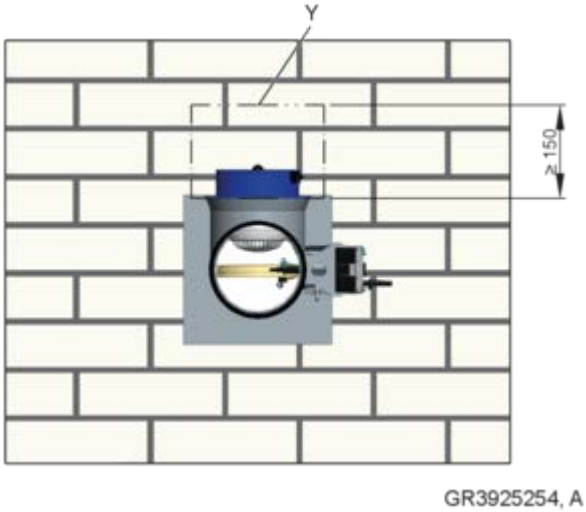


Fig. 20: FKRS-EU with spring return actuator and smoke detector (example RM-O-3-D)

Y Keep clear for operation and maintenance

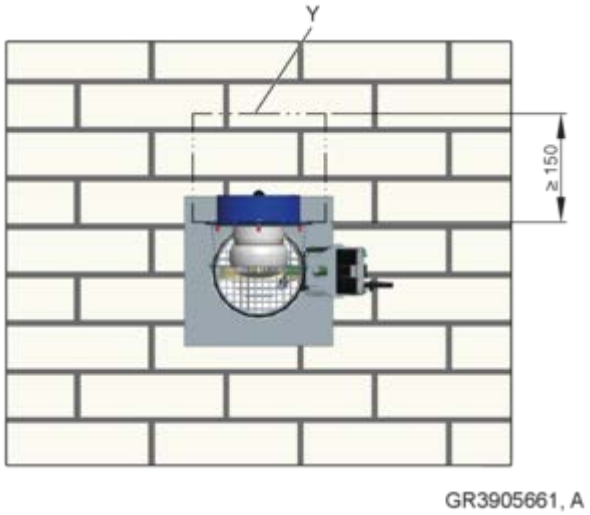


Fig. 21: FKRS-EU with spring return actuator and duct smoke detector as an air transfer damper (MFD)

Y Keep clear for operation and maintenance

Distances

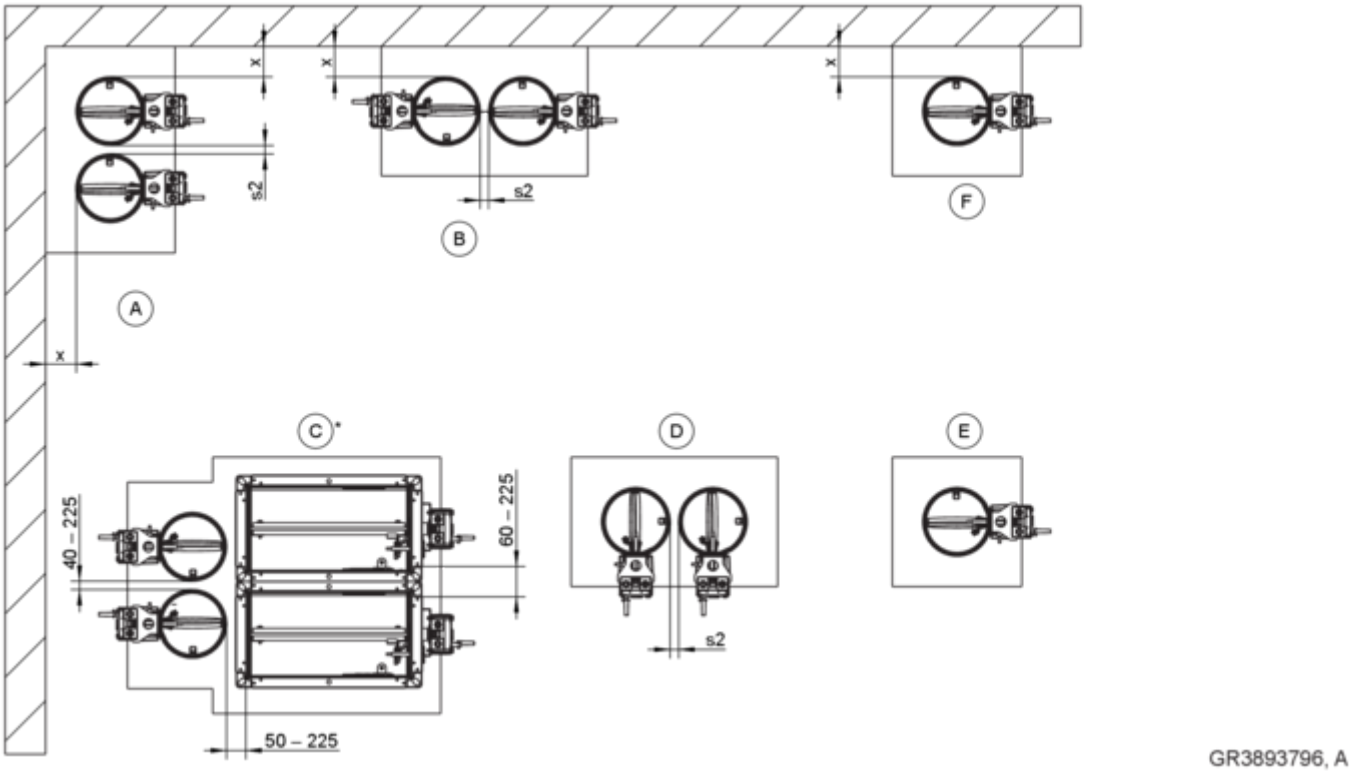


Fig. 22: Overview of distances

* Combined installation with fire damper type FK2-EU

Distances (unless stated otherwise in the installation details)

Installation type	x [mm]	s2 [mm]
Mortar-based installation	40 – 225	10[3] – 225
Mortar-based installation with partial mortaring [4]	40 – 50	40 – 225
Dry mortarless installation with installation block ER [1, 2]	≥ 75 [6]	≥ 200 [6]
Dry mortarless installation with installation kit TQ2 [1.2]	100 / 55 [5]	≥ 200
Dry mortarless installation with installation kit WA2	≥ 75	≥ 200
Dry mortarless installation with fire batt	40 – 600	10[3] – 600

[1] See "Installation openings" table under the respective installation details
[2] Installation into separate installation openings
[3] Minimum distance depends on fire resistance rating and supporting construction. Supporting construction, *'Installation orientation (see installation details for fire resistance rating)' on page 36*
[4] Solid wall only
[5] With shortened cover plate
[6] Distance between installation block(s)

Installation orientation (see installation details for fire resistance rating)

Supporting construction	Installation type		
	Mortar-based installation	Dry mortarless installation	Coated board system installation
Solid wall	A – F	E	A, B, D – F
Gypsum wallboard with W = 80 – < 100 mm	E, F		
Lightweight partition wall with metal support	A – F	E, F	A, B, D – F
Timber stud wall/half-timbered wall	A – F	E, F	A, B, D – F
Solid wood wall/CLT wall	A, B, D – F	E, F	E, F
Shaft wall with metal support structure	A – F	E, F	E, F
Asymmetrical shaft wall	E, F	E, F	
Shaft wall without metal support structure	E, F	E, F	
Sandwich panel wall		E *	
Solid ceiling slab	A – F	E	E
FireShield ®	E*		
Hollow chamber ceiling, hollow tile slab, composite ceiling, ribbed ceiling	A, B, D – F		
In combination with a lightweight ceiling (Cadolto system)	A, B, D – F		
In combination with lightweight ceiling (ADK Modulraum system)	A, B, D – F		
In/combined with a solid wood ceiling	E/A, B, D – F	E/–	
Wooden panel elements	E	E	
In/combined with a wooden beam ceiling	E/A, B, D – F	E/–	
In historic wooden beam ceilings	E		

* The following applies to Germany: Installation requires a project-related type approval.

Perimeter gap „s1“

- For mortar-based installation, the perimeter gap »s1« is limited to 225 mm (wall and ceiling). The perimeter gap must be large enough so that installation and filling with mortar are possible, even in case of thicker walls or ceilings. Larger wall openings must be sealed beforehand, matching the type of wall. In case of larger openings in solid ceilings, the dampers can be encased in concrete during construction of the ceiling section. The minimum gap can be reduced, but must be large enough for mortaring. We recommend that the mortar gap should not be smaller than 20 mm (observe the minimum installation opening, gap dimensions between 40 and 80 mm are usually practical). Provide reinforcement according to structural requirements.

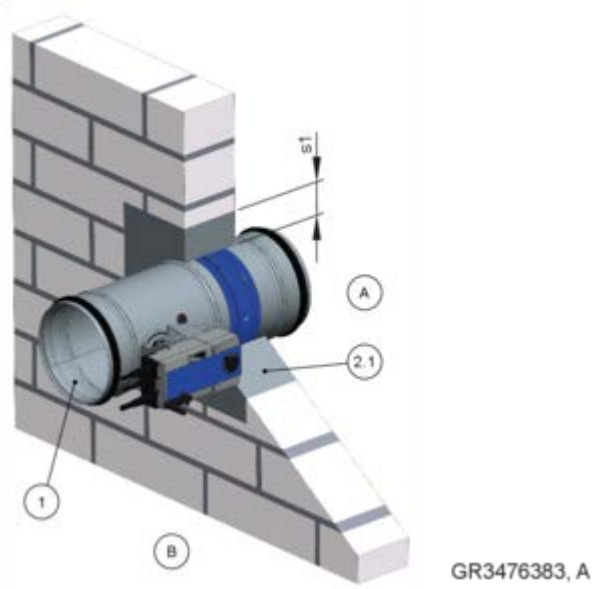


Fig. 23: Perimeter gap

1 FKRS-EU
2.1 Mortar
s1 Perimeter gap

Limitations of maximum gap widths are based on the specifications of European standard EN 15882-2. Larger mortar gaps do not have a negative effect on fire protection and are, in our opinion, harmless.

Mortar-based installation

- Cover all openings and control elements of the fire damper, e.g with plastic, to protect them from contamination (if necessary).
- Push the fire dampers into the installation opening in a centred manner and secure them. The distance from the spigot on the operating side to the wall/ ceiling is 215 mm.
- If the wall thickness is > 115 mm, extend the fire damper on the installation side with an extension piece or a spiral duct.
- In case of mortar-based installation, the cavities between the damper casing and the wall or ceiling must be completely filled with mortar. Air pockets must be avoided. The mortar bed depth should be equal to the thickness of the wall, but must be at least 100 mm.
- The bond between the mortar and the supporting construction must be ensured on site. If necessary, create a form-fit connection, e.g., screws in the installation opening for mortar-based installation in wooden beam ceilings.
- If you install the fire damper during the construction of the solid wall or solid ceiling, perimeter gap "s1" is not required. Any cavities between the fire damper and the wall must be closed off with mortar. For installation into solid ceilings, open spaces can be filled with concrete. Provide reinforcement according to structural requirements.
- For lightweight partition walls, the mortar bed depth should be equal to the thickness of the wall. If reveals with appropriate fire resistance are used, a mortar bed depth of 100 mm is sufficient.

Mortar

- DIN 1053: Groups II, IIa, III, IIIa; or firestop mortar of groups II, III
- EN 998-2: Classes M 2.5 to M 20 or firestop mortar of classes M 2.5 to M 20
- Firestop mortar to BS 476: Part 20
- Mortar or firestop mortar that has been verified by an ETA; if necessary, special installation conditions or restrictions of the ETA must be observed (e.g. minimum/maximum clearance must be observed)
- Equivalent mortars that meet the requirements of the above standards, gypsum mortar, or concrete

Installation without mortaring

For installation without mortaring, installation blocks or installation kits can be used:

- in walls and ceilings: ER, *5.4.2 'Installation block ER' on page 47* and TQ2, *5.4.3 'Installation kit TQ2' on page 48*
- on walls and ceilings: WA2, *5.4.4 'Installation kit WA2' on page 50*
- away from walls and ceilings: WE2, *5.4.5 'Installation kit WE2' on page 52*
- in lightweight walls with flexible ceiling joint: GL2, *5.4.6 'Installation kit GL2' on page 54*
- in solid wood ceilings (twin installation): TS2, *5.4.7 'Installation kit TS2' on page 57*

Mineral wool infill

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

Installation remote from walls with mineral wool

- Installation is carried out on sheet steel ducts without any openings, with fire-resistant cladding.
- The following materials should be used for the fire protection cladding of fire dampers and ducts:
  - PAROC Hvac Fire Mat BlackCoat* (≥ 80 kg/m³)
- The wall connections must be made in accordance with these instructions. Fittings must be configured according to PAROC specifications.
- When installing in conjunction with coated board system, use "PAROC Pyrotech Slab 140".

* Please check in advance whether the PAROC material is available in your market region.

Installation in coated board system

- For installation into coated board systems, the distance from the operating side spigot to the wall/ceiling has to be 215 mm
- Coated board systems always consist of two layers of mineral wool slabs, bulk density ≥ 140 kg/m³ and must be provided by the client.
- The mineral wool slabs must be glued tightly into the installation opening, using fire protection sealant. Seal any gaps between the mineral wool slabs and the installation opening, gaps between the cut surfaces of key pieces, and gaps between slabs and the fire damper by applying fire protection sealant or coating. Use only sealant or coating that is suitable for the coated board system.
- Apply firestop coating to the mineral wool slabs, ridges, transitions and to any damage on the pre-coated mineral wool slabs; coating thickness ≥ 2.5 mm.
- Depending on the selected installation situation and fire resistance rating, the damper casings must be partially firestop-coated, thickness ≥ 2.5 mm. The actuator and release mechanism and also the product label must not be coated.
  Permitted alternatives:
  - Mineral wool strips > 1000 °C, > 80 kg/m³, thickness = 20 mm
  - Pipe collars (can be ordered separately)
  - Elastomer foam strips (flame-resistant, non-dripping)
    The following applies in Germany: For notes on the use of elastomeric foams, see *8*.
- Fix fire dampers on both sides of the wall/ceiling; for deviations, see *Chapter 5.15.3.1 'Duct, horizontal' on page 256*.
- For installation into walls and fixing to the ceiling (see *255*), combinations with flexible ceiling joints are not possible.
- If the wall/ceiling is fairly thick, you must use additional layers of mineral wool slabs on side A.
- Only installation in solid walls and ceilings without hollow spaces. If hollow spaces are present, they must be completely sealed with mortar all around to a depth of ≥ 100 mm.

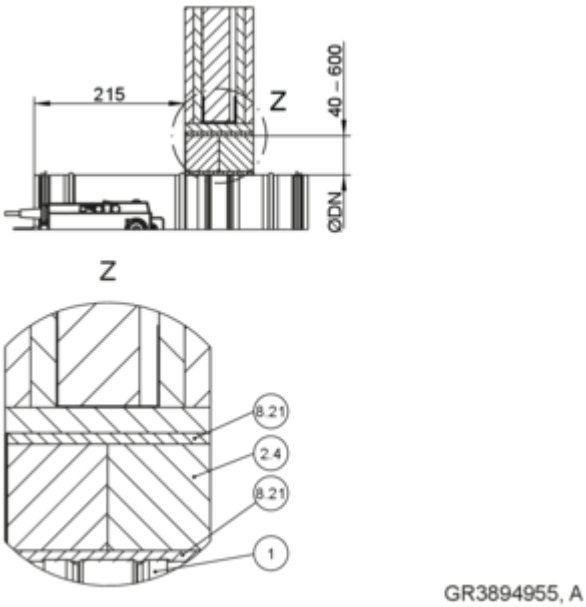


Fig. 24: Positioning the fire protection sealant

1 FKRS-EU
2.4 Coated board system with firestop coating
8.21 Acrylic fire protection sealant

Coated board systems

The fire batt systems listed below can be used. All rock wool slabs belonging to the system can be used if they are listed in the ETA (European Technical Assessment) of the system.

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

FLAMRO

- BML Fire protection coating ablative
- MCE Fire protection sealant ablative

Rockwool

- Firestop coating FIREPRO® Acoustic Intumescent Sealant
- Firestop sealant FIREPRO® Acoustic Intumescent Sealant

KBS

- Firestop coating KBS Coating
- Firestop sealant KBS Sealant

In addition to the listed fire batt systems, alternative fire batt systems with ablative coatings can be used if they fulfil the following requirements:

- Non-flammable slab material, melting point ≥ 1000°C, minimum thickness 50 mm
- Minimum density of the panel material 140 kg/m³
- Ablative coating, fire behaviour at least class E... according to EN 13501-1
- Test certificate in accordance with EN 1366-3 (submission of a valid ETA is sufficient as proof of suitability, provided the required information is included). The suitability of the fire batt systems in terms of fire resistance is tested on site

Dimensions and distances for coated board system for wall installation

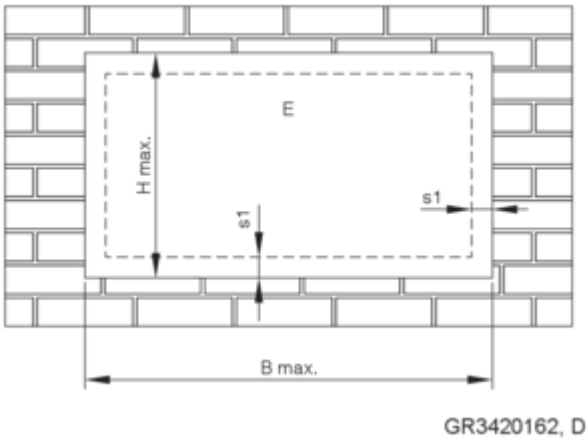


Fig. 25: Fire batt – installation in solid walls and ceilings, lightweight partition, timber stud wall, half-timbered construction and solid wood walls

E Installation area

Coated board system	B max. [mm]	H max. [mm]
Promat®	≤ 3750	≤ 1840
Hilti	≤ 3000	≤ 2115
Hensel	≤ 1900	≤ 1400
SVT		
OBO Bettermann		
Würth		
AGI		
FLAMRO®		
Rockwool		
KBS	≤ 1200	≤ 1200

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

Installation with combined penetration seal

Combined penetrating installation of FKRS-EU and FK2-EU fire dampers, together with cables and pipes in a Hilti soft penetration seal system (CFS-CT, CP 670 and CP 673), are permitted in the TROX combined penetration seal. The positions of the fire dampers, pipes and cables in the combined penetration seal are irrelevant as long as the specified distances are maintained. Bulkhead sizes up to B1 × H1 = 3000 × 2000 mm are possible.

Installation is permitted in solid walls, as well as lightweight partition walls with metal or timber support structure and solid wood walls. The European Technical Assessment ETA-21/0528 dated 29 June 2021 (available on request) serves as supplementary evidence.

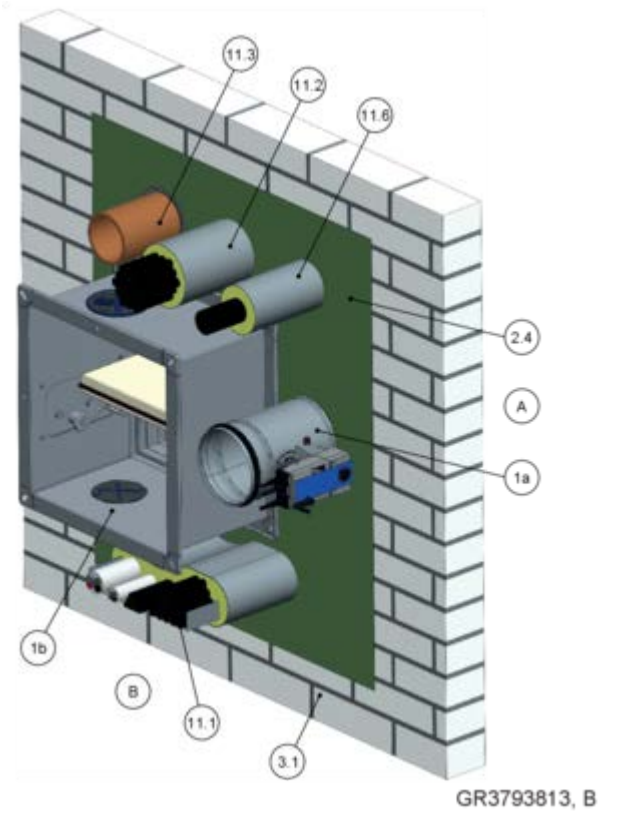


Fig. 26: Combined penetration seal (drawn solid wall)

1a FKRS-EU
1b FK2-EU
2.4 Coated board system with firestop coating
3.1 Solid wall
11.1 Cable tray
11.2 Cable harness
11.3 Pipe penetration
11.6 Cable gland

Note: For more information on the combined penetration seal, refer to the installation and operating manual for the combined penetration seal.

Additional provision for use in Germany:

- Use with a combined penetration seal in Germany requires official approval.

Installation in fire protection block bulkhead

- fire damper penetrations are permitted with firestop blocks (CFS-BL) in solid walls, lightweight partition walls with metal support and sandwich panel walls.

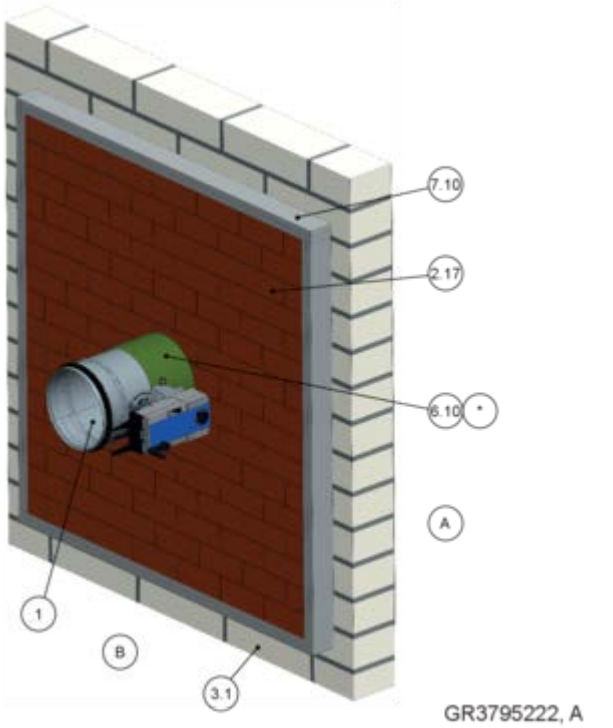


Fig. 27: Fire protection block bulkhead (single penetration)

1 FKRS-EU
2.17 Firestop blocks Hilti CFS-BL
3.1 Solid wall
6.10 Firestop coating around the perimeter, d = at least 2.5 mm
6.19 Mineral wool > 1000 °C, > 80 kg/m³, thickness = 20 mm, panel material around the perimeter, leave out the actuator and release mechanism; inspection openings must remain accessible
6.20 Pipe collar (can be ordered separately)
6.24 Elastomeric foam (flame-resistant, non-dripping) The following applies in Germany: For notes on the use of elastomeric foams *'Additional provision for use in Germany:' on page 8*.
7.10 Reveal, fire-resistant, double-layered, required for wall thicknesses < 200 mm
9.2 Air duct/extension piece
* 6.19, 6.20 or 6.24 as an alternative

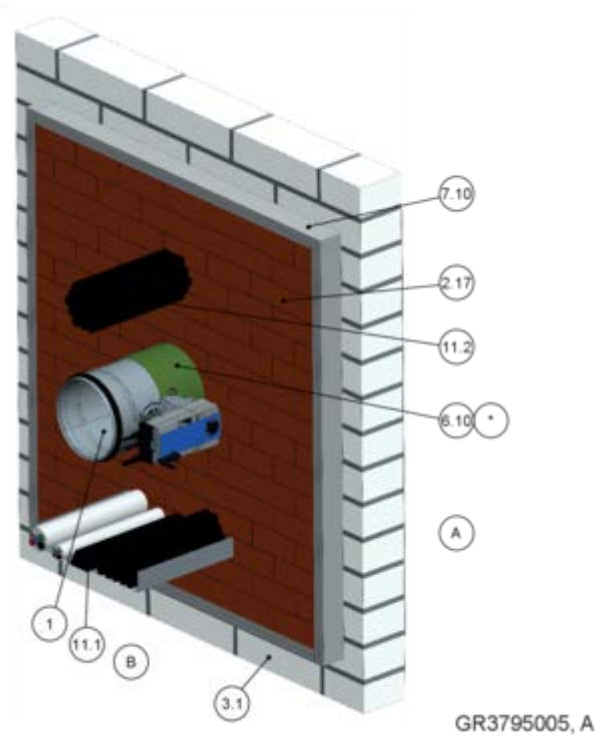


Fig. 28: Fire protection block bulkhead (combined penetration)

1 FKRS-EU
2.17 Firestop blocks Hilti CFS-BL
3.1 Solid wall
6.10 Firestop coating around the perimeter, d = at least 2.5 mm
6.19 Mineral wool > 1000 °C, > 80 kg/m³, thickness = 20 mm, panel material around the perimeter, leave out the actuator and release mechanism; inspection openings must remain accessible
6.20 Pipe collar (can be ordered separately)
6.24 Elastomeric foam (flame-resistant, non-dripping) The following applies in Germany: For notes on the use of elastomeric foams ↳ *'Additional provision for use in Germany:' on page 8* .
7.10 Reveal, fire-resistant, double-layered, required for wall thicknesses < 200 mm
11.1 Cable tray
11.2 Cable harness
* 6.19, 6.20 or 6.24 as an alternative

Note: Further information on the fire protection block bulkhead can be found in the additional assembly instructions for the fire protection block bulkhead.

Additional provision for use in Germany:

- Use in fire protection block bulkheads in Germany requires official approval.
- Hilti company provides additional information on the cable feedthroughs and the firestop blockCFS-BL.

5.3.1 Requirements for wall and ceiling systems

FKRS-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 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.

The structural safety of the wall/ceiling must be ensured (by the customer). Compensation measures, especially with regard to large installation openings, must be determined on a case to case basis (by the customer).

5.3.1.1 Wall systems

- **Solid walls**
  - Made of concrete, aerated concrete, masonry or solid gypsum wallboards in accordance with EN 12859 (without cavities, wallboard thickness W min. 80 mm), bulk density ≥ 350 kg/m³.
  - Wall thickness W ≥ 100 mm (≥ 75 mm in case of mortar-based installation).
  - Provide each installation opening and core drillings according to the local and structural conditions and with regard to the dimensions of the fire damper.
  - Cavities created during wall breaks and cut holes in supporting structures must be filled to a depth of at least 100 mm before the fire damper is installed, so that the overall fire resistance rating of the supporting structure is restored.

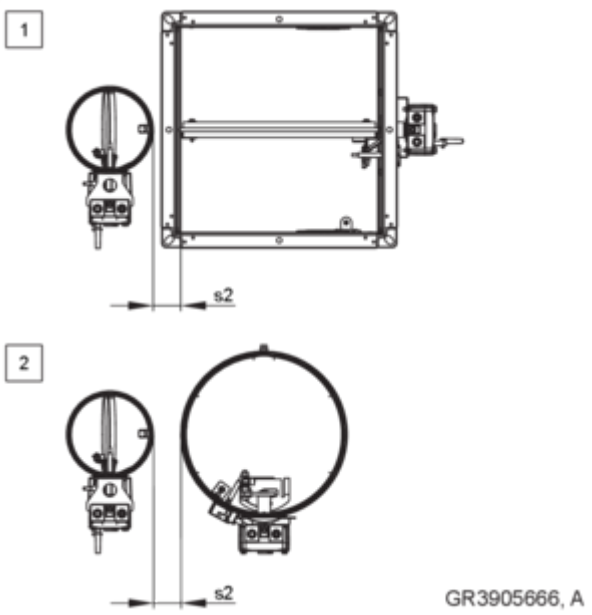


Fig. 29: Distance from the FKRS-EU to other TROX fire dampers in mortar-based installation

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

Seq. no.	Damper combination up to EI 90 S	s2 [mm]
1	FKRS-EU – FK2-EU	≥ 50
2	FKRS-EU – FKR-EU	≥ 40

- **Metal stud walls**
  - Lightweight partition walls, fire and safety partition walls or radiation protection walls, with metal studs or steel substructure, with European classification according to EN 13501-2 or equivalent national classification.
  - Cladding on both sides made of gypsum-bonded or cement-bonded panel materials, gypsum fibreboards, or fire protection calcium silicate boards.
  - Wall thickness W ≥ 94 mm.
  - Distance between metal studs ≤ 625 mm; distance between metal studs for compartment walls ≤ 312.5 mm.
  - Constructions as fire or safety partition walls can contain sheet steel inserts or steel nets.
  - Create an installation opening with trimmer and angle section.
  - If necessary, provide reveals and screw-fix them to the framework at approx. 100 mm intervals.
  - Additional layers of cladding or double stud constructions (if covered by the usability certificate for the wall) are permissible.
  - Connect the metal sections near the installation opening according to the installation details in this manual.
  - If reinforcing boards are required, screw-fix them to the metal support structure at intervals of approx. 100 mm.
  - Installation only in non-load-bearing walls (load-bearing wall constructions on request).
  - Upgrade of wall structures with fire-rated plasterboard panels on plasterboard construction panels for EI 30 S to EI 60 S is permitted.
  - Country-specific lightweight partition walls can be constructed with alternative framework and wall structures. The geometry of the metal profiles can deviate from standard metal profiles. Use of the FKRS-EU in such walls is permitted if the wall construction has been approved by the wall manufacturer. This also applies to wall structures with metal inserts, metal nets or additional layers of wooden composite boards. European and national evidence (report or expert assessments, etc.) and also additional tests and classifications carried out by testing institutes are accepted as evidence.

- **Timber stud walls and half-timbered walls**
  - Lightweight partition walls with timber studs or half-timbered construction, with European classification according to EN 13501-2 or equivalent national classification. This also includes walls in accordance with 4102-4 or EN 1995-1-2, Eurocode 5, provided that the minimum wall thicknesses corresponding to the required fire resistance rating are complied with in the installation area.
  - Distance between timber studs ≤ 625 mm; half-timbered constructions ≤ 1000 mm.
  - Cladding on both sides made of gypsum-bonded or cement-bonded panel materials, gypsum fibreboards, or fire protection calcium silicate boards.
  - Additional layers of cladding or double stud constructions (if covered by the usability certificate for the wall) are permissible.
  - Timber studs, wall thickness W ≥ 130 mm (W ≥ 110 with F60, W ≥ 105 with F30); half-timbered construction, wall thickness W ≥ 140 mm (W ≥ 110 with F30).
  - Erect the timber stud wall or half-timbered construction according to the manufacturer's instructions.
  - Additional layers of cladding or double stud constructions (if covered by the usability certificate for the wall) are permissible.
  - Create framed opening in the timber support structure with noggings and reveals.
  - Reveal and reinforcing boards have to be made of cladding material and have to be fixed to the framework.

- **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 in the installation area on the operating or installation side to W ≥ 100 mm).
  - If required, additional layers of gypsum or cement-bonded board panel materials or gypsum fibreboards are permissible.

- **Sandwich panel walls**
  - Self-supporting sandwich panels/layered boards (sheet steel ≥ 0.5 mm, both sides, mineral wool filling, ≥ 1000°C, ≥ 115 kg/m^3).
  - Wall thickness ≥ 100 mm to 200 mm.

- **Walls of modular systems**
  - Room systems in steel construction version with double-layer reveal made of fire-rated plasterboard panels, composite panels or comparable panel materials.
  - Individual modular wall constructions with certified fire resistance rating.
  - Additional assembly instructions for room modules according to the module manufacturer's specifications.
  - Mortar-based or dry mortarless installation with installation kits.
  - In dry mortarless installation with installation kits, fire dampers can be installed without a minimum distance under modular ceiling designs with a proven fire resistance rating. For this purpose, the cover plate of the installation kit must be professionally shortened on one side. As a replacement for the missing fixings, fixing screws must be provided on the H-sides of the cover plate, close to the floor or the ceiling. Predrill the screw holes with ∅ 4 mm.

- **Shaft walls with metal support structure**

  Shaft walls or facing shells with metal stud or steel support structure and European classification according to EN 13501-2 or comparable national classification.

  Cladding on one side made of gypsum-bonded or cement-bonded panel materials, gypsum fibreboards or fire protection calcium silicate boards. Shaft wall construction EI 30 and EI 60 can be constructed with cladding made of Promatect 100. The fire protection certificates and manufacturer's specifications must be observed.
  - Wall thickness W ≥ 90 mm.
  - Cladding/reinforcing boards according to installation details.
  - Thickness of the cladding, including the reinforcing board ≥ 55 mm. No reinforcement needed if the thickness of the wall cladding is ≥ 55 mm.
  - Distance between metal studs ≤ 625 mm.
  - Be sure to follow the manufacturers' instructions for the height, width and thickness of walls.
  - Create an installation opening with trimmer and angle section. If necessary, provide reveals and screw-fix them to the framework at approx. 100 mm intervals.
  - Installation with the operating side (B) on the room end.

- **Asymmetrical shaft walls**
  - Shaft wall constructions for use in Great Britain with the use of solely national panel building materials and metal profiles.
  - Can be used when access is only possible from one side during installation.
  - The fire damper is mounted with the operating side (B) on the room side.
  - Be sure to follow the manufacturers' instructions for the heights and widths of walls.
  - For further information, see "Additional assembly instructions for asymmetrical shaft walls in fire dampers, type FKRS-EU".

- **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, gypsum fibreboards, or fire protection calcium silicate boards.
  - Shaft wall between two solid walls, without corner formation.
  - Wall thickness W ≥ 50 mm (in case of installation with WA2, W ≥ 40 mm).
  - If reinforcing boards are required, screw-fix them at intervals of approx. 100 mm.

5.3.1.2 Ceiling systems

- **Solid ceilings**
  - Solid ceilings without hollow spaces, made of concrete or aerated concrete, bulk density ≥ 450 kg/m³.
  - Ceiling thickness D ≥ 100 mm, thickness increased to D ≥ 150 mm where required (unless stated otherwise in the installation details).
  - Partial solid ceiling, d ≥ 150 mm when combined with a fire-resistant wooden beam ceiling (also glulam), solid wood ceilings and ceilings from modular systems (except for room-in-room systems).
  - Provide each installation opening and core drillings according to the local and structural conditions and with regard to the dimensions of the fire damper.
  - Other ceiling types:
    – Hollow tile slabs, D ≥ 150 mm
    – Hollow core ceiling, D ≥ 150 mm
    – Ribbed ceilings, locally thickened to D ≥ 150 mm
    – Composite ceilings, D ≥ 150 mm
  - The structural properties of the ceiling and the connection of the mortar/concrete grouting to the ceiling or any necessary reinforcement must be checked and taken into account by others.

- **FireShield ® ceiling recess elements**
  - Ceiling recess elements with FireShield ® systems secure the access zones with treadable and waterproof elements made of lightweight concrete or comparable materials.
  - Fire resistance up to EI 90 (European and national certificates apply as proof).
  - Use of fire dampers with surrounding concrete block according to installation details.
  - The statics and fire resistance rating of the overall construction must be assessed and documented on site.
  - Additional assembly instructions for room modules according to the FireShield ® manufacturer's specifications.
  - The national requirements for the combination of FireShield ® recess elements with fire dampers must be checked and observed on site.
  - For installation in Germany, please note: Use in FireShield ® requires individual type-approval.

- **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 panel elements**
  - Panel elements or hollow box elements made of industrially manufactured wooden elements with low weights and high load-bearing strength.
  - Elements with or without insulating material filling with proven fire resistance are permissible, provided that a circumferential framed opening is included in the installation area.
  - Ceiling voids must be filled with ceiling construction materials for at least 100 mm circumferentially, with mortar in the case of mortar-based installation.
  - The statics and fire resistance rating of the overall construction must be assessed and documented on site.
  - Additional assembly instructions for wooden surface and wooden block elements according to the manufacturer's specifications.

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

- **Historic wooden beam ceilings**
  - Historic wooden beam ceilings structurally F30 or fire protection-technically F30-approved.
  - The statics and fire resistance rating of the overall construction must be assessed and documented on site.

- **Ceilings of modular systems**
  - Room modules in the steel construction version with double-layer reveal made of fire-rated plasterboard, composite panels or comparable panel materials.
  - Individual modular ceiling constructions with certified fire resistance rating.
  - Installation in the ceiling as mortar-based installation with mortar or concrete, alternative installation in the concrete block above the ceiling systems.
  - The statics and fire resistance rating of the overall construction must be assessed and documented on site.
  - Additional assembly instructions for room modules according to the module manufacturer's specifications.

Installation in walls and ceilings with slope

The use of fire dampers in walls and ceilings with slope is permitted if the fire damper remains completely in the inclination plane of the wall/ceiling. The position of the damper blade shaft is horizontal.

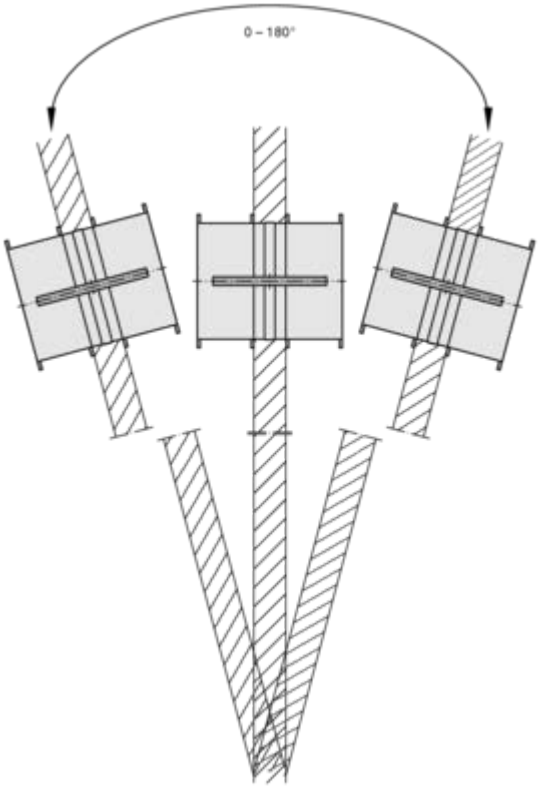


Fig. 30: Installation in walls and ceilings with slope

5.4 Installation kits

5.4.1 Overview of installation block and installation kits

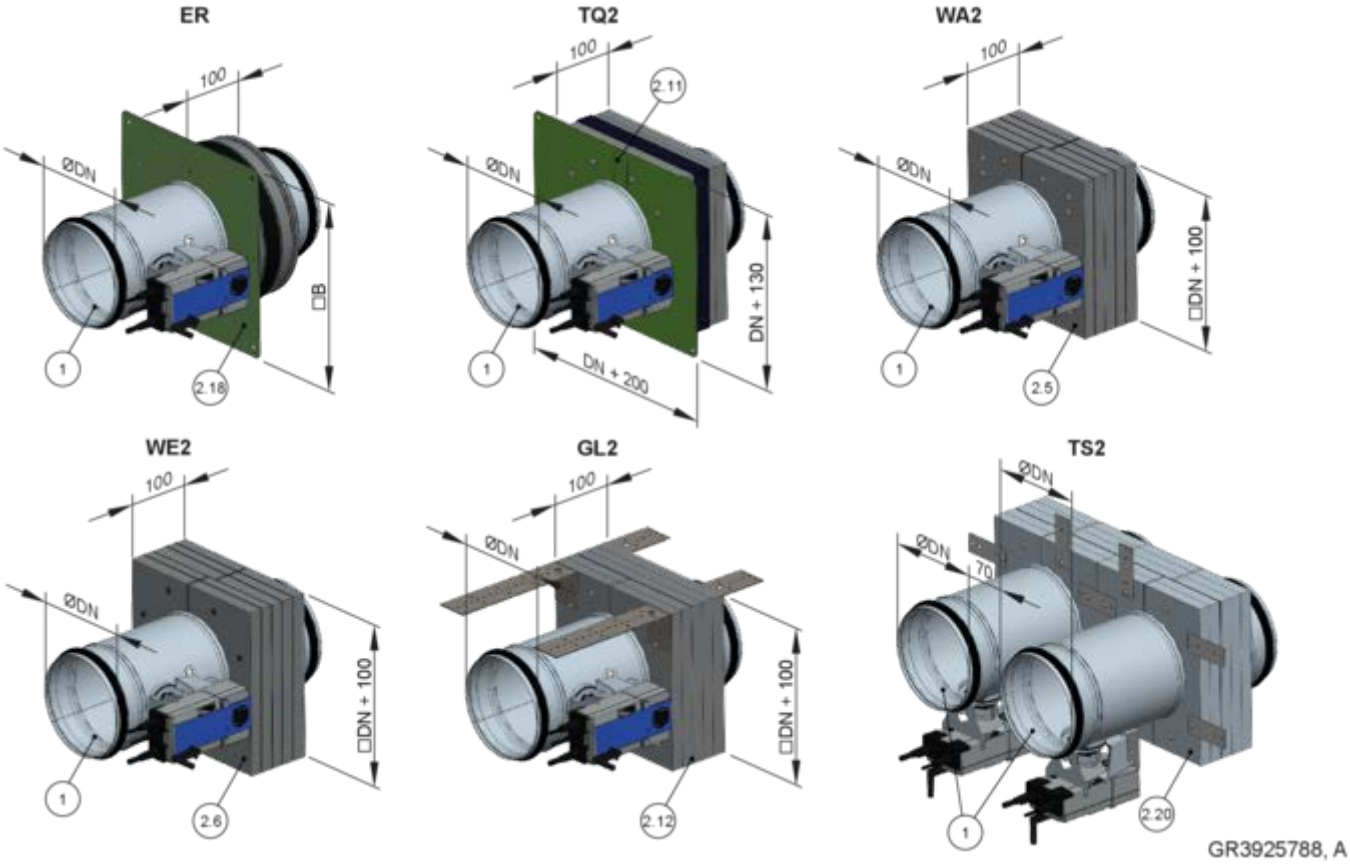


Fig. 31: Overview of installation block and installation kits

1	FKRS-EU	2.12	Installation kit GL2
2.5	Installation kit WA2	2.18	Installation block ER with cover plate
2.6	Installation kit WE2	2.20	Installation kit TS2
2.11	Installation kit TQ2		

5.4.2 Installation block ER

Installation block ER for dry mortarless installation into cut holes in solid walls and ceilings

- The installation block ER is an integral component of the fire damper (factory fitted) and must be ordered together with the damper.
- Only installation in solid walls and ceilings without hollow spaces. If hollow spaces are present, they must be completely sealed with mortar all around to a depth of ≥ 100 mm.
- The installation of the installation block is always centred in the installation opening.
- Circular installation opening ER: ∅D1, ↳ *5.4.1 'Overview of installation block and installation kits' on page 46* .

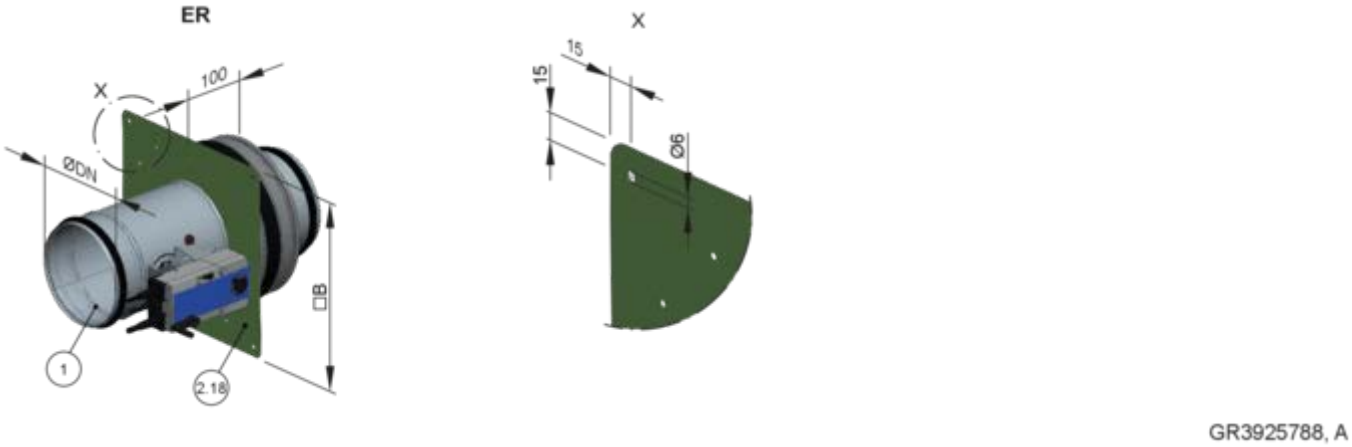


Fig. 32: Supply package and installation of installation block ER for dry mortarless installation

1 FKRS-EU
2.18 Installation block ER with cover plate

Dimensions of installation opening/cover plate [mm]										
Nominal size	**100**	**125**	**150**	**160**	**180**	**200**	**224**	**250**	**280**	**315**
∅DN	**99**	**124**	**149**	**159**	**179**	**199**	**223**	**249**	**279**	**314**
∅D1*	200	250	250	250	300	300	350	350	400	400
□B	250	300	300	300	350	350	400	400	450	450

Installation opening tolerance ±2 mm

* Diameter of the core drill hole in solid walls and ceilings

5.4.3 Installation kit TQ2

Installation kit TQ2 for dry mortarless installation into walls

- Installation kit TQ2 is supplied separately and has to be installed on site.
- The installation kit can also be ordered subsequently.
- Make square installation opening with nominal width + 110 mm.
- The installation kit is installed in the installation opening in such a way that a gap of 5 mm ("Tolerant +/-2 mm") is maintained from the installation kit (calcium silicate).
- If specified in the installation details, the cover plates of the installation kit TQ2 can be proficiently shortened on one side for installation near the ceiling and floor.
  As a replacement for the missing fixings, fixing screws must be provided on the H-sides of the cover plate, close to the floor or the ceiling.
- When using reveals, these are limited to a maximum of 25 mm or 2 × 12.5 mm.

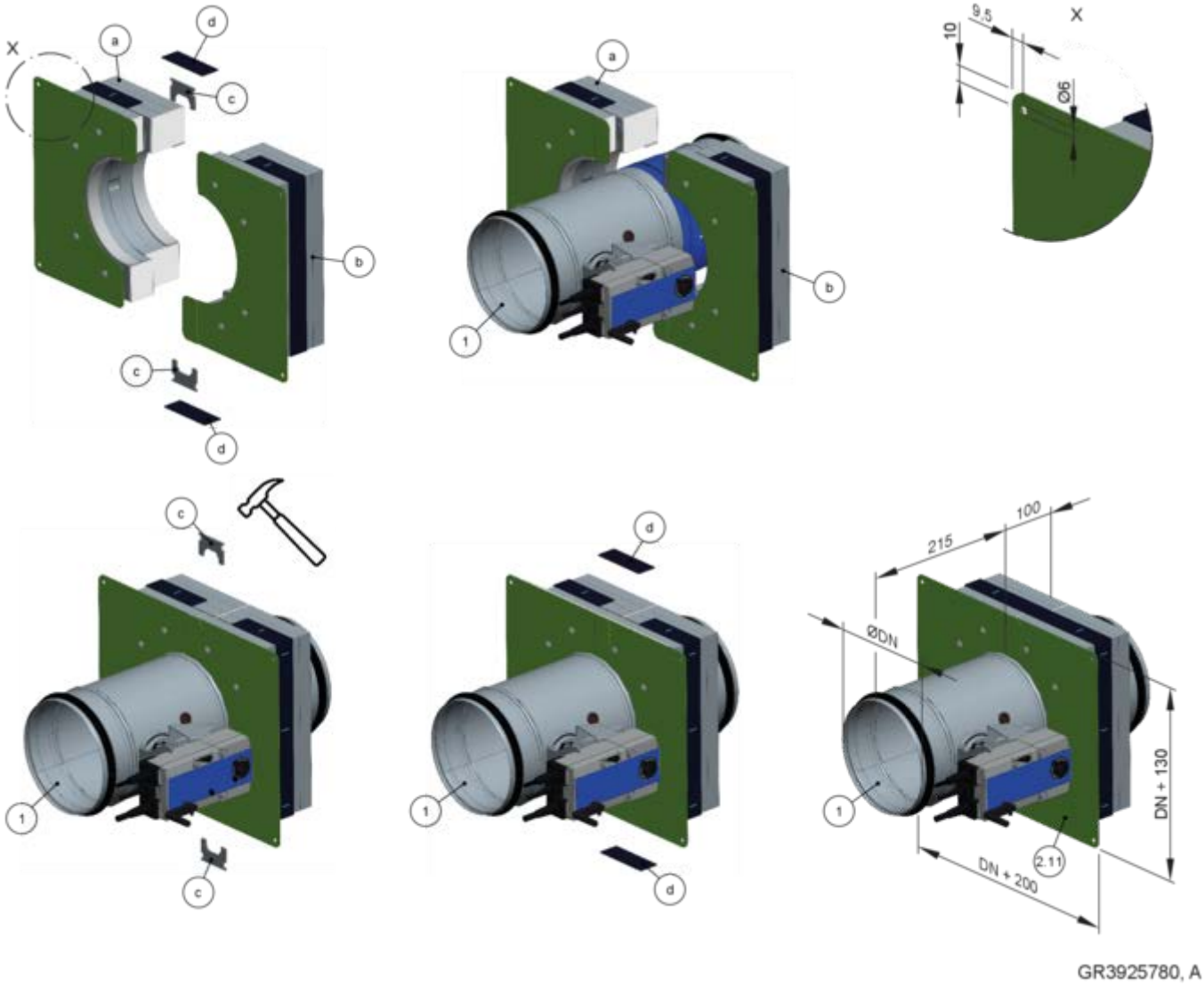


Fig. 33: Supply package and installation of installation kit TQ2 for dry mortarless installation

1	FKRS-EU	b	Half shell 2
2.11	Installation kit TQ2, consisting of:	c	Connecting clamp (2 ×)
a	Half shell 1	d	Intumescent seal (2 strips)

Installation of installation kit TQ2

1. Place half shells (2.11a) and (2.11b) of the installation kit (2.11) around the FKRS-EU so that the cover plate is flush with the bead. Fix the installation kit with two connecting clamps (2.11c) (any installation position of the FKRS-EU). Carefully drive in the connecting clamps bit by bit using a hammer, turning the fire damper with installation kit several times if necessary.
2. Affix intumescent seal (2.11d).

Dimensions of installation opening/cover plate [mm]										
Nominal size	**100**	**125**	**150**	**160**	**180**	**200**	**224**	**250**	**280**	**315**
∅DN	**99**	**124**	**149**	**159**	**179**	**199**	**223**	**249**	**279**	**314**
□A	209	234	259	269	289	309	333	359	389	424
DN + 200	299	324	349	359	379	399	423	449	479	514
DN + 130	229	254	149	289	309	329	353	379	409	444

Installation opening tolerance ±4 mm

5.4.4 Installation kit WA2

Installation kit WA2 for dry mortarless installation on solid walls

- The installation kit WA2 is supplied separately and must be installed by the customer.
- The installation kit can also be ordered subsequently.
- Installation is carried out on solid walls and ceilings in front of a core drill hole DN + 10 - 30 mm. If hollows are present in the wall/ceiling, they must be completely sealed with mortar all around to a depth of ≥ 100 mm.
- The installation is carried out on a mortared-in, shortened air duct mounted flush into the wall/ceiling with additional reinforcing board made of calcium silicate, d = 30 – 50 mm or mineral wool, ≥ 1000 °C, ≥ 140 kg/m³ , d = 50 mm.
- Installation is carried out on shaft walls with and without a metal support structure and cladding on one side with a round installation opening with nominal width + 5 mm, fastening of the installation kit by means of push-through mounting.

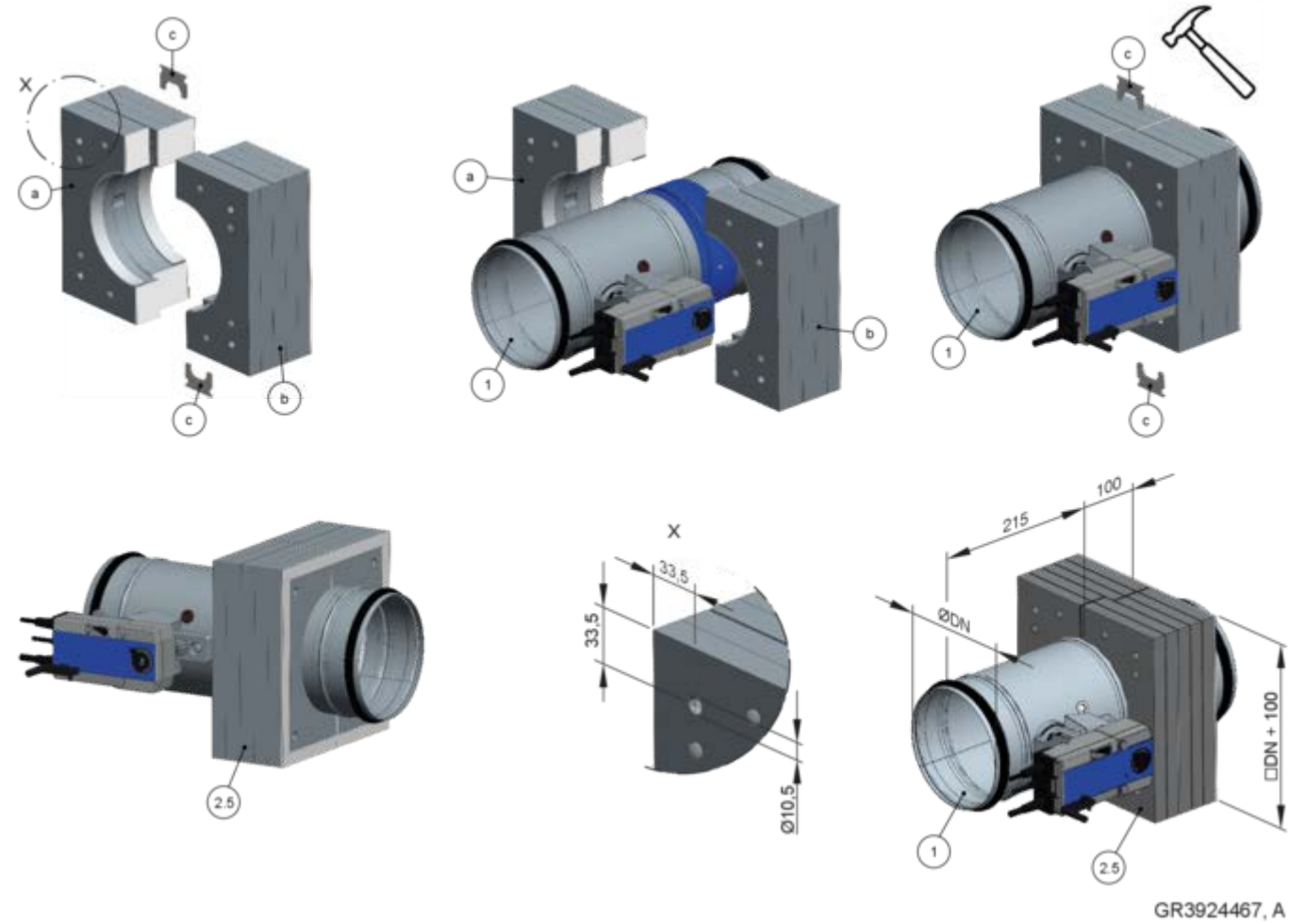


Fig. 34: Supply package and installation of installation kit WA2 for dry mortarless installation

1 FKRS-EU
2.5 Installation kit WA2, consisting of:
a Half shell 1 with Kerafix sealing tape
b Half shell 2 with Kerafix sealing tape
c Connecting clamp (2 ×)

Installation of installation kit WA2

- Place the half shells (2.5a) and (2.5b) of the installation kit (2.5) around the FKRS-EU so that it is flush with the bead (screw connections of the installation kit aligned towards the operating side). Fix the installation kit with two connecting clamps (2.5c) (any installation position of the FKRS-EU). Carefully drive in the connecting clamps bit by bit using a hammer, turning the fire damper with installation kit several times if necessary.

5.4.5 Installation kit WE2

Installation kit WE2 for installation remote from solid walls and ceilings as well as remote from lightweight partition walls

- The installation kit WE2 is supplied separately and must be installed on site.
- The installation kit can also be ordered subsequently.
- The installation is carried out on a sheet steel duct without openings with fire-resistant cladding, optionally made of:
  – Promatect® LS35 (d = 35 mm)
  – Promatect® L500 (d = 40 mm)
  – Promatect® AD40 (d = 40 mm)
- The wall/ceiling connections must be made in accordance with these instructions and the supplementary assembly instructions WE2.
- Enough clearance is required to mount the installation kit onto the fire damper.
- fire dampers installed remote from walls and ceilings need to be suspended or fixed.
  Suspension systems with L ≥ 1.5 m require fire-resistant insulation. Use cladding or mineral wool insulation according to the manufacturer's specifications.
- No installation remote from walls with flexible ceiling joint
- For more installation details and for components to be provided by others, see the supplementary installation manual WE2.

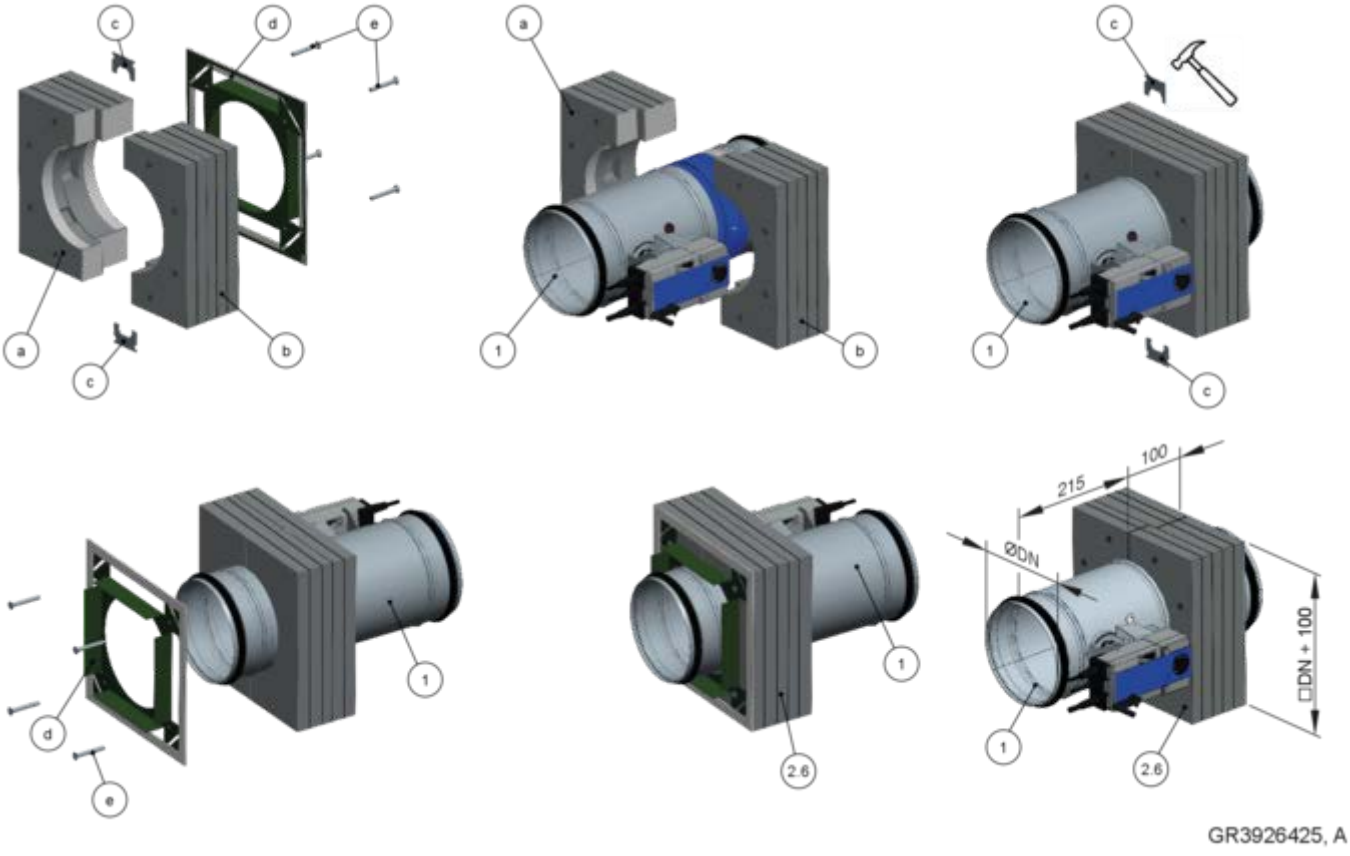


Fig. 35: Scope of supply and assembly Installation kit WE2 for dry mortarless installation

1 FKRS-EU
2.6 Installation kit WE2, consisting of:
a Half shell 1
b Half shell 2
c Connecting clamp (2 ×)
d Sheet metal cover plate with Kerafix sealing tape
e Drywall screw

Mounting installation kit WE2

1. Place the half shells (2.6a) and (2.6b) of the installation kit (2.6) around the FKRS-EU so that it is flush with the bead (screw connections of the installation kit aligned towards the operating side). Fix the installation kit with two connecting clamps (2.6c) (any installation position of the FKRS-EU). Carefully drive in the connecting clamps bit by bit using a hammer, turning the fire damper with installation kit several times if necessary.
2. On the rear of the installation kit (2.6), fix the sheet metal cover plate (2.6d) with 4 dry wall screws (2.6e).

5.4.6 Installation kit GL2

Installation kit GL2 for installation in conjunction with a flexible ceiling joint for metal stud walls with cladding on both sides

- The installation kit GL2 is supplied separately and must be installed on site and adapted to the existing wall thickness.
- The installation kit can also be ordered subsequently.
- The installation is carried out in metal stud walls clad on both sides.
- The installation is carried out near the ceiling under a solid ceiling slab and must be fixed to the ceiling with the supplied brackets.
- When installing with no ceiling fastening on the rear side, the steel angles Fig. 38 and the cover Fig. 39 must be made by the customer.
- For further installation details and components to be provided by the customer, see additional assembly instructions for the flexible ceiling joint.

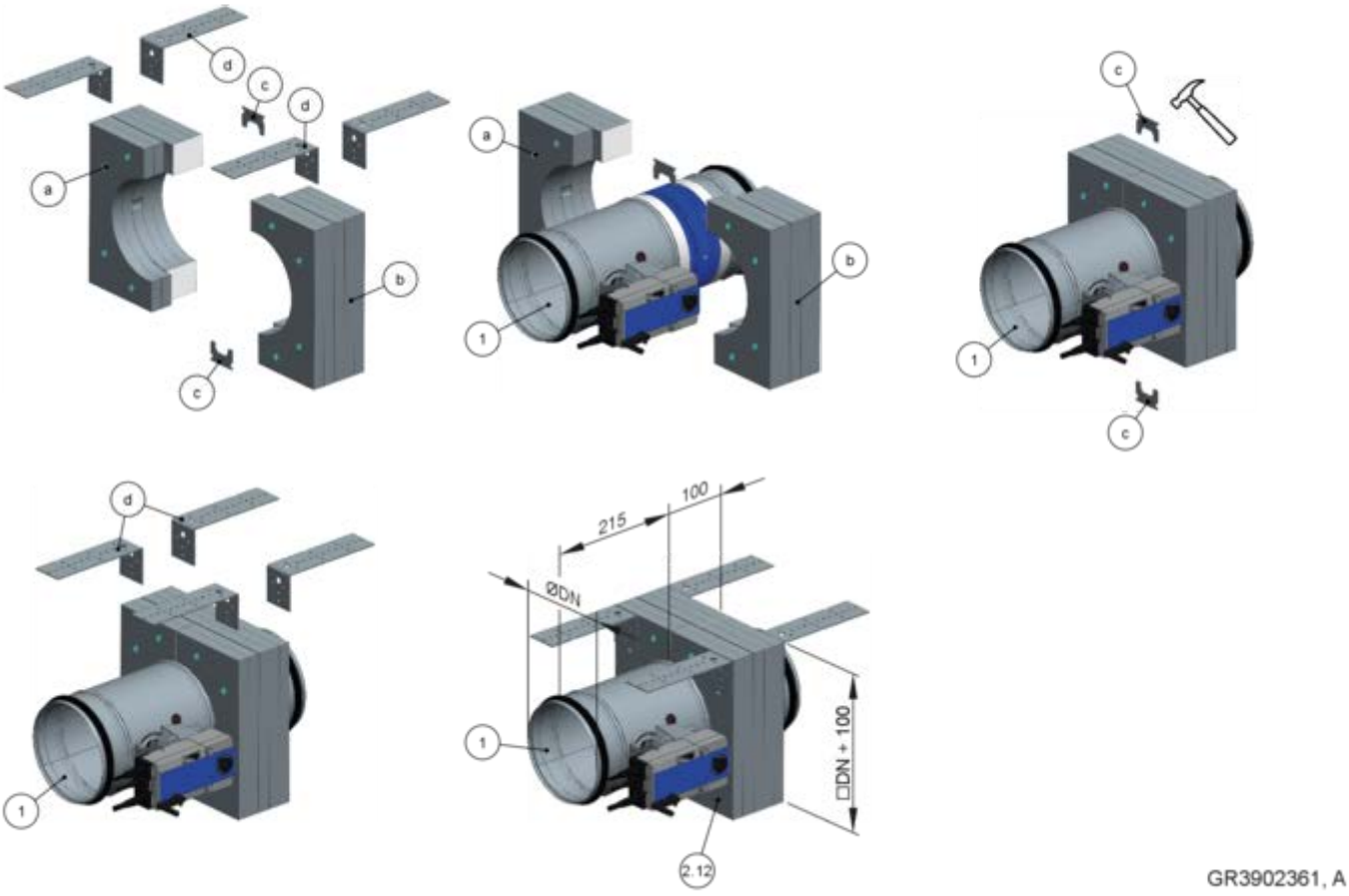


Fig. 36: Supply package and installation of installation kit GL2 for dry mortarless installation

1	FKRS-EU	b	Half shell 2
2.12	Installation kit GL2, consisting of:	c	Connecting clamp (2 ×)
a	Half shell 1	d	Bracket

Installation kit GL2 for installation in conjunction with a flexible ceiling joint in metal stud walls with cladding on both sides and no rear ceiling fitting

- The installation kit GL2 is supplied separately and must be installed on site.
- The installation kit can also be ordered subsequently.

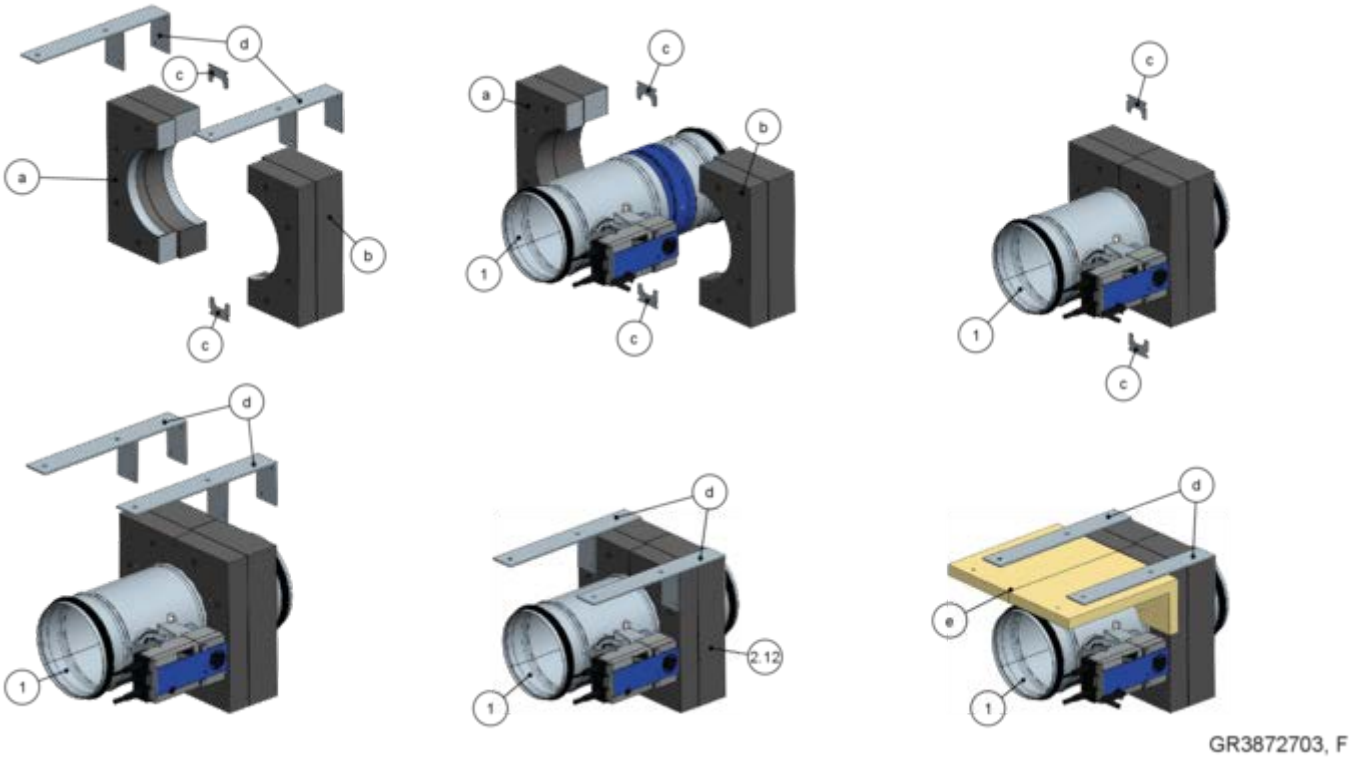


Fig. 37: Scope of supply and installation of installation kit GL2 (steel bracket and cover to be provided by customer) for dry mortarless installation if there is no ceiling fitting on the rear side

1 FKRS-EU
2.12 Installation kit GL2, consisting of:
a Half shell 1
b Half shell 2
c Connecting clamp (2 ×)
d Steel bracket (supplied by customer)
e Cover (supplied by customer)

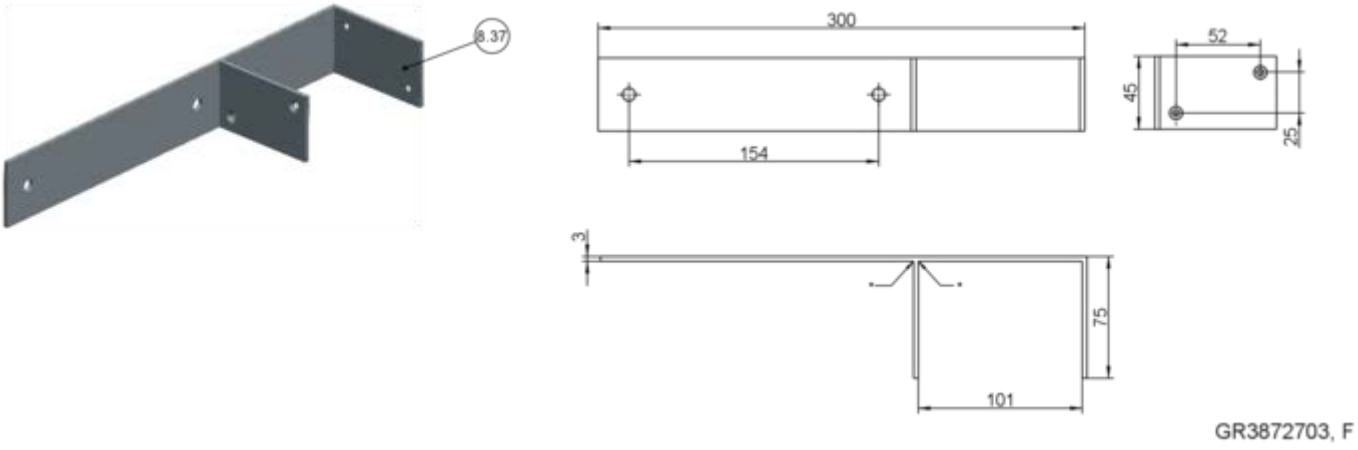


Fig. 38: Steel angle for dry mortarless installation with installation kit GL2 in lightweight partition wall if there is no rear fastening possibility

8.37 Steel bracket, supplied by customer
* Welded seam

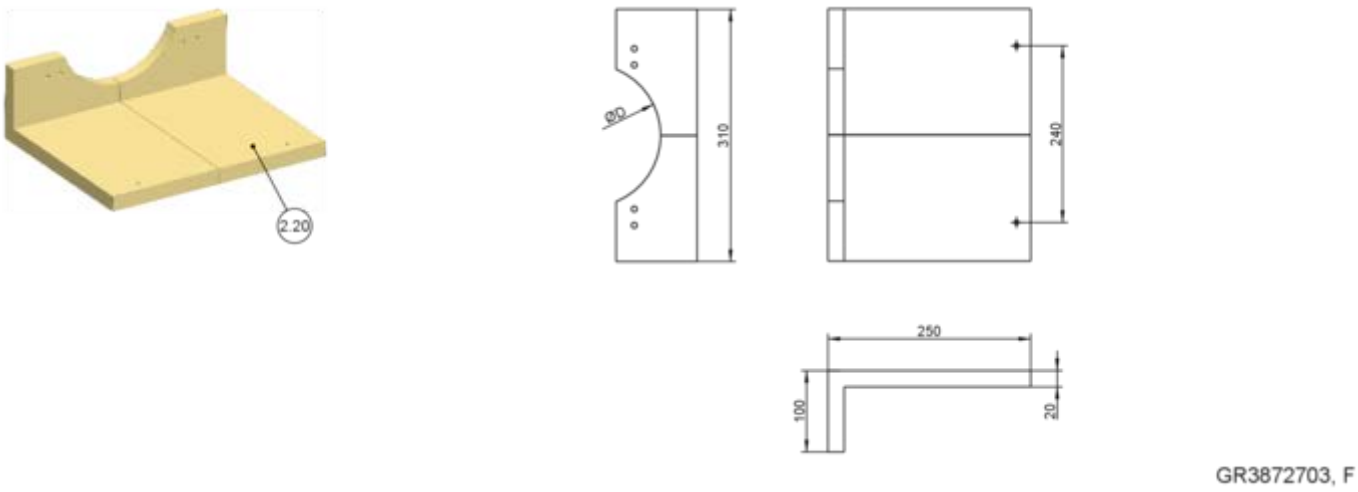


Fig. 39: Cover for dry mortarless installation with installation kit GL2 in lightweight partition wall if there is no rear fixing option

2.20 Cover (one part or two parts) Rigips Glasroc F20, supplied by customer

Cover dimensions [mm]										
Nominal size	**100**	**125**	**150**	**160**	**180**	**200**	**224**	**250**	**280**	**315**
∅D	115	140	165	175	195	215	240	265	295	330
L	250	275	300	310	330	350	375	400	430	465

Installation of installation kit GL2

1. Place the half shells (2.12a) and (2.12b) of the installation kit (2.12) around the FKRS-EU so that it is flush with the bead (screw connections of the installation kit aligned towards the operating side). Fix the installation kit with two connecting clamps (2.12c) (any installation position of the FKRS-EU). Carefully drive in the connecting clamps bit by bit using a hammer, turning the fire damper with installation kit several times if necessary.
2. Fix each bracket (2.12d) to the installation kit with at least two dry wall screws 3.9 × 35 mm.

Alternative fixing by means of on-site steel angles and cover made of Rigips Glasroc F20, see Fig. 100

5.4.7 Installation kit TS2

TS2 installation kit for dry mortarless installation in solid wood ceilings

- The installation kit WE2 is supplied separately and must be installed on site.
- The installation kit can also be ordered subsequently.
- Two FKRS-EU with TS2 (same nominal size) must be connected together to form a twin installation kit.
- Create a rectangular installation opening (for installation opening, see Fig. 183).
- The connected TS2 installation kits are always arranged in the installation opening in such a way that a gap of 2 - 5 mm remains all round. This gap is filled all round from above and below with firestop acrylic sealant.
- It is attached to the solid wood ceiling on 4 sides (or at least 3 sides if installed close to the wall) using lugs.
- Seal the gap between the ceiling opening and the TS2 installation kit on both sides with firestop acrylic sealant (e.g. HILTI CFS-S ACR, supplied by the customer).

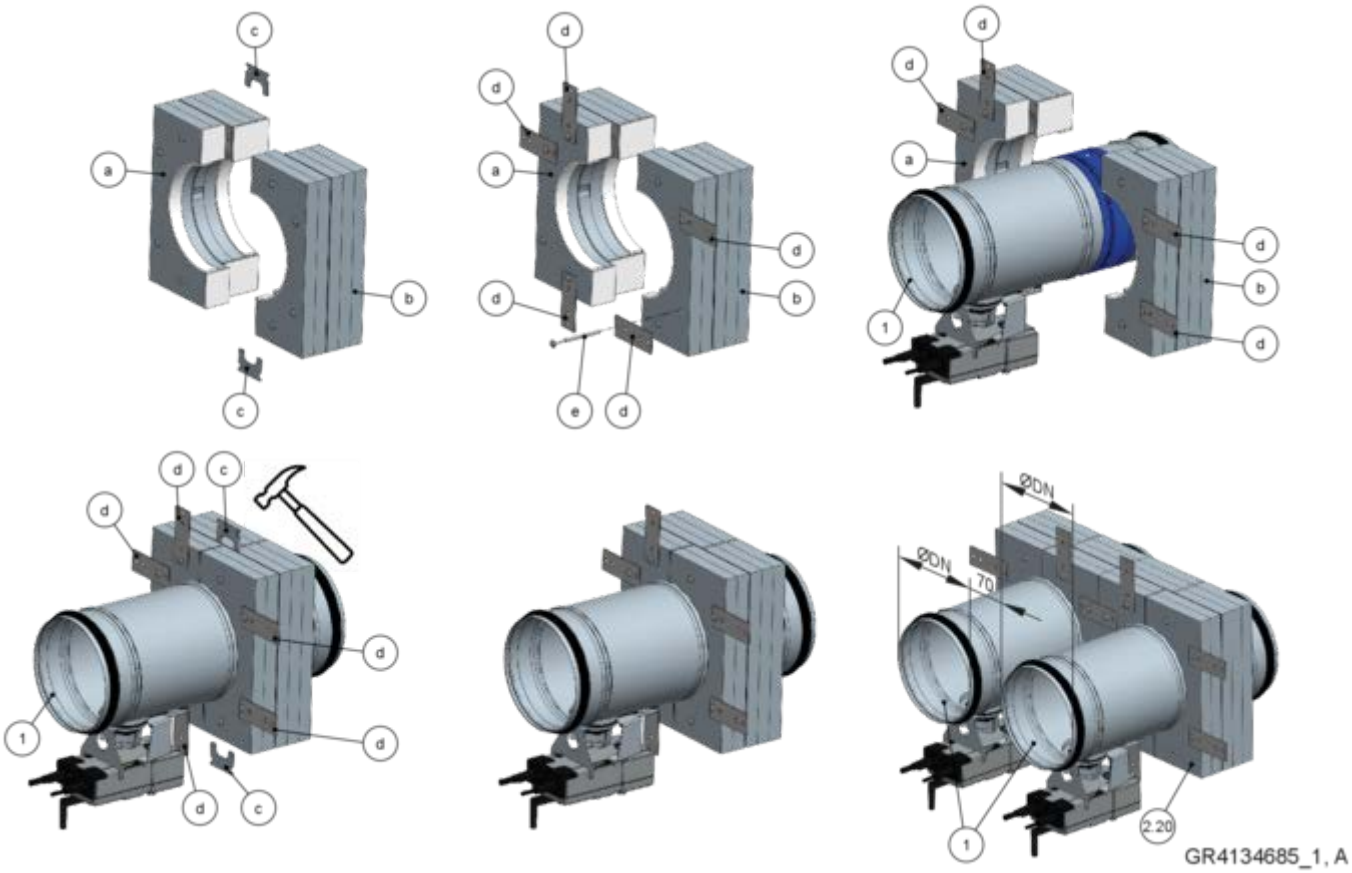


Fig. 40: Supply package and installation of installation kit GL2 for dry mortarless installation

1 FKRS-EU
2.20 1 Installation kit TS2, consisting of:
a Half shell 1 with Kerafix sealing tape
b Half shell 2 with Kerafix sealing tape
c Connecting clamp (2 ×)
d Lugs (6 ×; 5 × operating side, 1 × installation side)
e Screw (reuse dismantled screws)

Assembly of installation kit GL2

1. ▸ Place the half shells (2.20a) and (2.20b) of the installation kit (2.20) around the FKRS-EU so that it is flush with the bead (screw connections of the installation kit aligned towards the operating side).
2. ▸ Fix the installation kit (2.20) with two connecting clamps (2.20c) (any installation position of the FKRS-EU).
3. ▸ Carefully tap in the connecting clamps (2.20c) bit by bit using a hammer, turning the fire damper with installation kit several times if necessary.

Note: Two installation kits TS2 (2.20) are required for twin installation.

Mounting twin installation kit TS2

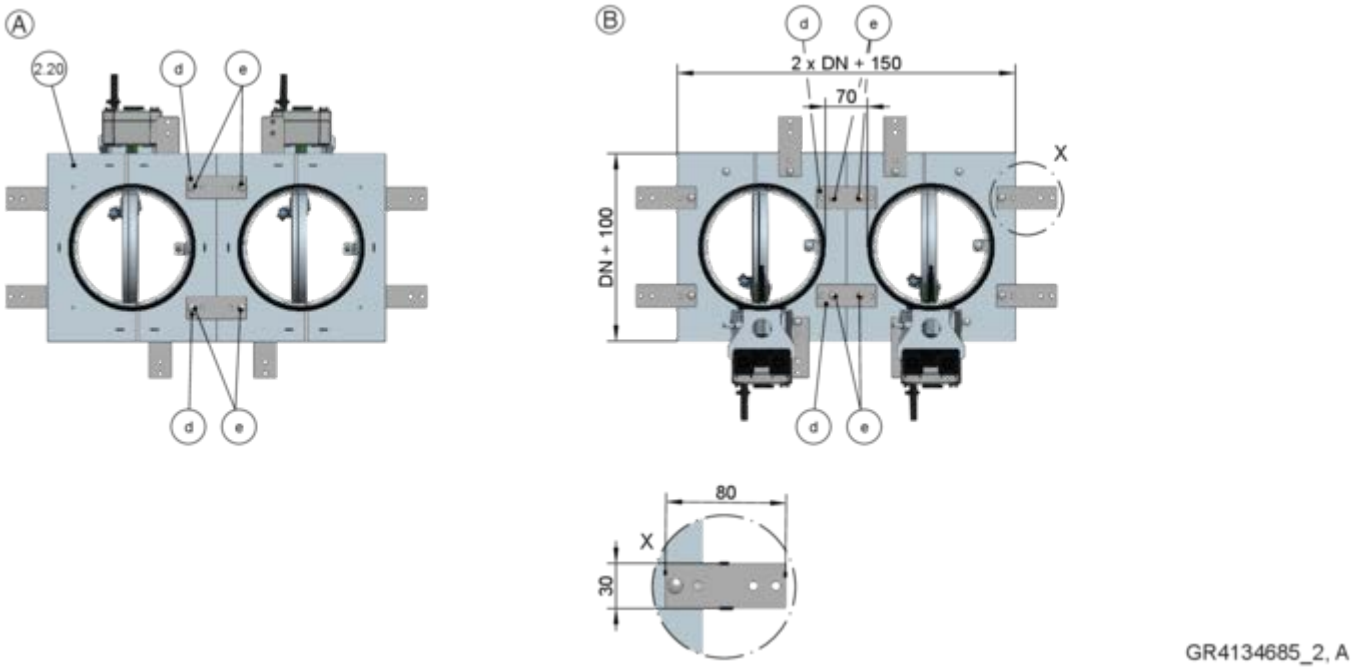


Fig. 41: Mounting twin installation kit TS2

1. Place two assembled installation kits TS2 (2.20) with FKRS-EU next to each other as shown.
2. Unscrew only one screw (2.20e) at a time from the actuator's side of the TS2 and screw it back on directly with a lug (2.20d). (If several screws are removed at the same time, the installation kit will fall apart)
3. To connect the two installation kits TS2 (2.20) to each other, 2 lugs (2.20 d) each on the installation side (A) and operating side (B) must be fastened with screws (2.20e).

Maximum size of the installation opening

installation opening										
Nominal size [mm]	**100**	**125**	**150**	**160**	**180**	**200**	**224**	**250**	**280**	**315**
ØDN [mm]	**99**	**124**	**149**	**159**	**179**	**199**	**223**	**249**	**279**	**314**
Width [mm]	360	410	460	480	520	560	608	660	720	790
Height [mm]	210	235	260	270	290	310	334	360	390	425

Tolerance - 5 mm

5.5 Solid walls

5.5.1 General information

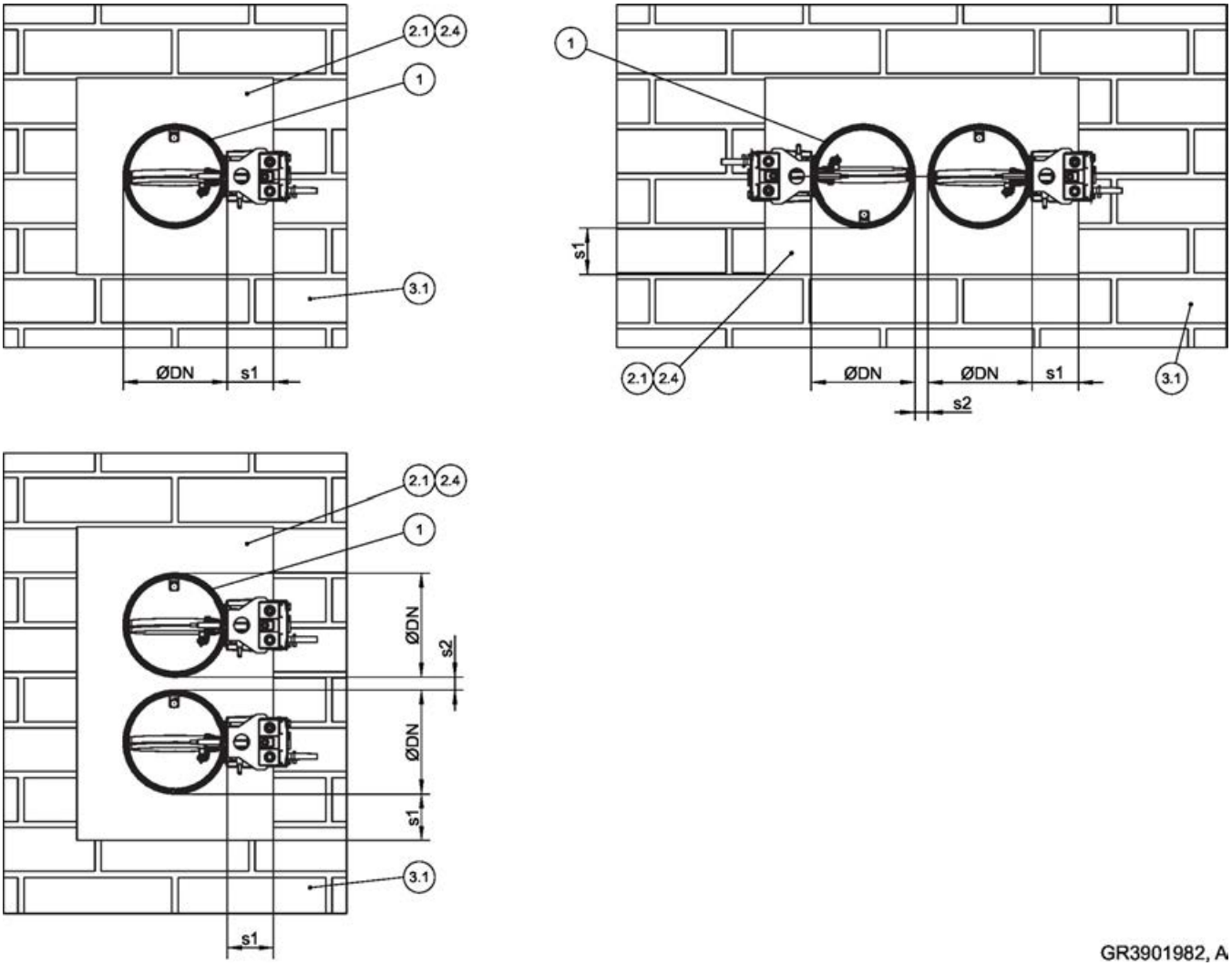


Fig. 42: Solid walls – arrangement/distances

1 FKRS-EU
2.1 Mortar
2.4 Coated board system with firestop coating
3.1 Solid wall
s1 Perimeter gap, ↳ *on page 37*
s2 Distance between the fire dampers, ↳ *'Distances' on page 35*

Installation type	Installation opening [mm]	Distance [mm]	
		s1	s2
Mortar-based installation	∅DN + max. 450	≤ 225	10/40 [2] – 225
Dry mortarless installation with ER	↳ *5.4.2 'Installation block ER' on page 47*	central installation	≥ 200 [3]
Dry mortarless installation with TQ2	□A = ∅DN + 110 [4]	central installation	≥ 200
Dry mortarless installation with coated board system [1]	□A = ∅DN + max. 1200	40 – 600	10/40 [2] – 600

[1] Observe the maximum permissible size of the coated board system!
[2] Depending on fire resistance rating
[3] Distance between the installation blocks
[4] Installation opening tolerance ± 4 mm

Additional requirements: solid walls

- Solid wall, *on page 42*
- Distances and installation orientation, *'Distances' on page 35*

5.5.2 Mortar-based installation

Mortar-based installation into a solid wall

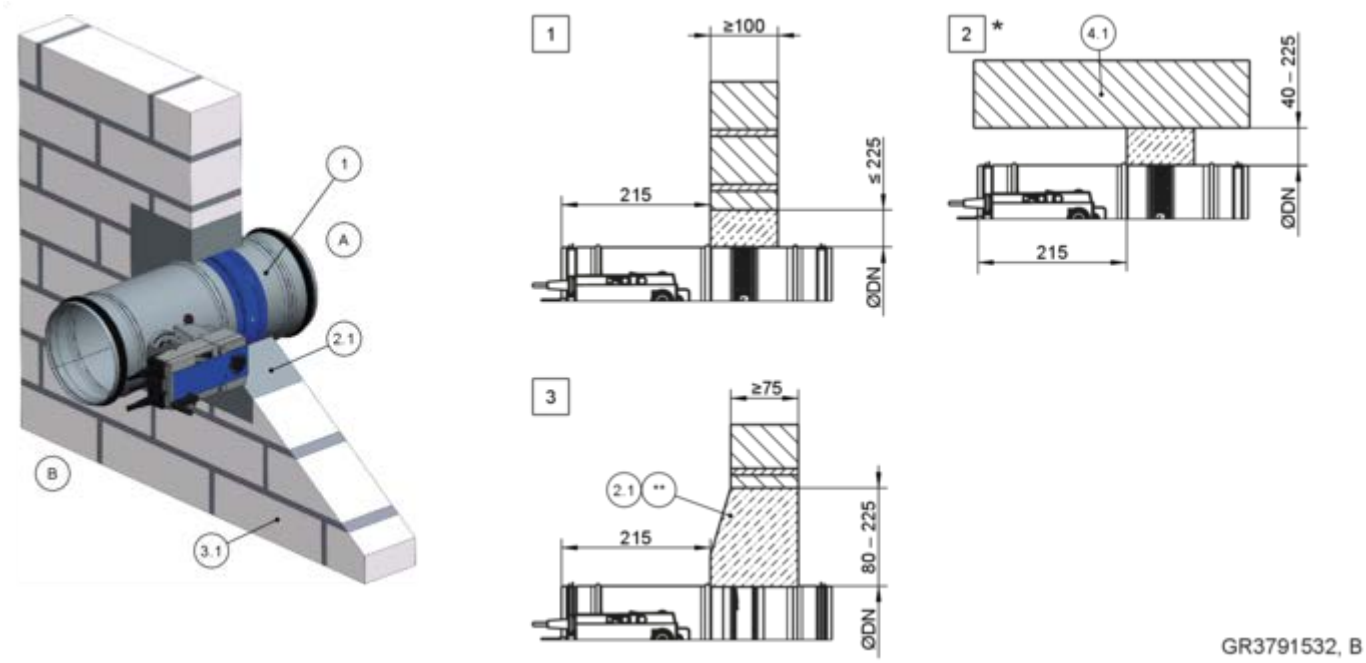


Fig. 43: Mortar-based installation into a solid wall

1	FKRS-EU	*	Installation near the floor as in 2
2.1	Mortar	**	Filling of the perimeter gap with mortar and a slanted smooth finish to at least 100 mm (optionally on one or two ends)
3.1	Solid wall		
4.1	Solid ceiling/solid floor		
		1 – 3	Up to EI 120 S

Mortar-based installation into a solid wall, flange to flange

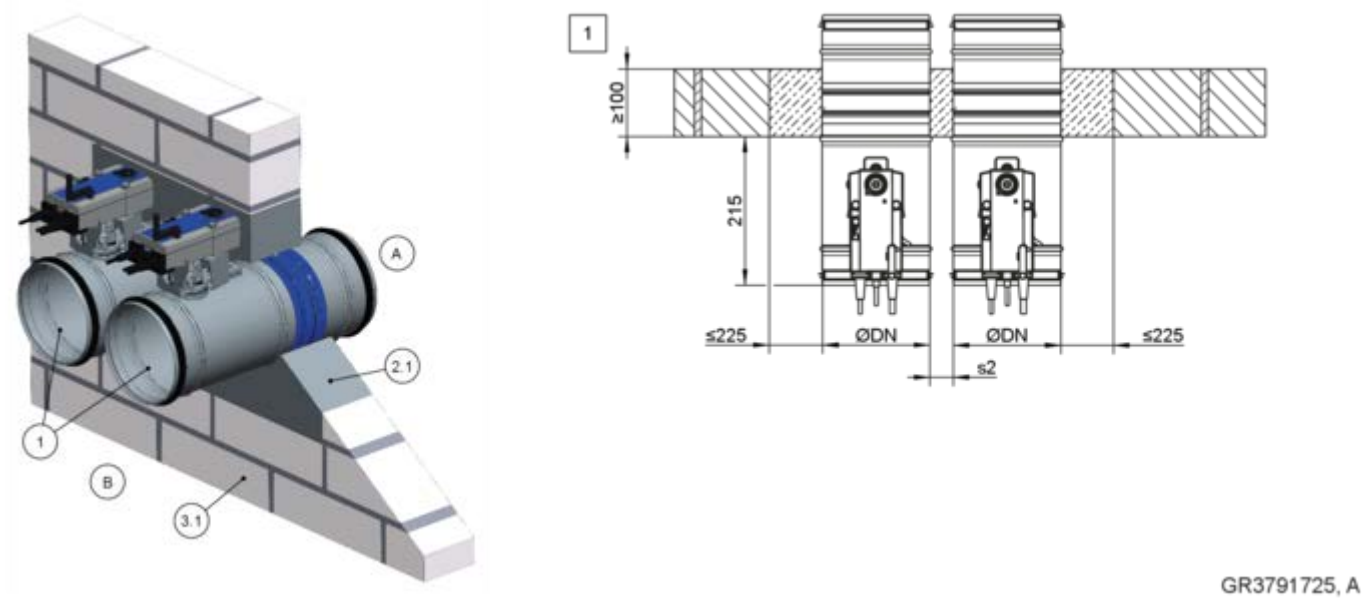


Fig. 44: Mortar-based installation into a solid wall, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)

1 FKRS-EU
2.1 Mortar
3.1 Solid wall

[1] Up to EI 120 S for s2 = 40 – 225 mm
Up to EI 90 S for s2 = 10 – 225 mm

Mortar-based installation in solid wall - installation not flush with wall

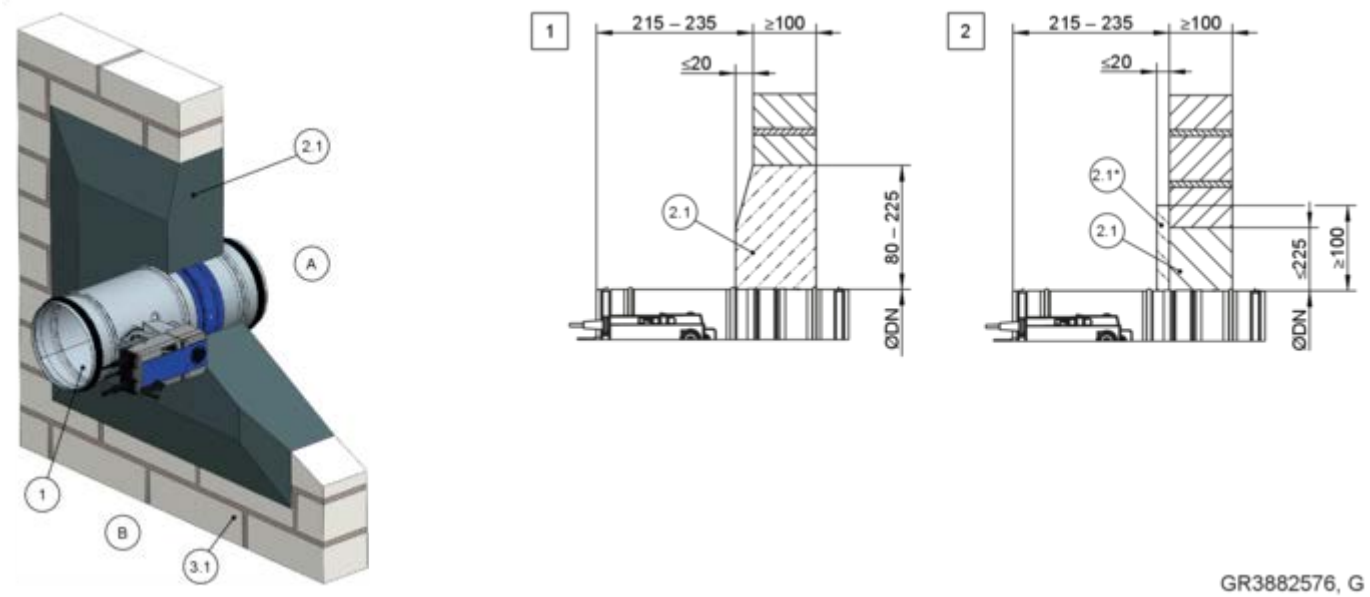


Fig. 45: Mortar-based installation in solid wall - installation not flush with wall

1 FKRS-EU
2.1 Mortar, alternatively closing the perimeter gap with mortar and sloping plaster finish
2.1* Mortar/cement mortar
3.1 Solid wall
[1] [2] Up to EI 120 S

Mortar-based installation into gypsum wallboard

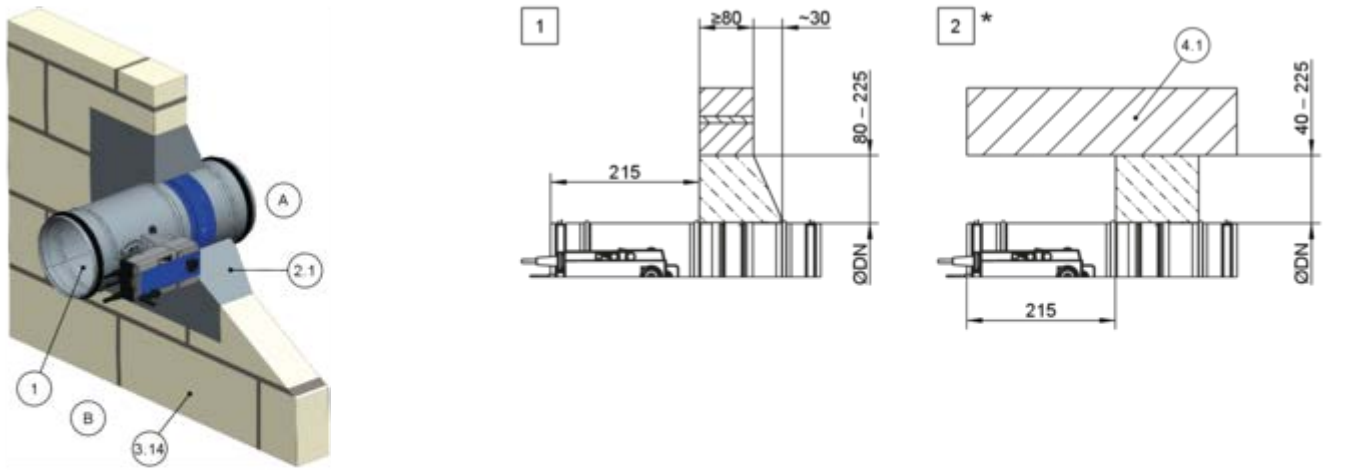


Fig. 46: Mortar-based installation into gypsum wallboard

1	FKRS-EU	4.1	Solid ceiling slab
2.1	Mortar	*	Installation near the floor as in 2
3.14	Solid wall made of gypsum wallboard EN 12859 (formerly DIN 18163)	1 2	Up to EI 120 S

Note for installation in gypsum wallboards with W = 80 to < 100 mm:

- Distance between two fire dampers ≥ 200 mm in separate installation openings
- at W ≥ 100 mm, distances Fig. 43 to Fig. 45

Mortar-based installation into a solid wall, combined, FKRS-EU and FK2-EU

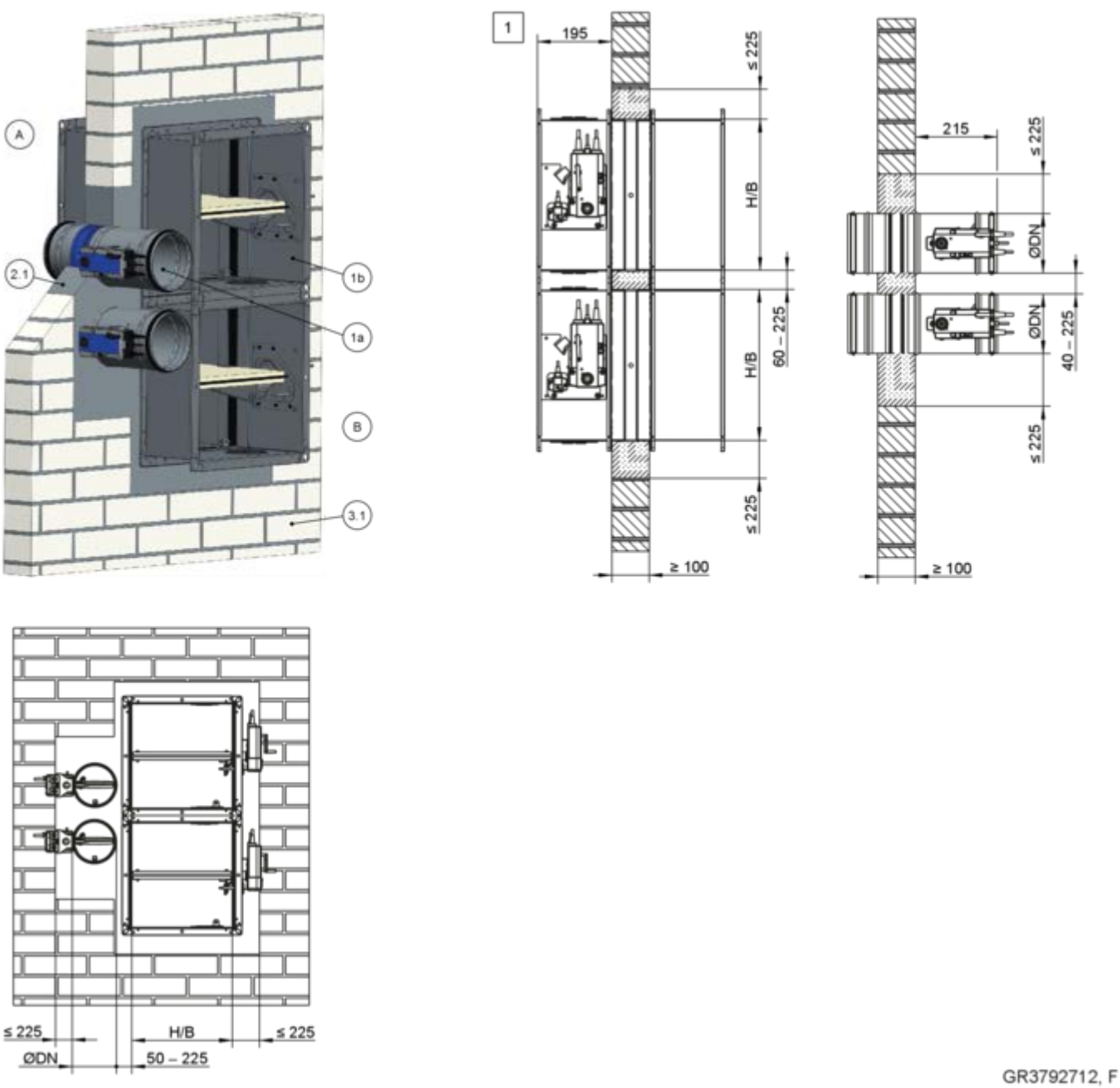


Fig. 47: Mortar-based installation into a solid wall, combined, FKRS-EU and FK2-EU

1a FKRS-EU
1b FK2-EU up to B × H ≤ 800 × 400 mm
2.1 Mortar
3.1 Solid wall
[1] up to EI 90 S

For combined installation please note:

- Overall fire damper area ≤ 1.2 m^2 .
- The number of fire dampers in an installation opening is limited by their size (B × H for FK2-EU and/or ∅nominal width for FKRS-EU) and the overall area of the fire dampers (1.2 m^2).
- Other arrangements (side by side or on top of each other) are possible.
  For installation details FK2-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, *on page 42*
- Mortar-based installation in opening or cut hole
- General installation information, *31* ff
- General information on mortar-based installation, '***Mortar-based installation***' *on page 37*

5.5.3 Mortar-based installation – multiple occupancy of one installation opening

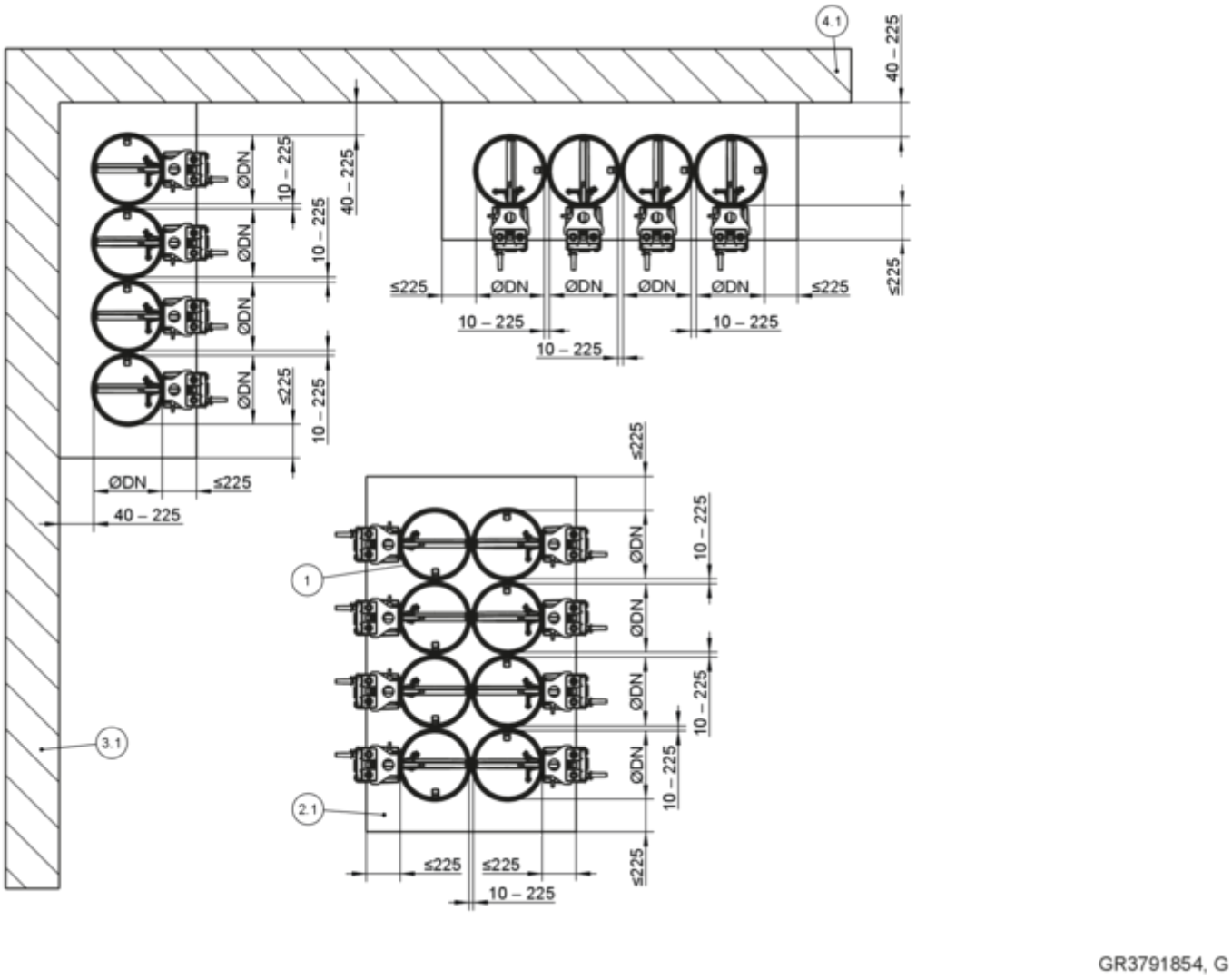


Fig. 48: Mortar-based installation – multiple occupancy of one installation opening

1 FKRS-EU
2.1 Mortar
3.1 Solid wall (load-bearing structural element)
4.1 Solid ceiling slab (load-bearing component)

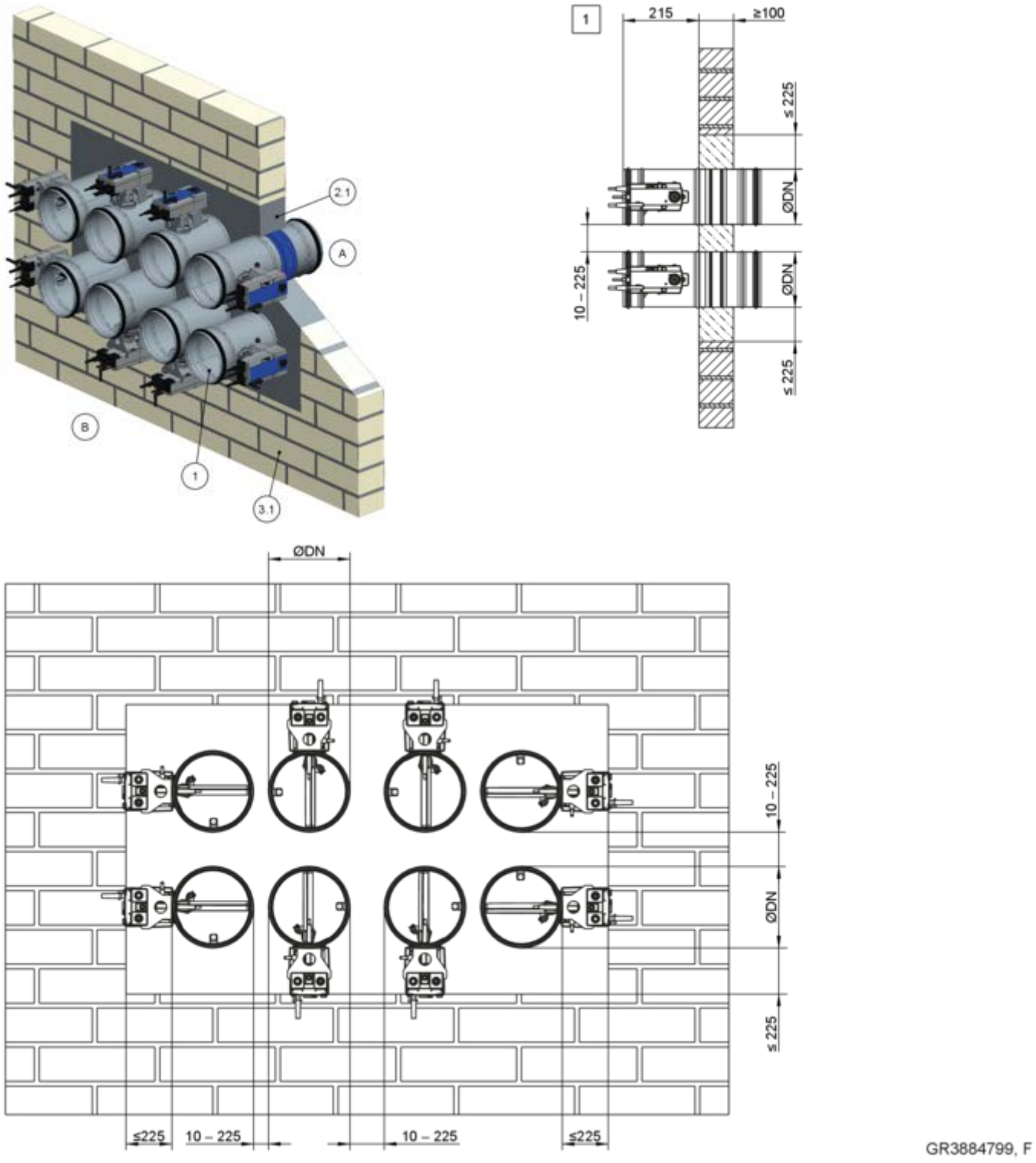


Fig. 49: Mortar-based installation – multiple occupancy of one installation opening

1	FKRS-EU	3.1	Solid wall
2.1	Mortar	[1]	up to EI 90 S

Additional requirements: mortar-based installation – multiple installation into one installation opening

- Solid wall, *on page 42*
- Overall fire damper area ≤ 1.2 m^2
- The number of fire dampers in an installation opening is limited by their size (nominal width) and the overall area of the fire dampers (1.2 m^2) (maximum 10 FKRS-EU in single or double row arrangement)
- Distance to load-bearing structural elements ≥ 40 mm
- Maximum mortar bed width 225 mm; provide a lintel or brick partition if necessary

5.5.4 Mortar-based installation into a solid wall, with partial mortaring

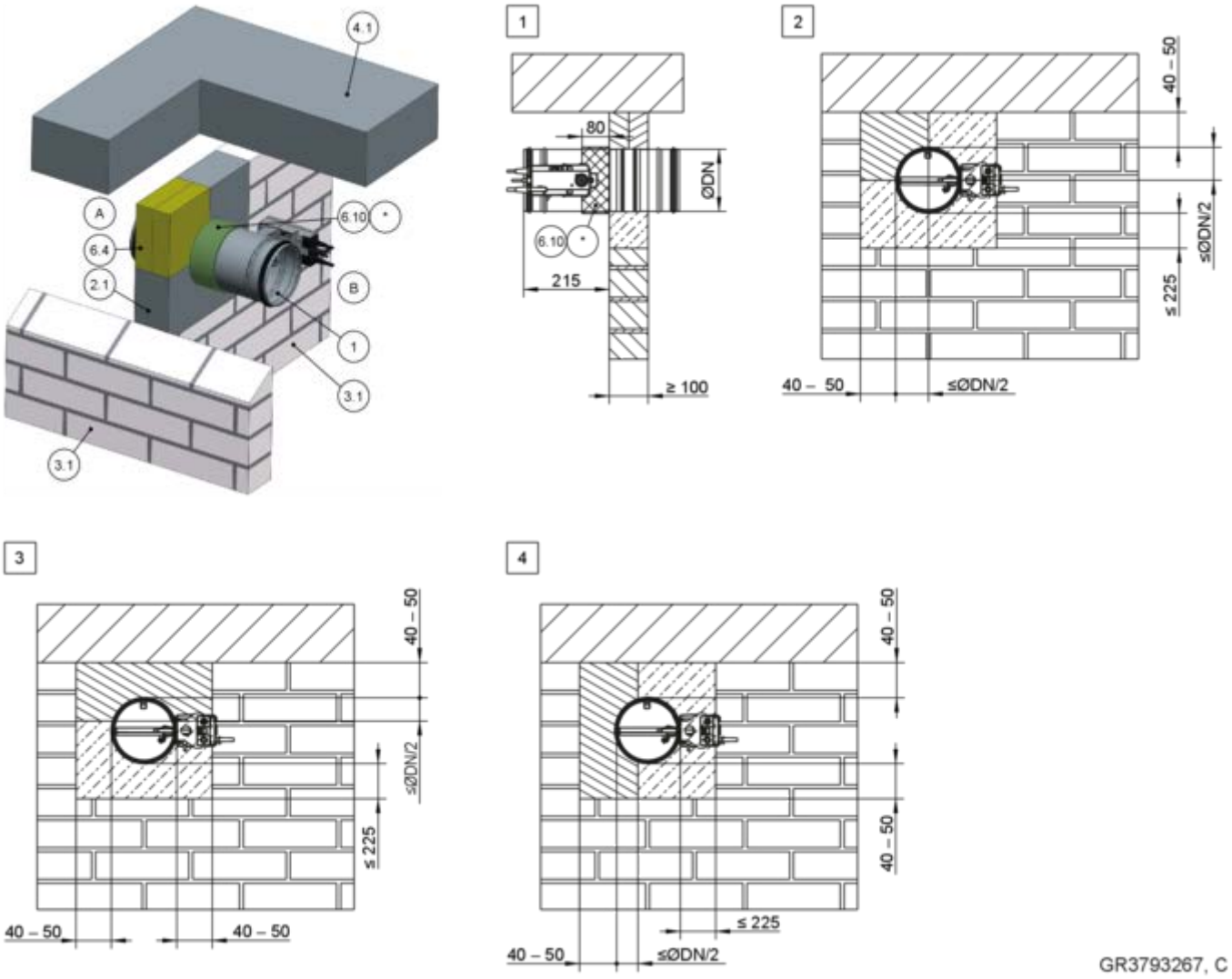


Fig. 50: Mortar-based installation into a solid wall, with partial mortaring

1	FKRS-EU
2.1	Mortar
3.1	Solid wall
4.1	Solid ceiling slab
6.4	Mineral wool panel, ≥ 1000°C, ≥ 140 kg/m³
6.10	Firestop coating around the perimeter, d = at least 2.5 mm
6.19	Mineral wool > 1000 °C, > 80 kg/m³, thickness = 20 mm, panel material around the perimeter, leave out the actuator and release mechanism; inspection openings must remain accessible
6.20	Pipe collar (can be ordered separately)
6.24	Elastomeric foam (flame-resistant, non-dripping) The following applies in Germany: For notes on the use of elastomeric foams *'Additional provision for use in Germany:' on page 8*.
*	required for nominal diameter ≥ 224 mm, alternatively 6.19, 6.20 or 6.24
1 - 4	up to EI 90 S

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

- Solid wall, *on page 42*
- Distance of 40 – 50 mm between the fire damper and load-bearing components
- 40 – 225 mm distance between two FKRS-EU fire dampers

1. The difficult-to-access installation gap between the FKRS-EU and the wall/ceiling must be completely filled in the wall area.
2. Completely close off the remaining gaps »s« (on 2 or 3 sides) with mortar.

5.5.5 Mortar-based installation into a solid wall underneath a flexible ceiling joint

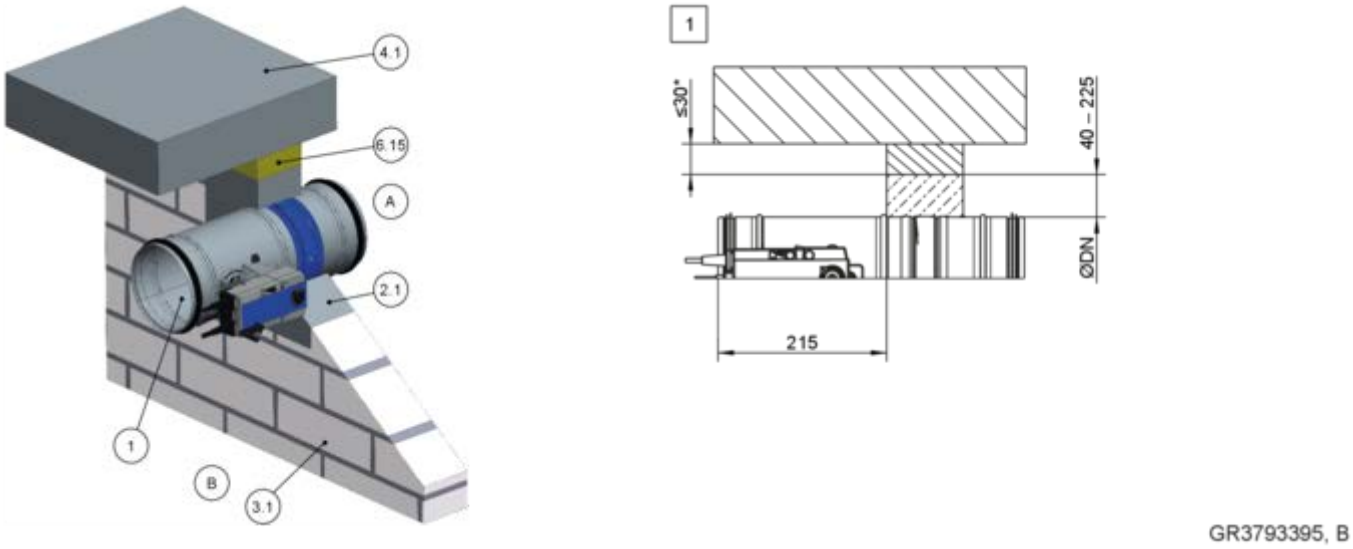


Fig. 51: Mortar-based installation into a solid wall underneath a flexible ceiling joint

1	FKRS-EU	6.15	Mineral wool, depending on the flexible ceiling joint
2.1	Mortar	*	After subsidence of the ceiling
3.1	Solid wall	1	up to EI 90 S
4.1	Solid ceiling slab		

Note on flexible ceiling joint: representative illustration. The distance from the ceiling depends on the construction of the flexible ceiling joint and the expected ceiling subsidence.

Additional requirements: mortar-based installation into solid walls underneath flexible ceiling joint

- Solid wall, *on page 42*
- Distance from the fire damper to the top edge of the wall 40 – 225 mm
- Distance between two fire dampers ≥ 40 mm, perimeter gap ≤ 225 mm

5.5.6 Dry mortarless installation in solid wall with installation block ER

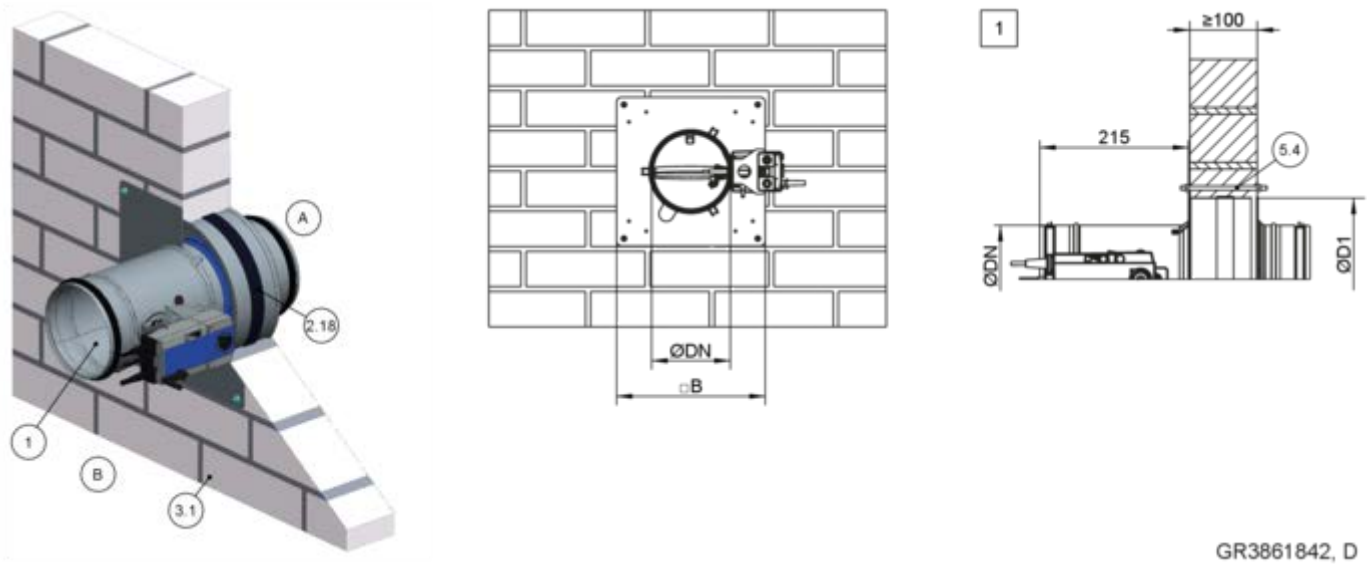


Fig. 52: Dry mortarless installation in solid wall with installation block ER

1 FKRS-EU
2.18 Installation block ER with cover plate
3.1 Solid wall
5.4 Threaded rod as push-through installation or suitable anchors approved by the building authorities, min. M6
1 up to EI 90 S

Additional requirements: dry mortarless installation with installation block ER

- Solid wall, *on page 42*
- Installation block ER, *5.4.2 'Installation block ER' on page 47*
- ≥ 75 mm distance between installation block and load-bearing structural elements
- ≥ 200 mm distance between two installation blocks
- General installation information, *5.3 'General installation information' on page 31* ff
- General information on installation with installation block ER, *on page 38*

1. Create an appropriate installation opening by means of a cut hole ∅D1, *5.4.2 'Installation block ER' on page 47*
2. Position the fire damper in the centre of the installation opening and push it in up to the cover plate. If the wall thickness is > 115 mm, extend the fire damper on the installation side with an extension piece or a spiral duct.
3. Fix the cover plate to the wall with four threaded rods as push-through installation. Fixing by means of four wall plugs (M6) with fire safety suitability certificate, matched to the respective building material, is permissible, provided that all prevailing conditions of the wall plug proof are observed.

5.5.7 Dry mortarless installation into a solid wall, with installation kit TQ2

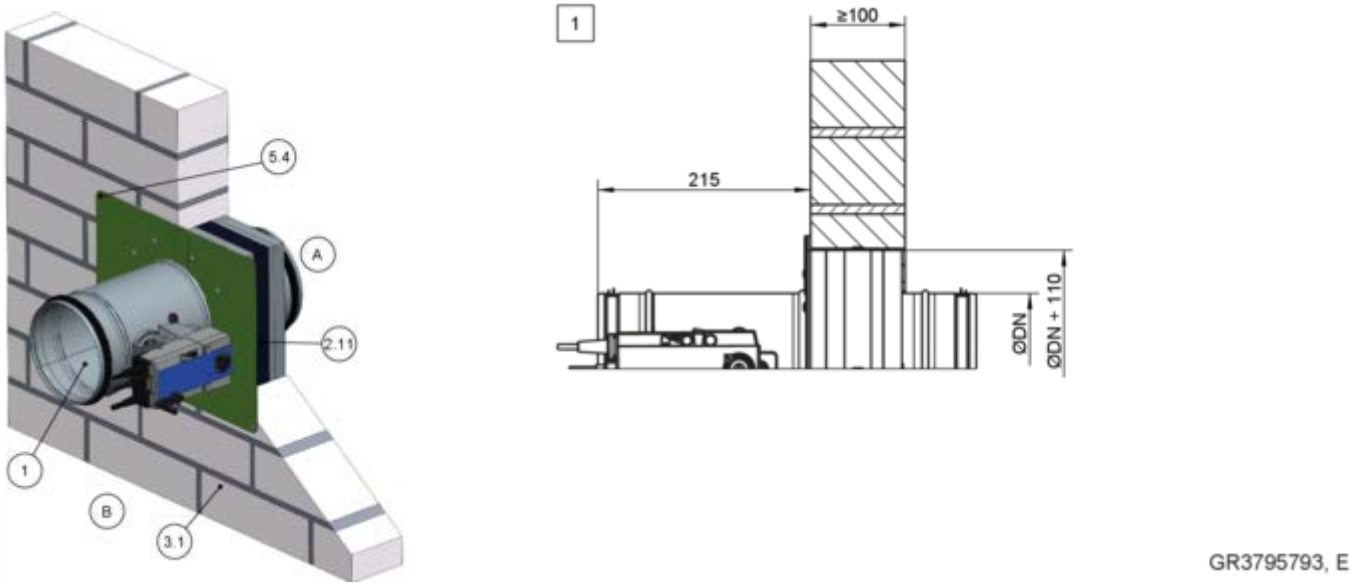


Fig. 53: Dry mortarless installation into a solid wall, with installation kit TQ2

1 FKRS-EU
2.11 Installation kit TQ2 with cover plate
3.1 Solid wall
5.4 Threaded rod as push-through installation or suitable metal anchors approved by the building authorities, min. M6
[1] Up to EI 120 S

Additional requirements: dry mortarless installation with installation kit TQ2 into solid walls

- Solid wall, ↳ *on page 42*
- Installation kit TQ2, ↳ *5.4.3 'Installation kit TQ2' on page 48*
- ≥ 55 mm distance from the fire damper to load-bearing structural elements (with shortened cover plate)
- ≥ 200 mm distance between two fire dampers
- Installation only permitted in solid walls without cavities. For solid walls with cavities, these must be sealed with mortar to a depth of at least 100 mm.
- General installation information, ↳ *5.3 'General installation information' on page 31* ff
- General information on installation with installation kit TQ2, ↳ *on page 38*

1. ▸ Create square installation opening, size ∅DN + 110 mm ±2mm
2. ▸ Position the fire damper with the installation kit in the centre of the installation opening and push it in up to the cover plate.
   The installation kit is installed in the installation opening in such a way that a gap of 5 mm ±2 mm is maintained from the installation kit.

   If the wall thickness is >115 mm , extend the fire damper on the installation side with an extension piece or a spiral duct.
3. ▸ Fix the cover plate to the wall with four threaded rods as push-through installation. Fixing by means of four wall plugs (M6) with fire safety suitability certificate, matched to the respective building material, is permissible, provided that all prevailing conditions of the wall plug proof are observed.

5.5.8 Dry mortarless installation on the face of a solid wall, with installation kit WA2

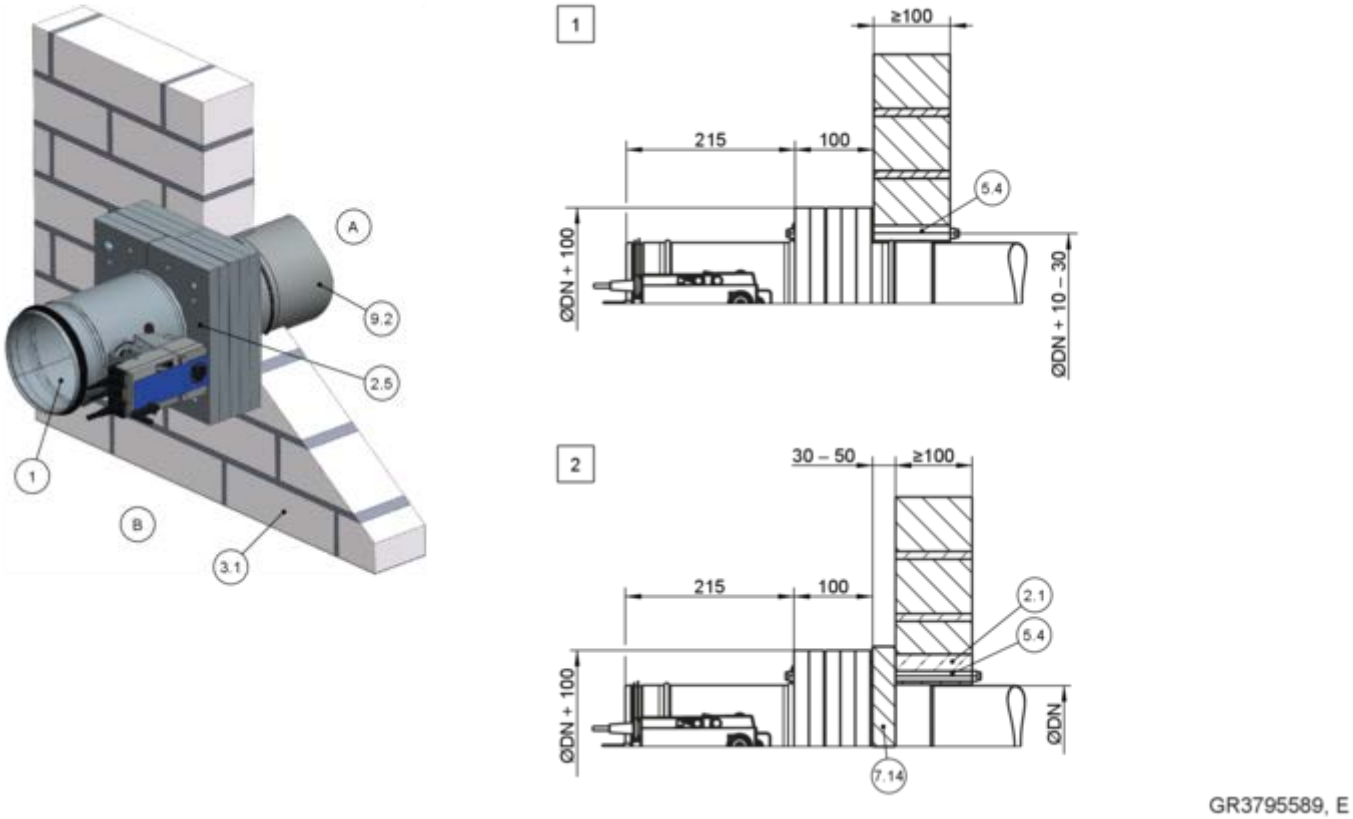


Fig. 54: Dry mortarless installation on the face of a solid wall, with installation kit WA2

1 FKRS-EU
2.1 Mortar
2.5 Installation kit WA2
3.1 Solid wall
5.4 Threaded rod as push-through installation with washers and nuts or wall plug with fire safety suitability certificate
7.14 Reinforcing board, calcium silicate, thickness = 30 – 50 mm or mineral wool, ≥ 1000 °C, ≥ 140 kg/m³, thickness = 50 mm
9.2 Extension piece/duct with 2 shortened flush with the wall
1 2 up to EI 90 S

Additional requirements: dry mortarless installation with installation kit WA2 on solid walls

- Solid wall, ↳ *on page 42*
- Installation kit WA2, ↳ *5.4.4 'Installation kit WA2' on page 50*
- ≥ 75 mm distance between the fire damper and load-bearing components
- ≥ 200 mm distance between two fire dampers
- General installation information, ↳ *5.3 'General installation information' on page 31* ff
- General information on installation with installation kit WA2, ↳ *on page 38*

1. ▸ 1: Make a cut hole with nominal width + 10 - 30 mm and compensate wall unevenness.
   2: Shorten the mortared-in air duct flush with the wall, create a reinforcing board (7.14) and compensate for wall unevenness.
2. ▸ The fire damper with installation kit WA2 is fixed to the wall with four threaded rods (M8 or M10) by means of push-through installation. Fixing by means of four wall plugs (M8) with fire safety suitability certificate, matched to the respective building material, is permissible, provided that all prevailing conditions of the wall plug proof are observed.
   Note: Tighten the nuts hand-tight to approx. 5 Nm for fastening.

5.5.9 Dry mortarless installation remote from solid walls with installation kit WE2 (wall connection)

Dry mortarless installation remote from solid walls with installation kit WE2 (wall connection), four-sided cladding

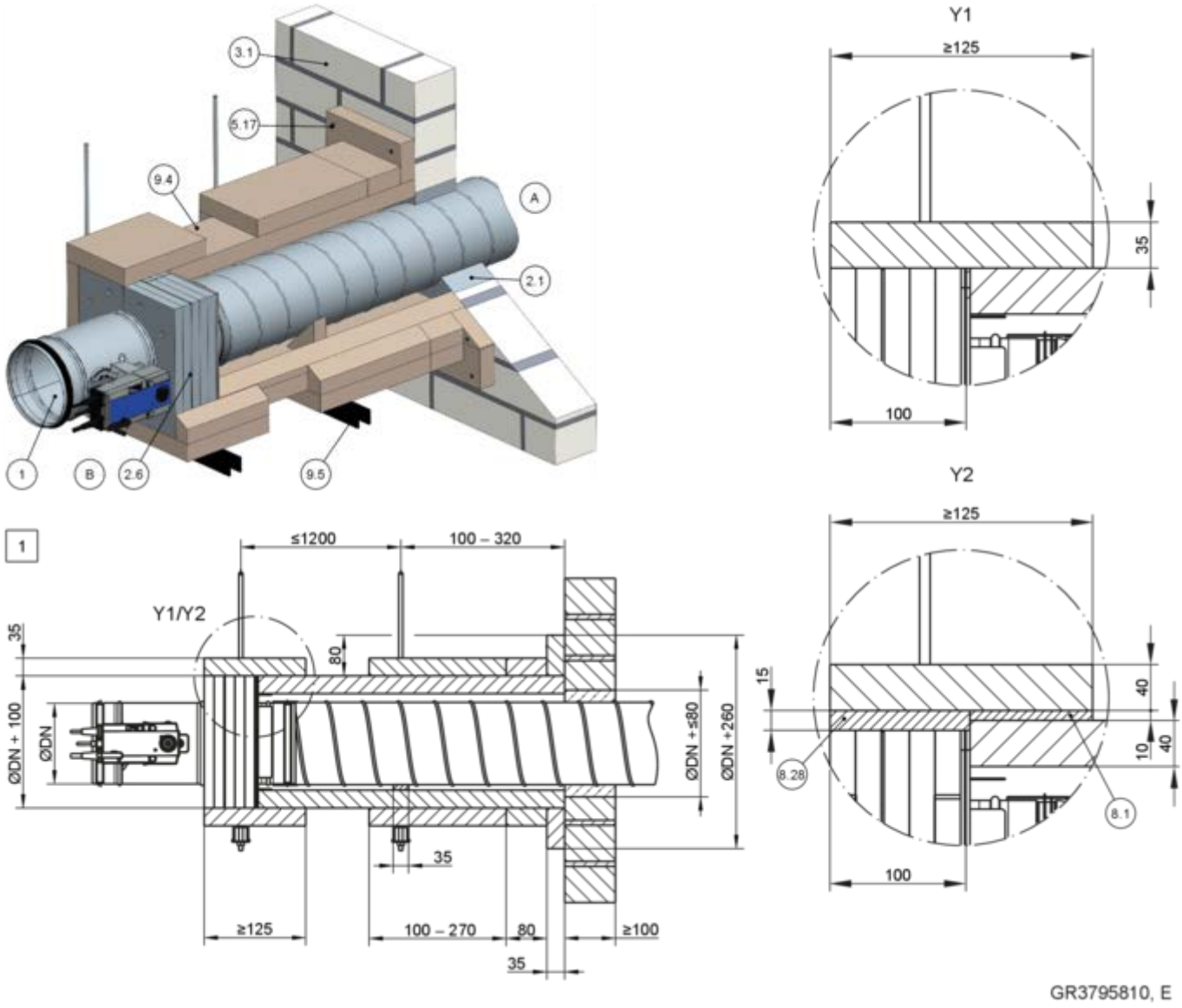


Fig. 55: Dry mortarless installation remote from solid walls with installation kit WE2 (wall connection), four-sided cladding

1 FKRS-EU
2.1 Mortar
2.6 Installation kit WE2
3.1 Solid wall
5.17 Hilti ® HUS-6 anchor ∅ 6 mm × 80 mm
As an alternative, equivalent fire-rated anchor bolts (supplied by the customer) with suitability certificate that are suitable for the wall or ceiling can also be used; push-through installation is also possible
8.1 PROMATECT®-H strip d = 10 mm
8.28 PROMATECT®-H strip d = 15 mm
9.4 Sheet steel duct with fire-rated cladding
The cladding of the air duct and the suspensions are carried out in accordance with these instructions, the additional assembly instructions for the installation kit WE2 and the specifications of the panel manufacturer
9.5 Suspension system (by others) consisting of:
a Threaded rod M10
b Hilti ® mounting rail MQ 41 × 3 mm or equivalent
c Hilti ® drilled plate MQZ L13 or equivalent
d Hexagon nut M10 with washer
[1] Up to EI 120 S

Dry mortarless installation remote from solid walls with installation kit WE2 (wall connection), three-sided cladding

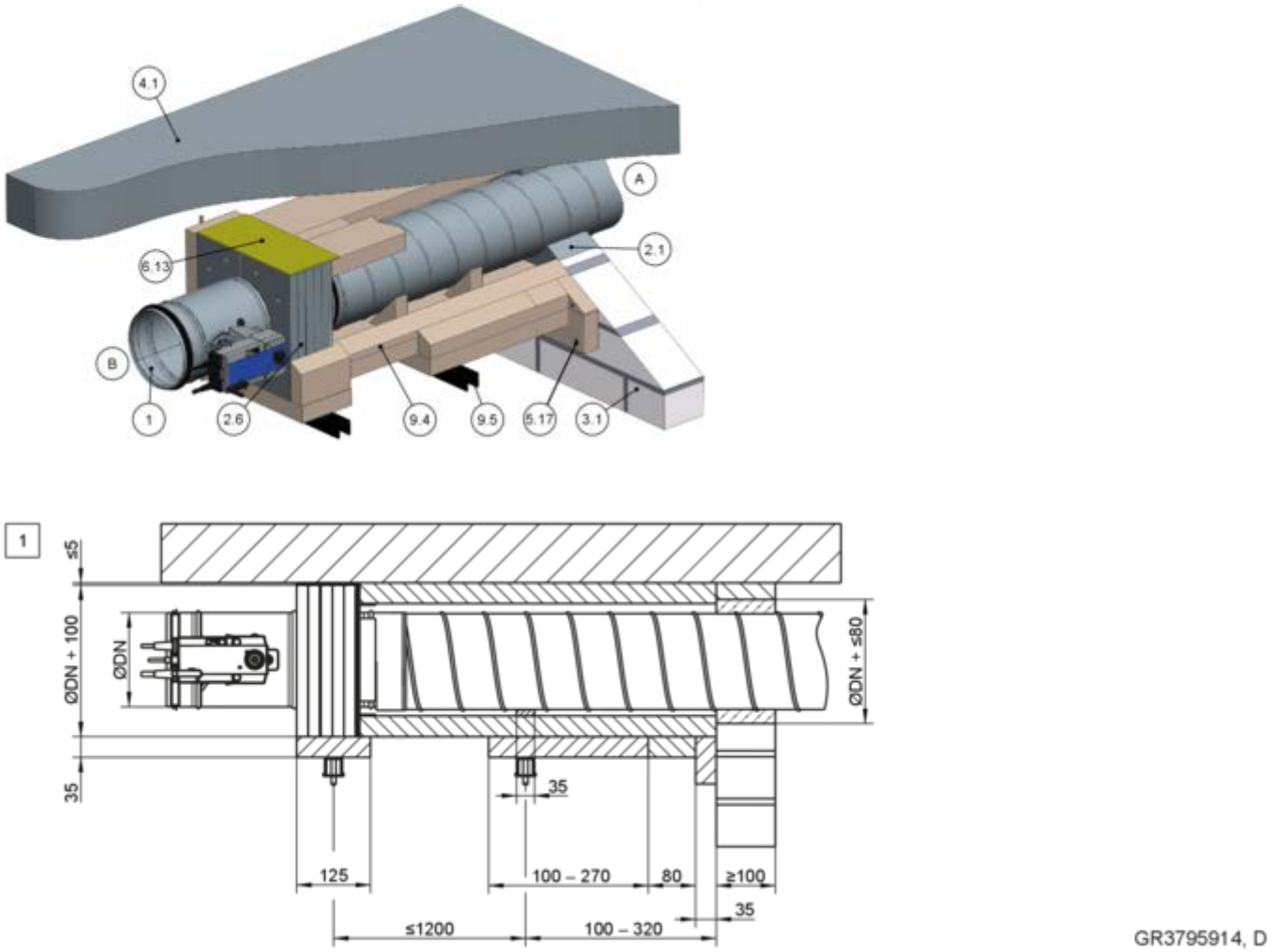


Fig. 56: Dry mortarless installation remote from solid walls with installation kit WE2 (wall connection), three-sided cladding

1 FKRS-EU
2.1 Mortar
2.6 Installation kit WE2
3.1 Solid wall
4.1 Solid ceiling slab
5.17 Hilti ® HUS-6 anchor ∅ 6 mm × 80 mm
As an alternative, equivalent fire-rated anchor bolts (supplied by the customer) with suitability certificate that are suitable for the wall or ceiling can also be used; push-through installation is also possible
6.13 Mineral wool, ≥ 1000 °C, ≥ 80 kg/m³, or gypsum mortar to even out an uneven ceiling
9.4 Sheet steel duct with fire-rated cladding
The cladding of the air duct and the suspensions are carried out in accordance with these instructions, the additional assembly instructions for the installation kit WE2 and the specifications of the panel manufacturer
9.5 Suspension system (by others) consisting of:
a Threaded rod M10
b Hilti ® mounting rail MQ 41 × 3 mm or equivalent
c Hilti ® drilled plate MQZ L13 or equivalent
d Hexagon nut M10 with washer
[1] Up to EI 120 S

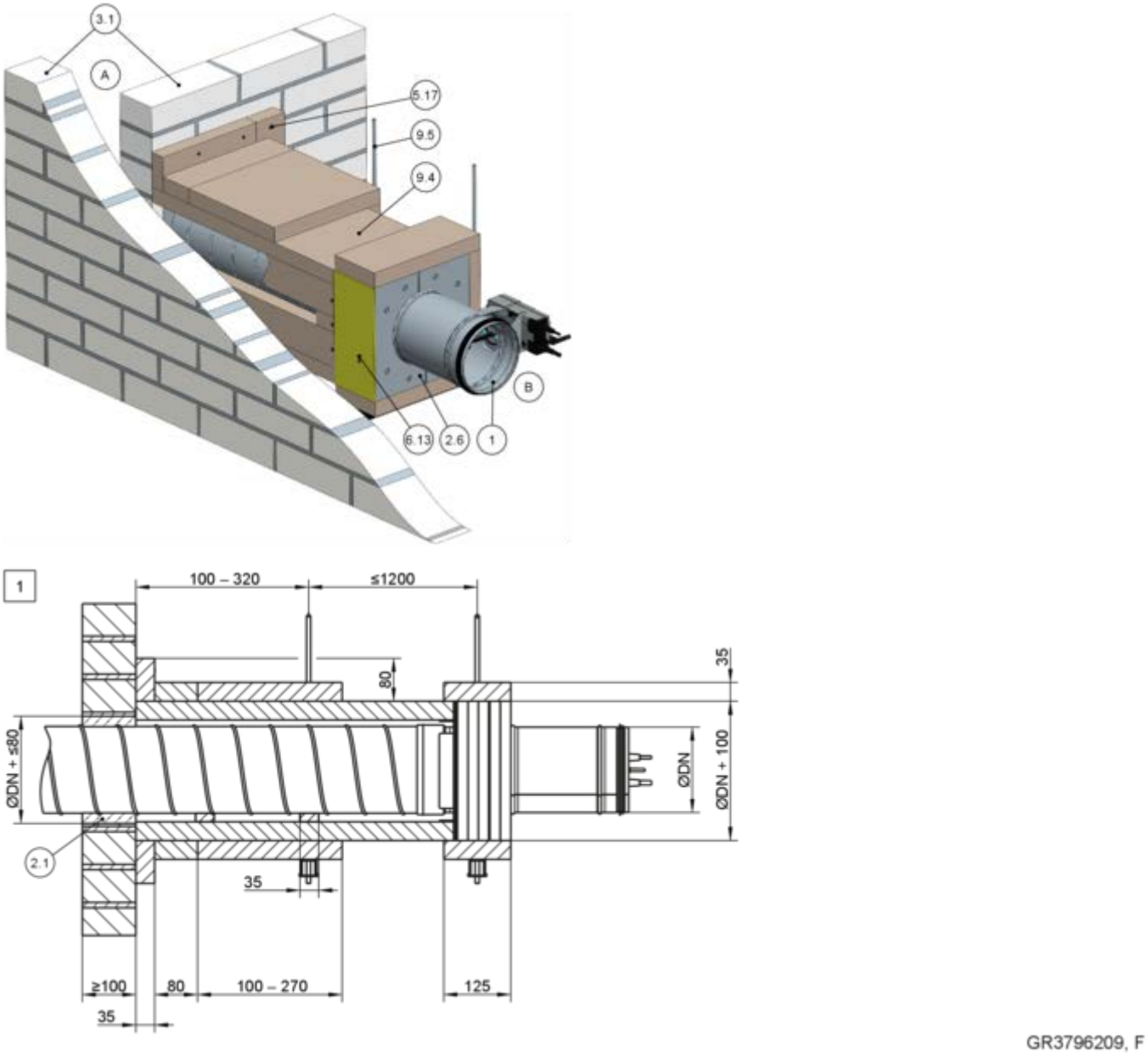


Fig. 57: Dry mortarless installation remote from solid walls with installation kit WE2 (wall connection), three-sided cladding

1 FKRS-EU
2.1 Mortar
2.6 Installation kit WE2
3.1 Solid wall
5.17 Hilti ® HUS-6 anchor ∅ 6 mm × 80 mm
As an alternative, equivalent fire-rated anchor bolts (supplied by the customer) with suitability certificate that are suitable for the wall or ceiling can also be used; push-through installation is also possible
6.13 Mineral wool, ≥ 1000 °C, ≥ 80 kg/m³, or gypsum mortar to even out an uneven wall
9.4 Sheet steel duct with fire-rated cladding
The cladding of the air duct and the suspensions are carried out in accordance with these instructions, the additional assembly instructions for the installation kit WE2 and the specifications of the panel manufacturer
9.5 Suspension system (by others) consisting of:
a Threaded rod M10
b Hilti ® mounting rail MQ 41 × 3 mm or equivalent
c Hilti ® drilled plate MQZ L13 or equivalent
d Hexagon nut M10 with washer
[1] Up to EI 120 S

Dry mortarless installation remote from solid walls with installation kit WE2 (wall connection), two-sided cladding

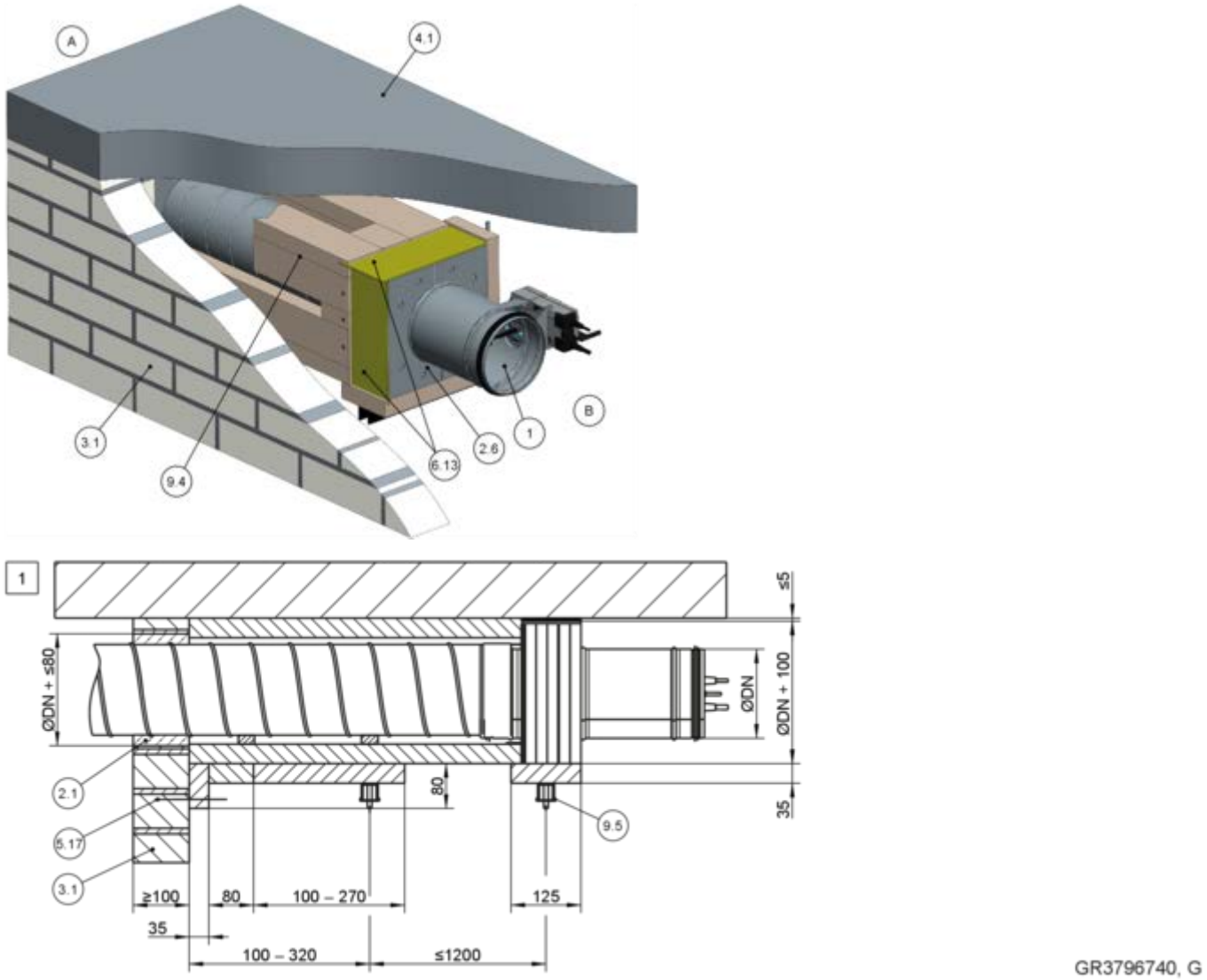


Fig. 58: Dry mortarless installation remote from solid walls with installation kit WE2 (wall connection), two-sided cladding

1 FKRS-EU
2.1 Mortar
2.6 Installation kit WE2
3.1 Solid wall
4.1 Solid ceiling slab
5.17 Hilti ® HUS-6 anchor ∅ 6 mm × 80 mm
As an alternative, equivalent fire-rated anchor bolts (supplied by the customer) with suitability certificate that are suitable for the wall or ceiling can also be used; push-through installation is also possible
6.13 Mineral wool, ≥ 1000 °C, ≥ 80 kg/m³, or gypsum mortar to even out an uneven wall or ceiling
9.4 Sheet steel duct with fire-rated cladding
The cladding of the air duct and the suspensions are carried out in accordance with these instructions, the additional assembly instructions for the installation kit WE2 and the specifications of the panel manufacturer
9.5 Suspension system (by others) consisting of:
a Threaded rod M10
b Hilti ® mounting rail MQ 41 × 3 mm or equivalent
c Hilti ® drilled plate MQZ L13 or equivalent
d Hexagon nut M10 with washer
[1] Up to EI 120 S

Additional requirements: dry mortarless installation remote from solid walls with installation kit WE2 (wall connection)

- Solid wall, ↳ *on page 42*
- Installation kit WE2, ↳ *5.4.5 'Installation kit WE2' on page 52*
- Suspension and fixing, ↳ *Chapter 5.15 'Fixing the fire damper' on page 255*
- Distance between two fire dampers ≥ 260 mm
- General installation information, ↳ *5.3 'General installation information' on page 31* ff
- General information on installation with installation kit WE2, ↳ *on page 38*

Note: For more installation details and for components to be provided by the customer, see the additional WE2 installation manual.

5.5.10 Dry mortarless installation remote from solid walls with installation kit WE2 (wall penetration)

Dry mortarless installation remote from solid walls with installation kit WE2 (wall penetration), four-sided cladding

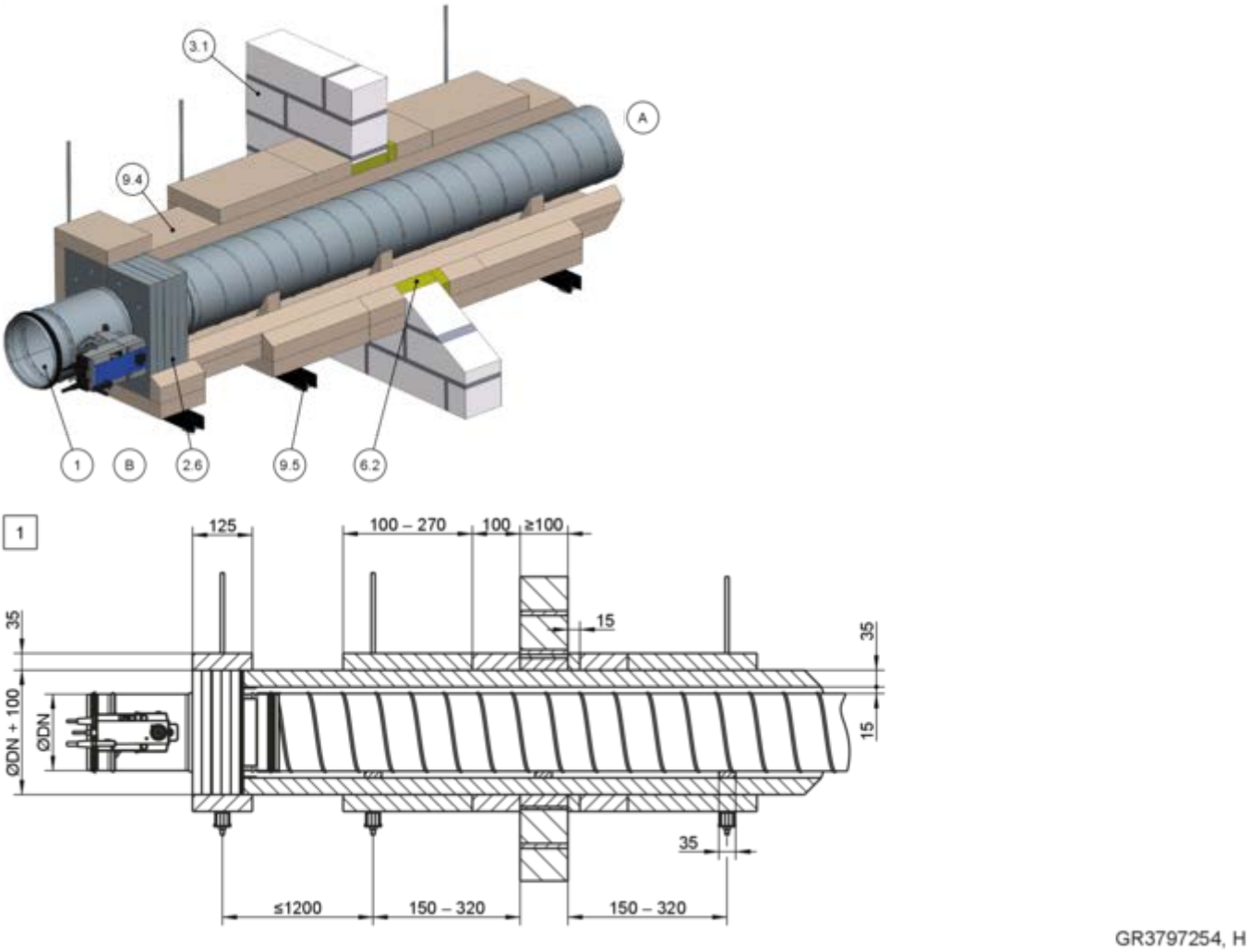


Fig. 59: Dry mortarless installation remote from solid walls with installation kit WE2 (wall penetration), four-sided cladding

1 FKRS-EU
2.6 Installation kit WE2
3.1 Solid wall
6.2 Mineral wool, ≥ 1000 °C, ≥ 80 kg/m³, thickness ≤ 20 mm
9.4 Sheet steel duct with fire-rated cladding
The cladding of the air duct and the suspensions are carried out in accordance with these instructions, the additional assembly instructions for the installation kit WE2 and the specifications of the panel manufacturer
9.5 Suspension system (by others) consisting of:

a Threaded rod M10
b Hilti ® mounting rail MQ 41 × 3 mm or equivalent
c Hilti ® drilled plate MQZ L13 or equivalent
d Hexagon nut M10 with washer
[1] Up to EI 120 S

Dry mortarless installation remote from solid walls with installation kit WE2 (wall penetration), three-sided cladding

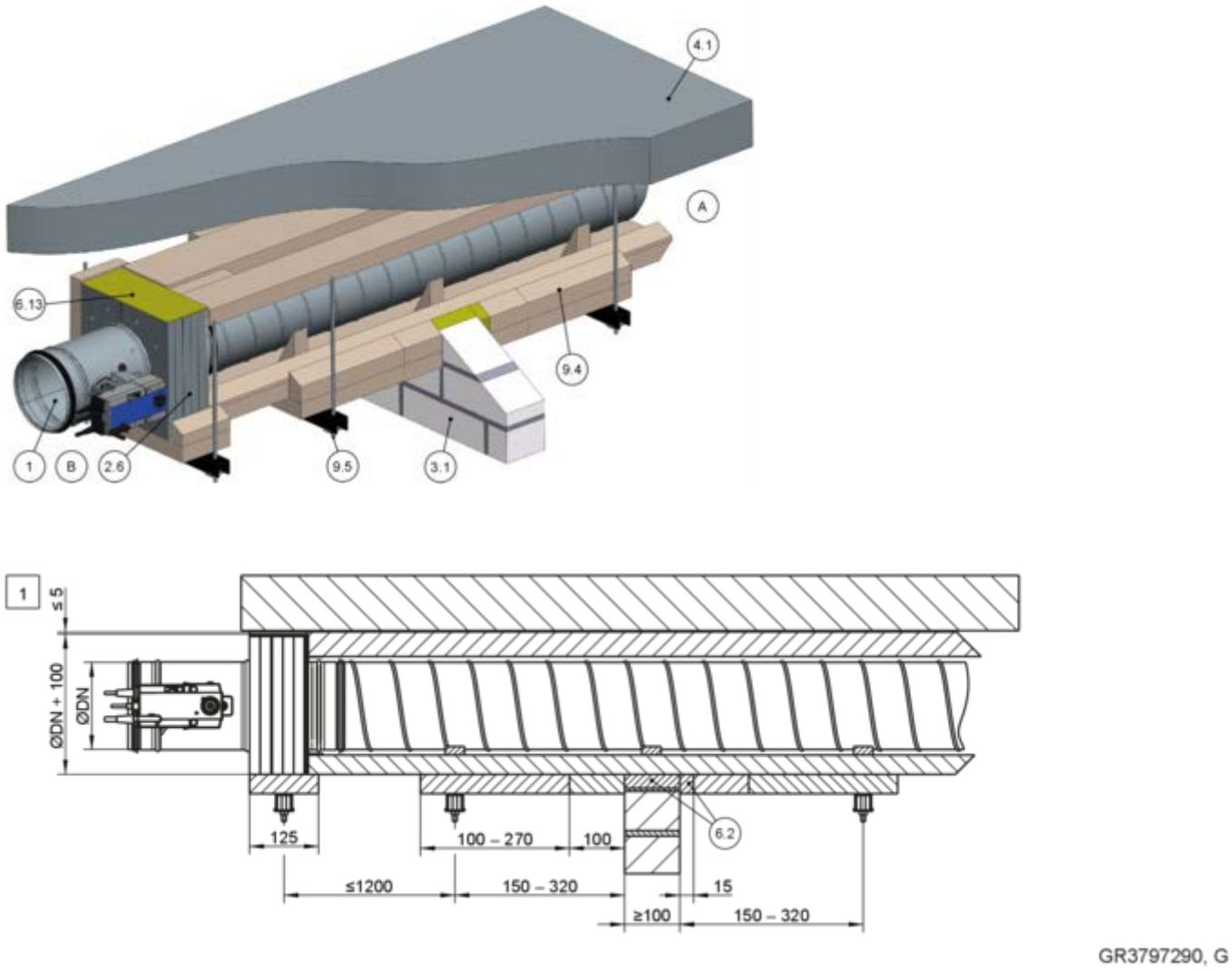


Fig. 60: Dry mortarless installation remote from solid walls with installation kit WE2 (wall penetration), three-sided cladding

1 FKRS-EU
2.6 Installation kit WE2
3.1 Solid wall
4.1 Solid ceiling slab
6.2 Mineral wool, ≥ 1000 °C, ≥ 80 kg/m³, thickness ≤ 20 mm
6.13 Mineral wool strips A1, filler as an alternative
9.4 Sheet steel duct with fire-rated cladding
The cladding of the air duct and the suspensions are carried out in accordance with these instructions, the additional assembly instructions for the installation kit WE2 and the specifications of the panel manufacturer
9.5 Suspension system (by others) consisting of:
a Threaded rod M10
b Hilti ® mounting rail MQ 41 × 3 mm or equivalent
c Hilti ® drilled plate MQZ L13 or equivalent
d Hexagon nut M10 with washer
1 Up to EI 120 S

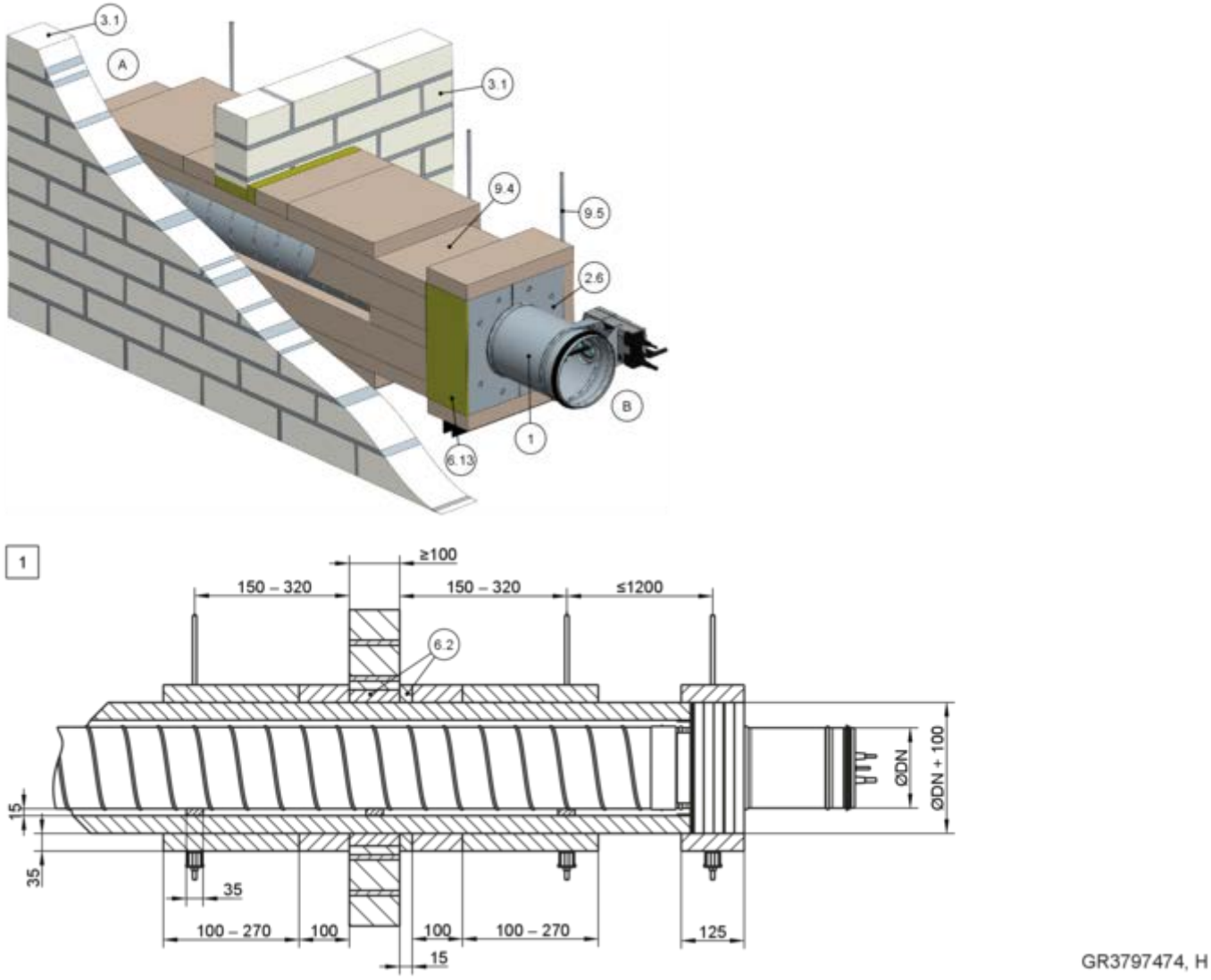


Fig. 61: Dry mortarless installation remote from solid walls with installation kit WE2 (wall penetration), three-sided cladding

1 FKRS-EU
2.6 Installation kit WE2
3.1 Solid wall
6.2 Mineral wool, ≥ 1000 °C, ≥ 80 kg/m³, thickness ≤ 20 mm
6.13 Mineral wool strips A1, filler as an alternative
9.4 Sheet steel duct with fire-rated cladding
The cladding of the air duct and the suspensions are carried out in accordance with these instructions, the additional assembly instructions for the installation kit WE2 and the specifications of the panel manufacturer
9.5 Suspension system (by others) consisting of:
a Threaded rod M10
b Hilti ® mounting rail MQ 41 × 3 mm or equivalent
c Hilti ® drilled plate MQZ L13 or equivalent
d Hexagon nut M10 with washer
[1] Up to EI 120 S

Dry mortarless installation remote from solid walls with installation kit WE2 (wall penetration), two-sided cladding

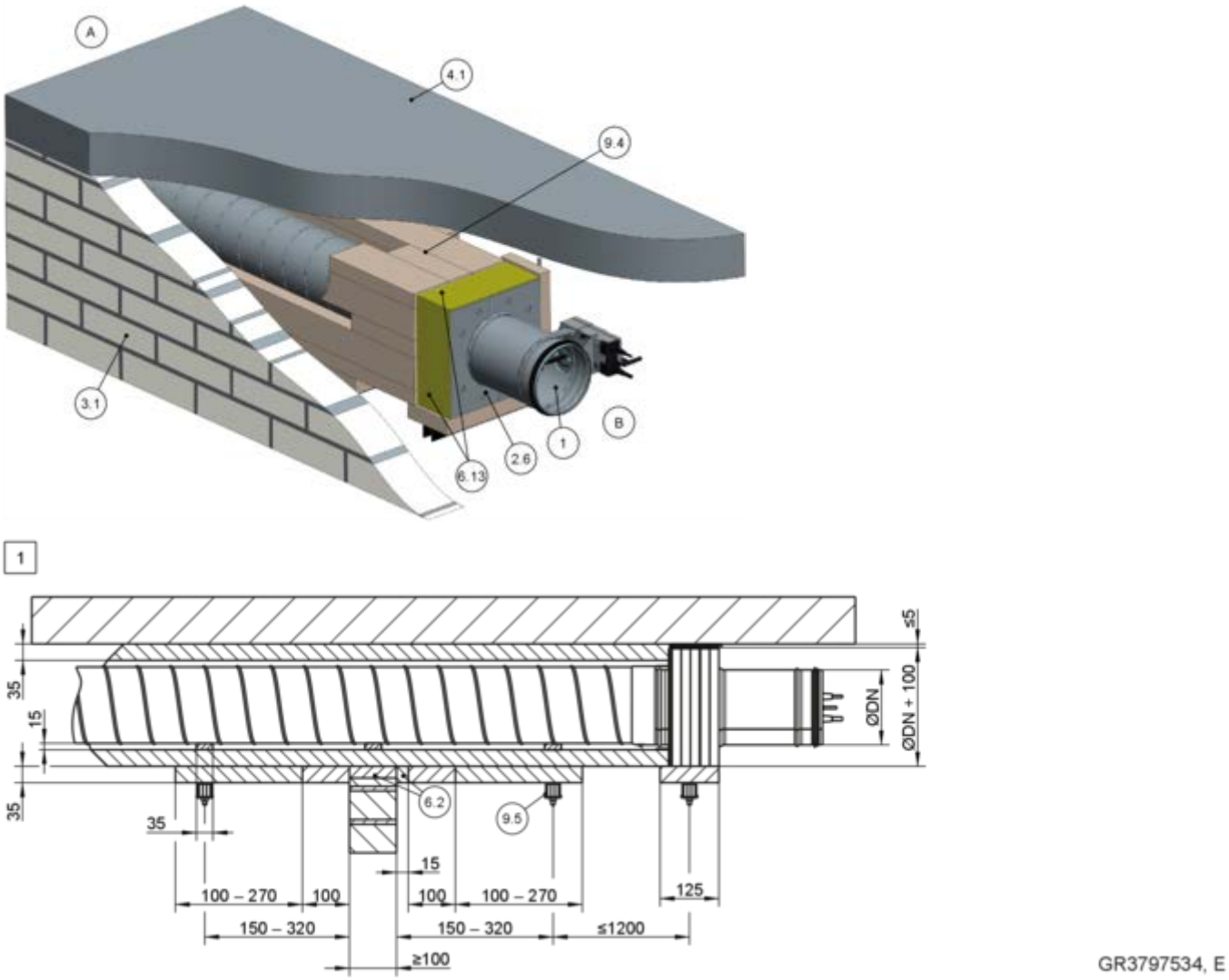


Fig. 62: Dry mortarless installation remote from solid walls with installation kit WE2 (wall penetration), two-sided cladding

1 FKRS-EU
2.6 Installation kit WE2
3.1 Solid wall
4.1 Solid ceiling slab
6.2 Mineral wool, ≥ 1000 °C, ≥ 80 kg/m³, thickness ≤ 20 mm
6.13 Mineral wool strips A1, filler as an alternative
9.4 Sheet steel duct with fire-rated cladding
The cladding of the air duct and the suspensions are carried out in accordance with these instructions, the additional assembly instructions for the installation kit WE2 and the specifications of the panel manufacturer
9.5 Suspension system (by others) consisting of:
a Threaded rod M10
b Hilti ® mounting rail MQ 41 × 3 mm or equivalent
c Hilti ® drilled plate MQZ L13 or equivalent
d Hexagon nut M10 with washer
[1] Up to EI 120 S

Additional requirements: dry mortarless installation remote from solid walls with installation kit WE2 (wall penetration)

- Solid wall, ↳ *on page 42*
- Installation kit WE2, ↳ *5.4.5 'Installation kit WE2' on page 52*
- Suspension and fixing, ↳ *Chapter 5.15 'Fixing the fire damper' on page 255*
- ≥ 200 mm distance between two fire dampers (wall penetration through separate wall openings)
- General installation information, ↳ *5.3 'General installation information' on page 31* ff
- General information on installation with installation kit WE2, ↳ *on page 38*

Note: For more installation details and for components to be provided by the customer, see the additional WE2 installation manual.

5.5.11 Installation remote from solid walls with mineral wool

Installation remote from solid walls with mineral wool

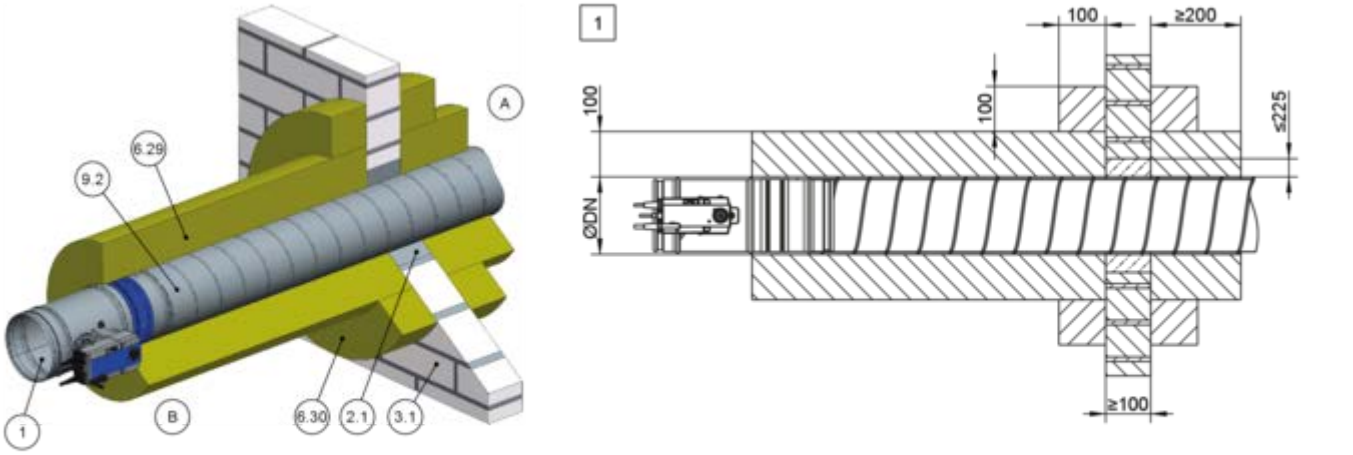


Fig. 63: Installation remote from solid walls with mineral wool

1	FKRS-EU	6.30*	Reinforcing board made of mineral wool PAROC HVAC Fire Mat BlackCoat (≥ 80 kg/m³), circumferentially glued
2.1	Mortar		
3.1	Solid wall		
6.29*	Mineral wool PAROC Hvac Fire Mat BlackCoat (≥ 80 kg/m³)	9.2	Sheet steel duct
		*	Please check in advance whether the PAROC material is available in your market region.
		1	Up to EI 60 S

Dry mortarless installation remote from solid walls with mineral wool and coated board system

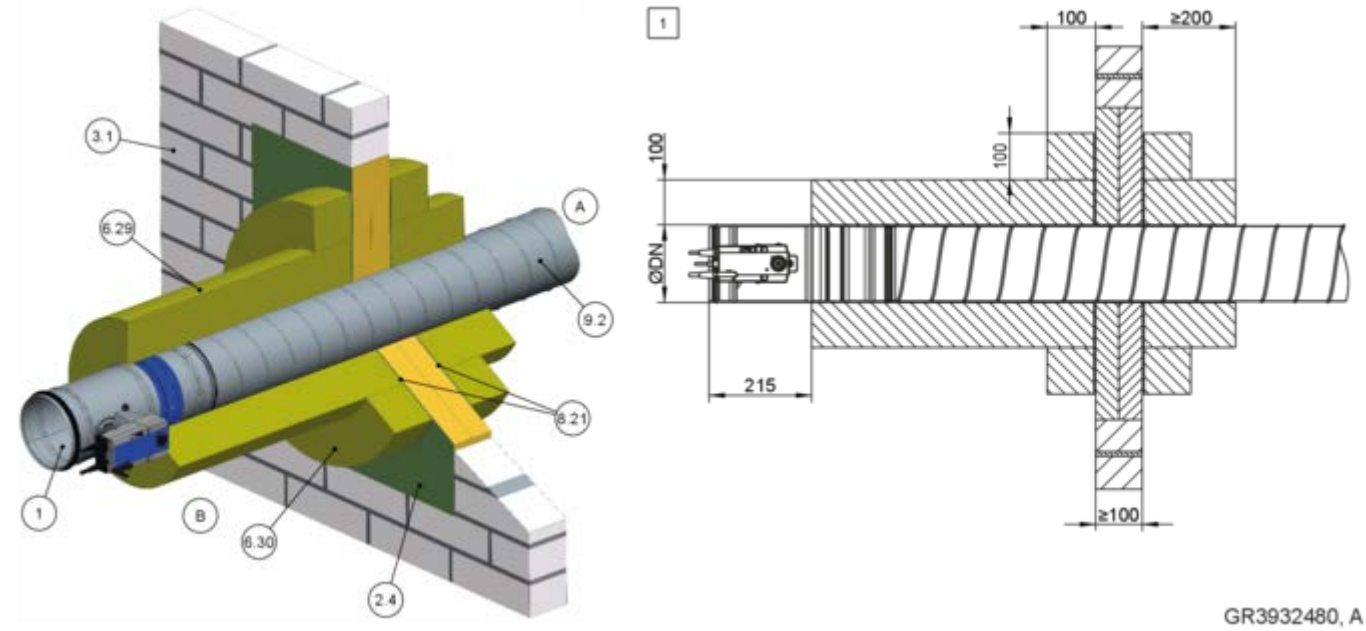


Fig. 64: Dry mortarless installation remote from solid walls with mineral wool and coated board system

1	FKRS-EU
2.4*	Coated board system, PAROC Pyrotech Slab 140 (max. W × H = 2.1 × 2.5 m)
3.1	Solid wall
6.29*	Mineral wool PAROC HVAC Fire Mat 80BLC (80 kg/m³)
6.30*	Reinforcing board made of mineral wool PAROC HVAC Fire Mat BlackCoat (≥ 80 kg/m³), circumferentially glued
8.21	Acrylic or sealing compound (suitable for coated board system)
9.2	Sheet steel duct
*	Please check in advance whether the PAROC material is available in your market region.
1	Up to EI 60 S

Additional requirements: installation remote from solid walls with mineral wool

- Solid wall, *on page 42*
- General installation information, *5.3 'General installation information' on page 31* ff
- General information on installation with mineral wool, *on page 38*
- Distance between two fire dampers ≥ 400 mm
- Distance to load-bearing/adjacent components ≥ 200 mm
- Suspend the fire damper and air duct according to the mineral wool manufacturer's specifications

5.5.12 Dry mortarless installation with fire batt

Dry mortarless installation with fire batt into a solid wall

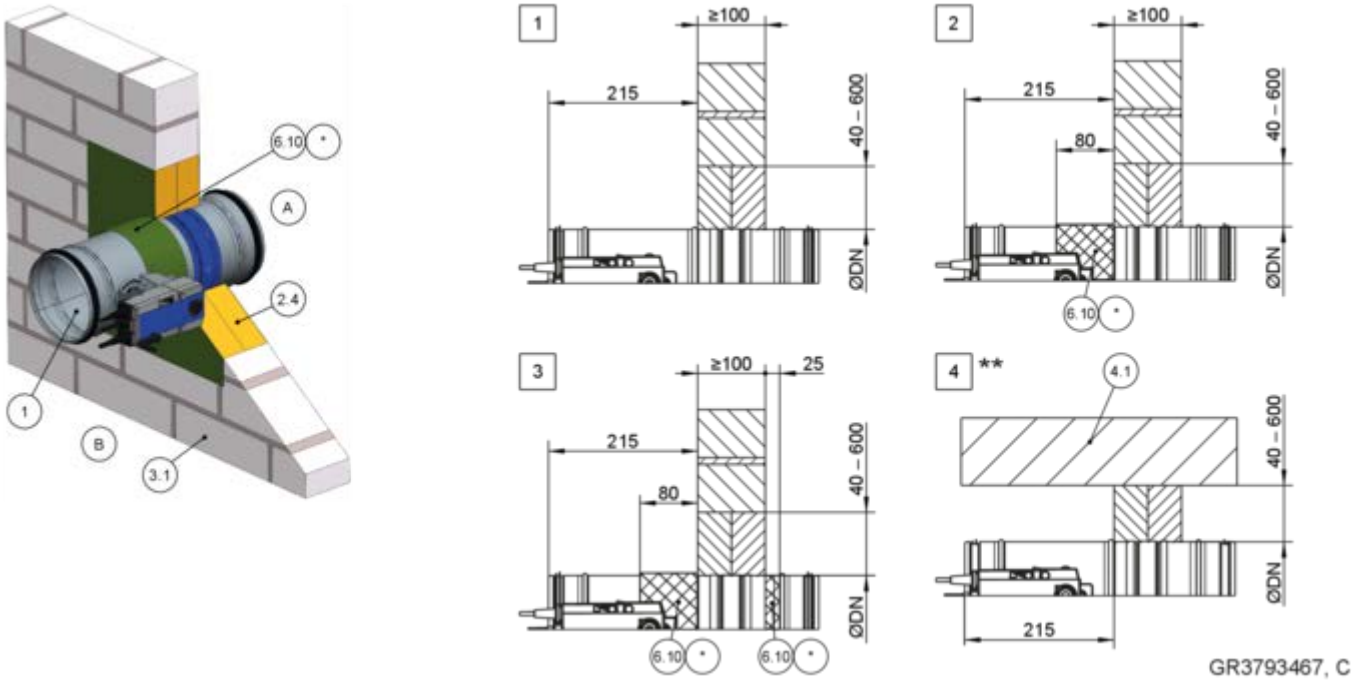


Fig. 65: Dry mortarless installation with fire batt into a solid wall

1	FKRS-EU	6.20	Pipe collar (can be ordered separately)
2.4	Coated board system with firestop coating	6.24	Elastomeric foam (flame-resistant, non-dripping)
3.1	Solid wall		The following applies in Germany: For notes on the use of elastomeric foams ↳ *'Additional provision for use in Germany:' on page 8* .
4.1	Solid ceiling slab		
6.10	Firestop coating around the perimeter, d = at least 2.5 mm	*	6.19, 6.20 or 6.24 as an alternative
6.19	Mineral wool > 1000 °C, > 80 kg/m³, thickness = 20 mm, panel material around the perimeter, leave out the actuator and release mechanism; inspection openings must remain accessible	**	Installation near the floor as in 4
		1 – 4	See table ↳ *89*

Note: The fire resistance properties of 4 depend on the nominal width and 6.10*.

Solid wall				
DN [mm]	Fire resistance rating to	Coating		Detail
		Operating side B	Installation side A	
100 – 315	EI 60 S	–	–	1, 4
100 – 200	EI 90 S	–	–	1, 4
224 – 315	EI 90 S	x	–	2, 4
100 – 200	EI 120 S	x	–	2, 4
224 – 315	EI 120 S	x	x	3, 4

Dry mortarless installation with fire batt in solid wall, flange to flange

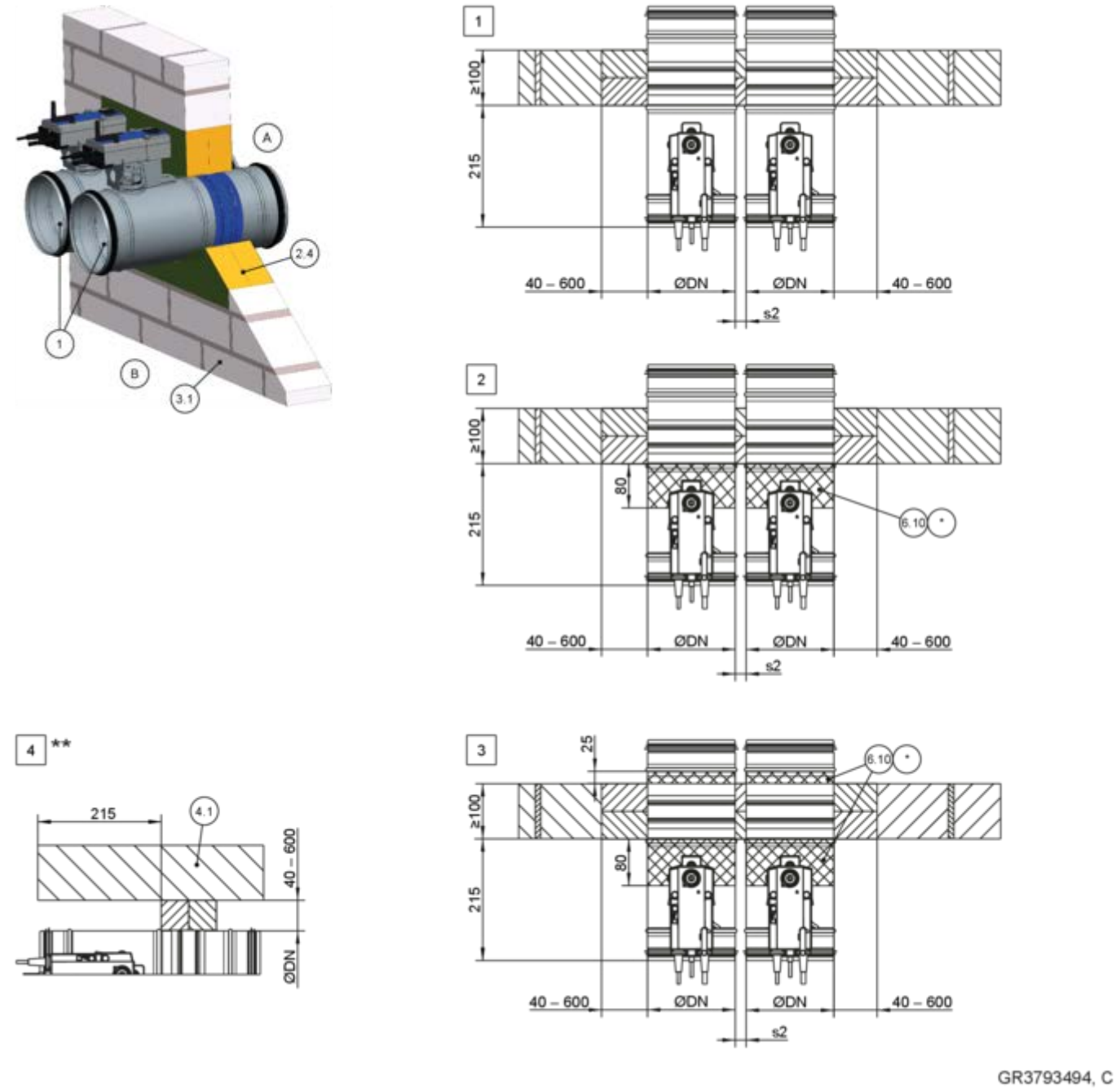


Fig. 66: Dry mortarless installation into a solid wall, with a fire batt, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)

1	FKRS-EU
2.4	Coated board system with firestop coating
3.1	Solid wall
4.1	Solid ceiling slab
6.10	Firestop coating around the perimeter, d = at least 2.5 mm
6.19	Mineral wool > 1000 °C, > 80 kg/m³, thickness = 20 mm, panel material around the perimeter, leave out the actuator and release mechanism; inspection openings must remain accessible
6.20	Pipe collar (can be ordered separately)
6.24	Elastomeric foam (flame-resistant, non-dripping) The following applies in Germany: For notes on the use of elastomeric foams ↳ *'Additional provision for use in Germany:' on page 8* .
*	6.19, 6.20 or 6.24 as an alternative
**	Installation near the floor as in 4
1 – 4	See table ↳ *91*

Note: The fire resistance properties of 4 depend on the nominal width and 6.10*.

Solid wall					
DN [mm]	Fire resistance rating to	Coating		s2 [mm]	Detail
		Operating side B	Installation side A		
100 – 200	EI 90 S	–	–	10* – 600	1, 4
224 – 315	EI 90 S	x	–	10* – 600	2, 4
100 – 200	EI 120 S	x	–	40 – 600	2, 4
224 – 315	EI 120 S	x	x	40 – 600	3, 4

* For a distance of 10 mm, mineral wool ≥ 1000 °C, ≥ 80 kg/m^3 with d = 10 mm and width nominal width/2 shall be provided between the fire dampers.

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

- Solid wall, ↬ *on page 42*
- Fire batt systems, installation details, distances/dimensions, ↬ *on page 38* f
- Suspension and fixing, ↬ *Chapter 5.15 'Fixing the fire damper' on page 255*
- General installation information, ↬ *5.3 'General installation information' on page 31* ff
- General information on installation with fire batt, ↬ *on page 38*

5.5.13 Dry mortarless installation with fire batt in solid wall - multiple occupancy of an installation opening

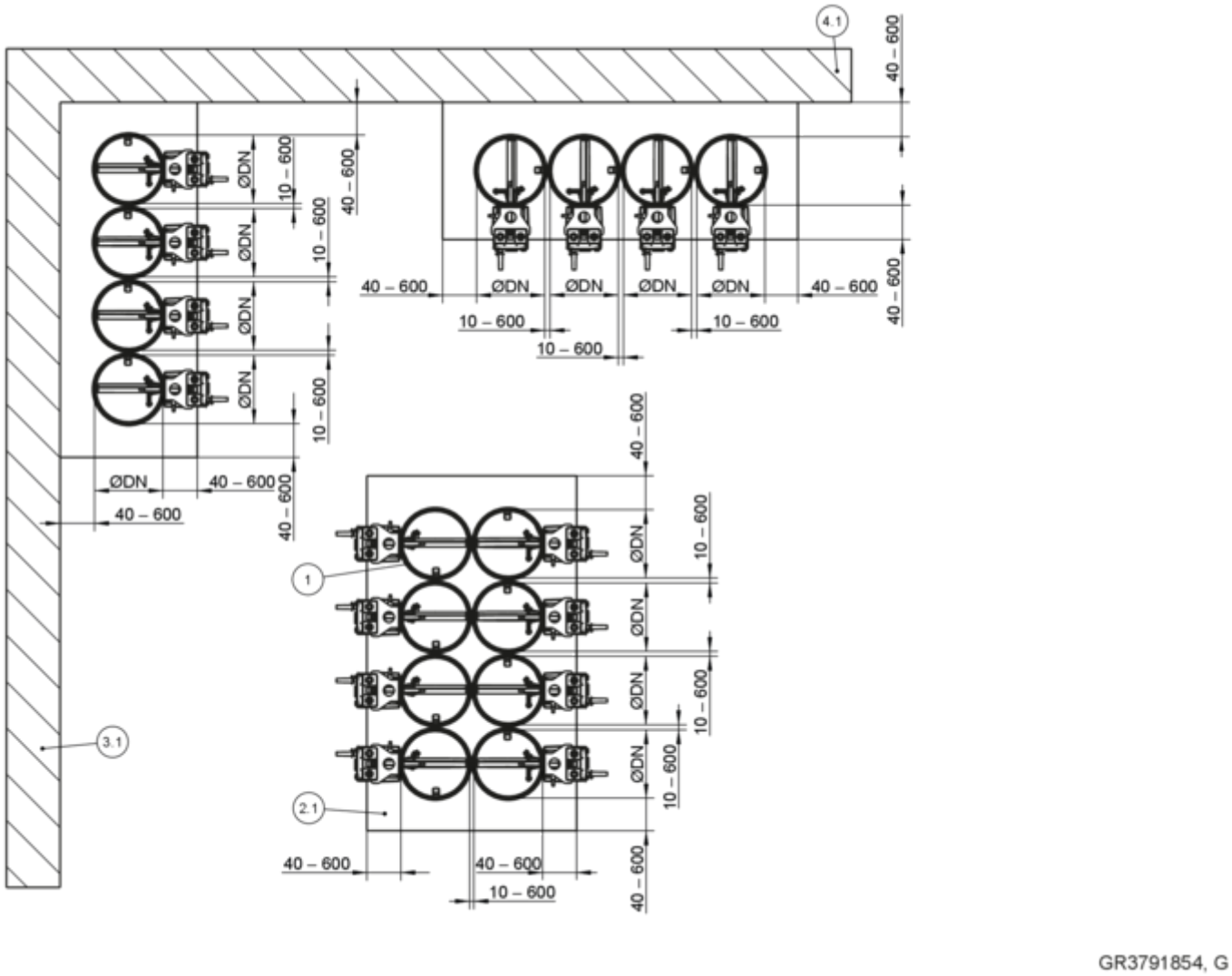


Fig. 67: Dry mortarless installation with fire batt in solid wall - multiple occupancy of an installation opening

1 FKRS-EU
2.1 Mortar
3.1 Solid wall (load-bearing structural element)
4.1 Solid ceiling slab (load-bearing component)

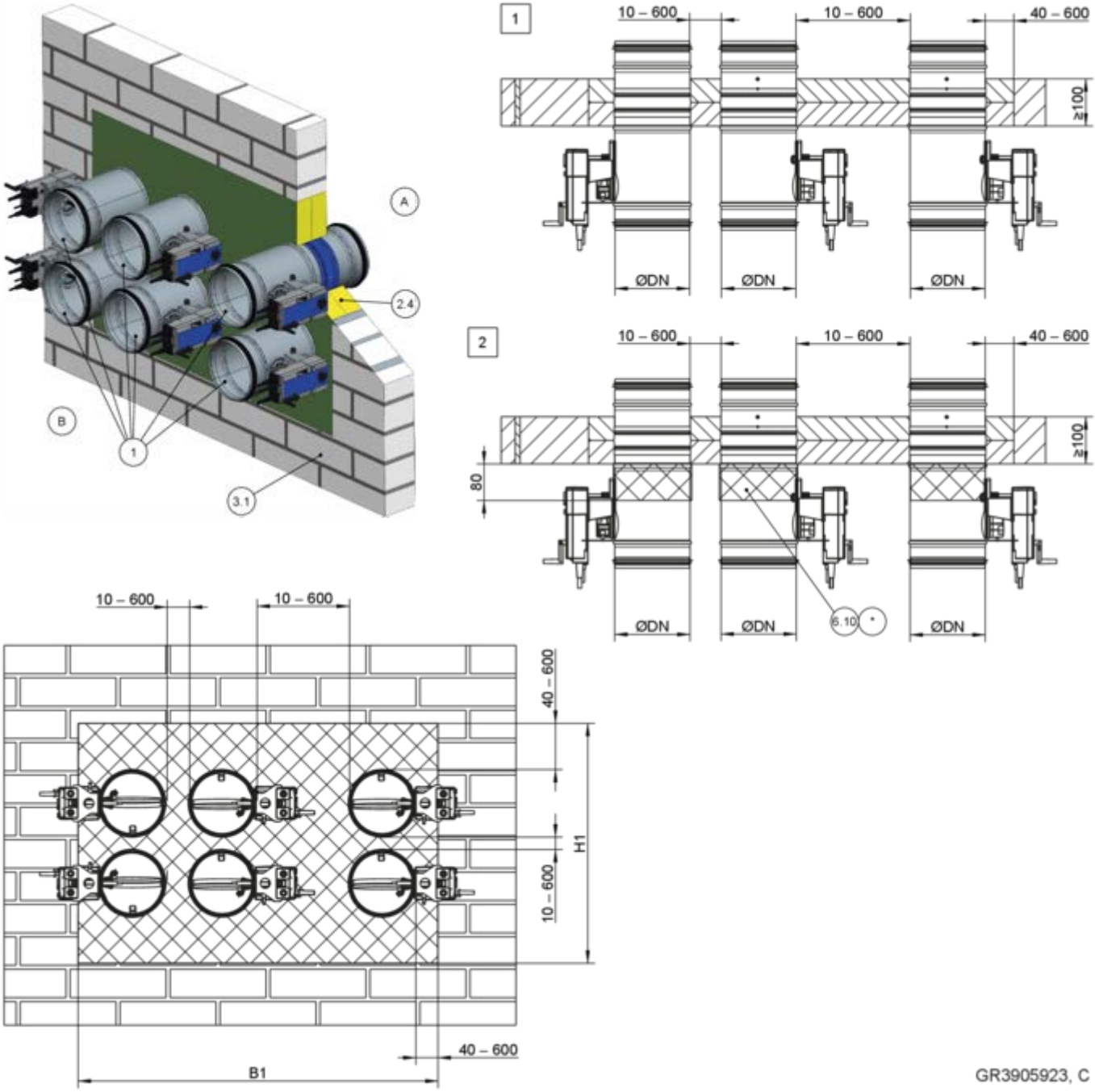


Fig. 68: Dry mortarless installation with fire batt in solid wall - multiple occupancy of an installation opening

1	FKRS-EU
2.4	Coated board system with firestop coating
3.1	Solid wall
6.10	Firestop coating around the perimeter, d = at least 2.5 mm
6.19	Mineral wool > 1000 °C, > 80 kg/m³, thickness = 20 mm, panel material around the perimeter, leave out the actuator and release mechanism; inspection openings must remain accessible
6.20	Pipe collar (can be ordered separately)
6.24	Elastomeric foam (flame-resistant, non-dripping) The following applies in Germany: For notes on the use of elastomeric foams *'Additional provision for use in Germany:' on page 8*.
*	6.19, 6.20 or 6.24 as an alternative
1 2	see table *Table on page 94*

Solid wall					
DN [mm]	Fire resistance rating to	Coating		Distance [mm]	Detail
		Operating side B	Installation side A		
100 – 200	EI 90 S	–	–	10* – 600	1
224 – 315	EI 90 S	x	–	10* – 600	2

* For a distance of 10 mm, mineral wool ≥ 1000 °C, ≥ 80 kg/m³ with d = 10 mm and width nominal width/2 shall be provided between the fire dampers.

Supplementary requirements: Dry mortarless installation with fire batt in solid walls – Multiple occupancy of an installation opening

- Solid wall, ↳ *on page 42*
- Overall fire damper area ≤ 1.2 m²
- The number of fire dampers in an installation opening is limited by their size (nominal width) and the overall area of the fire dampers (1.2 m²) (maximum 10 FKRS-EU in single or double row arrangement)
- Distance to load-bearing structural elements ≥ 40 mm
- Fire batt systems, installation details, distances/dimensions, ↳ *on page 38* f
- Suspension and fixing, ↳ *Chapter 5.15 'Fixing the fire damper' on page 255*
- General information on installation with fire batt, ↳ *on page 38*

5.6 Lightweight partition walls

5.6.1 General information

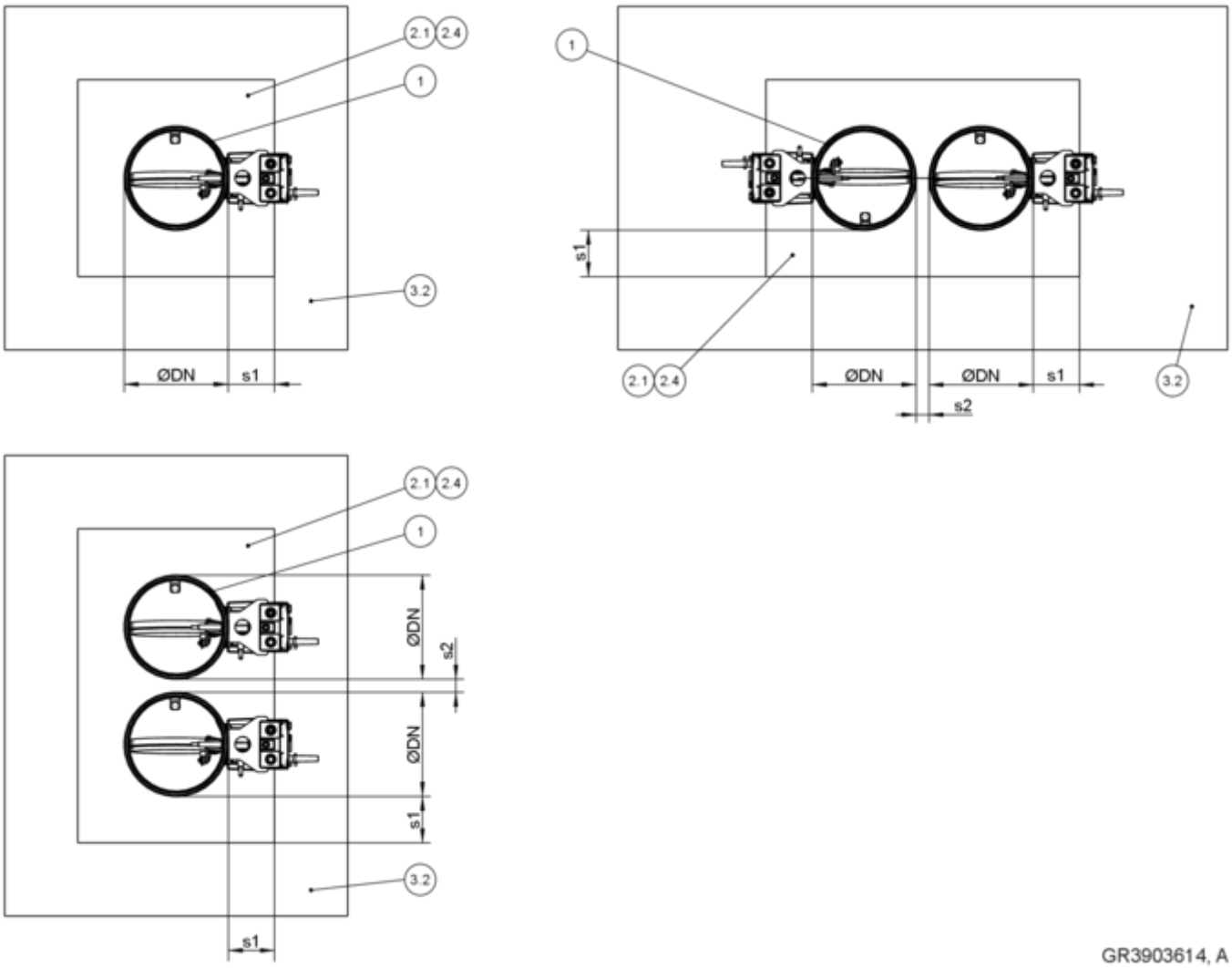


Fig. 69: Lightweight partition walls with metal frame construction – arrangement/distances

1 FKRS-EU
2.1 Mortar
2.4 Coated board system with firestop coating
3.2 Lightweight partition wall with metal support or steel support structure, cladding on both sides
s1 Perimeter gap, *on page 37*
s2 Distance between the fire dampers, *'Distances' on page 35*

Installation type	Installation opening [mm]	Distance [mm]	
		s1	s2
Mortar-based installation [5]	∅DN + max. 450	≤ 225	10/40 [2] – 225
Dry mortarless installation with TQ2 [5]	□A = ∅DN + 110 [3]	central installation	≥ 200 [4]
Dry mortarless installation with coated board system [1]	□A = ∅DN + max. 1200	40 – 600	10/40 [2] – 600

[1] Reveals required according to installation details
Observe the maximum permissible size of the soft bulkhead!
[2] Depending on fire resistance rating
[3] Installation opening tolerance ± 4 mm
[4] Installation into separate installation openings
[5] Reveal optional or according to installation detail (max. 2 × 12.5 mm / 1 × 25 mm)

Lightweight partition wall with metal support and cladding on both sides

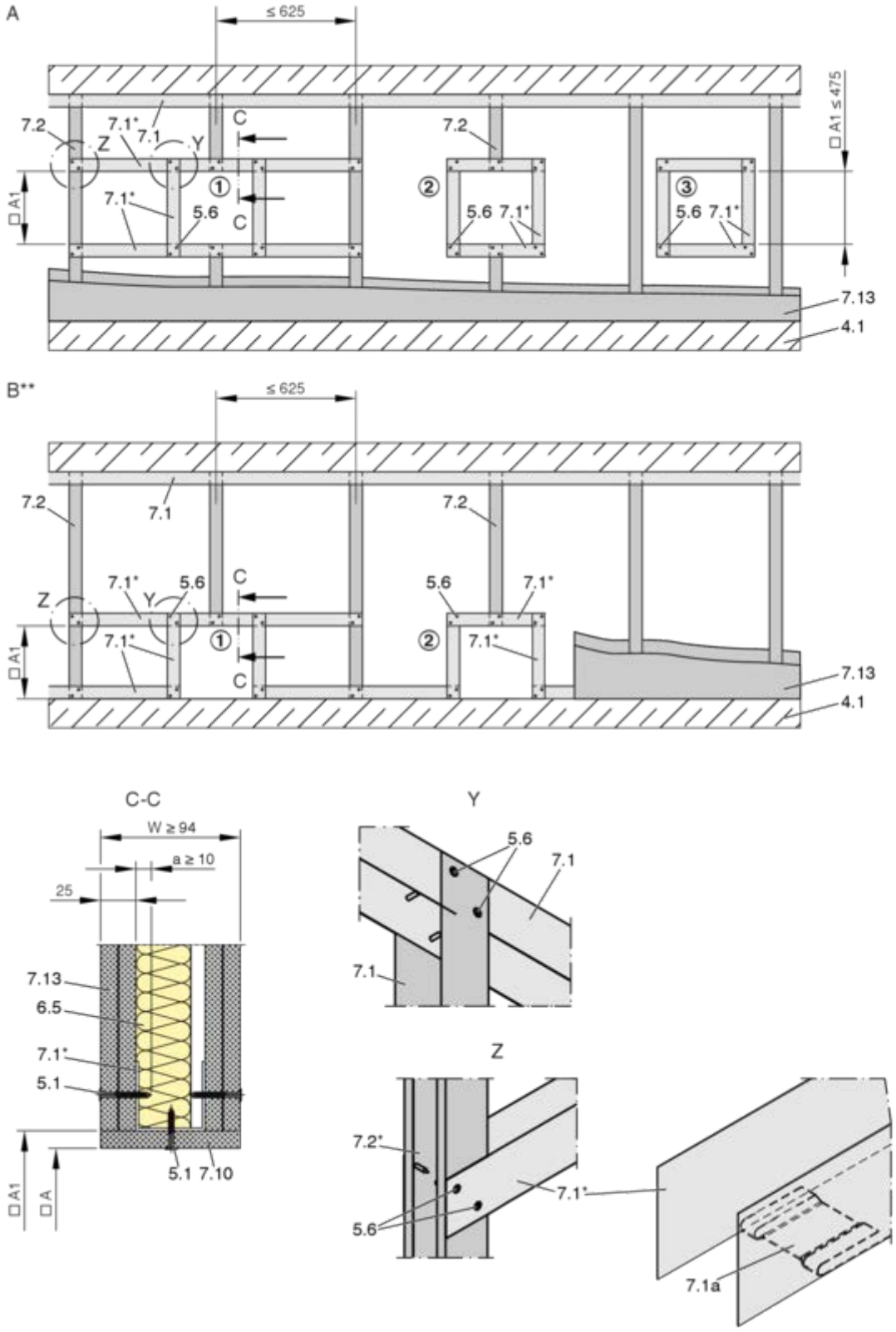


Fig. 70: Lightweight partition wall with metal support and cladding on both sides; for picture caption, see Fig. 71

Compartment wall with metal stud and cladding on both sides

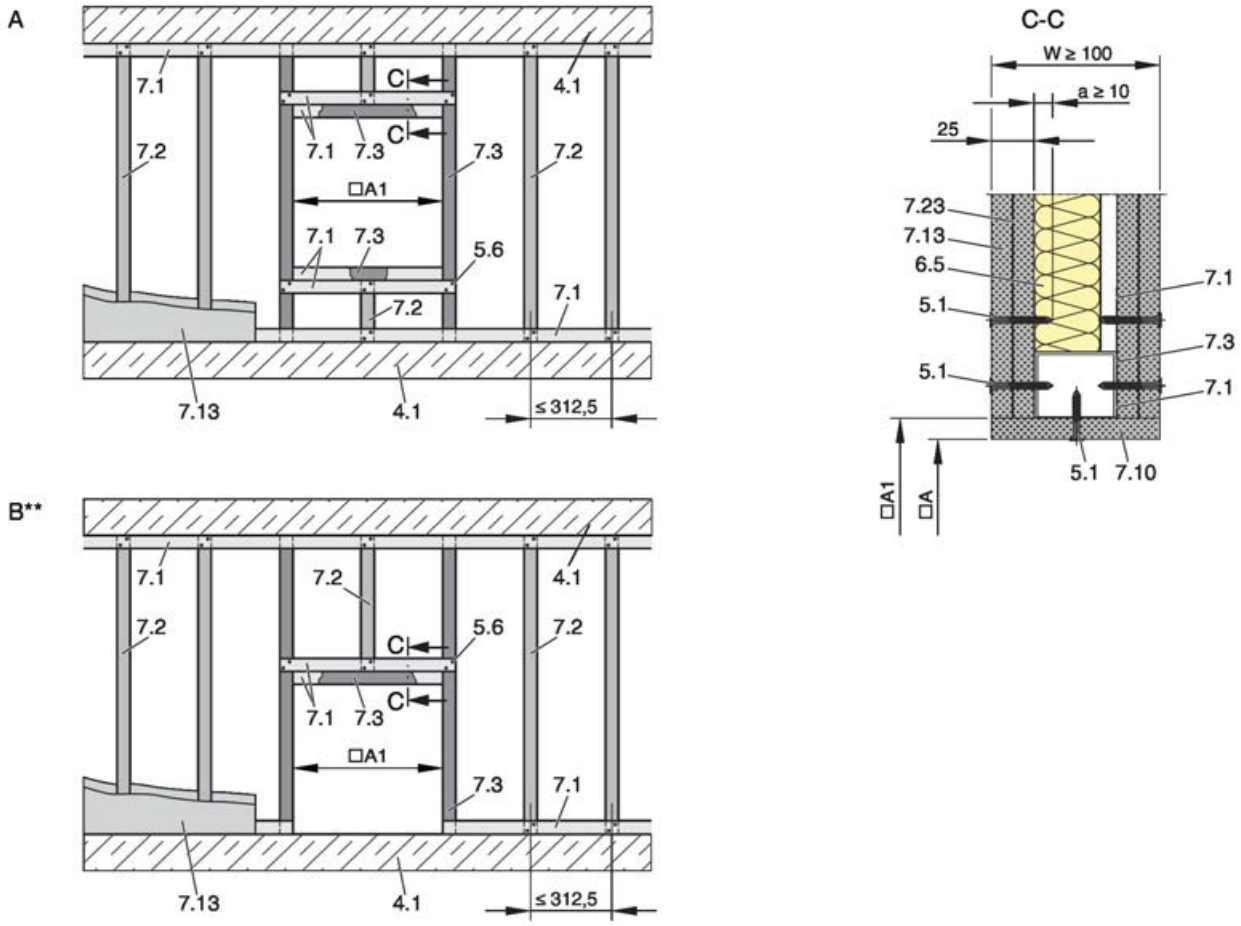


Fig. 71: Compartment wall with metal stud and cladding on both sides

A	Lightweight partition wall/compartment wall/ safety partition wall
B	Lightweight partition wall/compartment wall/ safety partition wall, installation near the floor
4.1	Solid ceiling/solid floor
5.1	Drywall screw
5.6	Screw or steel rivet
6.5	Mineral wool, depending on wall construction
7.1	UW section
7.1a	UW section, either cut in and bent, or cut off
7.2	CW section
7.3	UA section
7.10	Reveals according to installation details
7.13	Cladding
7.23	Sheet steel insert according to wall manufacturer (if applicable)
*	closed side must face the installation opening
**	installation near the ceiling analogue to B
□A	Installation opening
□A1	Opening in the metal support structure (without reveals: □A = □A1)

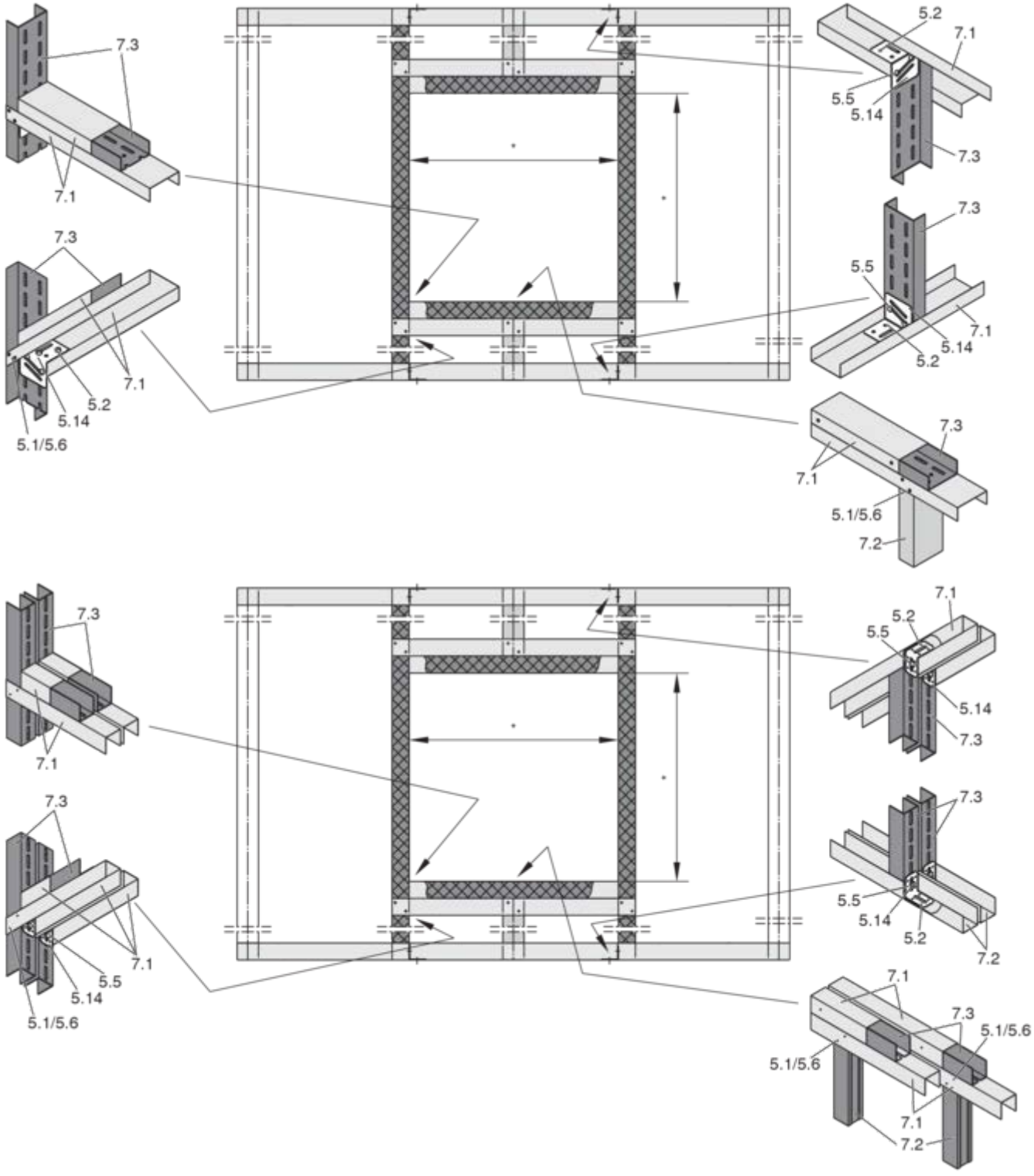


Fig. 72: Metal stud frame for a compartment wall, single and double stud system

5.1	Drywall 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 partition walls and compartment walls with metal stud

- Lightweight partition wall or fire wall, ↳ *on page 42*

Erecting a wall and creating an installation opening

- Erect the lightweight partition wall according to the manufacturer's instructions and create the installation opening in accordance with the specifications in these instructions, ↳ *5.6.1 'General information' on page 95* ff
  - Variant 1: Create an installation opening in the metal support structure with trimmer and angle section, then clad the wall.
  - Variant 2: Create installation opening in the metal stud frame with circumferential metal sections. If a standard vertical stud is cut, it must be connected to the profiles of the installation opening.
  - Option 3: After cladding the wall, create a square wall opening (clear installation opening ≤ 475 mm) between the standard studs and reinforce the installation opening with a circumferential metal profile. On both sides, screw metal sections over the cladding, spaced approx. 100 mm apart.

5.6.2 Mortar-based installation

Mortar-based installation into a lightweight partition wall, compartment wall or safety partition wall

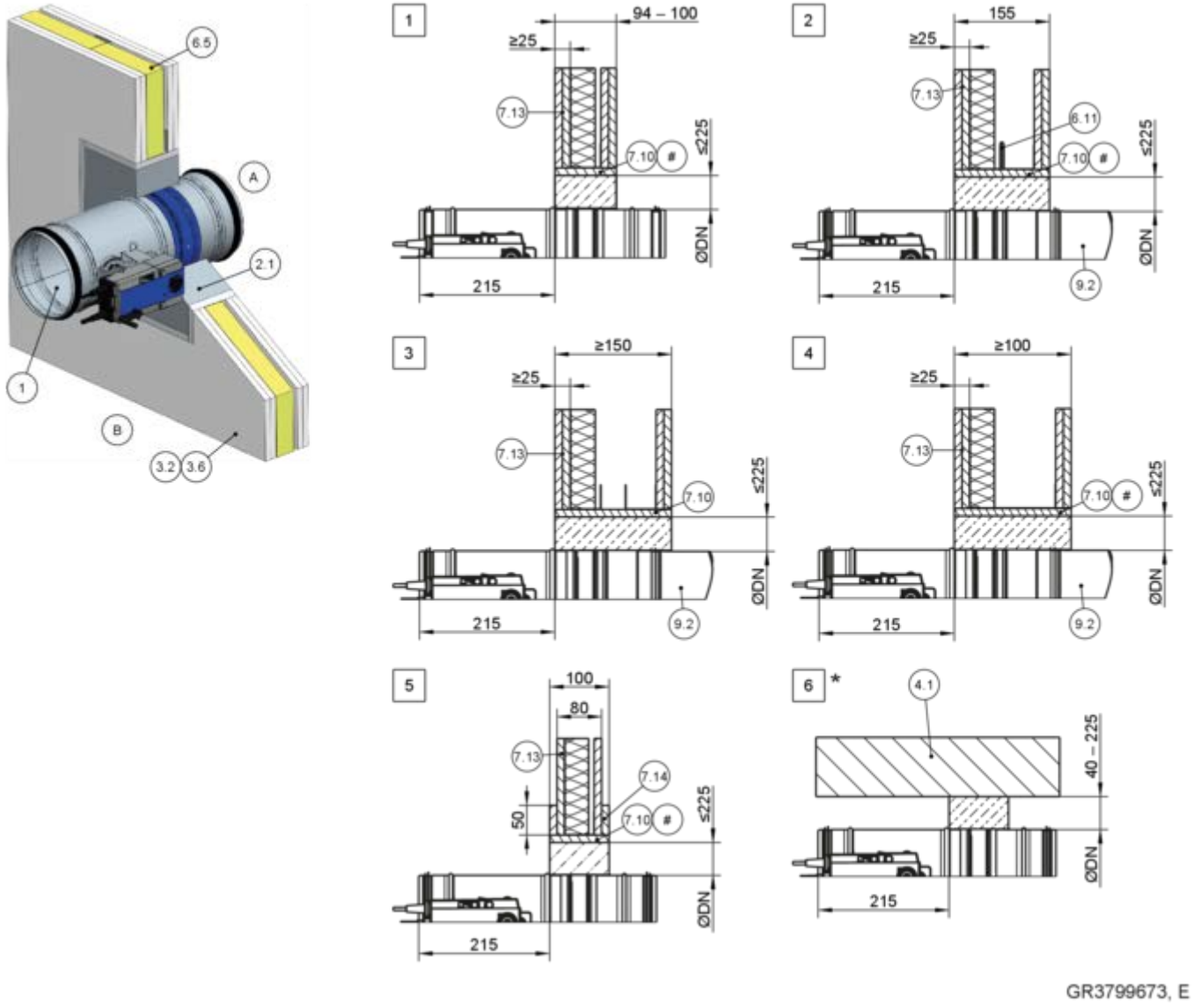


Fig. 73: Mortar-based installation into a lightweight partition wall, compartment wall or safety partition wall

1	FKRS-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 or steel support structure, cladding on both sides	9.2	Air duct/extension piece
3.6	Compartment wall or safety partition wall with metal stud, clad on both sides	#	Optional
4.1	Solid ceiling/solid floor	*	Installation near the floor as in 6
6.5	Mineral wool, depending on wall construction	1 – 4	Up to EI 120 S
6.11	Insulating strips (depending on wall construction)	5	Up to EI 60 S
7.10	Reveal	6	EI 30 S – EI 120 S

Mortar-based installation into a lightweight partition wall

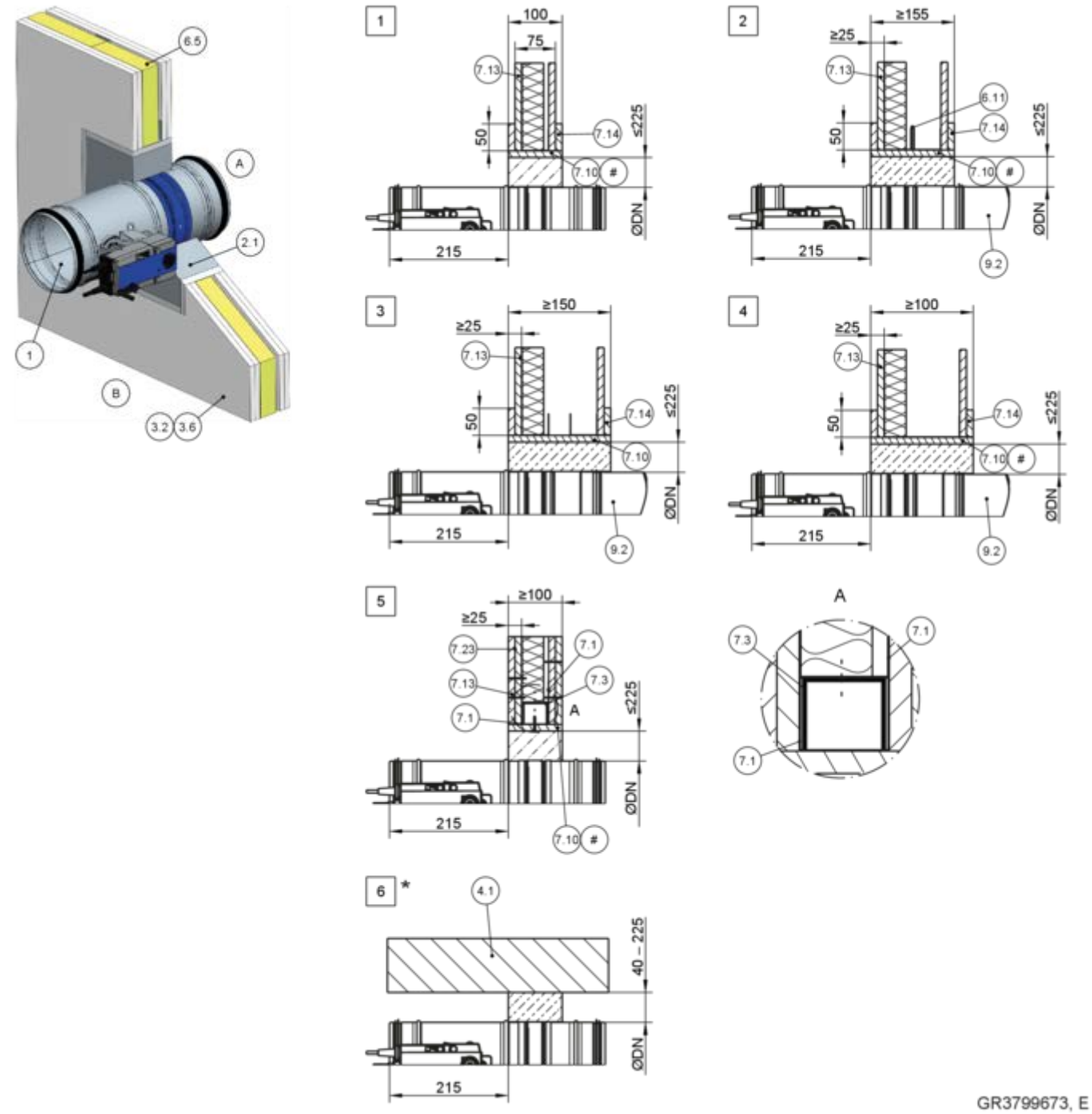


Fig. 74: Mortar-based installation into a lightweight partition wall, compartment wall or safety partition wall

1	FKRS-EU
2.1	Mortar
3.2	Lightweight partition wall with metal support or steel support structure, cladding on both sides
3.6	Compartment wall or safety partition wall with metal stud, clad on both sides
4.1	Solid ceiling/solid floor
6.5	Mineral wool, depending on wall construction
6.11	Insulating strips (depending on wall construction)
7.3	UA section
7.10	Reveal
7.13	Cladding
7.14	Reinforcing board of the same material as the wall
7.23	Sheet steel insert
9.2	Air duct/extension piece
#	Optional
*	Installation near the floor as in 6
1 – 4	EI 30 S
5	EI 120 S
6	EI 30 S – EI 120 S

Mortar-based installation in lightweight partition wall – Installation not flush with wall

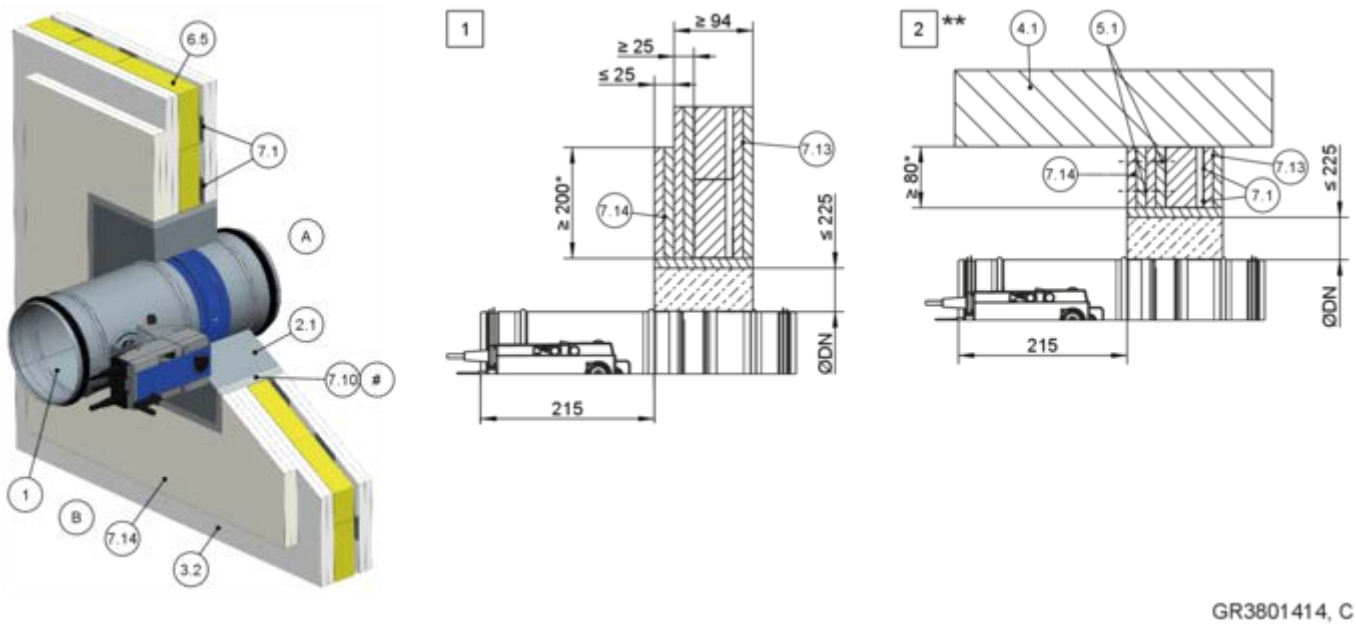


Fig. 75: Mortar-based installation in lightweight partition wall – Installation not flush with wall

1	FKRS-EU
2.1	Mortar
3.2	Lightweight partition wall with metal support or steel support structure, cladding on both sides
4.1	Solid ceiling/solid floor
6.5	Mineral wool, depending on wall construction
7.1	UW section
7.10	Reveal
7.13	Cladding
7.14	Reinforcing board of the same material as the wall
#	Optional/depending on wall construction
*	Fixing to at least two metal post profiles
**	Installation near the floor as in 2
1 2	EI 120 S

Mortar-based installation into a lightweight partition wall, flange to flange

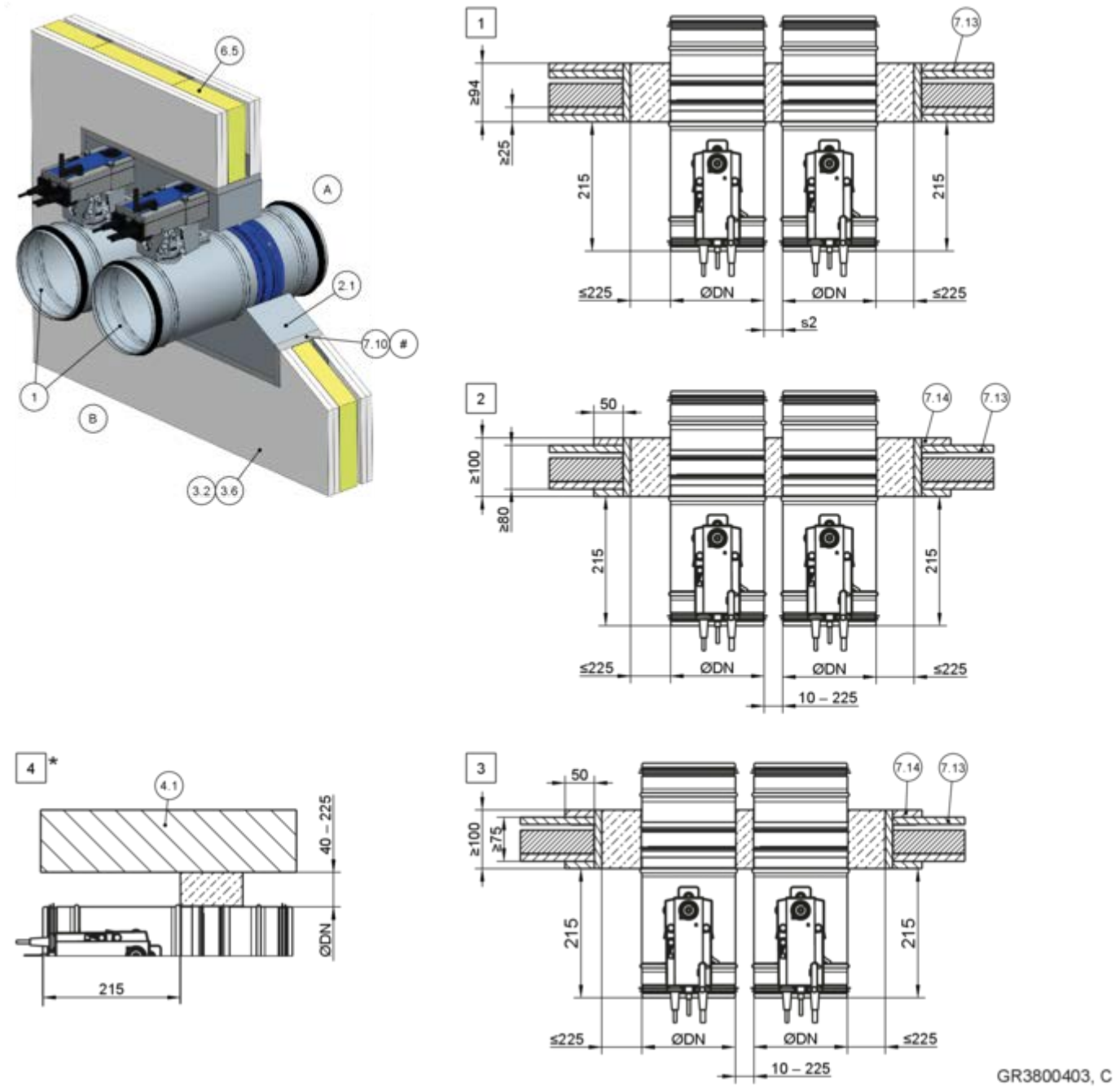


Fig. 76: Mortar-based installation into a lightweight partition wall, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)

1	FKRS-EU
2.1	Mortar
3.2	Lightweight partition wall with metal support or steel support structure, cladding on both sides
3.6	Compartment wall or safety partition wall with metal stud, clad on both sides
4.1	Solid ceiling/solid floor
6.5	Mineral wool, depending on wall construction
7.10	Reveal
7.13	Cladding
7.14	Reinforcing board of the same material as the wall
#	According to installation details Fig. 73 and Fig. 74
*	Installation near the floor as in 4
1	Up to EI 120 S for s2 = 40 – 225 mm Up to EI 90 S for s2 = 10 – 225 mm
2	Up to EI 60 S
3	EI 30 S
4	EI 30 S – EI 120 S

Mortar-based installation into a lightweight partition wall, below a flexible ceiling joint

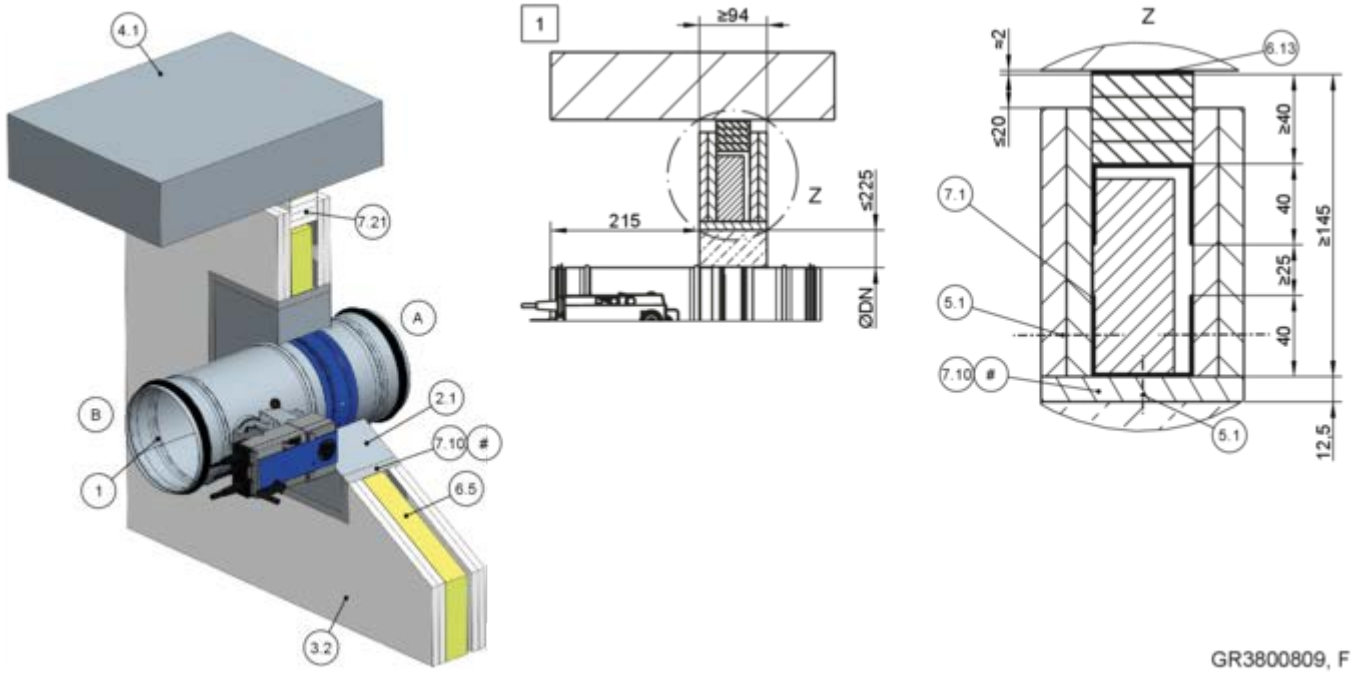


Fig. 77: Mortar-based installation into a lightweight partition wall, below a flexible ceiling joint

1	FKRS-EU
2.1	Mortar
3.2	Lightweight partition wall with metal support or steel support structure, cladding on both sides
4.1	Solid ceiling slab
5.1	Drywall screw
6.5	Mineral wool, depending on wall construction
6.13	Mineral wool strips A1, filler as an alternative (if required to even out an uneven wall)
7.1	UW section
7.10	Reveal
7.21	Ceiling joint strips (e.g. 4 × ≥ 10 mm)
#	According to installation details Fig. 73 and Fig. 74
1	Up to EI 120 S

Note: Illustration is an example. The distance from the ceiling depends on the flexible ceiling joint, the expected ceiling subsidence and the specifications of the wall manufacturer.

Mortar-based installation into a lightweight partition wall, FKRS-EU and FK2-EU, combined

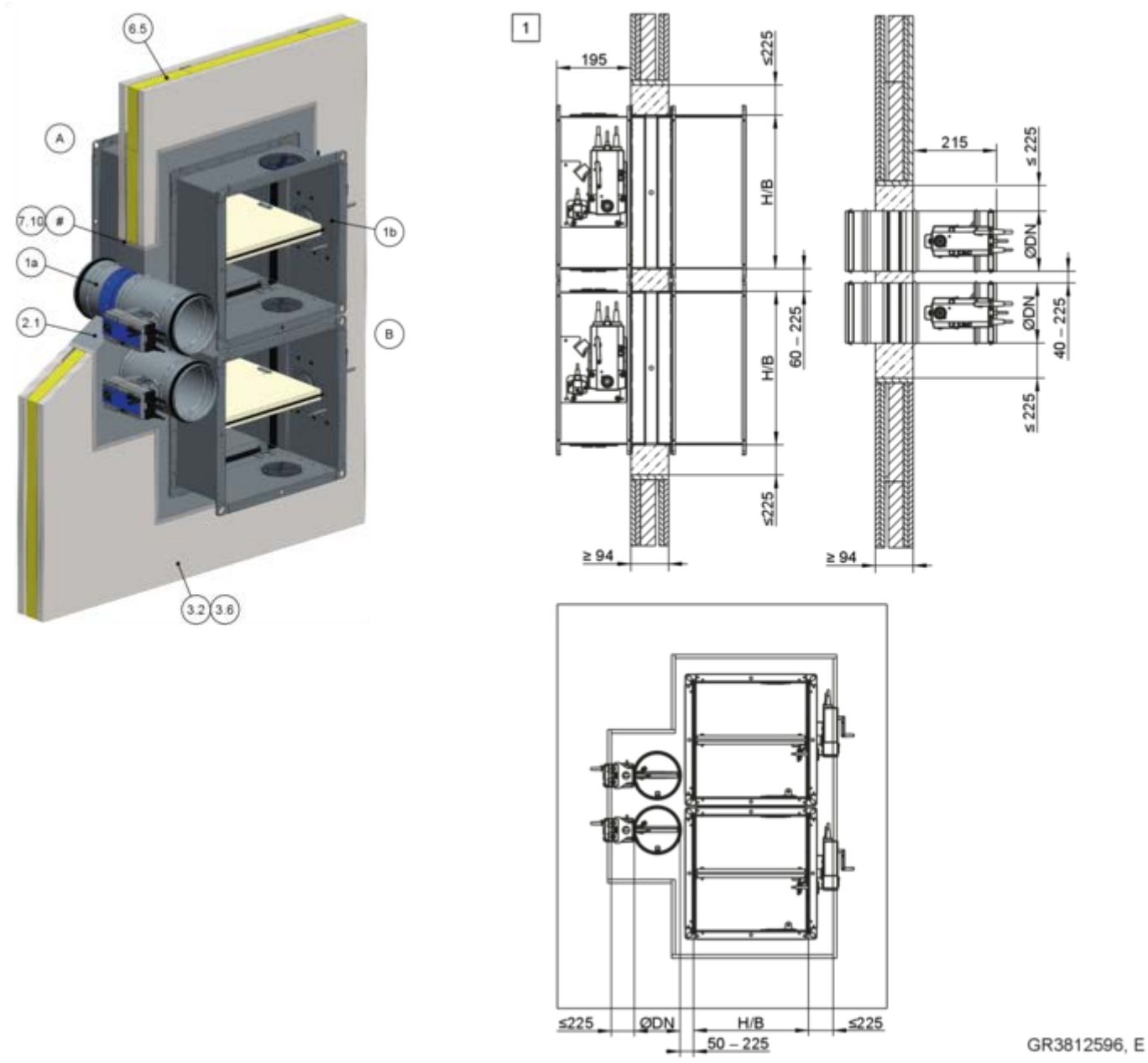


Fig. 78: Mortar-based installation into a lightweight partition wall, FKRS-EU and FK2-EU, combined

1a FKRS-EU
1b FK2-EU up to B × H ≤ 800 × 400 mm
2.1 Mortar
3.2 Lightweight partition wall with metal support or steel support structure, cladding on both sides
3.6 Compartment wall or safety partition wall with metal stud, clad on both sides
6.5 Mineral wool, depending on wall construction
7.10 Reveal
According to installation details Fig. 73 and Fig. 74
1 up to EI 90 S

For combined installation please note:

- Overall fire damper area ≤ 1.2 m^2 .
- The number of fire dampers in an installation opening is limited by their size (B × H for FK2-EU and/or ∅nominal width for FKRS-EU) and the overall area of the fire dampers (1.2 m^2).
- Other arrangements (side by side or on top of each other) are possible.
  For installation details FK2-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 walls and compartment walls

- Lightweight partition wall or fire wall, ↳ *on page 42*
- General installation information, ↳ *5.3 'General installation information' on page 31* ff
- General information on mortar-based installation, ↳ *'**Mortar-based installation**' on page 37*

5.6.3 Mortar-based installation – multiple occupancy of one installation opening

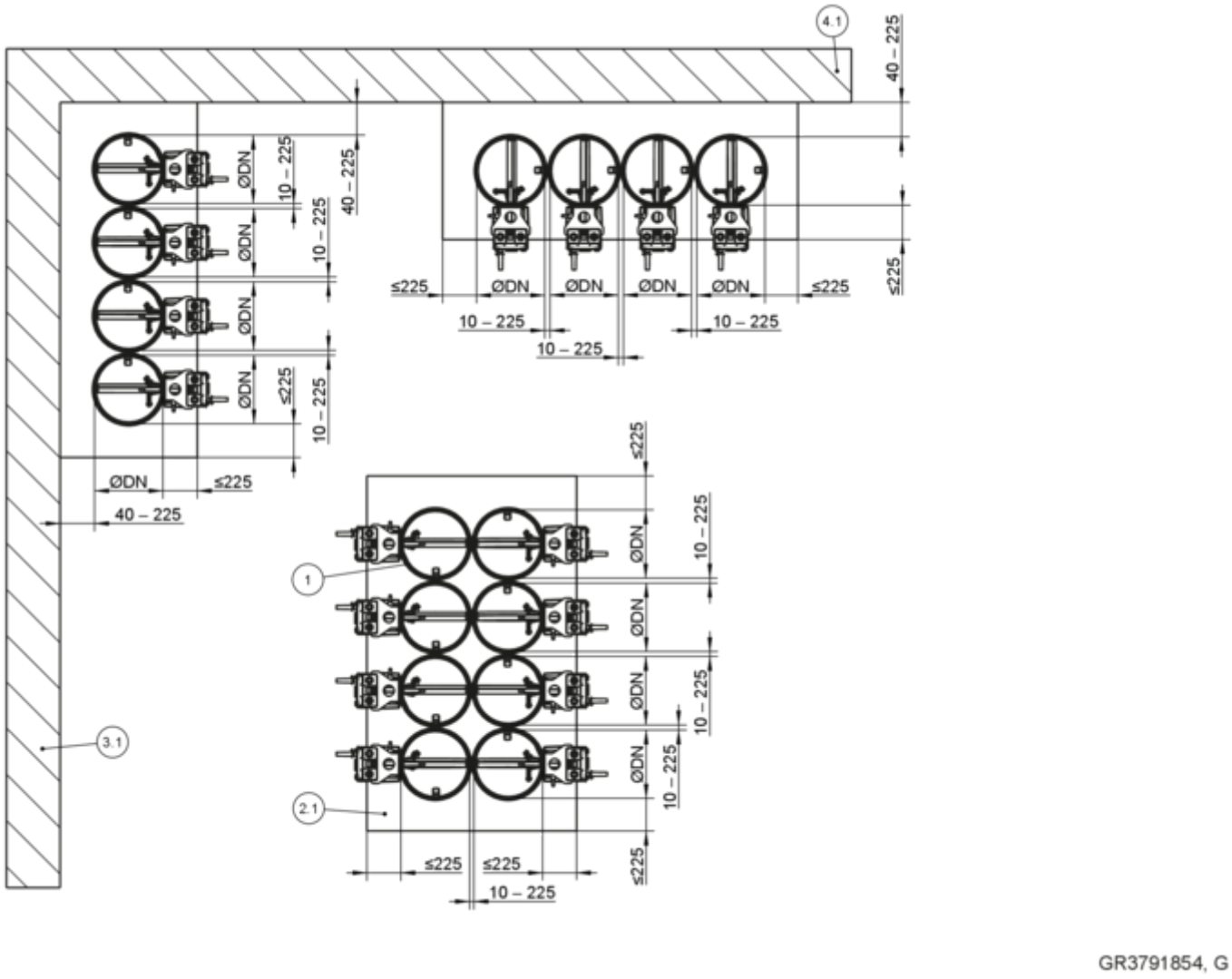


Fig. 79: Mortar-based installation – multiple occupancy of one installation opening

1 FKRS-EU
2.1 Mortar
3.1 Solid wall (load-bearing structural element)
4.1 Solid ceiling slab (load-bearing component)

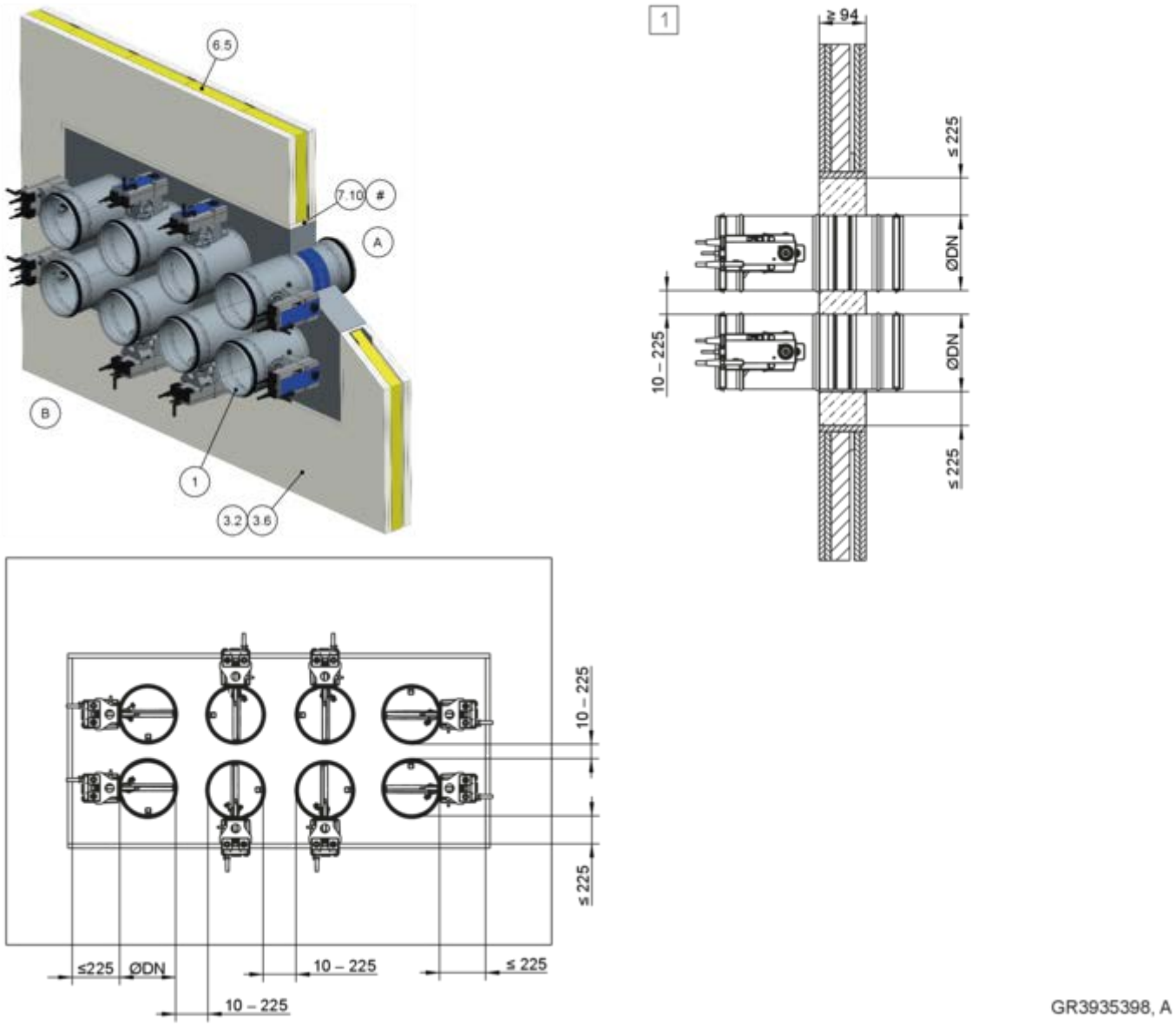


Fig. 80: Mortar-based installation – multiple occupancy of one installation opening

1	FKRS-EU
2.1	Mortar
3.2	Lightweight partition wall with metal support or steel support structure, cladding on both sides
3.6	Compartment wall or safety partition wall with metal stud, clad on both sides
6.5	Mineral wool, depending on wall construction
7.10	Reveal
#	According to installation details Fig. 73 and Fig. 74
[1]	up to EI 90 S

Additional requirements: mortar-based installation – multiple installation into one installation opening

- Lightweight partition wall or fire wall,
  on page 42
- The number of fire dampers in an installation opening is limited by their size (nominal width) and the overall area of the fire dampers (1.2 m^2) (maximum 10 FKRS-EU in single or double row arrangement)
- Distance to load-bearing structural elements ≥ 40 mm
- The mortar bed width must not exceed 225 mm, provide separate framed openings if necessary.

5.6.4 Dry mortarless installation into a lightweight partition wall, without installation kit

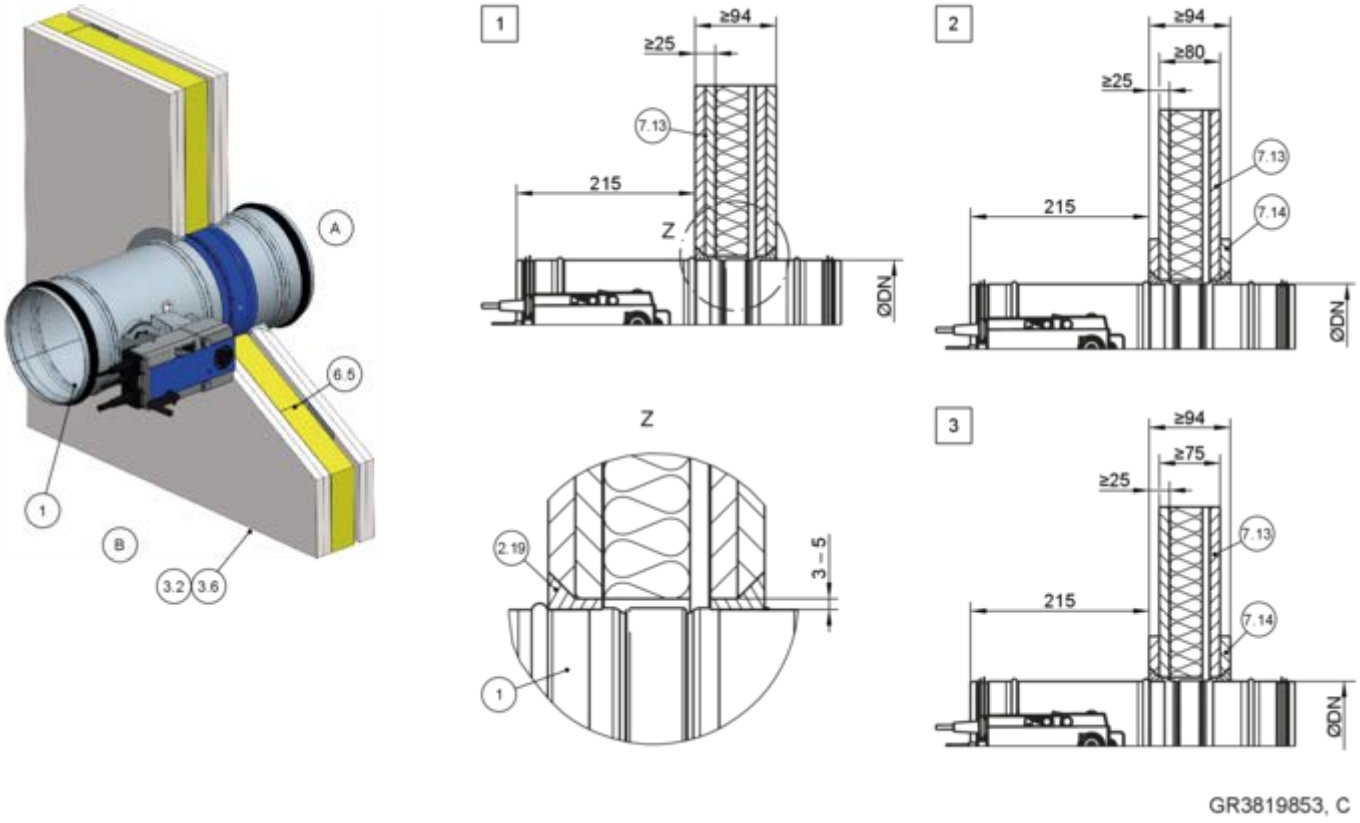


Fig. 81: Dry mortarless installation into a lightweight partition wall, without installation kit

1 FKRS-EU
2.19 Joint filler (filler, ready-mix filler or equivalent)
3.2 Lightweight partition wall with metal support or steel support structure, cladding on both sides
3.6 Compartment wall or safety partition wall with metal stud, clad on both sides
6.5 Mineral wool, depending on wall construction
7.13 Cladding
7.14 Reinforcing board of the same material as the wall
1 2 Up to EI 60 S
3 EI 30 S

Additional requirements: dry mortarless installation into lightweight partition walls without installation kit

- Lightweight partition wall, *on page 42*
- ≥ 200 mm distance between two fire dampers
- ≥ 75 mm distance between the fire damper and load-bearing components

1. Make a circular installation opening DN + 6 – 10 mm between two regular studs.
2. Chamfer the outer layer of the cladding all round on both sides and completely fill the surrounding gap on both sides with joint filler to the depth of the cladding.
3. Connection of the air duct via flexible connectors (recommendation).

5.6.5 Dry mortarless installation into a lightweight partition wall, with installation kit TQ2

Dry mortarless installation into a lightweight partition wall, with installation kit TQ2

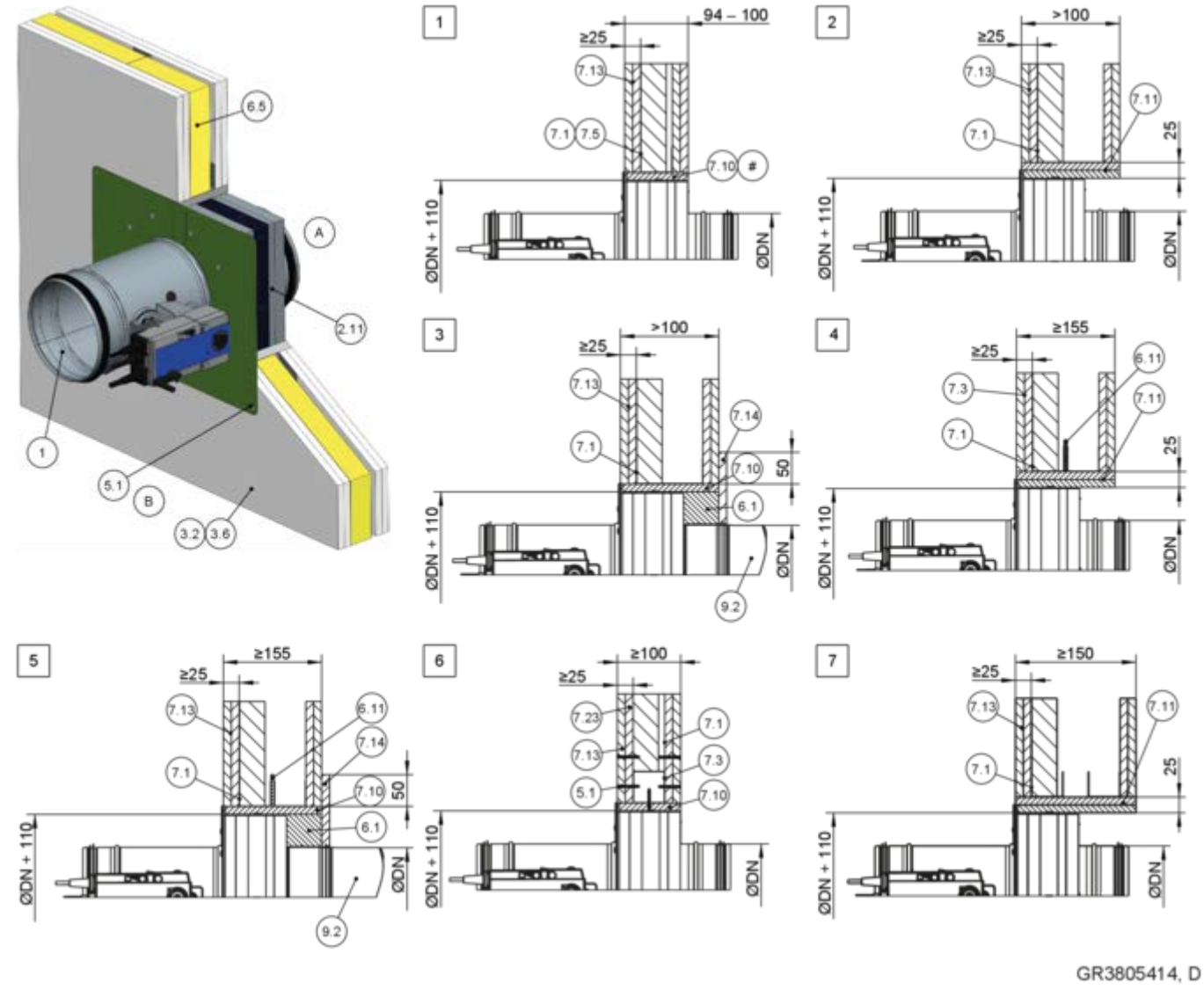


Fig. 82: Dry mortarless installation into a lightweight partition wall, with installation kit TQ2

1	FKRS-EU
2.11	Installation kit TQ2 with cover plate
3.2	Lightweight partition wall with metal support or steel support structure, cladding on both sides
3.6	Compartment wall or safety partition wall with metal stud, clad on both sides
5.1	Dry wall screw, min. 10 mm screwed into the metal stud frame
6.1	Mineral wool, ≥ 1000 °C, ≥ 40 kg/m³
6.5	Mineral wool, depending on wall construction
6.11	Insulating strips (depending on wall construction)
7.1	UW section
7.3	UA section
7.5	Steel support structure (box section)
7.10	Soffit (max. 25 mm), fire-resistant
7.11	Fire-resistant reveals, double
7.13	Cladding
7.14	Reinforcing board of the same material as the wall
7.23	Sheet steel insert
9.2	Air duct/extension piece
#	Optional
1 – 7	Up to EI 120 S

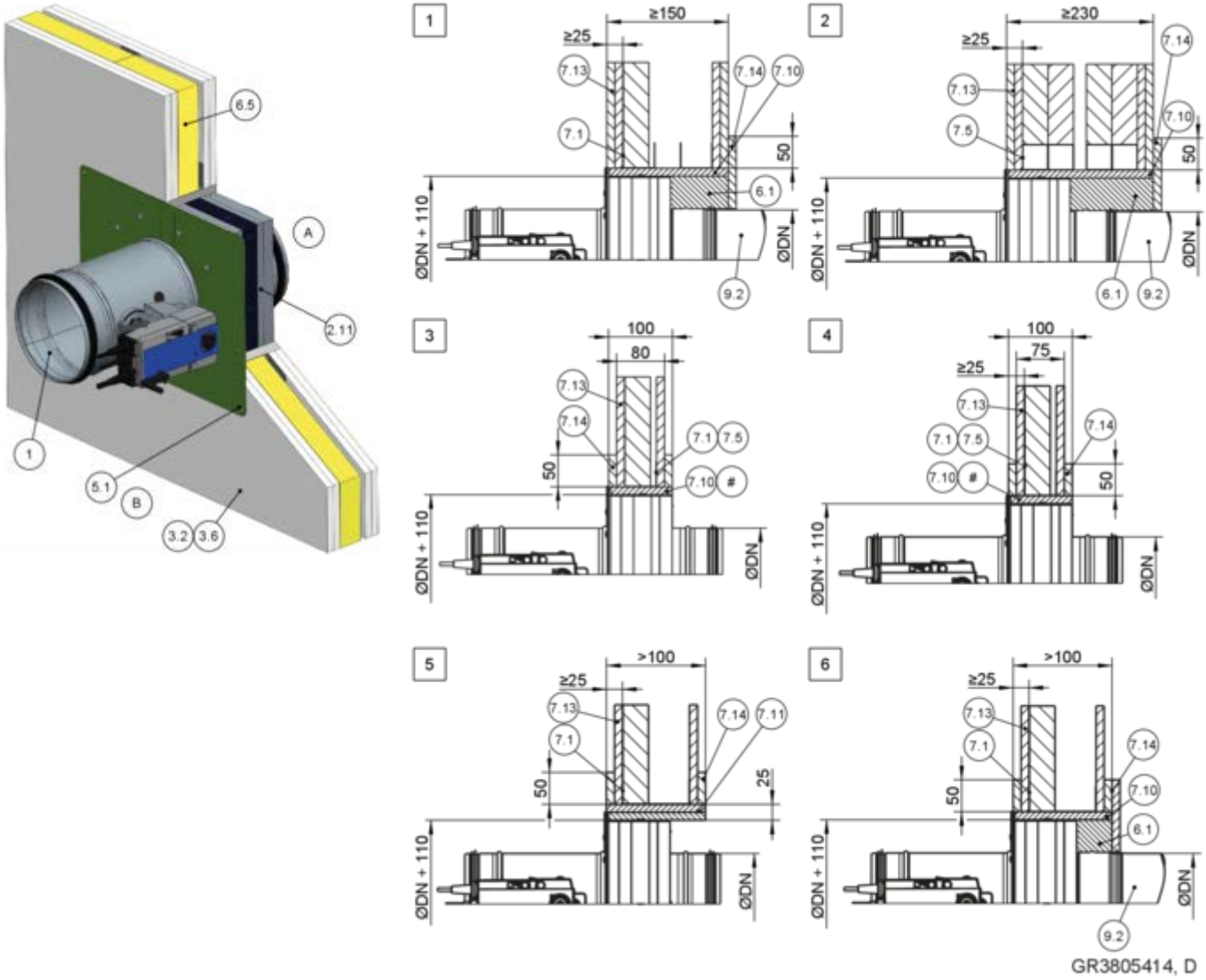


Fig. 83: Dry mortarless installation into a lightweight partition wall, with installation kit TQ2

1	FKRS-EU
2.11	Installation kit TQ2 with cover plate
3.2	Lightweight partition wall with metal support or steel support structure, cladding on both sides
3.6	Compartment wall or safety partition wall with metal stud, clad on both sides
5.1	Dry wall screw, min. 10 mm screwed into the metal stud frame
6.1	Mineral wool, ≥ 1000 °C, ≥ 40 kg/m³
6.5	Mineral wool, depending on wall construction
7.1	UW section
7.5	Steel support structure (box section)
7.10	Soffit (max. 25 mm), fire-resistant
7.11	Fire-resistant reveals, double
7.13	Cladding, fire-resistant, also with sheet steel insert
7.14	Reinforcing board of the same material as the wall
9.2	Air duct/extension piece
#	Optional
1 2	Up to EI 120 S
3	Up to EI 60 S
4 – 6	EI 30 S

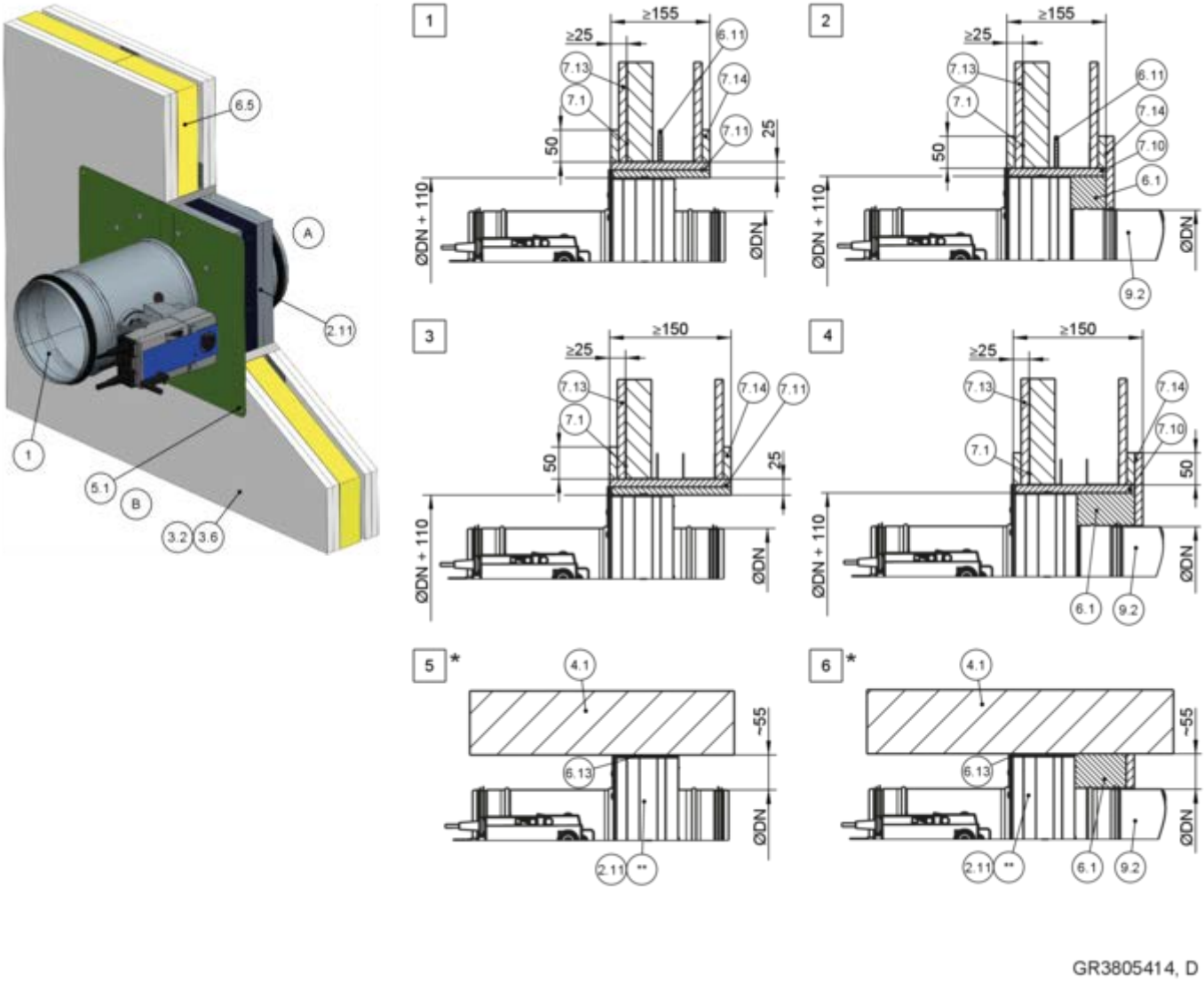


Fig. 84: Dry mortarless installation into a lightweight partition wall, with installation kit TQ2

1	FKRS-EU
2.11	Installation kit TQ2 with cover plate
3.2	Lightweight partition wall with metal support or steel support structure, cladding on both sides
3.6	Compartment wall or safety partition wall with metal stud, clad on both sides
4.1	Solid ceiling/solid floor
5.1	Dry wall screw, min. 10 mm screwed into the metal stud frame
6.1	Mineral wool, ≥ 1000 °C, ≥ 40 kg/m³
6.5	Mineral wool, depending on wall construction
6.11	Insulating strips (depending on wall construction)
6.13	Mineral wool strips A1, alternatively gypsum mortar
7.1	UW section
7.10	Soffit (max. 25 mm), fire-resistant
7.11	Fire-resistant reveals, double
7.13	Cladding, fire-resistant, also with sheet steel insert
7.14	Reinforcing board of the same material as the wall
9.2	Air duct/extension piece
#	Optional
*	Installation near the floor analogous to 5 and 6
**	Cover plate shortened by others
1 – 4	EI 30 S
5 6	EI 30 S – EI 120 S

Dry mortarless installation in lightweight partition wall with installation kit TQ2 – Installation not flush with wall

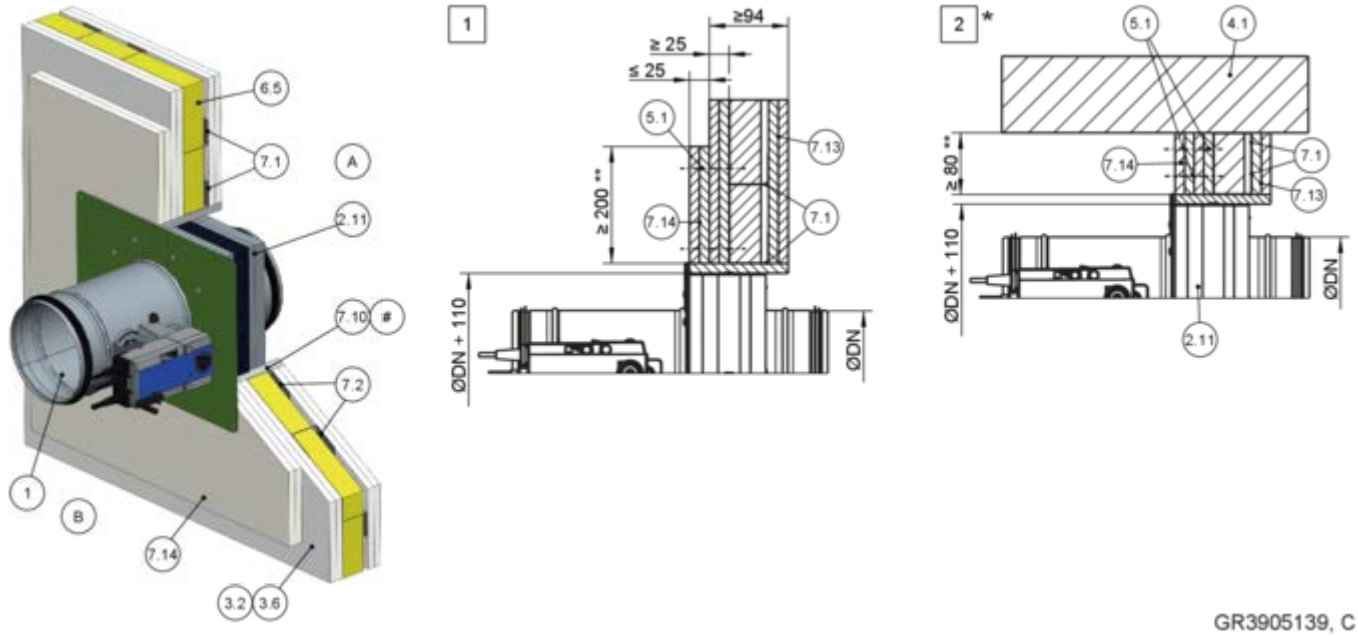


Fig. 85: Dry mortarless installation in lightweight partition wall with installation kit TQ2 – Installation not flush with wall

1	FKRS-EU
2.11	Installation kit TQ2 with cover plate
3.2	Lightweight partition wall with metal support or steel support structure, cladding on both sides
3.6	Compartment wall or safety partition wall with metal stud, clad on both sides
4.1	Solid ceiling slab
5.1	Dry wall screw, min. 10 mm screwed into the metal stud frame
6.5	Mineral wool, depending on wall construction
7.1	UW section
7.2	CW section
7.10	Soffit (max. 25 mm), fire-resistant
7.13	Cladding, fire-resistant, also with sheet steel insert
7.14	Reinforcing board of the same material as the wall
#	Optional/depending on wall construction
*	Installation near the floor as in 2
**	Fixing to at least two metal post profiles
1 2	Up to EI 120 S

Dry mortarless installation with installation kit TQ2 into a lightweight partition wall, below a flexible ceiling joint

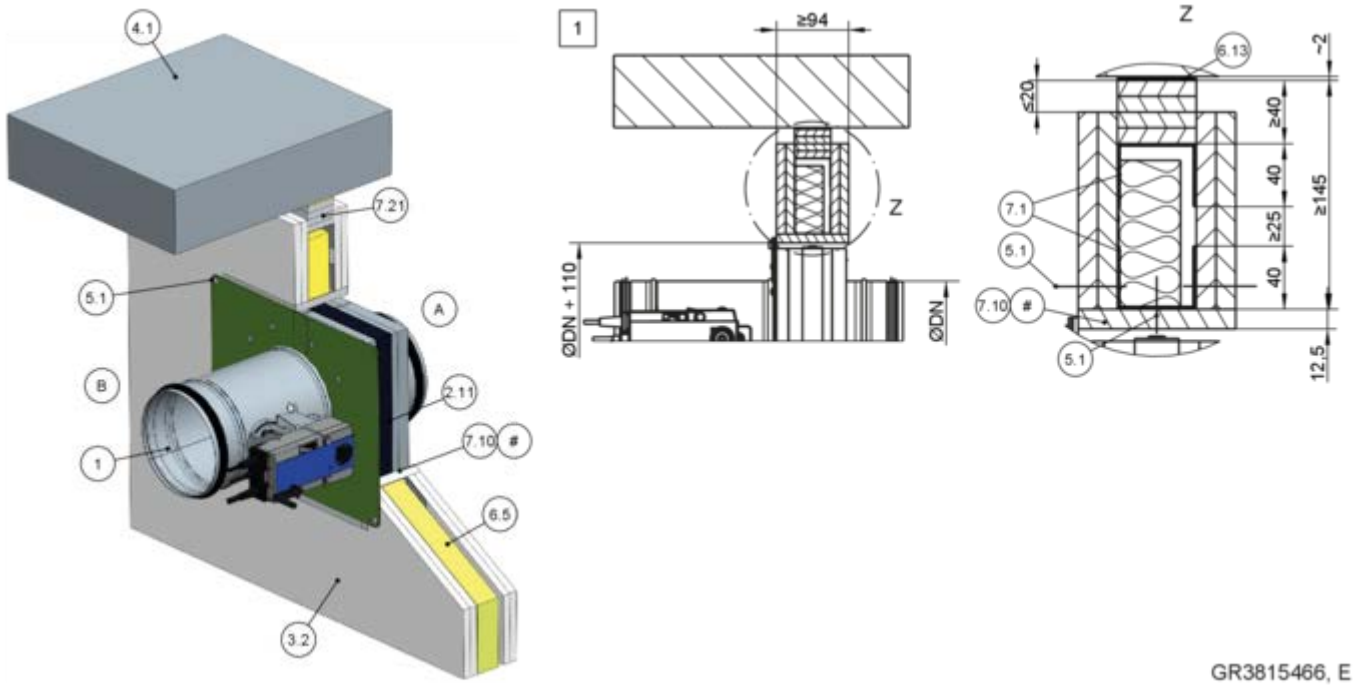


Fig. 86: Dry mortarless installation with installation kit TQ2 into a lightweight partition wall, below a flexible ceiling joint

1 FKRS-EU
2.11 Installation kit TQ2 with cover plate
3.2 Lightweight partition wall with metal support or steel support structure, cladding on both sides
3.6 Compartment wall or safety partition wall with metal stud, clad on both sides
4.1 Solid ceiling slab
5.1 Dry wall screw, min. 10 mm screwed into the metal stud frame
6.5 Mineral wool, depending on wall construction
6.13 Mineral wool strips A1, if required, alternatively gypsum mortar
7.1 UW section
7.10 Soffit (max. 25 mm), fire-resistant
7.21 Ceiling joint strips (e.g. 4 × ≥ 10 mm)
according to installation details Fig. 82 to Fig. 84
[1] Up to EI 120 S

Note: Illustration is an example. The distance from the ceiling depends on the flexible ceiling joint, the expected ceiling subsidence and the specifications of the wall manufacturer.

Additional requirements: dry mortarless installation with installation kit TQ2 into lightweight partition walls

- Lightweight partition wall or fire wall, ↳ *on page 42*
- Installation kit TQ2, ↳ *5.4.3 'Installation kit TQ2' on page 48*
- Distance between two fire dampers ≥ 200 mm (Installation of each fire damper in separate opening)
- General installation information, ↳ *5.3 'General installation information' on page 31* ff
- General information on installation with installation kit TQ2, ↳ *on page 38*

5.6.6 Dry mortarless installation remote from lightweight partition walls with installation kit WE2 (wall bushing)

Dry mortarless installation remote from lightweight partition walls with installation kit WE2 (wall penetration), four-sided cladding

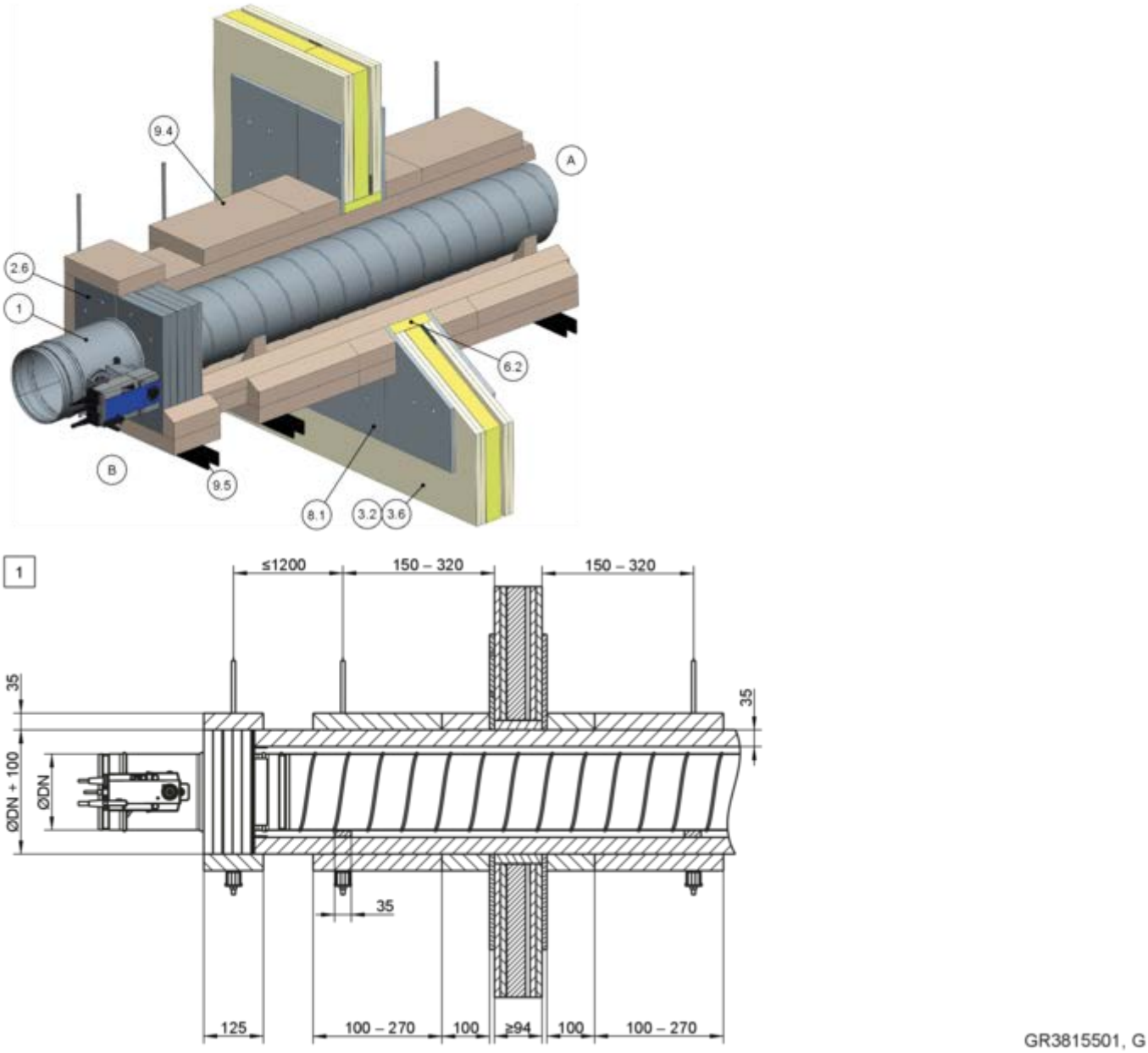


Fig. 87: Dry mortarless installation remote from lightweight partition walls with installation kit WE2 (wall penetration), four-sided cladding

1 FKRS-EU
2.6 Installation kit WE2
3.2 Lightweight partition wall with metal support or steel support structure, cladding on both sides
3.6 Compartment wall or safety partition wall with metal stud, clad on both sides
6.2 Mineral wool, ≥ 1000 °C, ≥ 80 kg/m³
8.1 PROMATECT® -H, d = 10 mm
9.4 Sheet steel duct with fire-rated cladding *
9.5 Suspension system (by others) consisting of:
a Threaded rod M10
b Hilti® mounting rail MQ 41 × 3 mm or equivalent
c Hilti® drilled plate MQZ L13 or equivalent
d Hexagon nut M10 with washer
* The cladding of the air duct and the suspensions are carried out in accordance with these instructions, the additional assembly instructions for the installation kit WE2 and the specifications of the panel manufacturer
1 up to EI 90 S

Dry mortarless installation remote from lightweight partition walls with installation kit WE2 (wall penetration), three-sided cladding

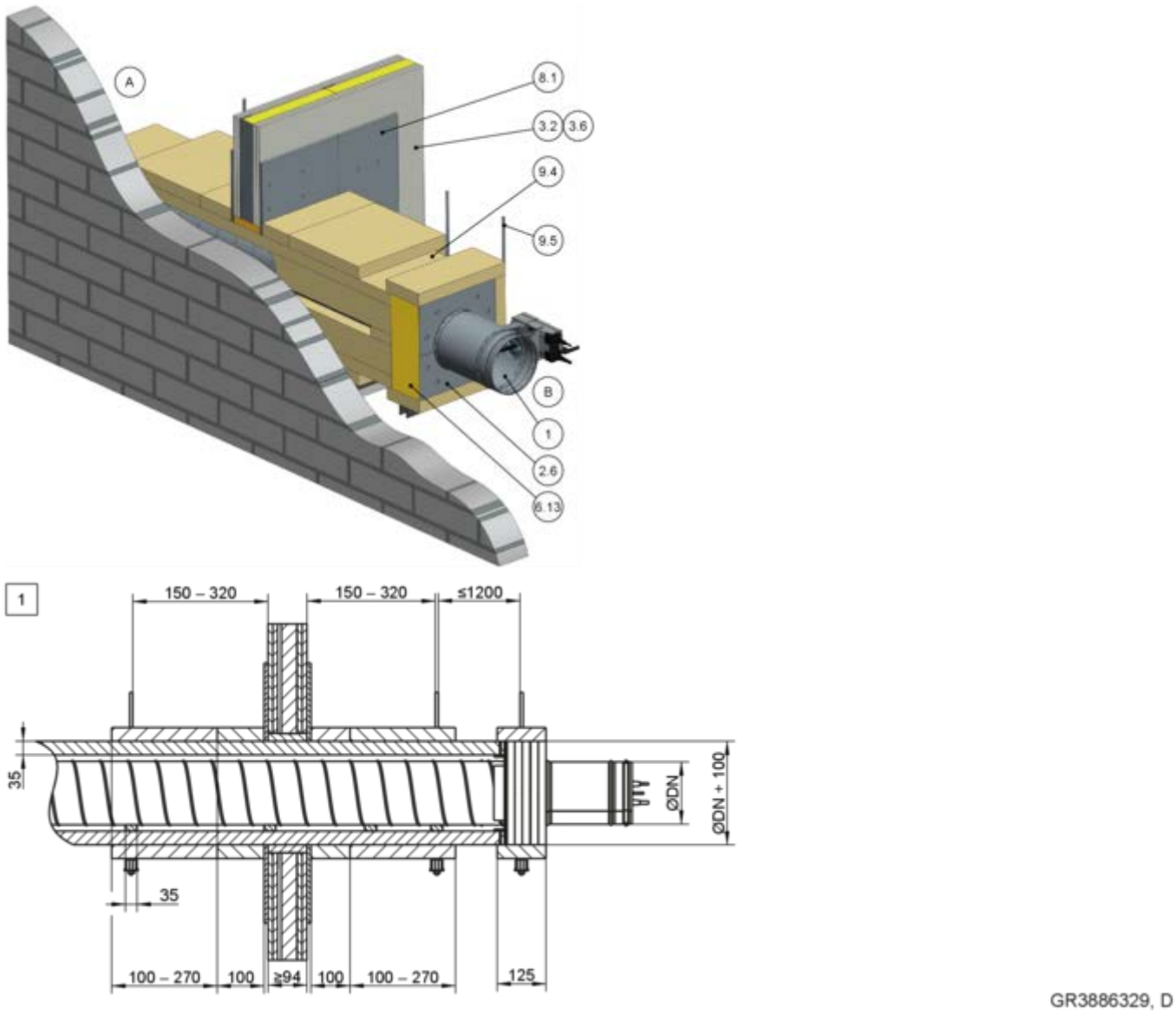


Fig. 88: Dry mortarless installation remote from lightweight partition walls with installation kit WE2 (wall penetration), three-sided cladding

1 FKRS-EU
2.6 Installation kit WE2
3.2 Lightweight partition wall with metal support or steel support structure, cladding on both sides
3.6 Compartment wall or safety partition wall with metal stud, clad on both sides
6.13 Mineral wool, ≥ 1000 °C or gypsum mortar for compensating unevenness
8.1 PROMATECT ® -H, d = 10 mm
9.4 Sheet steel duct with fire-rated cladding
The cladding of the air duct and the suspensions are carried out in accordance with these instructions, the additional assembly instructions for the installation kit WE2 and the specifications of the panel manufacturer
9.5 Suspension system (by others) consisting of:
a Threaded rod M10
b Hilti ® mounting rail MQ 41 × 3 mm or equivalent
c Hilti ® drilled plate MQZ L13 or equivalent
d Hexagon nut M10 with washer
[1] up to EI 90 S

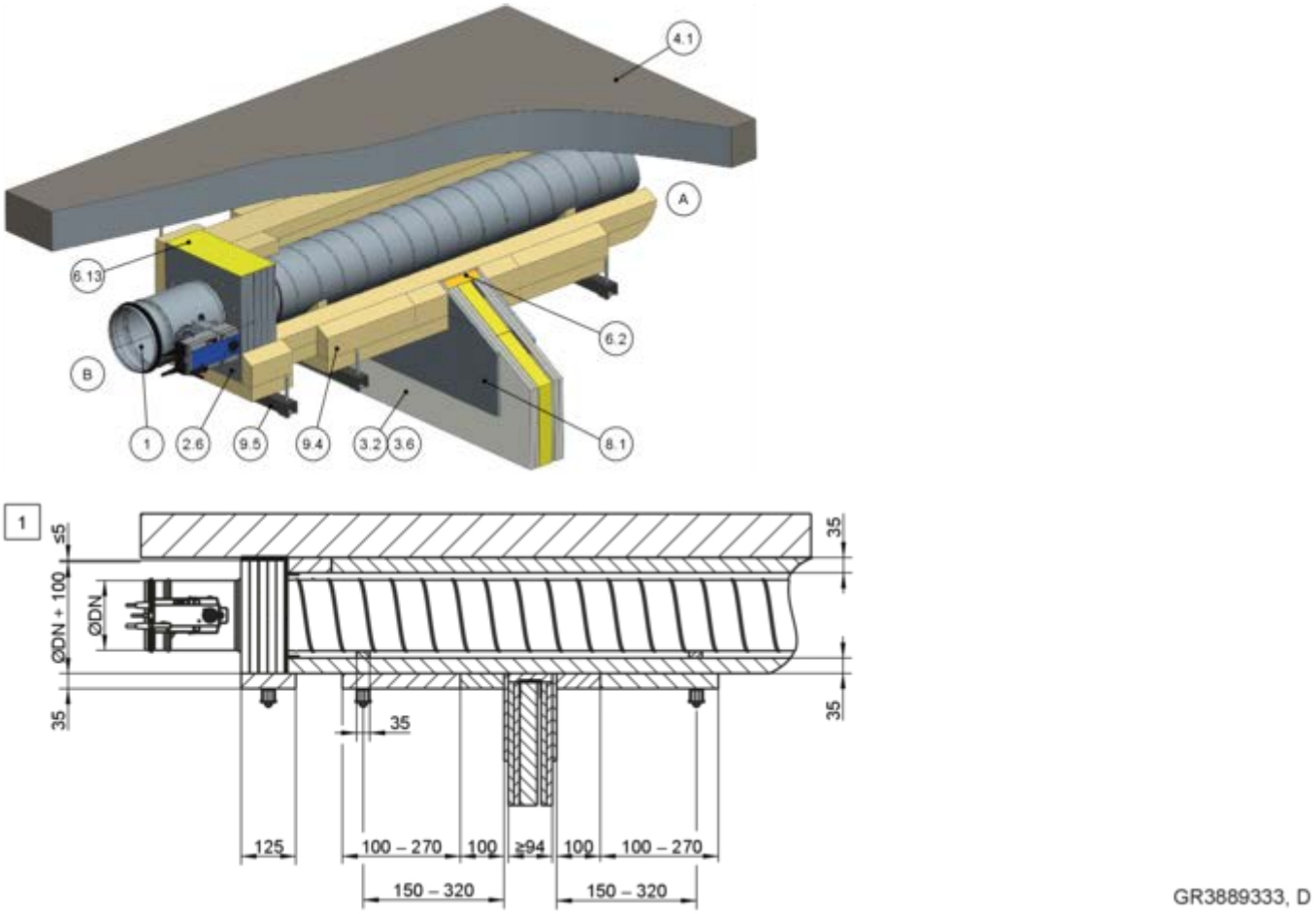


Fig. 89: Dry mortarless installation remote from lightweight partition walls with installation kit WE2 (wall penetration), three-sided cladding

1 FKRS-EU
2.6 Installation kit WE2
3.2 Lightweight partition wall with metal support or steel support structure, cladding on both sides
3.6 Compartment wall or safety partition wall with metal stud, clad on both sides
4.1 Solid ceiling slab
6.2 Mineral wool, ≥ 1000 °C, ≥ 80 kg/m³
6.13 Mineral wool, ≥ 1000 °C or gypsum mortar for compensating unevenness
8.1 PROMATECT® -H, d = 10 mm
9.4 Sheet steel duct with fire-rated cladding
The cladding of the air duct and the suspensions are carried out in accordance with these instructions, the additional assembly instructions for the installation kit WE2 and the specifications of the panel manufacturer
9.5 Suspension system (by others) consisting of:
a Threaded rod M10
b Hilti® mounting rail MQ 41 × 3 mm or equivalent
c Hilti® drilled plate MQZ L13 or equivalent
d Hexagon nut M10 with washer
[1] up to EI 90 S

Dry mortarless installation remote from lightweight partition walls with installation kit WE2 (wall penetration), two-sided cladding

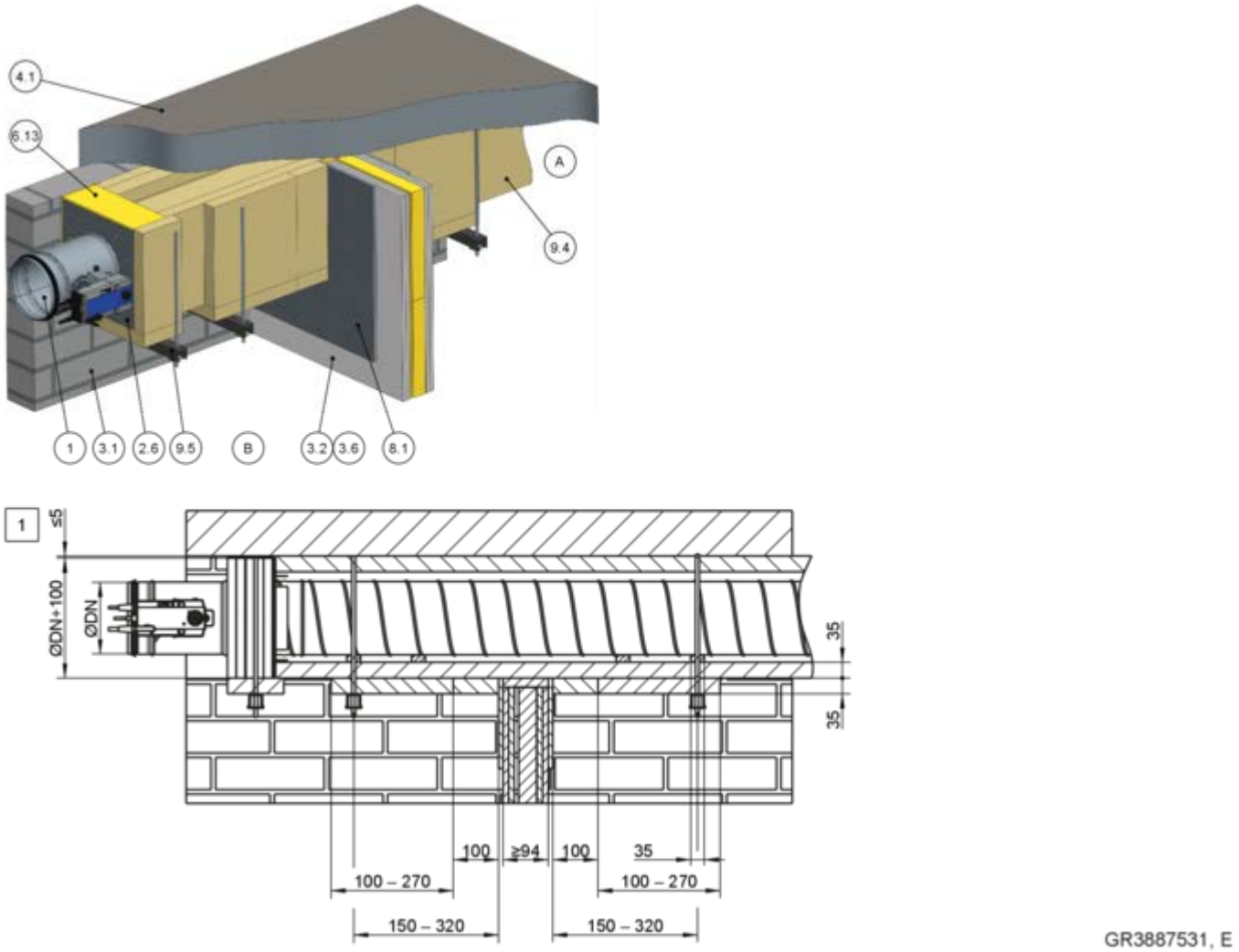


Fig. 90: Dry mortarless installation remote from lightweight partition walls with installation kit WE2 (wall penetration), two-sided cladding

1 FKRS-EU
2.6 Installation kit WE2
3.1 Solid wall
3.2 Lightweight partition wall with metal support or steel support structure, cladding on both sides
3.6 Compartment wall or safety partition wall with metal stud, clad on both sides
4.1 Solid ceiling slab
6.13 Mineral wool, ≥ 1000 °C or gypsum mortar for compensating unevenness
8.1 PROMATECT® -H, d = 10 mm
9.4 Sheet steel duct with fire-rated cladding
The cladding of the air duct and the suspensions are carried out in accordance with these instructions, the additional assembly instructions for the installation kit WE2 and the specifications of the panel manufacturer
9.5 Suspension system (by others) consisting of:
a Threaded rod M10
b Hilti® mounting rail MQ 41 × 3 mm or equivalent
c Hilti® drilled plate MQZ L13 or equivalent
d Hexagon nut M10 with washer
[1] up to EI 90 S

Additional requirements: dry mortarless installation with installation kit WE2 remote from lightweight partition walls (wall penetration)

- Lightweight partition wall or fire wall, ↳ *on page 42*
- Installation kit WE2, ↳ *5.4.5 'Installation kit WE2' on page 52*
- Suspension and fixing, ↳ *Chapter 5.15 'Fixing the fire damper' on page 255*
- Sheet steel ducts without any openings, with fire-resistant cladding (fittings with cladding according to instructions from Promat®)
- Distance between two fire dampers ≥ 300 mm
- General installation information, ↳ *5.3 'General installation information' on page 31* ff
- General information on installation with installation kit WE2, ↳ *on page 38*

Note: For more installation details and for components to be provided by the customer, see the additional WE2 installation manual.

5.6.7 Installation remote from lightweight partition and fire walls with mineral wool

Installation remote from lightweight partition walls with mineral wool and joint filler

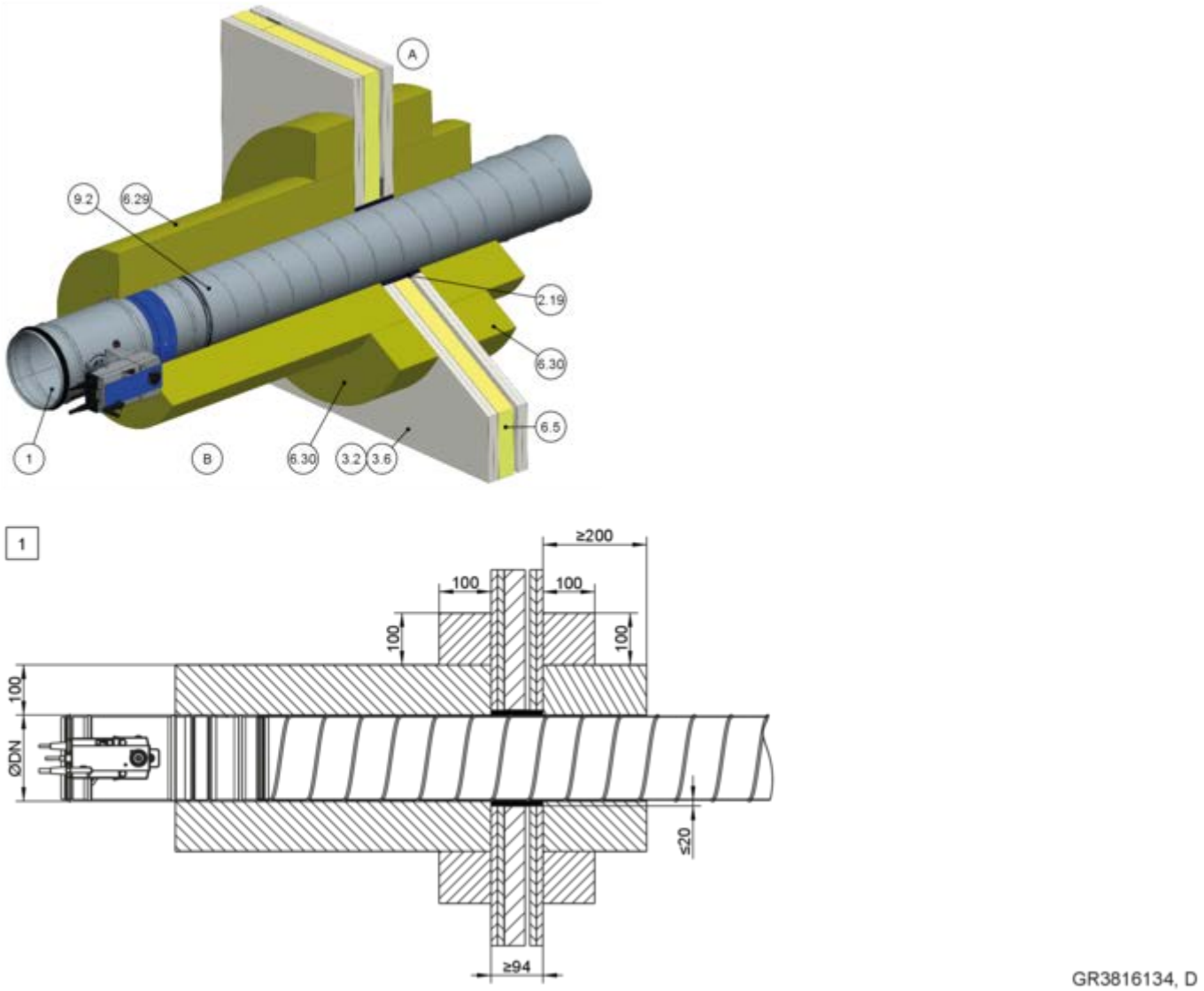


Fig. 91: Installation remote from lightweight partition walls with mineral wool and joint filler

1	FKRS-EU
2.19	Joint filler
3.2	Lightweight partition wall with metal support stud or steel support structure, cladding on both sides
3.6	Fire wall or safety partition wall with metal support structure, cladding on both sides
6.5	Mineral wool, depending on wall construction
6.29*	Mineral wool PAROC Hvac Fire Mat BlackCoat (≥ 80 kg/m³)
6.30*	Reinforcing board made of mineral wool PAROC HVAC Fire Mat BlackCoat (≥ 80 kg/m³), circumferentially glued
9.2	Sheet steel duct
*	Please check in advance whether the PAROC material is available in your market region.
1	up to EI 60 S

Dry mortarless installation remote from lightweight partition walls with mineral wool and coated board system

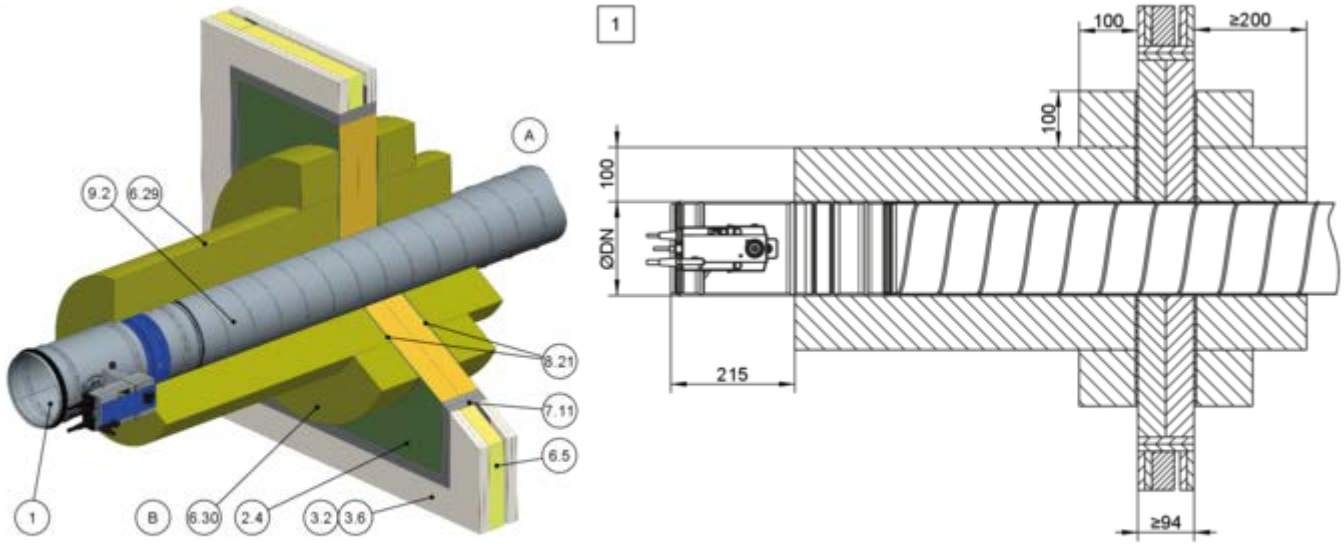


Fig. 92: Dry mortarless installation remote from lightweight partition walls with mineral wool and coated board system

1	FKRS-EU
2.4*	Coated board system, PAROC Pyrotech Slab 140 (max. W × H = 2.1 × 2.5 m)
3.2	Lightweight partition wall with metal support stud or steel support structure, cladding on both sides
3.6	Fire wall or safety partition wall with metal support structure, cladding on both sides
6.5	Mineral wool, depending on wall construction
6.29*	Mineral wool PAROC Hvac Fire Mat BlackCoat (≥ 80 kg/m³)
6.30*	Reinforcing board made of mineral wool PAROC HVAC Fire Mat BlackCoat (≥ 80 kg/m³), circumferentially glued
7.11	Reveal, single-layer, fire-resistant
8.21	Acrylic or sealing compound (suitable for coated board system)
9.2	Sheet steel duct
*	Please check in advance whether the PAROC material is available in your market region.
1	up to EI 60 S

Additional requirements: installation remote from lightweight partition and compartment walls with mineral wool

- Lightweight partition wall or fire wall, ↬ *on page 42*
- General installation information, ↬ *5.3 'General installation information' on page 31* ff
- General information on installation with mineral wool, ↬ *on page 38*
- Distance between two fire dampers ≥ 400 mm
- Distance to load-bearing/adjacent components ≥ 200 mm
- Suspend the fire damper and air duct according to the mineral wool manufacturer's specifications

5.6.8 Dry mortarless installation in lightweight partition wall with installation kit GL2 during wall construction

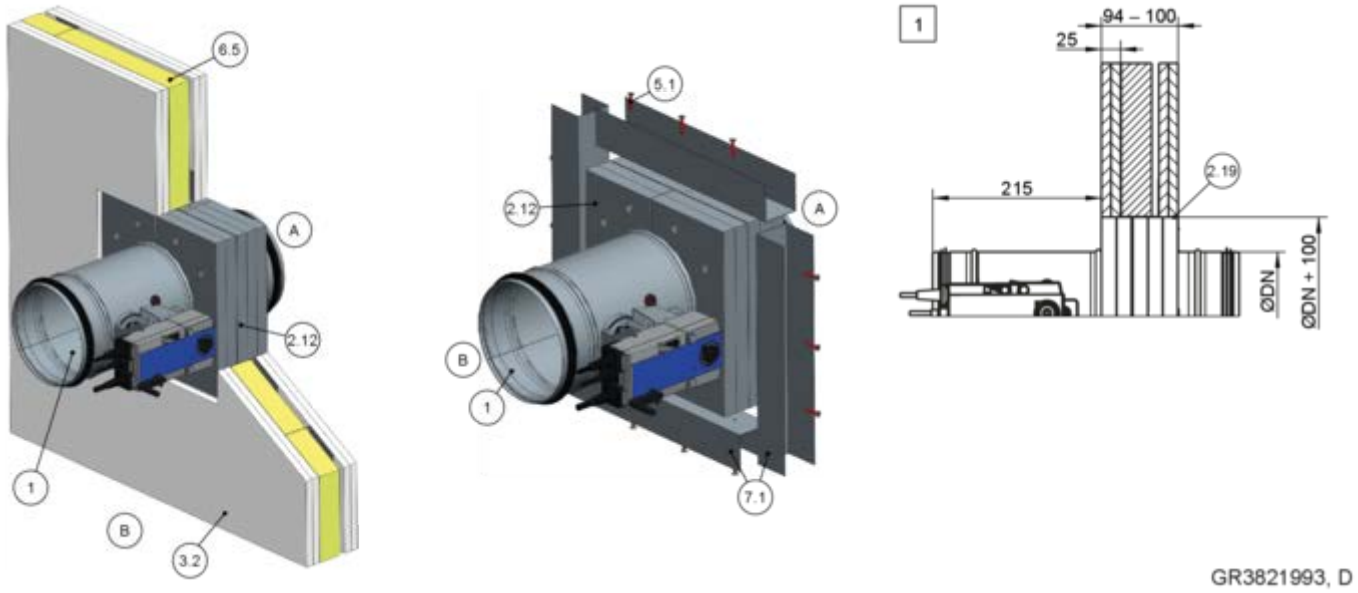


Fig. 93: Dry mortarless installation in lightweight partition wall with installation kit GL2 during wall construction

1	FKRS-EU
2.12	Installation kit GL2
2.19	Joint filler (filler, ready-to-use putty or equivalent)
3.2	Lightweight partition wall with metal support structure or steel support structure, cladding on both sides
5.1	Pre-drill dry wall screw 4 × 35 mm at a distance of approx. 100 mm with 3 mm
6.5	Mineral wool, depending on wall construction
7.1	U-channel section according to wall construction, W = 44 – 50 mm, H ≥ 40 mm, e.g. UW section
[1]	Up to EI 90 S

Note: Gaps between the installation kit GL2 and the wall cladding must be filled with joint filler (2.19), matching the wall cladding.

Supplementary requirements: Dry mortarless installation in lightweight partition walls with installation kit GL2 during wall construction

- Lightweight partition wall (except compartment wall), ↬ *on page 42*
- Installation kit GL2, ↬ *5.4.6 'Installation kit GL2' on page 54*
- Distance from the fire damper to load-bearing structural elements (structure ≥ 90 mm
- ≥ 200 mm distance between two fire dampers

1. ▸ Screw metal sections onto installation kit GL2.
2. ▸ Fix fire damper and clad the wall up to the installation kit. Make sure that the distance from the connecting spigot on the operating side to the wall is 215 mm.
3. ▸ Chamfer the outer layer of the cladding all round on both sides and completely fill the surrounding gap on both sides with filler to the depth of the cladding.
4. ▸ Screw metal sections onto both sides over the cladding, spaced approx. 100 mm apart.

5.6.9 Dry mortarless installation with flexible ceiling joint and installation kit GL2

Dry mortarless installation with installation kit GL2 into lightweight partition or compartment wall

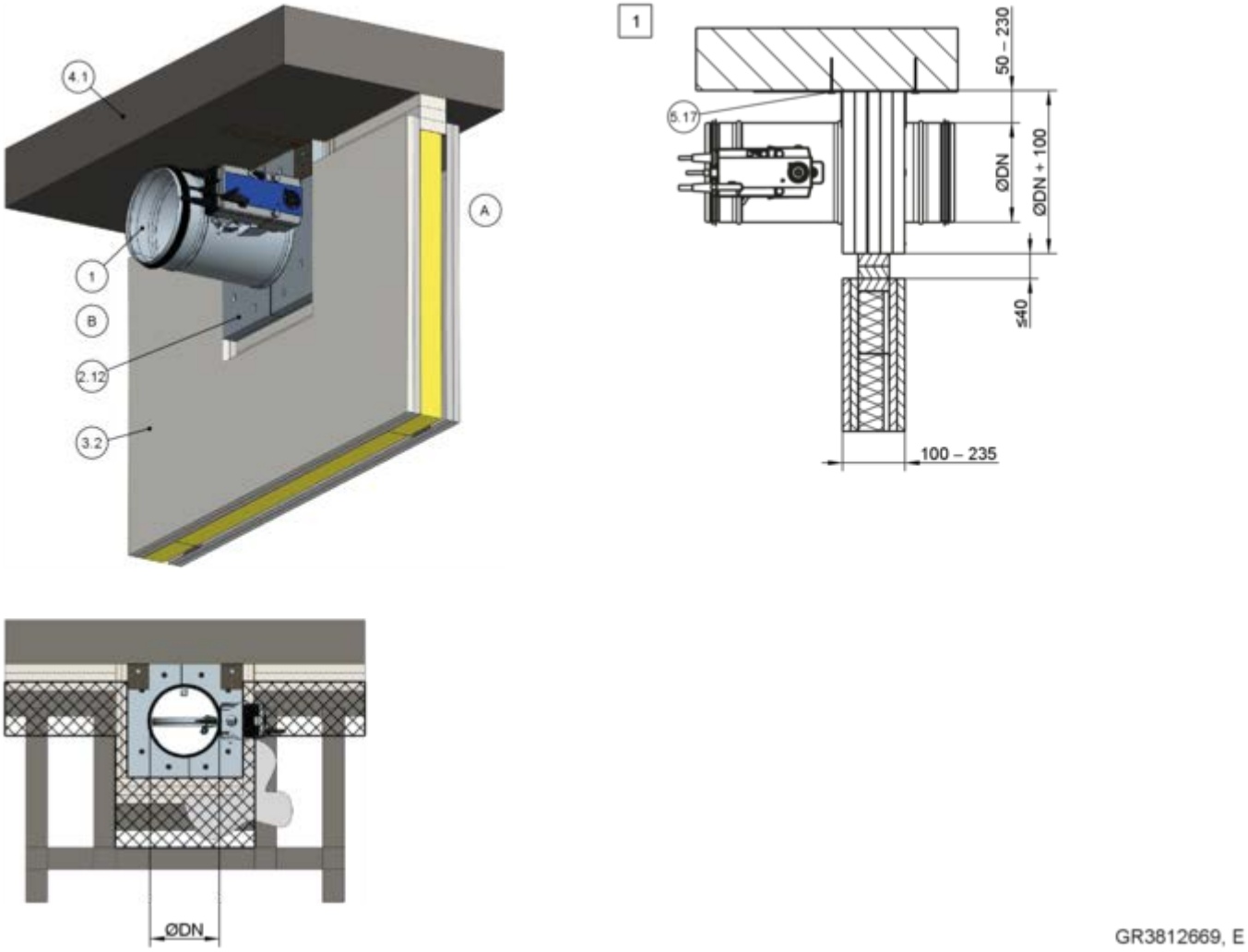


Fig. 94: Dry mortarless installation into a lightweight partition wall, with installation kit GL2

1	FKRS-EU
2.12	Installation kit GL2
3.2	Lightweight partition wall with metal studs, clad on both sides
4.1	Solid ceiling slab
5.17	Anchor bolt Hilti ® HUS-6 ∅ 6 mm × 60 mm or equivalent wall plugs with fire protection suitability certificate, adapted to the particular building material, alternatively push through installation
1	up to EI 90 S

Note: Do not make any screw connections in the hatched area.

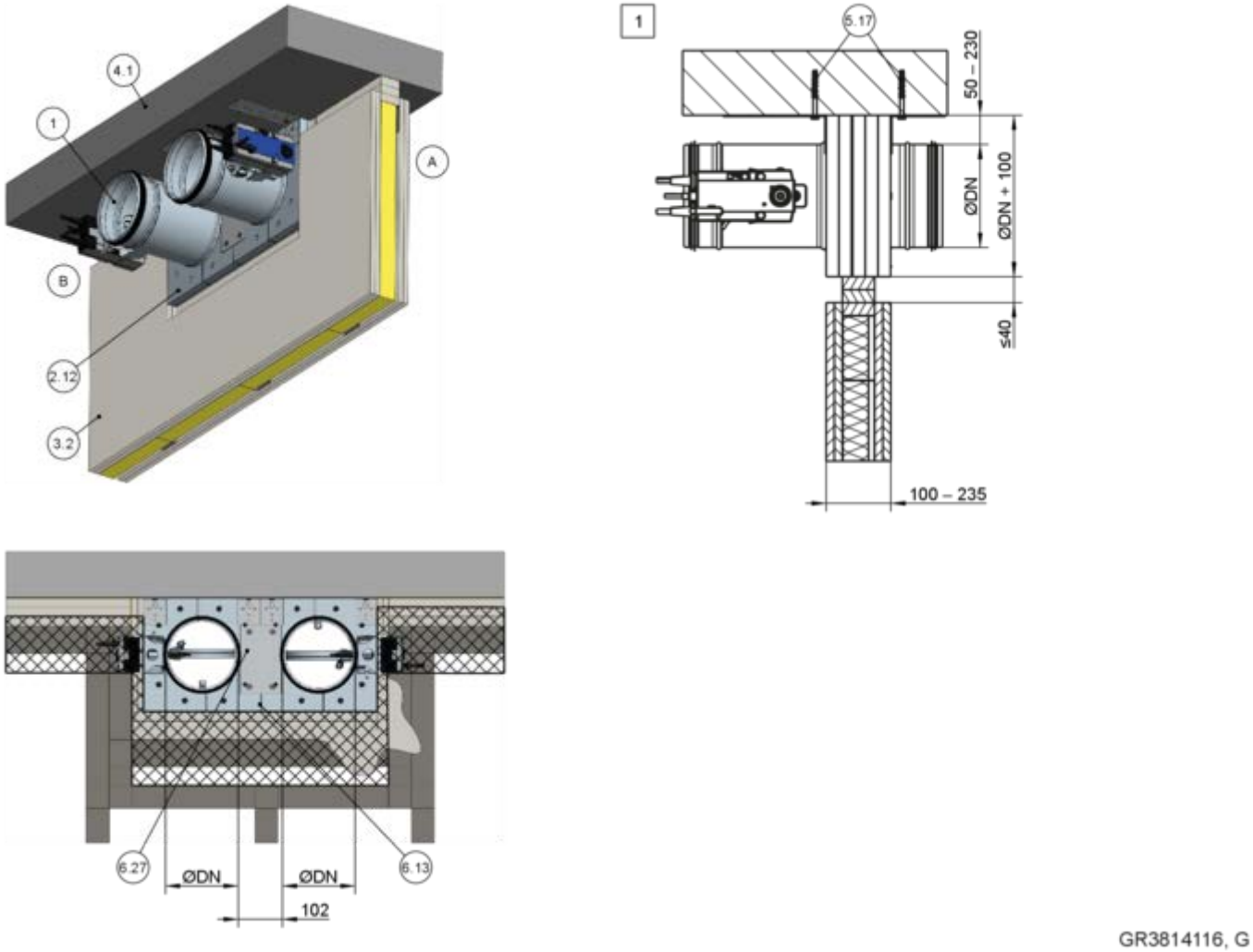


Fig. 95: Dry mortarless installation into a lightweight partition wall, with installation kit GL2

1	FKRS-EU
2.12	Installation kit GL2
3.2	Lightweight partition wall with metal studs, clad on both sides
4.1	Solid ceiling slab
5.17	Anchor bolt Hilti ® HUS-6 ∅ 6 mm × 60 mm or equivalent wall plugs with fire protection suitability certificate, adapted to the particular building material, alternatively push through installation
6.13	Mineral wool strips A1, filler as an alternative
6.27	Z brackets both sides, 90 × 140 × 1.5 mm
1	up to EI 90 S

Note: Do not make any screw connections in the hatched area.

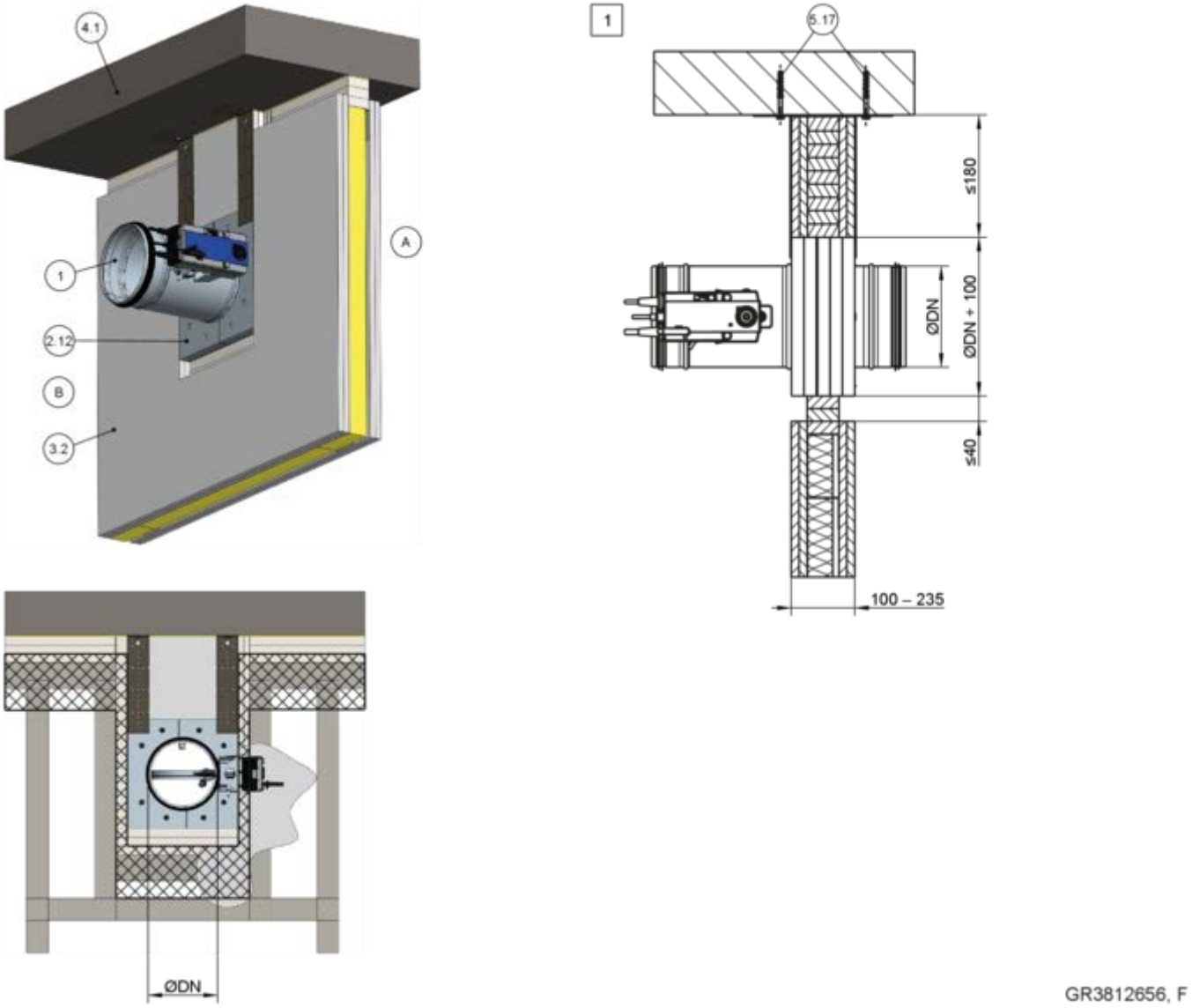


Fig. 96: Dry mortarless installation into a lightweight partition wall, with installation kit GL2

1	FKRS-EU	4.1	Solid ceiling slab
2.12	Installation kit GL2	5.17	Anchor bolt Hilti ® HUS-6 ∅ 6 mm × 60 mm or equivalent wall plugs with fire protection suitability certificate, adapted to the particular building material, alternatively push through installation
3.2	Lightweight partition wall with metal support or steel support structure, cladding on both sides	1	up to EI 90 S

Note: Do not make any screw connections in the hatched area.

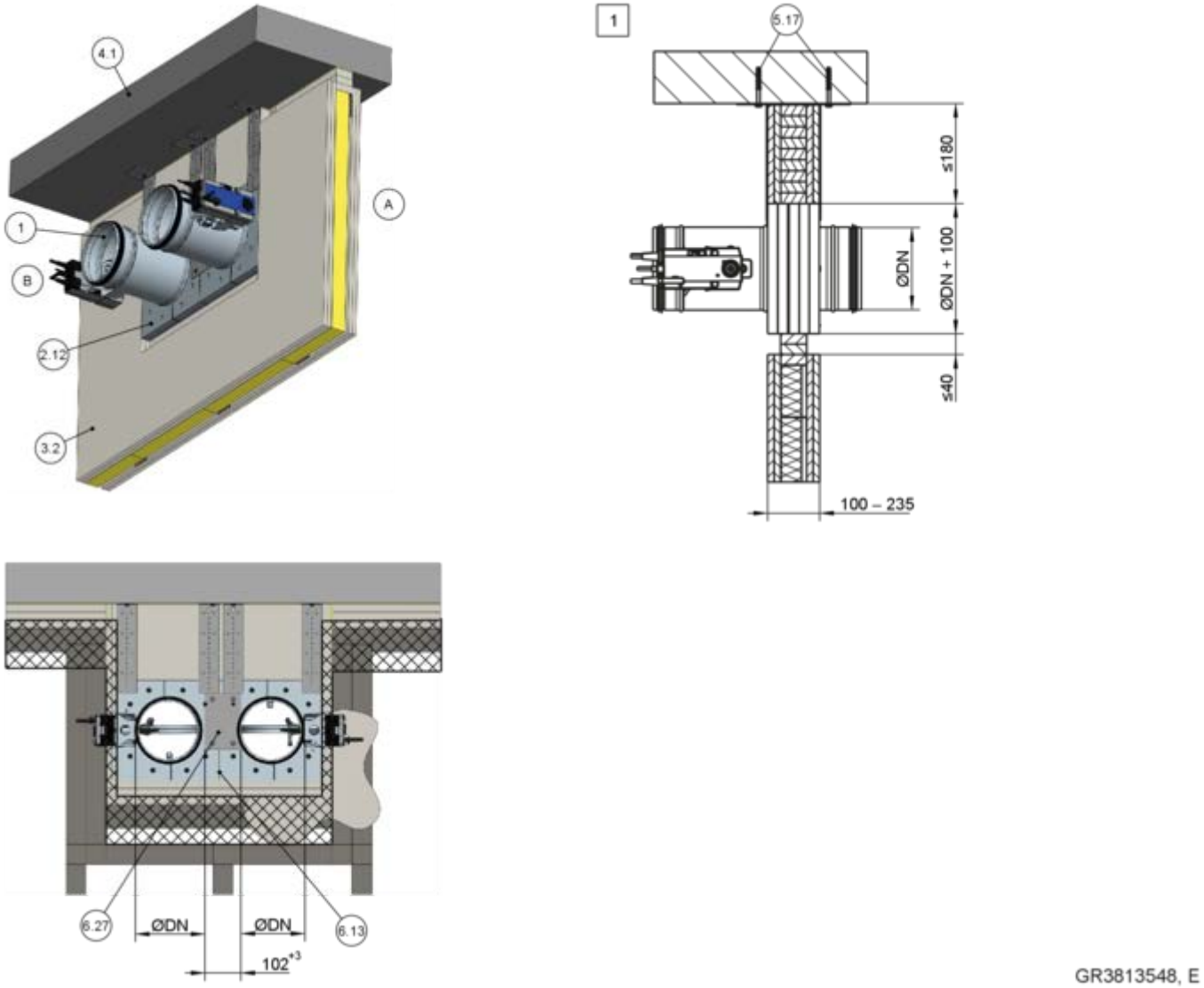


Fig. 97: Dry mortarless installation into a lightweight partition wall, with installation kit GL2

1	FKRS-EU
2.12	Installation kit GL2
3.2	Lightweight partition wall with metal support or steel support structure, cladding on both sides
4.1	Solid ceiling slab
5.17	Anchor bolt Hilti ® HUS-6 ∅ 6 mm × 60 mm or equivalent wall plugs with fire protection suitability certificate, adapted to the particular building material, alternatively push through installation
6.13	Mineral wool strips A1, filler as an alternative
6.27	Z brackets both sides, 90 × 140 × 1.5 mm
1	up to EI 90 S

Note: Do not make any screw connections in the hatched area.

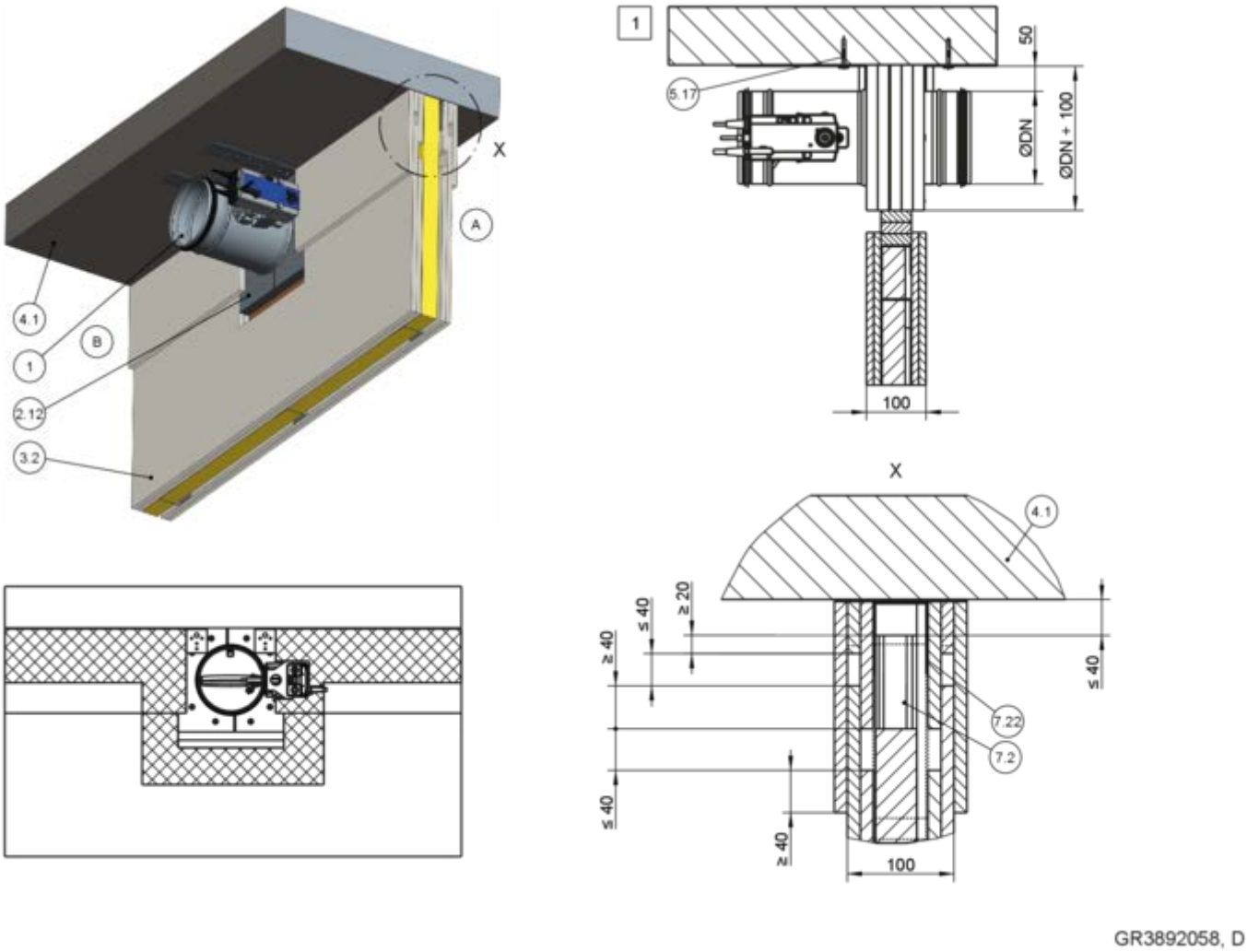


Fig. 98: Dry installation in lightweight wall and Knauf ceiling connection with installation kit GL2

1	FKRS-EU
2.12	Installation kit GL2
3.2	Lightweight partition wall with metal studs, clad on both sides
4.1	Solid ceiling slab
5.17	Anchor bolt Hilti ® HUS-6 ∅ 6 mm × 60 mm or equivalent wall plugs with fire protection suitability certificate, adapted to the particular building material, alternatively push through installation
7.2	CW section
7.22	Ceiling joint section
[1]	up to EI 90 S

Note: Do not make any screw connections in the hatched area.

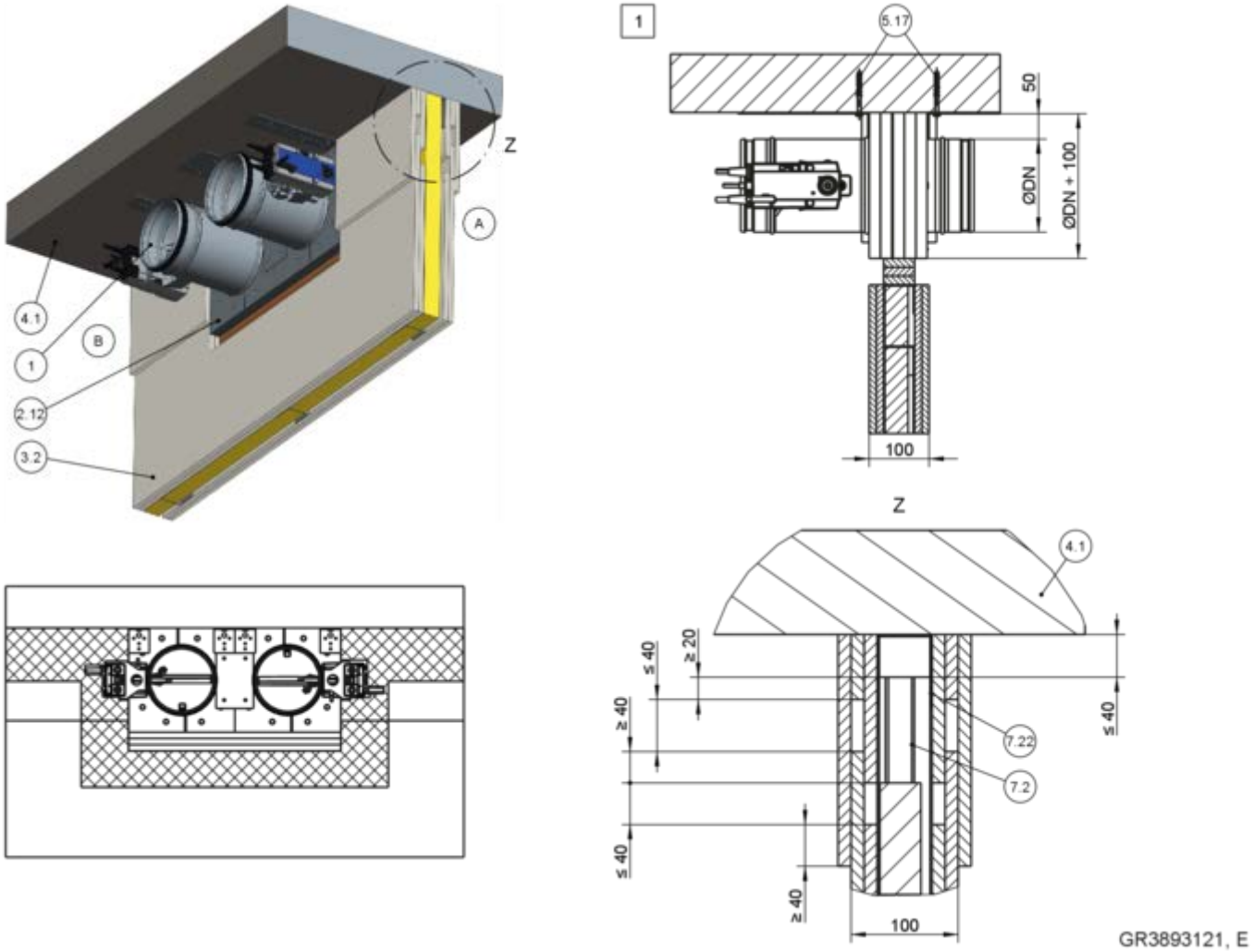


Fig. 99: Dry installation in lightweight wall and Knauf ceiling connection with installation kit GL2

1	FKRS-EU
2.12	Installation kit GL2
3.2	Lightweight partition wall with metal studs, clad on both sides
4.1	Solid ceiling slab
5.17	Anchor bolt Hilti ® HUS-6 ∅ 6 mm × 60 mm or equivalent wall plugs with fire protection suitability certificate, adapted to the particular building material, alternatively push through installation
7.2	CW section
7.22	Ceiling joint section
1	up to EI 90 S

Note: Do not make any screw connections in the hatched area.

Additional requirements: dry mortarless installation with installation kit GL2 into lightweight partition and compartment walls

- Lightweight partition wall, *on page 42*
- Installation kit GL2, *5.4.6 'Installation kit GL2' on page 54*
- Wall thickness W = 100 – 235 mm
  For Knauf ceiling connection, wall thickness 100 mm.
  Installation details for wall thicknesses 125 and 150 mm on request.
- Distance between fire damper and ceiling
  50 - 230 mm, with "Knauf ceiling connection"
  50 mm.
- ≥ 125 mm distance from the fire damper to adjacent walls
- Distance between two fire dampers ≥ 200 mm (separate installation opening), when installed in a common installation opening 102^{+3} mm
- Subsidence of the ceiling a ≤ 40 mm
- General installation information, *5.3 'General installation information' on page 31* ff
- General information on installation with installation kit GL2, *on page 38*
- If necessary, provide mineral fibre strips A1, alternatively levelling material (≤ 5 mm) above the installation kit to even out ceiling unevenness.

Note: Installation is carried out in accordance with the additional assembly instructions for flexible ceiling joint supplied.
Installation details for installation in compartment walls on request.

Dry mortarless installation in lightweight partition wall with installation kit GL2 and steel bracket if there is no rear fixing option

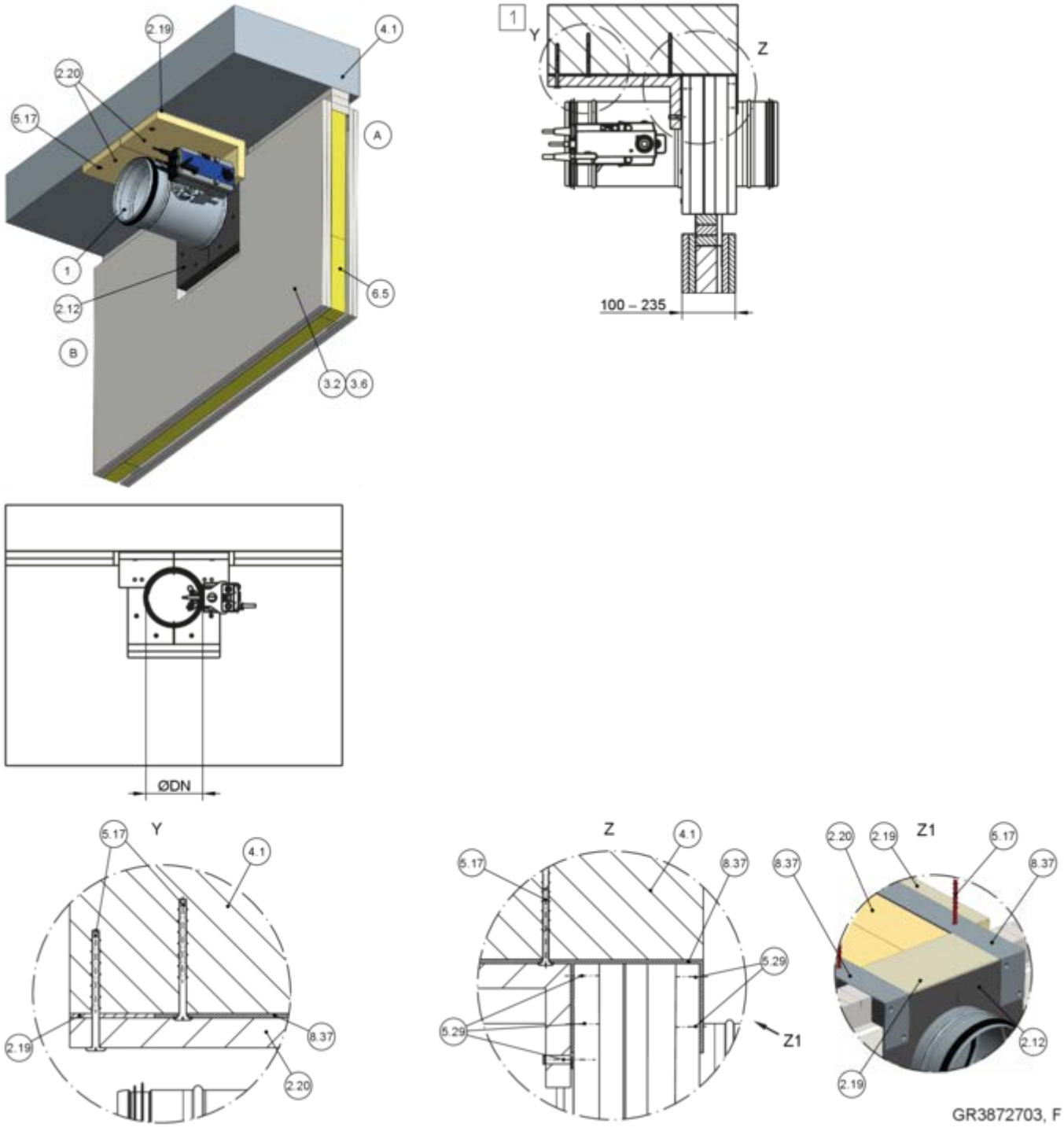


Fig. 100: Dry mortarless installation in lightweight partition wall with installation kit GL2 and steel bracket if there is no rear fixing option

1	FKRS-EU
2.12	Installation kit GL2
2.19	Joint filler
2.20	Cover (one part or two parts) Rigips Glasroc F20, supplied by customer
3.2	Lightweight partition wall with metal support or steel support structure, cladding on both sides
3.6	Compartment wall or safety partition wall with metal stud, clad on both sides
4.1	Solid ceiling slab
5.17	Anchor bolt Hilti ® HUS-6 ∅ 6 mm × 60 mm or equivalent wall plugs or fire-rated anchors with suitability certificate (push through installation is also possible)
5.29	Self-drilling screws ∅ 3.5 × 40 mm
6.5	Mineral wool ≥ 1000 °C, ≥ 100 kg/m^3
8.37	Steel bracket, supplied by customer
1	up to EI 90 S

Supplementary requirements: Dry mortarless installation in lightweight partition walls with installation kit GL2 and steel angle if there is no rear fixing option

- Lightweight partition wall (except compartment wall), ↳ *on page 42*
- Installation kit GL2, ↳ *5.4.6 'Installation kit GL2' on page 54*
- Wall thickness W = 100 – 235 mm
- 50 mm distance of fire damper to the ceiling
- ≥ 125 mm distance from the fire damper to adjacent walls
- ≥ 200 mm distance between two fire dampers (separate installation opening)
- Subsidence of the ceiling a ≤ 40 mm
- General installation information, ↳ *5.3 'General installation information' on page 31* ff
- General information on installation with installation kit GL2, ↳ *on page 38*
- If necessary, provide mineral fibre strips A1, alternatively levelling material (≤ 5 mm) above the installation kit to even out ceiling unevenness.

Note: Installation is carried out in accordance with the additional assembly instructions for flexible ceiling joint supplied.

5.6.10 Dry mortarless installation with fire batt

Dry mortarless installation into a lightweight partition wall, with a fire batt

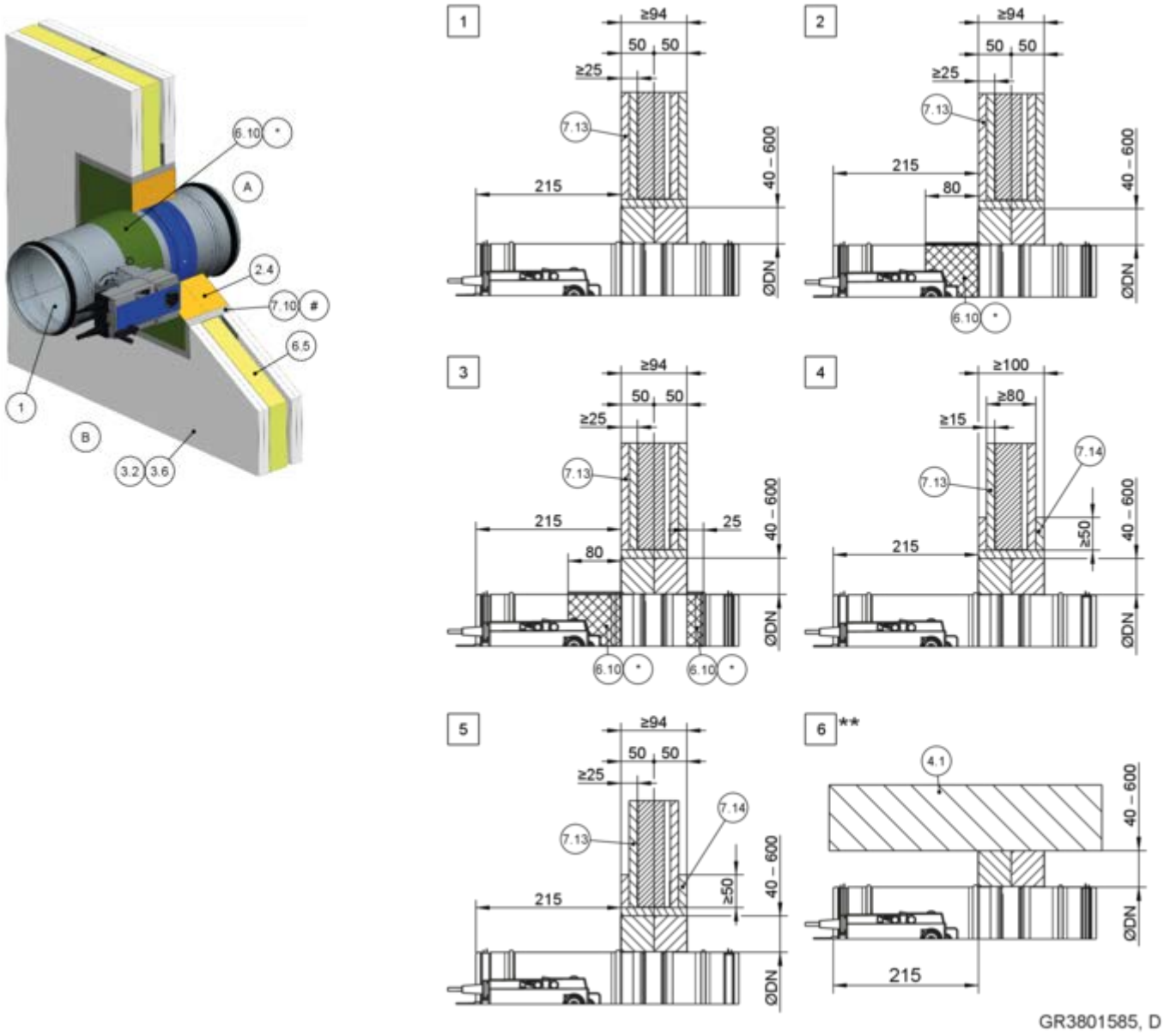


Fig. 101: Dry mortarless installation into a lightweight partition wall, with a fire batt

1	FKRS-EU
2.4	Coated board system with firestop coating
3.2	Lightweight partition wall with metal support or steel support structure, cladding on both sides
3.6	Compartment wall or safety partition wall with metal stud, clad on both sides
4.1	Solid ceiling/solid floor
6.5	Mineral wool, depending on wall construction
6.10	Firestop coating around the perimeter, d = at least 2.5 mm
6.19	Mineral wool > 1000 °C, > 80 kg/m³, thickness = 20 mm, leave out the actuator and release mechanism; inspection openings must remain accessible
6.20	Pipe collar (can be ordered separately)
6.24	Elastomeric foam (flame-resistant, non-dripping) The following applies in Germany: For notes on the use of elastomeric foams ↬ *'Additional provision for use in Germany:' on page 8* .
7.10#	Reveal At W ≤ 100 mm optional, at W > 100 mm double-layered (2 × 12.5 mm); also see Fig. 102
7.13	Cladding
7.14	Reinforcing board of the same material as the wall
*	6.19, 6.20 or 6.24 as an alternative
**	Installation near the floor as in 6
1 – 6	See table ↬ *135*

Note: The fire resistance properties of 6 depend on the nominal width and 6.10*.

Lightweight partition wall				
DN [mm]	Fire resistance rating to	Coating		Detail
		Operating side B	Installation side A	
100 – 200	EI 90 S	–	–	1, 6
224 – 315	EI 90 S	x	–	2, 6
100 – 200	EI 120 S	x	–	2, 6
224 – 315	EI 120 S	x	x	3, 6
100 – 315	EI 60 S	–	–	4, 6
100 – 315	EI 30 S	–	–	5, 6

Dry mortarless installation with fire batt in lightweight partition wall, "flange to flange

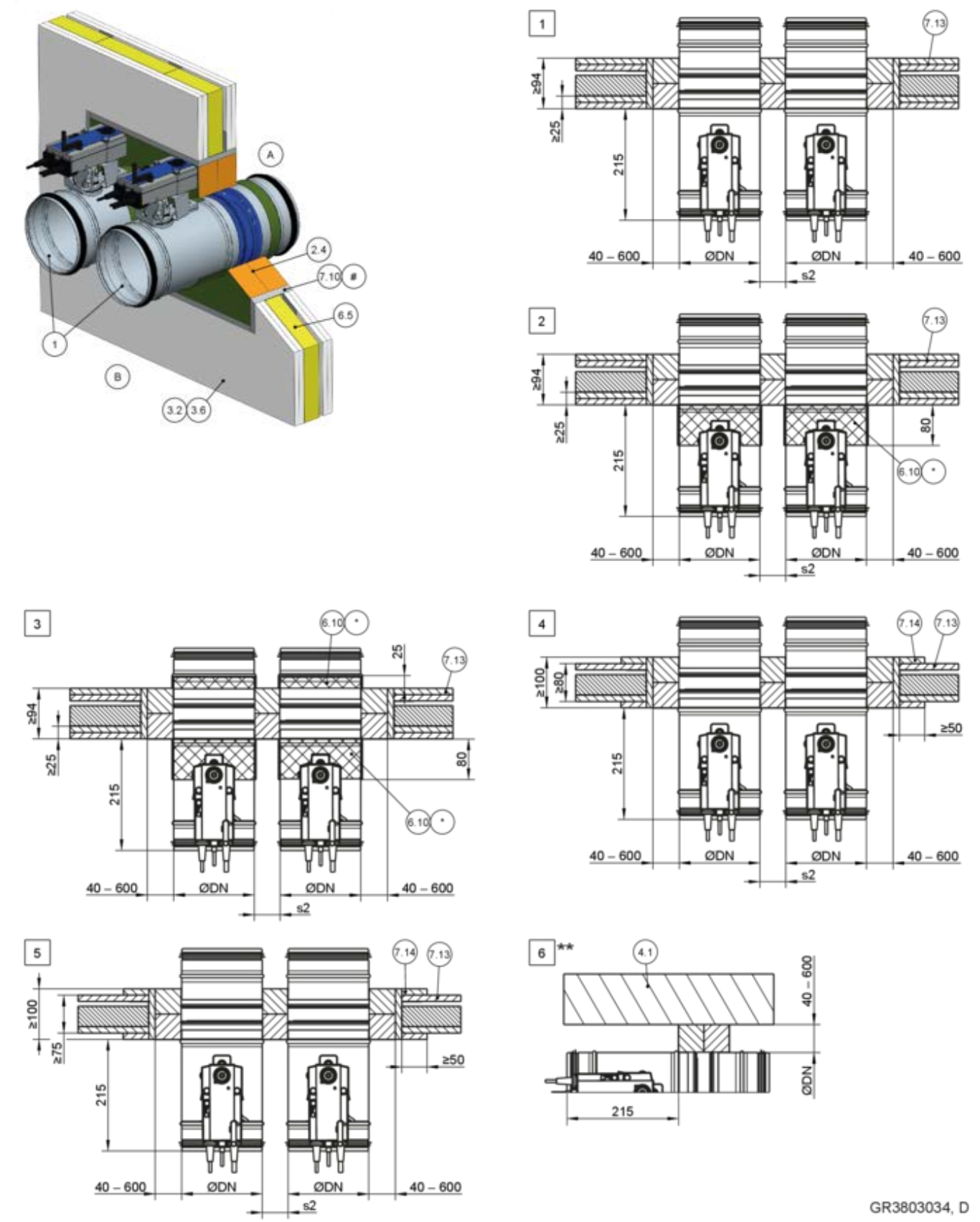


Fig. 102: Dry mortarless installation into a lightweight partition wall, with a fire batt, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)

1	FKRS-EU	6.20	Pipe collar (can be ordered separately)

2.4 Coated board system with firestop coating
3.2 Lightweight partition wall with metal support or steel support structure, cladding on both sides
3.6 Compartment wall or safety partition wall with metal stud, clad on both sides
4.1 Solid ceiling/solid floor
6.5 Mineral wool, depending on wall construction
6.10 Firestop coating around the perimeter, d = at least 2.5 mm
6.19 Mineral wool > 1000 °C, > 80 kg/m³, thickness = 20 mm, leave out the actuator and release mechanism; inspection openings must remain accessible
6.24 Elastomeric foam (flame-resistant, non-dripping)
The following applies in Germany: For notes on the use of elastomeric foams
↳ *'Additional provision for use in Germany:' on page 8 .*
7.10# Reveal
At W ≤ 100 mm optional,
at W > 100 mm double-layered (2 × 12.5 mm);
also see Fig. 102
7.13 Cladding
7.14 Reinforcing board of the same material as the wall
* 6.19, 6.20 or 6.24 as an alternative
** Installation near the floor as in 6
1 – 6 See table ↳ *137*

Note: The fire resistance properties of 3 depend on the nominal width and 6.10*.

Lightweight partition wall

DN [mm]	Fire resistance rating to	Coating		s2 [mm]	Detail
		Operating side B	Installation side A		
100 – 200	EI 90 S	–	–	10* – 600	1, 6
224 – 315	EI 90 S	x	–	10* – 600	2, 6
100 – 200	EI 120 S	x	–	40 – 600	2, 6
224 – 315	EI 120 S	x	x	40 – 600	3, 6
100 – 315	EI 60 S	–	–	10 – 600	4, 6
100 – 315	EI 30 S	–	–	10 – 600	5, 6

* For a distance of 10 mm, mineral wool ≥ 1000 °C, ≥ 80 kg/m³ with d = 10 mm and width nominal width/2 shall be provided between the fire dampers.

Approved combinations for thicker walls

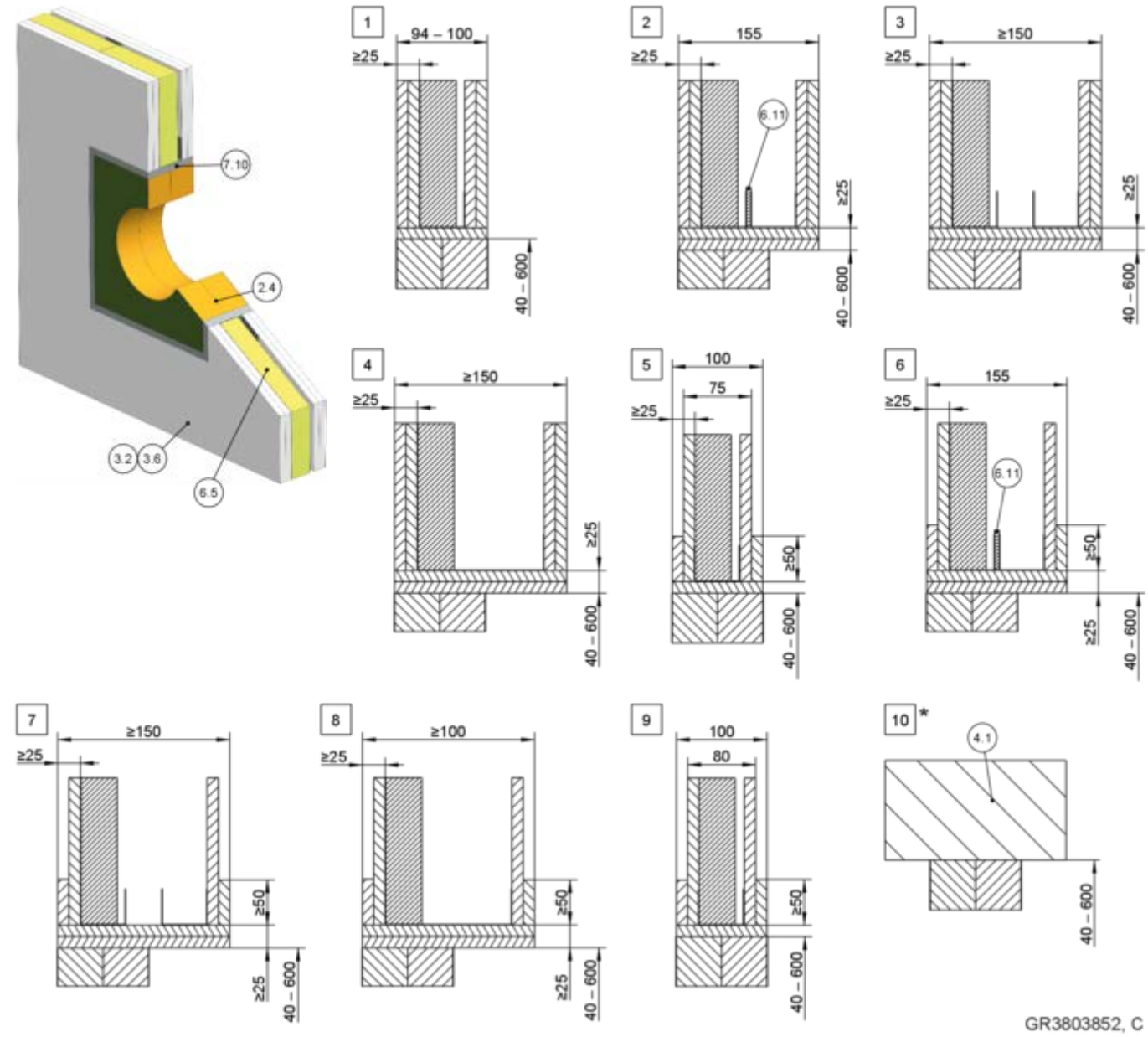


Fig. 103: Dry mortarless installation into a lightweight partition wall, with a fire batt, approved combinations for thicker walls

2.4	Coated board system with firestop coating
3.2	Lightweight partition wall with metal support or steel support structure, cladding on both sides
3.6	Compartment wall or safety partition wall with metal stud, clad on both sides
4.1	Solid ceiling/solid floor
6.5	Mineral wool, depending on wall construction
6.11	Insulation strips
7.10	Reveal At W ≤ 100 mm optional, From W > 100 mm double-layered and required
*	Installation near the floor as in 10
1 – 4	F120
5 – 8	F30
9	F60
10	F 30 – F 120

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

- Lightweight partition wall or fire wall, ↳ *on page 42*
- Fire batt systems, installation details, distances/dimensions, ↳ *on page 38* f
- Suspension and fixing, ↳ *Chapter 5.15 'Fixing the fire damper' on page 255*
- General installation information, ↳ *5.3 'General installation information' on page 31* ff
- General information on installation with fire batt, ↳ *on page 38*

5.6.11 Dry mortarless installation with fire batt in lightweight partition wall – Multiple occupancy of an installation opening

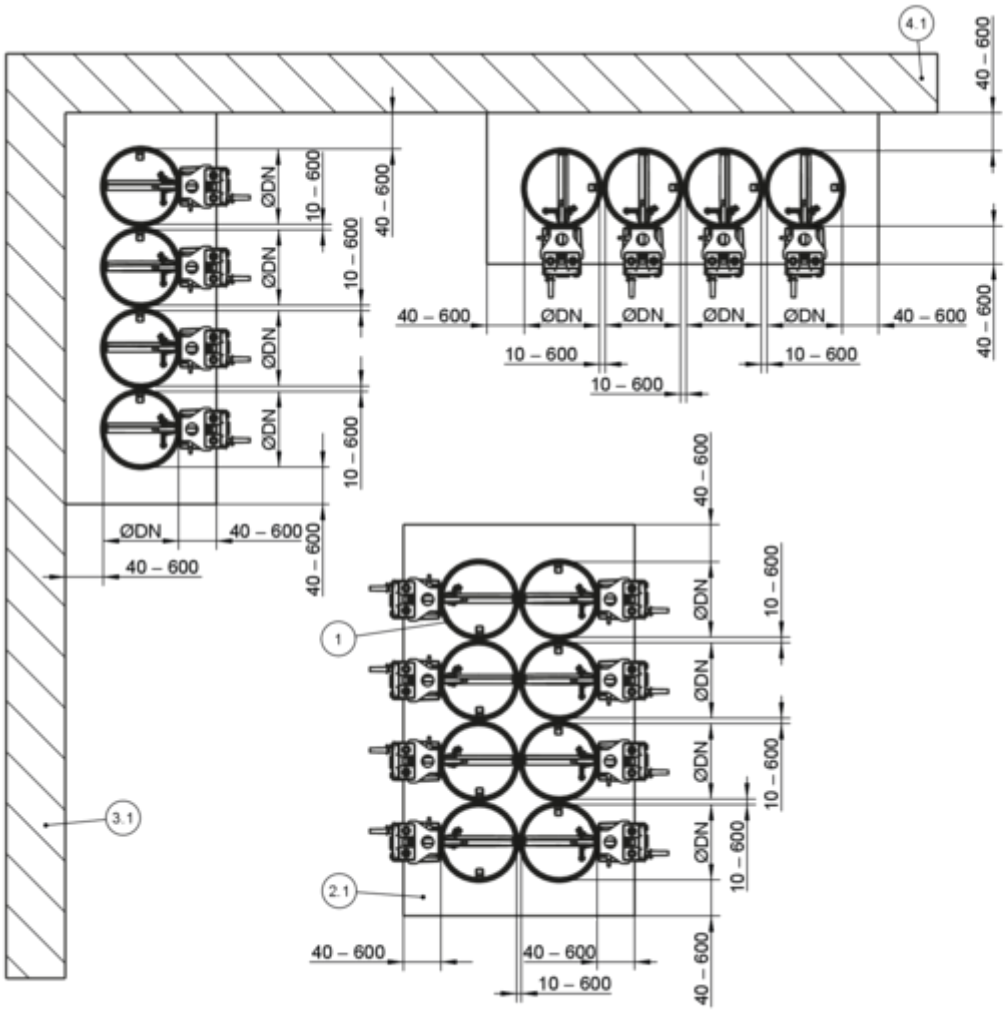


Fig. 104: Dry mortarless installation with fire batt in lightweight partition wall – Multiple occupancy of an installation opening

1	FKRS-EU	3.1	Solid wall (load-bearing structural element)
2.1	Mortar	4.1	Solid ceiling slab (load-bearing component)

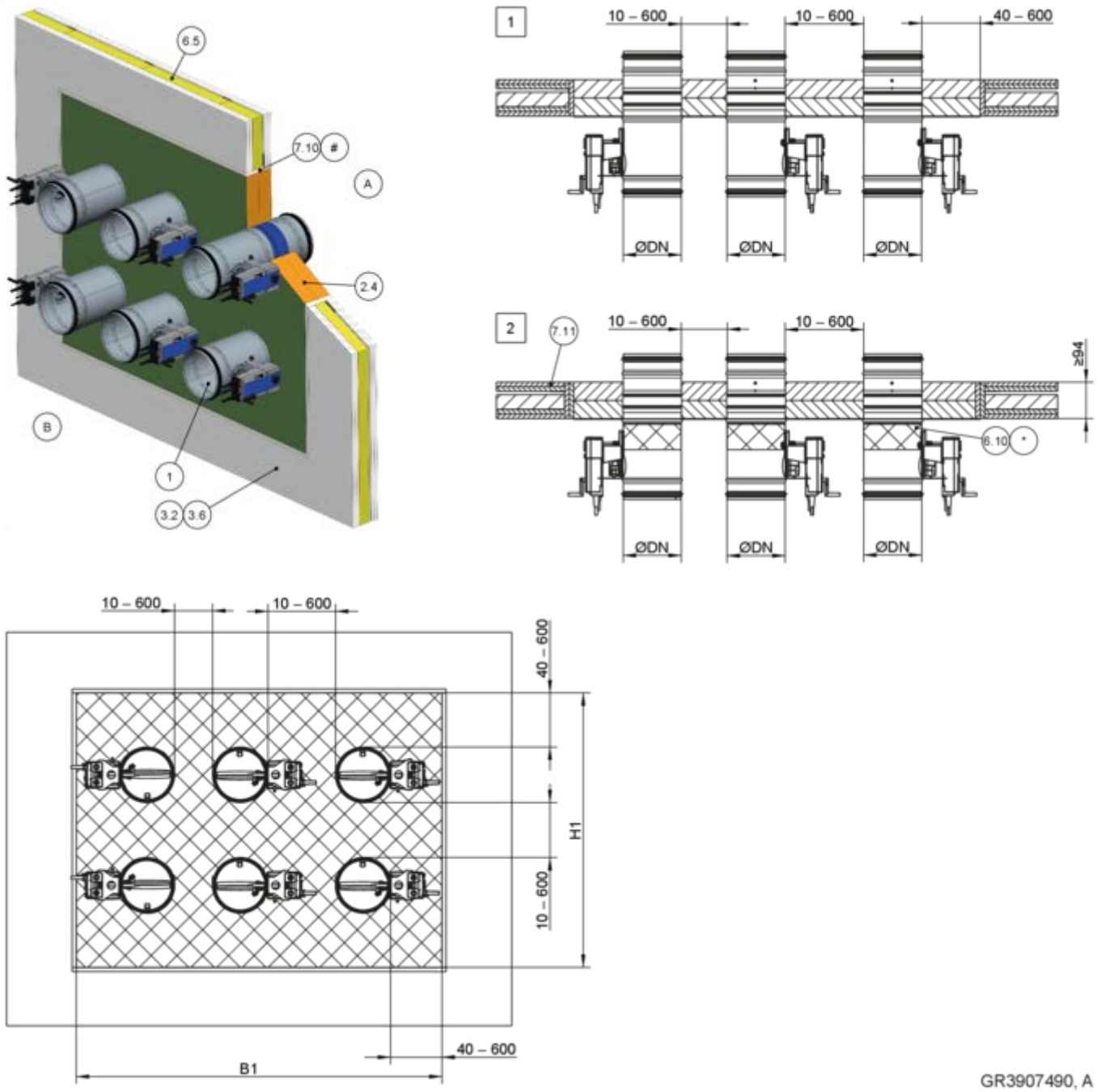


Fig. 105: Dry mortarless installation with fire batt in lightweight partition wall – Multiple occupancy of an installation opening

1 FKRS-EU
2.4 Coated board system with firestop coating
3.2 Lightweight partition wall with metal support or steel support structure, cladding on both sides
3.6 Compartment wall or safety partition wall with metal stud, clad on both sides
6.5 Mineral wool, depending on wall construction
6.10 Firestop coating around the perimeter, d = at least 2.5 mm
6.19 Mineral wool > 1000 °C, > 80 kg/m³, thickness = 20 mm, leave out the actuator and release mechanism; inspection openings must remain accessible
6.20 Pipe collar (can be ordered separately)
6.24 Elastomeric foam (flame-resistant, non-dripping) The following applies in Germany: For notes on the use of elastomeric foams *'Additional provision for use in Germany:' on page 8*.
7.10 Reveal
At W ≤ 100 mm optional, At W > 100 mm double-layered (2 × 12.5 mm)
* 6.19, 6.20 or 6.24 as an alternative
1 2 see table *Table on page 142*

Lightweight partition wall					
DN [mm]	Fire resistance rating to	Coating		Distance [mm]	Detail
		Operating side B	Installation side A		
100 – 200	EI 90 S	–	–	10* – 600	1
224 – 315	EI 90 S	x	–	10* – 600	2

* For a distance of 10 mm, mineral wool ≥ 1000 °C, ≥ 80 kg/m³ with d = 10 mm and width nominal width/2 shall be provided between the fire dampers.

Supplementary requirements: Dry mortarless installation with fire batt in lightweight partition walls – Multiple occupancy of an installation opening

- Lightweight partition wall or fire wall, ↳ *on page 42*
- Fire batt systems, installation details, distances/dimensions, ↳ *on page 38* f
- ≥ 40 mm distance between the fire damper and load-bearing components
- Suspension and fixing, ↳ *Chapter 5.15 'Fixing the fire damper' on page 255*
- General installation information, ↳ *5.3 'General installation information' on page 31* ff
- General information on installation with fire batt, ↳ *on page 38*
- Overall fire damper area ≤ 1.2 m²
- The number of fire dampers in an installation opening is limited by their size (nominal width) and the overall area of the fire dampers (1.2 m²) (maximum 10 FKRS-EU in single or double row arrangement)

5.7 Lightweight partition walls with timber support structure or half-timbered constructions

5.7.1 General information

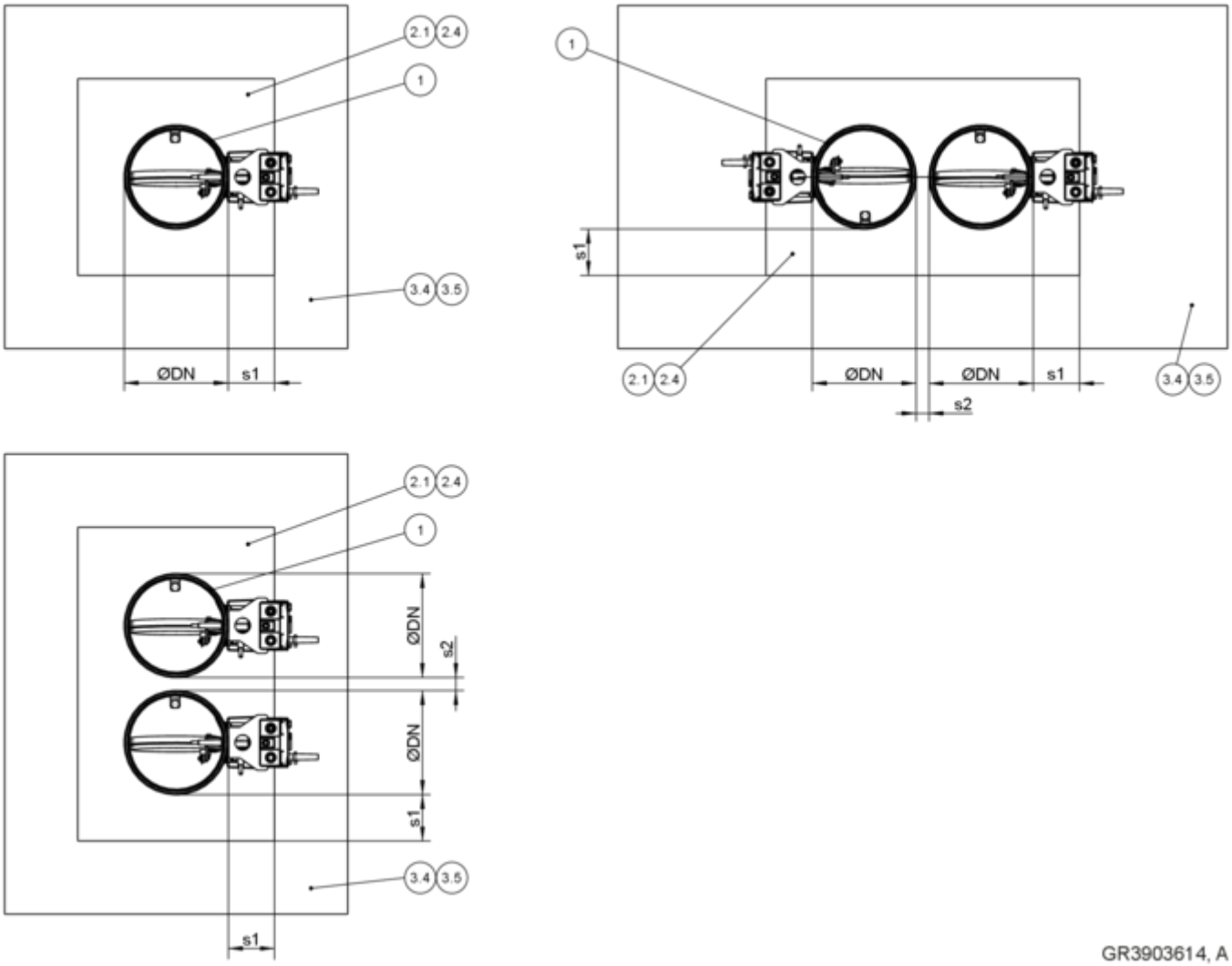


Fig. 106: Lightweight partition walls with timber frame/ half-timbered construction – arrangement/spacing

1 FKRS-EU
2.1 Mortar
2.4 Coated board system with firestop coating
3.4 Timber stud wall, cladding on both sides
3.5 Half-timbered wall, clad on both sides
s1 Perimeter gap, ↳ *on page 37*
s2 Distance between the fire dampers, ↳ *'Distances' on page 35*

Installation type	Installation opening [mm]	Distance [mm]	
		s1	s2
Mortar-based installation	∅DN + max. 450	≤ 225	10/40 [2] – 225
Dry mortarless installation with TQ2	□A = ∅DN + 110 [3]	central installation	≥ 200
Dry mortarless installation with coated board system [1]	□A = ∅DN + max. 1200	40 – 600	10/40 [2] – 600

[1] Observe the maximum permissible size of the coated board system!
[2] Depending on fire resistance rating
[3] Installation opening tolerance ± 4 mm

Lightweight partition wall with timber support structure and cladding on both sides

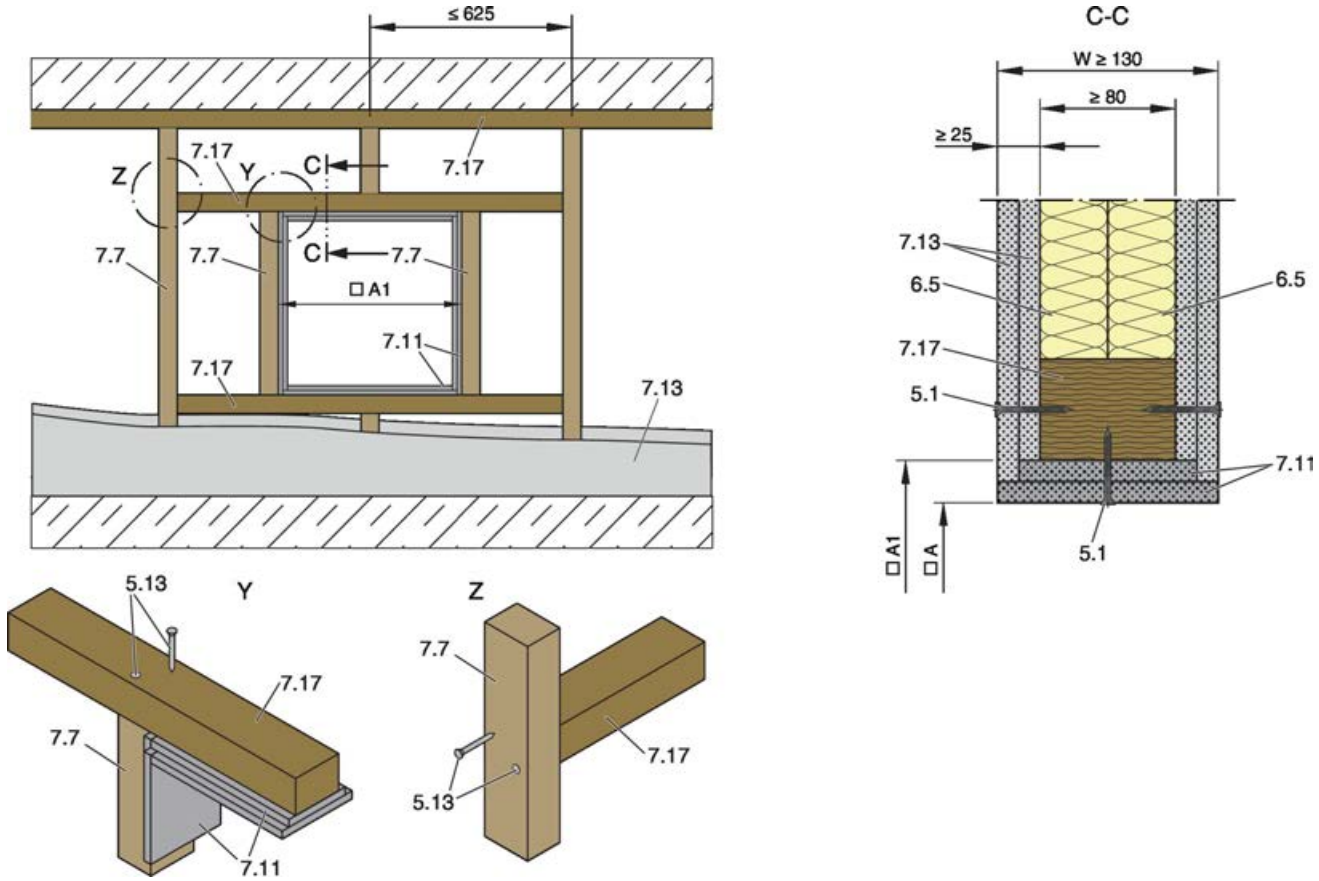


Fig. 107: Lightweight partition wall with timber support structure and cladding on both sides

5.1	Drywall screw	7.13	Cladding
5.13	Wood screw or pin-shaped fastener	7.17	Framed openings, timber stud/noggings min. 60 × 80 mm
6.5	Mineral wool, depending on wall construction		
7.7	Timber stud, min. 60 × 80 mm	□A	Clear installation opening
7.11	Reveals, double layer, with staggered joints	□A1	Opening in timber support structure, □A1 = □A + (4 × reveals)

Lightweight partition wall with half-timbered construction and cladding on both sides

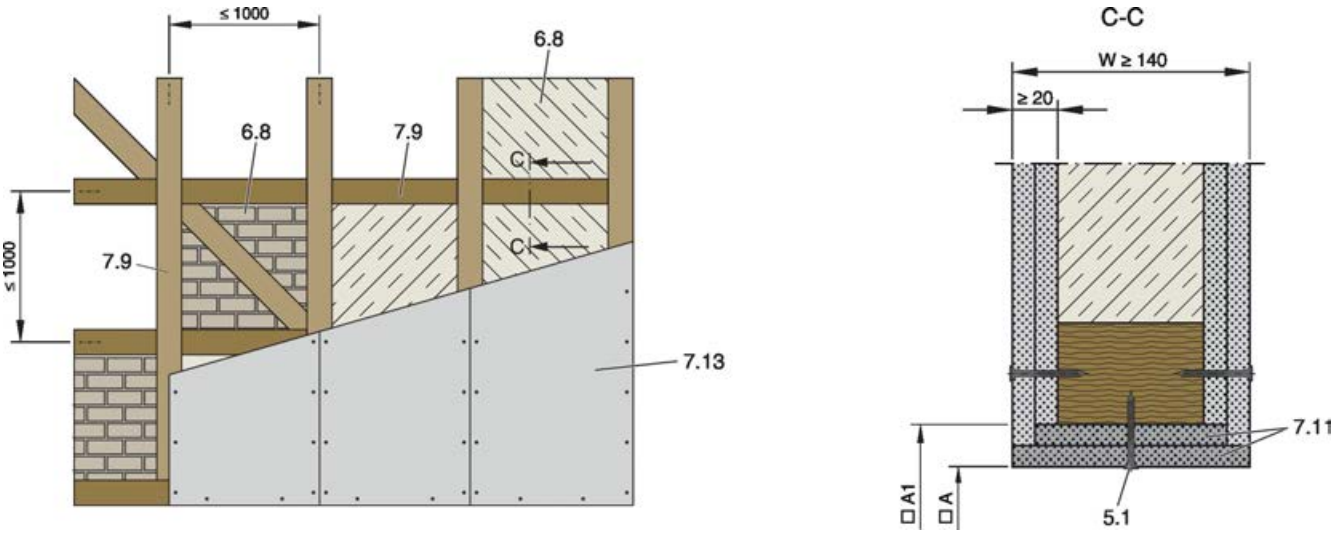


Fig. 108: Lightweight partition wall with half-timbered construction and cladding on both sides

5.1 Drywall screw
6.8 Infill*
7.9 Half-timbered construction
7.11 Reveals, double layer, with staggered joints
7.13 Cladding
* Cavities completely filled with mineral wool ≥ 50 kg/m³, bricks, aerated concrete, lightweight concrete, reinforced concrete or puddle clay
□A Clear installation opening
□A1 Opening in the half-timbered construction, □A1 = □A + (4 × reveals)

Additional requirements: lightweight partition walls with timber stud/half-timbered construction

- Timber stud wall/half-timbered construction,
  ↳ *on page 43*

5.7.2 Mortar-based installation

Mortar-based installation into a lightweight partition wall with timber support structure

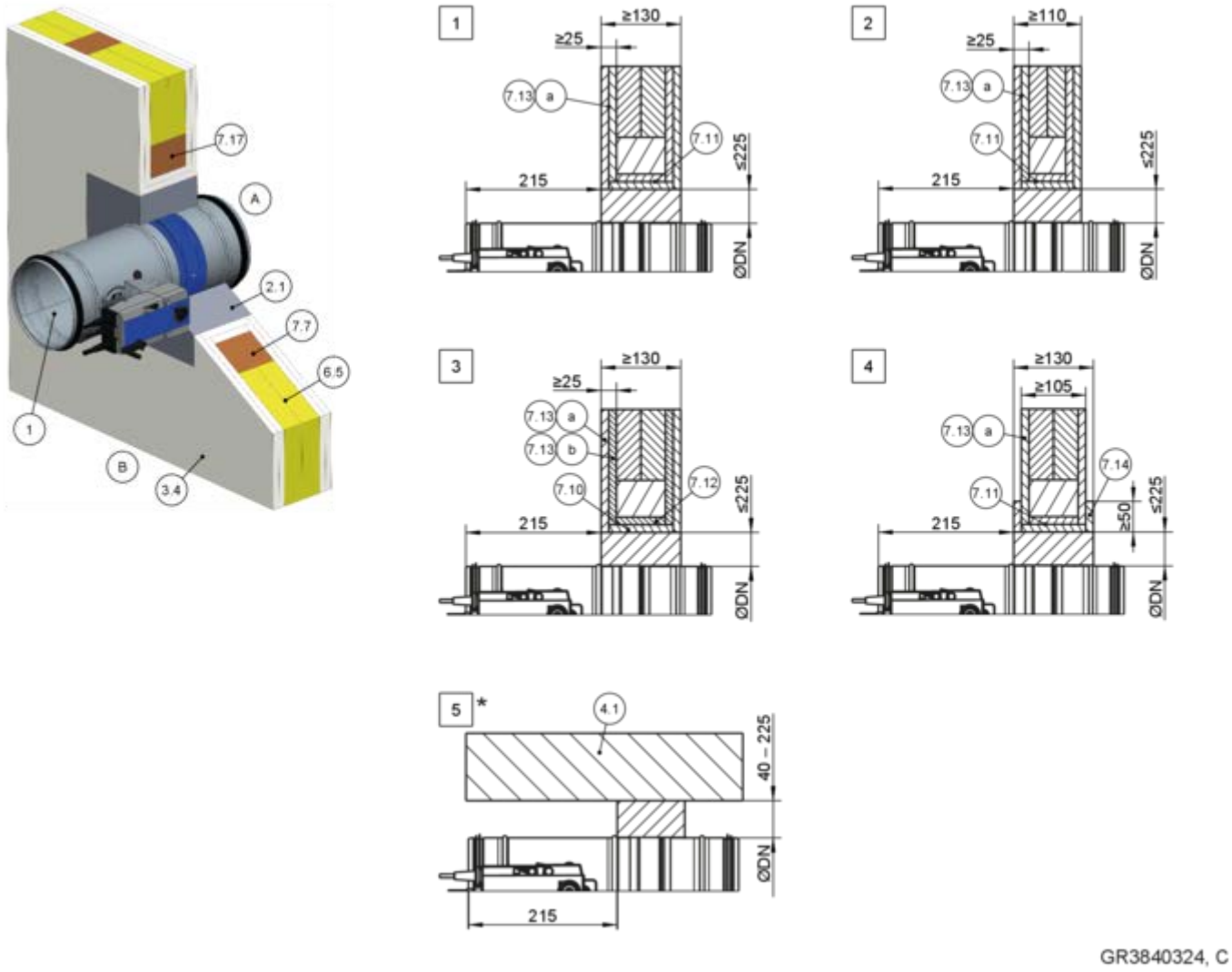


Fig. 109: Mortar-based installation into a lightweight partition wall with timber support structure

1	FKRS-EU
2.1	Mortar
3.4	Timber stud wall (including timber panel construction), clad on both sides
4.1	Solid ceiling/solid floor
6.5	Mineral wool, depending on wall construction
7.7	Timber stud, min. 60 × 80 mm or min. 60 × 60 mm with F60
7.10	Reveals (fire-resistant)
7.11	Reveals, double layer, with staggered joints
7.12	Reveals, 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	Framed openings, timber stud/noggings
*	Installation near the floor as in 5
1	Up to EI 120 S
2	Up to EI 60 S
3 4	EI 30 S
5	EI 30 to EI 120 S

Mortar-based installation in lightweight partition wall with timber support structure, "flange to flange"

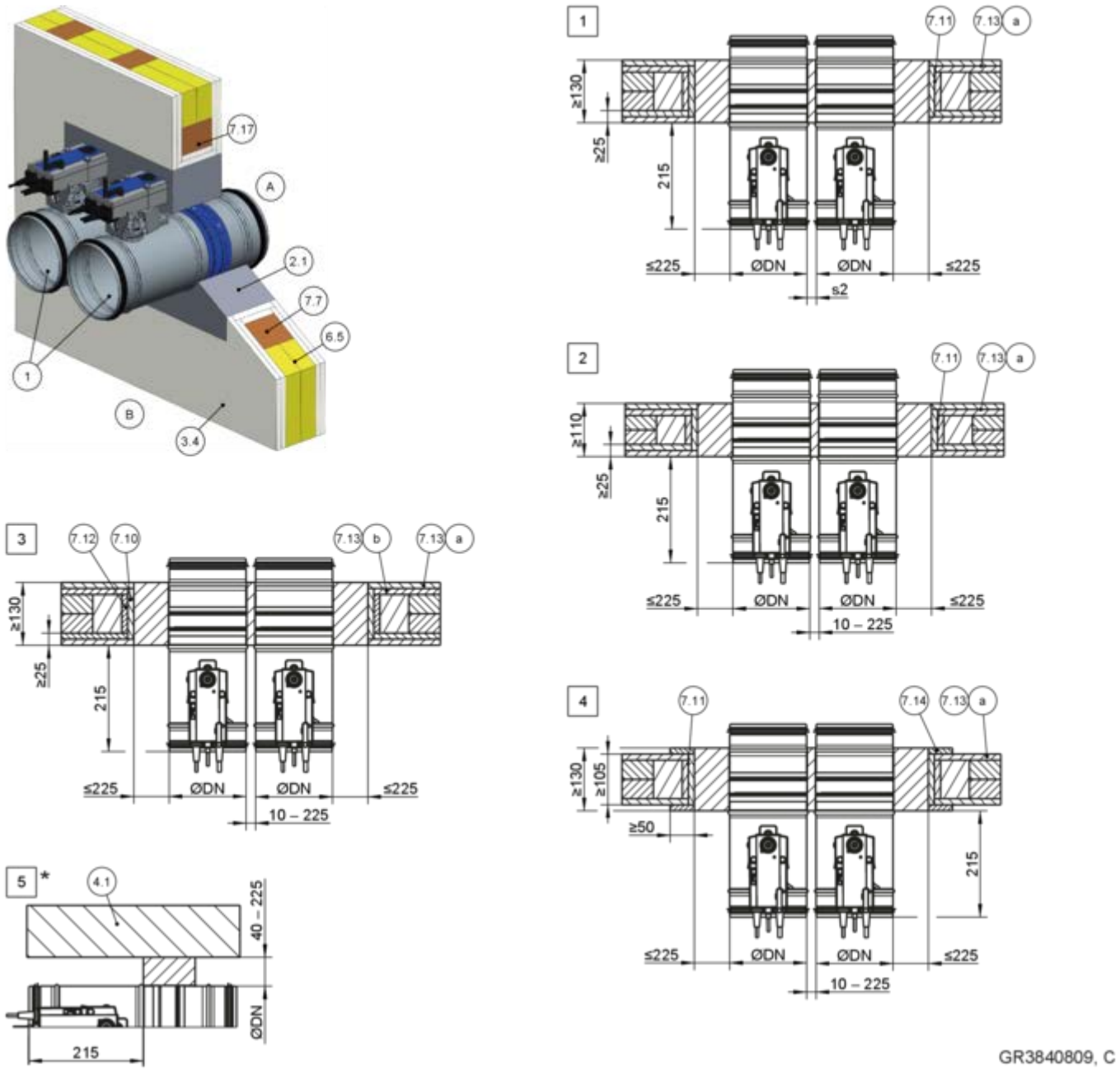


Fig. 110: Mortar-based installation into a lightweight partition wall with timber support structure, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)

1	FKRS-EU
2.1	Mortar
3.4	Timber stud wall (including timber panel construction), clad on both sides
4.1	Solid ceiling/solid floor
6.5	Mineral wool, depending on wall construction
7.7	Timber stud, min. 60 × 80 mm or min. 60 × 60 mm with F60
7.11	Reveals, double layer, with staggered joints
7.12	Reveals, 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	Framed openings, wooden beams min. 60 × 80 mm or min. 60 × 60 mm for F60
*	Installation near the floor as in 5
1	Up to EI 120 S for s2 = 40 – 225 mm Up to EI 90 S for s2 = 10 – 225 mm
2	Up to EI 60 S
3 4	EI 30 S
5	EI 30 to EI 120 S

Mortar-based installation into a lightweight partition wall with timber support structure, FKRS-EU and FK2-EU, combined

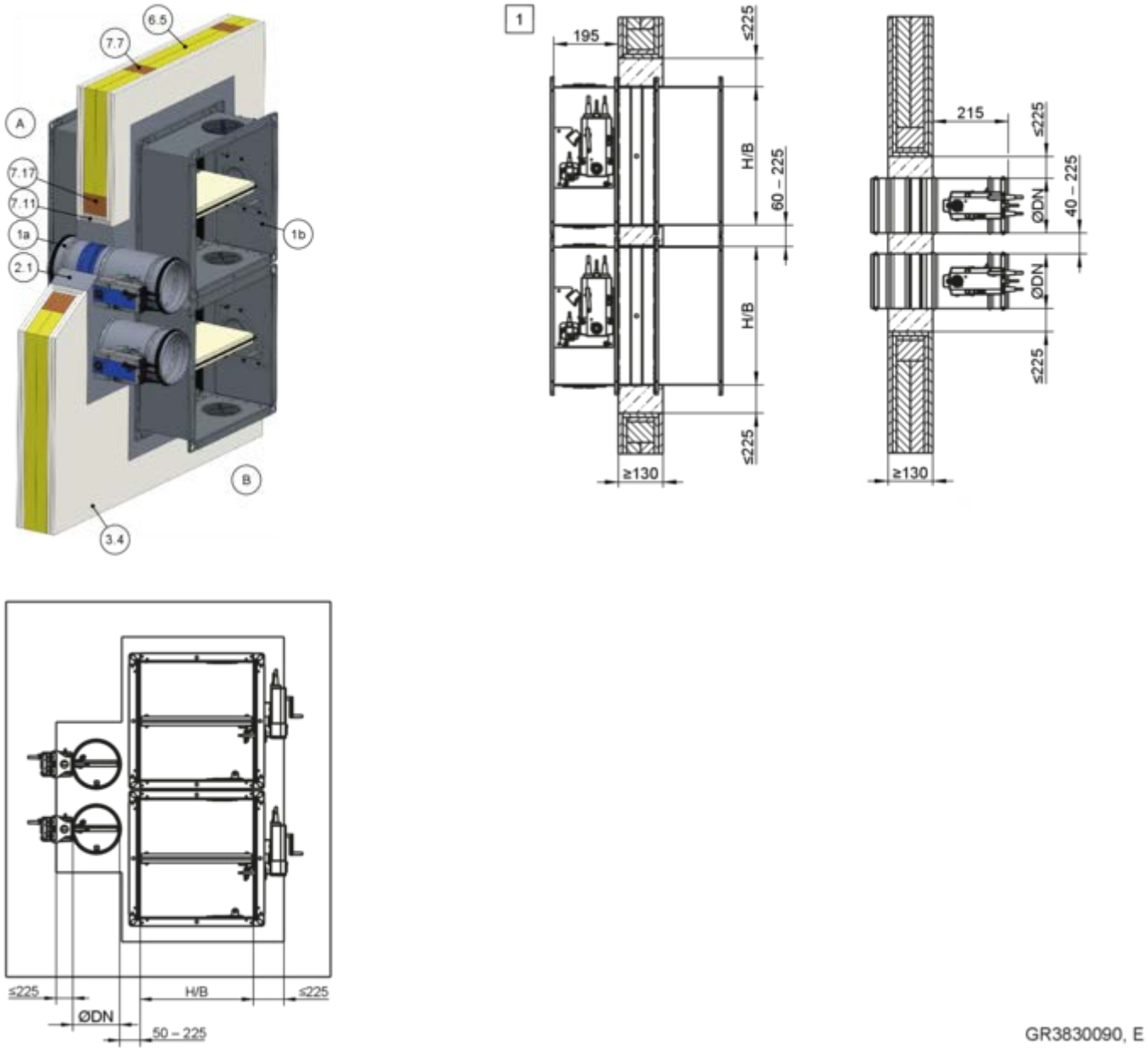


Fig. 111: Mortar-based installation into a lightweight partition wall with timber support structure, FKRS-EU and FK2-EU, combined

1a	FKRS-EU	7.7	Timber stud, min. 60 × 80 mm or min. 60 × 60 mm with F60
1b	FK2-EU up to B × H ≤ 800 × 400 mm	7.11	Reveals, double layer, with staggered joints
2.1	Mortar	7.17	Framed openings, wooden beams min. 60 × 80 mm or min. 60 × 60 mm for F60
3.4	Timber stud wall (including timber panel construction), clad on both sides	[1]	up to EI 90 S
6.5	Mineral wool, depending on wall construction		

For combined installation please note:

- Overall fire damper area ≤ 1.2 m^2 .
- The number of fire dampers in an installation opening is limited by their size (B × H for FK2-EU and/or ∅nominal width for FKRS-EU) and the overall area of the fire dampers (1.2 m^2).
- Other arrangements (side by side or on top of each other) are possible. Details are available upon request. For installation details FK2-EU, see the installation and operating manual for this fire damper type.
- Distance to load-bearing structural elements ≥ 40 mm

Mortar-based installation into a lightweight partition wall, half-timbered construction

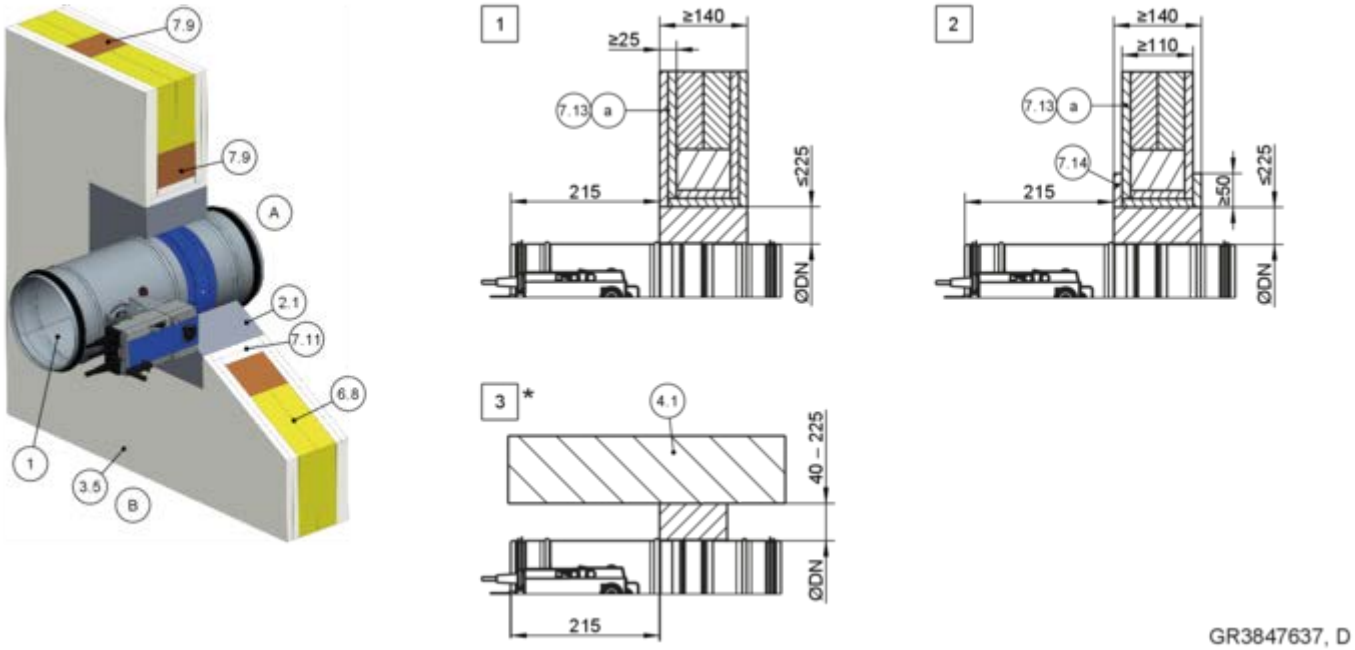


Fig. 112: Mortar-based installation into a lightweight partition wall, half-timbered construction

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

Mortar-based installation in lightweight partition wall with half-timbered construction, "flange to flange"

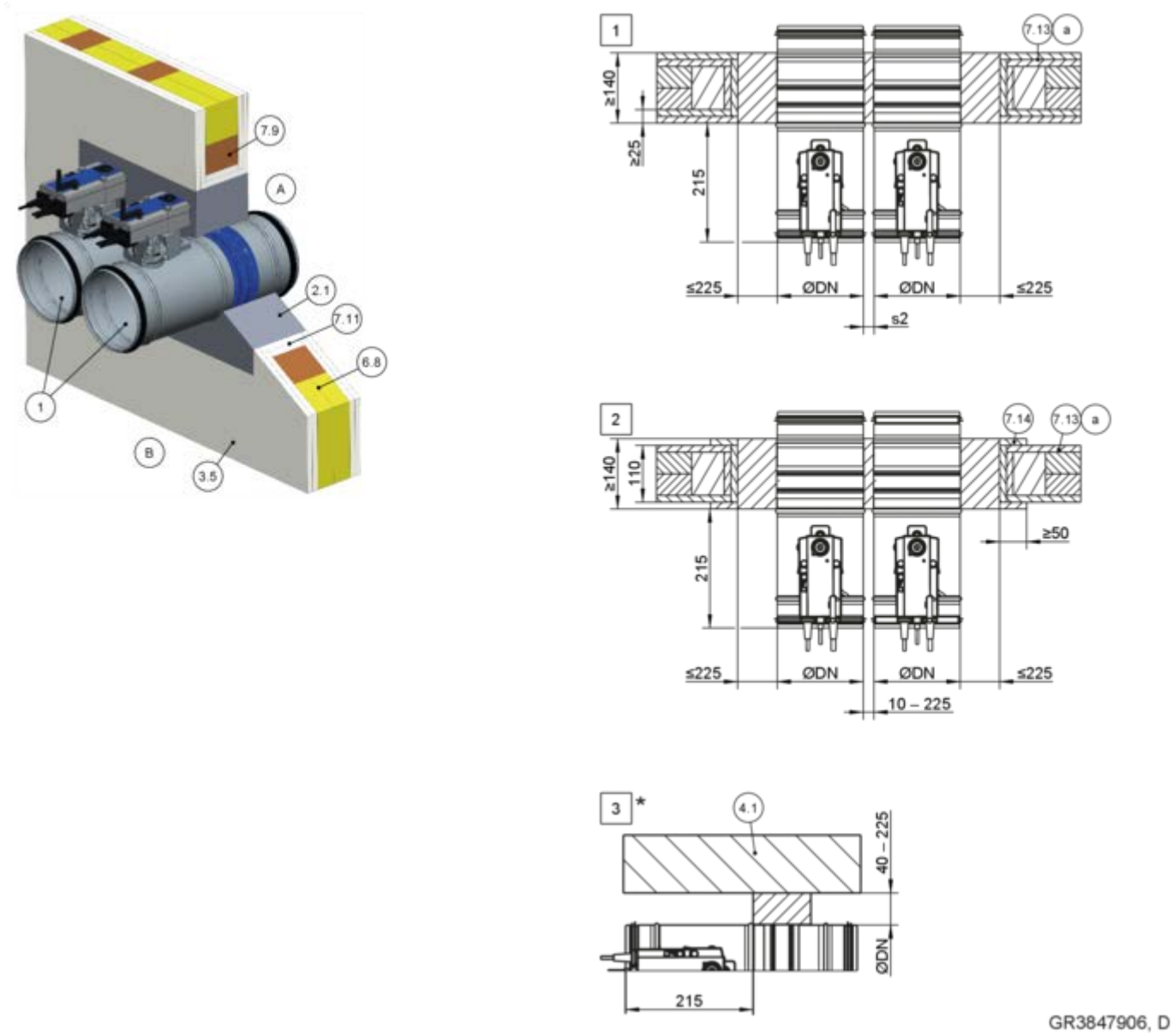


Fig. 113: Mortar-based installation into a lightweight partition wall, half-timbered construction, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)

1	FKRS-EU
2.1	Mortar
3.5	Half-timbered wall, clad on both sides
4.1	Solid ceiling/solid floor
6.8	Infill (cavities completely filled with mineral wool ≥ 1000 °C, ≥ 50 kg/m³, or masonry, aerated concrete, lightweight concrete, reinforced concrete or puddle clay)
7.9	Half-timbered construction
7.11	Reveal, fire-resistant, double layer with staggered joints
7.13a	Cladding, fire-resistant
7.14	Reinforcing board of the same material as the wall
*	Installation near the floor as in 3
1	Up to EI 120 S for s2 = 40 – 225 mm Up to EI 90 S for s2 = 10 – 225 mm
2	EI 30 S
3	EI 30 to EI 120 S

Mortar-based installation into a lightweight partition wall with half-timbered construction, FKRS-EU and FK2-EU, combined

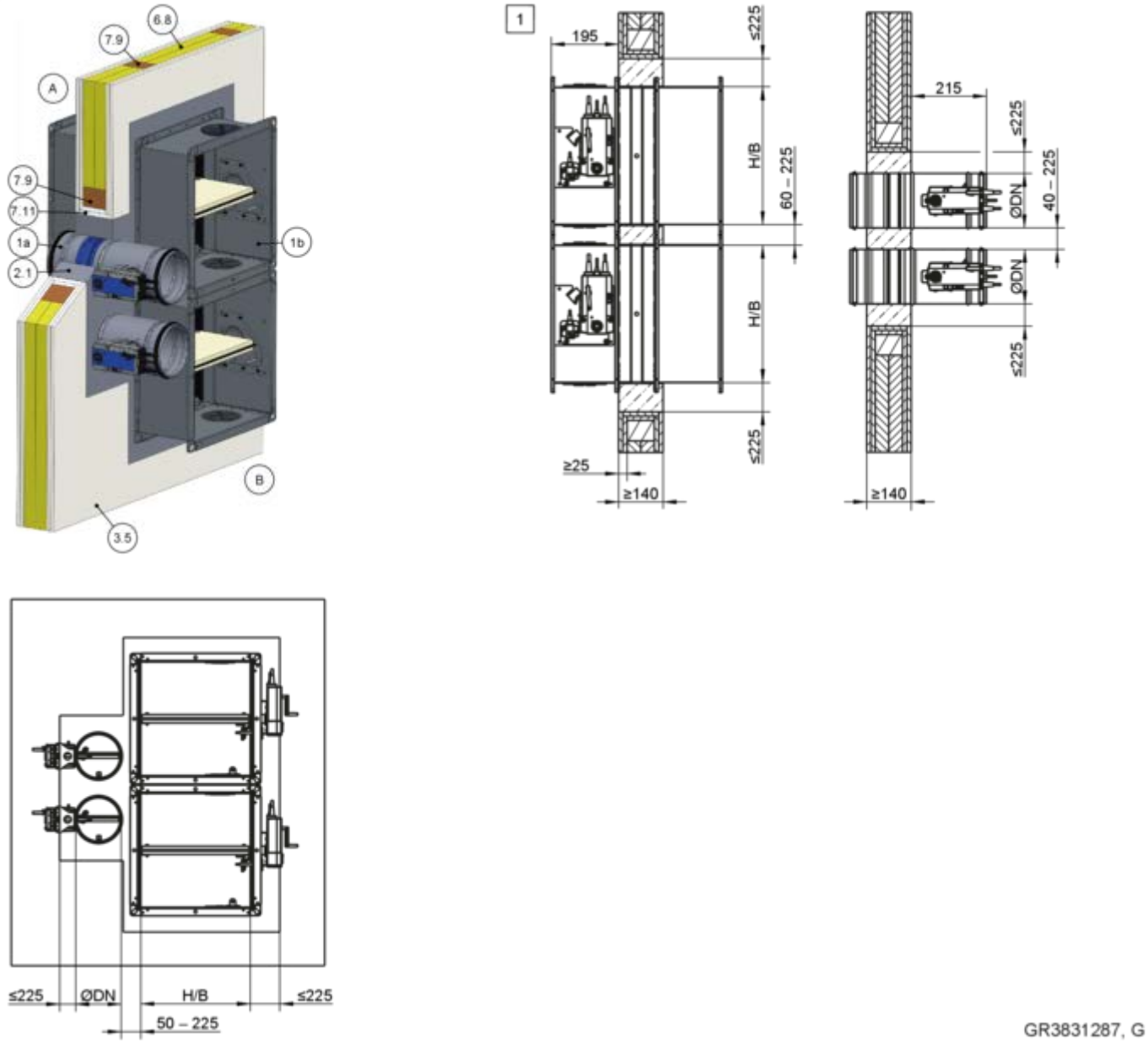


Fig. 114: Mortar-based installation into a lightweight partition wall with half-timbered construction, FKRS-EU and FK2-EU, combined

1a FKRS-EU
1b FK2-EU up to B × H ≤ 800 × 400 mm
2.1 Mortar
3.5 Half-timbered wall, clad on both sides
6.8 Infill (cavities completely filled with mineral wool ≥ 1000 °C, ≥ 50 kg/m³, or masonry, aerated concrete, lightweight concrete, reinforced concrete or puddle clay)
7.9 Half-timbered construction
7.11 Reveals, double layer, with staggered joints
[1] up to EI 90 S

For combined installation please note:

- Overall fire damper area ≤ 1.2 m^2 .
- The number of fire dampers in an installation opening is limited by their size (B × H for FK2-EU and/or ∅nominal width for FKRS-EU) and the overall area of the fire dampers (1.2 m^2).
- Other arrangements (side by side or on top of each other) are possible. Details are available upon request. For installation details FK2-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 in lightweight partition wall with timber support structure/half-timbered construction

- Timber stud wall/half-timbered construction, ↬ *on page 43*
- General installation information, ↬ *5.3 'General installation information' on page 31* ff
- General information on mortar-based installation, ↬ *'**Mortar-based installation**' on page 37*

5.7.3 Mortar-based installation – multiple occupancy of one installation opening

Mortar-based installation into a lightweight partition wall with timber support structure

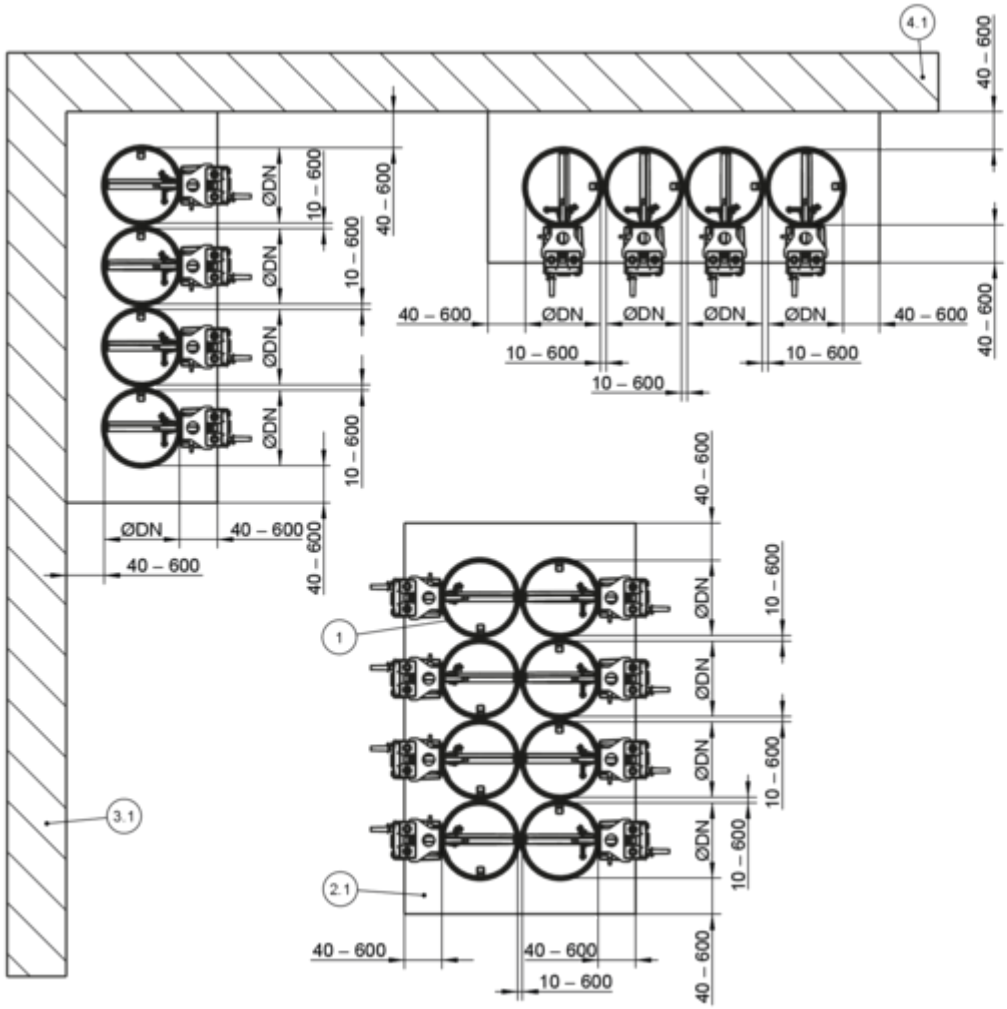


Fig. 115: Mortar-based installation in lightweight partition wall with timber stud – Multiple occupancy of an installation opening

1	FKRS-EU	3.1	Solid wall (load-bearing structural element)
2.1	Mortar	4.1	Solid ceiling slab (load-bearing component)

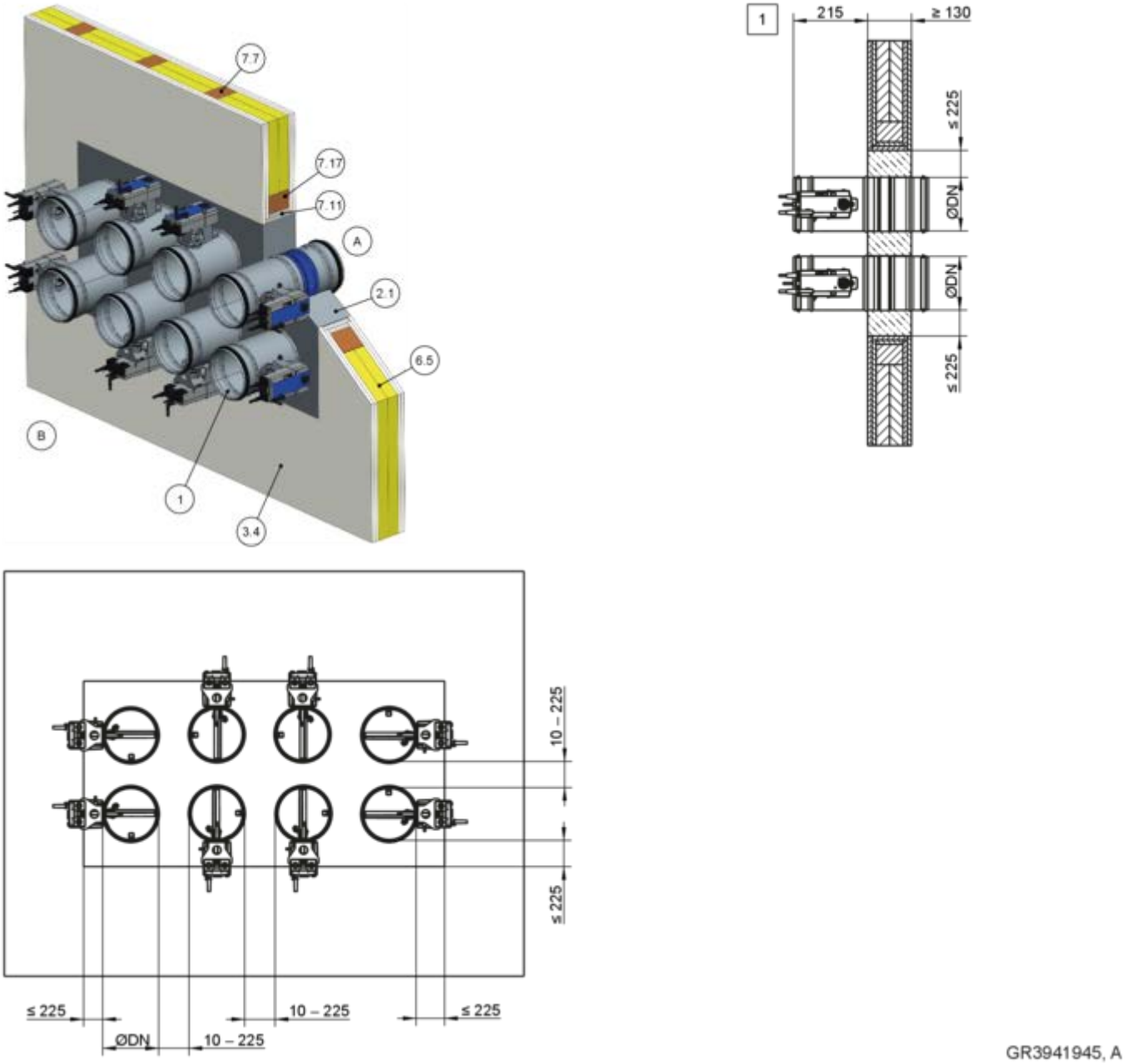


Fig. 116: Mortar-based installation in lightweight partition wall with timber stud – Multiple occupancy of an installation opening

1	FKRS-EU
2.1	Mortar
3.4	Timber stud wall (including timber panel construction), clad on both sides
6.5	Mineral wool, depending on wall construction
7.7	Timber stud, min. 60 × 80 mm
7.11	Reveal, fire-resistant, double layer with staggered joints
7.17	Framed openings, timber stud/noggings min. 60 × 80 mm
[1]	up to EI 90 S

Mortar-based installation into a lightweight partition wall, half-timbered construction

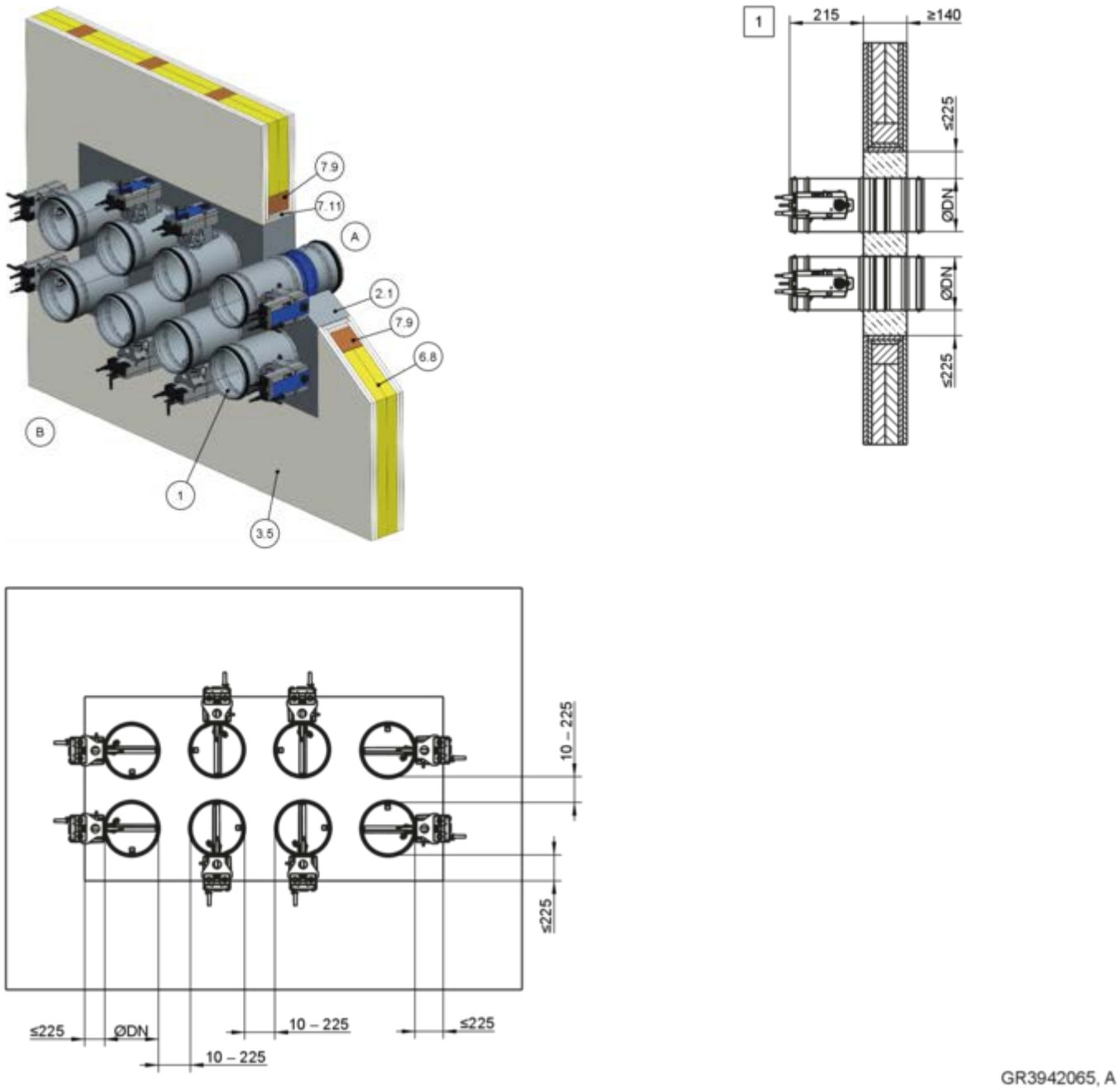


Fig. 117: Mortar-based installation in lightweight partition wall with half-timbered construction – Multiple occupancy of an installation opening

1 FKRS-EU
2.1 Mortar
3.5 Half-timbered wall, clad on both sides
6.8 Infill (cavities completely filled with mineral wool ≥ 1000 °C, ≥ 50 kg/m³, or masonry, aerated concrete, lightweight concrete, reinforced concrete or puddle clay)
7.9 Half-timbered construction
7.11 Reveal, fire-resistant, double layer with staggered joints
[1] up to EI 90 S

Supplementary requirements: Mortar-based installation with fire batt in lightweight partition walls with timber studs/half-timbered construction – Multiple occupancy of an installation opening

- Timber stud wall/half-timbered construction, *on page 43*
- General installation information, *5.3 'General installation information' on page 31* ff
- Overall fire damper area ≤ 1.2 m^2
- The number of fire dampers in an installation opening is limited by their size (nominal width) and the overall area of the fire dampers (1.2 m^2) (maximum 10 FKRS-EU in single or double row arrangement)
- Distance to load-bearing structural elements ≥ 40 mm

5.7.4 Dry mortarless installation with installation kit TQ2

Lightweight partition wall with timber support structure

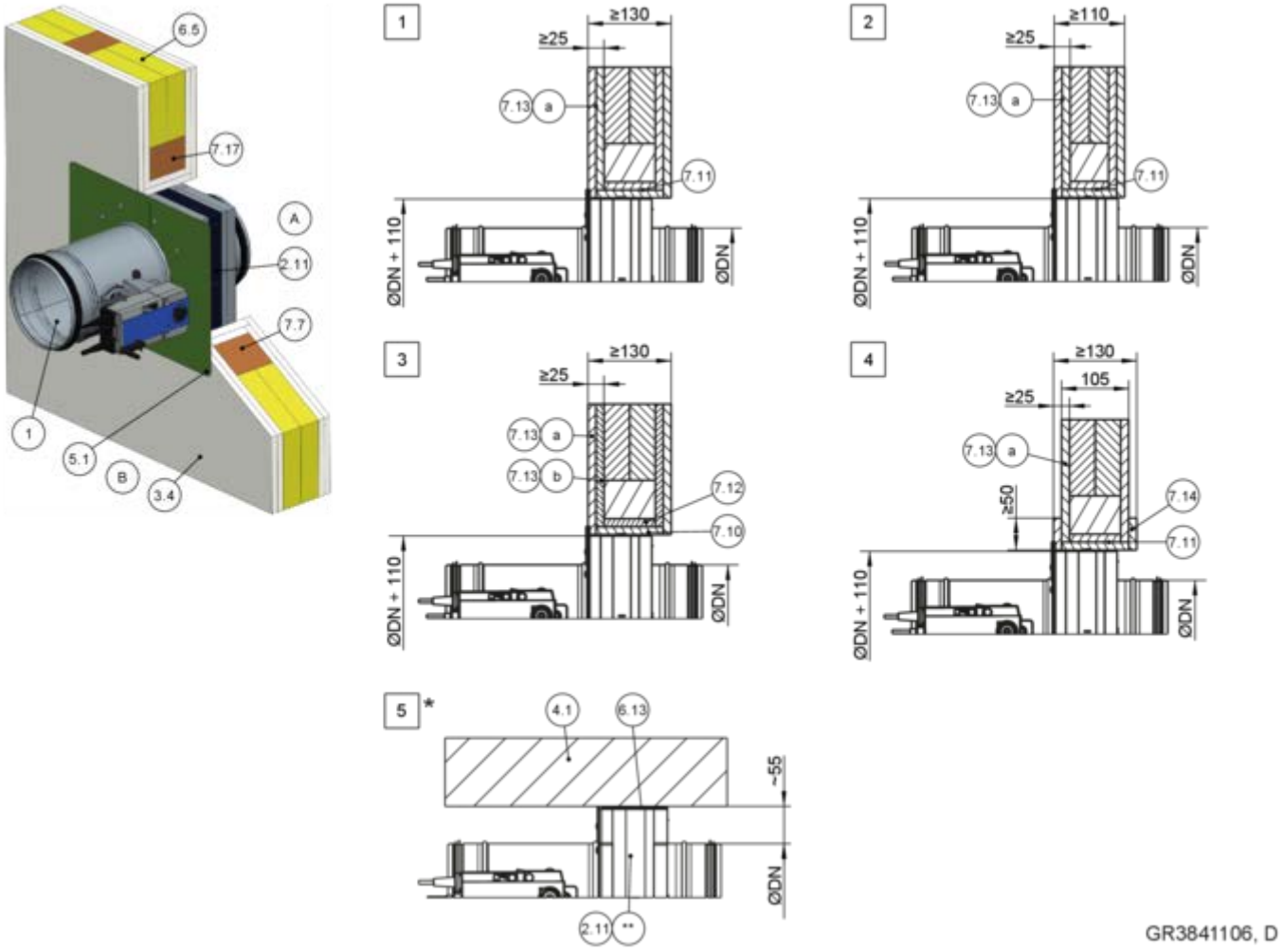


Fig. 118: Dry mortarless installation into a lightweight partition wall with timber support structure, with installation kit TQ2

1	FKRS-EU
2.11	Installation kit TQ2 with cover plate
3.4	Timber stud wall (including timber panel construction), clad on both sides
4.1	Solid ceiling/solid floor
5.1	Dry wall screw/wood screw, min. 10 mm screwed into the wooden framework
6.5	Mineral wool, depending on wall construction
6.13	Mineral wool strips A1, alternatively gypsum mortar
7.7	Timber stud, min. 60 × 80 mm or min. 60 × 60 mm with F60
7.10	Reveals (fire-resistant)
7.11	Reveals, double layer, with staggered joints
7.12	Reveals, 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	Framed openings, wooden beams min. 60 × 80 mm or min. 60 × 60 mm for F60
*	Installation near the floor as in 5
**	Cover plate shortened by others
1	Up to EI 120 S
2	Up to EI 60 S
3 4	EI 30 S
5	EI 30 to EI 120 S

Lightweight partition wall with half-timbered construction

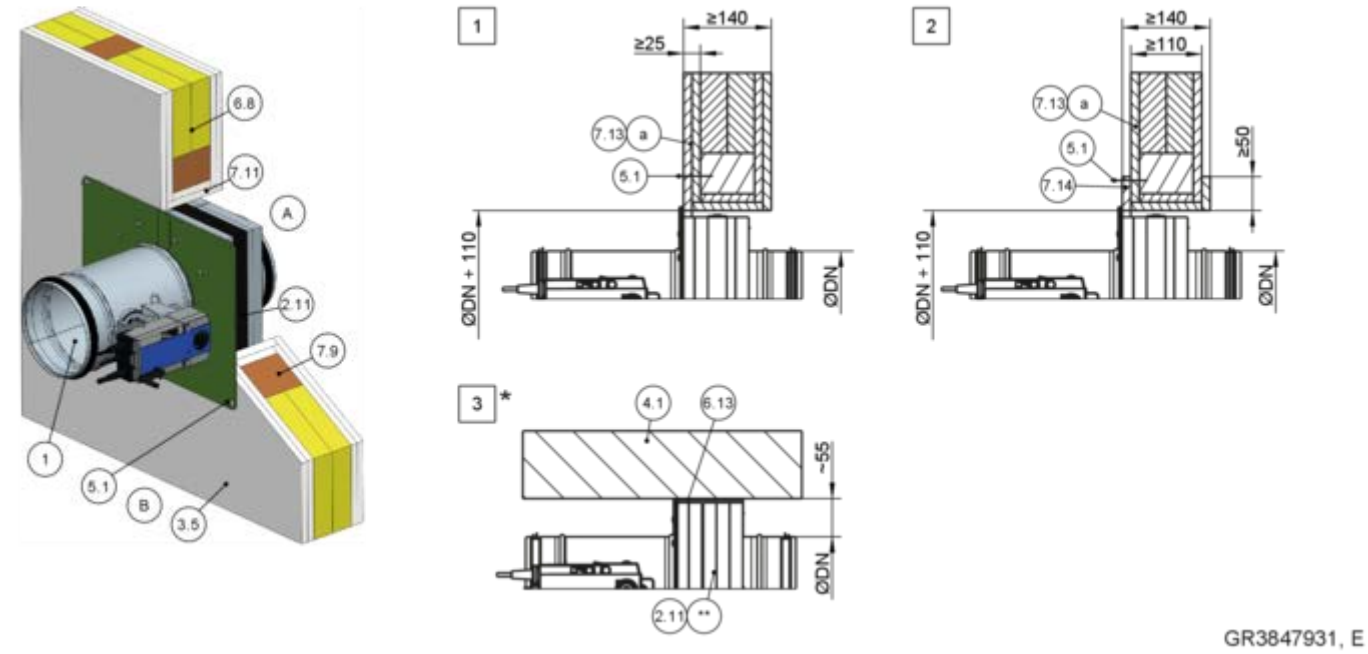


Fig. 119: Dry mortarless installation into a lightweight partition wall, half-timbered construction, using installation kit TQ2

1 FKRS-EU
2.11 Installation kit TQ2 with cover plate
3.5 Half-timbered wall, clad on both sides
4.1 Solid ceiling/solid floor
5.1 Dry wall screw/wood screw, min. 10 mm screwed into the wooden framework
6.8 Infill (cavities completely filled with mineral wool ≥ 1000 °C, ≥ 50 kg/m³, or masonry, aerated concrete, lightweight concrete, reinforced concrete or puddle clay)
6.13 Mineral wool strips A1, alternatively gypsum mortar
7.9 Half-timbered construction
7.11 Reveal, fire-resistant, double layer with staggered joints
7.13a Cladding, fire-resistant
7.14 Reinforcing board of the same material as the wall
* Installation near the floor as in 3
** Cover plate shortened by others
1 Up to EI 120 S
2 EI 30 S
3 EI 30 to EI 120 S

Additional requirements: dry mortarless installation with installation kit TQ2 into lightweight partition walls with timber support structure/half-timbered construction

- Timber stud wall/half-timbered construction, ↳ *on page 43*
- Installation kit TQ2, ↳ *5.4.3 'Installation kit TQ2' on page 48*
- Distance between two fire dampers ≥ 200 mm (Installation of each fire damper in separate opening)
- General installation information, ↳ *5.3 'General installation information' on page 31* ff
- General information on installation with installation kit TQ2, ↳ *on page 38*

5.7.5 Installation remote from lightweight partition walls with mineral wool

Installation remote from timber stud walls with mineral wool and joint filler

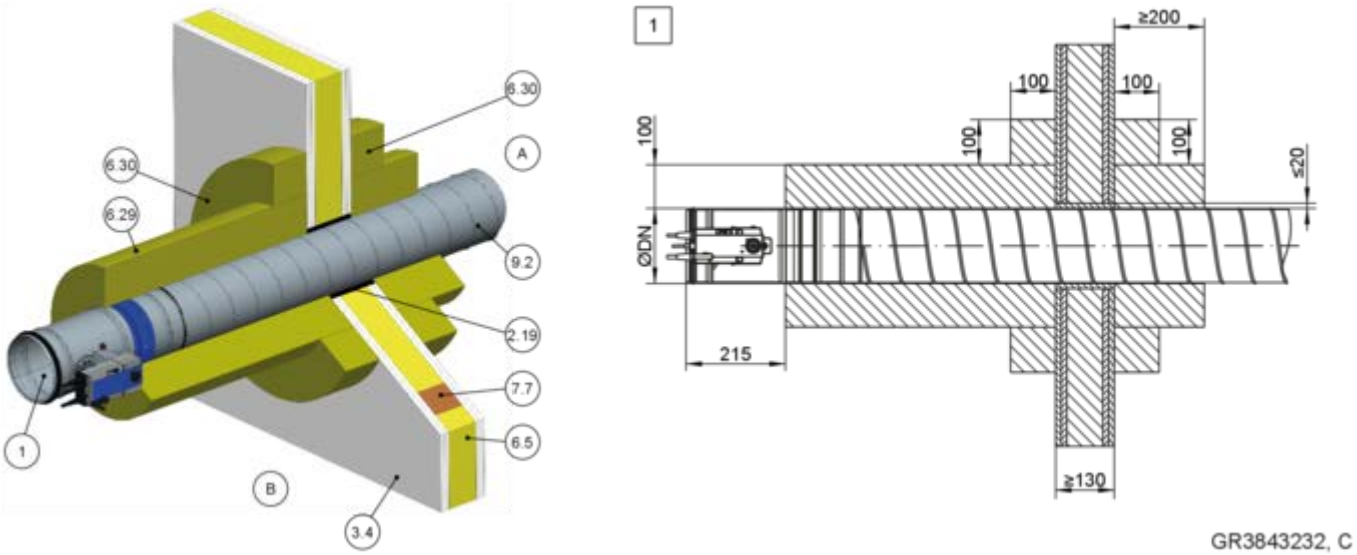


Fig. 120: Installation remote from timber stud walls with mineral wool and joint filler

1	FKRS-EU
2.19	Joint filler
3.4	Timber stud wall (including timber panel construction), clad on both sides
6.5	Mineral wool, depending on wall construction
6.29*	Mineral wool PAROC HVAC Fire Mat 80BLC (80 kg/m³)
6.30*	Reinforcing board made of mineral wool PAROC HVAC Fire Mat BlackCoat (≥ 80 kg/m³), circumferentially glued
7.7	Timber stud, min. 60 × 80 mm
9.2	Sheet steel duct
*	Please check in advance whether the PAROC material is available in your market region.
1	Up to EI 60 S

Installation remote from half-timbered walls with mineral wool and joint filler

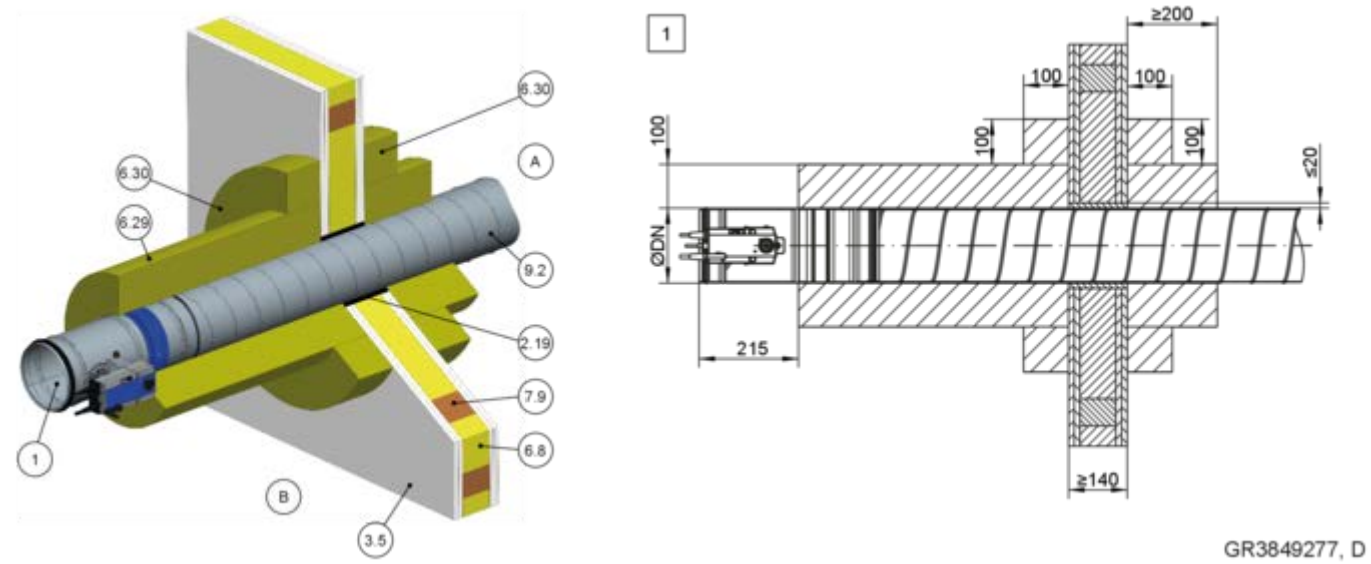


Fig. 121: Installation remote from half-timbered walls with mineral wool and joint filler

1	FKRS-EU
2.19	Joint filler
3.5	Half-timbered wall, clad on both sides
6.8	Infill (cavities completely filled with mineral wool ≥ 1000 °C, ≥ 50 kg/m³, or masonry, aerated concrete, lightweight concrete, reinforced concrete or puddle clay)
6.29*	Mineral wool PAROC Hvac Fire Mat BlackCoat (≥ 80 kg/m^3)
6.30*	Reinforcing board made of mineral wool PAROC HVAC Fire Mat BlackCoat (≥ 80 kg/m^3), circumferentially glued
7.9	Half-timbered construction
9.2	Sheet steel duct
*	Please check in advance whether the PAROC material is available in your market region.
1	Up to EI 60 S

Dry mortarless installation remote from timber stud walls with mineral wool and coated board system

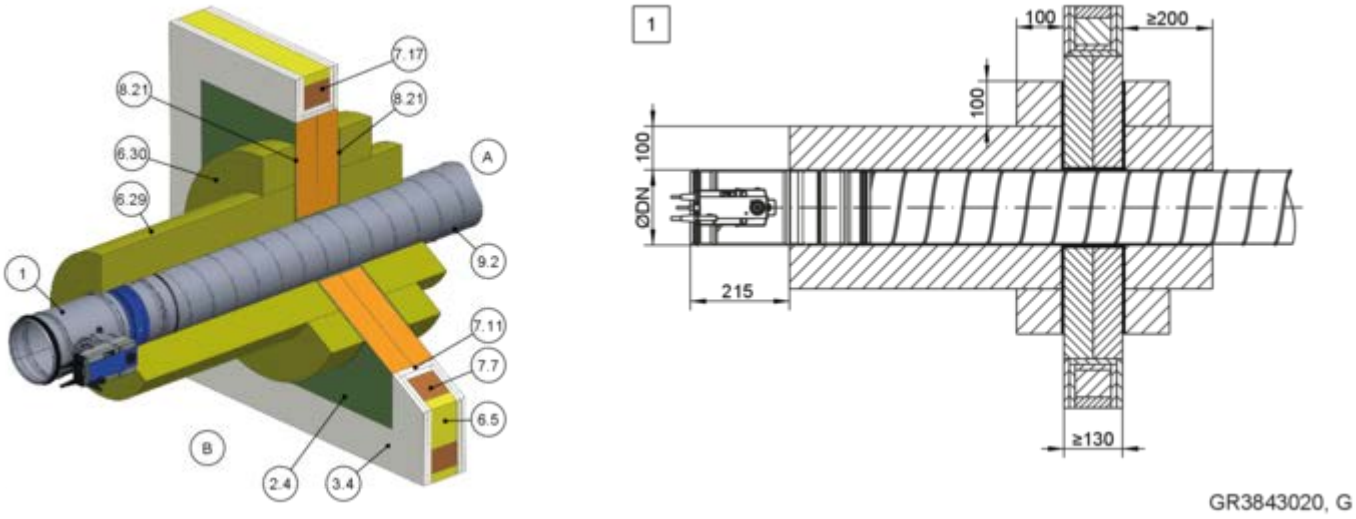


Fig. 122: Dry mortarless installation remote from timber stud walls with mineral wool and coated board system

1	FKRS-EU
2.4*	Coated board system, PAROC Pyrotech Slab 140 (max. W × H = 2.1 × 2.5 m)
3.4	Timber stud wall, cladding on both sides
6.5	Mineral wool, depending on wall construction
6.29*	Mineral wool PAROC Hvac Fire Mat BlackCoat (≥ 80 kg/m³)
6.30*	Reinforcing board made of mineral wool PAROC HVAC Fire Mat BlackCoat (≥ 80 kg/m³), circumferentially glued
7.7	Timber stud, min. 60 × 80 mm
7.11	Reveal, fire-resistant, double layer with staggered joints
7.17	Framed openings, wooden beam min. 60 × 80 mm
8.21	Acrylic or sealing compound (suitable for coated board system)
9.2	Sheet steel duct
*	Please check in advance whether the PAROC material is available in your market region.
1	Up to EI 60 S

Dry mortarless installation remote from timber frame walls with mineral wool and coated board system

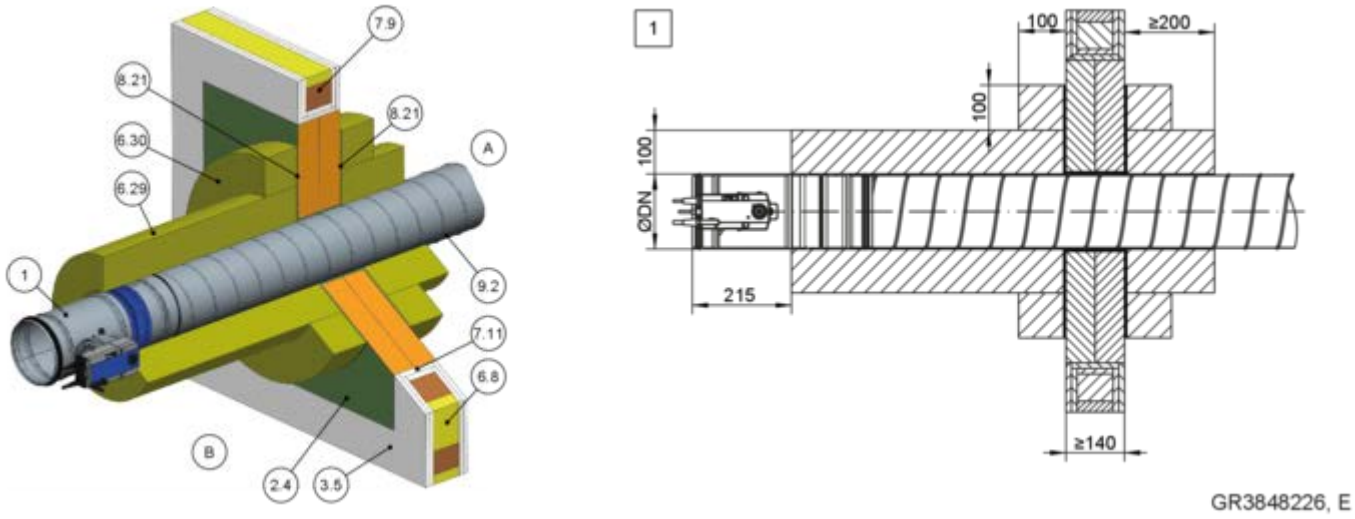


Fig. 123: Dry mortarless installation remote from timber frame walls with mineral wool and coated board system

1	FKRS-EU
2.4*	Coated board system, PAROC Pyrotech Slab 140 (max. W × H = 2.1 × 2.5 m)
3.5	Half-timbered wall, clad on both sides
6.8	Infill (cavities completely filled with mineral wool ≥ 1000 °C, ≥ 50 kg/m³, or masonry, aerated concrete, lightweight concrete, reinforced concrete or puddle clay)
6.29*	Mineral wool PAROC Hvac Fire Mat BlackCoat (≥ 80 kg/m³)
6.30*	Reinforcing board made of mineral wool PAROC HVAC Fire Mat BlackCoat (≥ 80 kg/m³), circumferentially glued
7.9	Half-timbered construction
7.11	Reveal, fire-resistant, double layer with staggered joints
8.21	Acrylic or sealing compound (suitable for coated board system)
9.2	Sheet steel duct
*	Please check in advance whether the PAROC material is available in your market region.
1	Up to EI 60 S

Additional requirements: installation remote from lightweight partition walls with wooden studs with mineral wool

- Timber stud wall/half-timbered construction, *on page 43*
- General installation information, *5.3 'General installation information' on page 31* ff
- General information on installation with mineral wool, *on page 38*
- Distance between two fire dampers ≥ 400 mm
- Distance to load-bearing/adjacent components ≥ 200 mm
- Suspend the fire damper and air duct according to the mineral wool manufacturer's specifications

5.7.6 Dry mortarless installation with fire batt

Dry mortarless installation into a lightweight partition wall with timber support structure, with a fire batt

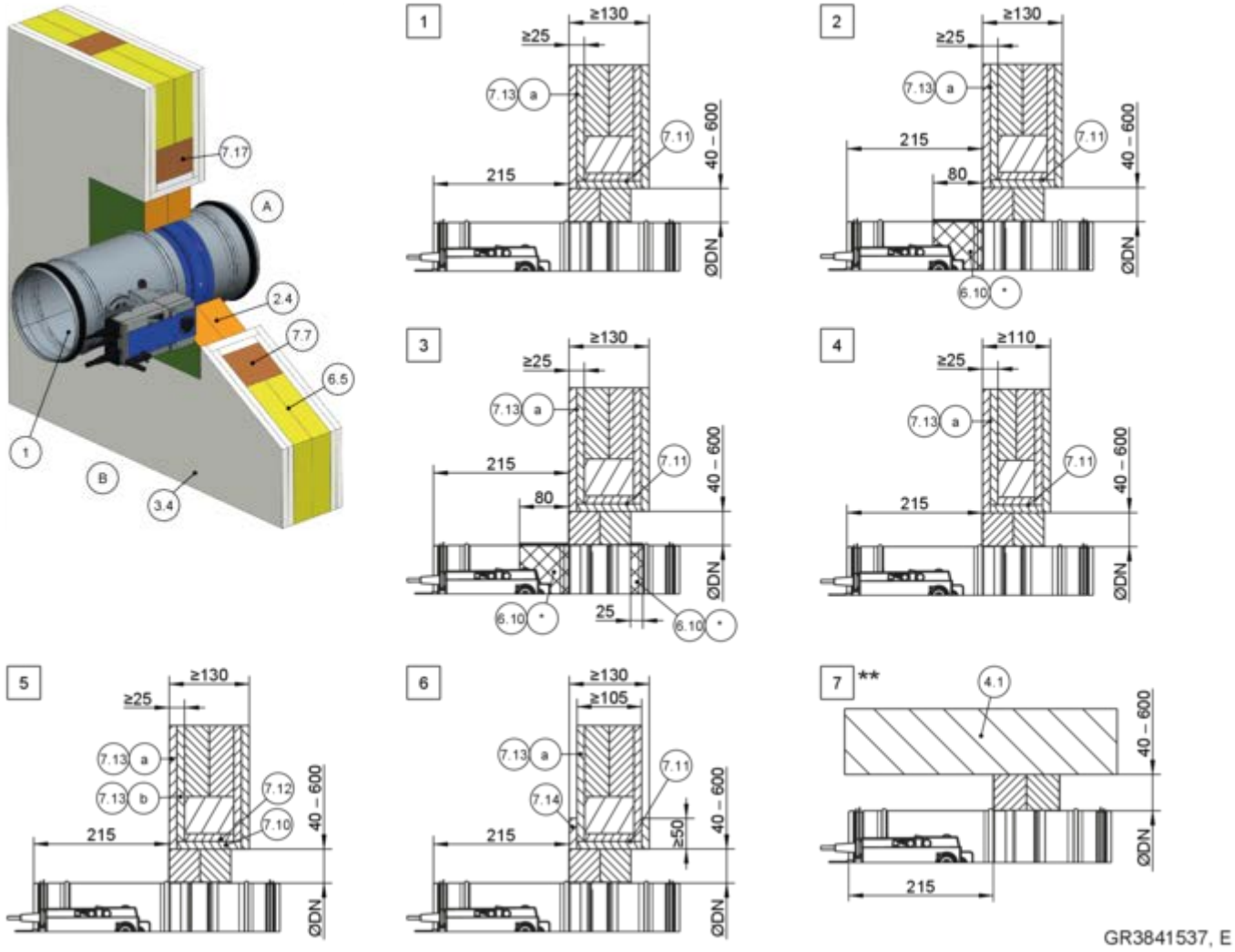


Fig. 124: Dry mortarless installation into a lightweight partition wall with timber support structure, with a fire batt

1	FKRS-EU
2.4	Coated board system with firestop coating
3.4	Timber stud wall (including timber panel construction), clad on both sides
4.1	Solid ceiling/solid floor
6.5	Mineral wool, depending on wall construction
6.10	Firestop coating around the perimeter, d = at least 2.5 mm
6.19	Mineral wool > 1000 °C, > 80 kg/m³, thickness = 20 mm, panel material around the perimeter, leave out the actuator and release mechanism; inspection openings must remain accessible
6.20	Pipe collar (can be ordered separately)
6.24	Elastomeric foam (flame-resistant, non-dripping) The following applies in Germany: For notes on the use of elastomeric foams *'Additional provision for use in Germany:' on page 8* .
7.7	Timber stud, min. 60 × 80 mm or min. 60 × 60 mm with F60
7.10	Reveals (fire-resistant)
7.11	Reveal, fire-resistant, double layer with staggered joints
7.12	Reveals, 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	Framed openings, wooden beams min. 60 × 80 mm or min. 60 × 60 mm for F60
*	6.19, 6.20 or 6.24 as an alternative
**	Installation near the floor as in 7
1 – 7	See table *164*

Lightweight partition wall with timber support structure				
DN [mm]	Fire resistance rating to	Coating		Detail
		Operating side B	Installation side A	
100 – 200	EI 90 S	–	–	1, 7
224 – 315	EI 90 S	x	–	2, 7
100 – 200	EI 120 S	x	–	2, 7
224 – 315	EI 120 S	x	x	3, 7
100 – 315	EI 60 S	–	–	4, 7
100 – 315	EI 30 S	–	–	5, 7
100 – 315	EI 30 S	–	–	6, 7

Dry mortarless installation into a lightweight partition wall, with a fire batt, with timber support structure, "flange to flange

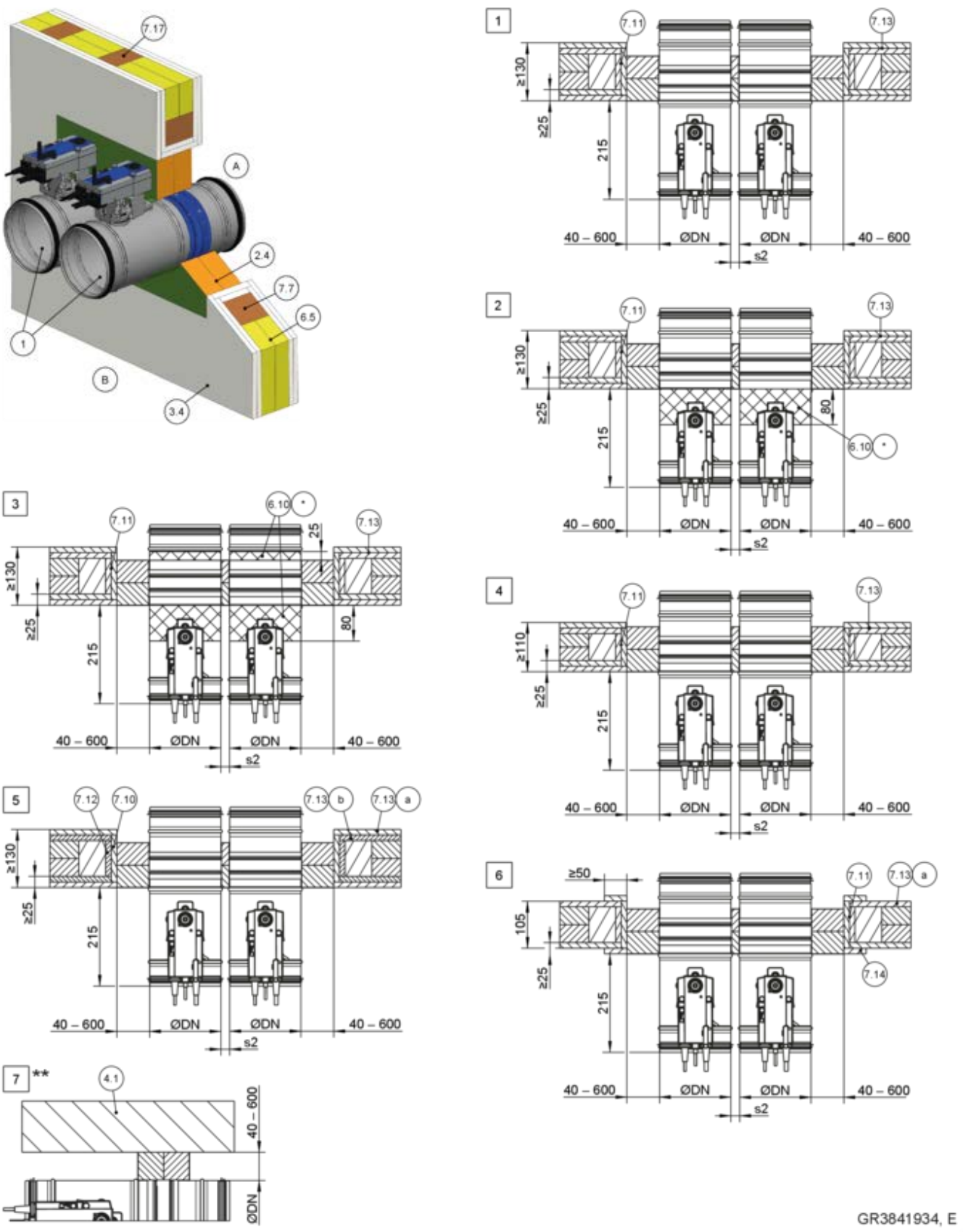


Fig. 125: Dry mortarless installation into a lightweight partition wall with timber support structure, with a fire batt, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)

1	FKRS-EU	7.10	Reveals (fire-resistant)
2.4	Coated board system with firestop coating	7.11	Reveals, double layer, with staggered joints

3.4 Timber stud wall (including timber panel construction), clad on both sides
4.1 Solid ceiling/solid floor
6.5 Mineral wool, depending on wall construction
6.10 Firestop coating around the perimeter, d = at least 2.5 mm
6.19 Mineral wool > 1000 °C, > 80 kg/m³, thickness = 20 mm, leave out the actuator and release mechanism; inspection openings must remain accessible
6.20 Pipe collar (can be ordered separately)
6.24 Elastomeric foam (flame-resistant, non-dripping) The following applies in Germany: For notes on the use of elastomeric foams ↳ *'Additional provision for use in Germany:' on page 8 .*
7.7 Timber stud, min. 60 × 80 mm or min. 60 × 60 mm with F60
7.12 Reveals, 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 Framed openings, wooden beams min. 60 × 80 mm or min. 60 × 60 mm for F60
* 6.19, 6.20 or 6.24 as an alternative
** Installation near the floor as in 7
1 – 7 See table ↳ *167*

Note: The class of performance of 7 depends on 6.10* (see details 1 to 4).

Lightweight partition wall with timber support structure

DN [mm]	Fire resistance rating to	Coating		s2 [mm]	Detail
		Operating side B	Installation side A		
100 – 200	EI 90 S	–	–	10* – 600	1, 7
224 – 315	EI 90 S	x	–	10* – 600	2, 7
100 – 200	EI 120 S	x	–	40 – 600	2, 7
224 – 315	EI 120 S	x	x	40 – 600	3, 7
100 – 315	EI 60 S	–	–	10 – 600	4, 7
100 – 315	EI 30 S	–	–	10 – 600	5, 7
100 – 315	EI 30 S	–	–	10 – 600	6, 7

* For a distance of 10 mm, mineral wool ≥ 1000 °C, ≥ 80 kg/m³ with d = 10 mm and width nominal width/2 shall be provided between the fire dampers.

Dry mortarless installation into a lightweight partition wall, with fire batt, with half-timbered construction

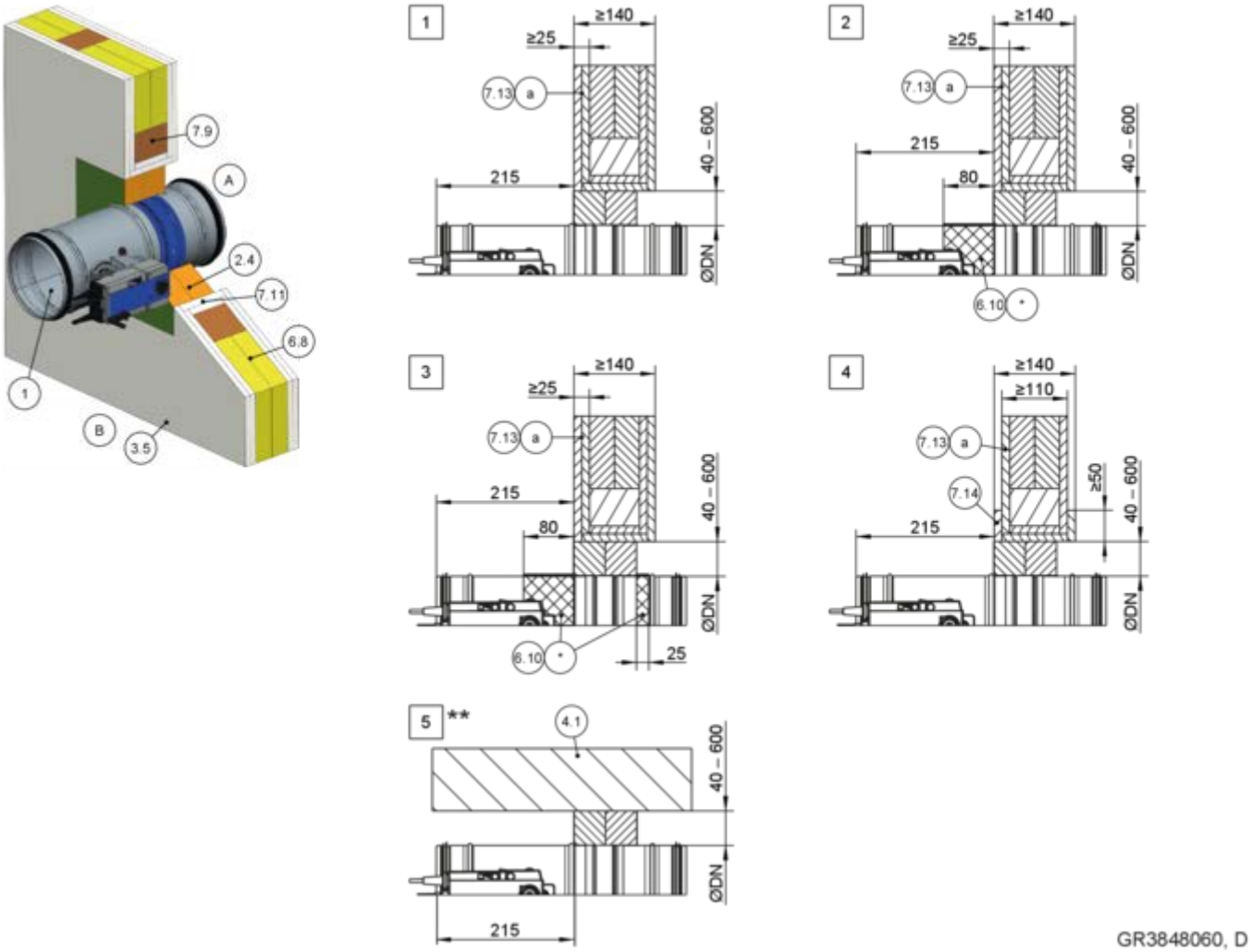


Fig. 126: Dry mortarless installation into a lightweight partition wall, with fire batt, with half-timbered construction

1	FKRS-EU
2.4	Coated board system with firestop coating
3.5	Half-timbered wall, clad on both sides
4.1	Solid ceiling/solid floor
6.8	Infill (cavities completely filled with mineral wool ≥ 1000 °C, ≥ 50 kg/m³, or masonry, aerated concrete, lightweight concrete, reinforced concrete or puddle clay)
6.10	Firestop coating around the perimeter, d = at least 2.5 mm
6.19	Mineral wool > 1000 °C, > 80 kg/m³, thickness = 20 mm, panel material around the perimeter, leave out the actuator and release mechanism; inspection openings must remain accessible
6.20	Pipe collar (can be ordered separately)
6.24	Elastomeric foam (flame-resistant, non-dripping) The following applies in Germany: For notes on the use of elastomeric foams ↬ *'Additional provision for use in Germany:' on page 8*.
7.9	Half-timbered construction
7.11	Reveal, fire-resistant, double layer with staggered joints
7.13	Cladding
7.13a	Cladding, fire-resistant
7.14	Reinforcing board of the same material as the wall
*	6.19, 6.20 or 6.24 as an alternative
**	Installation near the floor as in 5
1 – 5	See table ↬ *169*

Half-timbered wall				
DN [mm]	Fire resistance rating to	Coating		Detail
		Operating side B	Installation side A	
100 – 200	EI 90 S	–	–	1, 5
224 – 315	EI 90 S	x	–	2, 5
100 – 200	EI 120 S	x	–	2, 5
224 – 315	EI 120 S	x	x	3, 5
100 – 315	EI 30 S	–	–	4, 5

Dry mortarless installation with fire batt in lightweight partition wall with half-timbered construction, "flange to flange"

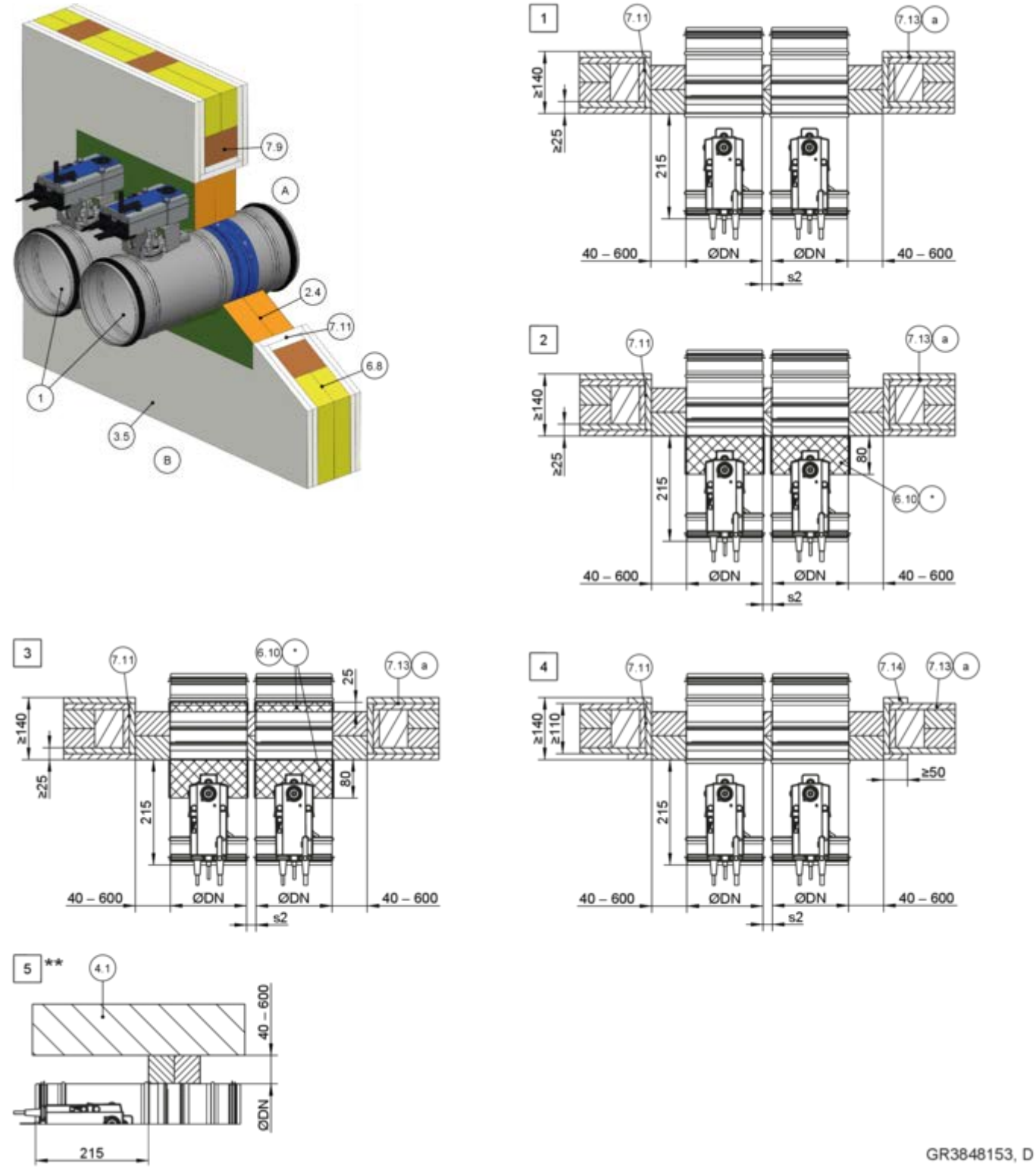


Fig. 127: Dry mortarless installation into a lightweight partition wall with half-timbered construction, with a fire batt, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)

1	FKRS-EU	6.24	Elastomeric foam (flame-resistant, non-dripping)
2.4	Coated board system with firestop coating		
3.5	Half-timbered wall, clad on both sides		
4.1	Solid ceiling/solid floor		

6.8 Infill (cavities completely filled with mineral wool ≥ 1000 °C, ≥ 50 kg/m³, or masonry, aerated concrete, lightweight concrete, reinforced concrete or puddle clay)
6.10 Firestop coating around the perimeter, d = at least 2.5 mm
6.19 Mineral wool > 1000 °C, > 80 kg/m³, thickness = 20 mm, panel material around the perimeter, leave out the actuator and release mechanism; inspection openings must remain accessible
6.20 Pipe collar (can be ordered separately)

The following applies in Germany: For notes on the use of elastomeric foams ↳ *'Additional provision for use in Germany:' on page 8* .
7.9 Half-timbered construction
7.11 Reveal, fire-resistant, double layer with staggered joints
7.13a Cladding, fire-resistant
7.14 Reinforcing board of the same material as the wall
* 6.19, 6.20 or 6.24 as an alternative
** Installation near the floor as in 5
1 – 5 see table ↳ *Table on page 171*

Lightweight partition wall with timber support structure

DN [mm]	Fire resistance rating to	Coating		s2 [mm]	Detail
		Operating side B	Installation side A		
100 – 200	EI 90 S	–	–	10* – 600	1, 5
224 – 315	EI 90 S	x	–	10* – 600	2, 5
100 – 200	EI 120 S	x	–	40 – 600	2, 5
224 – 315	EI 120 S	x	x	40 – 600	3, 5
100 – 315	EI 30 S	–	–	10 – 600	4, 5

* For a distance of 10 mm, mineral wool ≥ 1000 °C, ≥ 80 kg/m³ with d = 10 mm and width nominal width/2 shall be provided between the fire dampers.

Additional requirements: dry mortarless installation with fire batt into lightweight partition walls with timber support structure/half-timbered construction

- Timber stud wall/half-timbered construction, ↳ *on page 43*
- Fire batt systems, installation details, distances/dimensions, ↳ *on page 38* f
- Suspension and fixing, ↳ *Chapter 5.15 'Fixing the fire damper' on page 255*
- General installation information, ↳ *5.3 'General installation information' on page 31* ff
- General information on installation with fire batt, ↳ *on page 38*

5.7.7 Dry mortarless installation with fire batt – Multiple occupancy of an installation opening

Dry mortarless installation into a lightweight partition wall with timber support structure, with a fire batt

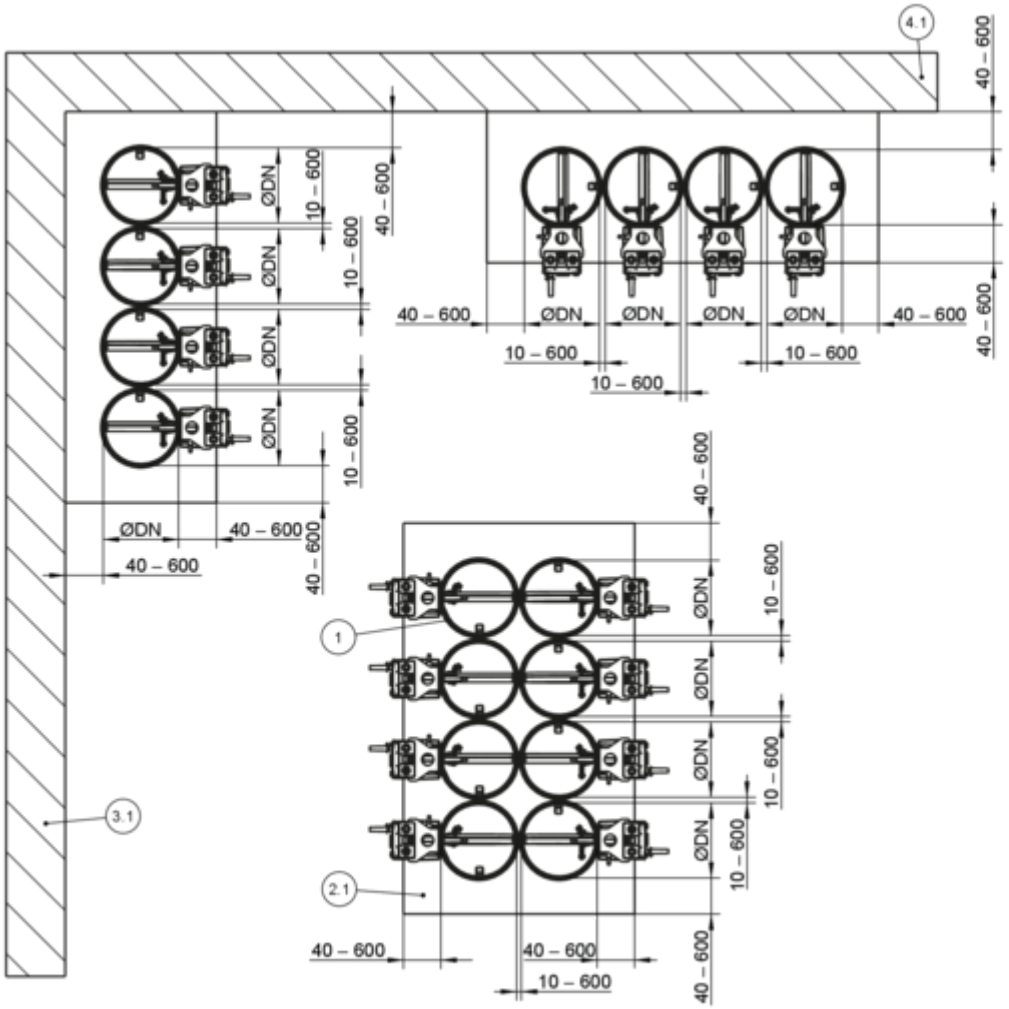


Fig. 128: Dry mortarless installation with fire batt in lightweight partition wall with timber studs – Multiple occupancy of an installation opening

1 FKRS-EU
2.1 Mortar
3.1 Solid wall (load-bearing structural element)
4.1 Solid ceiling slab (load-bearing component)

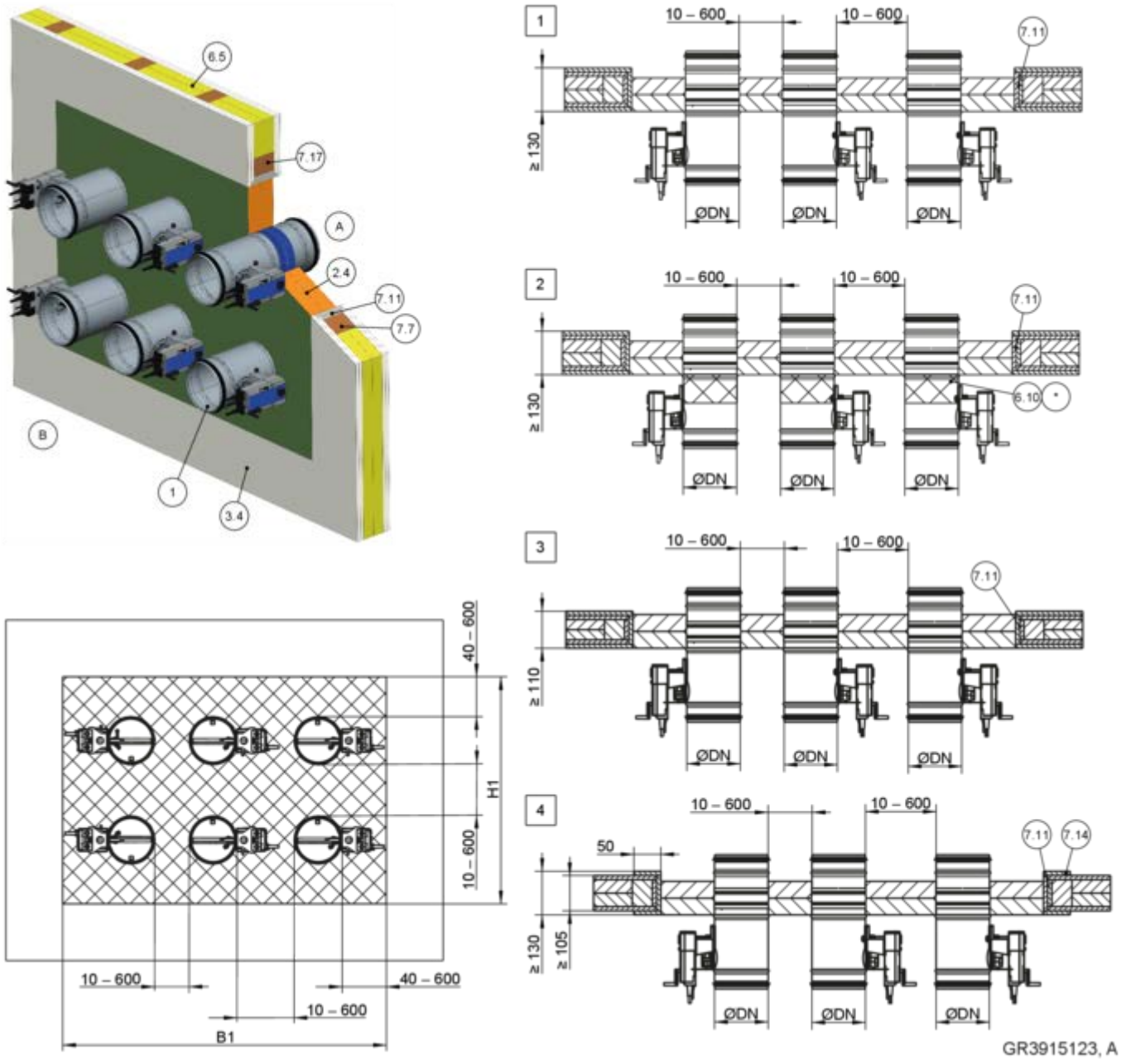


Fig. 129: Dry mortarless installation with fire batt in lightweight partition wall with timber studs – Multiple occupancy of an installation opening

1 FKRS-EU
2.4 Coated board system with firestop coating
3.4 Timber stud wall (including timber panel construction), clad on both sides
6.5 Mineral wool, depending on wall construction
6.10 Firestop coating around the perimeter, d = at least 2.5 mm
6.19 Mineral wool > 1000 °C, > 80 kg/m³, thickness = 20 mm, leave out the actuator and release mechanism; inspection openings must remain accessible
6.20 Pipe collar (can be ordered separately)
6.24 Elastomeric foam (flame-resistant, non-dripping)
The following applies in Germany: For notes on the use of elastomeric foams *'Additional provision for use in Germany:' on page 8*.
7.7 Timber stud, min. 60 × 80 mm or min. 60 × 60 mm with F60
7.11 Reveal, fire-resistant, double layer with staggered joints
7.17 Framed openings, wooden beams min. 60 × 80 mm or min. 60 × 60 mm for F60
* 6.19, 6.20 or 6.24 as an alternative
1 - 4 see table *Table on page 174*

Lightweight partition wall with timber support structure					
DN [mm]	Fire resistance rating to	Coating		Distance [mm]	Detail
		Operating side B	Installation side A		
100 – 200	EI 90 S	–	–	10* – 600	1
224 – 315	EI 90 S	x	–	10* – 600	2
100 – 315	EI 60 S	–	–	10 – 600	3
100 – 315	EI 30 S	–	–	10 – 600	4

* For a distance of 10 mm, mineral wool ≥ 1000 °C, ≥ 80 kg/m³ with d = 10 mm and width nominal width/2 shall be provided between the fire dampers.

Dry mortarless installation into a lightweight partition wall, with fire batt, with half-timbered construction

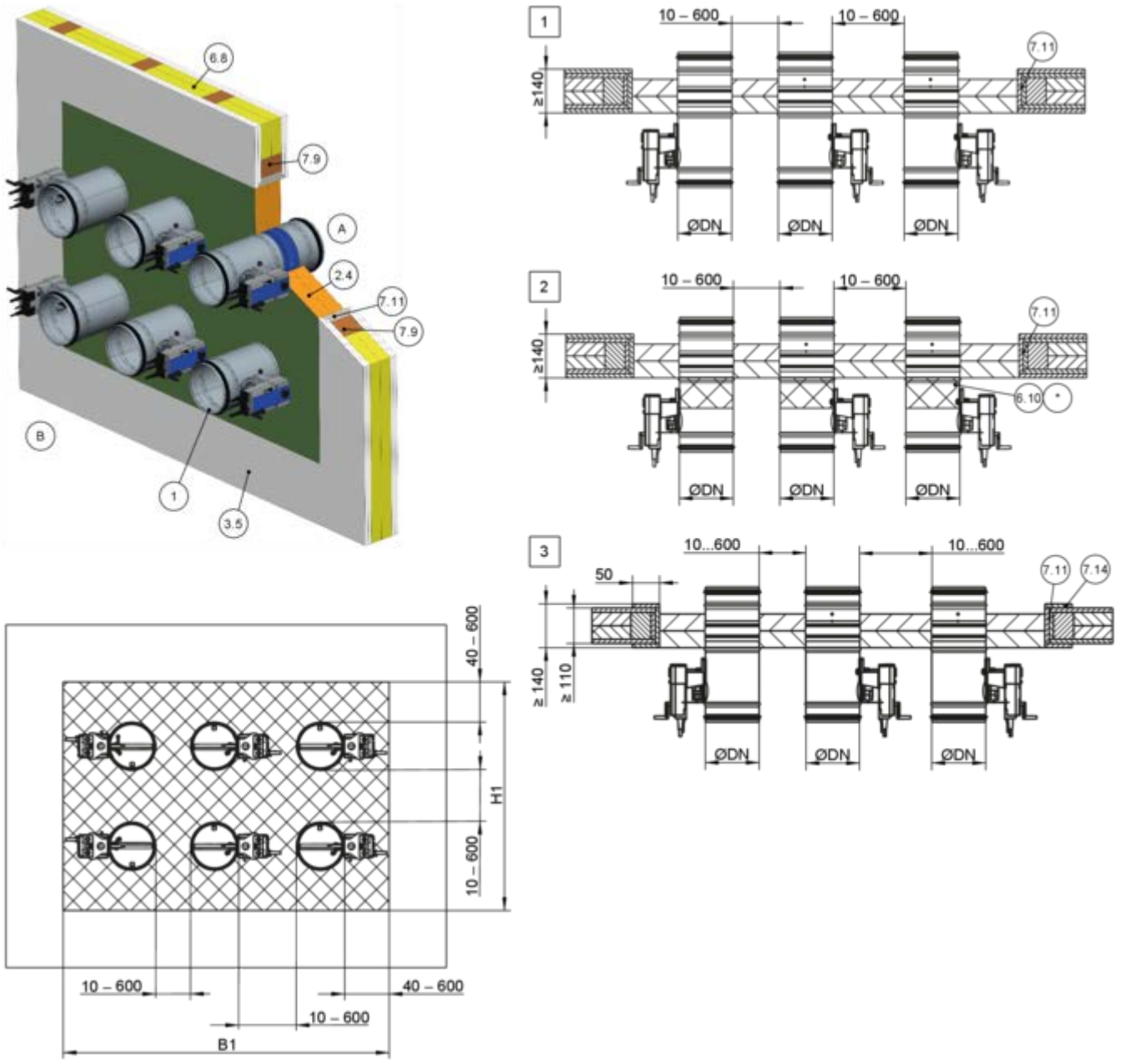


Fig. 130: Dry mortarless installation with fire batt in lightweight partition wall with half-timbered construction – Multiple occupancy of an installation opening

1 FKRS-EU
2.4 Coated board system with firestop coating
3.5 Half-timbered wall, clad on both sides
6.8 Infill (cavities completely filled with mineral wool ≥ 1000 °C, ≥ 50 kg/m³, or masonry, aerated concrete, lightweight concrete, reinforced concrete or puddle clay)
6.10 Firestop coating around the perimeter, d = at least 2.5 mm
6.19 Mineral wool > 1000 °C, > 80 kg/m³, thickness = 20 mm, leave out the actuator and release mechanism; inspection openings must remain accessible
6.20 Pipe collar (can be ordered separately)
6.24 Elastomeric foam (flame-resistant, non-dripping)
The following applies in Germany: For notes on the use of elastomeric foams ↳ *'Additional provision for use in Germany:' on page 8*.
7.9 Half-timbered construction
7.11 Reveal, fire-resistant, double layer with staggered joints
7.14 Reinforcing board of the same material as the wall
* 6.19, 6.20 or 6.24 as an alternative
1 - 3 see table ↳ *Table on page 176*

Half-timbered wall					
DN [mm]	Fire resistance rating to	Coating		Distance [mm]	Detail
		Operating side B	Installation side A		
100 – 200	EI 90 S	–	–	10* – 600	1
224 – 315	EI 90 S	x	–	10* – 600	2
100 – 315	EI 30 S	–	–	10 – 600	3

* For a distance of 10 mm, mineral wool ≥ 1000 °C, ≥ 80 kg/m³ with d = 10 mm and width nominal width/2 shall be provided between the fire dampers.

Supplementary requirements: Dry mortarless installation with fire batt in lightweight partition walls with timber studs/ half-timbered construction – Multiple occupancy of an installation opening

- Timber stud wall/half-timbered construction, ↬ *on page 43*
- Fire batt systems, installation details, distances/dimensions, ↬ *on page 38* f
- Suspension and fixing, ↬ *Chapter 5.15 'Fixing the fire damper' on page 255*
- General installation information, ↬ *5.3 'General installation information' on page 31* ff
- General information on installation with fire batt, ↬ *on page 38*
- Overall fire damper area ≤ 1.2 m²
- The number of fire dampers in an installation opening is limited by their size (nominal width) and the overall area of the fire dampers (1.2 m²) (maximum 10 FKRS-EU in single or double row arrangement)
- Distance to load-bearing structural elements ≥ 40 mm

5.8 Solid wood walls

5.8.1 General information

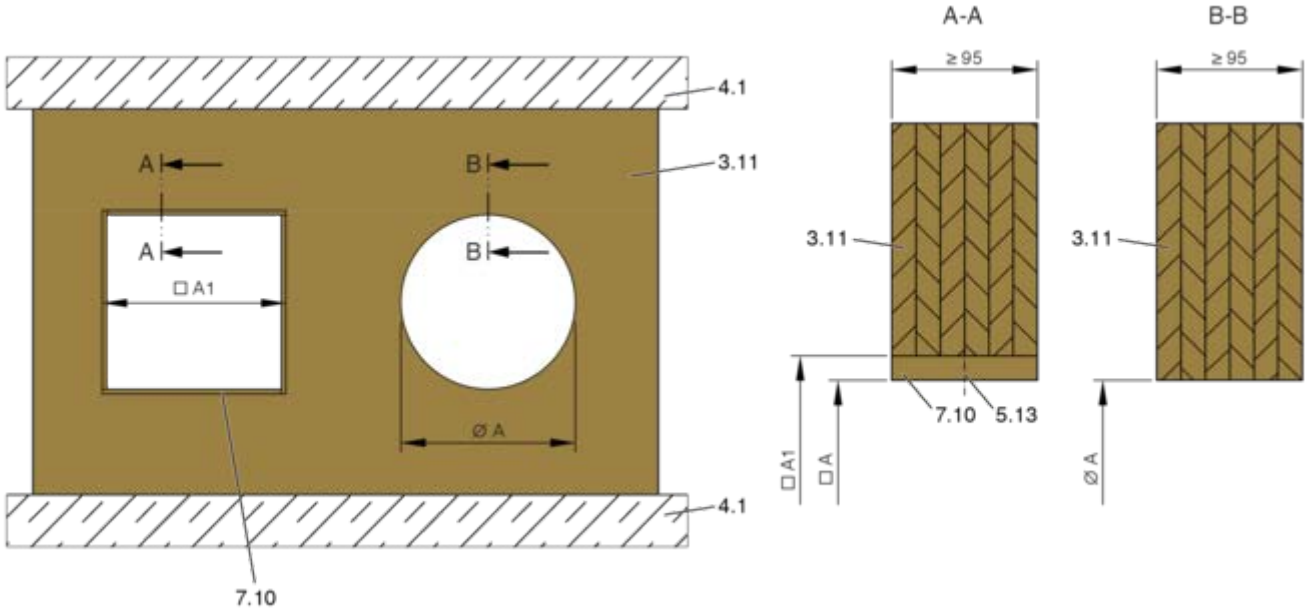


Fig. 131: Solid wood wall

3.11	Solid wood wall/cross-laminated timber wall	7.10	Soffit (optionally according to installation detail)
4.1	Solid ceiling/solid floor	□A	Clear installation opening
5.13	Wood screw or pin-shaped fastener	□A1	Opening in a solid wood wall/CLT wall (without reveals: □A1 = □A)

Installation type	Installation opening [mm]	Distance [mm]	
		s1	s2
Mortar-based installation	∅DN + max. 450	≤ 225	10 – 225
Dry mortarless installation with TQ2	□A = ∅DN + 110 [2]	central installation	≥ 200
Dry mortarless installation with coated board system [1]	□A = ∅DN + max. 1200	40 – 600	≥ 200

[1] Observe the maximum permissible size of the coated board system!

[2] Installation opening tolerance ± 4 mm

Additional requirements: solid wood walls

- Solid wood wall or CLT wall, ↳ *on page 43*

5.8.2 Mortar-based installation

Mortar-based installation into a solid wood wall or CLT wall

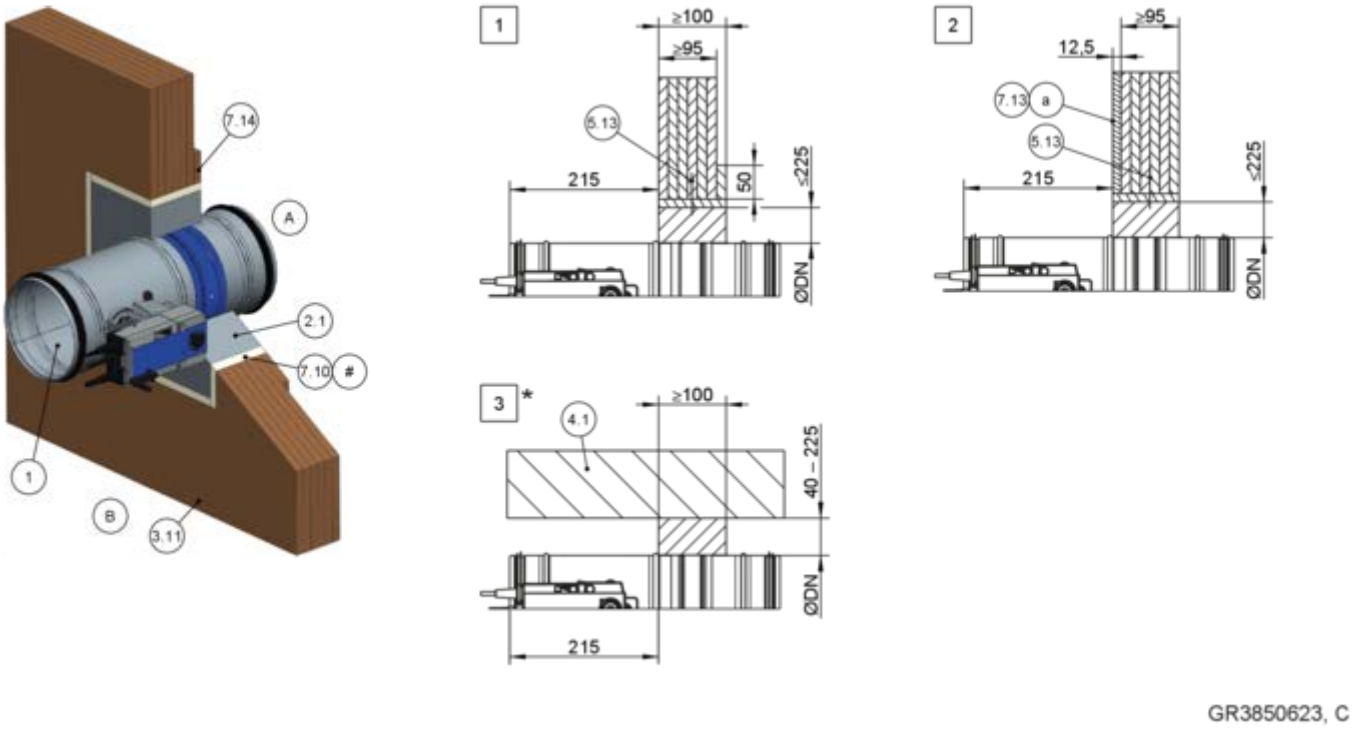


Fig. 132: Mortar-based installation into a solid wood wall or CLT wall

1	FKRS-EU	7.13a	Cladding, fire-resistant
2.1	Mortar	7.14	Reinforcing board of the same material (required if W < 100 mm)
3.11	Solid wood wall/CLT wall		
4.1	Solid ceiling slab/solid floor	#	Optional
5.13	Wood screw or pin	*	Installation near the floor as in 3
7.10	Trim panel	1 – 3	Up to EI 90 S

Mortar-based installation in solid wood wall/CLT wall, "flange to flange"

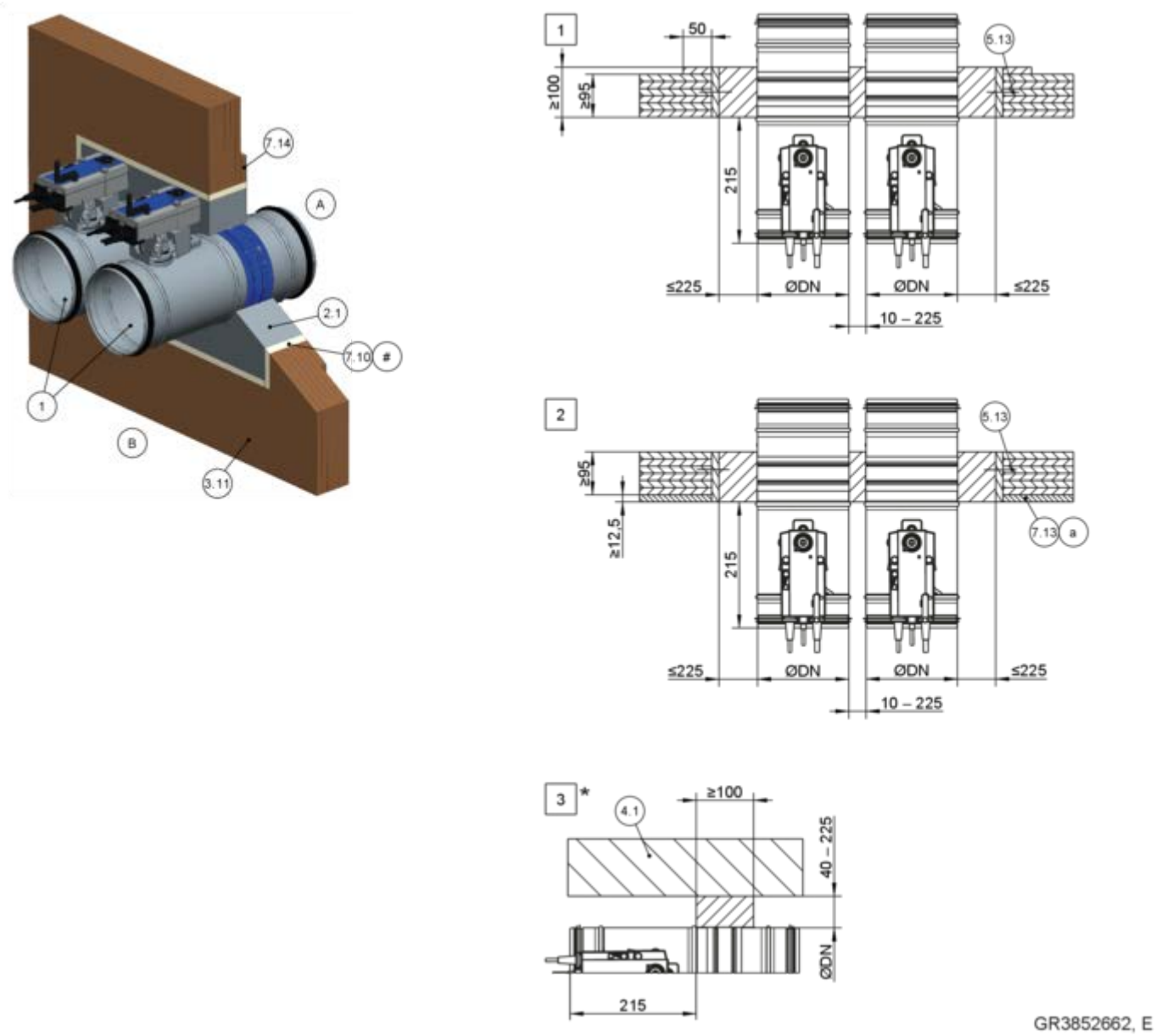


Fig. 133: Mortar-based installation into a solid wood wall or CLT wall, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)

1	FKRS-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 panel
7.13a	Cladding, fire-resistant
7.14	Reinforcing board of the same material (required if W < 100 mm)
#	Optional
*	Installation near the floor as in 3
1 – 3	Up to EI 90 S

Additional requirements: mortar-based installation into solid wood walls

- Solid wood wall or CLT wall, ↳ *on page 43*
- General installation information, ↳ *5.3 'General installation information' on page 31* ff
- General information on mortar-based installation, ↳ *'**Mortar-based installation**' on page 37*

5.8.3 Dry mortarless installation into a solid wood wall or CLT wall, with installation kit TQ2

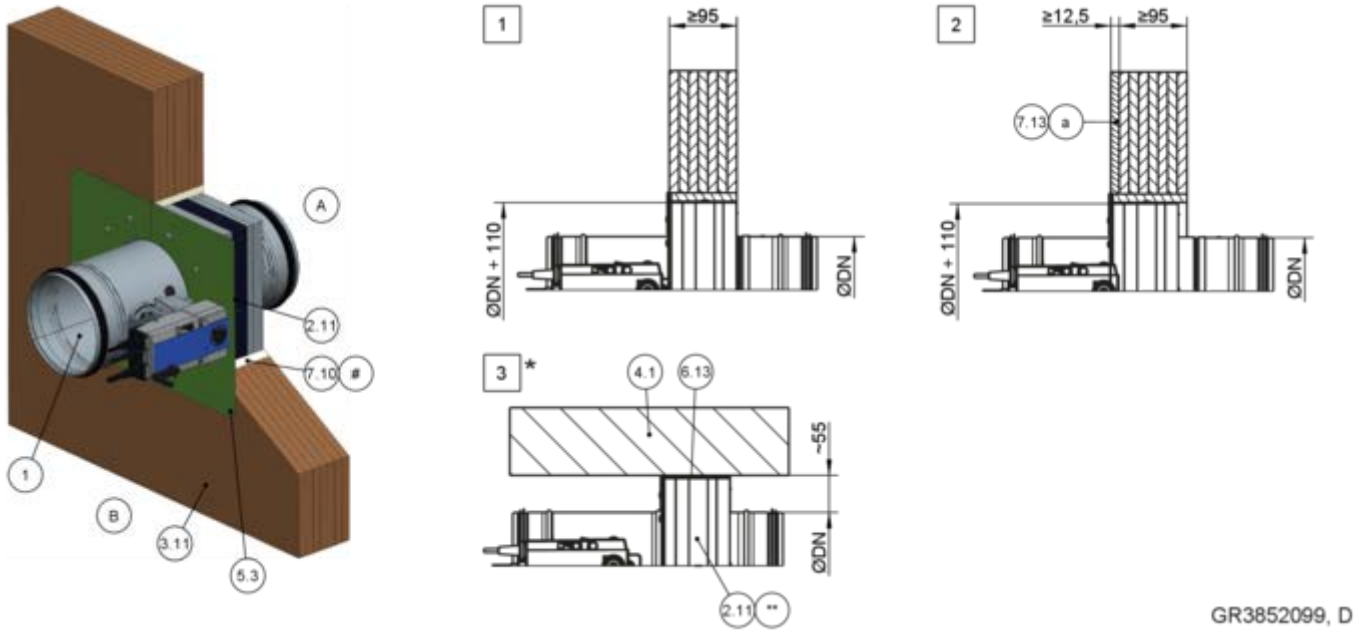


Fig. 134: Dry mortarless installation into a solid wood wall or CLT wall, with installation kit TQ2

1	FKRS-EU	7.10	Trim panel
2.11	Installation kit TQ2 with cover plate	7.13a	Cladding, fire-resistant
3.11	Solid wood wall/CLT wall	#	Optional
4.1	Solid ceiling slab/solid floor	*	Installation near the floor as in 3
5.3	Chipboard screw/wood screw	**	Cover plate shortened by others
6.13	Mineral wool strip A1, ≤ 5 mm thick, ≤ 1000 °C, filler as an alternative	1 – 3	Up to EI 90 S

Supplementary requirements: Dry mortarless installation in solid wood or cross laminated timber walls with installation kit TQ2

- Solid wood wall or CLT wall, ↳ *on page 43*
- Installation kit TQ2, ↳ *5.4.3 'Installation kit TQ2' on page 48*
- ≥ 200 mm distance between two fire dampers in separate installation openings
- General installation information, ↳ *5.3 'General installation information' on page 31* ff
- General information on installation with installation kit TQ2, ↳ *on page 38*

5.8.4 Installation remote from solid wood or cross-laminated timber walls with mineral wool

Installation remote from solid wood or cross-laminated timber walls with mineral wool

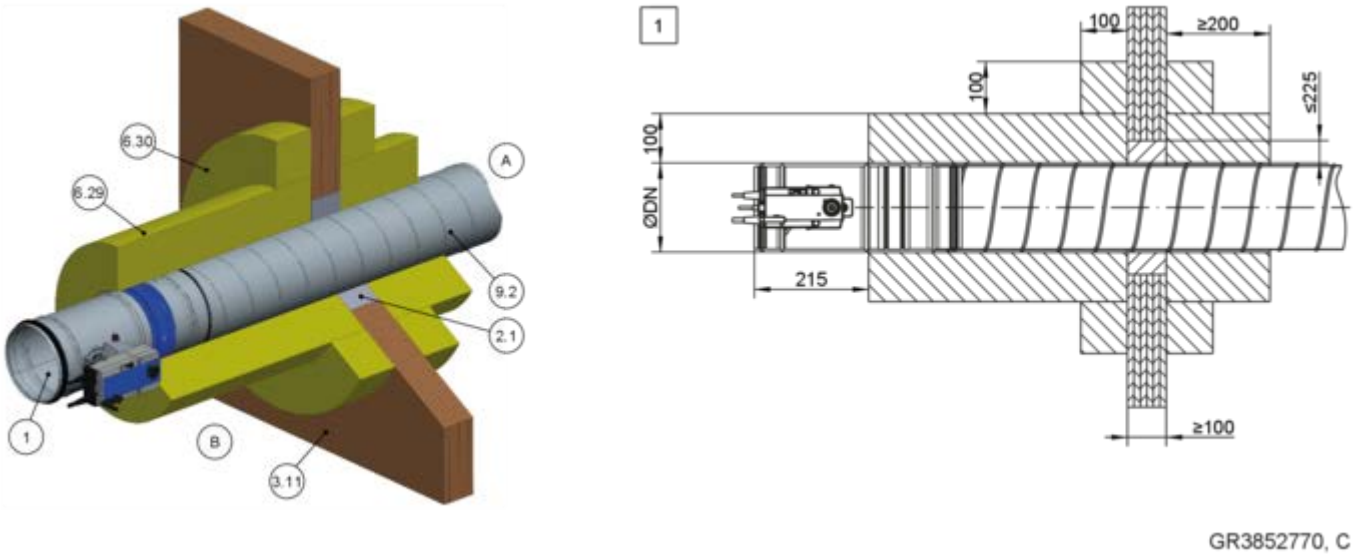


Fig. 135: Installation remote from solid wood or cross-laminated timber walls with mineral wool

1	FKRS-EU
2.1	Mortar
3.11	Solid wood wall/cross-laminated timber wall
6.29*	Mineral wool PAROC Hvac Fire Mat BlackCoat (≥ 80 kg/m³)
6.30*	Reinforcing board made of mineral wool PAROC HVAC Fire Mat BlackCoat (≥ 80 kg/m³), circumferentially glued
9.2	Sheet steel duct
*	Please check in advance whether the PAROC material is available in your market region.
1	Up to EI 60 S

Dry mortarless installation remote from solid wood or cross-laminated timber walls with mineral wool and coated board system

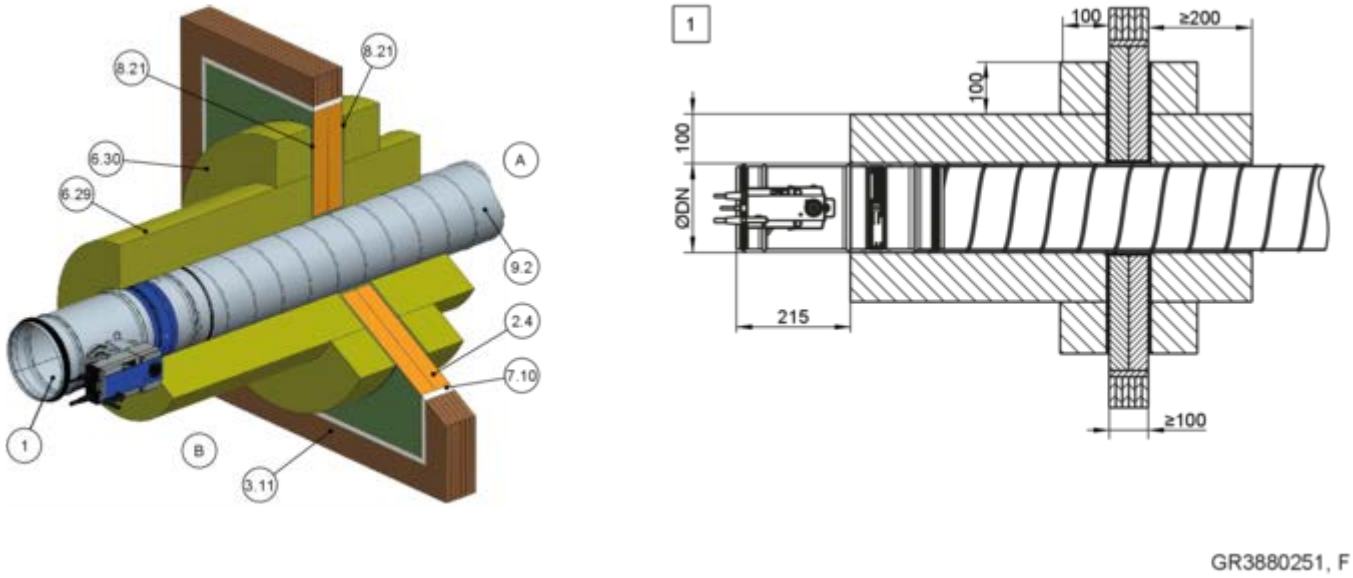


Fig. 136: Dry mortarless installation remote from solid wood or cross-laminated timber walls with mineral wool and coated board system

1	FKRS-EU
2.4*	Coated board system, PAROC Pyrotech Slab 140 (max. W × H = 2.1 × 2.5 m)
3.11	Solid wood wall/cross-laminated timber wall
6.29*	Mineral wool PAROC Hvac Fire Mat BlackCoat (≥ 80 kg/m³)
6.30*	Reinforcing board made of mineral wool PAROC HVAC Fire Mat BlackCoat (≥ 80 kg/m³), circumferentially glued
7.10	Reveal, single-layer, fire-resistant
8.21	Acrylic or sealing compound (suitable for coated board system)
9.2	Sheet steel duct
*	Please check in advance whether the PAROC material is available in your market region.
1	Up to EI 60 S

Additional requirements: installation remote from solid wood walls with mineral wool

- Solid wood wall or CLT wall, *on page 43*
- General installation information, *5.3 'General installation information' on page 31* ff
- General information on installation with mineral wool, *on page 38*
- Distance between two fire dampers ≥ 400 mm
- Distance to load-bearing/adjacent components ≥ 200 mm
- Suspend the fire damper and air duct according to the mineral wool manufacturer's specifications

5.8.5 Dry mortarless installation with fire batt

Dry mortarless installation into a timber wall or CLT wall, with a fire batt

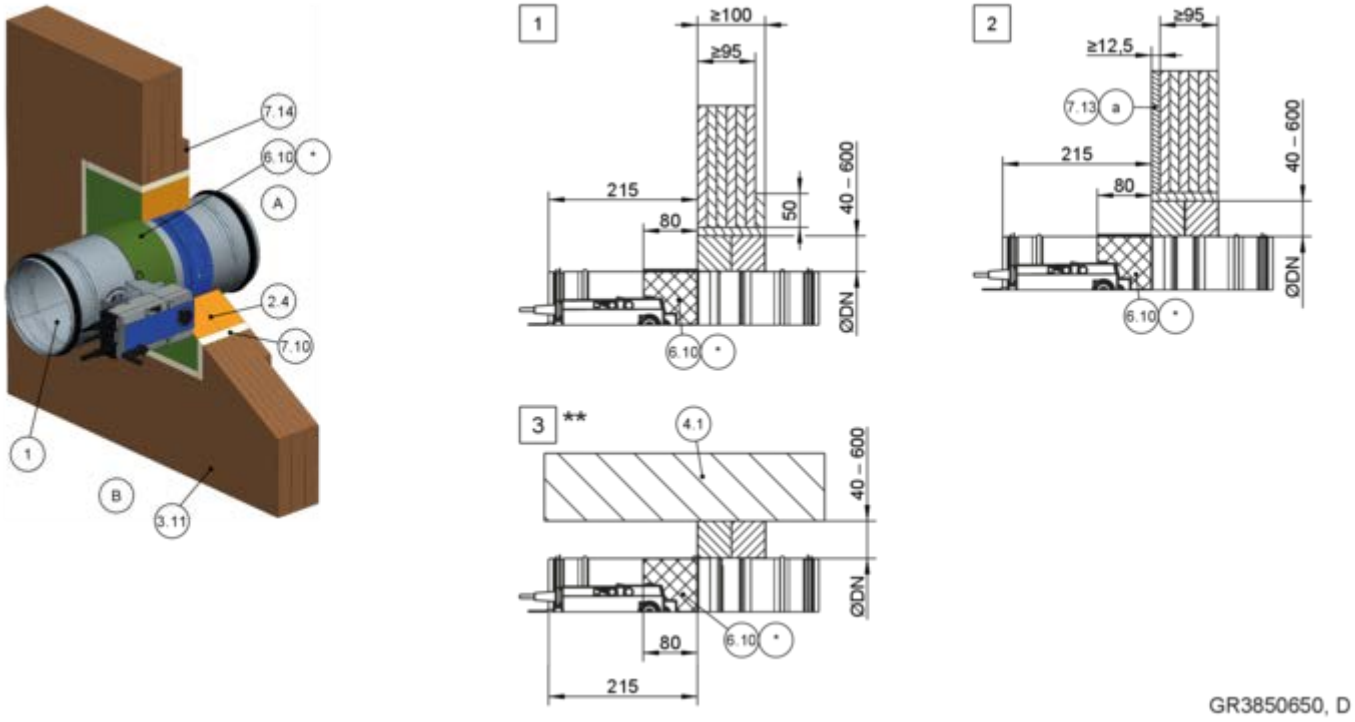


Fig. 137: Dry mortarless installation into a timber wall or CLT wall, with a fire batt

1	FKRS-EU
2.4	Coated board system
3.11	Solid wood wall/CLT wall
4.1	Solid ceiling slab/solid floor
6.10	Ablative coating around the perimeter, d = at least 2.5 mm
6.19	Mineral wool > 1000 °C, > 80 kg/m³, thickness = 20 mm, panel material around the perimeter, leave out the actuator and release mechanism; inspection openings must remain accessible
6.20	Pipe collar (to be ordered separately)
6.24	Elastomeric foam (flame-resistant, non-dripping) The following applies in Germany: For notes on the use of elastomeric foams ↳ *'Additional provision for use in Germany:' on page 8 .*
7.10	Reveals (fire-resistant)
7.13a	Cladding, fire-resistant
7.14	Reinforcing board of the same material as the wall
*	6.19, 6.20 or 6.24 as an alternative
**	Installation near the floor as in 3
1 – 3	Up to EI 90 S

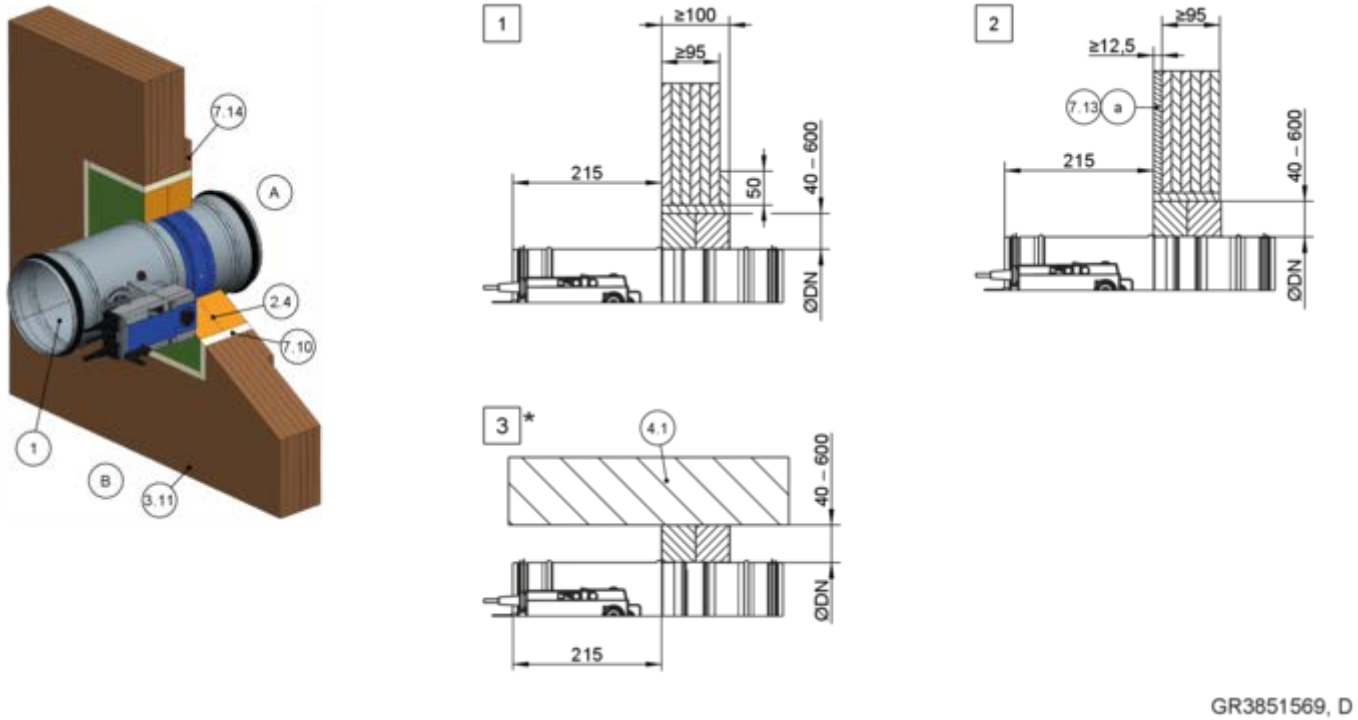


Fig. 138: Dry mortarless installation into a timber wall or CLT wall, with a fire batt

1	FKRS-EU	7.13a	Cladding, fire-resistant
2.4	Coated board system	7.14	Reinforcing board of the same material as the wall
3.11	Solid wood wall/CLT wall		
4.1	Solid ceiling slab/solid floor	*	Installation near the floor as in 3
7.10	Reveals (fire-resistant)	1 – 3	Up to EI 60 S

Supplementary requirements: Dry mortarless installation with fire batt in solid wood or cross laminated timber walls

- Solid wood wall or CLT wall, ↳ *on page 43*
- Fire batt systems, installation details, distances/dimensions, ↳ *on page 38* f
- Suspension and fixing, ↳ *Chapter 5.15 'Fixing the fire damper' on page 255*
- ≥ 200 mm distance between two fire dampers in separate installation openings
- General installation information, ↳ *5.3 'General installation information' on page 31* ff
- General information on installation with fire batt, ↳ *on page 38*

5.9 Shaft walls with metal support structure

5.9.1 General information

Shaft wall with metal stud and cladding on one side

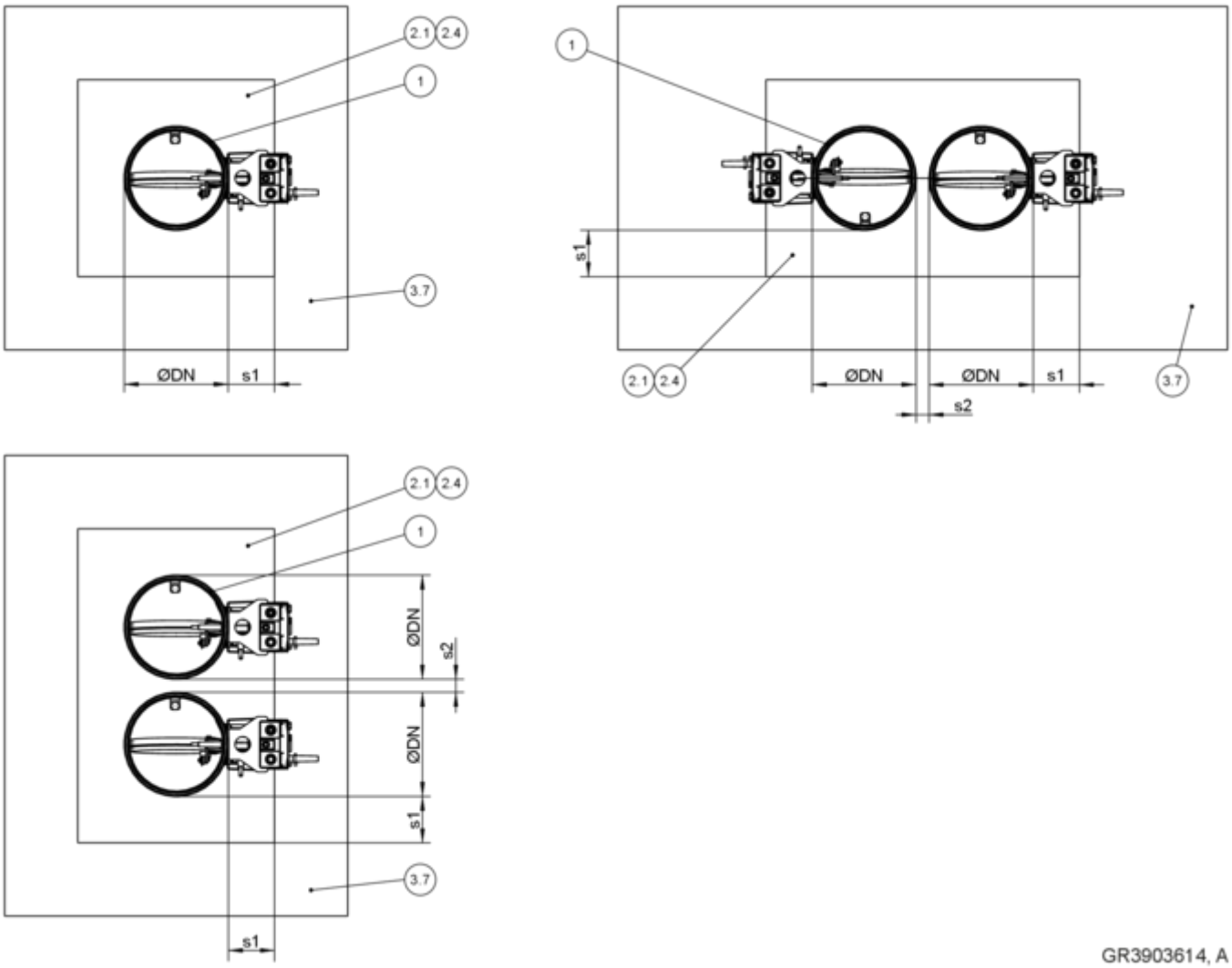


Fig. 139: Shaft walls with metal support structure – arrangement/distances

1 FKRS-EU
2.1 Mortar
2.4 Coated board system with firestop coating
3.7 Shaft wall with metal stud, clad on one side
s1 Perimeter gap, ↳ *on page 37*
s2 Distance between the fire dampers, ↳ *'Distances' on page 35*

Installation type	Installation opening [mm]	Distance [mm]	
		s1	s2
Mortar-based installation	∅DN + max. 450	≤ 225	10 – 225
Dry mortarless installation with TQ2	□A = ∅DN + 110 [2]	central installation	≥ 200
Dry mortarless installation with coated board system [1]	□A = ∅DN + max. 1200	40 – 600	≥ 200

[1] Observe the maximum permissible size of the coated board system!
[2] Installation opening tolerance ± 4 mm

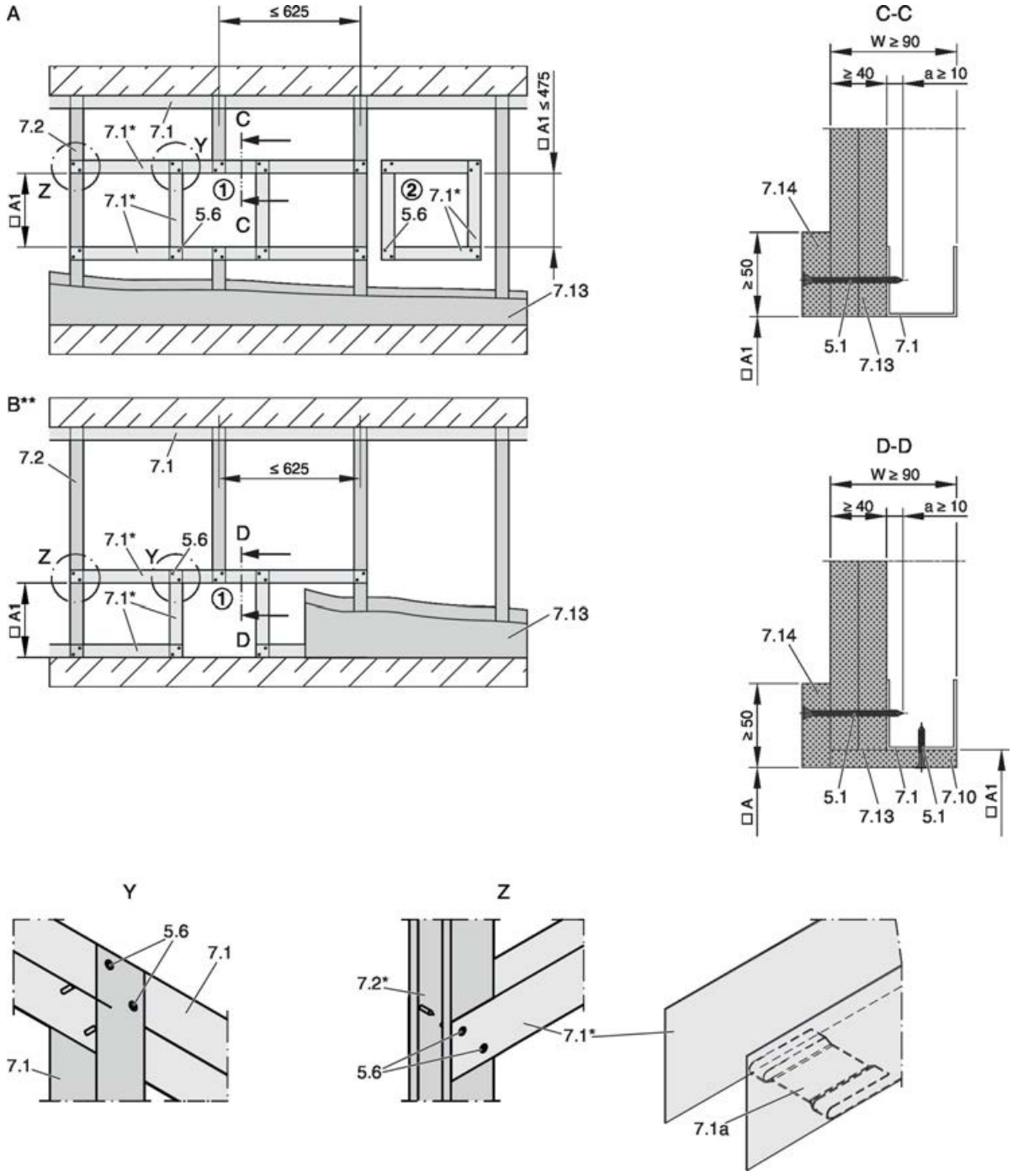


Fig. 140: Shaft walls with metal support structure and cladding on one side

A	Shaft wall	7.13	Cladding
B	Shaft wall, installation near the floor***	7.14	Reinforcing board of the same material as the wall according to installation details
5.1	Dry wall screw		
5.6	Screw or steel rivet	*	Closed side of metal section must face the installation opening
7.1	UW section		
7.1a	UW section, either cut in and bent, or cut off	**	Installation near the ceiling analogous to B
7.2	CW section	***	Mortar-based installation only
7.10	Reveals, according to installation details	□A	Clear installation opening
		□A1	Opening in the metal support structure (without reveals: □A = □A1)

Additional requirements: shaft walls with metal stud

- Shaft wall with metal support structure,
  ↳ *on page 43*
- Erect the shaft wall according to the manufacturer's instructions and create the installation opening according to the specifications in these instructions, Fig. 140
- – Variant 1: Create an installation opening in the metal support structure with trimmer and angle section, then clad the wall and attach the reinforcing board (if required).
  – Variant 2: After cladding the wall, create a square wall opening (clear installation opening ≤ 475 mm) between two standard vertical studs, attach the reinforcing board and brace the installation opening with a circumferential metal section. Screw metal sections over the cladding, spaced approx. 100 mm apart.

5.9.2 Mortar-based installation

Mortar-based installation into shaft wall with metal support structure

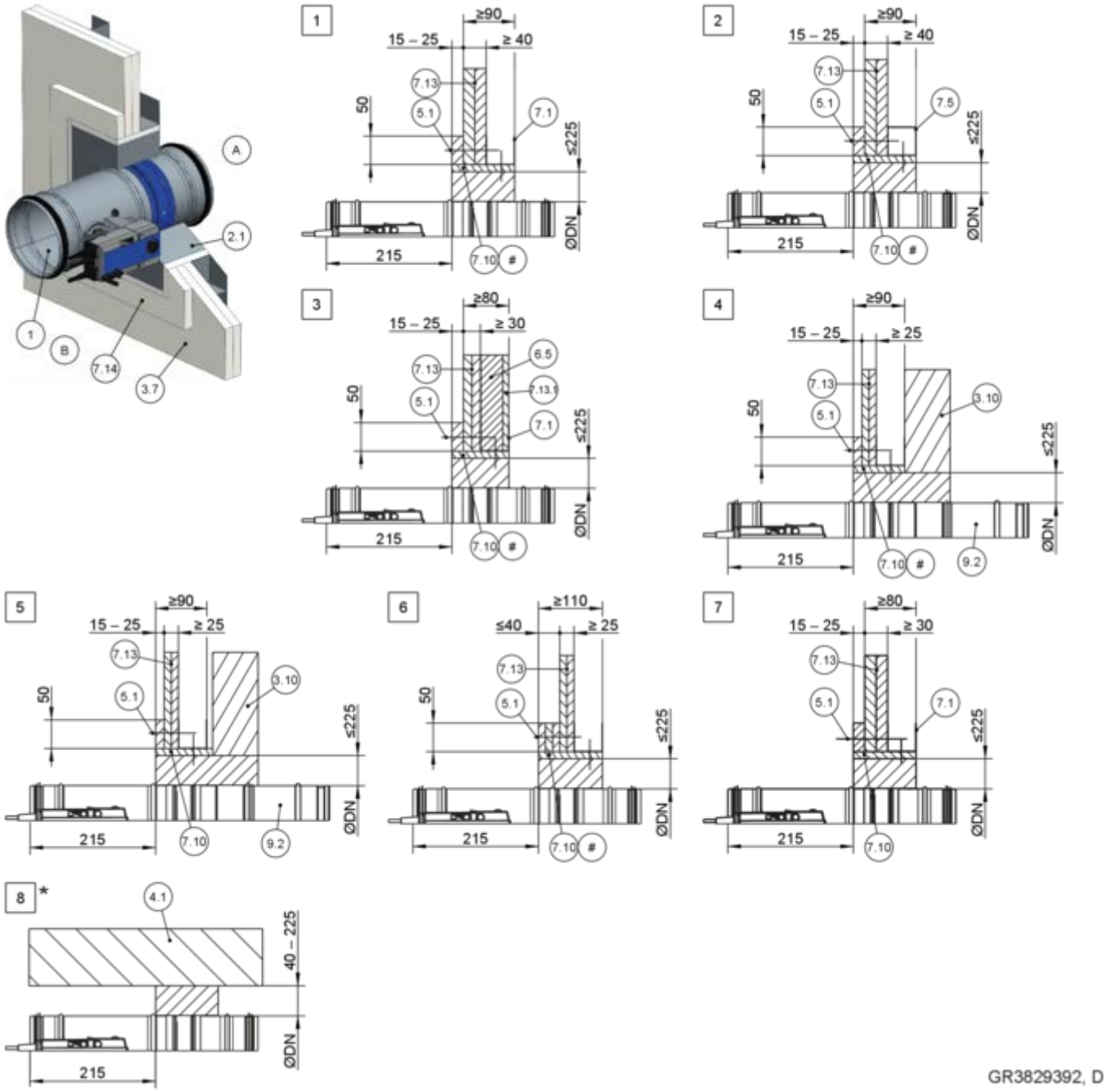


Fig. 141: Mortar-based installation into shaft wall with metal support structure

1	FKRS-EU
2.1	Mortar
3.7	Shaft wall with metal stud, clad on one side
3.10	Wall without adequate fire resistance rating
4.1	Solid ceiling/solid floor
5.1	Drywall screw
6.5	Mineral wool, depending on wall construction
7.1	UW section
7.5	Steel support structure (box section)
7.10	Reveal
7.13	Cladding
7.13.1	Cladding, single-layer, inside UW section
7.14	Reinforcing board of the same material as the wall
9.2	Air duct/extension piece
#	Optional
*	Installation near the floor as in 8
1 – 3	up to EI 90 S
4 – 6	EI 30 S
7	Up to EI 60 S
8	EI 30 S – EI 90 S

Mortar-based installation into a shaft wall, flange to flange

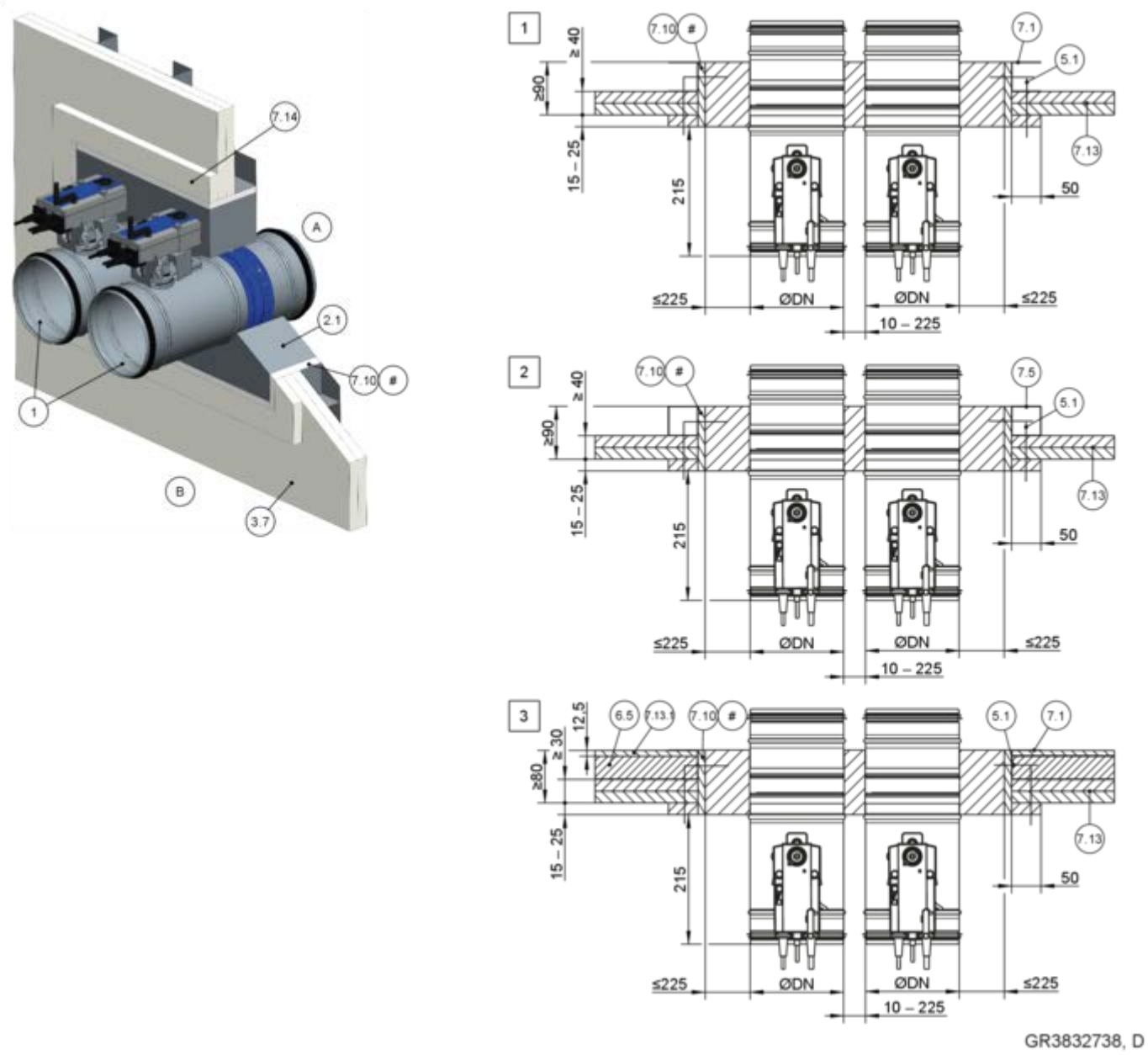


Fig. 142: Mortar-based installation into a shaft wall, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)

1	FKRS-EU	7.10	Reveal
2.1	Mortar	7.13	Cladding
3.7	Shaft wall with metal stud, clad on one side	7.13.1	Cladding, single-layer, inside UW section
5.1	Drywall screw	7.14	Reinforcing board of the same material as the wall
6.5	Mineral wool, depending on wall construction	#	Optional
7.1	UW section	1 – 3	up to EI 90 S
7.5	Steel support structure (box section)		

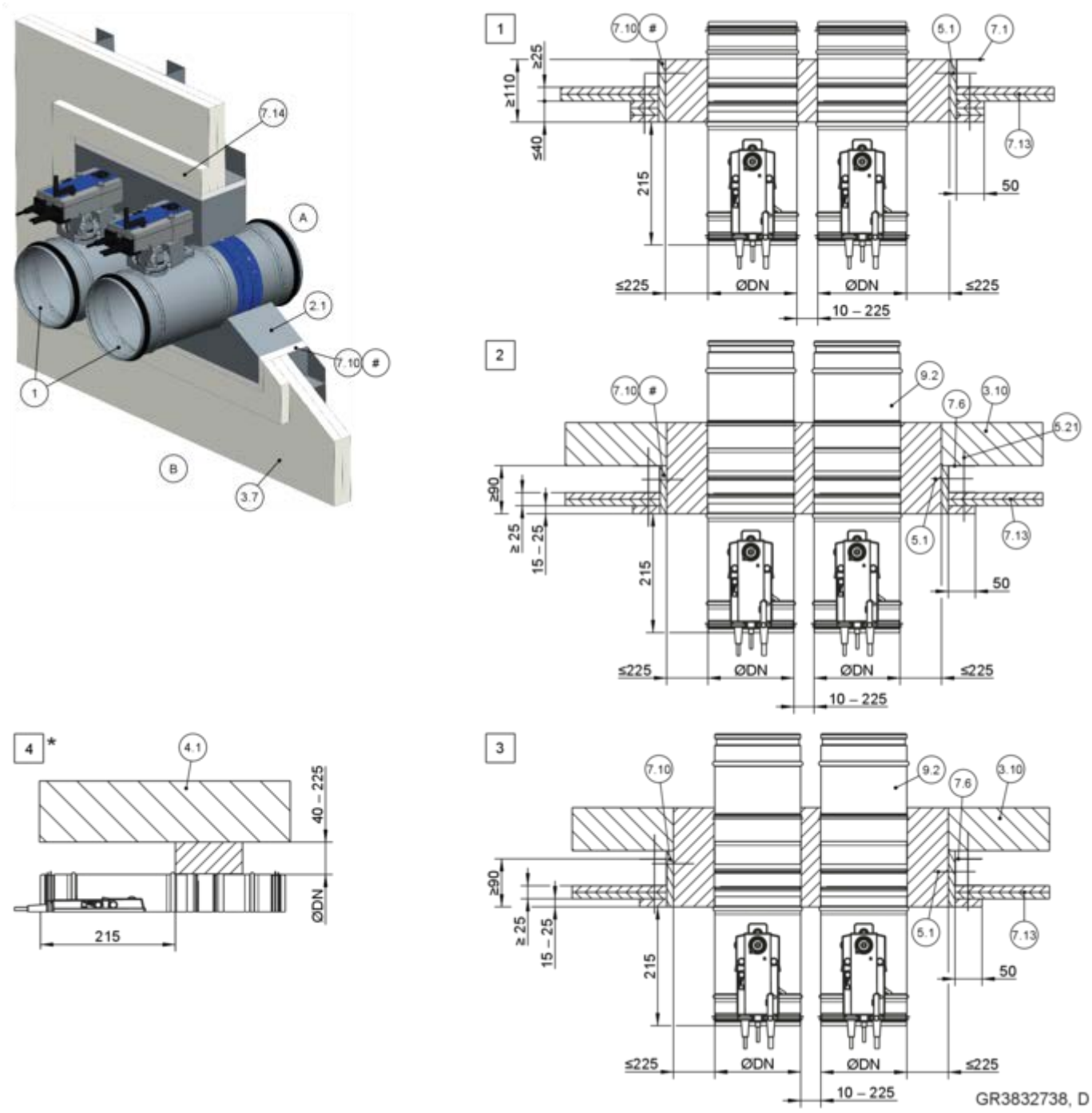


Fig. 143: Mortar-based installation into a shaft wall, flange to flange, illustration shows side by side installation (applies also to installation of dampers on top of each other)

1	FKRS-EU	7.10	Reveal
2.1	Mortar	7.13	Cladding
3.7	Shaft wall with metal stud, clad on one side	7.14	Reinforcing board of the same material as the wall
3.10	Wall without adequate fire resistance rating		
4.1	Solid ceiling/solid floor	9.2	Air duct/extension piece
5.1	Drywall screw	#	Optional
5.21	Screw/dowel	*	Installation near the floor as in 4
7.1	UW section	1 – 3	EI 30 S
7.6	Metal section according to wall manufacturer	4	EI 30 S – EI 90 S

Mortar-based installation into a shaft wall, FKR-EU and FK2-EU combined

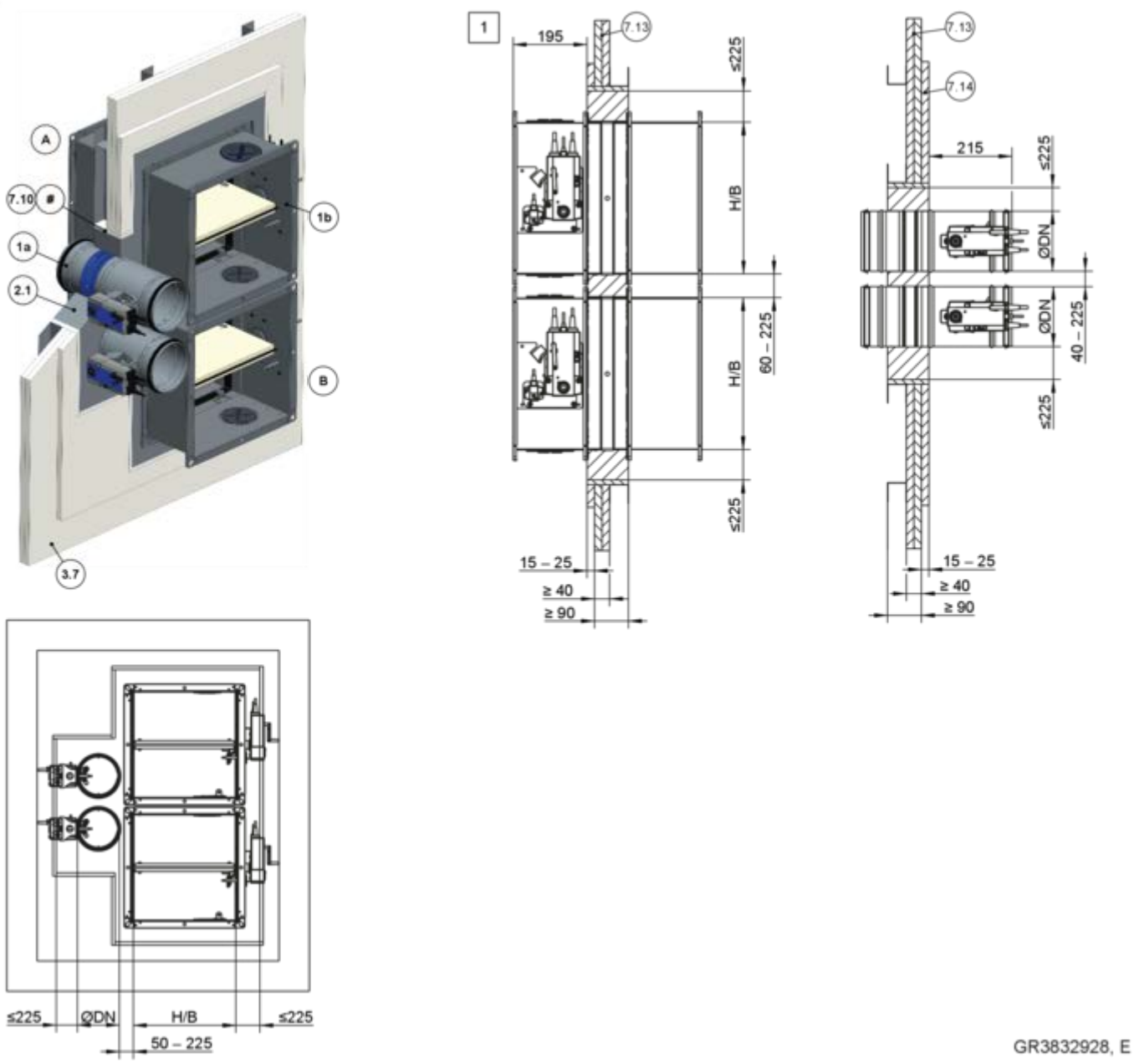


Fig. 144: Mortar-based installation into a shaft wall, FKR-EU and FK2-EU combined

1a	FKRS-EU	7.13	Cladding
1b	FK2-EU up to B × H ≤ 800 × 400 mm	7.14	Reinforcing board of the same material as the wall
2.1	Mortar	#	Optional
3.7	Shaft wall with metal stud, clad on one side	1	up to EI 90 S
7.10	Reveal		

For combined installation please note:

- Overall fire damper area ≤ 1.2 m^2 .
- The number of fire dampers in an installation opening is limited by their size (B × H for FK2-EU and/or ∅nominal width for FKRS-EU) and the overall area of the fire dampers (1.2 m^2).
- Other arrangements (side by side or on top of each other) are possible. Details are available upon request. For installation details FK2-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, ↳ *on page 43*
- General installation information, ↳ *5.3 'General installation information' on page 31* ff
- General information on mortar-based installation, ↳ *'**Mortar-based installation**' on page 37*

5.9.3 Dry mortarless installation into a shaft wall with metal support structure, with installation kit TQ2

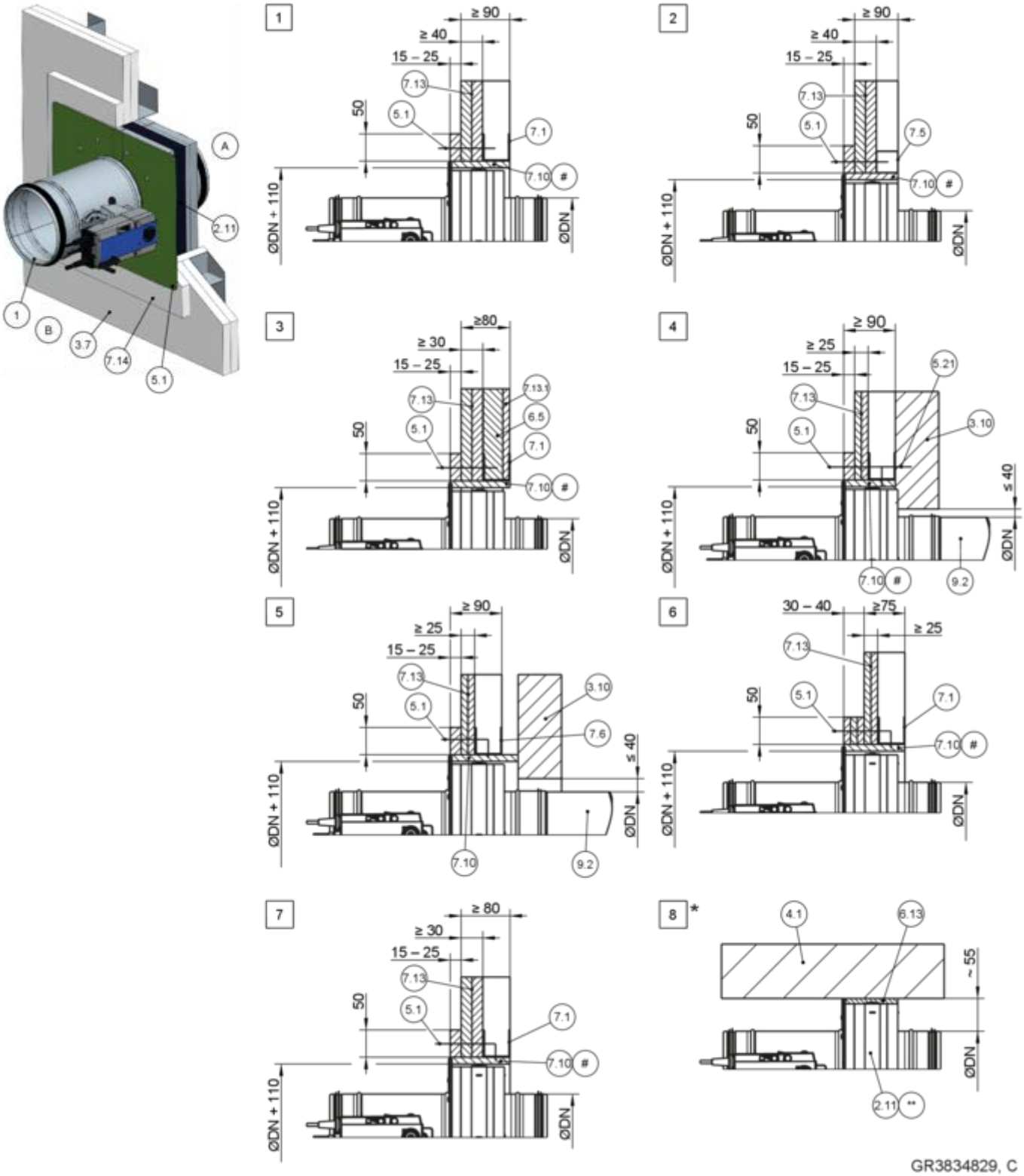


Fig. 145: Dry mortarless installation into a shaft wall with metal support structure, with installation kit TQ2

1	FKRS-EU
2.11	Installation kit TQ2 with cover plate
3.7	Shaft wall with metal stud, clad on one side
3.10	Wall without adequate fire resistance rating
4.1	Solid ceiling/solid floor
7.10	Reveal
7.13	Cladding
7.13.1	Cladding, single-layer, inside UW section
7.14	Reinforcing board of the same material as the wall

5.1	Dry wall screw, min. 10 mm screwed into the metal stud frame
5.21	Screw/dowel
6.5	Mineral wool, depending on wall construction
6.13	Mineral fibre strips A1, alternatively gypsum mortar (for levelling ceiling unevenness)
7.1	UW section
7.5	Steel support structure (box section)
7.6	Metal section according to wall manufacturer
9.2	Air duct/extension piece
#	Optional
*	Installation near the floor as in 7
**	Cover plate shortened by others
1 – 3	up to EI 90 S
4 – 6	EI 30 S
7	EI 60 S
8	EI 30 to EI 90 S

Additional requirements: dry mortarless installation into shaft walls with metal support structure, with installation kit TQ2

- Shaft wall, ↳ *on page 43*
- Installation kit TQ2, ↳ *5.4.3 'Installation kit TQ2' on page 48*
- Distance between two fire dampers ≥ 200 mm (Installation of each fire damper in separate opening)
- General installation information, ↳ *5.3 'General installation information' on page 31* ff
- General information on installation with installation kit TQ2, ↳ *on page 38*

5.9.4 Dry mortarless installation into a shaft wall with metal support structure, with installation kit WA2

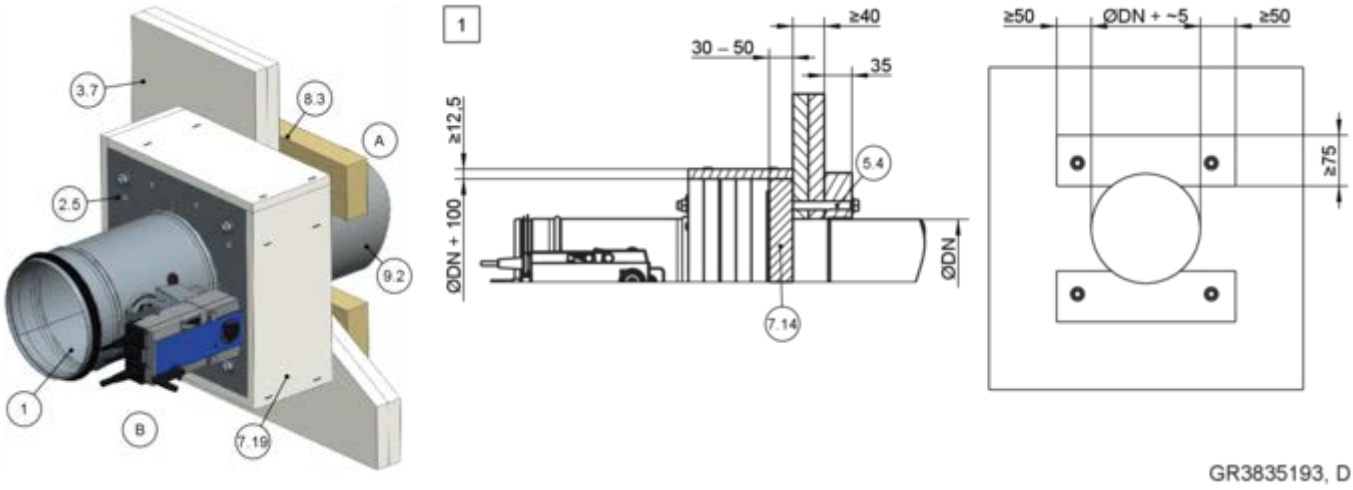


Fig. 146: Dry mortarless installation into a shaft wall with metal support structure, with installation kit WA2

1 FKRS-EU
2.5 Installation kit WA2
3.7 Shaft wall with metal stud, clad on one side
5.4 Threaded rod (M8 or M10) as push-through installation with washers and nuts
7.14 Reinforcing board (square, DN + 100 mm), calcium silicate, thickness = 30 – 50 mm or mineral wool, ≥ 1000 °C, ≥ 140 kg/m³, thickness = 50 mm
7.19 Fire-resistant cladding (fire-rated plasterboard panel, thickness ≥ 12.5 mm)
8.3 PROMATECT®-LS board, d = 35 mm
9.2 Air duct/extension piece
[1] up to EI 90 S

Additional requirements: dry mortarless installation with installation kit WA2 into shaft walls with metal support structure

- Shaft wall, ↬ *on page 43*
- Installation kit WA2, ↬ *5.4.4 'Installation kit WA2' on page 50*
- ≥ 75 mm distance between the fire damper and load-bearing components
- ≥ 200 mm distance between two fire dampers

1. Make a circular installation opening DN + approx. 5 mm between two regular studs.
2. Create a reinforcing board (7.14) and fix it to the installation kit.
3. Create Promatect strips (8.3).
4. Push the fire damper into the wall opening and fix it with threaded rods (5.4) and Promatect strips (8.3).
   Note: Tighten the nuts hand-tight to approx. 5 Nm for fastening.
5. Apply fire-resistant cladding (7.19).

5.9.5 Dry mortarless installation with fire batt

Dry mortarless installation with fire batt in shaft wall with metal support structure

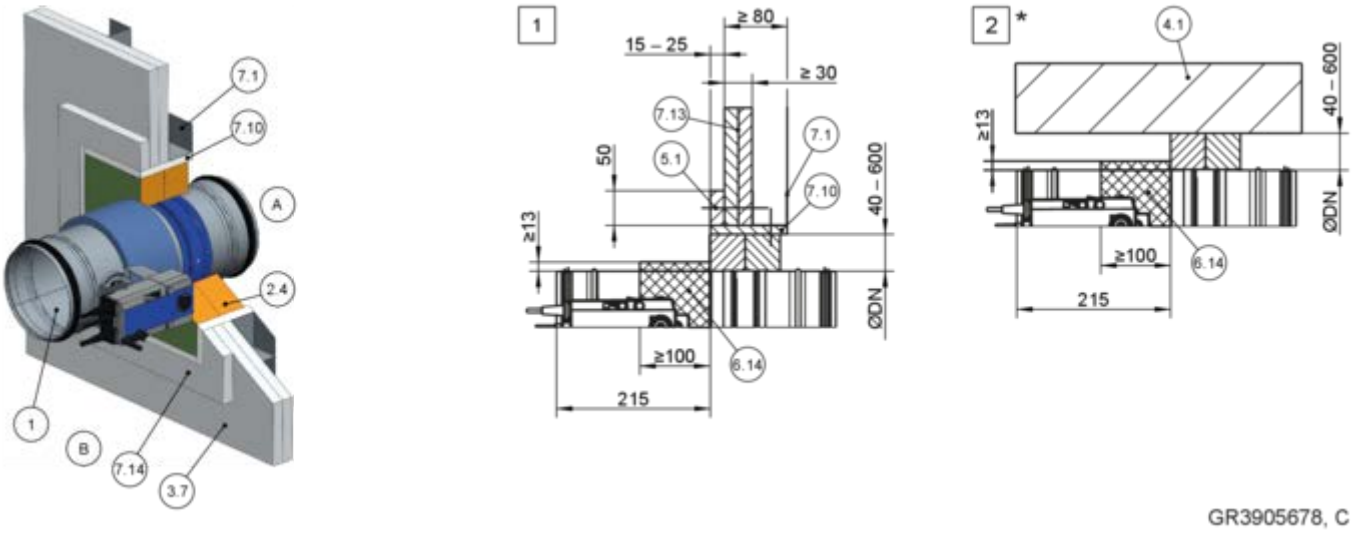


Fig. 147: Dry mortarless installation with fire batt in shaft wall with metal support structure

1	FKRS-EU
2.4	Coated board system
3.7	Shaft wall with metal support structure, cladding on one side
4.1	Solid ceiling slab/solid floor
5.1	Dry wall screw
6.14	Armaflex
7.1	UW section
7.10	Reveal
7.13	Cladding
7.14	Reinforcing board of the same material as the wall
*	Installation near the floor as in 2
1 2	Up to EI 60 S

Supplementary requirements: Dry mortarless installation with fire batt in shaft walls with metal support structure

- Shaft wall, ↳ *on page 43*
- Fire batt systems, installation details, distances/dimensions, ↳ *on page 38* f
- Suspension and fixing, ↳ *Chapter 5.15 'Fixing the fire damper' on page 255*
- ≥ 200 mm distance between two fire dampers in separate installation openings
- General installation information, ↳ *5.3 'General installation information' on page 31* ff
- General information on installation with fire batt, ↳ *on page 38*

5.10 Shaft walls without metal support structure

5.10.1 General information

Shaft wall without metal studs and cladding on one side

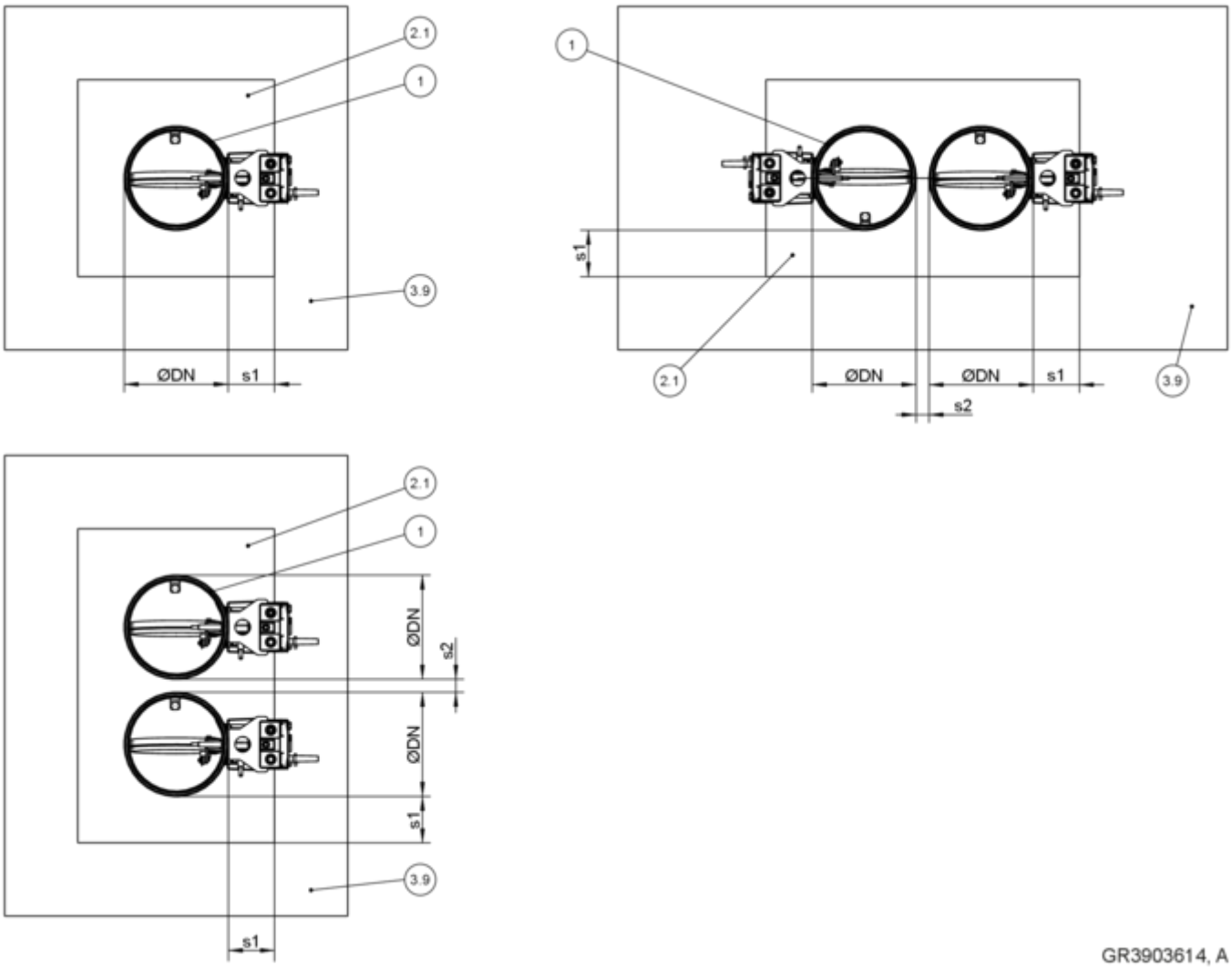


Fig. 148: Shaft walls without metal support structure – Arrangement/distances

1 FKRS-EU
2.1 Mortar
3.9 Shaft wall without metal studs, clad on one side
s1 Perimeter gap, ↳ *on page 37*
s2 Distance between the fire dampers, ↳ *'Distances' on page 35*

Installation type	Installation opening [mm]	Distance [mm]	
		s1	s2
Mortar-based installation	∅DN + max. 450	≤ 225	≥ 200
Dry mortarless installation with TQ2	□A = ∅DN + 110 [1]	central installation	≥ 200

[1] Installation opening tolerance ± 4 mm

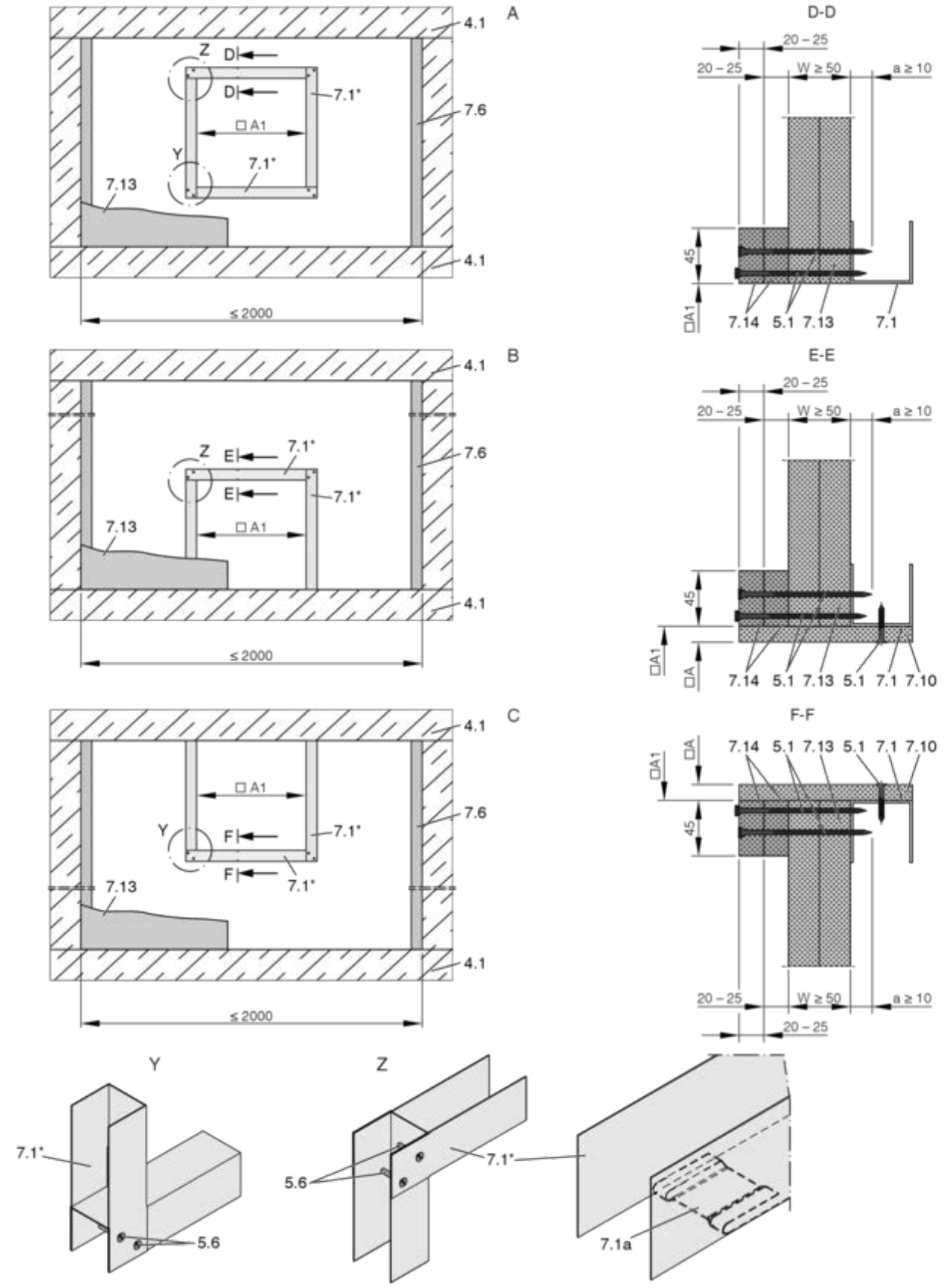


Fig. 149: Shaft wall without metal support structure and cladding on one side

A	Shaft wall	7.6	Metal section/steel bracket according to wall manufacturer
B	Shaft wall, installation near the floor	7.10	Reveals, according to installation details
C	Shaft wall, installation near the ceiling	7.13	Cladding
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, either cut in and bent, or cut off
7.14 Reinforcing
☐A Installation opening
☐A1 Opening in shaft wall (without reveals: ☐A =☐A1)
* Closed side of metal section must face the installation opening

Additional requirements: shaft walls without metal support structure

- Shaft wall without metal support structure,
  on page 44
- Erect the shaft wall according to the manufacturer's instructions and create the installation opening according to the specifications in these instructions, Fig. 149
- After cladding the wall, create a square wall opening with reinforcing strips and brace it with a perimeter metal section. Screw metal sections over the cladding, spaced approx. 100 mm apart.

5.10.2 Mortar-based installation

Mortar-based installation into shaft wall without metal support structure

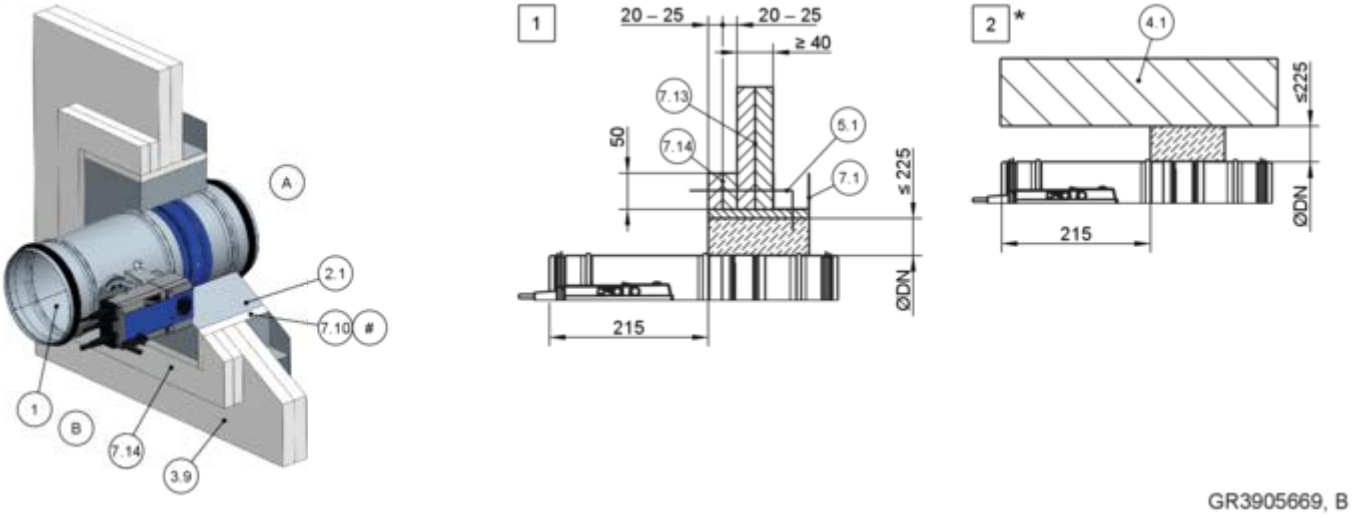


Fig. 150: Mortar-based installation into shaft wall without metal support structure

1	FKRS-EU
2.1	Mortar
3.9	Shaft wall without metal studs, clad on one side
4.1	Solid ceiling/solid floor
5.1	Dry wall screw, min. 10 mm screwed into the metal stud frame
7.1	UW section
7.10	Reveal
7.13	Cladding
7.14	Reinforcing board of the same material as the wall
#	Optional
*	Installation near the floor as in 2
1	up to EI 90 S
2	EI 30 S – EI 90 S

Additional requirements: mortar-based installation into shaft walls without metal support structure

- Shaft wall, *on page 44*
- Distance to load-bearing components ≥ 40 mm
- Distance between two fire dampers ≥ 200 mm (Installation of each fire damper in separate opening)
- General installation information, *5.3 'General installation information' on page 31* ff
- General information on mortar-based installation, '***Mortar-based installation***' *on page 37*

5.10.3 Dry mortarless installation into a shaft wall without metal support structure, with installation kit TQ2

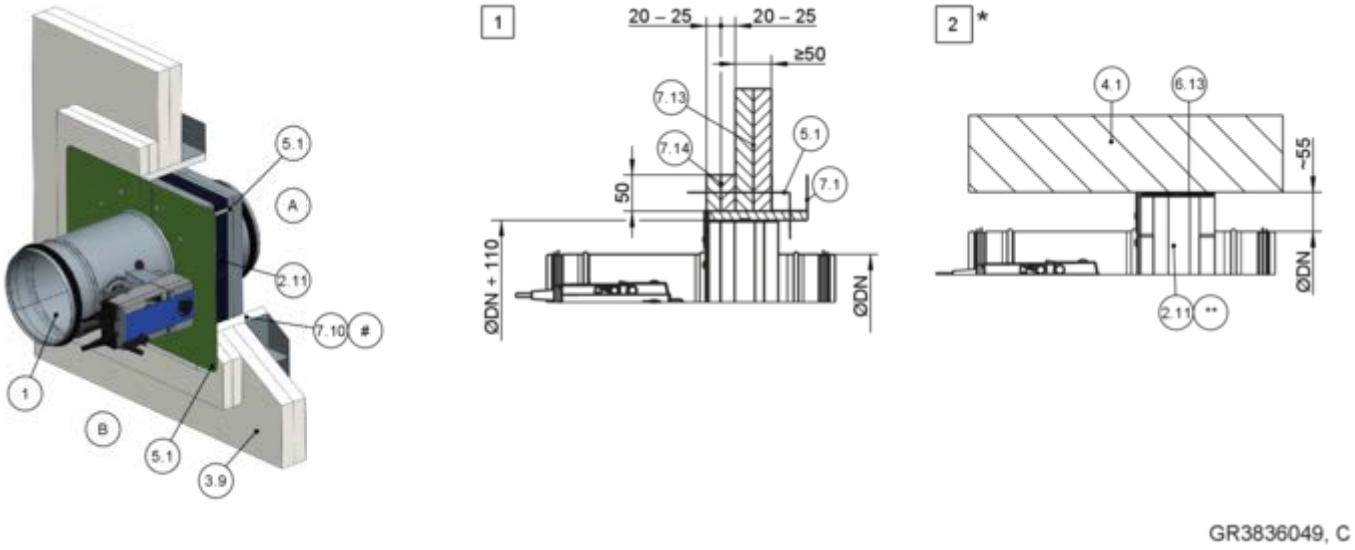


Fig. 151: Dry mortarless installation into a shaft wall without metal support structure, with installation kit TQ2

1	FKRS-EU
2.11	Installation kit TQ2 with cover plate
3.9	Shaft wall without metal support structure, cladding on one side
5.1	Dry wall screw, min. 10 mm screwed into the metal stud frame
6.13	Mineral fibre strips A1, alternatively gypsum mortar (for levelling ceiling unevenness)
7.1	UW section
7.10	Reveal
7.13	Cladding
7.14	Reinforcing board of the same material as the wall
#	Optional
*	Installation near the floor as in 2
**	Cover plate shortened by others
1	Up to EI 90 S
2	EI 30 to EI 90 S

Additional requirements: dry mortarless installation into shaft walls without metal support structure, with installation kit TQ2

- Shaft wall, *on page 44*
- Installation kit TQ2, *5.4.3 'Installation kit TQ2' on page 48*
- ≥ 200 mm distance between two fire dampers in separate installation openings
- ≥ 55 mm distance between the fire damper and load-bearing components
- General installation information, *5.3 'General installation information' on page 31* ff
- General information on installation with installation kit TQ2, *on page 38*

5.10.4 Dry mortarless installation into a shaft wall without metal support structure, with installation kit WA2

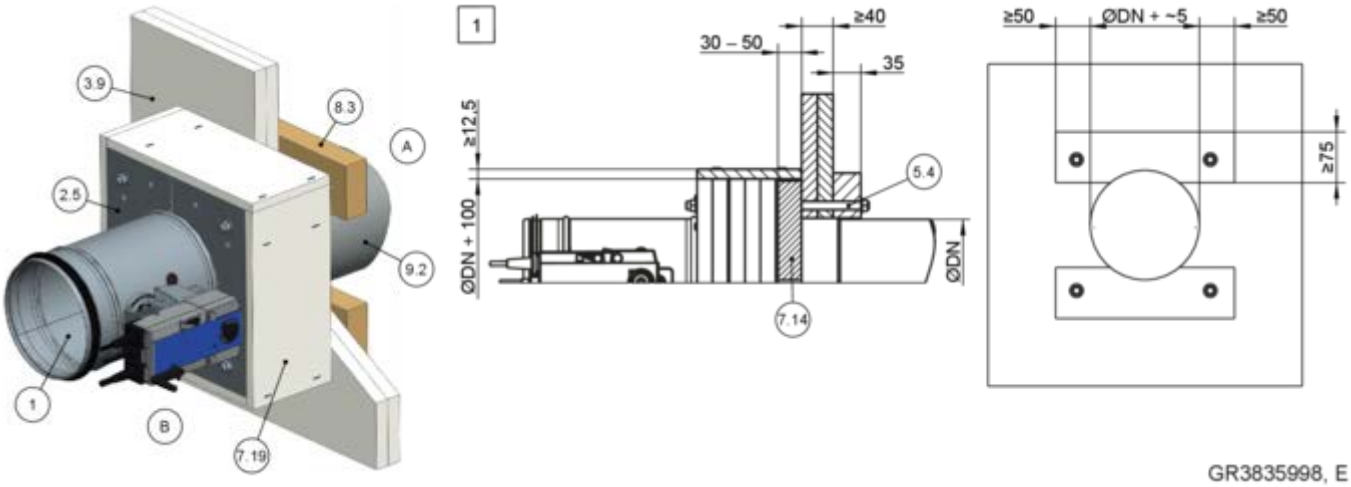


Fig. 152: Dry mortarless installation into a shaft wall without metal support structure, with installation kit WA2

1 FKRS-EU
2.5 Installation kit WA2
3.9 Shaft wall without metal studs, clad on one side
5.4 Threaded rod (M8 or M10) as push-through installation with washers and nuts
7.14 Reinforcing board (square, DN + 100 mm), calcium silicate, thickness = 30 – 50 mm or mineral wool, ≥ 1000 °C, ≥ 140 kg/m³, thickness = 50 mm
7.19 Fire-resistant cladding (fire-rated plasterboard panel, thickness ≥ 12.5 mm)
8.3 PROMATECT®-LS board, d = 35 mm
9.2 Air duct
[1] up to EI 90 S

Additional requirements: dry mortarless installation with installation kit WA2 on shaft walls without metal support structure

- Shaft wall, *on page 44*
- Installation kit WA2, *5.4.4 'Installation kit WA2' on page 50*
- ≥ 75 mm distance between the fire damper and load-bearing components
- ≥ 200 mm distance between two fire dampers

1. Make a circular installation opening DN + approx. 5 mm.
2. Create a reinforcing board (7.14) and fix it to the installation kit.
3. Create Promatect strips (8.3).
4. Push the fire damper into the wall opening and fix it with threaded rods (5.4) and Promatect strips (8.3).
   Note: Tighten the nuts hand-tight to approx. 5 Nm for fastening.
5. Apply fire-resistant cladding (7.19).

5.11 Solid ceiling slabs

5.11.1 General information

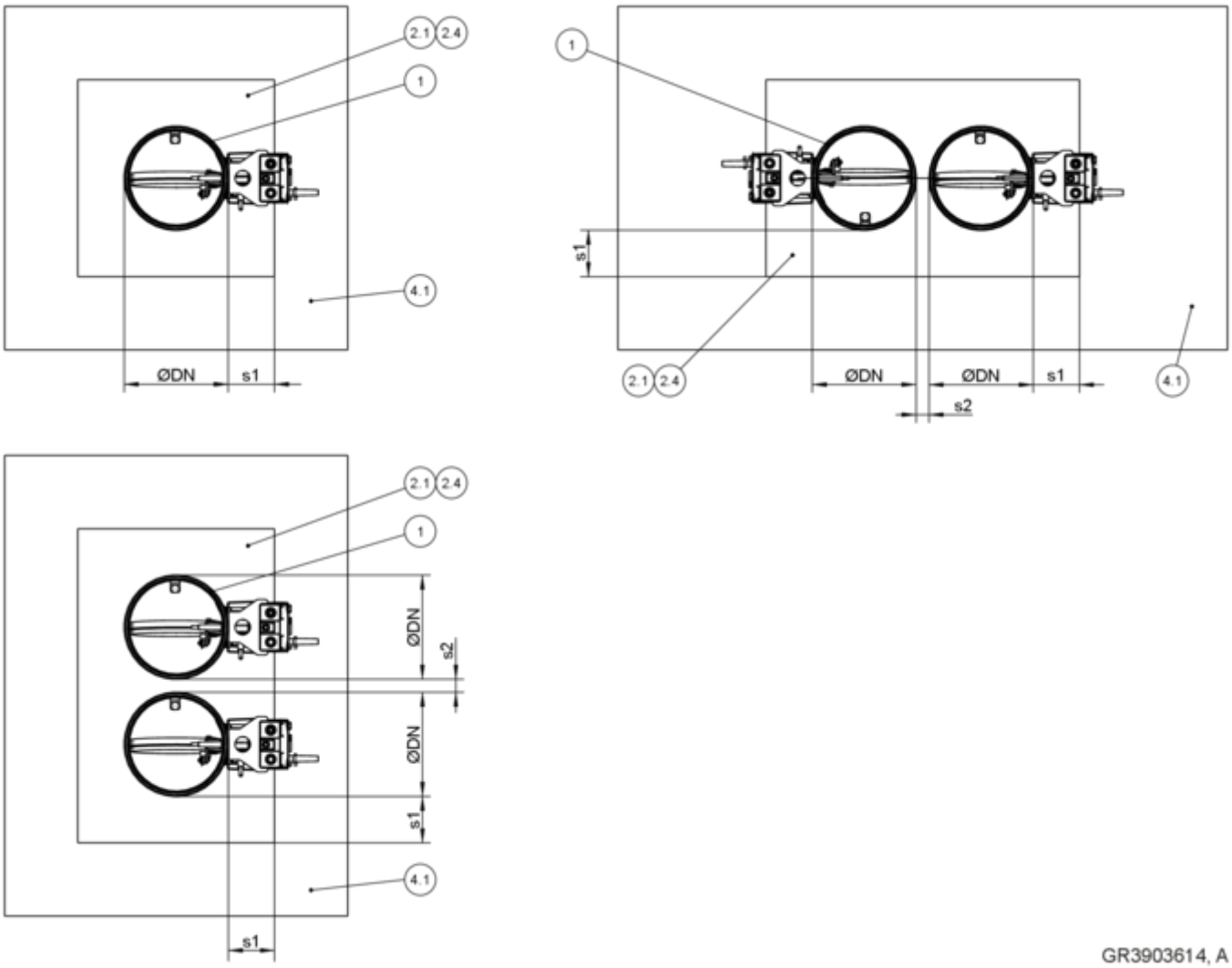


Fig. 153: Solid ceiling slabs – arrangement/distances, side-by-side arrangement by way of example

1 FKRS-EU
2.1 Mortar
2.4 Coated board system with firestop coating
4.1 Solid ceiling slab
s1 Perimeter gap, *on page 37*
s2 Distance between the fire dampers, *'Distances' on page 35*

Installation type	Installation opening [mm]	Distance [mm]	
		s1	s2
Mortar-based installation	∅DN + max. 450	≤ 225	x – 225 [4]
Dry mortarless installation with ER	*5.4.2 'Installation block ER' on page 47*	central installation	≥ 200 [2]
Dry mortarless installation with coated board system [1]	□A = ∅DN + max. 1200	40 – 600	≥ 200 [3]

[1] Observe the maximum permissible size of the coated board system!
[2] Distance between the installation blocks
[3] Installation into separate installation openings
[4] x = 45 mm up to EI 120 S / x = 10 mm up to EI 90 S

Additional requirements: solid ceiling slabs

- Solid ceiling slab, *on page 44*
- Distances and installation orientation, *'Distances' on page 35*
- The structural safety of the ceiling as well as the attachment of the mortar or concrete to the ceiling must be ensured (by customer). Compensation measures, especially with regard to large installation openings (such as for multiple installation), must be determined on a case-to-case basis (by customer).

5.11.2 Mortar-based installation

Mortar-based installation into a solid ceiling slab, suspended or upright

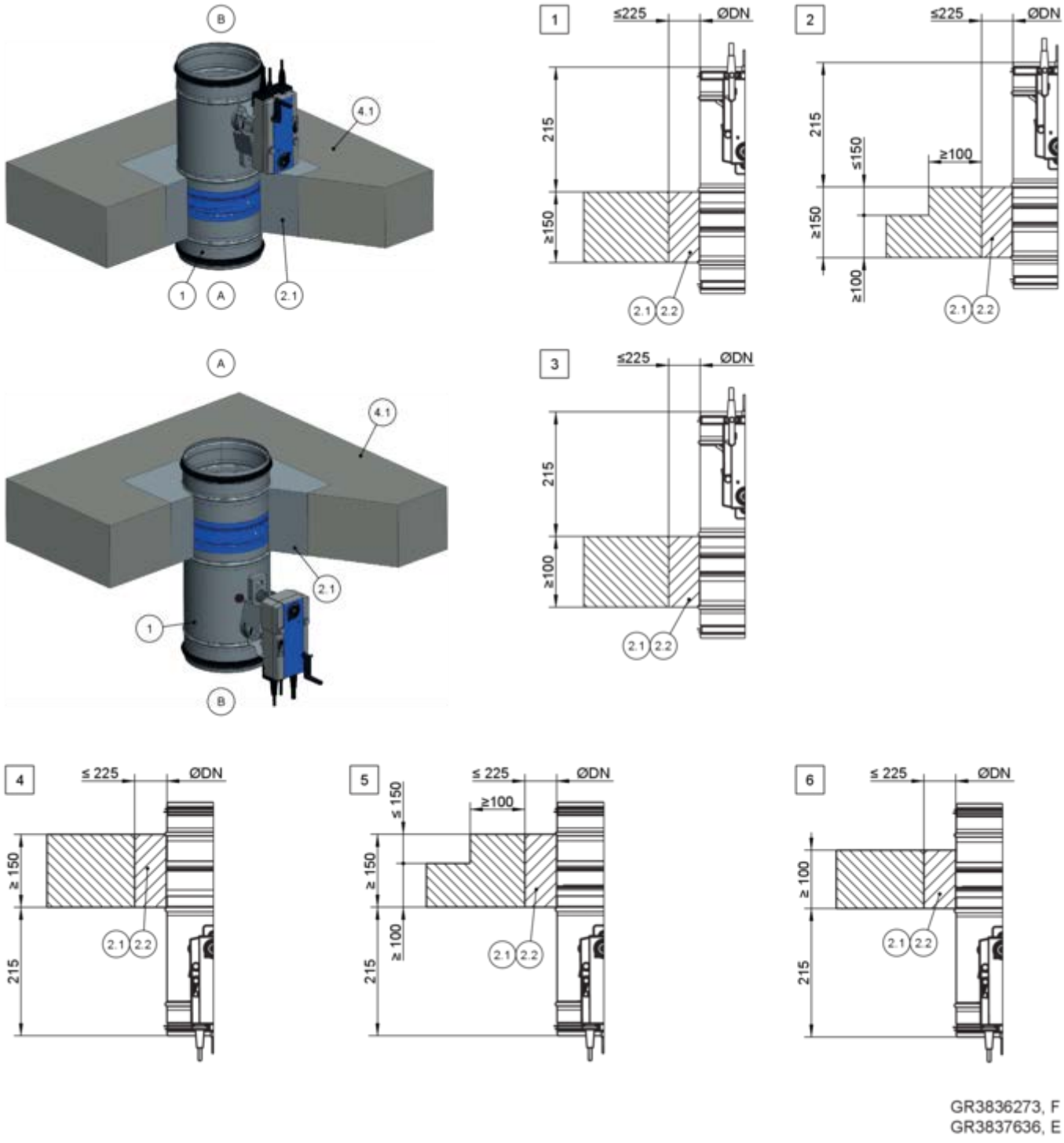


Fig. 154: Mortar-based installation into a solid ceiling slab, suspended or upright

1	FKRS-EU	1 2	Up to EI 120 S
2.1	Mortar	3	Up to EI 90 S
2.2	Reinforced concrete	4 5	Up to EI 120 S
4.1	Solid ceiling slab (thickness increased at 2 and 5)	6	Up to EI 90 S

Mortar-based installation into a solid ceiling slab with screed and footfall sound insulation, suspended or upright

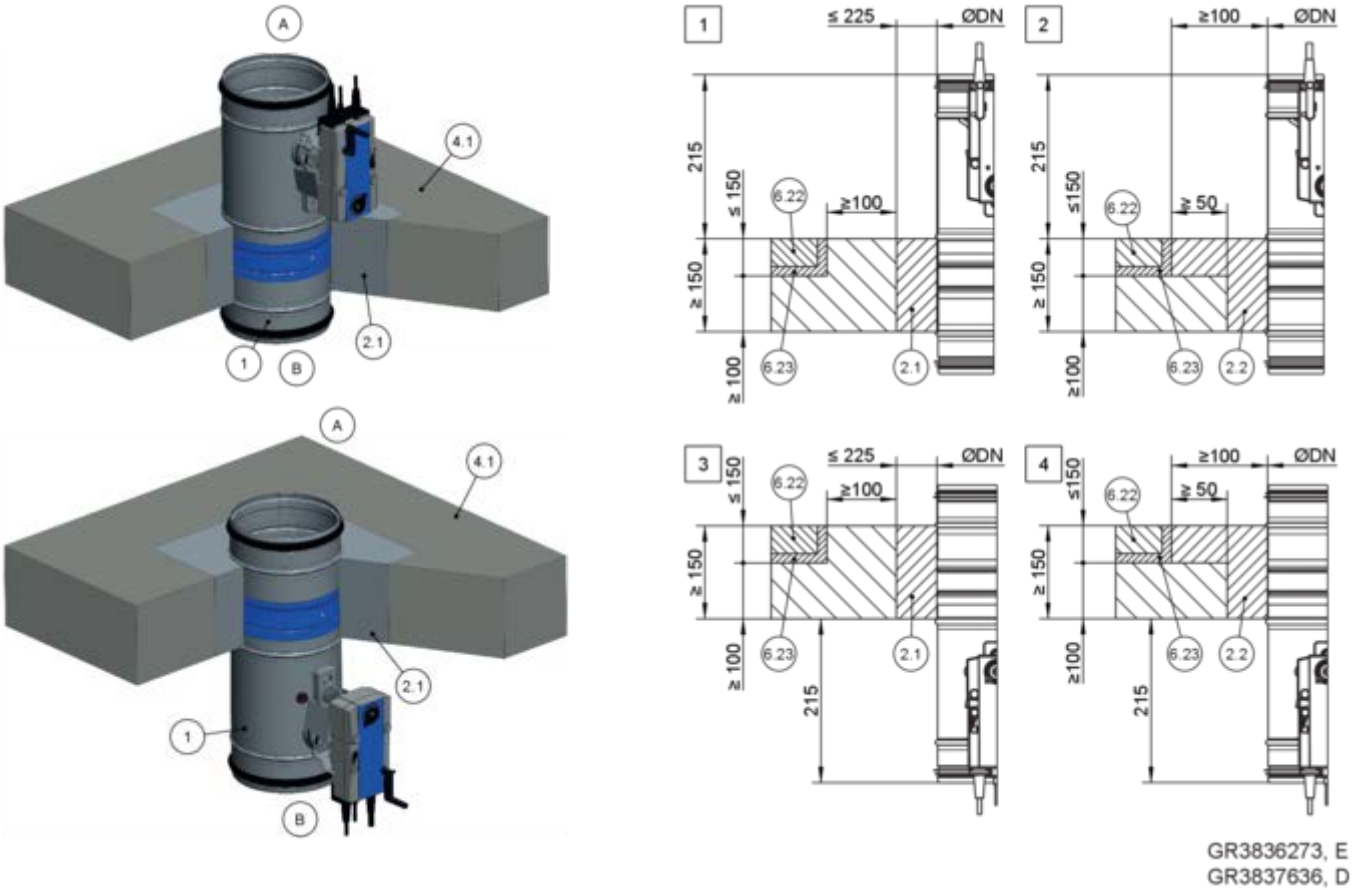


Fig. 155: Mortar-based installation into a solid ceiling slab with screed and footfall sound insulation, suspended or upright

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

Mortar-based installation into solid ceiling slab, suspended, "flange to flange", upright and suspended

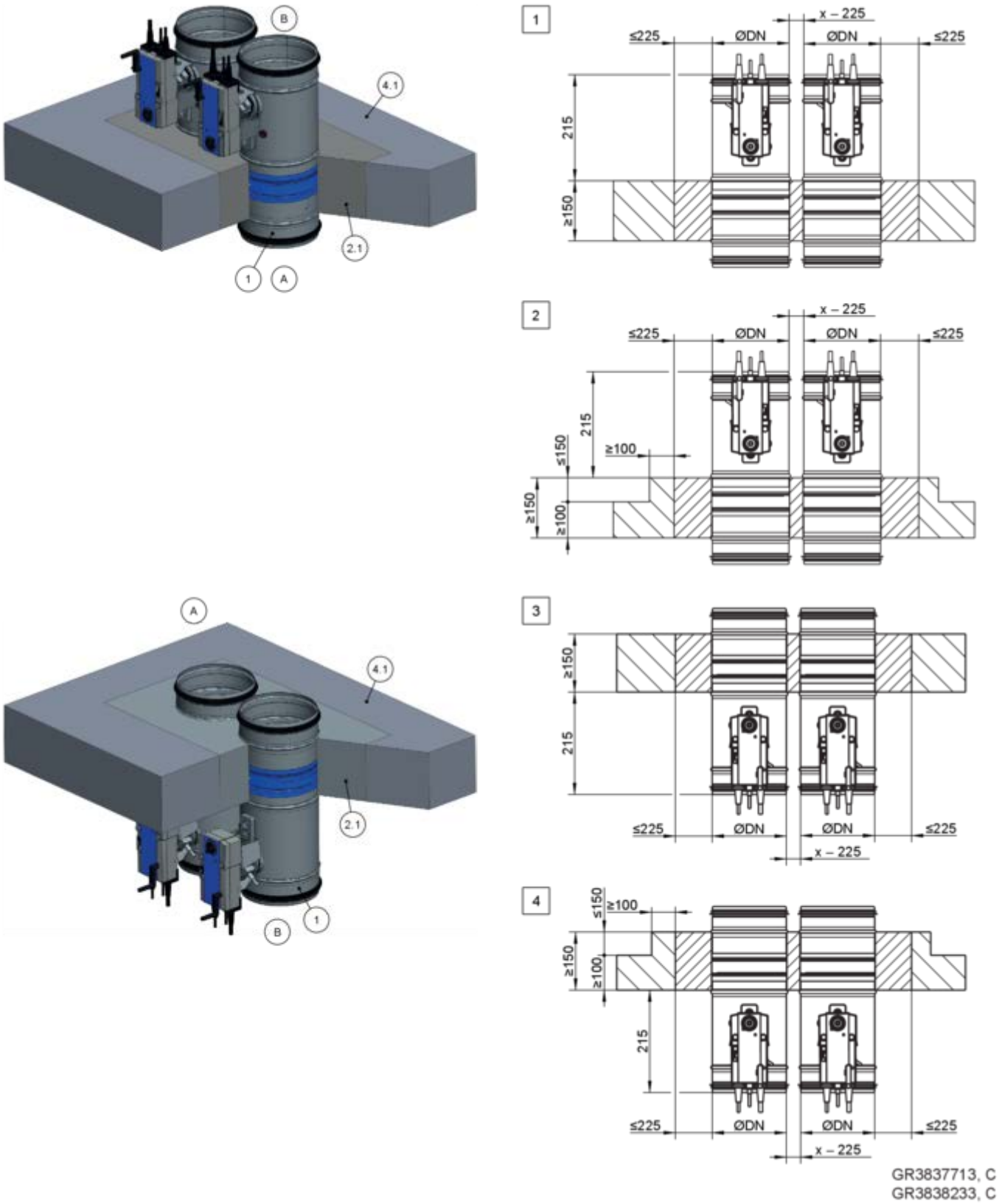


Fig. 156: Mortar-based installation into solid ceiling slab, "flange to flange", upright and suspended (also applicable for blending into the screed according to Fig. 154 *)*

1	FKRS-EU	x	45 mm up to EI 120 S
2.1	Mortar		10 mm up to EI 90 S
		1 – 4	Up to EI 120 S

4.1 Solid ceiling slab (thickness increased at 2 and 4)

Mortar-based installation into a solid ceiling slab, FKRS-EU and FK2-EU, combined

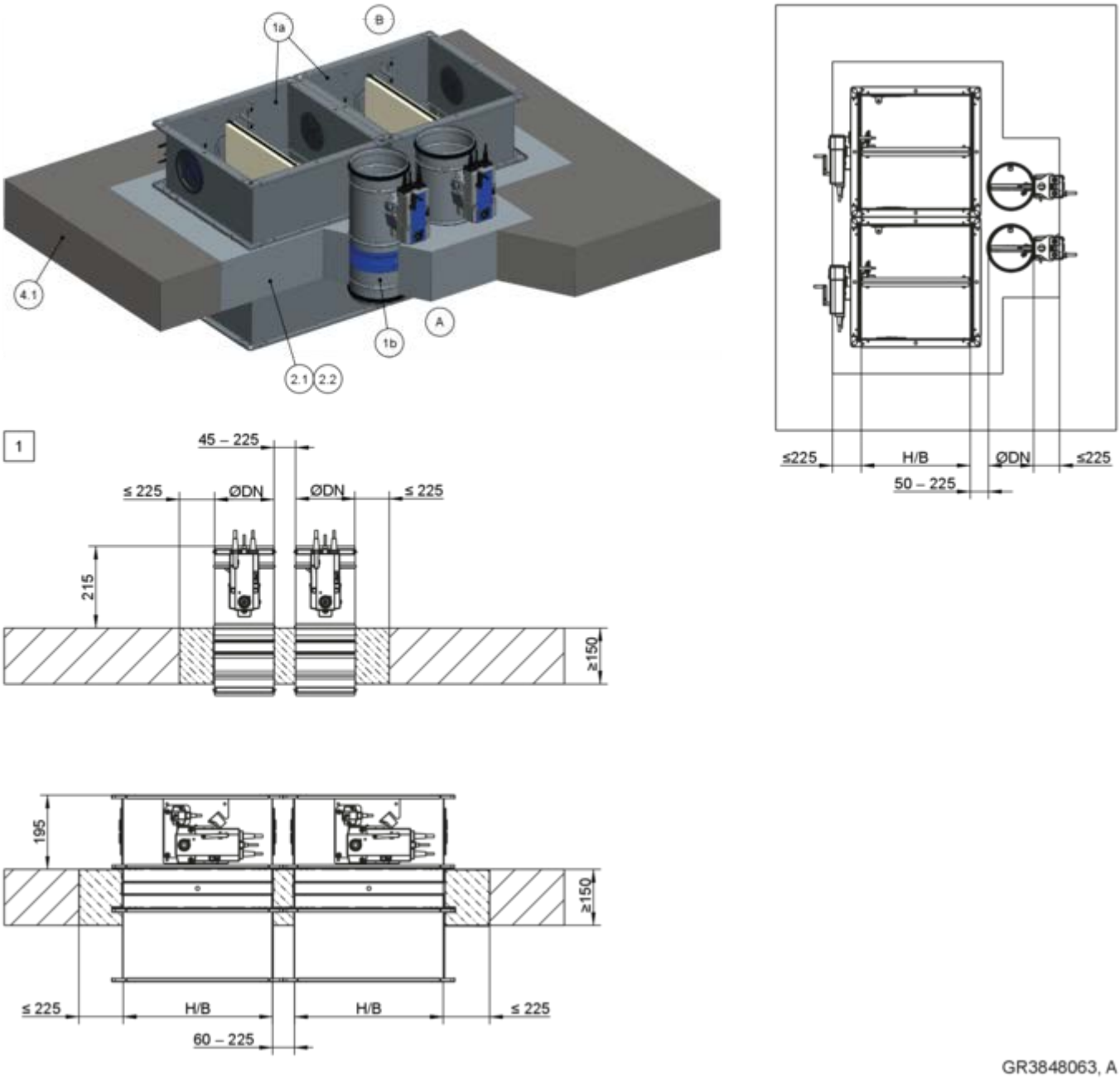


Fig. 157: Mortar-based installation into a solid ceiling slab, FKRS-EU and FK2-EU, combined

1a	FKRS-EU	2.2	Concrete
1b	FK2-EU up to B × H ≤ 800 × 400 mm	4.1	Solid ceiling slab
2.1	Mortar	1	up to EI 90 S

For combined installation please note:

- Overall fire damper area ≤ 1.2 m^2 .
- The number of fire dampers in an installation opening is limited by their size (B × H for FK2-EU and/or ∅nominal width for FKRS-EU) and the overall area of the fire dampers (1.2 m^2).
- Other arrangements (side by side or on top of each other) are possible. Details are available upon request. For installation details FK2-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 ceiling slabs

- Solid ceiling slab, ↬ *on page 44*
- ≥ 40 mm distance between the fire damper and load-bearing components
- General installation information, ↬ *5.3 'General installation information' on page 31* ff
- General information on mortar-based installation, ↬ '***Mortar-based installation***' *on page 37*

Note:

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

5.11.3 Mortar-based installation – multiple occupancy of one installation opening

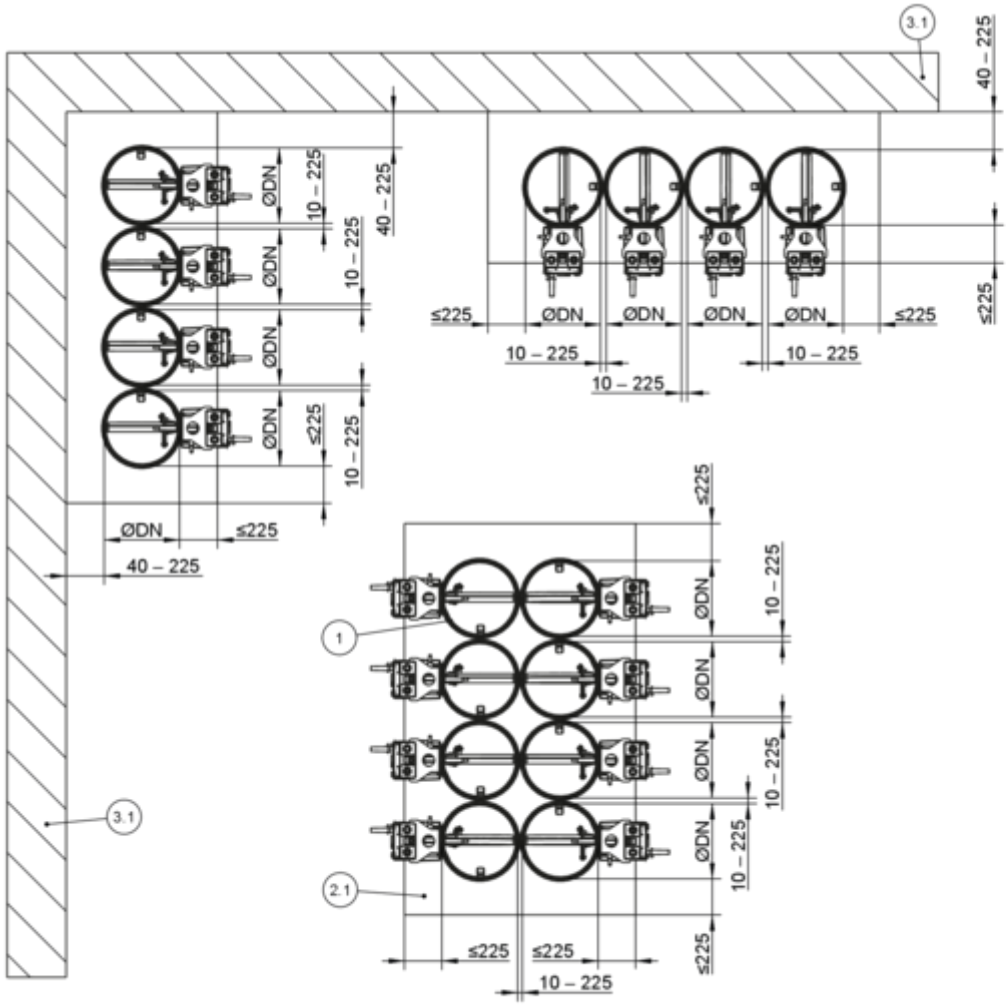


Fig. 158: Mortar-based installation – multiple occupancy of one installation opening

1 FKRS-EU
2.1 Mortar
3.1 Solid wall (load-bearing structural element)

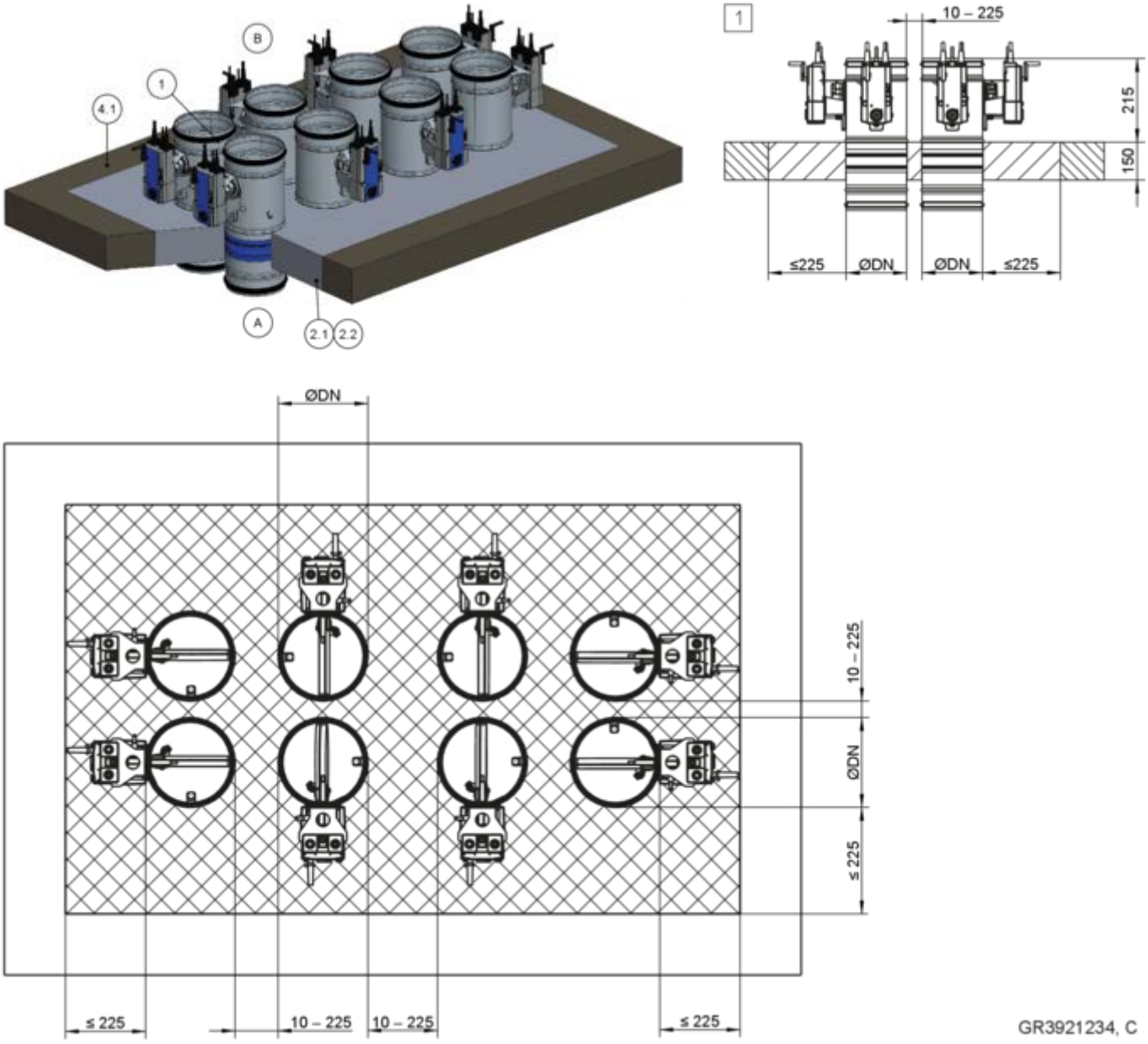


Fig. 159: Mortar-based installation – multiple installation into one installation opening, illustration shows upright installation (applies also to suspended installation)

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

Additional requirements: mortar-based installation – multiple installation into one installation opening

- Solid ceiling slab, *on page 44*
- Overall fire damper area ≤ 1.2 m^2
- The number of fire dampers in an installation opening is limited by their size (nominal width) and the overall area of the fire dampers (1.2 m^2) (maximum 10 FKRS-EU in single or double row arrangement)
- Distance to load-bearing structural elements ≥ 40 mm

5.11.4 Mortar-based installation into a concrete base

Mortar-based installation with concrete base into a solid ceiling slab, upright

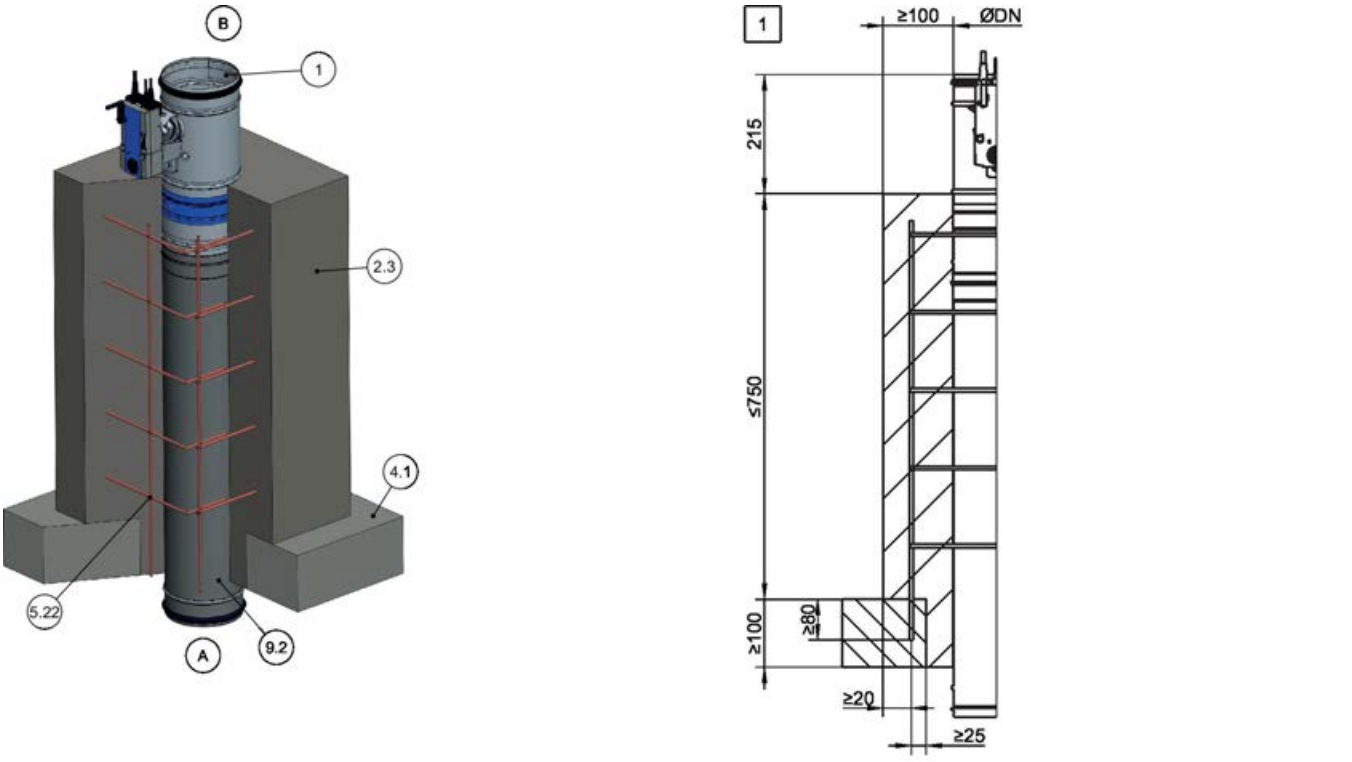


Fig. 160: Mortar-based installation with concrete base into a solid ceiling slab, upright

1	FKRS-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: 4
9.2	Air duct/extension piece
1	Up to EI 120 S

Mortar-based installation with concrete base into a solid ceiling slab, upright, combined, FKRS-EU and FK2-EU

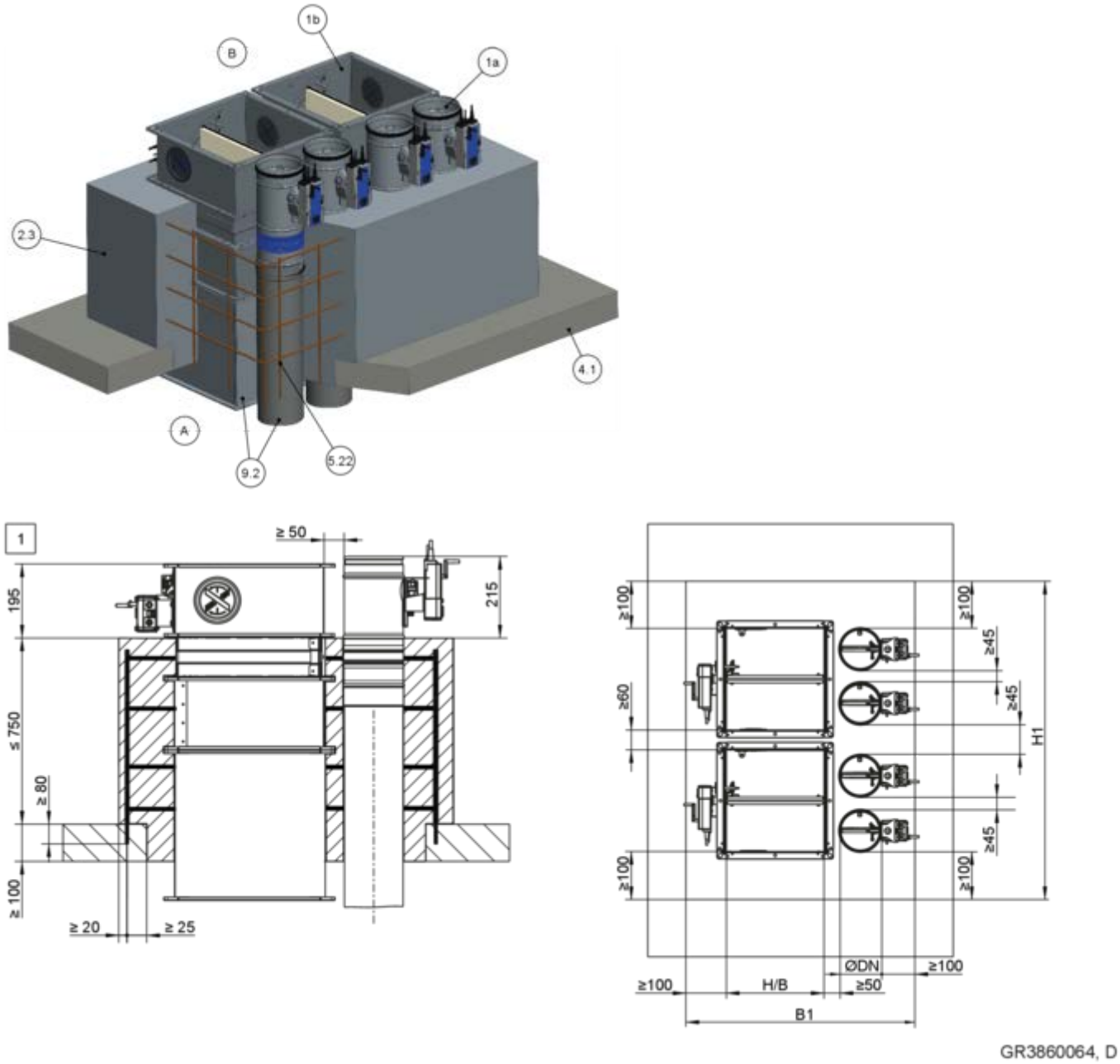


Fig. 161: Mortar-based installation with concrete base into a solid ceiling slab, upright, combined, FKRS-EU and FK2-EU

1a FKRS-EU
1b FK2-EU up to B × H ≤ 800 × 400 mm
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 ↳ *215*
9.2 Air duct/extension piece
[1] up to EI 90 S

For combined installation please note:

- Overall fire damper area ≤ 1.2 m² .
- The number of fire dampers in an installation opening is limited by their size (B × H for FK2-EU and/or ∅nominal width for FKRS-EU) and the overall area of the fire dampers (1.2 m²).
- Other arrangements (side by side or on top of each other) are possible. Details are available upon request. For installation details FK2-EU, see the installation and operating manual for this fire damper type.

- Distance to load-bearing structural elements ≥ 40 mm
- Minimum number of fixing points in the ceiling slab *on page 215*

Minimum number of fixing points in the ceiling slab

B1 ≥ [mm]	H1 ≥ [mm]													
	200	500	800	1100	1400	1700	2000	2300	2600	2900	3200	3500	3800	4100
100	4	6	8	10	12	14	16	18	20	22	24	26	28	30
400	6	8	10	12	14	16	18	20	22	24	2	28	30	32
700	8	10	12	14	16	18	20	22	24	26	28	30	32	34
1000	10	12	14	16	18	20	22	24	26	28	30	–	–	–
1300	12	14	16	18	20	22	24	26	28	30	32	–	–	–
1600	14	16	18	20	22	24	26	28	30	32	34	–	–	–
1900	16	18	20	22	24	26	28	30	32	34	36	–	–	–
2000	18	20	22	24	26	28	30	32	34	36	38	–	–	–

Supplementary requirements: mortar-based installation in solid ceiling slabs with concrete base

- Solid ceiling slab, *on page 44*
- ≥ 40 mm distance between the fire damper and load-bearing components
- ≥ 45 mm distance between two fire dampers
- If the distance to adjacent solid walls is < 100 mm and if the concrete base has been correctly attached, no reinforcement is required on the wall side.
- Concrete bases with H ≤ 150 mm do not require reinforcement
- General installation information, *5.3 'General installation information' on page 31* ff

5.11.5 Mortar-based installation into a concrete base – multiple installation opening into one installation opening

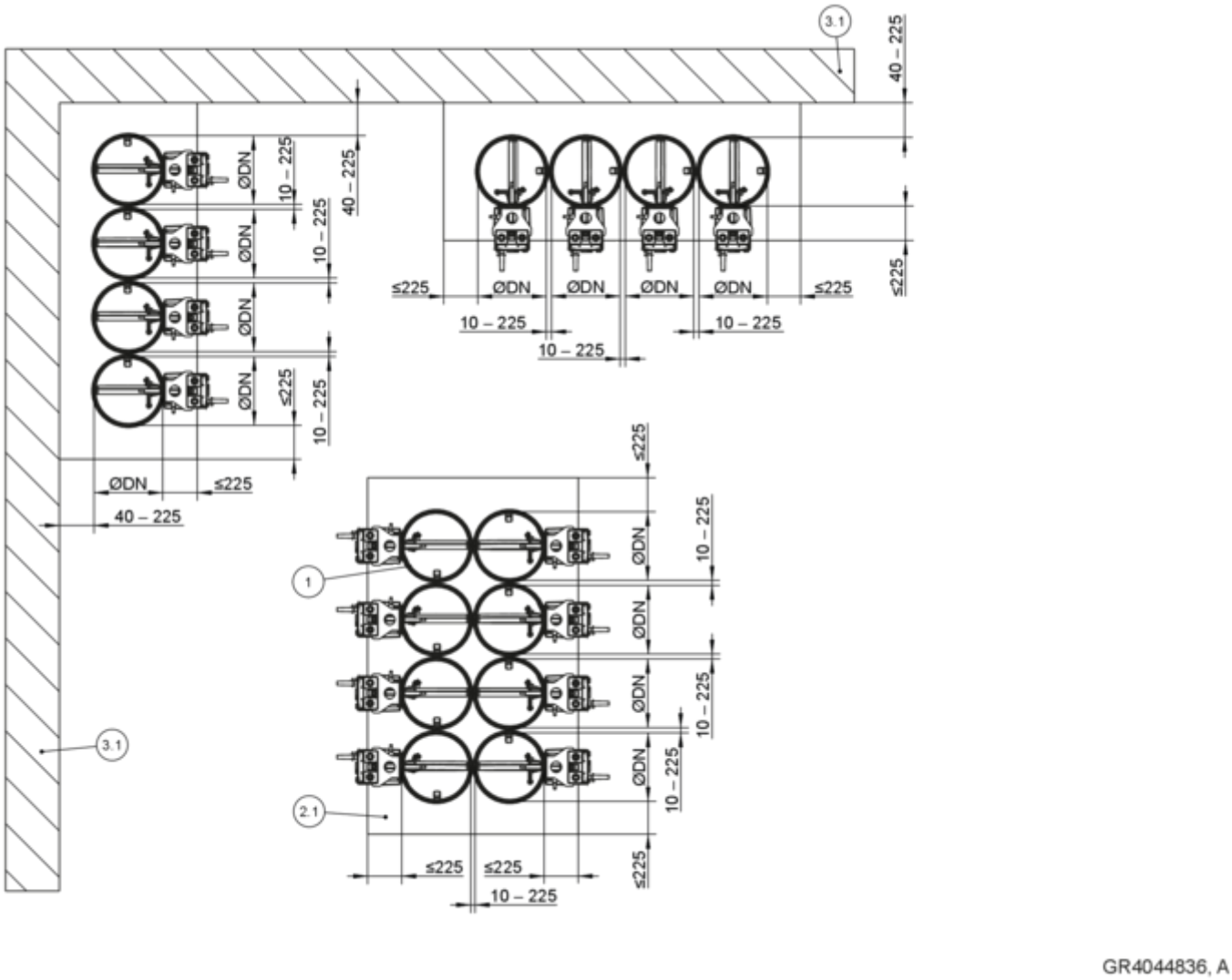
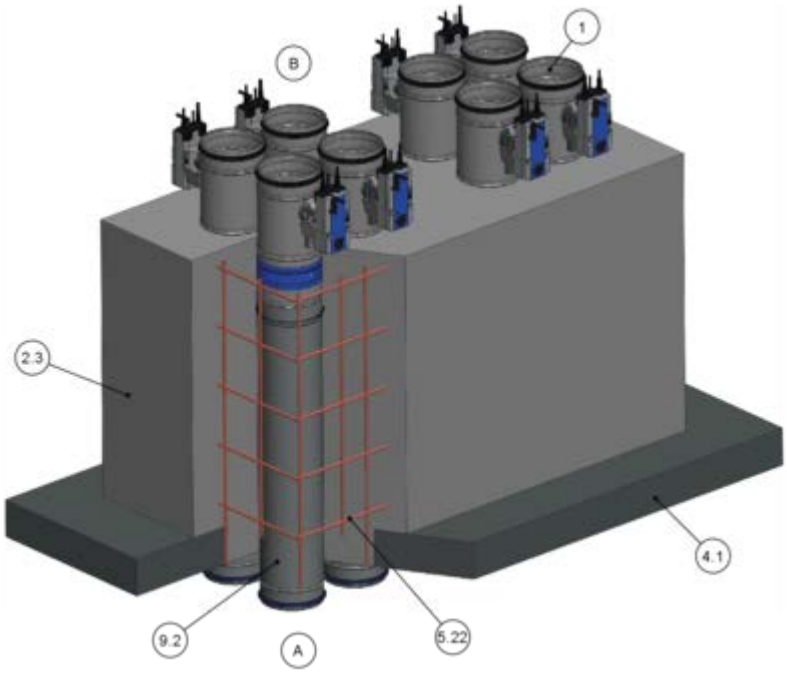
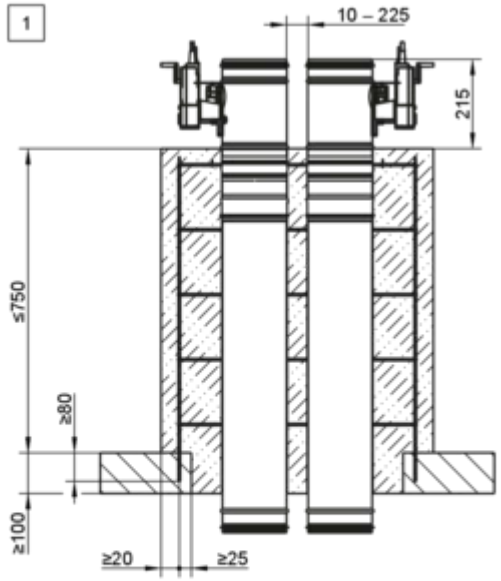
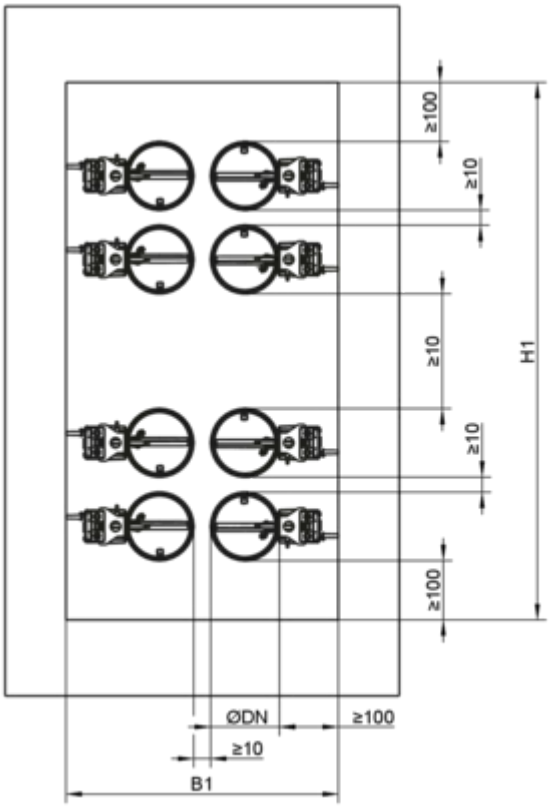


Fig. 162: Mortar-based installation – multiple occupancy of one installation opening

1 FKRS-EU
2.1 Mortar
3.1 Solid wall (load-bearing structural element)







GR3875803, F

Fig. 163: Mortar-based installation with concrete base into a solid ceiling slab, upright, multiple installation

1 FKRS-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 ↯ *215*
9.2 Air duct/extension piece
[1] up to EI 90 S

Additional requirements: mortar-based installation into a solid ceiling slab with concrete base – multiple installation into one installation opening

- Solid ceiling slab, ↳ *on page 44*
- Overall fire damper area ≤ 1.2 m^2
- The number of fire dampers in an installation opening is limited by their size (nominal width) and the overall area of the fire dampers (1.2 m^2) (maximum 10 FKRS-EU in single or double row arrangement)
- Distance to load-bearing structural elements ≥ 40 mm
- Minimum number of fixing points in the ceiling slab ↳ *on page 215*

5.11.6 Mortar-based installation in hollow concrete block ceiling

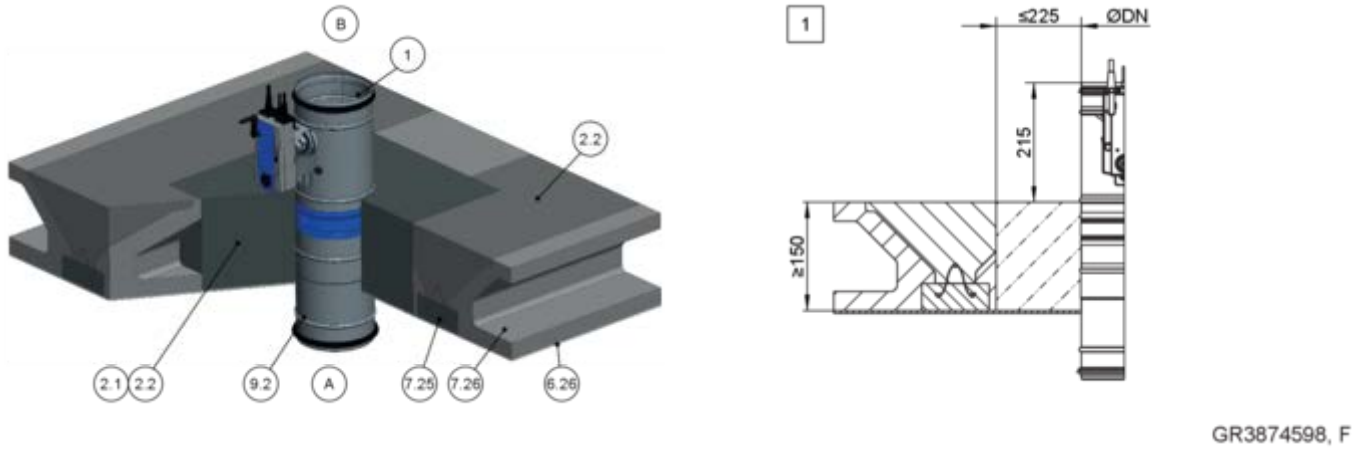


Fig. 164: Mortar-based installation in hollow block ceiling, drawn standing (also applies to suspended arrangement)

1	FKRS-EU
2.1	Mortar
2.2	Concrete
6.26	Cement plaster*
7.25	Reinforced concrete beam*
7.26	Hollow concrete block*
9.2	Air duct/extension piece
*	The illustration is an example; other ceiling constructions may be possible depending on make and local conditions
1	up to EI 90 S

Additional requirements: mortar-based installation into hollow concrete block ceilings

- Hollow concrete block ceiling, ↬ *on page 44*
- ≥ 40 mm distance between the fire damper and load-bearing components
- ≥ 45 mm distance between two fire dampers
- General installation information, ↬ *5.3 'General installation information' on page 31* ff
- General information on mortar-based installation, ↬ *'**Mortar-based installation**' on page 37*
- After creating the installation opening, the adjacent cavities must be partially sealed (to the thickness of the ceiling) by at least 100 mm all round.

5.11.7 Mortar-based installation in hollow core ceiling

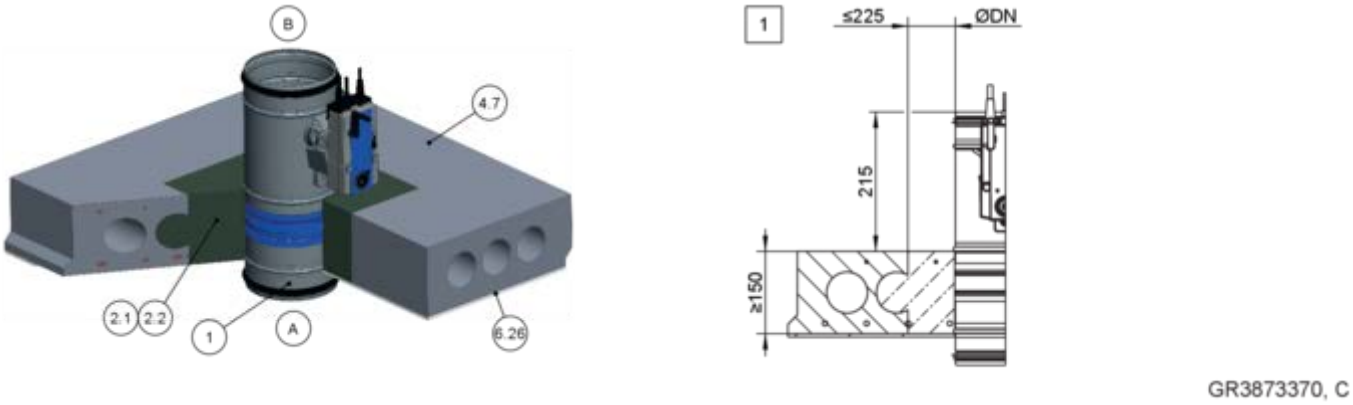


Fig. 165: Mortar-based installation in hollow chamber ceiling, drawn standing (also applies to suspended arrangement)

1 FKRS-EU
2.1 Mortar
2.2 Concrete
4.7 Reinforced hollow core slab*
6.26 Cement plaster*
* The illustration is an example; other ceiling constructions may be possible depending on make and local conditions
1 up to EI 90 S

Additional requirements: mortar-based installation into hollow core slabs

- Hollow core slab, ↬ *on page 44*
- ≥ 40 mm distance between the fire damper and load-bearing components
- ≥ 45 mm distance between two fire dampers
- General installation information, ↬ *5.3 'General installation information' on page 31* ff
- General information on mortar-based installation, ↬ '***Mortar-based installation***' *on page 37*
- After creating the installation opening, the adjacent cavities must be partially sealed (to the thickness of the ceiling) by at least 100 mm all round.

5.11.8 Mortar-based installation in ribbed ceiling

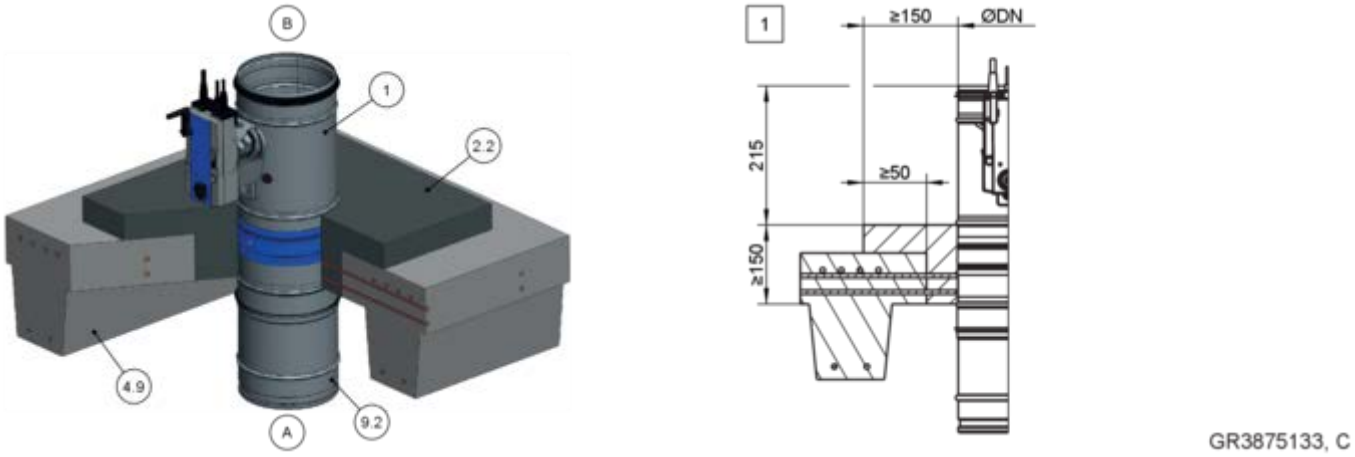


Fig. 166: Mortar-based installation in ribbed ceiling

1 FKRS-EU
2.2 Concrete
4.9 Reinforced ribbed ceiling*
9.2 Air duct/extension piece
* The illustration is an example; other ceiling constructions may be possible depending on make and local conditions
1 up to EI 90 S

Additional requirements: mortar-based installation into ribbed ceilings

- Ribbed ceiling, ↬ *on page 44*
- Concrete bases with H ≤ 150 mm do not require reinforcement
- ≥ 40 mm distance between the fire damper and load-bearing components
- ≥ 45 mm distance between two fire dampers
- General installation information, ↬ *5.3 'General installation information' on page 31* ff

5.11.9 Mortar-based installation in composite ceiling

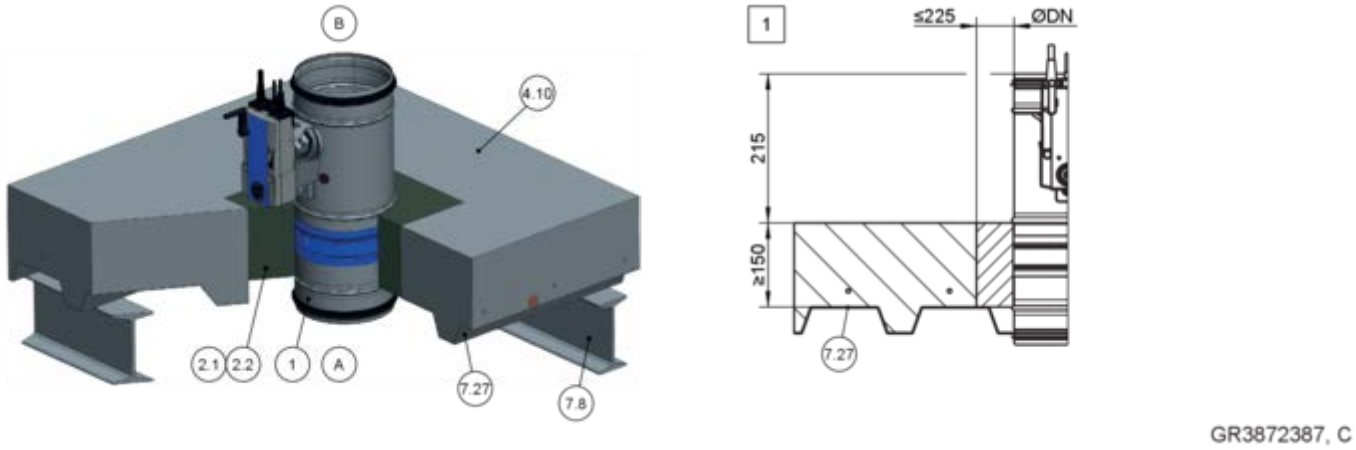


Fig. 167: Mortar-based installation in composite ceiling

1 FKRS-EU
2.1 Mortar
2.2 Concrete
4.10 Reinforced composite ceiling*
7.8 Steel girder
7.27 Troughed sheet
* The illustration is an example; other ceiling constructions may be possible depending on make and local conditions
1 Up to EI 90 S

Additional requirements: mortar-based installation into composite ceilings

- Composite ceiling, *on page 44*
- ≥ 40 mm distance between the fire damper and load-bearing components
- ≥ 45 mm distance between two fire dampers
- General installation information, *5.3 'General installation information' on page 31* ff
- General information on mortar-based installation, '***Mortar-based installation***' *on page 37*

5.11.10 Mortar-based installation in combination with wooden beam ceiling

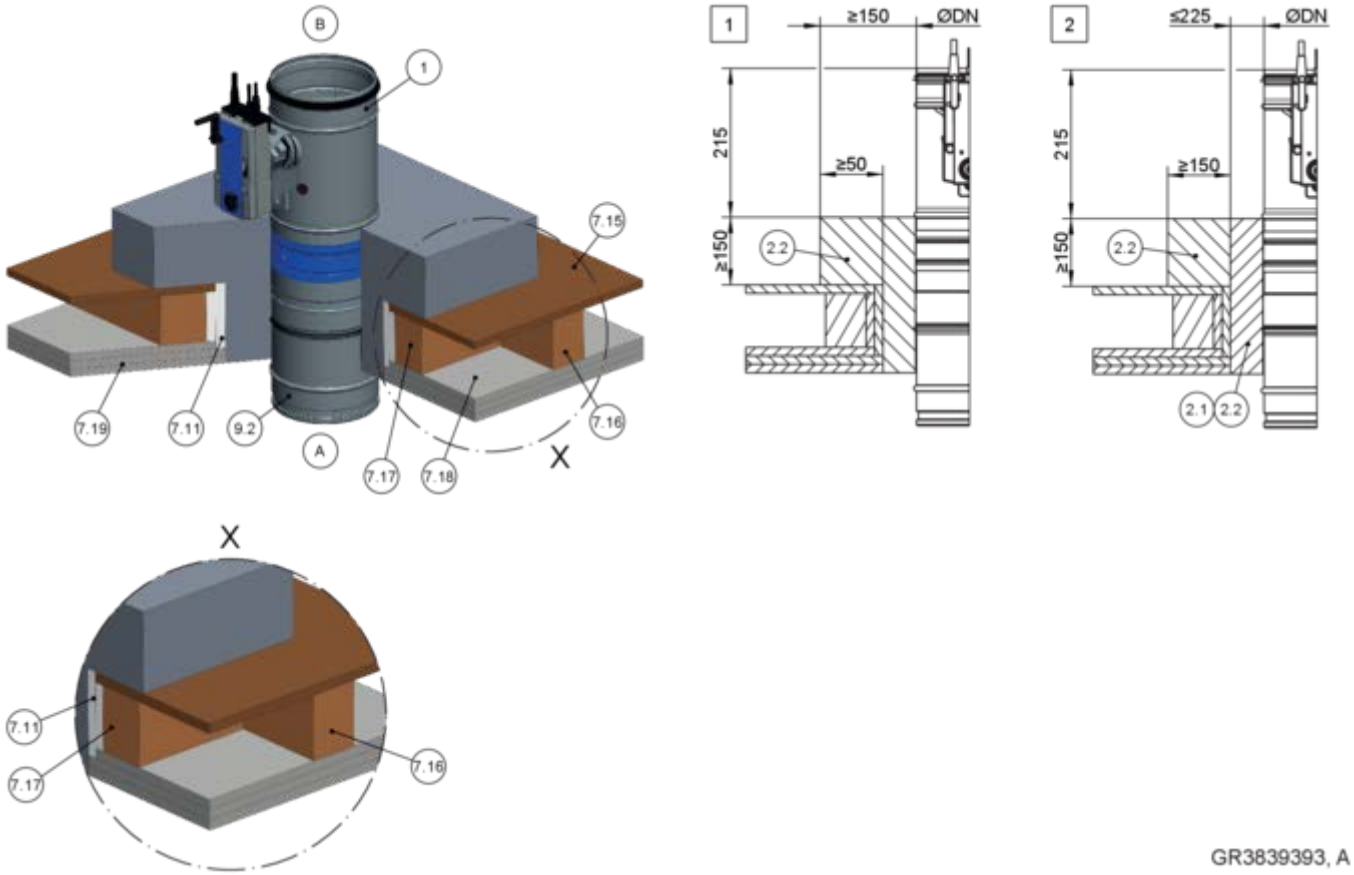


Fig. 168: Mortar-based installation in solid ceiling slab in combination with wooden beam/gluelam ceiling

1 FKRS-EU
2.1 Mortar
2.2 Reinforced concrete
7.11 Reveal, same construction as 7.19
7.15 Wooden floorboard/floor tiles (different ceiling construction may be possible)
7.16 Wooden beam/gluelam (reduce distances between wooden beams to the size of the installation opening)
7.17 Framed openings, wooden beams/glued laminated timber
7.18 Ceiling formwork
7.19 Fire-resistant cladding (depending on ceiling)
9.2 Air duct/extension piece
[1] [2] up to EI 90 S

Additional requirements: mortar-based installation into solid ceiling slabs in conjunction with wooden beam or gluelam ceilings

- Wooden beam ceiling, *on page 44*
- ≥ 40 mm distance between the fire damper and load-bearing components
- ≥ 45 mm distance between two fire dampers

5.11.11 Mortar-based installation in combination with solid wood ceiling

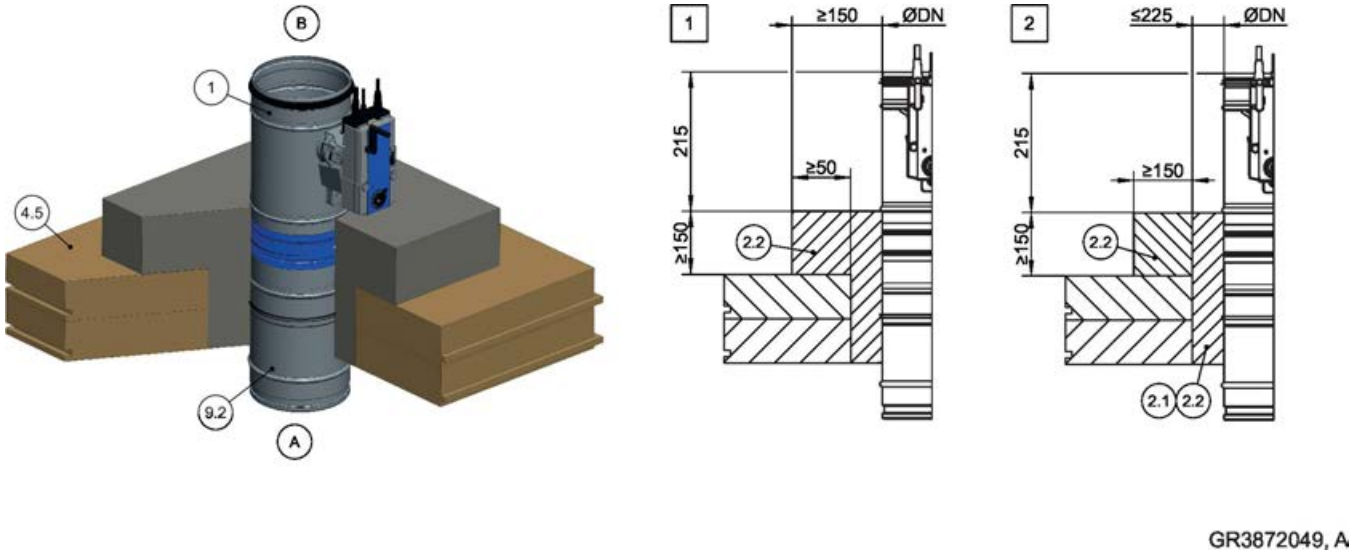


Fig. 169: Mortar-based installation in solid ceiling slab in combination with solid wood ceiling

1	FKRS-EU	4.5	Solid wood ceiling
2.1	Mortar	9.2	Extension piece/duct
2.2	Reinforced concrete	1 2	Up to EI 90 S

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

- Solid wood ceiling, *on page 44*
- ≥ 40 mm distance between the fire damper and load-bearing components
- ≥ 45 mm distance between two fire dampers

5.11.12 Mortar-based installation in combination with a lightweight ceiling (Cadolto system)

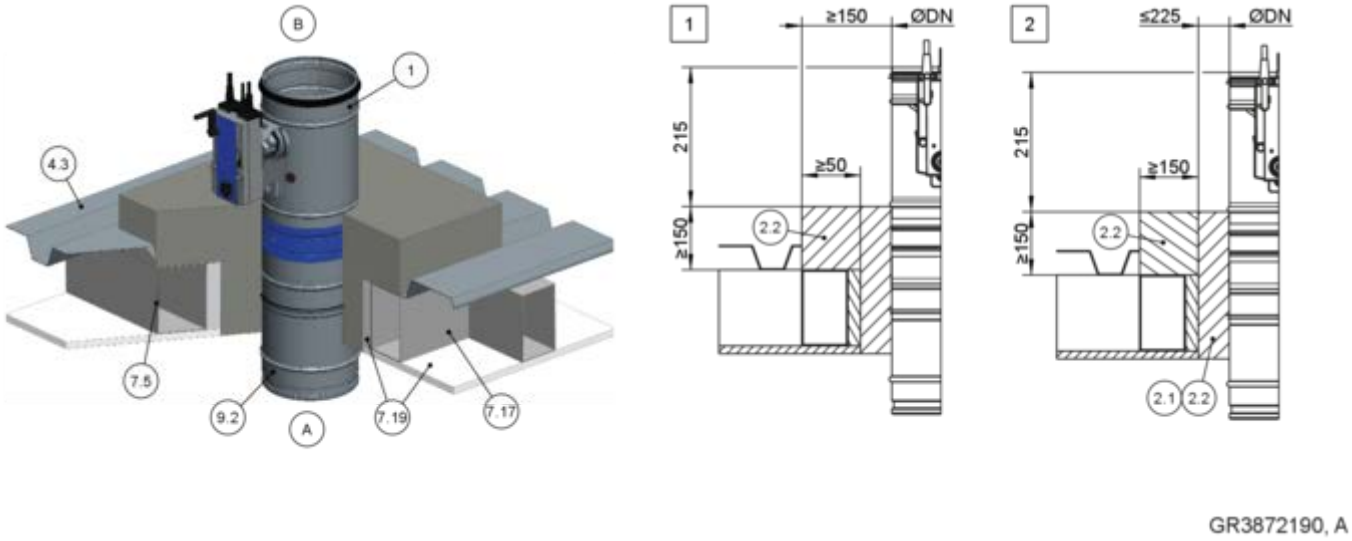


Fig. 170: Mortar-based installation into a solid ceiling slab in conjunction with a lightweight ceiling (Cadolto system)

1 FKRS-EU
2.1 Mortar
2.2 Reinforced concrete
4.3 Modular ceiling (Cadolto system), installation according to manufacturer's instructions and general appraisal certificate
7.5 Steel support structure
7.17 Trimmers, steel support structure
7.19 Fire-resistant cladding
9.2 Air duct/extension piece
[1] [2] Up to EI 120 S

Supplementary requirements: mortar-based installation in solid ceiling slabs in combination with lightweight ceiling (Cadolto system)

- Modular ceiling, (Cadolto system), *on page 45*
- ≥ 40 mm distance between the fire damper and load-bearing components
- ≥ 45 mm distance between two fire dampers

5.11.13 Mortar-based installation in combination with lightweight ceiling (ADK Modulraum system)

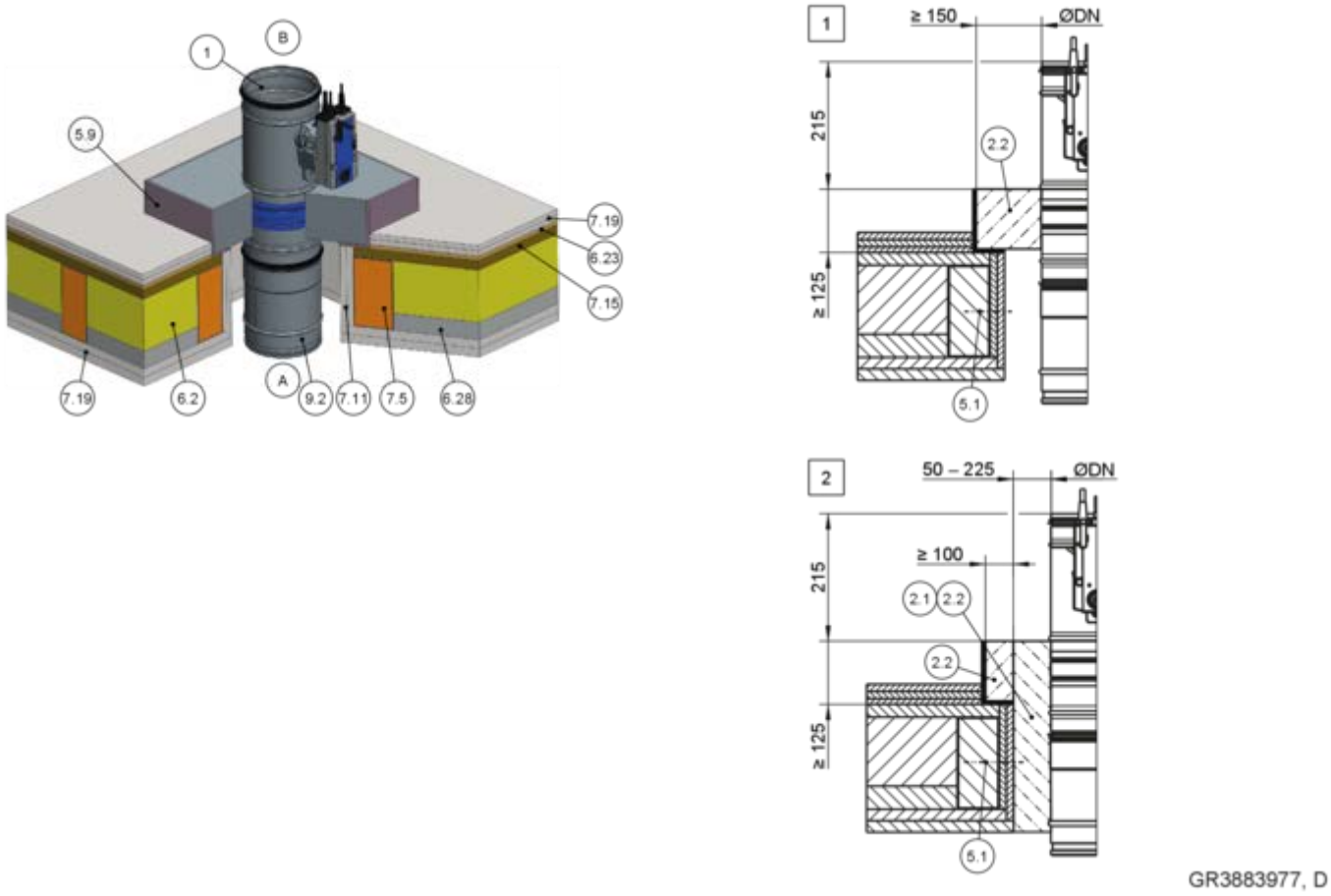


Fig. 171: Mortar-based installation in solid ceiling slab in combination with lightweight ceiling (ADK Modulraum system)

1	FKRS-EU	6.28	Counter position
2.1	Mortar	7.5	Steel section with mineral wool filling
2.2	Concrete (reinforcement according to structural requirements)	7.11	Reveal, double layer, fire-resistant
5.1	Dry wall screw, min. 10 mm into steel section	7.15	Wood-based panel/wood plank
5.9	Aluminium bracket ≥ 130 × 80 × 6 mm	7.19	Fire-resistant cladding
6.2	Mineral wool, A1, ≥ 1000 °C, 140 mm thick	9.2	Air duct/extension piece
6.23	Footfall sound insulation	1 2	Up to EI 90 S

Note on lightweight ceiling: Ceiling construction according to ADK module room specifications.

Additional requirements: mortar-based installation into solid ceiling slabs in conjunction with light-weight ceilings (ADK Modulraum system)

- Modular ceiling (ADK Modulraum system), *on page 45*
- ≥ 40 mm distance between the fire damper and load-bearing components
- ≥ 45 mm distance between two fire dampers

1. Make a square installation opening (connection of the steel sections in the ceiling's own type of construction) with reveals (executed as 7.19).
2. Leave out impact sound insulation (6.23) and fire protection cladding (7.19) and screw angle bracket to the steel section.
3. Set fire damper in concrete [1] or pour concrete base [2] and then mortar the gap between fire damper and concrete base. Provide reinforcement according to structural requirements.

5.11.14 Dry mortarless installation in solid ceiling slab with installation block ER

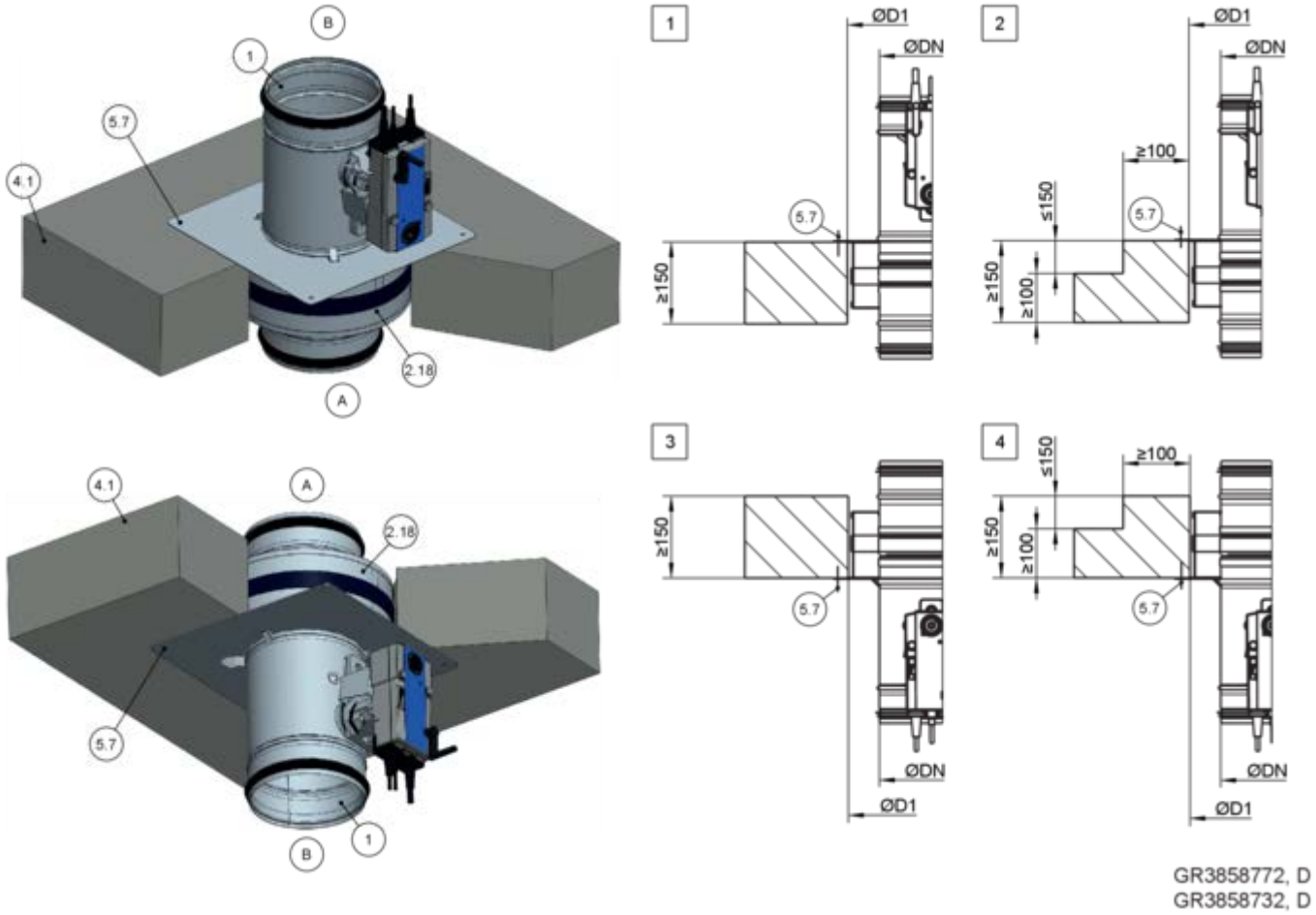


Fig. 172: Dry mortarless installation with installation block ER in solid ceiling slab, upright and suspended

1	FKRS-EU	5.7	Wallplug with fire protection suitability certificate, alternatively push through installation
2.18	Installation block ER with cover plate		
4.1	Solid ceiling slab	1 – 4	Up to EI 90 S

Additional requirements: dry mortarless installation with installation block ER in solid ceiling slabs

- Solid ceiling slab, ↳ *on page 44*
- Installation block ER, ↳ *5.4.2 'Installation block ER' on page 47*
- ≥ 75 mm distance between installation block and load-bearing structural elements
- ≥ 200 mm distance between two installation blocks
- General installation information, ↳ *5.3 'General installation information' on page 31* ff
- General information on installation with installation block ER, ↳ *on page 38*

1. ▸ Create an appropriate installation opening by means of a cut hole ∅D1, ↳ *5.4.2 'Installation block ER' on page 47*
2. ▸ Position the fire damper with the installation block in the centre of the installation opening and push it in up to the cover plate.
3. ▸ Fix the cover plate with four threaded rods (push through installation) or with at least four M6 screws. For solid walls and solid ceiling slabs, suitable steel wall plugs with building inspectorate approval that have been adapted to the respective building material must be used.

5.11.15 Dry mortarless installation onto a solid ceiling slab with installation kit WA2

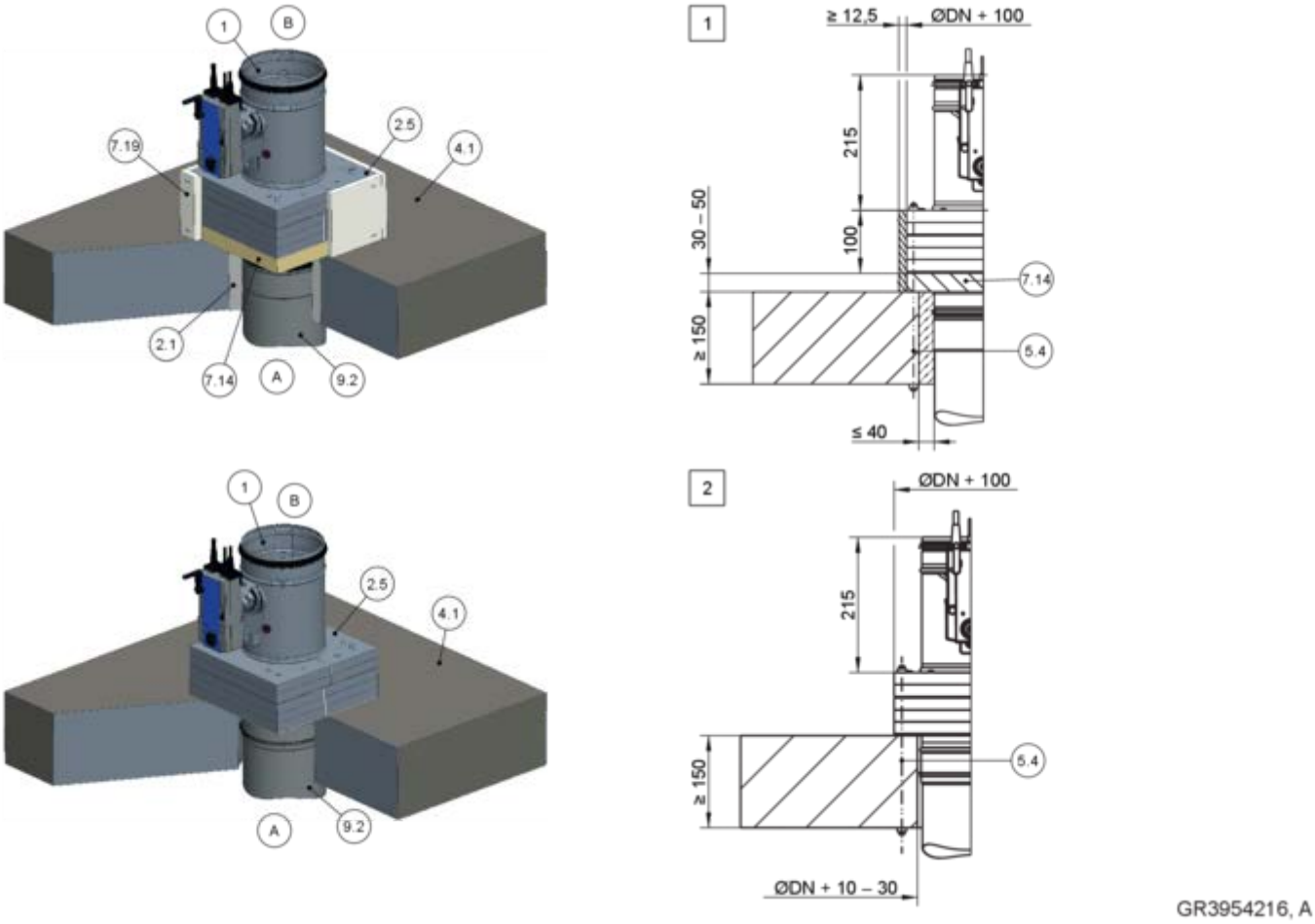


Fig. 173: Dry mortarless installation into a solid ceiling slab with installation kit WA2, illustration shows upright installation (applies also to suspended installation)

1 FKRS-EU
2.1 Mortar
2.5 Installation kit WA2
4.1 Solid ceiling slab
5.4 Threaded rod as push-through installation with washers and nuts or wall plug with fire safety suitability certificate
7.14 Reinforcing board, calcium silicate, thickness = 30 – 50 mm or mineral wool, ≥ 1000 °C, ≥ 140 kg/m³, thickness = 50 mm
7.19 Fire-resistant cladding (fire-rated plasterboard panel, thickness ≥ 12.5 mm)
9.2 Extension piece/duct with [1], shortened, flush with the ceiling
[1] Up to EI 90 S
[2] Up to EI 60 S

Additional requirements: Dry mortarless installation with installation kit WA2 on solid walls

- Solid ceiling slab, *on page 44*
- Installation kit WA2, *5.4.4 'Installation kit WA2' on page 50*
- ≥ 75 mm distance between the fire damper and load-bearing components
- ≥ 200 mm distance between two fire dampers
- General installation information, *5.3 'General installation information' on page 31* ff
- General information on installation with installation kit WA2, *on page 38*

1. ▸ 1: Shorten the mortared-in air duct flush with the ceiling, create a reinforcing board (7.14) and compensate for wall unevenness.
   2: Make a cut hole with nominal width + 10 – 30 mm and compensate wall unevenness.
2. ▸ The fire damper with installation kit WA2 is fixed to the ceiling with four threaded rods (M8 or M10) by means of push-through mounting. Fixing by means of four wall plugs (M8) with fire safety suitability certificate, matched to the respective building material, is permissible, provided that all prevailing conditions of the wall plug proof are observed.
   Note: Tighten the nuts hand-tight to approx. 5 Nm for fastening.

   1: Fire protection cladding (7.19) with the installation kit WA2 at a distance of ≤ 100 mm.

5.11.16 Dry mortarless installation remote from solid ceiling slabs, with installation kit WE2

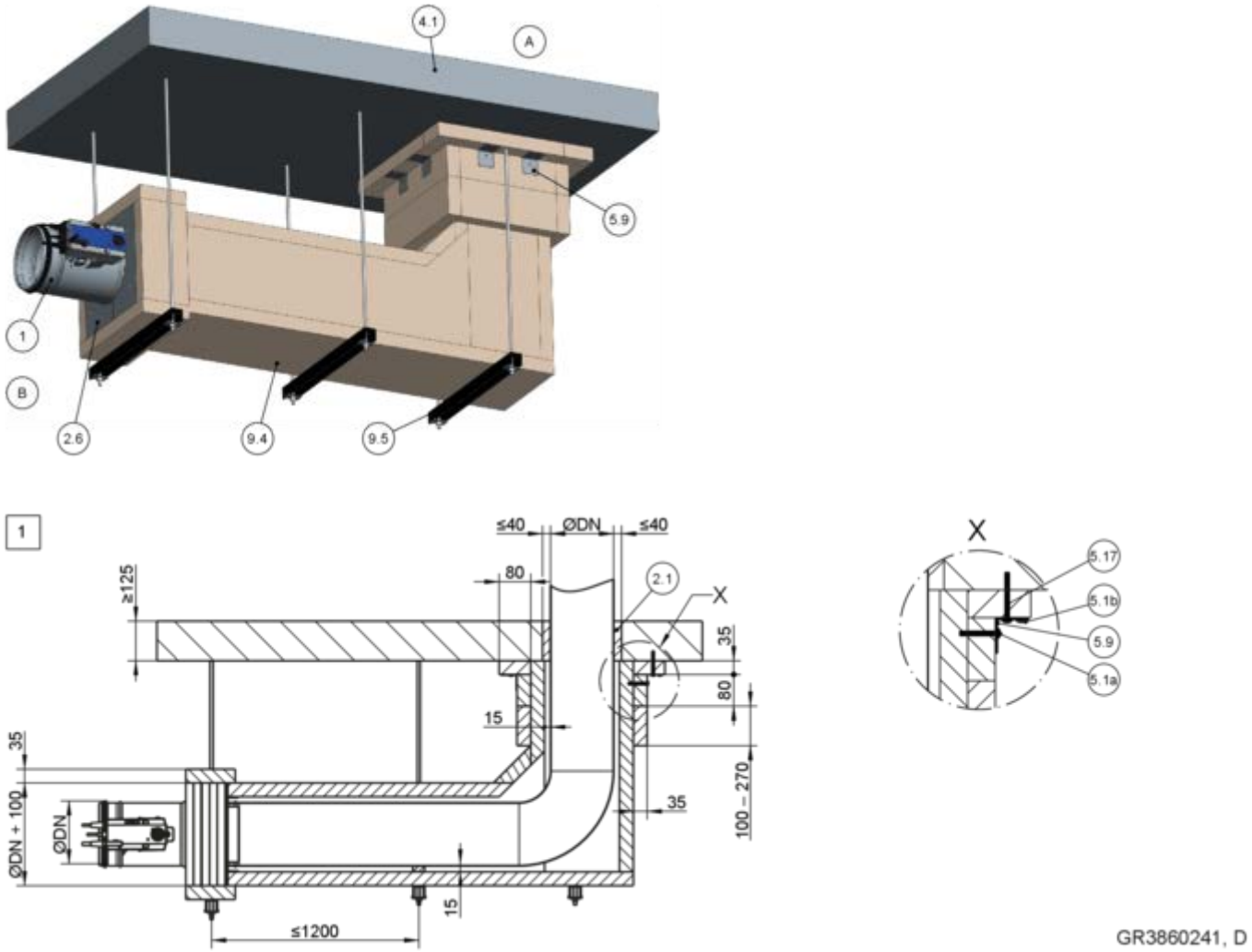


Fig. 174: Dry mortarless installation remote from solid ceiling slabs, with installation kit WE2

1 FKRS-EU
2.1 Mortar
2.6 Installation kit WE2
4.1 Solid ceiling slab
5.1a Dry wall screw, 4 × 50 mm
5.1b Dry wall screw, 4 × 30 mm
5.9 Angle steel circumferential or steel angle 40 × 40 × 1.5 mm (distance ≤ 150 mm)
5.17 Hilti ® HUS-6 anchor ∅ 6 mm × 80 mm
As an alternative, equivalent fire-rated anchor bolts (supplied by the customer) with suitability certificate that are suitable for the wall or ceiling can also be used; push-through installation is also possible
9.4 Sheet steel duct with fire-rated cladding
The cladding of the air duct and the suspensions are carried out in accordance with these instructions, the additional assembly instructions for the installation kit WE2 and the specifications of the panel manufacturer
9.5 Suspension system (by others) consisting of:
a Threaded rod M10
b Hilti ® mounting rail MQ 41 × 3 mm or equivalent
c Hilti ® drilled plate MQZ L13 or equivalent
d Hexagon nut M10 with washer
[1] up to EI 90 S

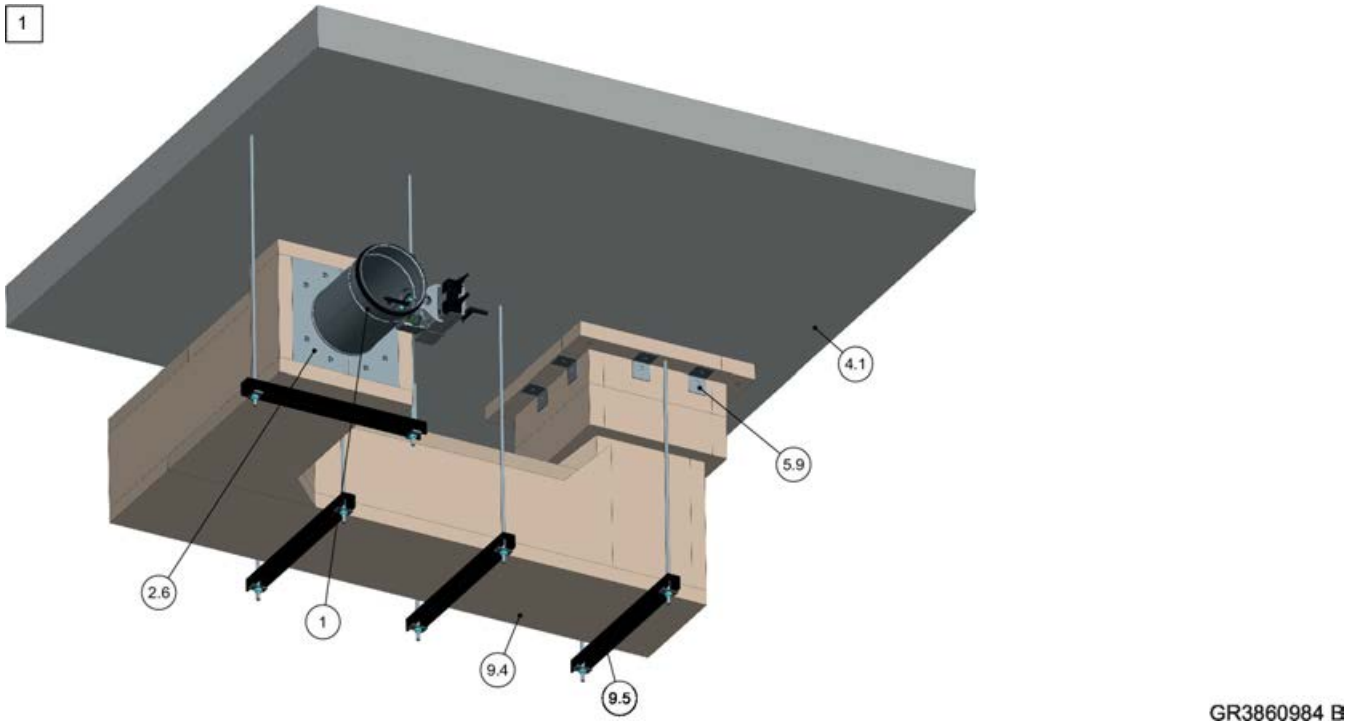


Fig. 175: Dry mortarless installation remote from solid ceiling slabs, with installation kit WE2

1 FKRS-EU
2.6 Installation kit WE2
4.1 Solid ceiling slab
5.9 Angle steel circumferential or steel angle 40 × 40 × 1.5 mm (distance ≤ 150 mm)
9.4 Sheet steel duct with fire-rated cladding
The cladding of the air duct and the suspensions are carried out in accordance with these instructions, the additional assembly instructions for the installation kit WE2 and the specifications of the panel manufacturer
9.5 Suspension system (by others) consisting of:

a Threaded rod M10
b Hilti ® mounting rail MQ 41 × 3 mm or equivalent
c Hilti ® drilled plate MQZ L13 or equivalent
d Hexagon nut M10 with washer
[1] up to EI 90 S

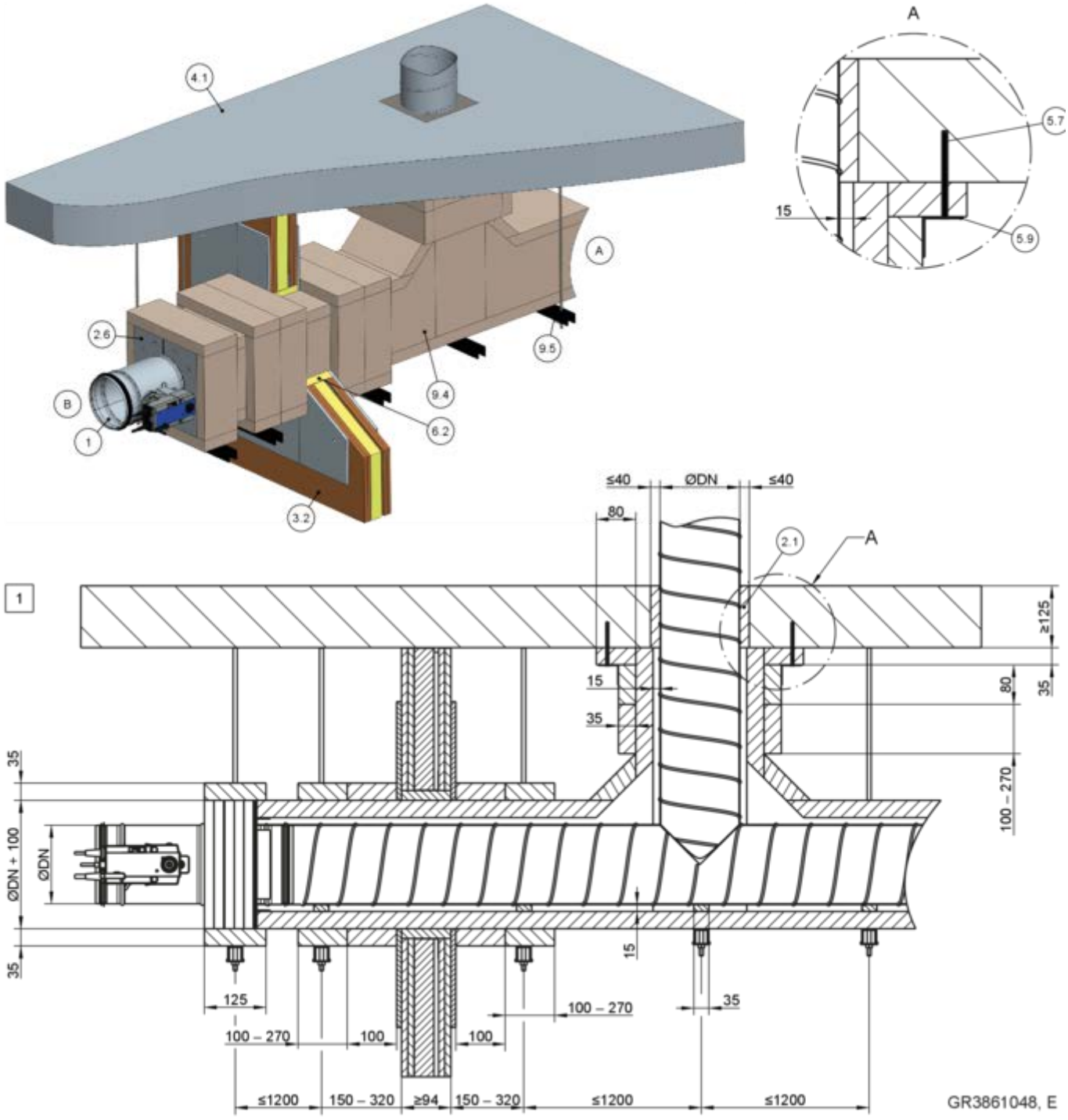


Fig. 176: Dry mortarless installation remote from solid ceiling slabs, with installation kit WE2

1 FKRS-EU
2.1 Mortar
2.6 Installation kit WE2
3.2 Lightweight partition wall with metal support structure or steel support structure, cladding on both sides or solid wall (if present)
4.1 Solid ceiling slab
5.9 Angle steel circumferential or steel angle 40 × 40 × 1.5 mm (distance ≤ 150 mm)
5.17 Hilti ® HUS-6 anchor ∅ 6 mm × 80 mm
9.4 Sheet steel duct with fire-rated cladding
The cladding of the air duct and the suspensions are carried out in accordance with these instructions, the additional assembly instructions for the installation kit WE2 and the specifications of the panel manufacturer
9.5 Suspension system (by others) consisting of:
a Threaded rod M10
b Hilti ® mounting rail MQ 41 × 3 mm or equivalent
c Hilti ® drilled plate MQZ L13 or equivalent
d Hexagon nut M10 with washer
[1] up to EI 90 S

As an alternative, equivalent fire-rated anchor bolts (supplied by the customer) with suitability certificate that are suitable for the wall or ceiling can also be used; push-through installation is also possible

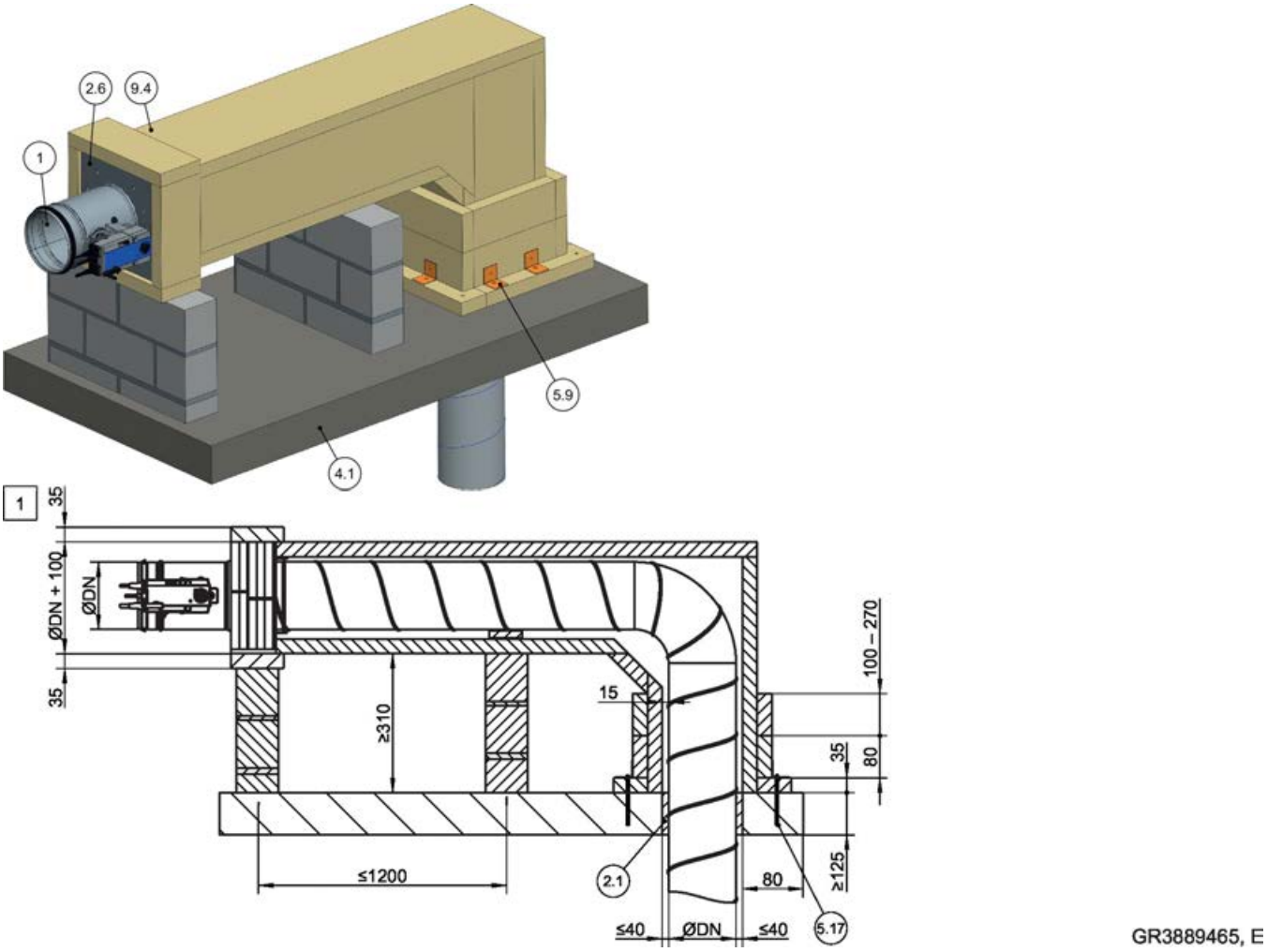


Fig. 177: Dry mortarless installation remote from solid ceiling slabs, with installation kit WE2

1 FKRS-EU
2.1 Mortar
2.6 Installation kit WE2
4.1 Solid ceiling slab
5.9 Angle steel circumferential or steel angle 40 × 40 × 1.5 mm (distance ≤ 150 mm)
5.17 Hilti ® HUS-6 anchor ∅ 6 mm × 80 mm
As an alternative, equivalent fire-rated anchor bolts (supplied by the customer) with suitability certificate that are suitable for the wall or ceiling can also be used; push-through installation is also possible
9.4 Sheet steel duct with fire-rated cladding
The cladding of the air duct and the suspensions are carried out in accordance with these instructions, the additional assembly instructions for the installation kit WE2 and the specifications of the panel manufacturer
[1] up to EI 90 S

Additional requirements: dry mortarless installation remote from solid ceiling slabs, with installation kit WE2

- Solid ceiling slabs without open spaces, made of concrete or aerated concrete, bulk density ≥ 450 kg/m³
- Installation kit WE2, *5.4.5 'Installation kit WE2' on page 52*
- ≥ 130 mm distance between the fire damper and adjacent structural elements
- Distance between two fire dampers ≥ 260 mm
- General installation information, *5.3 'General installation information' on page 31* ff
- General information on installation with installation kit WE2, *on page 38*

Note: For more installation details and for components to be provided by the customer, see the additional WE2 installation manual.

5.11.17 Dry mortarless installation in solid ceiling slab with a FireShield ®

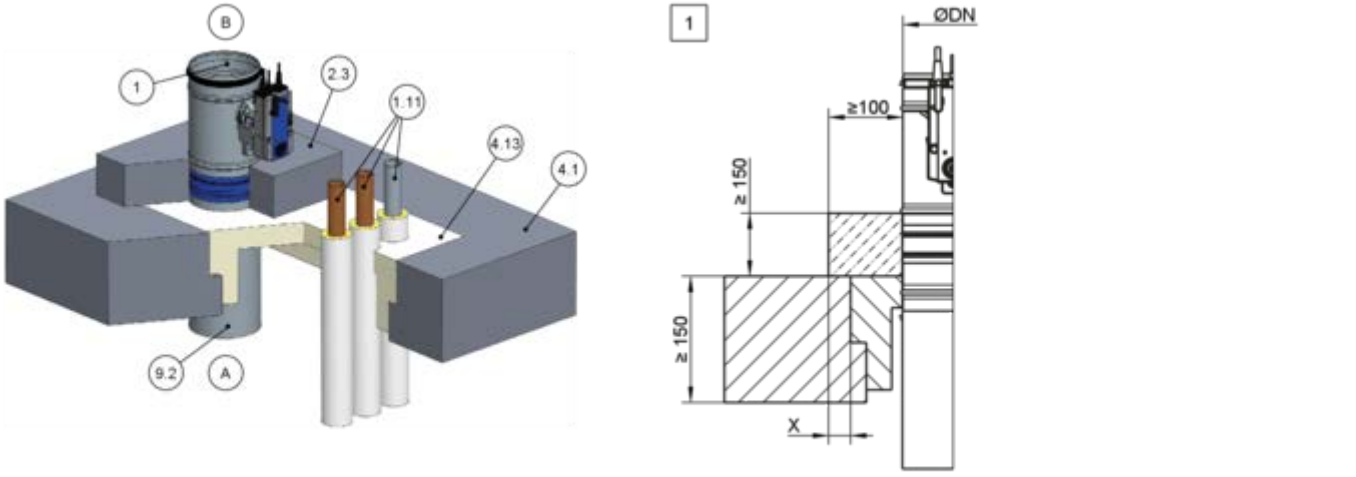


Fig. 178: Dry mortarless installation in solid ceiling slab with a FireShield ®

1	FKRS-EU
2.3	Concrete base with reinforcement
4.1	Solid ceiling slab
4.13	FireShield ®
9.2	Air duct/extension piece
11.1	Pipe penetrations or other penetrations according to local conditions
X	Overhang X at least on two sides
1	up to EI 90 S

Additional requirements: dry mortarless installation in solid ceiling slabs with a Fireshield ®

- FireShield ®, *on page 44*
- Solid ceiling slab, *on page 44*
- ≥ 100 mm distance between the fire damper and adjacent structural elements
- Distance between two fire dampers ≥ 200 mm (Installation of each fire damper in separate opening)
- Other penetrations outside the concrete base
- General installation information, *5.3 'General installation information' on page 31* ff

1. ▸ Create an installation opening with nominal width + 10 – 40 mm.
2. ▸ Centred installation of the fire damper in the concrete base with reinforcement.

For installation in Germany, please note:
Use in Fireshield with a combined penetration seal requires individual type-approval.

5.11.18 Dry mortarless installation with fire batt

Dry mortarless installation into a solid ceiling slab, with a fire batt, upright

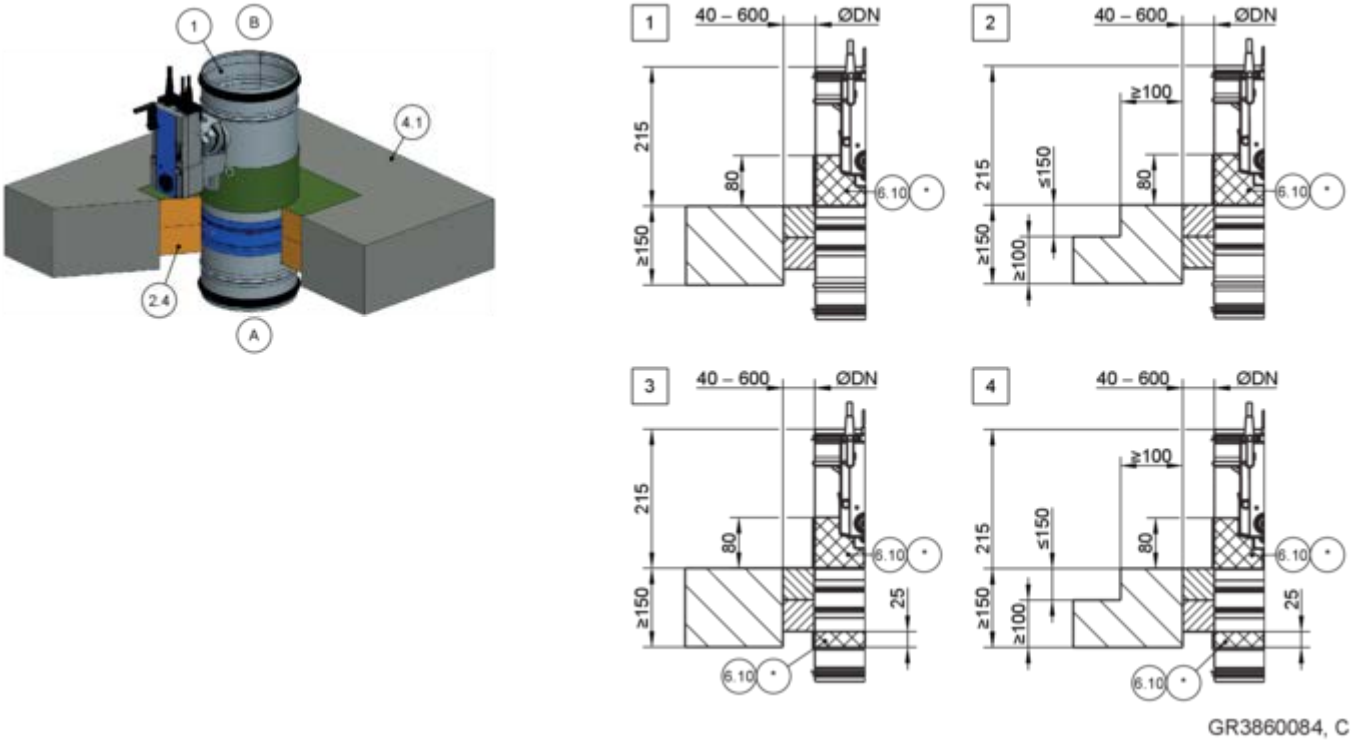


Fig. 179: Dry mortarless installation into a solid ceiling slab, with a fire batt, upright

1	FKRS-EU
2.4	Coated board system with firestop coating
4.1	Solid ceiling slab (thickness increased at 2 and 4)
6.10	Firestop coating around the perimeter, d = at least 2.5 mm
6.19	Mineral wool > 1000 °C, > 80 kg/m³, thickness = 20 mm, panel material around the perimeter, leave out the actuator and release mechanism; inspection openings must remain accessible
6.20	Pipe collar (can be ordered separately)
6.24	Elastomeric foam (flame-resistant, non-dripping) The following applies in Germany: For notes on the use of elastomeric foams ↳ *'Additional provision for use in Germany:' on page 8* .
*	6.19, 6.20 or 6.24 as an alternative
1 – 4	See table ↳ *238*

Solid ceiling slab				
DN [mm]	Fire resistance rating to	Coating		Detail
		Operating side B	Installation side A	
100 – 315	EI 90 S	x	–	1, 2
100 – 315	EI 120 S	x	x	3, 4

Dry mortarless installation into a solid ceiling slab, with a fire batt, suspended

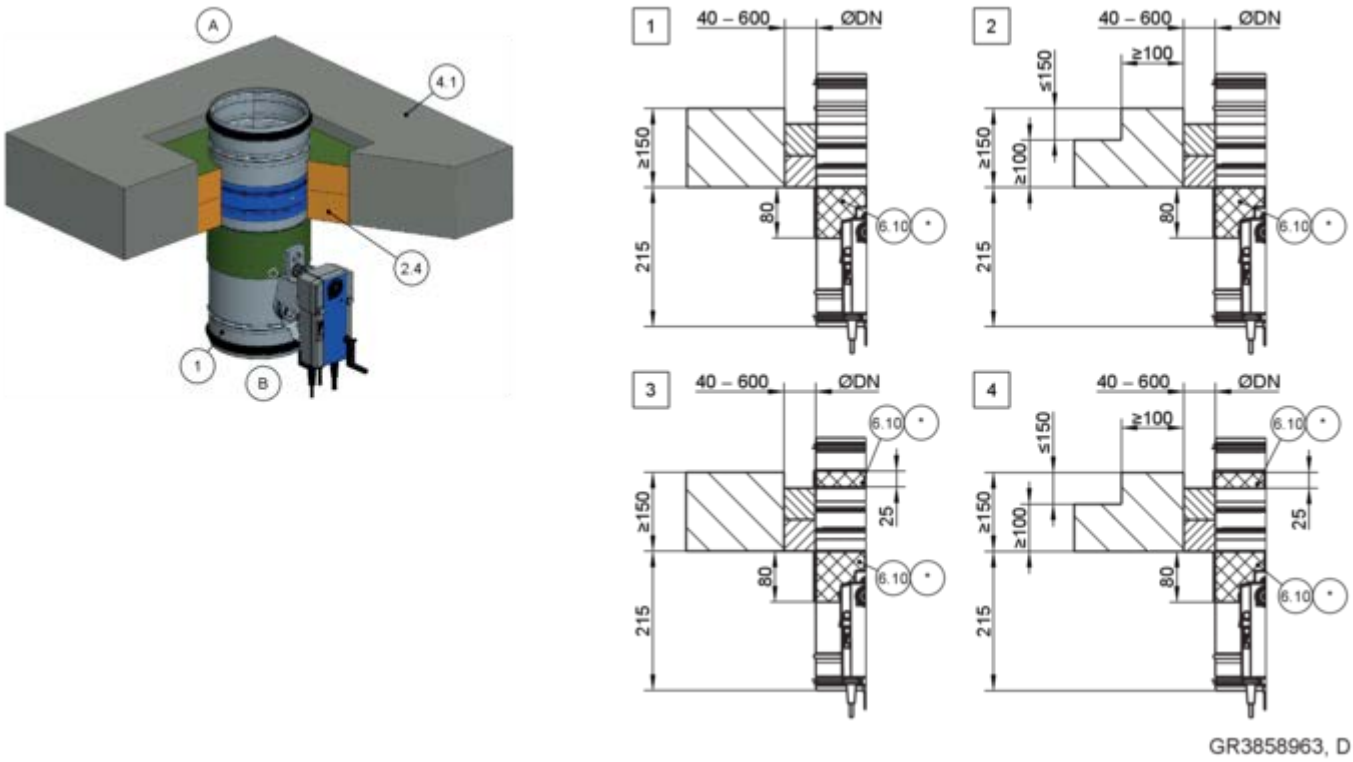


Fig. 180: Dry mortarless installation into a solid ceiling slab, with a fire batt, suspended

1 FKRS-EU
2.4 Coated board system with firestop coating
4.1 Solid ceiling slab (thickness increased at 2 and 4)
6.10 Firestop coating around the perimeter, d = at least 2.5 mm
6.19 Mineral wool > 1000 °C, > 80 kg/m³, thickness = 20 mm, panel material around the perimeter, leave out the actuator and release mechanism; inspection openings must remain accessible
6.20 Pipe collar (can be ordered separately)
6.24 Elastomeric foam (flame-resistant, non-dripping)
The following applies in Germany: For notes on the use of elastomeric foams *'Additional provision for use in Germany:' on page 8*.
* 6.19, 6.20 or 6.24 as an alternative
1 – 4 See table *238*

Solid ceiling slab				
DN [mm]	Fire resistance rating to	Coating		Detail
		Operating side B	Installation side A	
100 – 315	EI 90 S	x	–	1, 2
100 – 315	EI 120 S	x	x	3, 4

Additional requirements: dry mortarless installation into solid ceiling slabs, with a fire batt

- Solid ceiling slab,
- ≥ 40 mm distance between the fire damper and load-bearing components
- Distance between two fire dampers ≥ 200 mm (Installation of each fire damper in separate opening)
- Fire batt systems, installation details, distances/dimensions, *on page 38*
- Suspension and fixing, *Chapter 5.15 'Fixing the fire damper' on page 255*
- General installation information, *5.3 'General installation information' on page 31* ff
- General information on installation with fire batt, *on page 38*

5.12 Solid wood ceilings

5.12.1 Mortar-based installation into a solid wood ceiling, suspended or upright

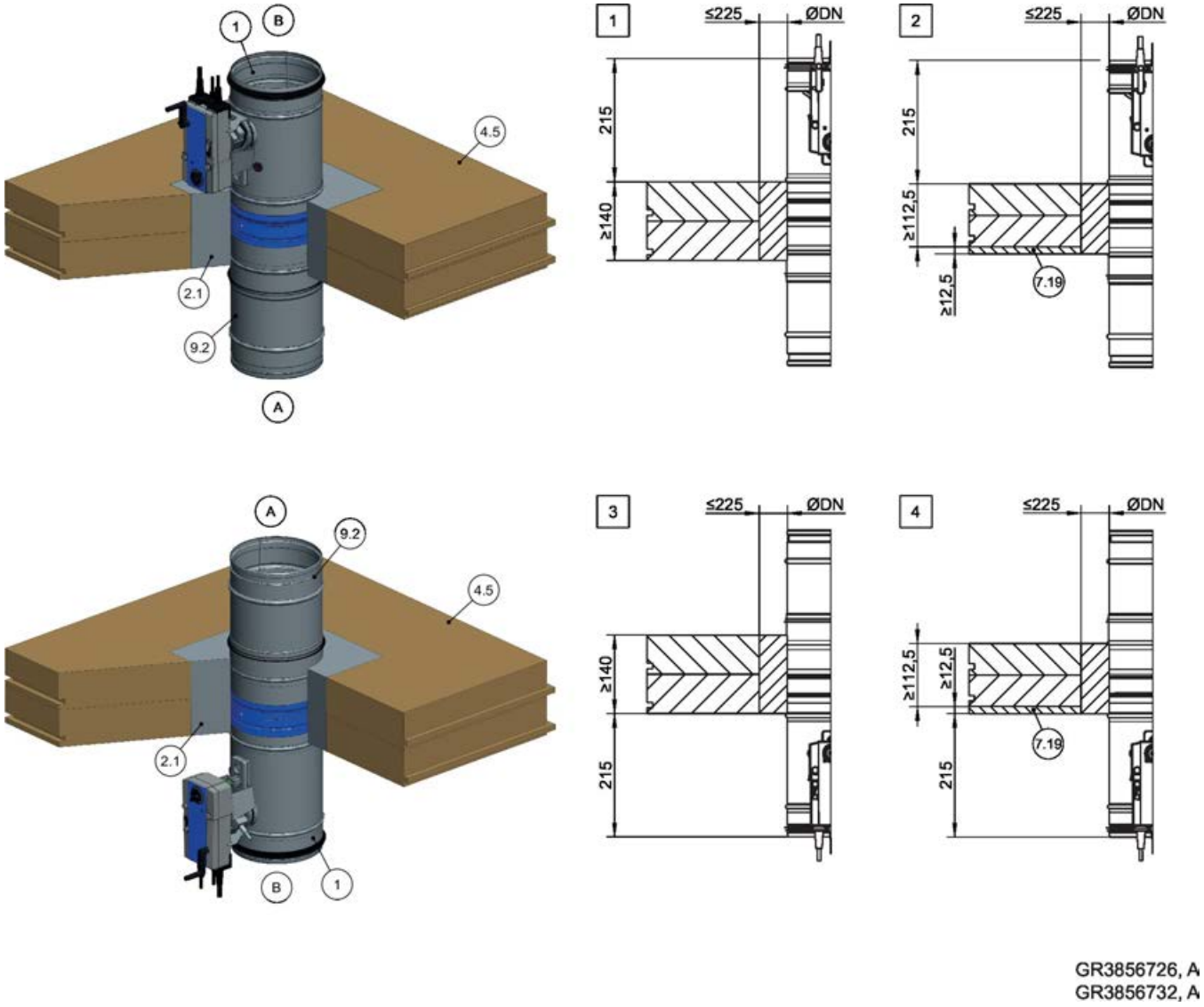


Fig. 181: Mortar-based installation into a solid wood ceiling, suspended or upright

1	FKRS-EU	7.19	Fire-resistant cladding
2.1	Mortar	9.2	Extension piece/duct
4.5	Solid wood ceiling	1 – 4	Up to EI 90 S

Additional requirements: mortar-based installation into solid wood ceilings

- Solid wood ceiling, ↳ *on page 44*
- ≥ 40 mm distance between the fire damper and load-bearing components
- ≥ 200 mm distance between two fire dampers in separate installation openings
- General installation information, ↳ *5.3 'General installation information' on page 31* ff
- General information on mortar-based installation, ↳ *'**Mortar-based installation**' on page 37*

5.12.2 Dry mortarless installation with installation kit TQ2 into solid wood ceiling, upright and suspended

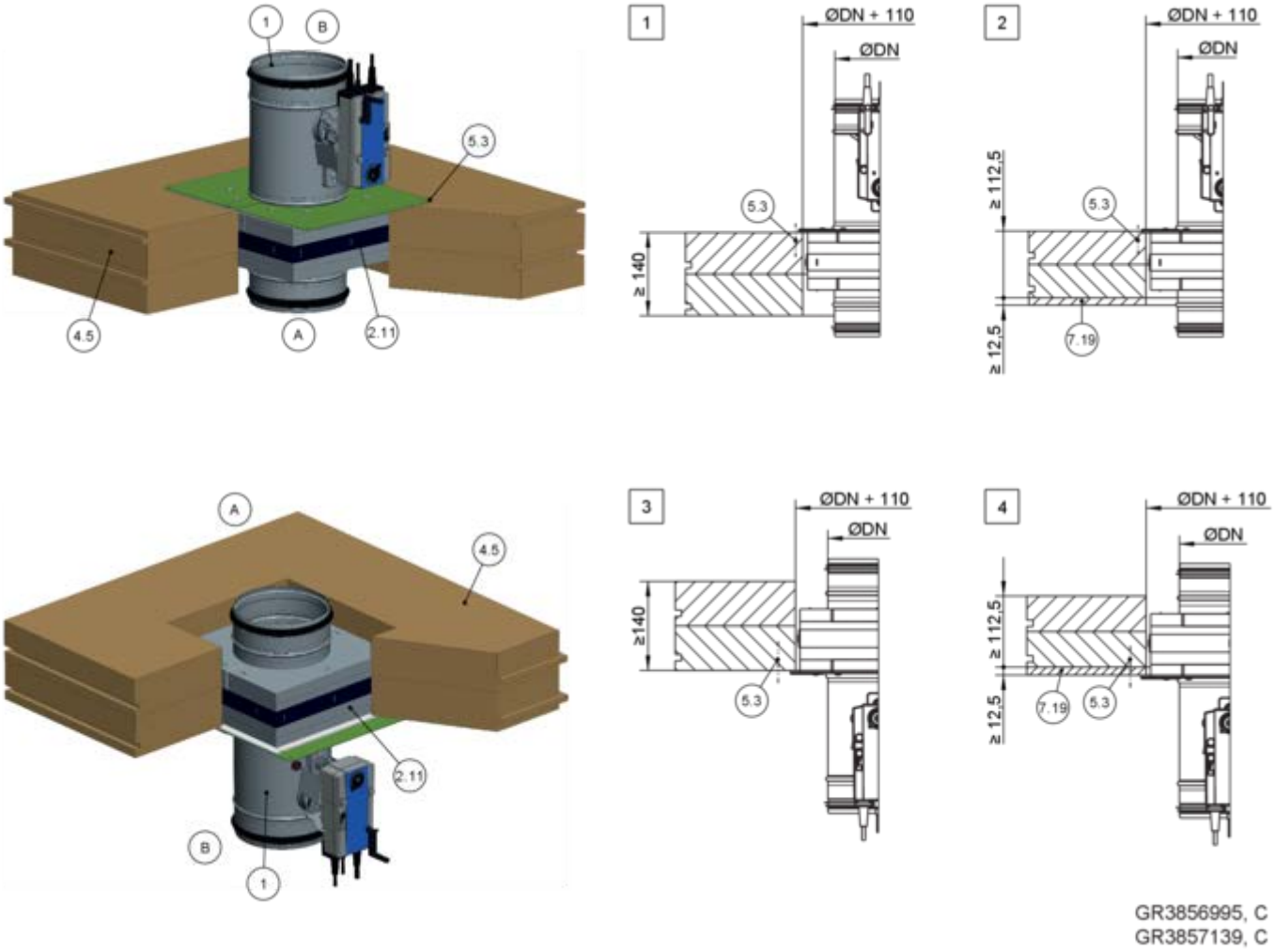


Fig. 182: Dry mortarless installation with installation kit TQ2 into solid wood ceiling, upright and suspended

1	FKRS-EU	5.3	Wood screw min. 5 × 70 mm
2.11	Installation kit TQ2 with cover plate	7.19	Fire-resistant cladding
4.5	Solid wood ceiling	1 – 4	Up to EI 90 S

Additional requirements: dry mortarless installation into solid wood ceilings, with installation kit TQ2

- Solid wood ceiling, *on page 44*
- Installation kit TQ2, *5.4.3 'Installation kit TQ2' on page 48*
- ≥ 55 mm distance from the fire damper to load-bearing structural elements (with shortened orifice plate)
- ≥ 200 mm distance between two fire dampers in separate installation openings
- General installation information, *5.3 'General installation information' on page 31* ff
- General information on installation with installation kit TQ2, *on page 38*

5.12.3 Dry mortarless installation with installation kit TS2 into solid wood ceiling, upright and suspended

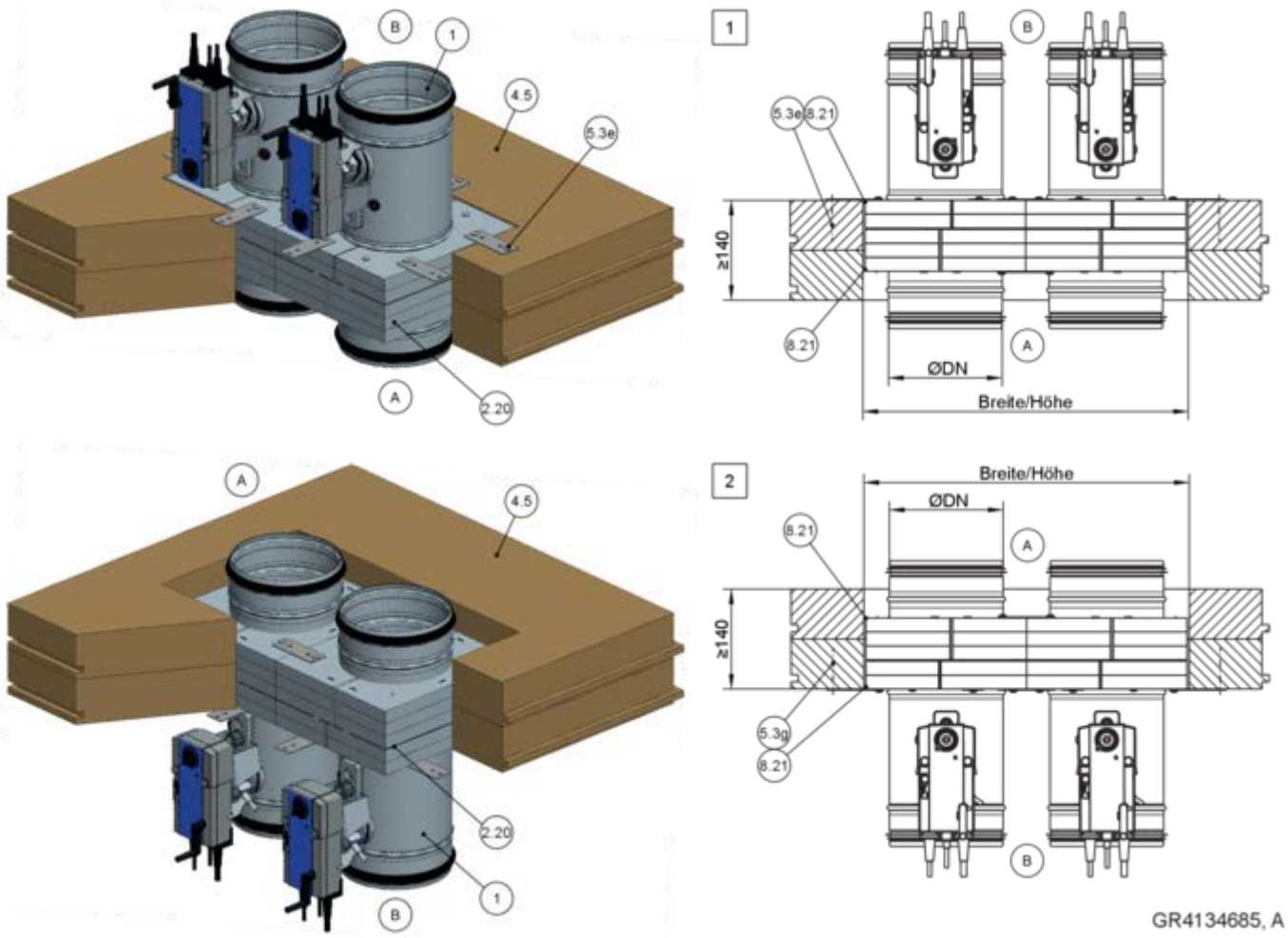


Fig. 183: Dry mortarless installation with installation kit TS2 into solid wood ceiling, upright and suspended

1 FKRS-EU
2.20 Installation kit TS2 (two-piece)
4.5 Solid wood ceiling
5.3e Chipboard screw min. 5 × 70 mm (on site)
5.3g Chipboard screw min. 5 × 120 mm (on site)
8.21 Acrylic fire protection sealant
1 2 up to EI 90 S

Maximum size of the installation opening

installation opening										
Nominal size [mm]	**100**	**125**	**150**	**160**	**180**	**200**	**224**	**250**	**280**	**315**
ØDN [mm]	**99**	**124**	**149**	**159**	**179**	**199**	**223**	**249**	**279**	**314**
Width [mm]	360	410	460	480	520	560	608	660	720	790
Height [mm]	210	235	260	270	290	310	334	360	390	425

Tolerance - 5 mm

Additional requirements: dry mortarless installation into solid wood ceilings, with installation kit TS2

- Solid wood ceiling, *on page 44*
- Installation kit TS2, *5.4.7 'Installation kit TS2' on page 57*
- General installation information, *5.3 'General installation information' on page 31* ff

1. Erect solid wood ceiling according to manufacturer's instructions and create installation opening, see *on page 243*
2. Insert the TS2 twin installation kit with all lugs into the prepared ceiling opening so that the maximum circumferential width of gap is 5 mm and fasten all lugs to the ceiling with screws (when installing flush with the wall, fasten lugs to 3 sides as a minimum).
   Upright installation: chipboard screw min. 5 × 70 mm (5.3e, provided by the customer)
   Suspended installation: chipboard screw min. 5 × 120 mm (5.3g, provided by customer)
3. Seal the gap between the ceiling opening and the TS2 twin installation kit on both sides with acrylic fire protection sealant (8.21, e.g. HILTI CFS-S ACR, supplied by customer).

5.13 Wooden panel elements

5.13.1 Mortar-based installation into wooden panel element, upright or suspended

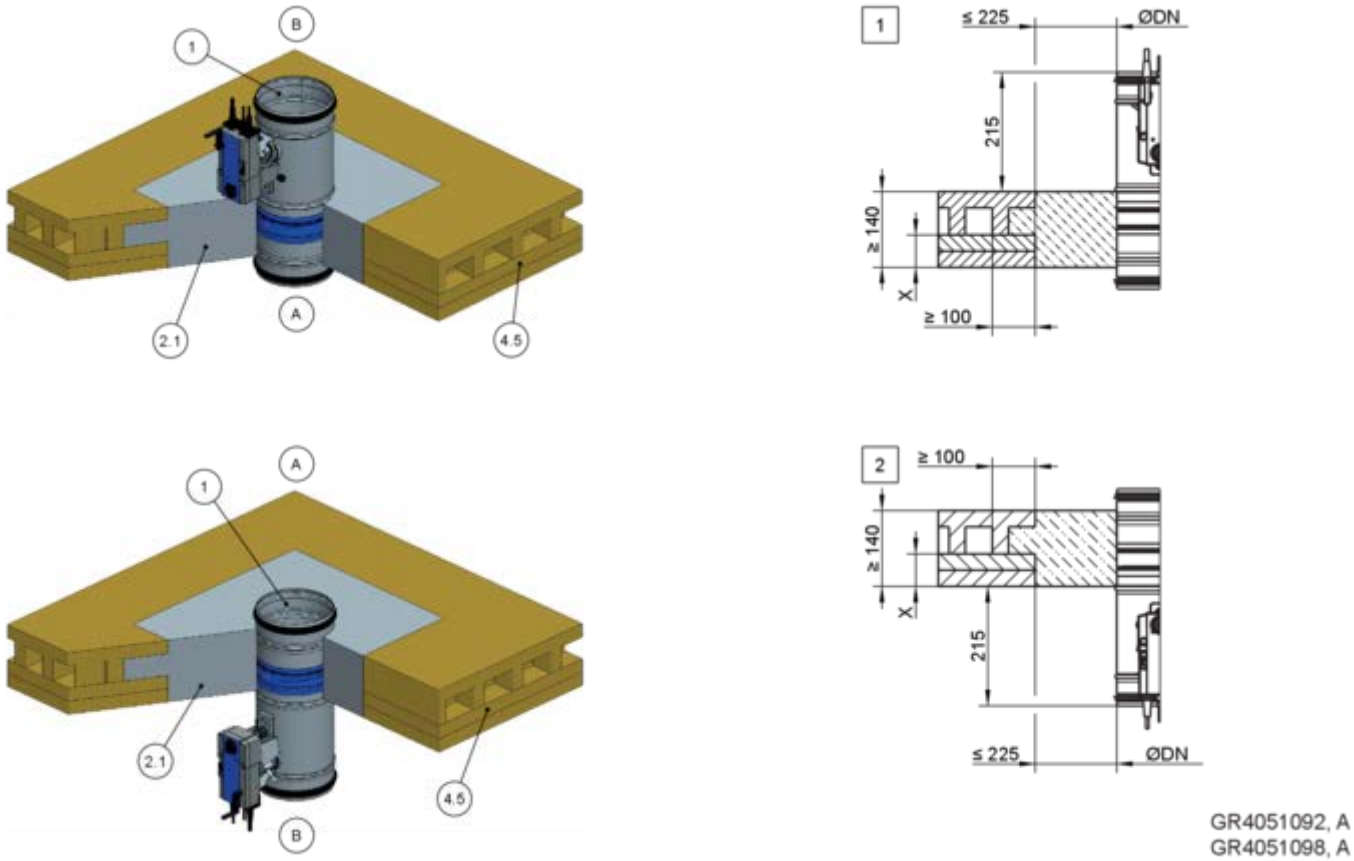


Fig. 184: Mortar-based installation into wooden panel element, upright or suspended

1 FKRS-EU
2.1 Mortar
4.5 Wooden panel element
X Ceiling thickness according to the desired fire resistance duration, as well as the selected ceiling system and the specifications of the ceiling manufacturer
[1] Up to EI 90 S

Additional requirements: mortar-based installation into wooden panel element

- Wooden panel element ↳ *on page 44*
- ≥ 40 mm distance between the fire damper and load-bearing components
- ≥ 200 mm distance between two fire dampers in separate installation openings
- General installation information, ↳ *5.3 'General installation information' on page 31* ff
- General information on mortar-based installation, ↳ *'**Mortar-based installation**' on page 37*

5.13.2 Dry mortarless installation into wooden panel element with installation kit TQ2, upright and suspended

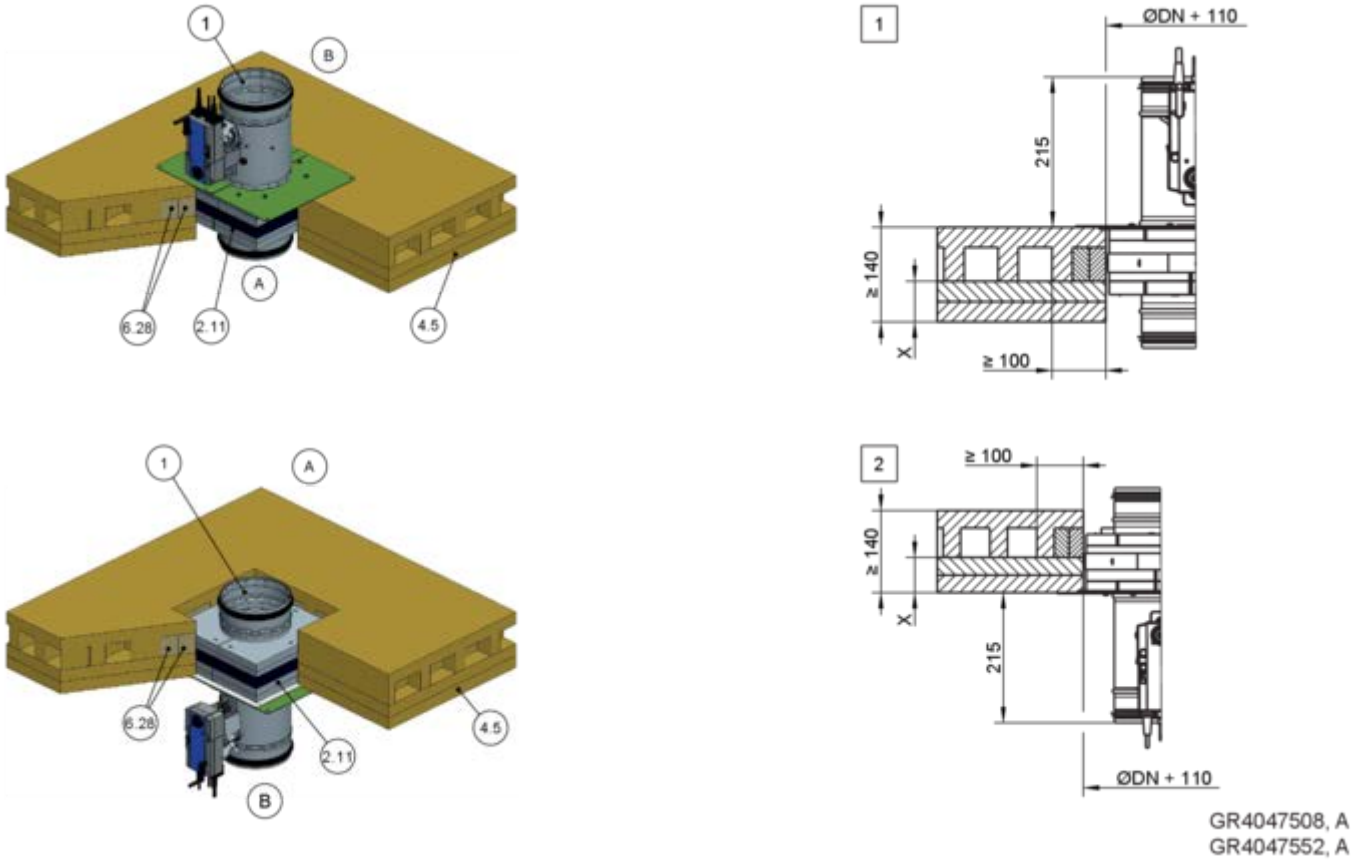


Fig. 185: Dry mortarless installation into wooden panel element with installation kit TQ2, upright and suspended

1 FKRS-EU
2.11 Installation kit TQ2 with cover plate
4.5 Wooden panel element
6.28 Ceiling filling (layers of boards or beams)
X Ceiling thickness according to the desired fire resistance duration, as well as the selected ceiling system and the specifications of the ceiling manufacturer
[1] Up to EI 90 S

Additional requirements: Dry mortarless installation into wooden panel element with installation kit TQ2

- Wooden panel element *on page 44*
- Installation kit TQ2, *5.4.3 'Installation kit TQ2' on page 48*
- ≥ 55 mm distance from the fire damper to load-bearing structural elements (with shortened orifice plate)
- ≥ 200 mm distance between two fire dampers in separate installation openings
- General installation information, *5.3 'General installation information' on page 31* ff
- General information on installation with installation kit TQ2, *on page 38*

5.14 Wooden beam ceilings

5.14.1 Mortar-based installation into wooden beam ceilings

Mortar-based installation into wooden beam or gluelam ceilings, upright

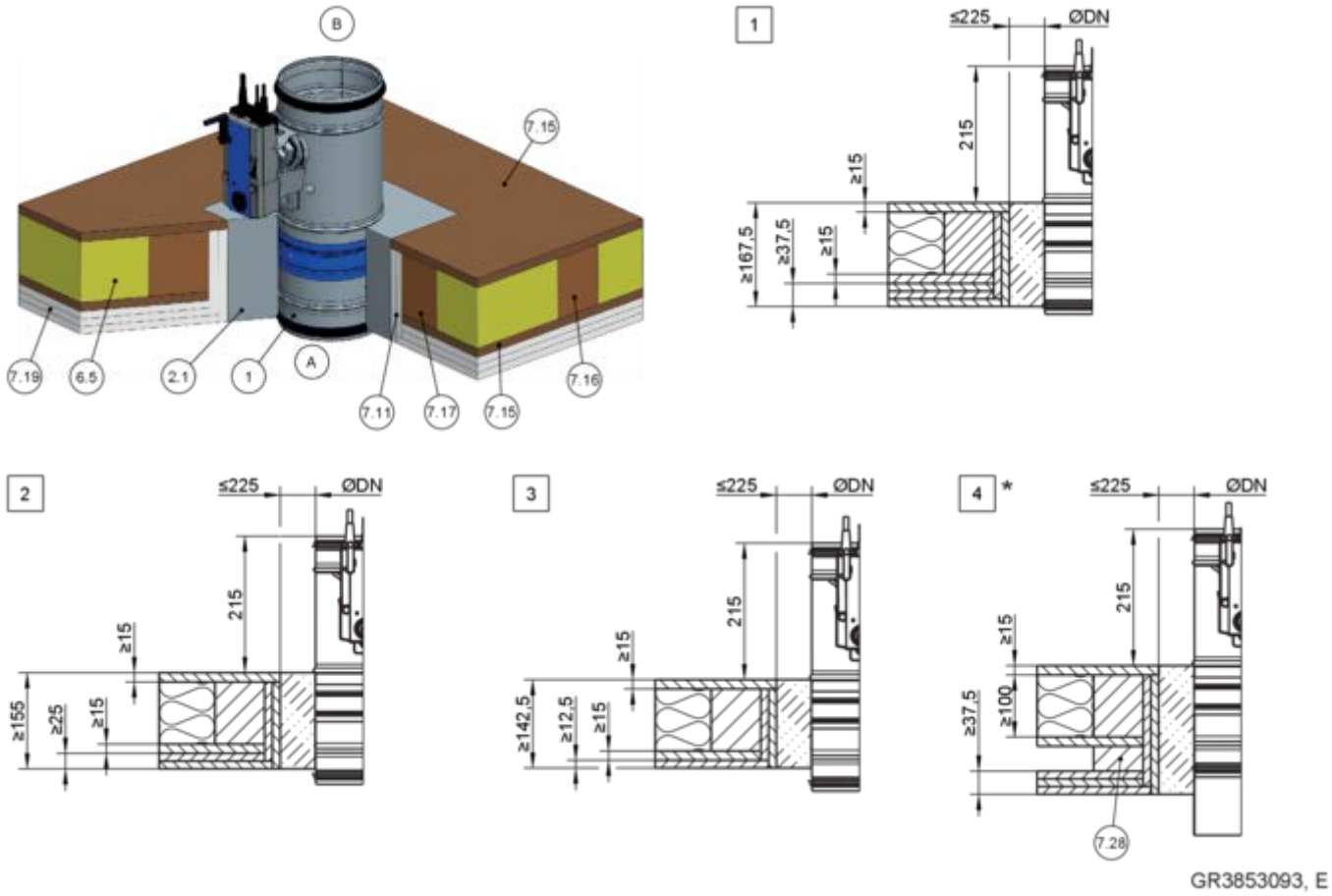


Fig. 186: Mortar-based installation into wooden beam or gluelam ceiling, upright (illustration is an example; other ceiling constructions upon request)

1	FKRS-EU
2.1	Mortar
6.5	Mineral wool filling (depending on ceiling)
7.11	Reveal, same construction as 7.19
7.15	Wood sheet, at least 600 kg/m³
7.16	Wooden beam/gluelam at least 100 × 80 mm (reduce distances between wooden beams to the size of the installation opening)
7.17	Framed openings, wooden beam/glued laminated timber min. 100 × 80 mm
7.19	Fire protection cladding, e.g. GKF, (ceiling-dependent)
7.28	Substructure, e.g. squared timber to the thickness of the substructure
*	The fire resistance period depends on the fire protection cladding, analogue details 1 to 3
1	up to EI 90 S
2	Up to EI 60 S
3	EI 30 S

Mortar-based installation into a wooden beam ceiling/gluelam ceiling, suspended

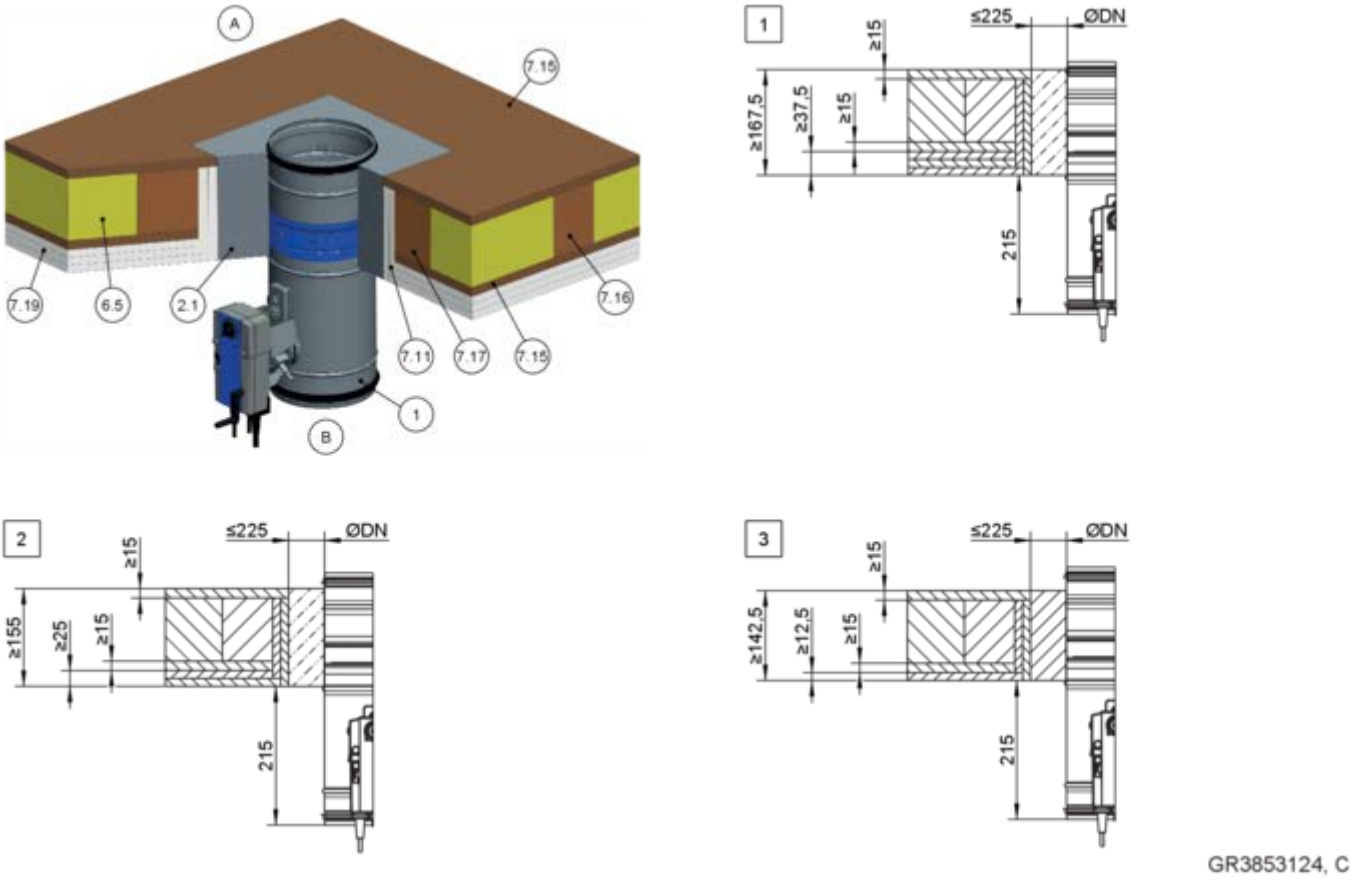


Fig. 187: Mortar-based installation into a wooden beam ceiling/gluelam ceiling, suspended (the illustration is an example; other ceiling constructions may be possible upon request)

1	FKRS-EU
2.1	Mortar
6.5	Mineral wool filling (depending on ceiling)
7.11	Reveal, same construction as 7.19
7.15	Wood sheet, at least 600 kg/m³
7.16	Wooden beam/gluelam at least 100 × 80 mm (reduce distances between wooden beams to the size of the installation opening)
7.17	Framed openings, wooden beam/glued laminated timber min. 100 × 80 mm
7.19	Fire protection cladding, e.g. GKF, (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 or gluelam ceilings

- Wooden beam ceiling, *on page 44*
- ≥ 40 mm distance between the fire damper and load-bearing components
- Distance between two fire dampers ≥ 200 mm (Installation of each fire damper in separate opening)
- General installation information, *5.3 'General installation information' on page 31* ff
- General information on mortar-based installation, *'**Mortar-based installation**' on page 37*
- When installing in ceilings with decoupled fire protection cladding, a suitable substructure (e.g. squared timber) that is tailored to the ceiling must be created around the installation opening so that the reveal lies against the substructure without any hollow spaces. The panelling is screwed to the substructure (7.28) at intervals of approx. 100 mm.

Note:

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

5.14.2 Dry mortarless installation in wooden beam ceiling with installation kit TQ2

Dry mortarless installation into wooden beam ceilings or gluelam ceilings, upright, with installation kit TQ2

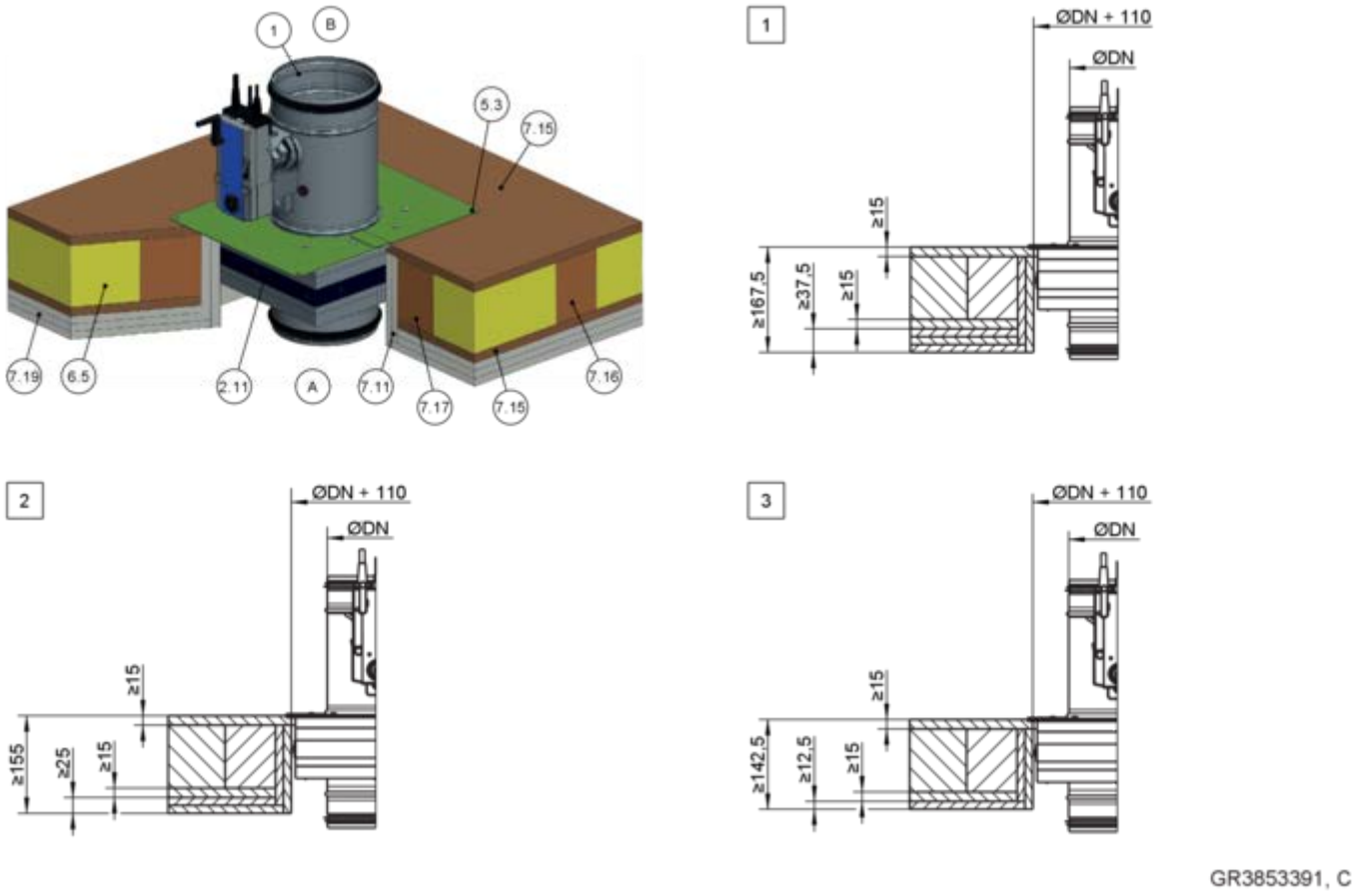


Fig. 188: Dry mortarless installation with installation kit TQ2 into wooden beam/gluelam ceiling, upright (illustration representative, alternative ceiling construction possible on request)

1 FKRS-EU
2.11 Installation kit TQ2 with cover plate
5.3 Wood screw min. 5 × 70 mm
6.5 Mineral wool filling (depending on ceiling)
7.11 Reveal, same construction as 7.19
7.15 Wood sheet, at least 600 kg/m³
7.16 Wooden beam/gluelam at least 100 × 80 mm (reduce distances between wooden beams to the size of the installation opening)
7.17 Framed openings, wooden beam/glued laminated timber min. 100 × 80 mm
7.19 Fire protection cladding, e.g. GKF, (ceiling-dependent)
1 up to EI 90 S
2 Up to EI 60 S
3 EI 30 S

Dry mortarless installation into a wooden beam or gluelam ceiling, suspended, with installation kit TQ2

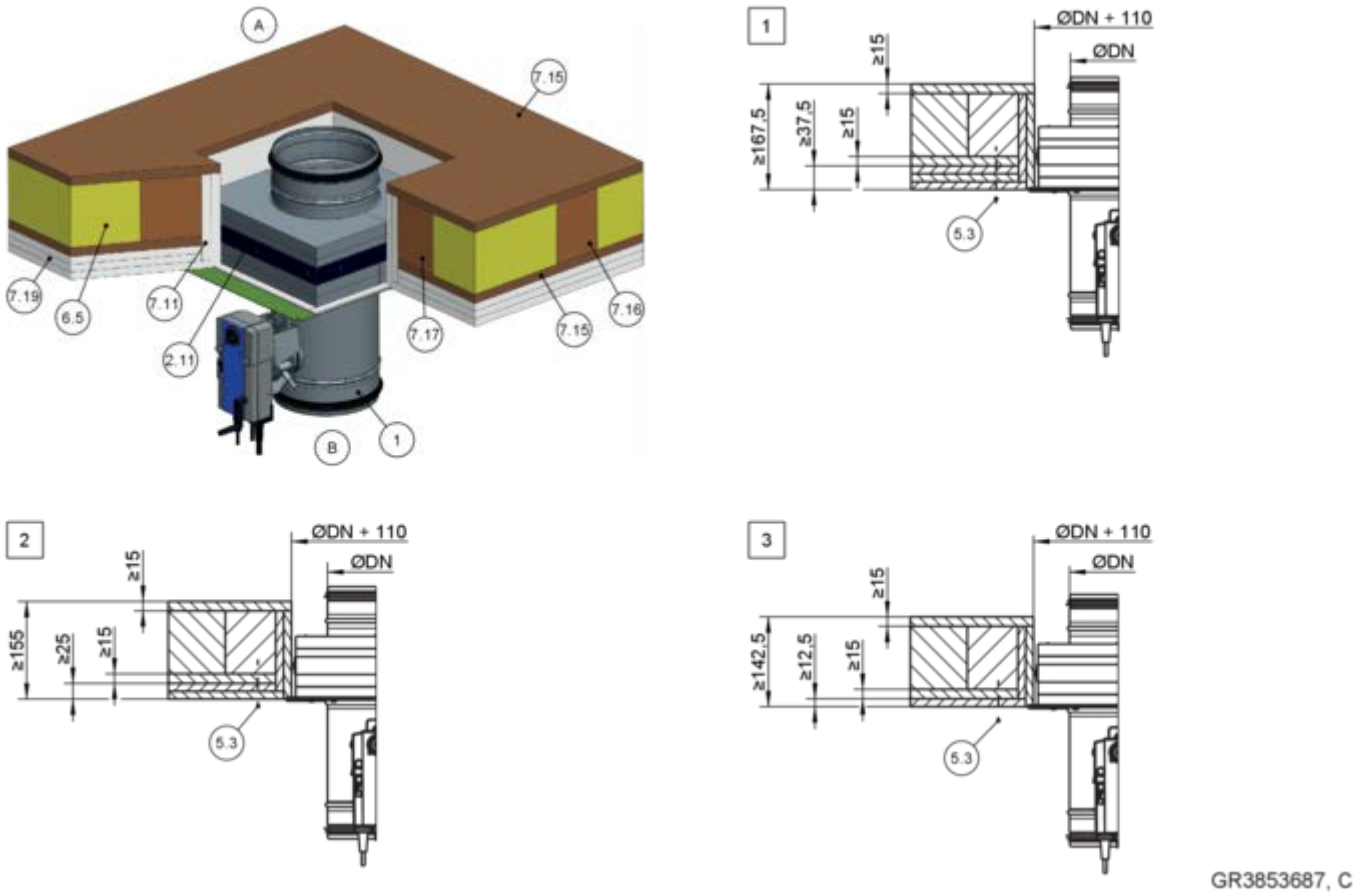


Fig. 189: Dry mortarless installation with installation kit TQ2 into wooden beam/gluelam ceiling, suspended (illustration representative, alternative ceiling construction possible on request)

1 FKRS-EU
2.11 Installation kit TQ2 with cover plate
5.3 Wood screw min. 5 × 70 mm
6.5 Mineral wool filling (depending on ceiling)
7.11 Reveal, same construction as 7.19
7.15 Wood sheet, at least 600 kg/m³
7.16 Wooden beam/gluelam at least 100 × 80 mm (reduce distances between wooden beams to the size of the installation opening)
7.17 Framed openings, wooden beam/glued laminated timber min. 100 × 80 mm
7.19 Fire protection cladding, e.g. GKF, (ceiling-dependent)
1 up to EI 90 S
2 Up to EI 60 S
3 EI 30 S

Additional requirements: dry mortarless installation with installation kit TQ2 into wooden beam/gluelam ceilings

- Wooden beam ceiling, *on page 44*
- Installation kit TQ2, *5.4.3 'Installation kit TQ2' on page 48*
- ≥ 55 mm distance from the fire damper to load-bearing structural elements (with shortened cover plate)
- Distance between two fire dampers ≥ 200 mm (Installation of each fire damper in separate opening)
- General installation information, *5.3 'General installation information' on page 31* ff
- General information on installation with installation kit TQ2, *on page 38*
- When installing in ceilings with decoupled fire protection cladding, a suitable substructure (e.g. squared timber) that is tailored to the ceiling must be created around the installation opening so that the reveal lies against the substructure without any hollow spaces. The panelling is screwed to the sub-structure (7.28) at a distance of approx. 100 mm. The mounting screws must be selected so that they reach at least 50 mm into the wooden beams. With decoupled cladding and suspended installa-tion, the installation kit must be connected to the ceiling construction in a load-bearing manner.

5.14.3 Mortar-based installation into historical wooden beam ceilings

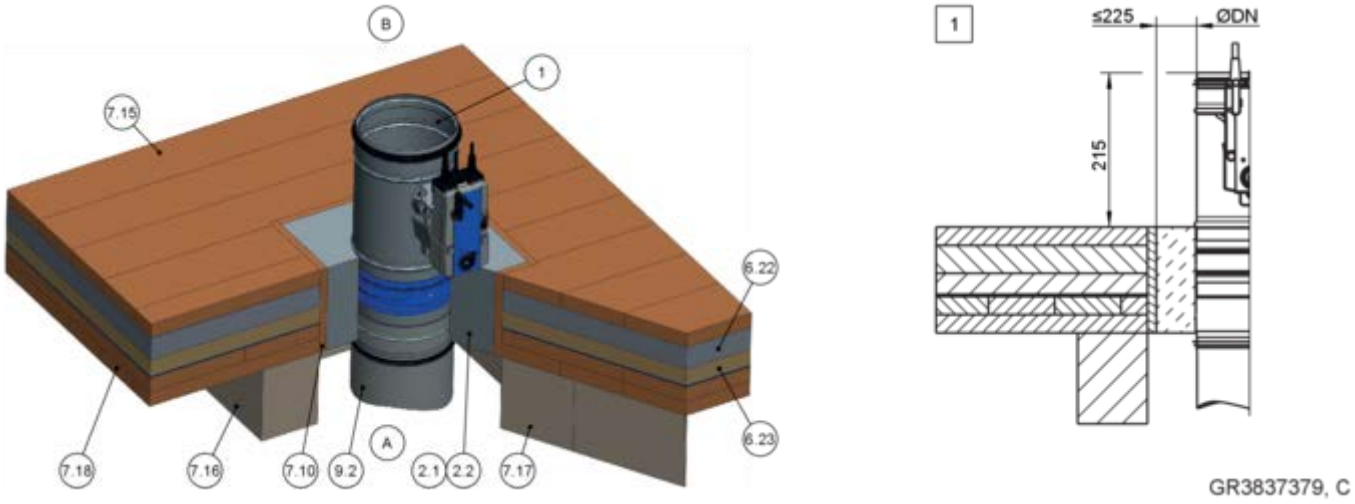


Fig. 190: Mortar-based installation into historical wooden beam ceilings

1	FKRS-EU
2.1	Mortar
2.2	Concrete
6.22	Screed*
6.23	Footfall sound insulation*
7.10	Reveals (fire-rated plasterboard or wood sheet)
7.15	Wooden floorboard/flooring*
7.16	Timber beams
7.17	Framed openings
7.18	Ceiling formwork*
9.2	Air duct/extension piece
*	The illustration is an example; other ceiling constructions may be possible depending on make and local conditions
1	EI 30 S

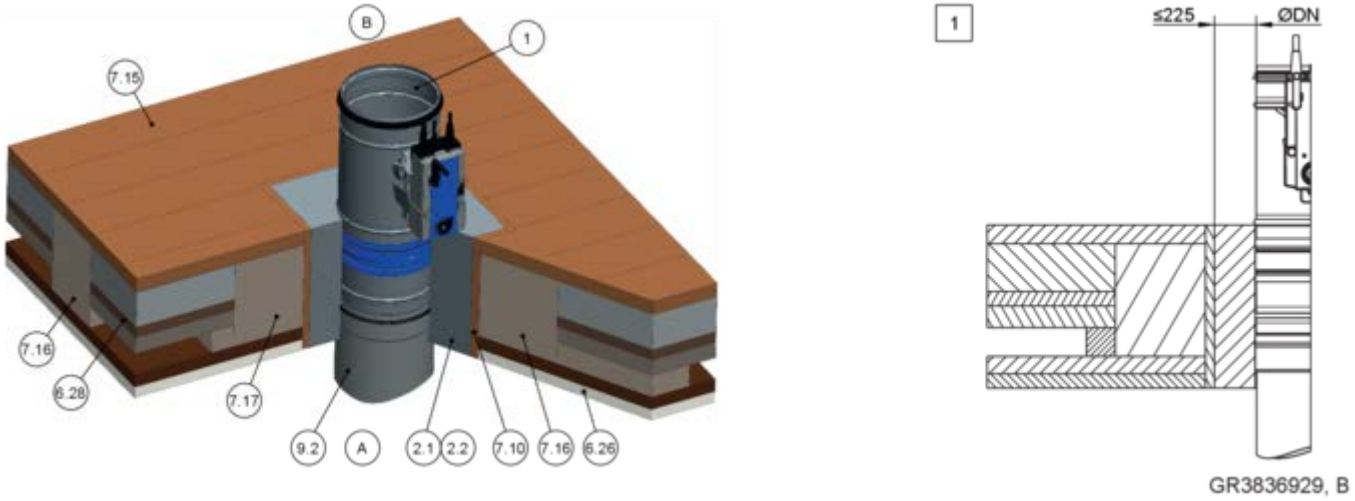


Fig. 191: Mortar-based installation into historic wooden beam ceilings, illustration shows upright installation (applies also to suspended installation)

1	FKRS-EU
2.1	Mortar
2.2	Concrete
6.26	Cement plaster*
6.28	Ceiling filling*
7.10	Reveals (fire-rated plasterboard or wood sheet)
7.15	Wooden floorboard/flooring*
7.16	Timber beams
7.17	Framed openings, wooden beam
9.2	Air duct/extension piece
*	The illustration is an example; other ceiling constructions may be possible depending on make and local conditions
1	EI 30 S

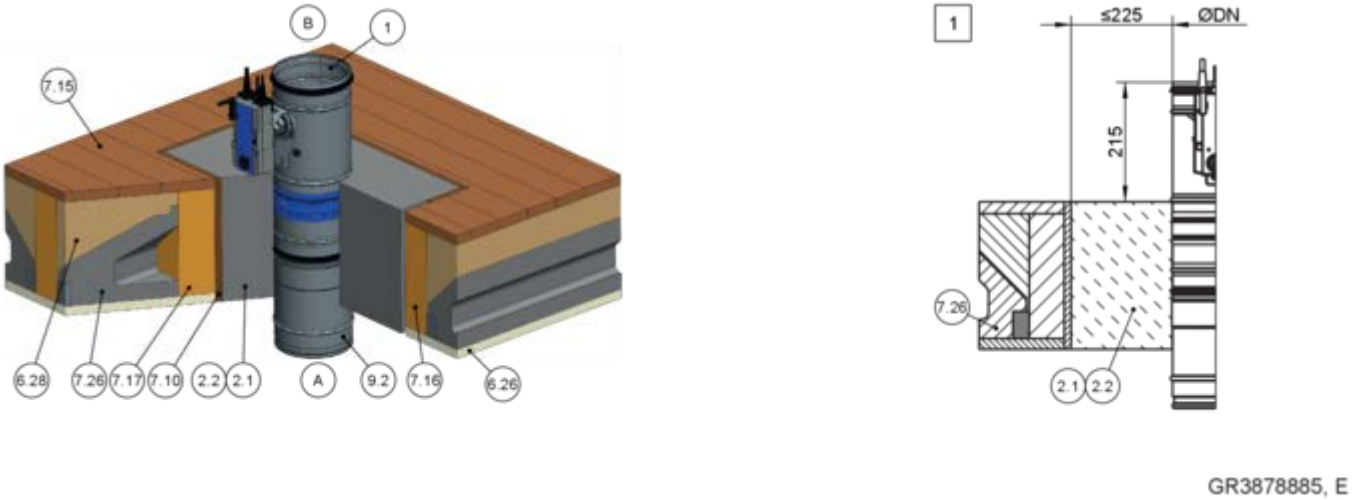


Fig. 192: Mortar-based installation into historic wooden beam ceilings, illustration shows upright installation (applies also to suspended installation)

1 FKRS-EU
2.1 Mortar
2.2 Concrete
6.26 Cement plaster*
6.28 Ceiling filling*
7.10 Reveals (fire-rated plasterboard or wood sheet)
7.15 Wooden floorboard/flooring*
7.16 Timber beams
7.17 Framed openings, wooden beam
7.26 Hollow concrete block
9.2 Air duct/extension piece
* The illustration is an example; other ceiling constructions may be possible depending on make and local conditions
1 EI 30 S

Additional requirements: mortar-based installation into historic wooden beam ceilings

- Historic wooden beam ceiling, ↬ *on page 45*
- ≥ 40 mm distance between the fire damper and load-bearing components
- Distance between two fire dampers ≥ 200 mm (Installation of each fire damper in separate opening)
- General installation information, ↬ *5.3 'General installation information' on page 31* ff
- General information on mortar-based installation, ↬ '***Mortar-based installation***' *on page 37*

Note:

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

5.15 Fixing the fire damper

5.15.1 General information

Fire dampers are suspended with threaded steel rods:

- remote from walls and ceiling slabs
- Installation in fire batt
- Installation with fire protection block bulkhead

The threaded rods must be fixed to solid ceiling slabs in accordance with the required fire resistance duration. Use only fire-rated wall plugs with suitability certificate depending on the ceiling construction.

Instead of wall plugs, 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; ducts must be suspended separately.

Weight [kg]: ↳ *Chapter 2.2 'FKRS-EU with fusible link' on page 12* ↳ *Chapter 2.3 'FKRS-EU with spring return actuator' on page 13* ↳ *Chapter 2.4 'FKRS-EU with spring return actuator and smoke detector' on page 16* ↳ *Chapter 2.5 'FKRS-EU as an air transfer damper (FD)' on page 18* ↳ *Chapter 2.6 'FKRS-EU as an air transfer damper (MFD)' on page 19* .

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).

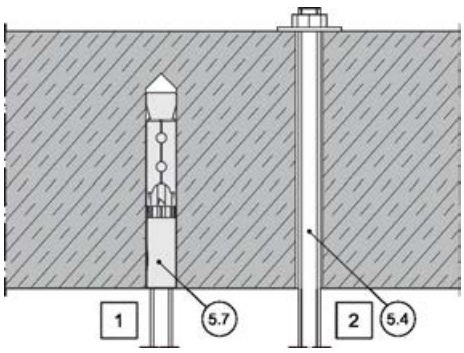


Fig. 193: Fixing to the ceiling

5.4 Threaded rod
5.7 Fire-rated wall plug (with suitability certificate)
1 Fixing with fire-rated wall plug with suitability certificate
2 Fixing with threaded rod (push through)

5.15.2 Alternative fixing systems

Alternative fixings may be used, provided that their performance is supported by fire test, stress, linear expansion or load data. Other information may be taken into account. In addition to these fixings, fixing variants approved by a testing body may also be used.

5.15.3 Fixing in conjunction with fire batt/fire protection block bulkhead

5.15.3.1 Duct, horizontal

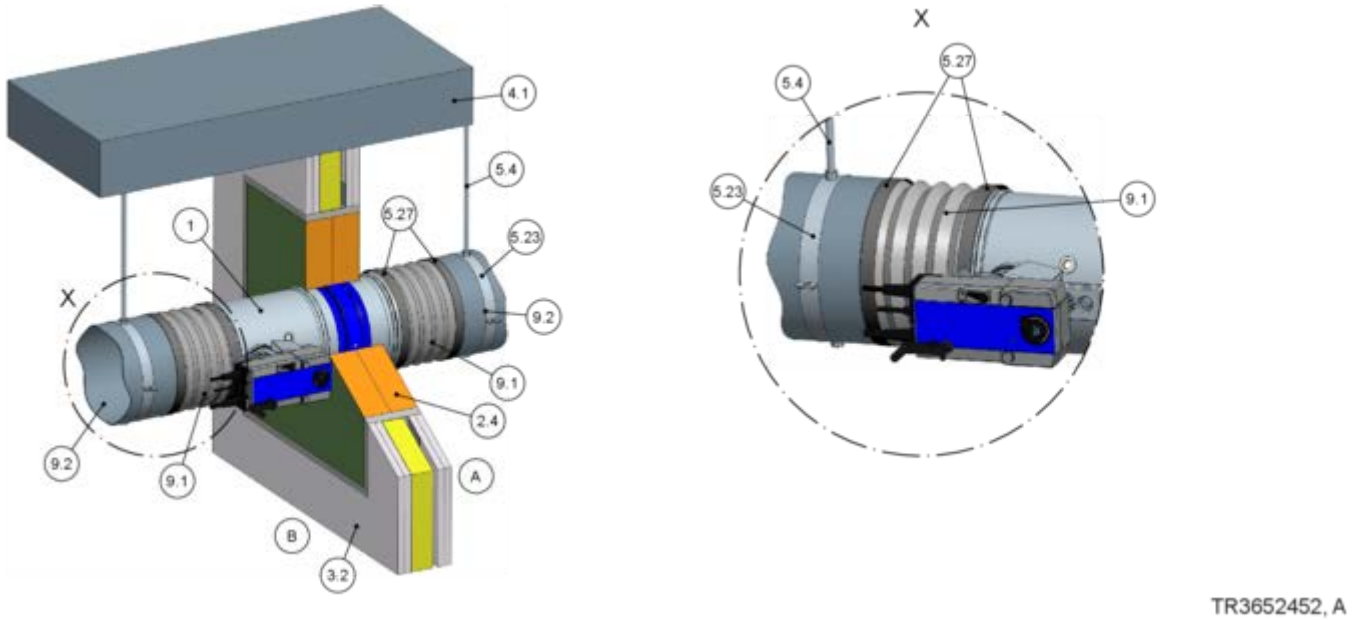


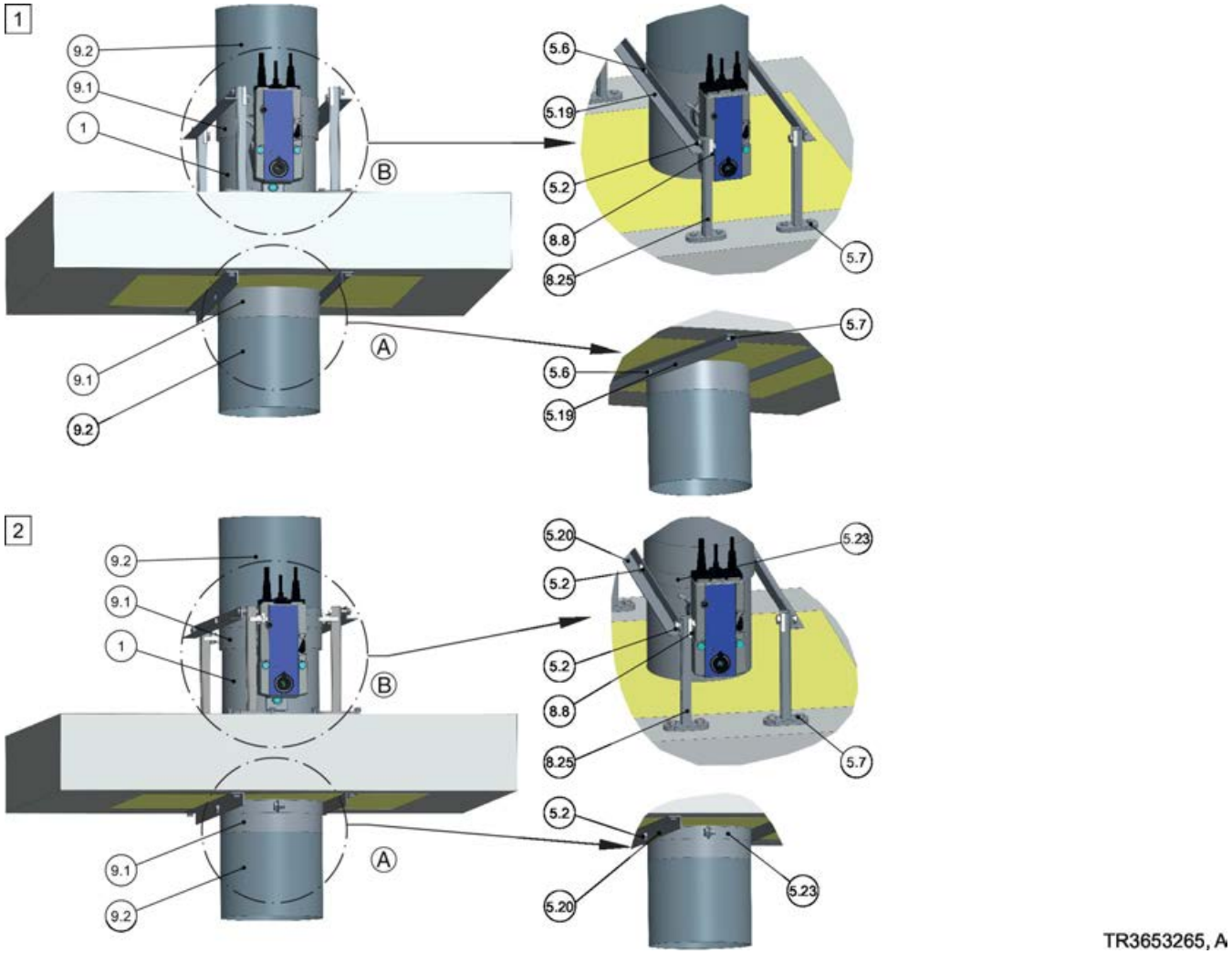
Fig. 194: Horizontal air duct

1 FKRS-EU
2.4 Coated board system with firestop coating
3.2 Lightweight partition wall with metal support or steel support structure, cladding on both sides
4.1 Solid ceiling slab
5.4 Threaded rod, at least M8, galvanised steel. Suspension systems longer than > 1.5 m require fire-resistant insulation.
5.23 Pipe clamp
5.27 Fastening element, e.g. with band clamp
9.1 Flexible connector
9.2 Air duct/extension piece

The FKRS-EU is attached to the wall via the soft bulkhead. The connected air ducts must be fastened independently of the fire damper. The pipes may be connected on both sides with or without flexible connectors.
No forces may be exerted on the damper casing, e.g. as a result of flexible ceiling joints.

5.15.3.2 Duct, vertical

Upright installation of the fire damper



TR3653265, A

Fig. 195: Upright installation variants for fire dampers

1 FKRS-EU
5.2 4 screw fixings (M8 screw with 2 washers and nut), suitable for the bracket or screw fixing matching the clamp
5.6 4 steel rivets ∅ 6.4 mm, clamping range 2 – 20 mm, e.g. cap blind rivets or high strength rivets; the riveted connection must be air-tight.
5.7 Anchor bolt Hilti ® HUS-6 or equivalent
5.19 L-bracket according to EN 10056-1, 20 × 20 × 3 mm galvanised, painted or similar.
5.20 L-bracket according to EN 10056-1, 35 × 35 × 4 mm galvanised, painted or similar.
5.23 Pipe clamp, e.g., Hilti MP-MX, Valraven BIS HD 500 or equivalent
8.8 Fixing bracket, Varifix or Müpro MPC or equivalent
8.25 Bracket, e.g. Hilti MM-B-30 or equivalent
9.1 Flexible connector (if required)
9.2 Air duct/extension piece
1 Fixing above and below the ceiling with rivets
2 Fixing above and below the ceiling with heavy duty clamp

DANGER!

Danger of falling off! Do not step onto the fire batt!

The fire batt cannot carry any loads. Adequate means, e.g. a permanent barrier, must be installed to prevent people from stepping onto the fire batt.

Suspended installation of the fire damper

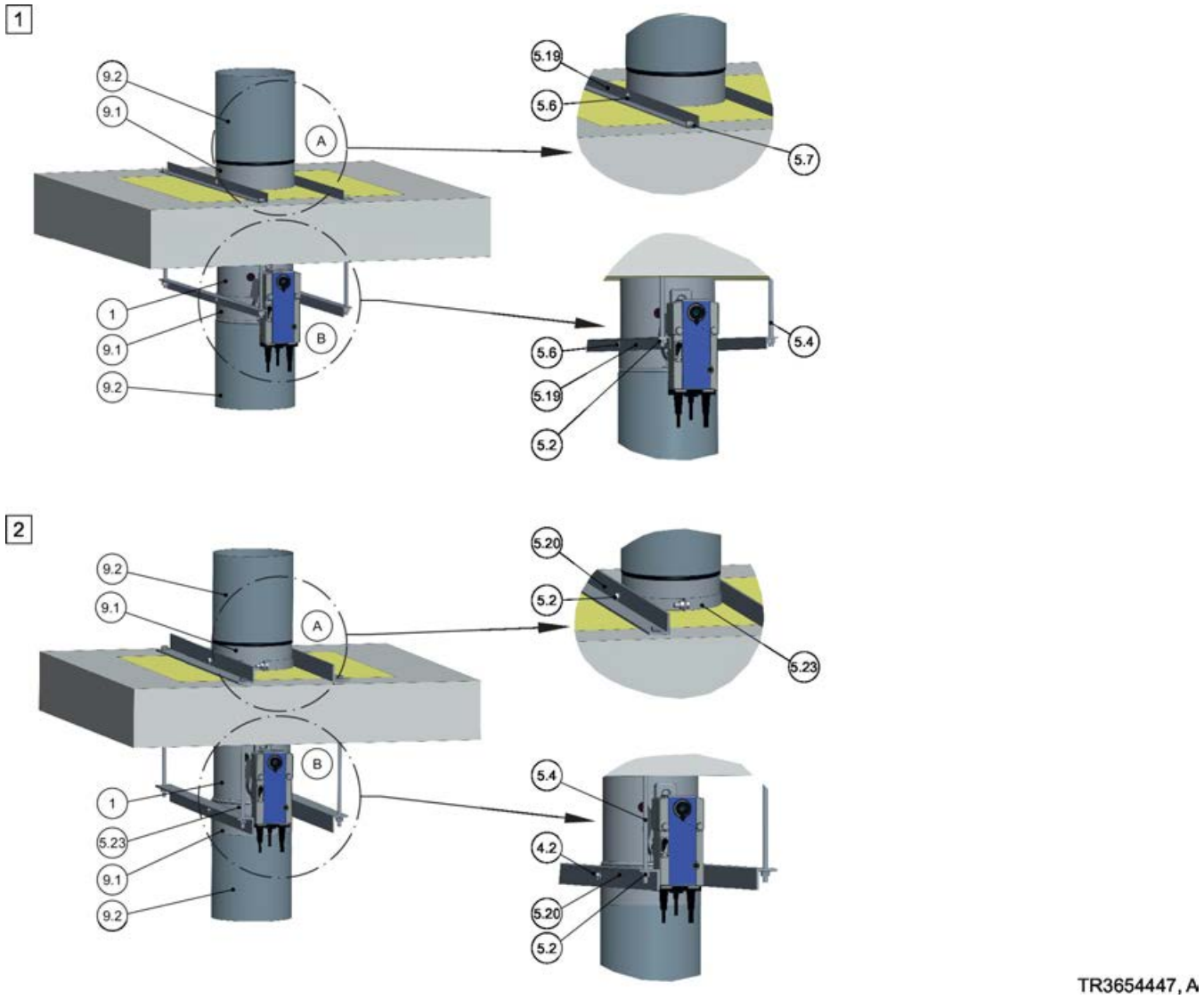


Fig. 196: Suspended installation variants for fire dampers

1 FKRS-EU
5.2 Washer, nut appropriate for the threaded rod or screw fixing suitable for the clamp
5.4 Threaded rod, at least M8, galvanised steel
5.6 4 steel rivets ∅ 6.4 mm clamping range 2 – 20 mm, e.g. cap blind rivets or high strength rivets; the riveted connection must be air-tight.
5.7 Anchor bolt Hilti ® HUS-6 or equivalent
5.19 L-bracket according to EN 10056-1, 20 × 20 × 3 mm galvanised, painted or similar.
5.20 L-bracket according to EN 10056-1, 35 × 35 × 4 mm galvanised, painted or similar.
5.23 Pipe clamp, e.g., Hilti MP-MX, Valraven BIS HD 500 or equivalent
9.1 Flexible connector
9.2 Air duct/extension piece
1 Fixing above and below the ceiling with rivets
2 Fixing above and below the ceiling with heavy duty clamp

5.15.4 Fire damper remote from walls and ceilings

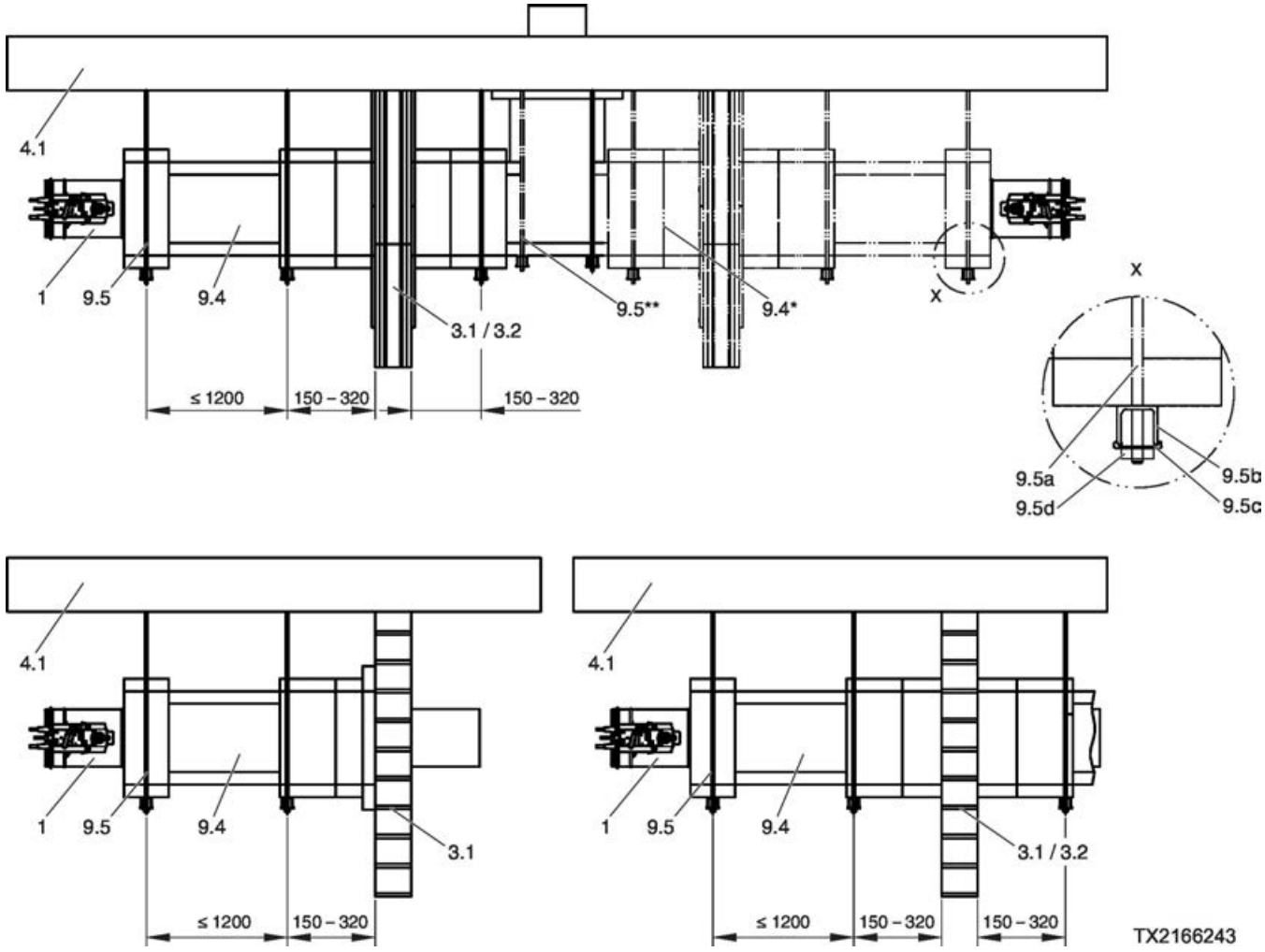


Fig. 197: FKRS-EU in a cladded duct

1 FKRS-EU
3.1 Solid wall
3.2 Lightweight partition wall with metal support structure or steel support structure, cladding on both sides
4.1 Solid ceiling slab
9.4 Sheet steel duct with fire-rated cladding
The cladding of the air duct and the suspensions are carried out in accordance with these instructions, the additional assembly instructions for the installation kit WE2 and the specifications of the panel manufacturer
9.5 Suspension system (by others) consisting of:

a Threaded rod M10
b Hilti ® mounting rail MQ 41 × 3 mm or equivalent
c Hilti ® drilled plate MQZ L13 or equivalent
d Hexagon nut M10 with washer
* Additional ducting can be used
** Suspension is required in connection with 9.4*

6 Accessories

Extension pieces

Depending on the design, the damper protrusion must be taken into account when using flexible connectors, cover grilles, pipe bends etc., see table 260. Sufficient clearance must be provided, we recommend 50 mm distance to the opened damper blade.

Open blade protrusion [mm]		
Nominal size [mm]	**x [mm]**	**y [mm]**
100	-220	-80
125	-208	-67.5
150	-195	-55
160	-190	-50
180	-180	-40
200	-170	-30
224	-158	-18
250	-145	-5
280	-130	10
315	-113	27.5

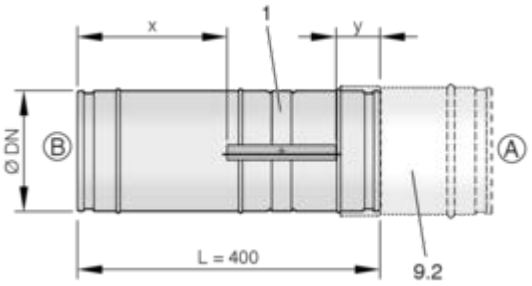


Fig. 198: Open blade protrusion

1 FKRS-EU
9.2 Air duct/extension piece

> ***Note***
>
> *The movement of the damper blade must not be obstructed by any accessory. The minimum 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.

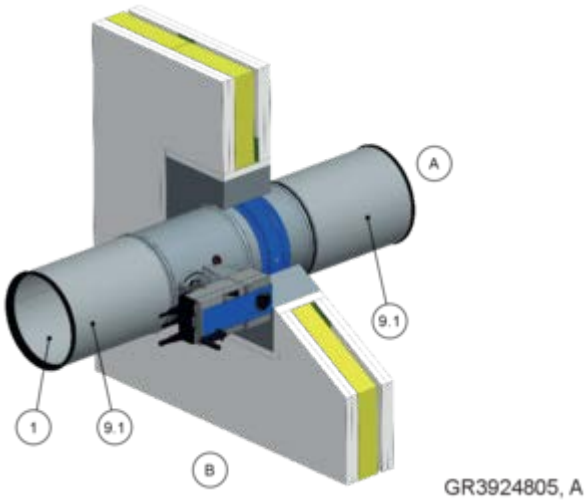


Fig. 199: FKRS-EU with flexible connectors

1 FKRS-EU
9.1 Flexible connector

Cover grille

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

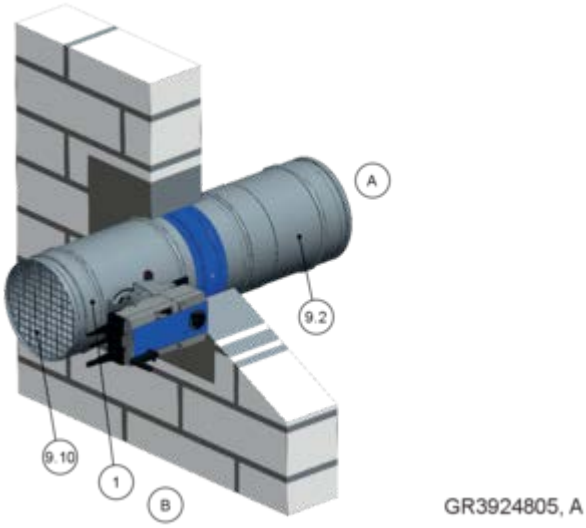


Fig. 200: Fire damper with cover grille

1 FKRS-EU
9.2 Air duct/extension piece
9.10 Cover grille

7 Electrical connection

7.1 General safety instructions

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.
– Before working on the electrical system, switch off the supply voltage and secure it against being switched on again.

The dimensioning of the connection cables is done on site depending on the supply voltage (230 V or 24 V), the cable length as well as the power consumption and number of actuators.

7.2 Limit switches (fire dampers with fusible link)

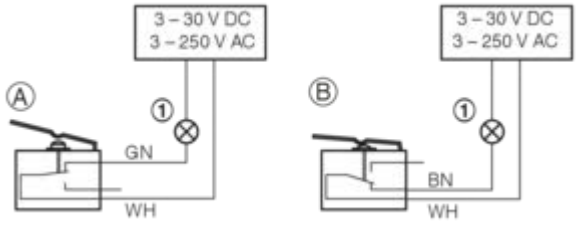


Fig. 201: Wiring of limit switches, example

1 Indicator light or relay, to be provided by customer
A Type of connection: NC contact
B Type of connection: NO contact

- The limit switches must be connected according to the wiring example Fig. 201
- Indicator lamps 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.

Connection type	Limit switch	Damper blade	Electric circuit
A	not actuated	CLOSED or OPEN position not reached	closed
B	actuated	CLOSED or OPEN position reached	closed

Note: For wiring explosion-proof limit switch, see "Supplementary operating manual for explosion-proof fire dampers type FKRS-EU".

7.3 Spring return actuator

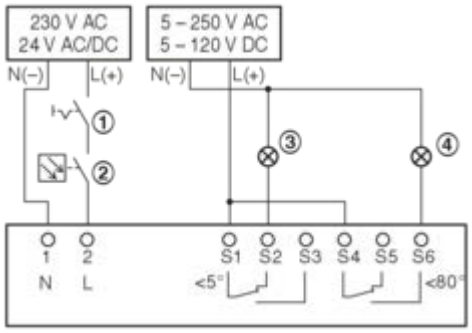


Fig. 202: Actuator connection, example

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

- The fire damper can be equipped with a spring return actuator for a supply voltage of 230 V AC or 24 V AC/DC. Observe the performance data on the rating plate of the actuator.
- The spring return actuator must be connected according to the wiring example shown. Several actuators can be connected in parallel, taking into account the performance data.
- Junction boxes must be fixed to the adjoining structure (wall or ceiling). 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 FKRS-EU".

Actuators with 24 V AC/DC

Connect actuators only to safety transformers. 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.

7.4 Spring return actuator and duct smoke detector RM-O-M or RM-O-3-D

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

8 Functional test

8.1 General information

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

CAUTION!

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

8.2 Functional test with automated control unit

For fire dampers with spring return actuators, the function can also be tested with an automated 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 the runtimes of the actuators
- Issuing an alarm when the runtimes are exceeded and closing of fire dampers
- Documentation of 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 runtime of actuators. Based on this, additional measures such as cleaning in the event of heavy soiling (e.g. dust contamination in extract air systems) can maintain the functionality of the system.

8.3 Fire damper with fusible link

Closing the fire damper

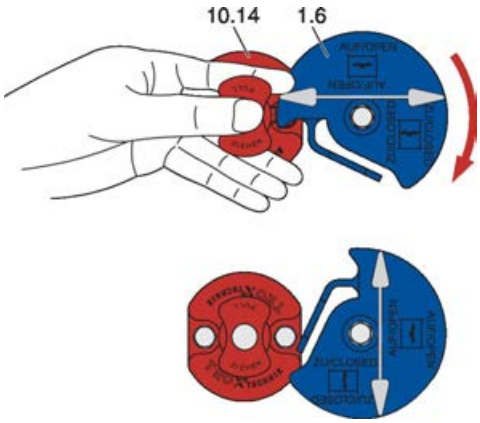


Fig. 203: Closing the fire damper

1.6 Handle/damper blade position indicator
10.14 Thermal release device with fusible link

CAUTION!

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

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 is closed and
5. ▸ the handle (1.6) shows that the damper blade is closed.

Opening the damper blade

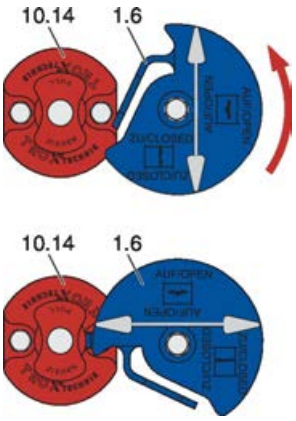


Fig. 204: Opening the damper blade

1.6 Handle/damper blade position indicator

Requirement

- The damper blade is CLOSED

1. ▸ Turn the handle (1.6) anti-clockwise (see arrow) until
2. ▸ The handle (1.6) locks into place (10.14).
3. ▸ The damper blade is open and
4. ▸ the handle (1.6) indicates that the damper blade is open.

Damper blade position indicator

The position of the damper blade is indicated by the position of the handle.

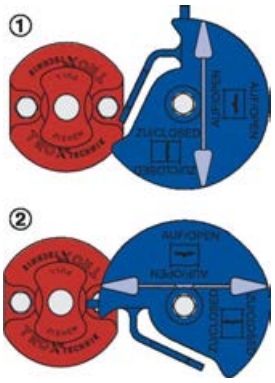


Fig. 205: Damper blade position indicator

1 Damper blade is closed
2 Damper blade is open

8.4 Fire damper with spring return actuator

8.4.1 Construction Gruner

Status indicator

Fig. 206: Thermoelectric release mechanism TAE

1 Push button for functional test
2 Indicator light

The indicator light (2) for the thermoelectric release mechanism lights up when:

- power is being supplied and
- the thermal fuses are intact and
- 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. 207: Damper blade position indicator

1 Damper blade is closed
2 Damper blade is open

Opening/closing the damper blade with spring return actuator

Fig. 208: Functional test

1 Push button for functional test

⚠ CAUTION!

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

Requirement

- Power is being supplied

1. ▸ Press and hold the button (1).
   ⇨ This interrupts the power supply, and the damper blade closes.
2. ▸ Check if the damper blade is CLOSED, check run-time.
3. ▸ Release the button (1).
   ⇨ Power is supplied again, and the damper blade opens.
4. ▸ Check if the damper blade is OPEN, check run-time.

Opening the damper blade using the crank handle

Fig. 209: Functional test (without power supply)

1 Crank handle
2 Direction of arrow

DANGER!

Danger due to malfunction of the fire damper.

If the damper blade has been opened manually using a crank handle, no thermal release is possible in the event of a fire. This means: 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 (the crank handle is fixed to the connecting cable).
2. Turn the crank handle in the direction of the arrow (2) until just before the travel stop.
3. Then quickly rotate the crank handle by approx. 90° towards the 'lock' position.

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

Closing the damper blade using the crank handle

Fig. 210: Functional test (without power supply)

1 Crank handle

CAUTION!

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

Requirement

- The damper blade is OPEN.

1. Insert the crank handle (1) into the opening for the spring winding mechanism (the crank handle is fixed to the connecting cable).
2. Rotate the crank handle by approx. 90° towards the 'unlock' position until a click can be heard.

   ⇨ The actuator unlocks, the damper blade is released and closes.
3. Remove the crank handle.

8.4.2 Construction Belimo

Status indicator

Fig. 211: 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. 212: Damper blade position indicator

1 Damper blade is closed
2 Damper blade is open

Closing/opening the damper blade with spring return actuator

Fig. 213: Functional test

1 Push button for functional test

CAUTION!

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

Requirement

- Power is being supplied

1. Push the 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 run time.
3. Release the button (1).
   ⇨ Power is supplied again, and the damper blade opens.
4. Check if the damper blade is OPEN, check run time.

Opening the damper blade using the crank handle

Fig. 214: Functional test (without power supply)

1 Crank handle
2 Direction of arrow
3 Locking lever

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

Closing the fire damper

Fig. 215: Functional test (without power supply)

3 Locking lever

CAUTION!

Danger of injury when reaching into the fire damper. 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 actuator unlocks, the damper blade is released and closes.
Check if the CLOSED position is reached on the damper blade position indicator.

8.5 Fire damper with spring return actuator Z43/Z45

Status indicator

Fig. 216: Thermoelectric release mechanism TAE

1 Push button for functional test
2 Indicator light

The indicator light (2) for the thermoelectric release mechanism lights up when:

- power is being supplied and
- the thermal fuses are intact and
- 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. 217: Damper blade position indicator

1 Damper blade is closed
2 Damper blade is open

Opening/closing the damper blade with spring return actuator

Fig. 218: Functional test

1 Push button for functional test

⚠ CAUTION!
Danger of injury when reaching into the fire damper. Do not reach into the fire damper while actuating the release mechanism.

Requirement

- Power is being supplied

1. ▸ Press and hold the button (1).
   ⇨ This interrupts the power supply, and the damper blade closes.
2. ▸ Check if the damper blade is CLOSED, check run-time.
3. ▸ Release the button (1).
   ⇨ Power is supplied again, and the damper blade opens.
4. ▸ Check if the damper blade is OPEN, check run-time.

Opening the damper blade using the crank handle

Fig. 219: Functional test (without power supply)

1 Crank handle
2 Direction of arrow

DANGER!

Danger due to malfunction of the fire damper.

If the damper blade has been opened manually using a crank handle, no thermal release is possible in the event of a fire. This means: 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 (the crank handle is fixed to the connecting cable).
2. Turn the crank handle in the direction of the arrow (2) until just before the travel stop.
3. Then quickly rotate the crank handle by approx. 90° towards the 'lock' position.

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

Closing the damper blade using the crank handle

Fig. 220: Functional test (without power supply)

1 Crank handle

CAUTION!

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

Requirement

- The damper blade is OPEN.

1. Insert the crank handle (1) into the opening for the spring winding mechanism (the crank handle is fixed to the connecting cable).
2. Rotate the crank handle by approx. 90° towards the 'unlock' position until a click can be heard.

   ⇨ The actuator unlocks, the damper blade is released and closes.
3. Remove the crank handle.

8.6 Fire damper with spring return actuator Z43/Z45

Status indicator

Fig. 221: 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. 222: Damper blade position indicator

1 Damper blade is closed
2 Damper blade is open

Closing/opening the damper blade with spring return actuator

Fig. 223: Functional test

1 Push button for functional test

⚠ CAUTION!

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

Requirement

- Power is being supplied

1. Push the 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 run time.
3. Release the button (1).
   ⇨ Power is supplied again, and the damper blade opens.
4. Check if the damper blade is OPEN, check run time.

Opening the damper blade using the crank handle

Fig. 224: Functional test (without power supply)

1 Crank handle
2 Direction of arrow
3 Locking lever

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

Closing the fire damper

Fig. 225: Functional test (without power supply)

3 Locking lever

CAUTION!

Danger of injury when reaching into the fire damper. 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 actuator unlocks, the damper blade is released and closes.
Check if the CLOSED position is reached on the damper blade position indicator.

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 ↳ *Chapter 10.3 'Inspection and repair measures' on page 275 .*

Operation

During normal operation, the fire damper is open to allow air to pass 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 system is running must be inspected before they are opened again in order to ensure their correct function ↳ *'Inspection' on page 273 .*

10 Maintenance

10.1 General information

General safety instructions

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.
– Before working on the electrical system, switch off the supply voltage and secure it against being switched on again.

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 conducted 6 months apart show no functional issues, the fire damper can transition to an annual testing schedule.

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 ↳ *on page 262* .

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. Standard household cleaning agents can be used for heavy contamination. Do not use abrasive cleaners or mechanical cleaning methods, e.g. brushes. For disinfection you may use commercially available disinfectants or disinfecting procedures.

Hygiene

The hygiene requirements in accordance with VDI 6022-1, VDI 3803-1, DIN 1946-4, EN 13779 and Ö-Norm H 6020 and H 6021 and SWKI are fulfilled. The building materials of the fire damper were tested for resistance to fungi and bacteria by testing the microbial metabolisability in accordance with 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. The function must then be tested at regular intervals. In addition, any local requirements and building regulations must be complied with. The inspection measures to be taken are listed in ↳ *on page 275* . The test of each fire damper must be documented and evaluated. In the event of deviations from the target condition, suitable repair measures must be taken.

Repair

For safety reasons, repair work must only be carried out by expert qualified personnel or the manufacturer. Only original replacement parts are to be used. A functional test is required after any repair work ↳ *8.1 'General information' on page 262* .

10.2 Replacing the fusible link

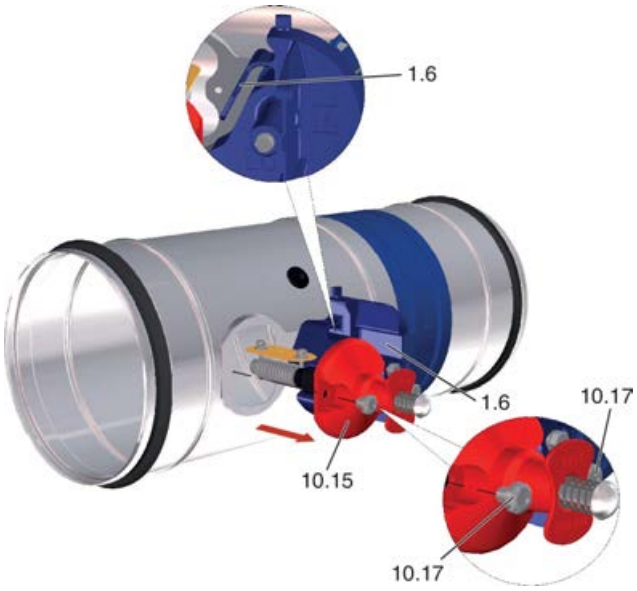


Fig. 226: Removing the fusible link holder

1.6 Handle
10.15 Fusible link holder
10.17 Screw

1. Close the fire damper.
2. Release screws (10.17) on the fusible link holder (10.15).
3. Remove fusible link holder (10.15) from the fire damper. While doing so, slightly press down the tab (1.6) of the handle.

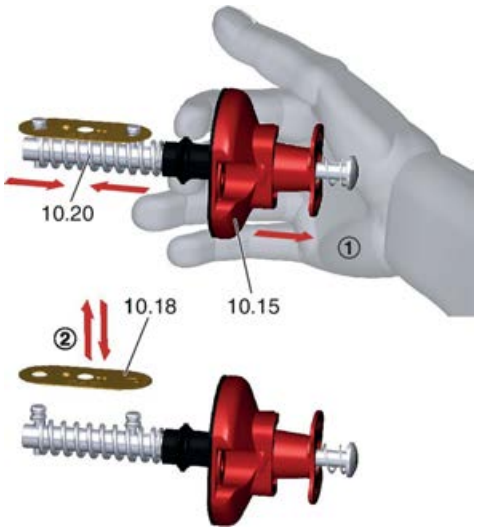


Fig. 227: Replacing the fusible link

10.15 Fusible link holder
10.18 Fusible link
10.20 Spring

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).

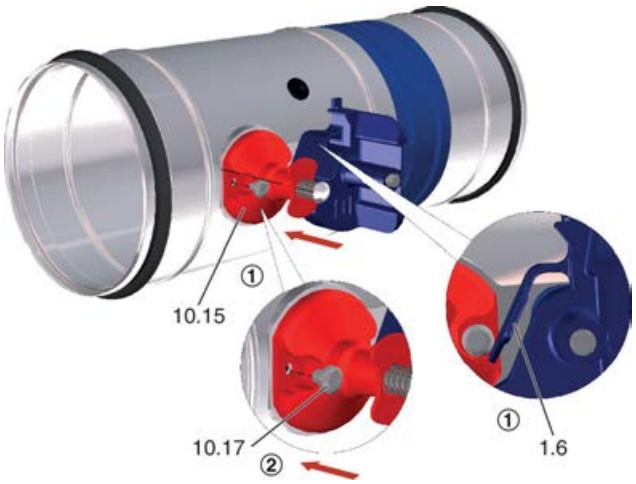


Fig. 228: Installing the fusible link holder

1.6 Handle
10.15 Fusible link holder
10.17 Screw

1. Press the tab of the handle (1.6) slightly against the handle and push the fusible link holder (10.15) into the fire damper and
2. fasten with screws (10.17).

   ⇨ Carry out functional test.

10.3 Inspection and repair measures

Interval	Measure	Staff
A	Access to the fire damper ■ Internal and external accessibility – Provide access	Specialist personnel
	Installation of the fire damper ■ Installation according to the operating manual *31* – Install the fire damper correctly.	Specialist personnel
	Transport and installation protection, if any ■ Transport/installation protection has been removed – Remove transport/installation protection	Specialist personnel
	Connection of air ducts/Cover grilles/Flexible connectors ■ Connection according to the operating manual *Chapter 6 'Accessories' on page 260* – Establish correct connection	Specialist personnel
	Power supply to the spring return actuator ■ Power supply according to spring return actuator rating plate – Supply correct voltage	Skilled qualified electrician
A/B	Check fire damper for damage ■ Fire damper, damper blade and seal must be intact – Replace the damper blade – Repair or replace the fire damper.	Specialist personnel
	Function of the release mechanism ■ Function OK ■ Fusible link intact/no corrosion – Replace the fusible link – Replace the release mechanism	Specialist personnel
	Functional test of the fire damper with fusible link *263* ■ Fire damper can be opened manually ■ Handle can be locked in the OPEN position ■ Damper blade closes when triggered manually – Determine and eliminate the cause of the fault – Repair or replace the fire damper. – Replace the release mechanism	Specialist personnel
	Functional test of the fire damper with spring return actuator *270* ■ Actuator function OK ■ Damper blade closes ■ Damper blade opens – Determine and eliminate the cause of the fault – Replace the spring return actuator – Repair or replace the fire damper.	Specialist personnel
	Function of external duct smoke detector ■ Function OK ■ Fire damper closes when triggered manually or when smoke is detected ■ Fire damper opens after reset – Determine and eliminate the cause of the fault – Repair or replace duct smoke detector	Specialist personnel

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

11.1 Final decommissioning

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

11.2 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.
– Before working on the electrical system, switch off the supply voltage and secure it against being switched on again.

1. Disconnect the connecting cable.
2. Remove the air ducts.
3. Close the fire damper.
4. Remove the fire damper.

11.3 Disposal

ENVIRONMENT!

Risk of harm to the environment due to incorrect disposal!

Incorrect disposal may harm the environment.

– Be sure to comply with the relevant national guidelines and regulations.
– Have electrical waste, electronic components, lubricants and other auxiliary materials disposed of by authorised specialist companies.
– In case of doubt, contact your local authorities or a specialist disposal company.

Note: The fire damper has to be dismantled for disposal.
If no disposal or return agreements with TROX SE are in place, we recommend disposing of the materials as follows:

Disposal information

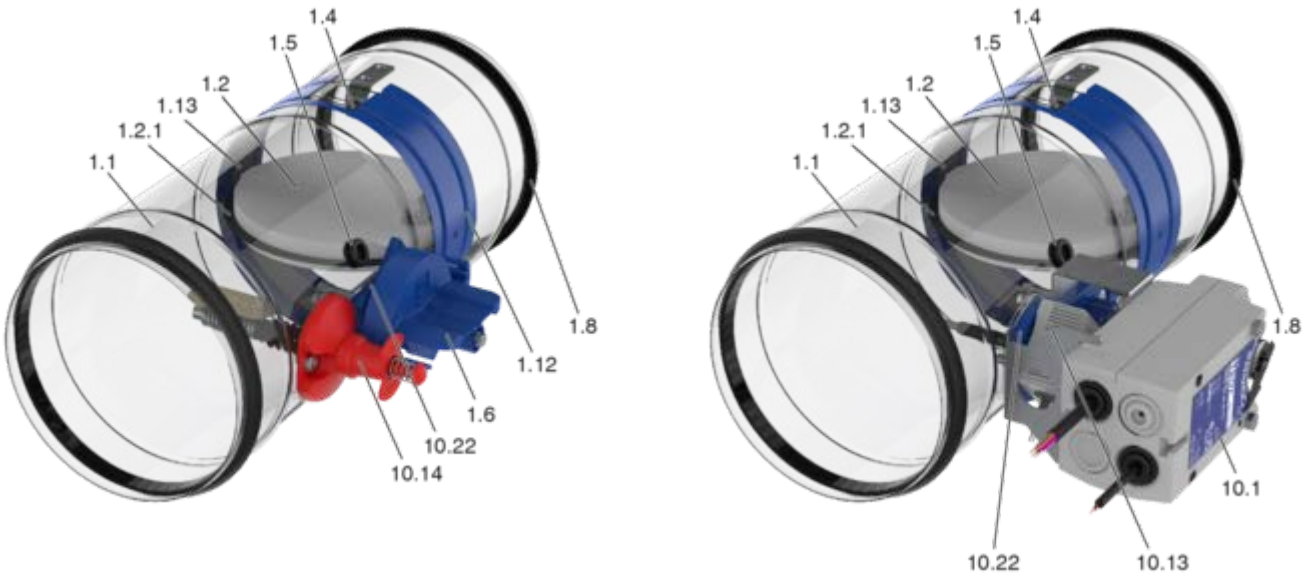


Fig. 229: FKRS-EU with fusible link or spring return actuator

Pos.	Component	Material/waste code	Type of disposal
1.1	Casing	Metal	Scrap metal recycling.
1.2	Damper blade	EAK 17 09 04 – mixed construction and demolition waste	Take such materials to construction waste and inert waste landfills (class 1 landfill).
1.2.1	Sealing ring	EWC 07 02 13 – waste plastic	Disposal according to EWC.
1.4	Parabolic stop buffer	Rubber	Can be fully recycled.
1.5	Sealing plug	EWC 07 02 99 – waste not otherwise specified	Disposal according to EWC.
1.6	Release element	Plastic	Thermoplastic resin can be recycled. If possible, favour recycling over disposal/incineration.
1.8	Lip seal	EAK 17 09 04 – mixed construction and demolition waste	Disposal according to EWC.
1.12	Adhesive tape	EWC 15 01 02 – waste plastic	Disposal according to EWC.
1.13	Intumescent seal	EWC 07 02 13 – waste plastic	Disposal according to EWC.
10.1	Actuator	Electronic component	Have electronic waste disposed of by an authorised specialist company.
10.13	Release element	Electronic component	Have electronic waste disposed of by an authorised specialist company.
10.14	Release element	Metal	Scrap metal recycling.
10.22	Bearing/motor plate	Plastic	Thermoplastic resin can be recycled. If possible, favour recycling over disposal/incineration.

EWC: European Waste Catalogue

12 Nomenclature

In these instructions, several options are given for different installation situations, e.g. (6.2)(6.16) either (6.2) or (6.16).

Seq. no.	Designation
1	**Fire damper/smoke control damper**
1.1	Casing
1.2	Damper blade (with or without lip seal)
1.2.1	Lip seal/travel stop seal/ring seal
1.3	Travel stop for OPEN position
1.4	Travel stop for CLOSED position / parabolic stop buffer
1.5	Inspection access/inspection cover/sealing plug
1.6	Handle/damper blade position indicator
1.7	Interlock
1.8	Lip seal
1.9	Cover
1.10	Release lever
1.11	Flange
1.12	Adhesive tape
1.13	Intumescent seal/storage
1.14	Deflector profile
1.15	Casing extension operating side
1.16	Casing extension installation side
1.17	Calcium silicate core
1.18	Intumescent seal

Seq. no.	Designation
2	**Installation material for fire damper/ smoke control damper**
2.1	Mortar
2.2	Concrete with reinforcement / concrete without reinforcement
2.3	Concrete base with reinforcement
2.4	Coated board system with firestop coating
2.5	Installation kit WA / WA2
2.6	Installation kit WE / WE2
2.7	Installation kit WV
2.8	Installation kit E1 / E2 / E3 / EW

Seq. no.	Designation
2	**Installation material for fire damper/ smoke control damper**
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	Connecting subframe
2.16	Installation subframe
2.17	Firestop block Hilti CFS-BL
2.18	Installation block ER with cover plate
2.19	Joint filler (Promat® filler, Promat® ready-mix filler or equivalent)
2.20	Installation kit TS2
2.21	Installation ring
2.22	Fixing bracket

Seq. no.	Designation
3	**Walls**
3.1	Solid wall
3.2	Lightweight partition wall with metal studs, clad on both sides
3.3	Lightweight partition wall with steel support structure, cladding on both sides
3.4	Timber stud wall (including timber panel construction), clad on both sides
3.5	Half-timbered wall, clad on both sides
3.6	Fire wall or safety partition wall with metal stud, clad on both sides
3.7	Shaft wall with metal studs, clad on one side
3.8	Shaft wall with steel support structure, clad on one side
3.9	Shaft wall without metal studs, clad on one side
3.10	Wall without adequate fire resistance rating
3.11	Solid wood wall/cross-laminated timber wall
3.12	Sandwich panel wall
3.13	Facing formwork with metal stud
3.14	Solid wall made of gypsum wallboard

Seq. no.	Designation
4	**Ceilings**
4.1	Solid ceiling/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	Suspended ceiling
4.7	Hollow core ceiling with reinforcement
4.8	Hollow block slab
4.9	Ribbed ceiling
4.10	Composite ceiling
4.11	Historic wooden beam ceiling, fire resistance rating ≥ F 30
4.12	Panelled ceiling
4.13	FireShield®

Seq. no.	Designation
5	**Fixing material**
5.1	Dry wall screw
5.2	Hexagon head screws, washers, nuts (see respective installation detail)
5.3	Chipboard screw
5.3a	Chipboard screw 5 × 80 mm
5.3b	Chipboard screw 5 × 100 mm
5.3c	Chipboard screw 5 × 60 mm
5.3d	Chipboard screw 5 × 50 mm (4 – 8 screws, depending on damper size)
5.3e	Chipboard screw 5 × 70 mm (16 – 28 screws, depending on damper size)
5.3f	Chipboard screw 5 × 35 mm
5.3g	Chipboard screw 5 × 120 mm
5.3h	Chipboard screw 5 × 130 mm
5.4	Threaded rod, galvanised steel (see respective installation detail)
5.5	Carriage bolt, L ≤ 50 mm, with washer and nut
5.6	Screw or rivet, galvanised steel (see respective installation detail)
5.7	Dowels with suitability certificate for fire resistance
5.8	Metal anchor M8 – M12

Seq. no.	Designation
5	**Fixing material**
5.9	Steel bracket
5.10	Wall fixing tab
5.11	Mounting plate
5.12	Cover plate
5.13	Wood screw or pin-shaped fastener
5.14	Angle bracket
5.15	Flange angle/clamp
5.16	Wall face 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	Fischer® screw, FFS 7.5 × 82 mm or equivalent
5.21	Screw/dowel
5.22	Reinforcement mat, Ø ≥ 8 mm, mesh size 150 mm or equivalent
5.23	Pipe clamp, e.g. Hilti MP-MX or Walraven BIS HD 500 or equivalent
5.24	Sheet metal strips
5.25	Drywall screw
5.26	Steel wire clamp
5.27	Fixing element
5.28	Welding pin
5.29	Duct clamp
5.30	Mineral wool screws, Conlit Screw 90 mm

Seq. no.	Designation
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 board ≥ 1000 °C, ≥ 140 kg/m³
6.5	Mineral wool depending on wall or ceiling construction, mineral wool filling if required
6.6	Mineral wool (tamping wool), loose, ≥ 150 kg/m³, e.g. Rockwool RL
6.7	Coated board system

Seq. no.	Designation
6	**Filling and coating material**
6.8	Wall infill (cavities completely filled with mineral wool ≥ 1000 °C, ≥ 50 kg/m³, or masonry, aerated concrete, lightweight concrete, reinforced concrete or puddle clay)
6.9	Fire-resistant sealant suitable for the coated board system used
6.10	Firestop coating all-round, thickness 2.5 mm
6.11	Insulating strips (depending on wall construction)
6.12	Intumescent seal
6.13	Mineral fibre strips A1, ≤ 5 mm thick, ≤ 1000 °C, alternatively filler material
6.14	Armaflex
6.15	Mineral wool (according to the flexible ceiling joint design)
6.16	Armaflex AF / Armaflex Ultima
6.17	Coated board system, Hensel brand
6.18	
6.19	Mineral wool > 1000 °C, > 80 kg/m³, board material around the perimeter, leave out the actuator and release mechanism; inspection openings must remain accessible
6.20	Pipe collar (can be ordered separately)
6.21	Kerafix 2000 sealing tape
6.22	Screed
6.23	Footstep sound insulation
6.24	Elastomer foam (synthetic rubber) of fire rating class B-S3, D0
6.25	Mineral wool or glass wool filling
6.26	Plaster
6.27	Retaining plate on both sides, 90 × 140 × 1.5 mm
6.28	Ceiling filling (layers of boards or beams)
6.29*	Mineral wool PAROC Hvac Fire Mat BlackCoat (≥ 80 kg/m³)
6.30*	Reinforcement mineral wool PAROC Hvac Fire Mat BlackCoat (≥ 80 kg/m³)
6.31	Fire-rated plasterboard strip d = 12.5 mm
6.32	Fire-rated plasterboard strip d = 20 mm
6.33	Fire-rated plasterboard strip d = 15 mm
6.34	Gyproc FireLine 15 mm
6.35	Gyproc CoreBoard 19 mm

Seq. no.	Designation
6	**Filling and coating material**
6.36	Gyproc CoreBoard packer (consisting of 6.35, to be cut on site)
6.37	Knauf Plasterboard 15 mm
6.38	Knauf Core Board 19 mm
6.39	Knauf Insulation Rocksilk RS60
6.40	GTEC Fire Board 15 mm
6.41	GTEC Core Board 19 mm
6.42	GTEC Fire Board 12.5 mm
6.43	Knauf Plasterboard 12.5 mm
6.44	Gyproc FireLine 12.5 mm
6.45	DuctRock Slab or Conlit Fireboard, 90 mm
6.46	Conlit Fireboard, 60 mm
6.47	Angle section, 40 x 40 mm
6.48	Adhesive Conlit Fix Cold, Conlit Fix, Firepro Glue

Seq. no.	Designation
7	**Supporting construction**
7.1	UW section
7.1a	UW section, cut and bent
7.2	Metal stud profile (CW section)
7.3	UA section
7.4	U50 channel
7.5	Steel support structure
7.6	Metal section, circumferential
7.7	Timber stud, min. 60 × 80 mm
7.8	Steel girder
7.9	Half-timbered construction
7.10	Reveal (also optional)
7.11	Reveal, double layer, staggered joints
7.12	Reveal, wooden composite board min. 600 kg/m³
7.13	Cladding/wall cladding
7.13.1	Cladding, single-layer, inside UW section
7.13.2	Cladding, single-layer/two-layers
7.13a	Cladding, fire-resistant
7.13b	Cladding wooden composite board, min. 600 kg/m³

Seq. no.	Designation
7	**Supporting construction**
7.14	Reinforcing board made of wall construction material
7.15	Wooden floorboard/floor panel/wooden composite board min. 600 kg/m³
7.16	Wooden beam/gluelam
7.17	Framed openings, general
7.18	Ceiling formwork
7.19	Fire-resistant cladding
7.20	U channel
7.21	Ceiling joint strip
7.22	Ceiling joint section
7.23	Sheet steel insert, depending on wall manufacturer
7.24	Ceiling construction
7.25	Reinforced concrete beam
7.26	Hollow concrete block
7.27	Trapezoidal sheet
7.28	Support structure
7.29	Gypframe Extra Deep Flange Floor & Ceiling Channel or Gypframe 'J' Channel
7.30	Gypframe 'I' Stud
7.31	Gypframe retaining channel
7.32	Knauf Deep Flange "U" Channel
7.33	Knauf "J" Channel
7.34	Knauf "CT" Stud
7.35	GTEC "J" Track
7.36	GTEC "E" Stud
7.37	GTEC "CH" Stud
7.38	GTEC "CH" Stud

Seq. no.	Designation
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 fire-rated board d = 35 mm
8.4	Hilti mounting rail MQ 41 × 3, or equivalent
8.5	Hilti perforated plate MQZ L13, or equivalent
8.6	Hilti perforated strips LB26, or equivalent

Seq. no.	Designation
8	**Material for extended applications**
8.7	Mounting rail Würth Varifix 36 × 36 × 2.5 or Müpro MPC 38/40, or equivalent
8.8	Retaining clip Varifix or Müpro MPC, or equivalent
8.9	Connection bracket Varifix ANSHWNKL-PRFL36-90GRAD or Müpro mounting bracket 90°, galvanised, or equivalent
8.10	Large gear
8.11	Actuator with strap
8.12	Strap of actuator mounting plate
8.13	Small gear of actuator
8.14	Connecting cable
8.15	Adjusting screws
8.16	Actuator mounting plate
8.17	Cover
8.18	Junction box
8.19	Firestop board, made of 8.3
8.20	Promaseal®-Mastic intumescent putty
8.21	Firestop acrylic sealant CFS-S ACR CW
8.22	Calcium silicate board, 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	Sheet metal cover, t = 1 mm
8.27	Seal
8.28	PROMATECT®-H strips d = 15 mm
8.29	PROMATECT®-H strips d = 25 mm
8.30	PROMATECT®-AD, d = 40 mm
8.31	PROMATECT®-L500, d = 50 mm
8.32	Firestop board, made of 8.30
8.33	Firestop board, made of 8.31
8.34	Sealing tape, type Flexan
8.35	Intumescent coatings
8.36	Promaxon® panel, type A, d = 20 mm
8.37	Steel bracket
8.38	OWA adhesive
8.39	Support, consisting of spiral duct and 2 × flanged collars

Seq. no.	Designation
8	**Material for extended applications**
8.40	Calcium silicate smoke extract duct
8.41	Kerafix sealing strip, t = 2 mm
8.42	Intumescent fire protection sealant, e.g. CFS-IS / CP 611A
8.43	Calcium silicate Promatect MT 50 or equivalent
8.44	Calcium silicate, e.g. Promatect LS35, Promatect L500 or Promatect AD
8.45	Calcium silicate, e.g. Promatect H, Promatect L500 or Promatect AD
8.46	Foiling, black aluminium foil
8.47	Loose mineral wool, e.g. RL Rockwool
8.48	Actuator cover

Seq. no.	Designation
9	**Accessories**
9.1	Flexible connector
9.2	Air duct/extension piece
9.3	Prop
9.4	Sheet steel duct with fire-rated cladding The cladding of the air duct, as well as the suspensions, are carried out according to these instructions, the additional assembly instructions of the installation kit WE2 and also the specifications of the panel manufacturer (Promat).
9.5	Suspension
9.6	Replacement damper blade
9.7	Damper blade
9.8	Rivet axis
9.9	Pressure plate
9.10	Cover grille
9.11	Circular spigot
9.12	Clamping ring
9.13	Stiffening angle
9.14	Connecting subframe
9.15	T piece
9.16	Cover grille (Q grille)
9.17	Sheet steel smoke extract duct

Seq. no.	Designation
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
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 tipping lever
10.17	Screw
10.18	Fusible link
10.19	Cover
10.20	Spring
10.21	Z-sheet profile
10.22	Bearing/motor plate
10.23	Monitoring system
10.24	Limit switch subassembly (sensor box) with position indicator
10.25	Pneumatic actuator, 6 bar (single-acting)
10.26	Rating plate
10.27	Thermal release unit FT. Nc-72- duo

Seq. no.	Designation
11	**Additions**
11.1	Cable tray
11.2	Cable bundle
11.3	Pipe penetration

Seq. no.	Designation
11	**Additions**
11.4	Underlay material, non-combustible, to be provided by others
11.5	Underlay, to be provided by others
11.6	Cable gland
11.7	Equipotential bonding
11.8	Kitchen
11.9	Cooking area, e.g. hob, grill, deep fryer
11.10	Cooker hood
11.11	Extract air fan
11.12	Attic
11.13	Extract air duct
11.14	Fire-resistant shaft

* Please check in advance whether the PAROC material is available in your market region.

13 Revision history

The table shows all changes made to this document.

Version no.	Date	Author	Remark/amendment
3	2025-02-01	Aj/Nm	■ **General information:** – Editorial text and drawing adjustments ■ **Extensions:** – TS2 installation kit added. – Dry mortarless installation with installation kit TS2 into solid wood ceiling, upright and suspended – FKRS-EU with spring return actuator and RM-O-M smoke release device (air guiding profile). – Individual electrical lines used for the power supply/communication of the fire damper may be routed through the mortar bed of the damper during the mortar-based installation. – Structural adaptation: installation kits summarised. – Tolerance installation kit TQ2 increased to +/- 4 mm. – Fixing in conjunction with fire batt/fire protection block bulkhead adjusted – Additional drive included. ■ New document ID – A00000092709 Version 2 –> A00000092709 Version 3
2	2023-12-01	PB	■ **General information:** – Declaration of Performance increased from DoP / FKRS-EU / DE / 005 to DoP / FKRS-EU / DE / 006 – Addition EN 15882 to the standardisation principles, as a result: - Specification of the performance class for FKRS-EU with stainless steel casing, for all applications up to EI 90 S - Dry mortarless installation with TQ2 in lightweight ceilings (ADK system) not applicable - Dry mortarless installation with TQ2 in combination with lightweight ceiling (ADK system) not applicable – Belimo spring return actuators have been replaced by "general" spring return actuators. – Use of flexible connector as separate point – Adaptation/extension table for installation positions and distances – Editorial text and drawing adjustments ■ **Extensions:** – Use in combined penetration seal according to ETA-21/0528 – Solid wall with W ≥ 75 mm, mortar-based installation, up to EI 120 S – Timber stud wall, mortar-based installation, multiple installation, EI 90 S – Half-timbered construction, mortar-based installation, multiple installation, EI 90 S – Asymmetrical shaft wall, mortar-based installation, EI 60 S to EI 120 S – Asymmetrical shaft wall, dry mortarless installation, EI 60 S to EI 120 S – Solid ceiling slab, dry mortarless installation with installation kit WA2, EI 90 S – Solid ceiling slab in conjunction with FireShield ®, EI 90 S (currently not available for Germany) – Wooden ceiling slab, wooden panel element, mortar-based installation, EI 30 S to EI 90 S – Wooden ceiling slab, wooden panel element, dry mortarless installation, EI 30 S to EI 90 S

Version no.	Date	Author	Remark/amendment
			– Timber stud walls, extension of non-load-bearing timber wall constructions to include walls in accordance with DIN 4102-4, or EN 1995-1-2, Eurocode 5, provided that the minimum wall thicknesses corresponding to the required fire resistance rating are complied with in the installation area. – Solid ceiling slab in conjunction with wooden beam ceiling, extension of the existing ADK and Cadolto modules also for modules from other manufacturers whose constructions (e.g. steel construction with double-layer reveal made of fire-rated plasterboard panels) are comparable with the above-mentioned systems. – Alternative coated board systems, the list of approved soft insulation systems is extended to include Rockwool and KBS. Other coated board systems are also permitted if they fulfil the following requirements: - Non-flammable slab material, melting point ≥ 1000° C - Minimum thickness 50 mm - Minimum density of the panel material 140 kg/m^3 - Ablative coating, minimum fire behaviour class E... according to EN 13501-1 - Test certificate in accordance with EN 1366-3 (a valid ETA is sufficient as proof of suitability, provided the required information is included). The suitability of the coated board systems in terms of fire resistance is tested on site. – Installation in walls and ceilings with slope – Alternative shaft wall systems are permissible, provided they are covered by the direct scope of EN 1366-2 (more layers, greater thickness, etc.). – Simplification of the distance rules below supporting structures: - Distance from 40 mm using the mortar-based installation method - Distance from 40 mm with soft bulkhead - Distance from 55 mm in dry mortarless installation with installation block/installation frame These distances can now also be applied to ceilings (also in slab form) in horizontal alignment that have a valid European or national fire resistance certificate (report or expert report, etc.). The verifications of these reports and the suitability of the supporting structure with regard to fire resistance and statics are carried out on site. – Lightweight partition walls with alternative stud frame and wall construction, extension to include lightweight partition walls that are constructed with country-specific metal profiles that differ in their geometry from the profiles used in the fire tests. The use of FKRS-EU in walls with such profiles is permitted if the wall construction has been tested by the wall manufacturer. This also applies to wall structures with metal inserts, metal nets or additional layers of wooden sheets. European and national evidence (report or expert assessments, etc.) and also additional tests and classifications carried out by testing institutes are accepted as evidence. – Shaft walls, extension to include shaft walls up to EI 60 S, which were constructed with Promatect 100. – Lightweight walls, extension of wall structures with GKF boards to GKB boards for EI 30 S to EI 60 S. Additional reinforcing boards made of wall construction materials or additional wood sheets are permitted. – Alternative fixing systems, alternative fixings may be used provided that their performance is proven by fire test, stresses, linear expansion or load data. Other information may be taken into account. In addition to these fastenings, fastening variants approved by a testing facility may also be used. ■ New document ID

Version no.	Date	Author	Remark/amendment
			– A00000092709 Version 1 –> A00000092709 Version 2
1	2023-03-06	PB	■ Technical data - New attachments: – FKRS-EU with spring return actuator and smoke detector – FKRS-EU with fusible link and cover grilles as an air transfer damper (FD) – FKRS-EU with spring return actuator and duct smoke detector as an air transfer damper (MFD) ■ Structure and function - New attachments: – FKRS-EU with fusible link and cover grilles as an air transfer damper (FD) – FKRS-EU with spring return actuator and duct smoke detector as an air transfer damper (MFD) ■ Installation - installation kits: – Old installation kits TQ, WA, WE and GL no longer applicable ■ Installation - New uses: – Solid walls - Mortar-based installation in solid wall - installation not flush with wall - Mortar-based installation in gypsum wallboard – Dry mortarless installation remote from solid walls with mineral wool and coated board system - Dry mortarless installation with coated board system in solid wall - multiple occupancy of an installation opening – Lightweight partition walls – Mortar-based installation in lightweight partition wall – Installation not flush with wall – Mortar-based installation – multiple occupancy of one installation opening – Dry mortarless installation in lightweight partition wall with installation kit TQ2 – Installation not flush with wall – Dry mortarless installation with installation kit GL2 in lightweight construction or compartment wall and Knauf ceiling connection – Dry mortarless installation with installation kit GL2 and steel bracket in lightweight partition wall, if there is no rear fixing option – Dry mortarless installation with coated board system in lightweight partition wall – Multiple occupancy of an installation opening – Timber stud walls and half-timbered construction walls – Mortar-based installation into a lightweight partition wall with timber support structure, combined, FKRS-EU and FK2-EU – Mortar-based installation into a lightweight partition wall with half-timbered construction, combined, FKRS-EU and FK2-EU - Dry mortarless installation with coated board system - multiple occupancy of an installation opening – Shaft walls with metal support structure – Dry mortarless installation with installation kit WA2 - Dry mortarless installation with coated board system – Shaft walls without metal support structure - Mortar-based installation – Solid ceilings - Mortar-based installation in solid ceiling, combined, FKRS-EU and FK2-EU – Mortar-based installation – multiple occupancy of one installation opening - Mortar-based installation in combination with lightweight ceilings (ADK modular room system) - Dry mortarless installation in combination with lightweight ceilings (ADK modular room system), with concrete base and installation kit TQ2 ■ New document ID

Version no.	Date	Author	Remark/amendment
			– M375DE7 Version 5 –> A00000092709 Version 1

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Valid from 01.07.2024