geba brandschutz

Assembly and Operating Instructions

geba Fire Damper WFK according to EN 15650

With open cross-section for use in air handling systems of buildings

Tested according to EN 1366, Part 2

CE

Version: 06/2023

Table of contents

General Instructions

This assembly and operating manual describes the fire protection damper of the WFK variant. To ensure the proper functioning of the fire protection damper, it is absolutely essential to read the supplied assembly and operating manual before any use and to observe the instructions listed therein. Upon facility handover, the manual is to be handed over to the facility operator. The facility operator is required to include the manual in the system documentation. Malfunctions or damages resulting from failure to follow this manual or non-compliance with legal regulations do not lead to liability claims against the manufacturer. This assembly and operating manual is intended for planners, developers, and operators of systems in which fire protection dampers are to be integrated.

Furthermore, this manual is intended for individuals performing the following tasks:

- Transport and storage
- Installation
- Commissioning, operation, and maintenance
- Decommissioning, dismantling, and disposal

In addition to this assembly and operating manual, the applicable standards and technical regulations must be followed.

Guidelines for cleaning and connecting ventilation elements according to VDI 6022 Sheet 1 Table 2 b):
"According to DIN EN 12097: maximum screw length 13 mm or resulting protrusion of screws and rivets of a maximum of 12 mm. To prevent injuries to maintenance personnel, a distance of one meter from inspection and cleaning openings should be maintained. Under no circumstances should cleaning and maintenance work be obstructed."

CE Marking and Labeling:

CE
1322

Bartholomäus GmbH
Bachstraße 10
89607 Emerkingen

Bartholomäus GmbH

18
1322-CPR-086678/01

DIN EN 15650:2010
fire damper
WFK

Nominal activation/sensitivity conditions	
- Load capacity of the temperature-sensitive sensor	fulfilled
- Response temperature of the temperature-sensitive sensor	fulfilled
Response delay (response time):	
- Closing time	fulfilled
Operational safety:	
- cyclic testing	50 cycles
Fire resistance:	
- Retention of the cross section	
- Compartmentation E	EI XX
- Thermal insulation I	(v_e/h_o, i <--> o)
- Smoke leakage S	S
- Mechanical strength (regarding E)	fulfilled
- cross section (regarding E)	fulfilled
Durability of response delay:	
- Response of the temperature-sensitive sensor to temperature and load	fulfilled
Durability of operational safety:	
- Testing of opening and closing cycles	- not applicable -

CE marking

Producer data

Year of marking
EG Certificate of Conformity

European standard
Product description
Type/Model

Information about applicable characteristics

See page 4

Safety and Intended Use

The described tasks on the fire protection damper may only be carried out by qualified personnel. The following regulations and guidelines must be observed for all tasks related to the fire protection damper:

- Equipment and Product Safety Act
- Operating Safety Ordinance
- Building Code Regulations
- Accident Prevention Regulations (BGV A1, BGV A3)

The fire protection damper WFK is a safety component specially developed for fire protection.

Certifications and Standards

- Fire protection damper according to EN 15650:2010
- Performance Declaration Certificate 1322-CPR-086678/01
- Declaration of Performance DoP/WFK/DE/2023/006
- Classification according to DIN EN 13501-3:2009

▪ Solid ceiling wet installation (mortar) d* ≥ 150 mm:	EI 120 (h_o i <--> o) S
Installation Würth - I-Block wet installation	EI 120 (h_o i <--> o) S
Modular ceiling system Cadolto, wet installation	EI 120 (h_o i <--> o) S
Solid wall (mortar) d* ≥ 100 mm:	EI 90 (v_e i <--> o) S
Solid wall dry installation (insert element) d* ≥ 100 mm:	EI 90 (v_e i <--> o) S
Lightweight wall with metal stud framework wet installation (mortar) d* ≥ 100 mm:	EI 90 (v_e i <--> o) S
Lightweight wall with metal stud framework dry installation (insert element) d* ≥ 100 mm:	EI 60 (v_e i <--> o) S
Sliding ceiling connection GDA, lightweight wall d ≥ 100 mm	EI 90 (v_e i <--> o) S
Board stack / plywood ceiling paneled wet installation (mortar) d* ≥ 112.5 mm:	EI 90 (h_o i <--> o) S
Board stack / plywood ceiling wet installation (mortar) d* ≥ 140 mm:	EI 90 (h_o i <--> o) S
Timber beam ceiling wet installation (mortar) d* ≥ 174.5 mm:	EI 90 (h_o i <--> o) S
Shaft wall wet installation (mortar) d* ≥ 90 mm:	EI 90 (v_e i <--> o) S
Shaft wall dry installation (insert element) d* ≥ 90 mm:	EI 60 (v_e i <--> o) S
Wood stud wall paneled on both sides wet installation (mortar) d* ≥ 130 mm:	EI 90 (v_e i <--> o) S
Wood stud wall paneled on both sides dry installation (insert element) d* ≥ 130 mm: Board	EI 90 (v_e i <--> o) S
stack / plywood wall wet installation (mortar) d* ≥ 100 mm:	EI 90 (v_e i <--> o) S
Board stack / plywood wall dry installation (insert element) d* ≥ 100 mm:	EI 90 (v_e i <--> o) S

- Tested according to DIN EN 1366-2
- Damper leakage according to EN 1366-2

All other relevant norms and regulations for fire protection must be observed.
*d: wall/ceiling thickness

Intended Use

The fire protection damper is used as a thermal barrier device to prevent the spread of fire and smoke through the air duct. The fire protection damper can be used in supply and exhaust air systems, with or without heat recovery. Intended installation locations include solid walls, solid ceilings, lightweight partitions, shaft walls, wooden ceilings, board stack walls, plywood walls, and wood stud walls. Installation can be done vertically and horizontally with any airflow direction. Connections can be made to air ducts made of combustible or non-combustible materials, including single-sided connections with grille cover. In accordance with European standards, use without dual pipe connections is possible unless there are national requirements to the contrary. Under the conditions of intended installation and operation, the Type WFK fire protection damper achieves the performance class DIN EN 13501-3:2007 + A1:2009. Furthermore, the general maintenance guidelines DIN 31051 and EN 13306 apply.

Prohibited Uses

The fire protection damper must not be used under the following conditions

- Use as a smoke extraction damper
- Use in hazardous areas (Ex zones)
- Use outdoors without adequate protection against weather influences
- Use in exhaust systems of commercial kitchens
- Use in ventilation systems where function is hindered by heavy contamination, extreme humidity, or chemical contamination.
- Use in installation situations where internal inspection, such as camera inspection, reflection, and cleaning of the fire protection damper in its installed state, is not possible.

Modifications to the fire protection damper and the use of spare parts not approved by Bartholomäus GmbH are not allowed.

Residual hazards

geba-Fire protection dampers undergo rigorous quality controls during manufacturing. Additionally, a functional test is conducted prior to delivery. Damages during transportation or installation can lead to a compromised function. The proper and undamaged condition of the fire protection damper must be checked before installation and during commissioning

Transportation and Storage

Inspection of the delivery

Inspect the delivery for any damage and completeness immediately upon receipt. In case of any transport damage or incomplete delivery, notify the carrier and your supplier promptly. The complete delivery includes

- fire protection damper
- if applicable,. attachments/accessories
- assembly and operating instructions

Transport to the building site

Transport the fire protection damper in its shipping packaging as close as possible to the installation location

Storage

When storing fire protection dampers, please consider the following points:

- Protect the fire protection damper from dust and debris.
- Shield from moisture and direct sunlight.
- Do not expose the fire protection damper (even when packaged) directly to the weather.
- Store the fire protection damper at temperatures between -40°C and 50°C.

Packaging

Dispose of packaging materials properly after unpacking.

Caution!
Risk of injury from edges and sheet metal parts.
Wear protective gloves during transport and installation.

Product Description

Fire protection dampers of the WFK series are used as safety components within the ventilation system.
The fire protection damper is intended to prevent the spread of fire and smoke through the air duct. During operation at normal temperature, the fire protection damper is open to ensure the airflow in the ventilation system.

Functional description (Fig. 2)

The fire protection damper contains two thermal release devices that trigger at a temperature above 70°C. This causes the preloaded closure flaps to pivot from the 'open' to the 'closed' position. Maintenance-free stainless steel double torsion springs serve as the driving mechanism

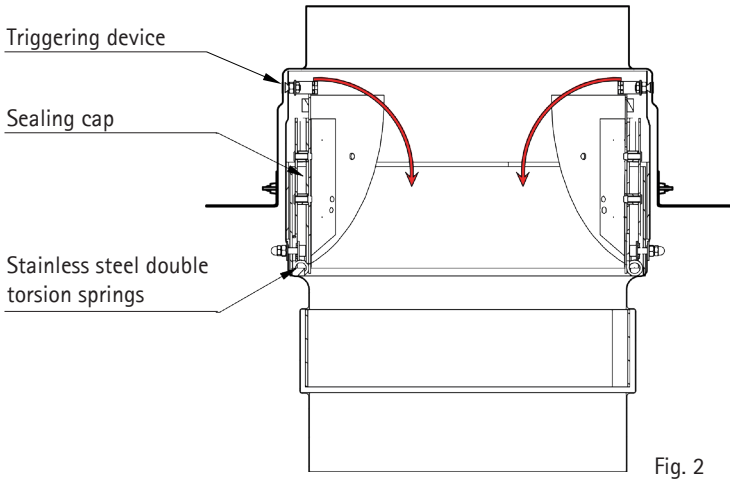


Fig. 2

Dimensions

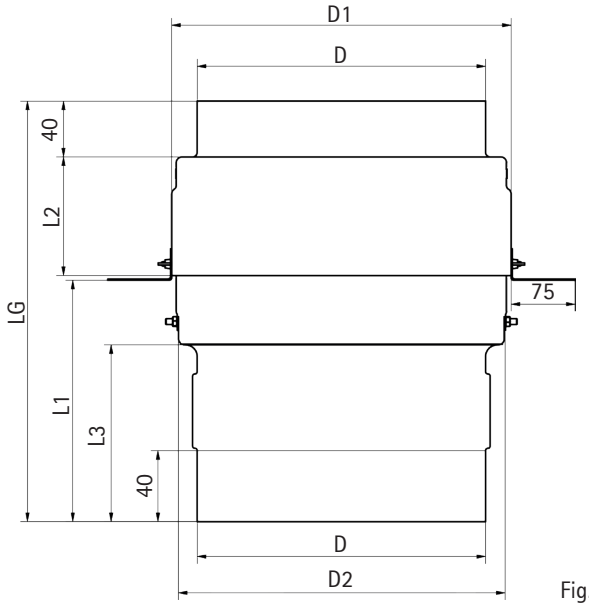
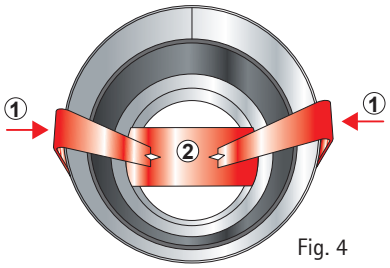


Fig. 3

Nominal size DN in mm	100	125	160	200	250
D	98	123	158	198	248
D1	145	177	211	251	300
D2	130	155	190	230	280
L1	168	168	168	178	188
L2	32	41	60	76	101
L3	110	110	110	120	130
LG	245	255	270	300	335
Weight in kg	1.2	1.7	2.2	3.3	4.9

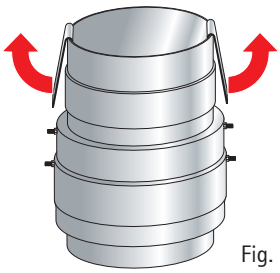
General Installation Information

1. Removal of transport lock



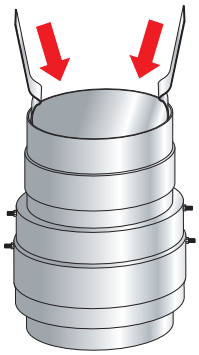
1 Safety bracket
2 Security plate

Fig. 4



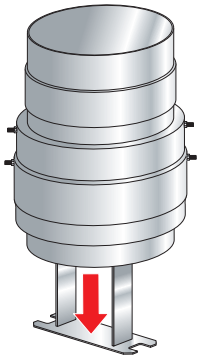
Bend both safety brackets upwards.

Fig. 5



Press safety brackets with locking plate downwards (through WFK).

Fig. 6



Remove locking plate and safety bracket completely from the housing.

Fig. 7

2. Checking the release tab

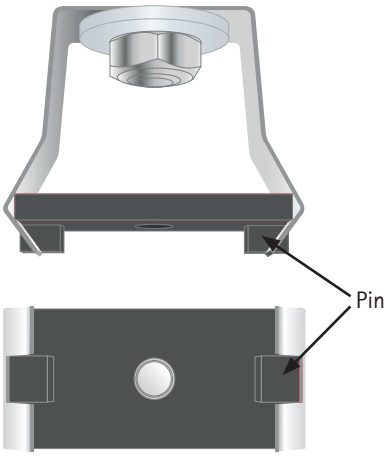


Fig. 8

Caution!
Flap blades are tensioned.
Danger of injury!

Position of the release tabs must be checked before installing the flap.

The release tabs must be straight and sit inside the bracket as shown in Fig. 8.

Important! Both pins of the release tabs must be positioned inside the designated cutouts of the brackets.

3. Distance to load-bearing components

	Y1*	Y2**
Ceiling	≥ 10 mm	≥ 20 mm
Wall	≥ 10 mm	≥ 20 mm

*Housing cover from load bearing components
**Clearance area D2 from supporting components

Exception: „Installation - Soft Firestop“ on page 23

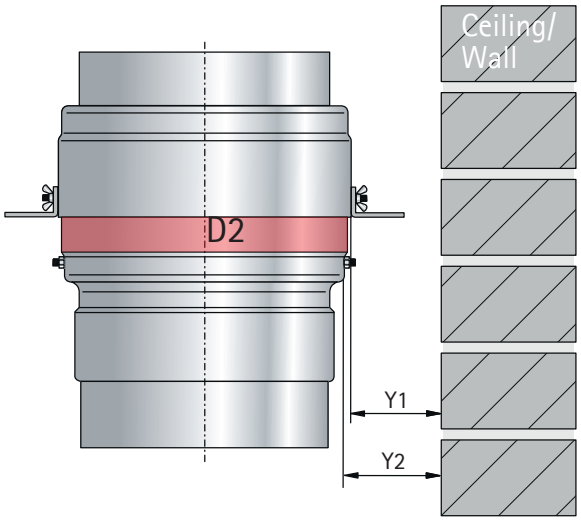


Fig. 9

4. Important Information

Caution!
Malfunction of the fire protection damper due to contamination or damage.
Clean the fire protection damper from any debris before installation.
Protect the fire protection damper from contamination and damage during installation.

Caution!
Risk of injury from edges and sheet metal parts.
Wear protective gloves during transport and installation.

Connection of ventilation ducts

Installation is possible vertically and horizontally with any airflow direction. Suitable for installation in solid and wooden ceilings, as well as in solid walls, shaft walls, and lightweight walls with metal and wooden studs, and wooden walls. For stud construction, use elastic connectors to absorb thrust forces and allow for expansion compensation. Connection of air ducts made of combustible or non-combustible materials, also possible with single-sided grille. European standards allow for use without dual-pipe connection unless national regulations state otherwise.

Mounting brackets

Attach the supplied mounting or stop brackets on both sides of the housing cover using wing nuts. The brackets are fastened with the shorter side against the cover and aligned according to Fig. 10.

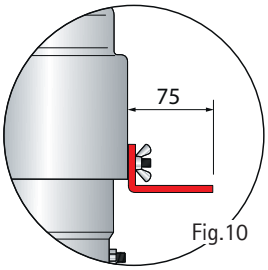


Fig.10

Approved mortar for wet installation

The voids between the fire protection damper and the wall/ceiling must be completely filled with mortar across the entire wall/ceiling thickness. Air pockets must be prevented. Approved mortar:

- DIN 1053: Group II, IIa, III, IIIa, or fire protection mortar Group II, III
- EN 998-2: Class M 2.5 to M20 or fire protection mortar Class M 2.5 to M20
- Alternatively, equivalent mortars to the above-mentioned standards, gypsum mortar.

Load-bearing structures according DIN EN 1363-1:2012 section 7.2.2

- Solid construction with high bulk density: masonry or solid concrete with a total density of ≥ 850 kg/m³ according to section 7.2.2.1.
- Solid construction with low bulk density: aerated concrete with a total density of (650 ± 200) kg/m³ according to section 7.2.2.2.
- Lightweight construction: Lightweight wall with metal studs and plasterboard paneling, according to section 7.2.2.4.

Load-bearing structures according to DIN EN 1363-1:2012 section 7.2.2

- Shaft walls single-sided paneled: in accordance with EN 1363, Part 1, Section 7.2.3 and EN 1366, Part 2, Section 7.2.
- Board stack / plywood ceilings d ≥ 112.5 mm; paneled with GKF board (12.5 mm)
- Board stack/ plywood ceilings d ≥ 140 mm
- Timber beam ceiling d ≥ 174.5 mm; triple-paneled with GKF boards (3 x 12.5 mm)
- Wood stud wall d ≥ 130 mm on both sides, double-paneled with GKF boards (each 2 x 12.5 mm)
- Board stack / plywood walls d ≥ 100 mm

Distances - Installation in Ceilings & Walls

Installation on or under ceiling

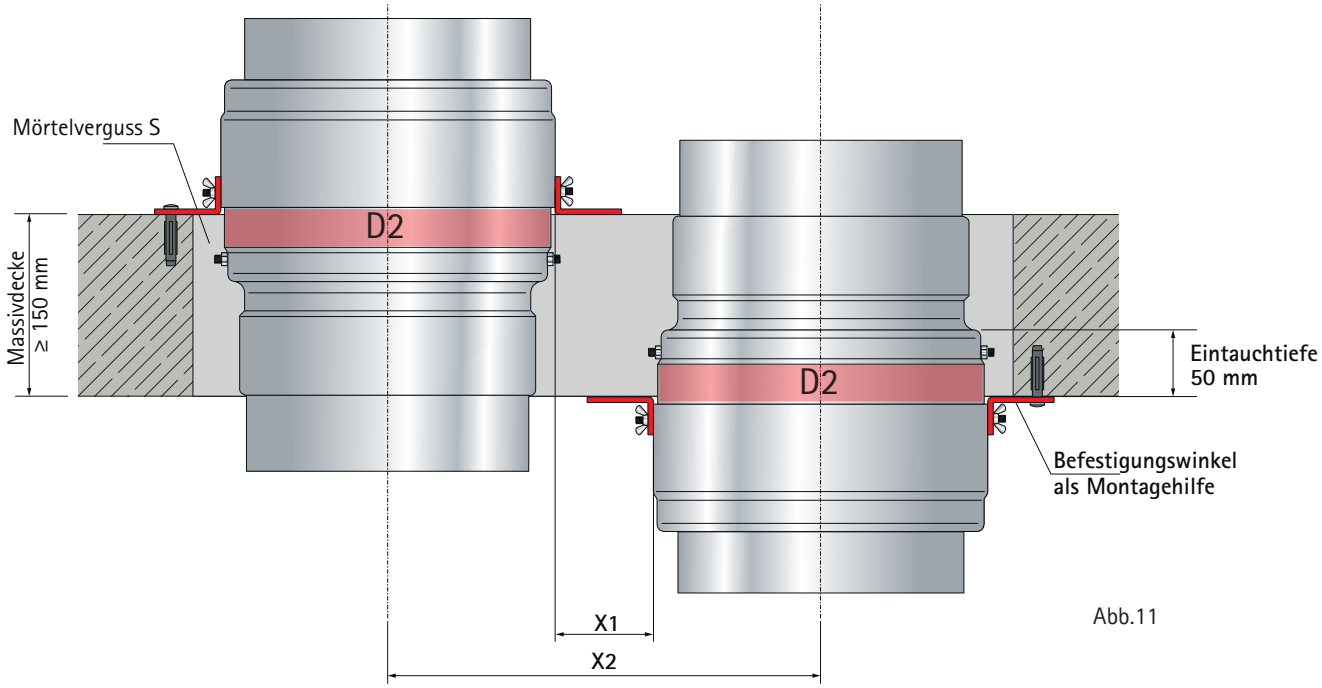


Abb.11

Ceiling installation: Mount the mounting brackets (shown in red) flush with the top edge of the ceiling when installing on the ceiling, and flush with the bottom edge of the ceiling when installing under the ceiling.
Wall installation: Mount the mounting brackets (shown in red) flush with the wall when installing on the wall.

X1	Solid ceiling Wooden ceiling	Lightweight wall**, solid wall wooden stud wall	Shaft wall
WFK-WFK (innen)	≥ 20 mm	≥ 20 mm	≥ 190 mm

X2	Solid ceiling Wooden ceiling	Lightweight wall**, solid wall wooden stud wall	Shaft wall
Interaxis distance	≥ DN + 70 mm	≥ DN + 70 mm	≥ DN + 240 mm
DN 100	170 mm	170 mm	340 mm
DN 125	195 mm	195 mm	365 mm
DN 160	230 mm	230 mm	400 mm
DN 200	270 mm	270 mm	440 mm
DN 250	320 mm	320 mm	490 mm

Installation situation	Gap S*	Distance to load-bearing components
Solid ceiling	≤ 150 mm	≥ 20 mm
Solid wall	≤ 150 mm	≥ 20 mm
Lightweight wall with metal stud**/with wooden stud	≤ 150 mm	≥ 20 mm

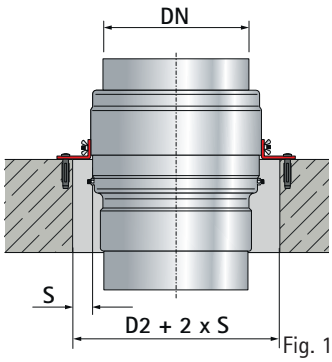


Fig. 12

*Gap S (150)

S ≤ 150 mm
circumferential gap

**Lightweight wall with metal stud:

- Lightweight walls with metal studs and double-sided paneling, classified according to EN 13501-2 or comparable national classification.
- Lightweight walls with metal studs and double-sided paneling made of gypsum fiberboards or gypsum- or cement-bound panel materials (wall thickness ≥ 100 mm, spacing of metal studs ≤ 625 mm).
- Connection of air duct with elastic connector.
- Shaft wall with metal stud framework, single-sided paneled with 2 x 20 GKF (fibrous gypsum board) panels.

Installation - Solid Ceiling

Wet installation

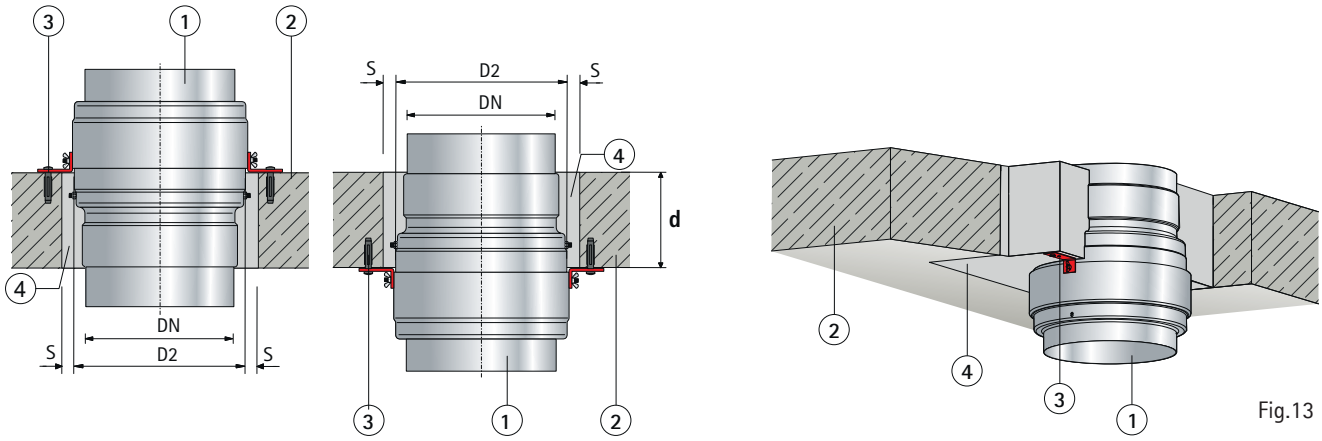


Fig.13

DN Pipe diameter
S Gap S ≤ 150 mm round/rectangular
d Ceiling thickness d ≥ 150 mm

1 Fire damper WFK
2 Solid ceiling (wet installation)
3 Mounting bracket (use screws if necessary)
4 Mortar

Basics/Data

- Performance class EI 120 (h_o i ↔ o) S
- Solid ceilings with a minimum thickness of 150 mm, e. g. made of concrete or aerated concrete
- Distance between two fire protection dampers is ≥ 25 mm (page 8)
- Distance to supporting components ≥ 20 mm from dimension D2 (Fig. 9, page 7; red spacing surface)

Installation during ceiling construction

The fire protection damper can be directly embedded into the solid ceiling during its construction. The surrounding gap S can be omitted here.

1. Remove the transportation safeguard from the fire protection damper (page 6).
2. Verify the correct position of the release tabs (page 6).
3. Attach the mounting brackets to the housing using wing nuts (Fig.12, page 8).
4. Position the fire protection damper with the mounting brackets flush with the upper edge of the ceiling when installing on top of the floor ceiling, or flush with the lower edge of the ceiling when installing below the floor ceiling (Fig. 11, page 8). use screws if necessary.
5. Protect the interior of the fire protection damper from mortar and debris.
6. Pour the fire protection damper in place.

Installation after ceiling completion (core drilling, penetration)

If installation takes place after the ceiling has been completed, the following steps must be carried out:

1. Remove the transportation protection from the fire protection damper (page 6).
2. Verify the correct positioning of the release tabs (page 6).
3. Attach the mounting brackets to the housing using wing nuts (Fig. 10, page 7).

Create the installation opening through core drilling or penetration (Fig. 11, page 8):

- For a single fire protection damper, we recommend an installation opening of at least Ø D2 + 2 x 20 mm;
- For two fire protection dampers, we recommend an installation opening of at least 2 x Ø D2 + 40 mm + 2 x 20 mm;
- Maintain a distance of ≥ 25 mm between two fire protection dampers.

4. Position the fire protection damper with the mounting brackets flush with the upper edge of the ceiling when installing on top of the floor ceiling, or flush with the lower edge of the ceiling when installing below the floor ceiling (Fig. 11, page 8). Use screws if necessary. The wall/ceiling-flush leg can be shortened if space is limited.
5. Install formwork.
6. Fill the fire protection damper with a surrounding mortar bed in the thickness of the ceiling.

Note: Protect the interior of the fire protection damper from mortar and debris.

Installation - Solid Wall

Wet Installation

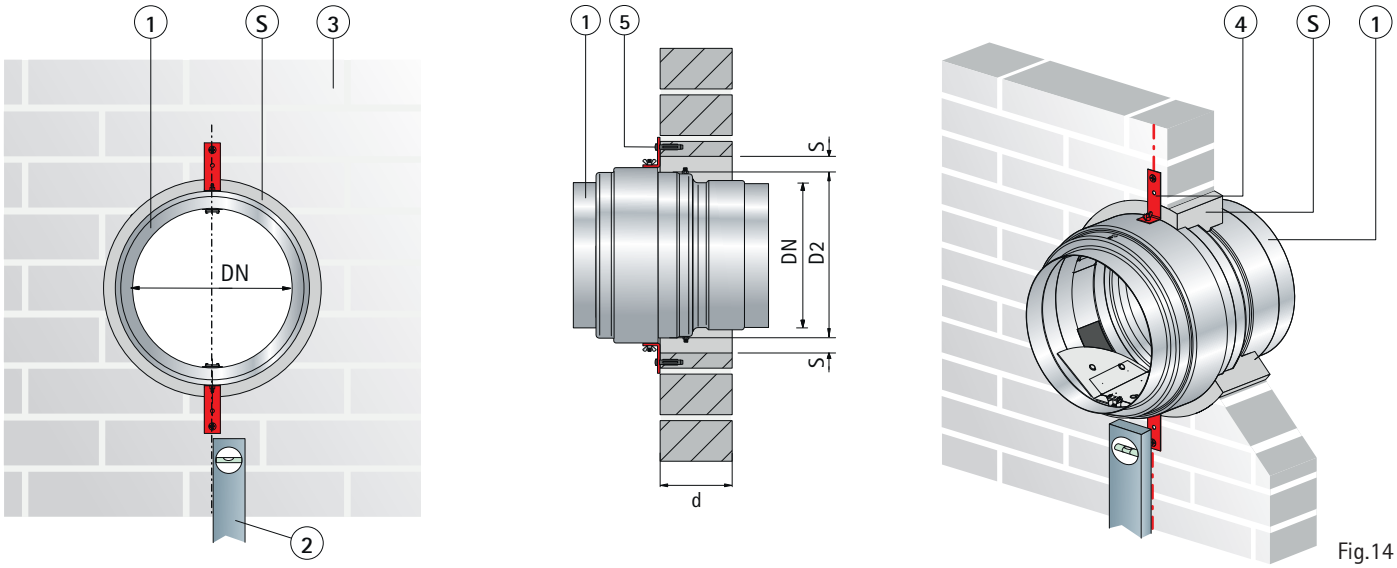


Fig.14

DN Pipe diameter

S Gap S ≤ 150 mm, round/ rectangular

d Wall thickness d ≥ 100 mm

1 Fire protection damper WFK

2 The installation position is determined by vertical mounting brackets (corresp. to the horizontal axis orientation of the closure flaps)

3 Solid wall (wet installation)

4 Mounting brackets

5 Screw mounting brackets (use screws if necessary)

Basics/data

- Performance class EI 90 (v_e i ↔ o) S
- Solid walls with a minimum thickness of 100 mm, made of materials such as concrete or aerated concrete.
- Distance between two fire protection dampers is ≥ 25 mm (page 8).
- Distance to load-bearing components ≥ 20 mm from dimension D2 (Fig. 9, page 7, red clearance area).

Installation during wall construction

The fire protection damper can be directly embedded into the solid wall during its construction.

1. Remove the transportation safeguard from the fire protection damper (page 6).
2. Verify the correct positioning of the release tabs (Page 6).
3. Attach the mounting brackets to the housing using wing nuts (Figure 10, Page 7).
4. Position the fire protection damper in the designated installation position on a mortar bed during wall assembly. Mounting brackets must align vertically and flush (Fig.11; Fig.14, ②) with the wall, use screws if necessary.
5. Protect the interior of the fire protection damper from mortar and debris.
6. Embed the fire protection damper into the wall with a surrounding mortar bed.

Installation after wall completion (core drilling, penetration)

If installation takes place after wall completion, the following steps must be carried out:

1. Remove the transportation safeguard from the fire protection damper (page 6).
2. Verify the correct positioning of the release tabs (page 6).
3. Attach the mounting brackets to the housing using wing nuts (Fig. 10, page 7).

Create the installation opening (round/rectangular) through core drilling or penetration (page 8):

- For a single fire protection damper, we recommend an installation opening of at least Ø D2 + 2 x 20 mm;
- For two fire protection dampers, we recommend an installation opening of at least 2 x Ø D2 + 40 mm + 2 x 20 mm;
- Maintain a distance of ≥ 25 mm between two fire protection dampers.

4. Slide and position the fire protection damper into the installation opening.
   Mounting brackets must align vertically and flush (Fig.11; Fig.14, ②) with the wall, use screws if necessary. The wall/ceiling-flush leg kan be shortened if space is limited.
5. Protect the interior of the fire protection damper from mortar and debris.
6. Seal the surrounding gap with approved mortar (page 7) to the full wall thickness.

Installation - Lightweight Wall with Metal Stud Framework

Wet installation

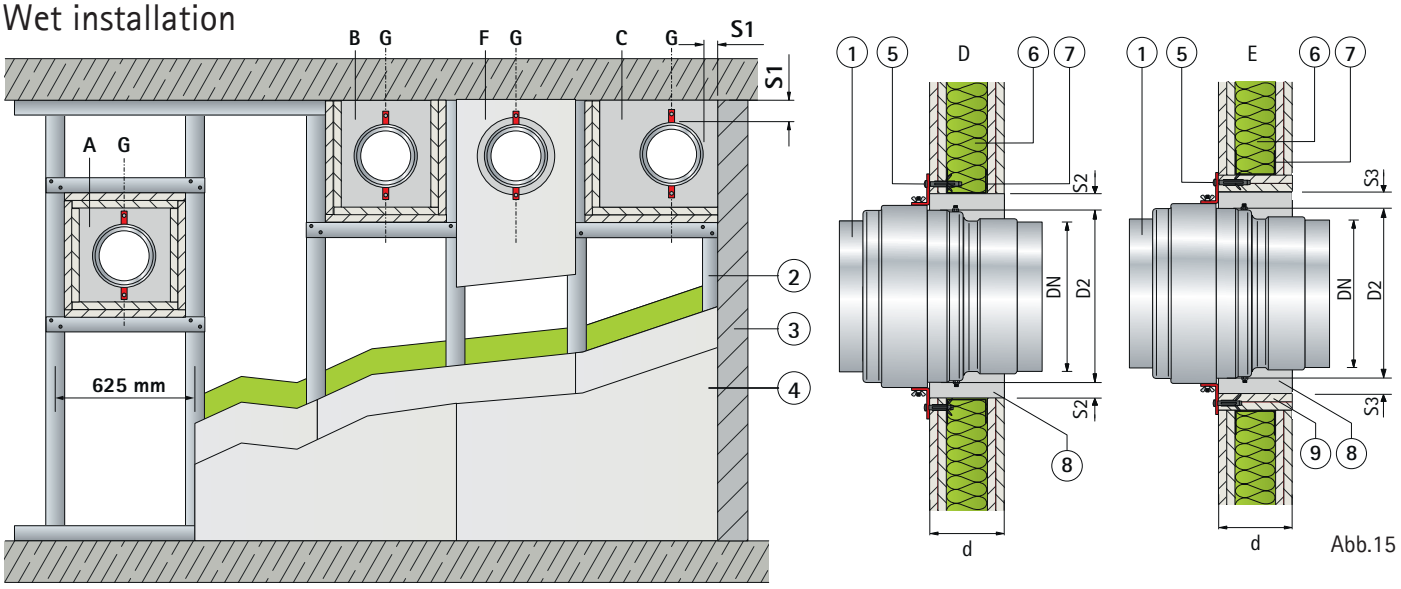


Abb.15

A Installation - lightweight wall w/ metal stud framing

B Installation under the floor ceiling

C Installation on load-bearing components (here: ceiling and wall)

D Wall cross-section, installation of WFK w/o reveals

E Wall cross-section, installation of WFK w/o reveals, paneled

F Wall cross-section, installation of WFK round opening

G Installation position using vertical mounting brackets predefined (corresponds to the horizontal axis position of the shut-off flaps)

S1 Distance to load-bearing components S1 ≥ 20 mm

S2 Gap without reveal paneling S2 ≤ 150 mm

S3 Gap with reveal paneling S3 ≤ 150 mm

S4 Gap S4 ≤ 75 mm

d Wall thickness d ≥ 100 mm

1 Fire protection damper WFK

2 Metal profile

3 Load-bearing component (here: wall or. ceiling)

4 Double-sided paneling, dual-layered with GKF panel (2 x 12,5 mm)

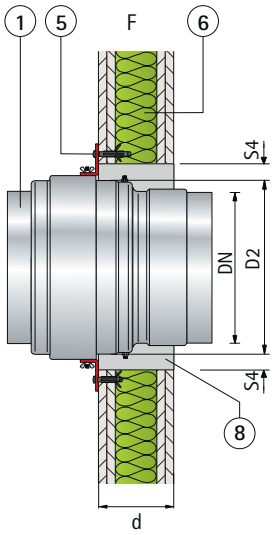
5 Mounting brackets

6 Insolation

7 CW profile 50 mm

8 Mortar, acc. to DIN 1053: group II, IIa, III, IIIa or fire protection mortar group II, III; EN 998-2: class M 2.5 to M20 or fire protection mortar class M 2.5 to M 20

9 Reveal, w/o, single or double paneling



Basics/Data

- Performance class EI 90 (v_e i ↔ o) S
- Lightweight walls with metal studs and double-sided paneling according to European classification (EN 13501-2) or comparable national classification.
- Double-sided paneling made of cement or gypsum-based panel materials, gypsum fiberboards, or fire protection boards made of calcium silicate, wall thickness d ≥ 100 mm.
- Distance between metal studs ≤ 625 mm.
- Installation in round openings without replacement gap S4 ≤ 75mm.
- Installation in rectangular openings with a bracing profile or with replacements and bars.
- Reveals must always be screwed to the stud framework.
- Distance to load-bearing components (ceiling, wall) S1 ≥ 20 mm.

Installation - wet installation

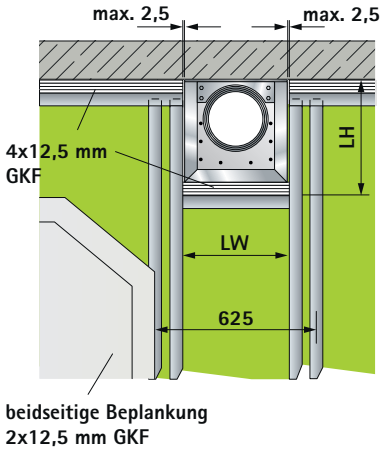
Construct lightweight wall with metal stud framing according to manufacturer's specifications:
1. Create installation opening, alternatively with doubling.
Perimeter gap S2/S3 ≤ 150 mm; we recommend the mortar gap not be smaller than 20 mm.
- Before wall paneling: create installation opening in metal stud framing with replacement and bars.
- After wall paneling: create rectangular installation opening and reinforce with perimeter metal profile.
2. Remove transport safeguard from the fire protection damper.
3. Check trigger plates for correct positioning.
4. Attach mounting brackets to the housing using wing nuts.
5. Place and secure fire protection damper in the installation opening. Mounting brackets must be installed vertically and flush (Ⓖ) with the wall, use screws if necessary. The wall- / ceiling-flush leg can be shortened if space is limited.
6. Protect the interior of fire protection dampers from mortar and debris.
7. Completely seal the circumferential gap S with mortar over the entire wall thickness d.

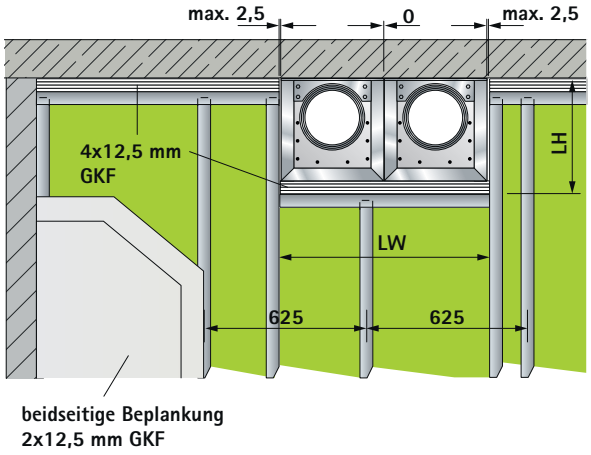
Installation - Lightweight Wall with Metal Stud Framework

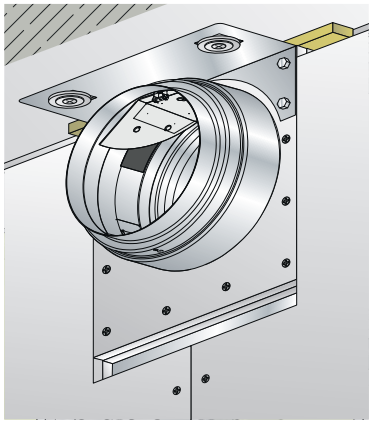
Sliding Ceiling Connection

The manufacturer's specifications for metal stud walls (Knauf, Rigips, etc.) must be observed when dealing with suspended ceiling connections involving sliding.

[mm]

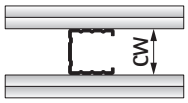


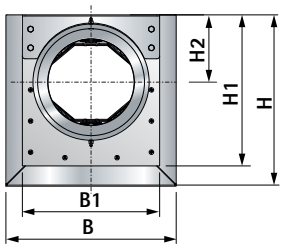


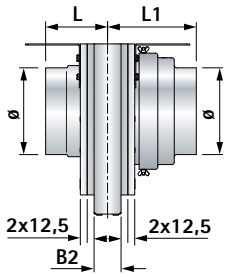


WFK-GDA	LW max.	LH
DN 100	255	300
DN 125	280	325
DN 160	315	360
DN 200	355	400
DN 250	405	450

WFK-GDA	LW max.	LH
DN 100	505	300
DN 125	555	325
DN 160	625	360
DN 200	705	400
DN 250	805	450







							WFK-GDA W 100 CW = 50 mm			WFK-GDA W 125 CW = 75 mm			WFK-GDA W 150 CW = 100 mm		
	Ø	B	B1	H	H1	H2	L	L1	B2	L	L1	B2	L	L1	B2
DN 100	98	250	190	250	215	93	113	135		101	148		115	160	
DN 125	123	275	215	275	240	105	113	145		101	158		115	170	
DN 160	158	310	250	310	275	123	113	163	49	101	176	74	115	188	99
DN 200	198	350	290	350	315	143	122	182		110	195		120	208	
DN 250	248	400	340	400	365	165	133	205		120	218		120	232	

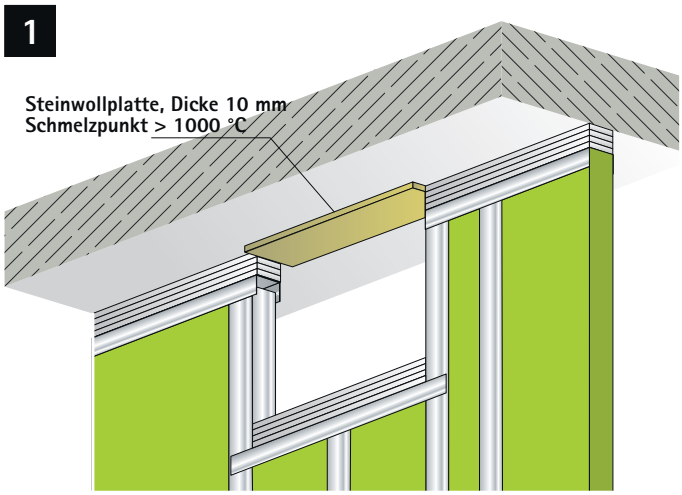
Basics/data

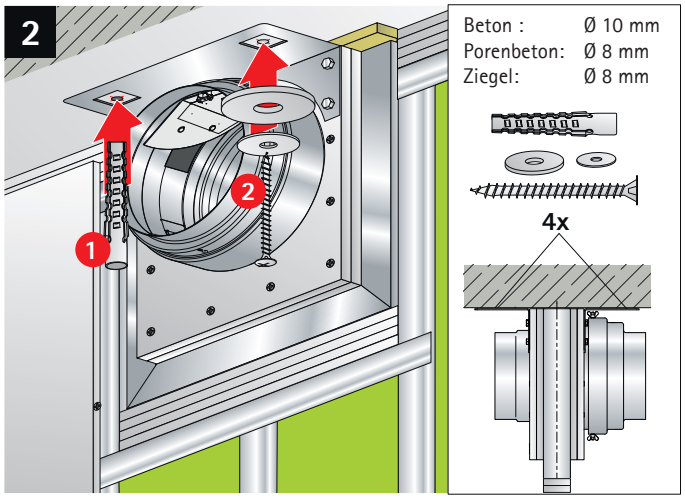
- Performance class EI 90 (v_e i ↔ o) S
- Lightweight walls with metal studs and double-sided paneling according to European classification (EN 13501-2) or comparable national classification.
- Double-sided paneling made of cement or gypsum-based panel materials, gypsum fiberboards, or fire protection boards made of calcium silicate, wall thicknesses d = 100 mm, d = 125 mm, d = 150 mm.
- Distance between metal studs ≤ 625 mm.
- Installation in rectangular openings with a bracing profile or with replacements and bars.

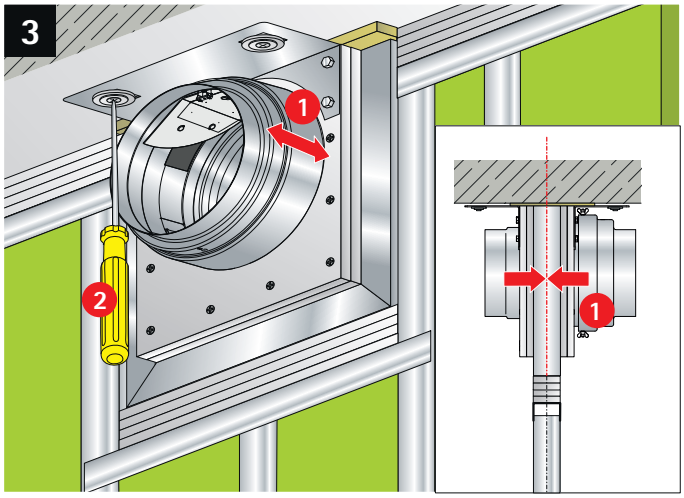
Installation of Sliding Ceiling Connection

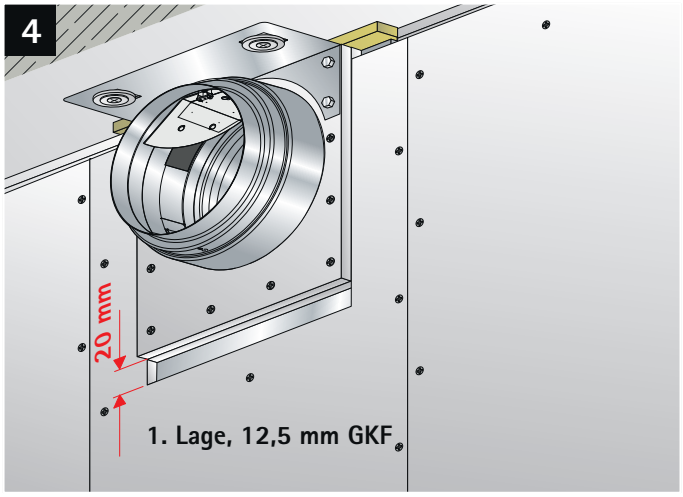
Construct lightweight wall with metal stud framing according to manufacturer's specifications for sliding ceilings:

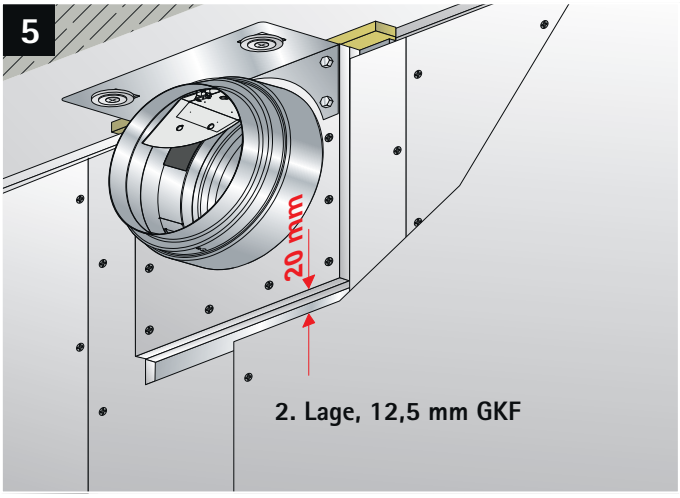
1. Create installation opening as specified, see left.
2. Adhere a 10 mm thick stone wool board with a melting point > 1000 °C, 1
3. Place 2 and install 3 the fire protection damper in the installation opeing.
4. Align the fire protection damper 4 .
5. Paneling of metal stud wall with 20 mm clearance at the bottom 5 .
6. Panel the gap between the clearance 6 .

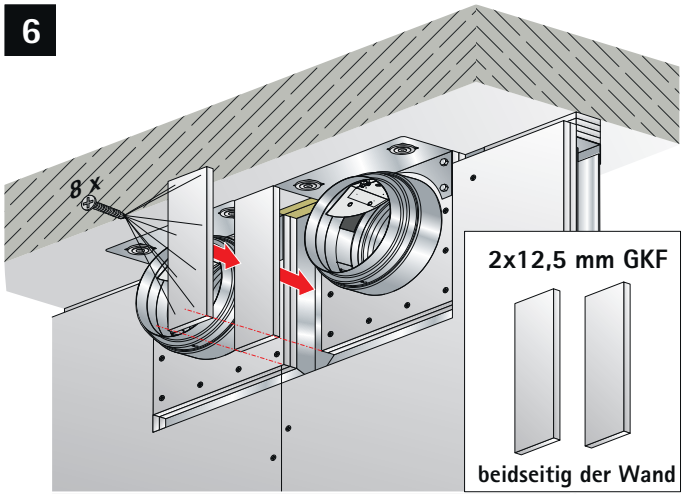












Installation - Shaft Wall with Metal Stud Framework

Wet installation

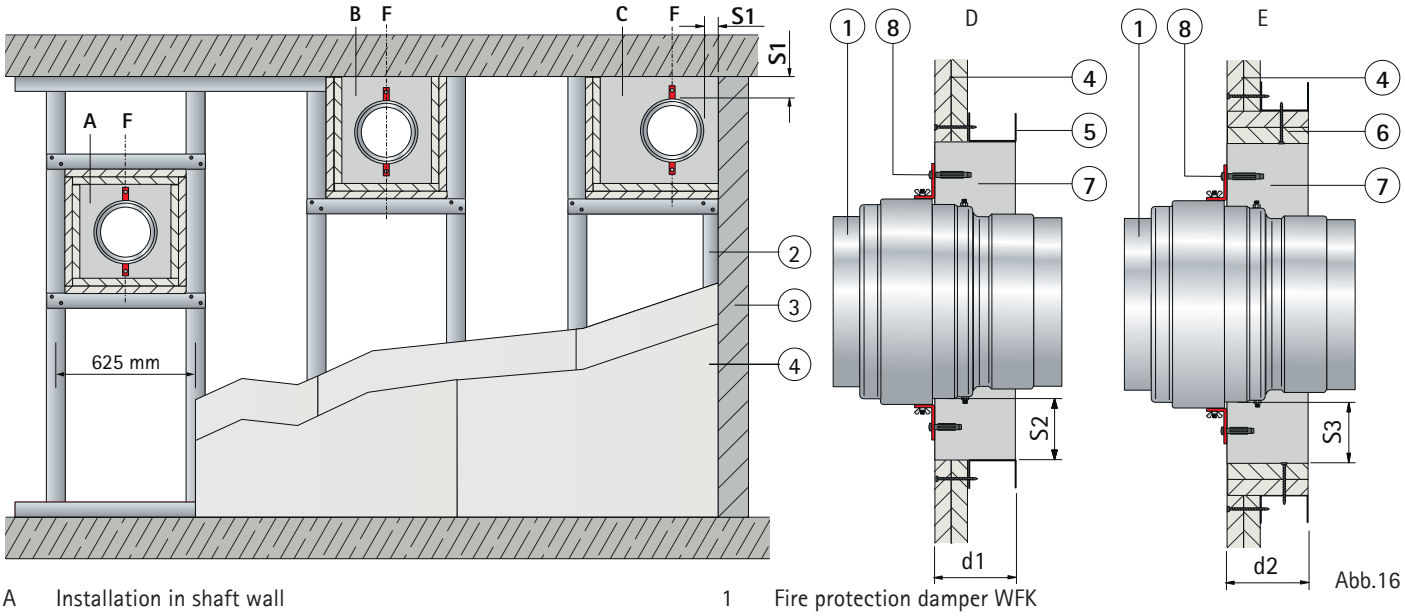


Abb.16

A Installation in shaft wall
B Installation under the floor ceiling
C Installation on load-bearing components (here: wall and ceiling)
D Wall cross-section, installation of WFK without reveals
E Wall cross-section, installation of WFK with reveals paneled
F Installation position predetermined by vertical mounting brackets (corresponds to the horizontal axis position of the closure flaps).
S1 Distance to load-bearing components S1 ≥ 20 mm
S2 Gap without reveal paneling S2 ≤ 150 mm
S3 Gap with reveal paneling S3 ≤ 150 mm
d1 Pouring thickness without reveal paneling d1 ≥ 90 mm
d2 Pouring thickness with reveal paneling d2 ≥ 100 mm

1 Fire protection damper WFK
2 Metal profile
3 Load-bearing component (here: wall or ceiling)
4 Double-sided paneling, dual-layered with GKF panel (2 x 20 mm), one-sided with metal stud framing
5 CW profile 50 mm
6 Reveal, without, single or double paneling
7 Mortar, DIN 1053: group II, IIa, III, IIIa or fire protection mortar group II, III
EN 998-2: class M 2.5 to M20 or fire protection mortar class M 2.5 to M 20
8 Mounting bracket, must be vertically aligned (as indicated by the installation position of the fire protection damper).

Basics/data

- Performance class EI 90 (v_e i ↔ o) S
- Shaft walls with metal studs and one-sided paneling according to European classification (EN 13501-2) or comparable national classification.
- One-sided paneling made of cement-bound or gypsum-bound panel materials, gypsum fiberboards, or fire protection boards made of calcium silicate, wall thickness d ≥ 90 mm, with or without insulation.
- Distance between metal studs ≤ 625 mm.
- Installation in rectangular installation openings allowed.
- Stiffening of the installation opening with a bracing profile or with replacements and bars.
- Reveals are always to be screwed to the stud frame.
- Distance to supporting components (ceiling, wall) S1 ≥ 20 mm.

Installation - wet installation

Erect the shaft wall according to manufacturer specifications.

1. Create the installation opening, alternatively with additional framing.
2. Circumferential gap S2/S3 ≤ 150 mm; we recommend not making the mortar gap less than 20 mm.
   - Before wall paneling: create the installation opening in the metal stud framework using replacements and bars.
   - After wall paneling: create a rectangular installation opening and reinforce it with a surrounding metal profile.
3. Remove the transport safeguard from the fire protection damper.
4. Check the positioning of the release tabs.
5. Place and secure the fire protection damper in the installation opening.
   Mounting brackets must be vertically aligned and flush (Ⓕ) with the wall, use screws if necessary. The wall- / ceiling flush-leg can be shortened if space is limited.
6. Protect the interior of fire protection dampers from mortar and debris.
7. Completely seal the circumferential gap S with mortar over the entire casting depth (here: d1 and d2).

Distances - Installation in Wooden Ceilings and Walls

Installation examples, on or under the ceiling

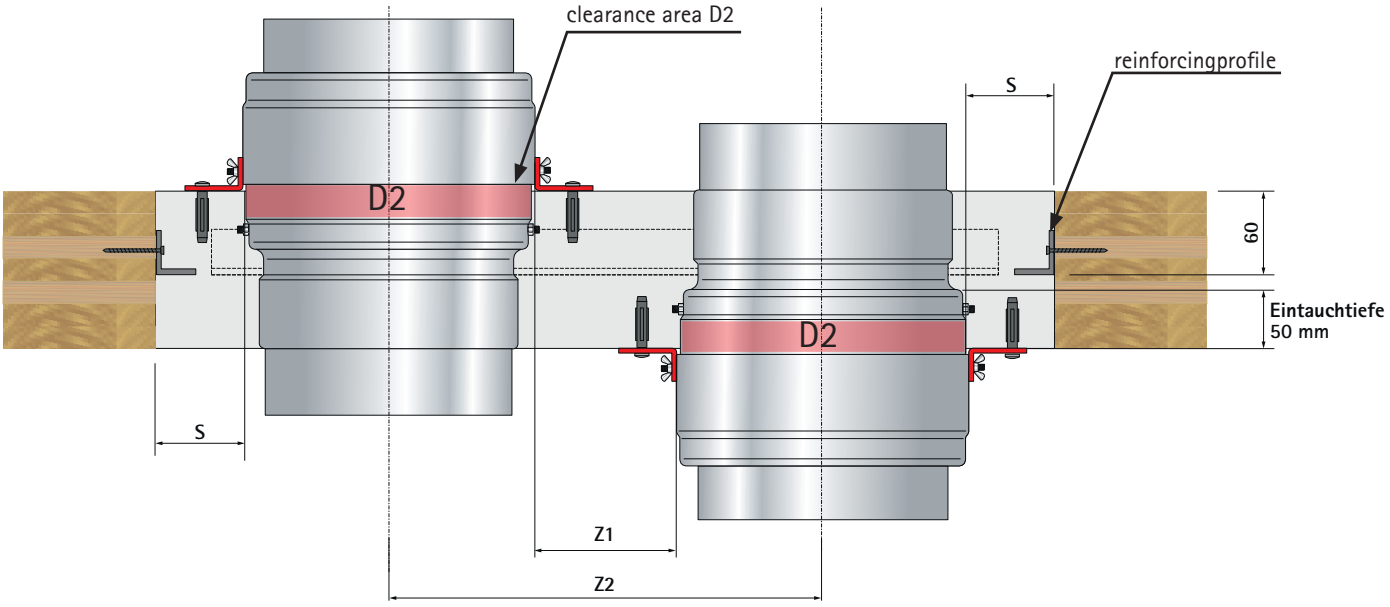


Fig.16

Installation wooden ceiling: Secure reinforcing profile in 60 mm depth all around the ceiling penetration.
Clearance area D2: Describes the area where the gap (S) connects (page 7, Fig. 9).

	Z1 (mm)	Z2 (mm)	S* in relation to D2 (mm)
Board stack / plywood ceiling (REI90) Thickness: 100 mm + paneling underneath 12.5 mm (GKF board)	≥ 25	≥ DN + 70	≤ 150
Board stack / plywood ceiling (REI90) Thickness: 140 mm without paneling	≥ 25	≥ DN + 70	≤ 150
Board stack ceiling (REI90) thickness: 137 mm + paneling underneath 3 x 12.5 mm (GKF boards)	≥ 25	≥ DN + 70	≤ 150

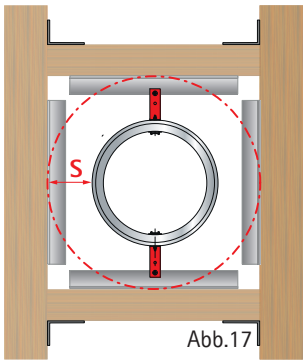


Abb.17

*Gap S (150)

S ≤ 150 mm
circumferential gap with structural reinforcment
(reinforcing profile)

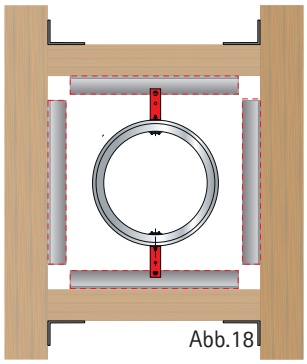


Abb.18

Reinforcing profile

(40 x 40 x 3 mm)
circumferential in immersion depth of
60 mm in wooden ceiling

Installation - Wooden Ceilings

Installaton options, wet installation

on the floor ceiling

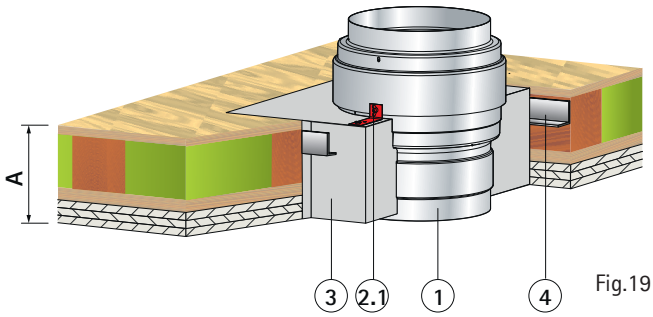


Fig.19

under the floor ceiling

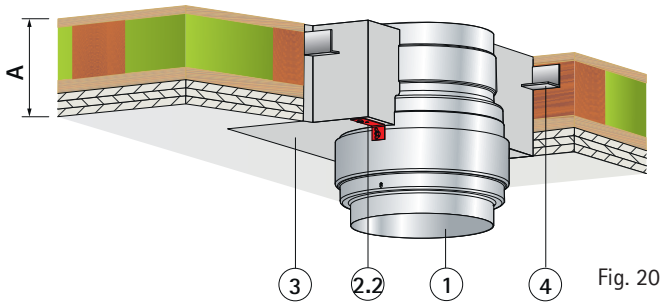


Fig. 20

A Wooden structure; for possible configurations see A.1, A.2, A.3
1 Fire protection damper WFK
2.1 Mounting bracket, flush wit floor ceiling
2.2 Mounting bracket flush under the floor ceiling
3 Casting mortar all around to the entire floor ceiling height (gap S ≤ 150 mm).
4 Reinforcing profile, surrounding in a depth of 60 mm (page 15)

Wooden ceiling structures

A.1 Board stack / plywood ceiling REI 90

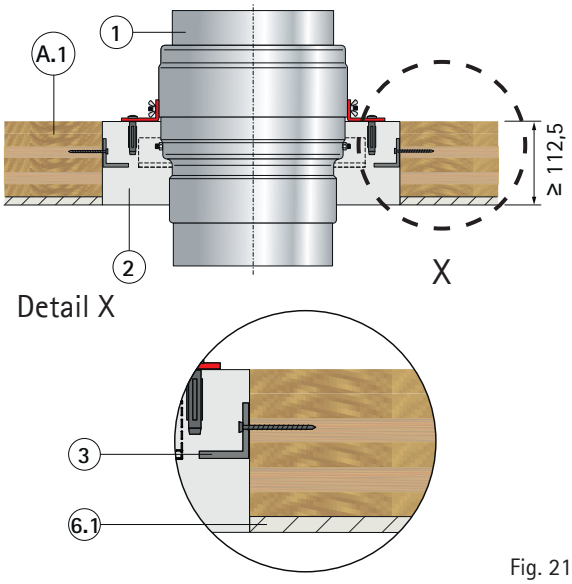


Fig. 21

A.2 Board stack / plywood ceiling REI 90

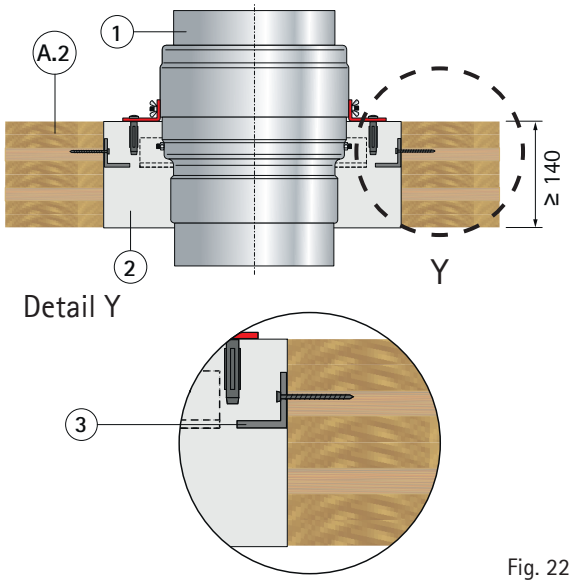


Fig. 22

A.3 Board stack ceiling REI 90

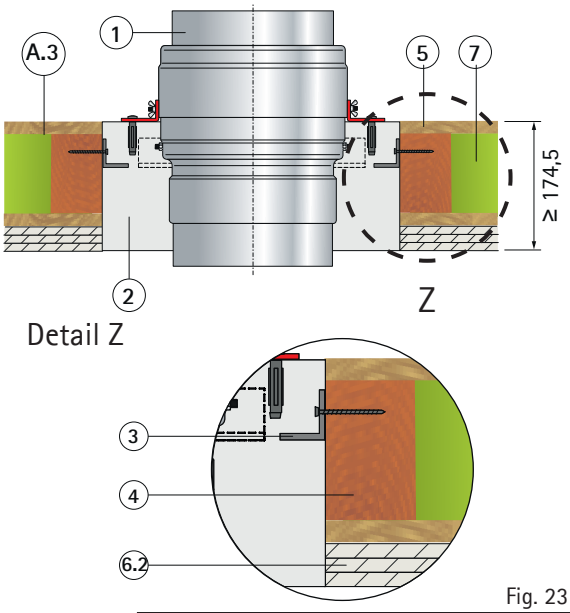


Fig. 23

A.1 Board stack / plywood ceiling (REI 90)
total ceiling thickness ≥ 112.5 mm
consisting of board plywood element ≥ 100 mm
with GKF board 1 x 12.5 mm
A.2 Board stack / plywood ceiling (REI 90)
total ceiling thickness ≥ 140 mm without paneling
A.3 Timber beam ceiling (REI 90)
total ceiling thickness ≥ 174.5 mm
consisting of timber beam element ≥ 137 mm
with GKF boards 3 x 12.5 mm
1 Fire protection damper WFK
2 Mortar circumferential ≤ 150 mm
3 Reinforcing profile, circumferential in 60 mm depth (page 15)
4 Timber beam 100 x 100 mm with replacement
5 OSB board
6.1 1 x 12.5 mm Gypsum board fire protection panel (GKF)
6.2 3 x 12.5 mm Gypsum board fire protection panel (GKF)
7 Mineral wool ≥ 1000°C

Installation into a Wooden Ceiling Structure

Basics/data

- Performance class up to EI 90 (h_o i ↔ o) S
- Wooden ceiling constructions with fire protection paneling (tested configurations on page 16)
- Distance of fire protection damper to bearing components ≥ 20 mm
- Distance between two fire protection dampers Z1 ≥ 25 mm (details, page 15).

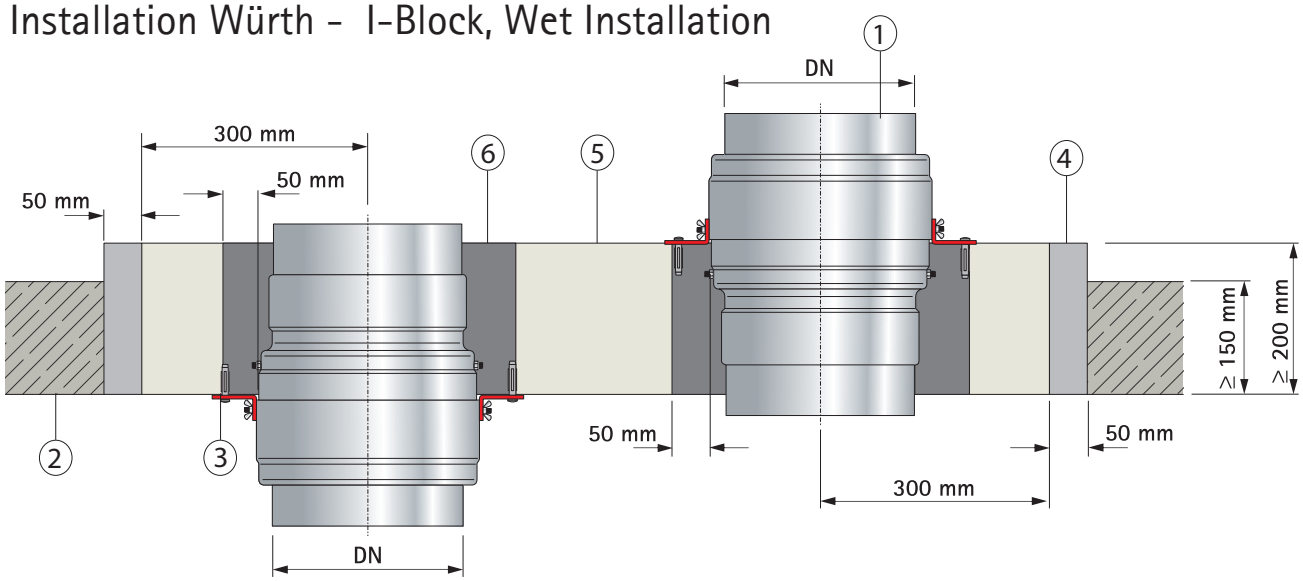
Installation - wooden ceilings

After completion of the ceiling, the following steps are to be carried out:

1. Remove the transport safeguard from the fire protection damper (page 6).
2. Check the positioning of the release tabs (page 6).
3. Secure mounting brackets to the housing with wing nuts (Fig.10, page 7). Create an opening or replacement:
   - For individual fire protection dampers, we recommend an installation opening of at least Ø D2 + 2 x 20 mm (page 15); maximum is Ø D2 + 300 mm with reinforcement possible.
   - For multiple fire protection dampers, we recommend an installation opening of at least 2 x Ø D2 + 40 mm + 2 x 20 mm (page 15).;
   - Maintain a distance ≥ 25 mm between two fire protection dampers.
4. Reinforcement: install angle profiles (40 x 40 x 3 mm) all around in a depth of 60 mm in the wooden ceiling.
5. Apply formwork.
6. Position the fire protection damper with the mounting bracket flush with the upper edge of the ceiling during installation on the floor ceiling; when installing below the floor ceiling, position the mounting bracket flush with the lower edge of the ceiling (Fig..20 (2.1), Fig..21 (2.2)), use screws if necessary. The wall- / ceiling-flush leg can be shortened if space is limited.
7. Pour the fire protection damper into the ceiling with a surrounding mortar bed.

Note: Protect the interior of the fire protection dampers from mortar and debris.

Installation Würth - I-Block, Wet Installation



DN Pipe Diameter
d Ceiling thickness d ≥ 150 mm

1 Fire protection damper WFK
2 Solid ceiling
3 Mounting bracket (screwing if necessary)
4 Filling of remaining gap with gypsum-sand mixture
5 I-Block, Test Report No. 232000337-01 MPA NRW
6 Filling of remaining gap with MG IIIz

Basics/data

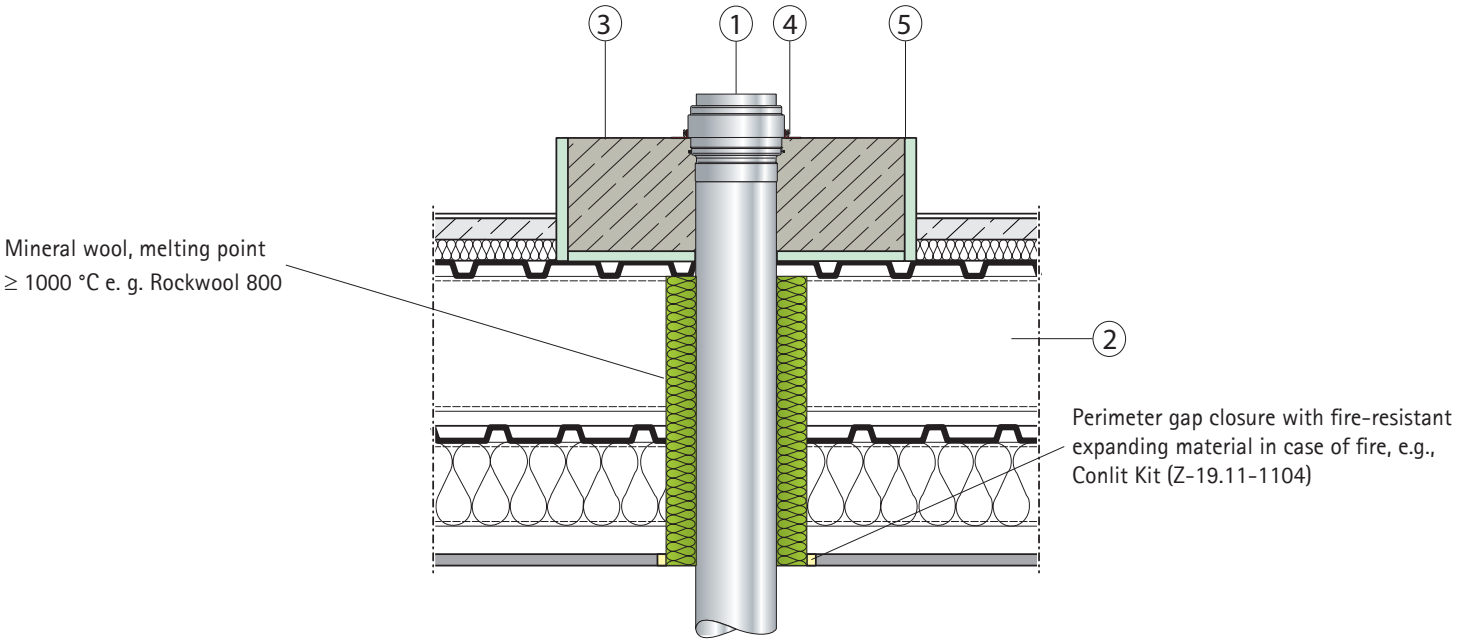
- Performance class EI 120 (h_o i ↔ o) S
- Solid ceilings with a minimum thickness of 150 mm, e.g., made of concrete or aerated concrete
- The distance between two fire protection dampers is ≥ 100 mm

Installation in the ceiling

1. Remove the transport safeguard from the fire protection damper (page 6).
2. Check the positioning of the release tabs (page 6).
3. Secure mounting brackets to the housing with wing nuts (Fig.12, page 8).
4. Position the fire protection damper with the mounting bracket flush with the upper edge of the I-block during installation on the floor ceiling When installing below the floor ceiling, position the mounting bracket flush with the lower edge of the I-block. Use screws if necessary.
5. Protect the interior of fire protection dampers from mortar and debris.
6. Cast the fire protection damper.

Please refer to the installation details in test report No. 232000337-01, MPA NRW, and the assembly instructions of Adolf Würth GmbH & Co. KG.

Installation in Modular Ceiling, System Cadolto



DN Pipe diameter

1 Fire damper WFK
2 Modular ceiling, System Cadolto
Execution acc. to manufacturer's instructions or proof of usability
3 Concrete plinth ≥ 150 mm all around with reinforcement, height ≥ 125 mm.
4. Mounting bracket

Basics/data

- Performance class EI 120 (h_o i ↔ o) S

Installation WFK

The fire protection damper can be cast directly during the construction of the solid ceiling. The surrounding gap S can be omitted in this case.

1. Remove the transport safeguard from the fire protection damper (page 6).
2. Check the positioning of the release tabs (page 6).
3. Secure mounting brackets to the housing with wing nuts (Fig.12, page 8).
4. Position the fire protection damper with the mounting brackets of the concrete plinth flush with the upper edge.
5. Protect the interior of fire protection dampers from mortar and debris.
6. Cast the fire protection damper.

Note: Protect the interior of fire protection dampers from mortar and debris.
The stability and fire resistance of the structure must be verified by the construction side.

Installation - Board Stack / Plywood Wall

Wet installation

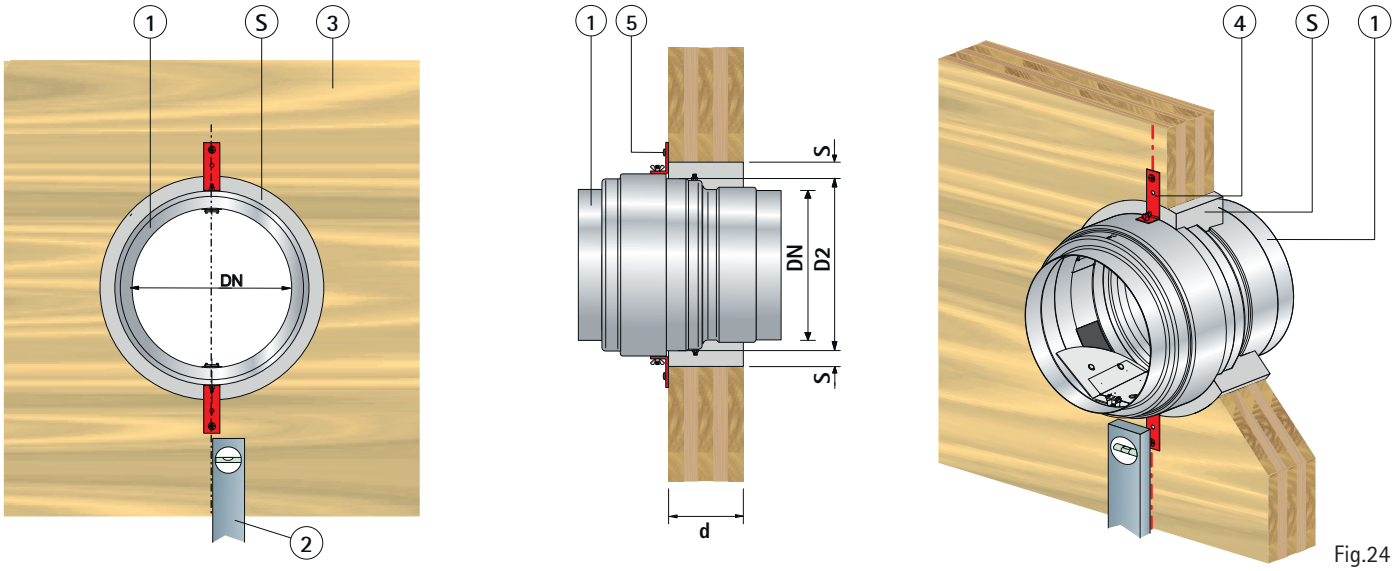


Fig.24

DN Pipe diameter
S Gap S ≤ 150 mm, round/ rectangular
d Wall thickness d ≥ 100 mm
1 Fire protection damper WFK
2 Installation position determined by vertical mounting brackets
(corresponds to horizontal axis position of the closure dampers).
3 Board stack / plywood wall
4 Mounting brackets
5 Screw mounting brackets (use screws if necessary)

Basics/data

- Performance class EI 90 (v_e i ↔ o) S
- Board stack / plywood wall d ≥ 100 mm
- Gap S ≤ 150 mm
- Round installation opening and rectangular installation opening possible
- Distance between two fire protection dampers is ≥ 25 mm (page 15)
- Distance to supporting components ≥ 20 mm to dimension D2 (page 7; red clearance area)

Installation instructions for wet installation

The fire protection damper can be installed in the board stack wall and plywood wall while adhering to the required clearance rules, either in wet installation or with an insert element.

1. Remove the transport safeguard from the fire protection damper (page 6).
2. Check the positioning of the release tabs (page 6).
3. Secure mounting brackets to the housing with wing nuts (Fig.10, page 7).
4. Create the installation opening (round/rectangular) through core drilling or breakthrough (page 15).
   - For individual fire protection dampers, we recommend an installation opening of at least Ø D2 + 2 x 20 mm; the maximum allowed is D2 + 2 x gap S ≤ 150 mm.
   - For two fire protection dampers, we recommend an installation opening of at least 2 x Ø D2 + 40 mm + 2 x 20 mm
   - Maintain a distance ≥ 25 mm between two fire protection dampers.

Position the fire protection damper in the designated installation position on the shaft wall with the mounting brackets.

Mounting brack ets must be vertically aligned and flush (Fig.25, (2)) with the wall, use screws if necessary. The wall- / ceiling-flush leg can be shortened if space is limited.

5. Carry out formwork and fill the existing gap with approved mortar (page 7) to the full wall thickness.

Installation - Lightweight Wall with Wooden Stud Framework

Wet installation

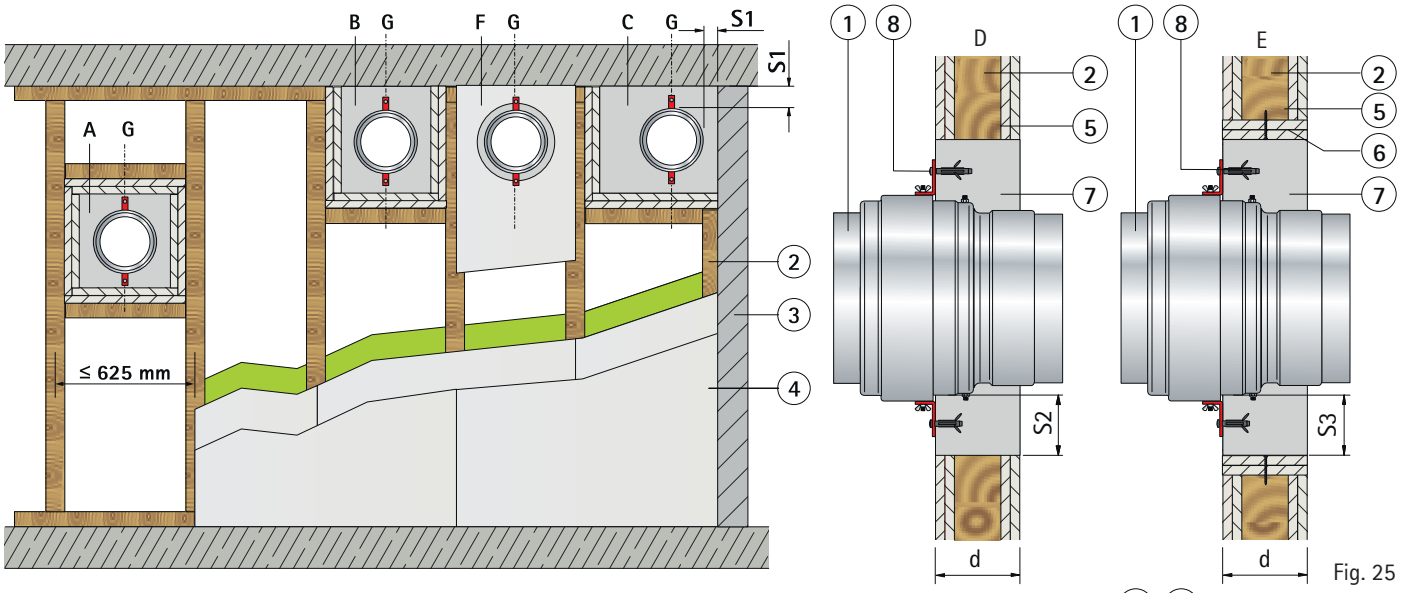


Fig. 25

A Installation of lightweight wall w/ wooden stud framework

B Installation under floor ceiling

C Installation on load-bearing components (here: ceiling and wall)

D Wall diameter, installation of WFK w/o reveal doubling

E Wall diameter, installatin of WFK w/ reveal doubled-paneled

F Wall diameter, installation of WFK round opening

G The installation position is determined by vertical mounting brackets (corresponds to the horizontal axis position of the closure flaps).

S1 Distance to load-bearing components S1 ≥ 20 mm

S2 Gap w/o reveal doubling S2 ≤ 150 mm

S3 Gap w/ reveal doubled-paneled S3 ≤ 150 mm

S4 Gap S4 ≤ 75 mm

d Filling w/ and w/o reveal paneling over the entire wall thickness

1 Fire protection damper WFK

2 Wooden stud 50 x 80 mm

3 Load-bearing component (here: wall or ceiling)

4 Double-layer paneling (2 x 12,5 mm), wooden stud framing on both sides

5 Replacement/bars

6 Reveal; without, single or double paneling

7 Mortar, according to DIN 1053: group II, IIa, III, IIIa or fire-resistant mortar group II, III
According to EN 998-2: class M 2.5 to M20 or fire-resistant mortar of class M 2.5 bis M 20

8 Mounting brackets, must be vertically aligned

Basics/data

- Performance class EI 90 (v_e i ↔ o) S
- Lightweight construction wall with wooden studs and double-sided paneling according to European classification (EN 13501-2) or equivalent national classification, wall thickness ≥ 130 mm
- Double-sided paneling made of cement or gypsum-based panel materials, gypsum fiberboards, or fire protection boards made of calcium silicate, wall thickness d ≥ 130 mm, with insulation - tested according to ÖNORM 1363-1 point 7.2.3
- Distance between wooden studs ≤ 625 mm
- Installation in round openings without replacement; gap S4 ≤ 75 mm
- Installation in rectangular openings with replacements and bars
- Reveals are always to be screwed to the stud framework
- Distance to load-bearing components (ceiling, wall) S1 ≥ 20 mm.

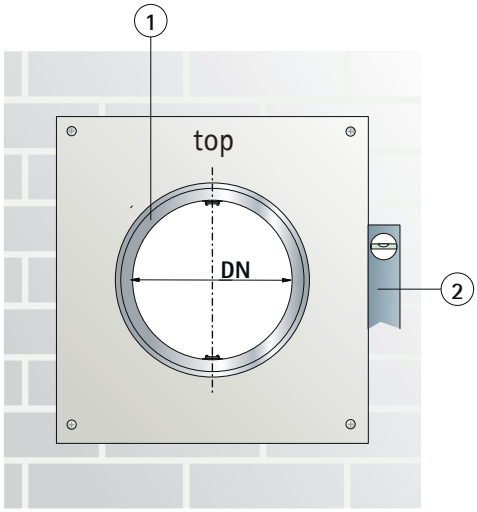
Installation - wet installation

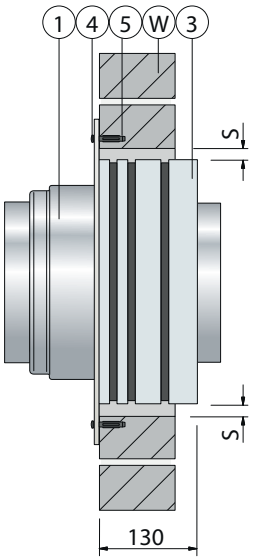
Construct lightweight wall with wooden stud framing according to manufacturer's instructions.

1. Create installation opening, alternatively with doubling.
   Circumferential gap S2/S3 ≤ 150 mm; we recommend the mortar gap (here: S2, S3) not to be less than 20 mm.
2. Remove transport safeguard from the fire protection damper.
3. Check the positioning of the triggering tabs.
4. Attach mounting brackets to the housing using wing nuts.
5. Place and secure the fire protection damper in the installation opening.
6. Mounting brackets must be vertically aligned and flush (Ⓖ) with the wall, use screws if necessary. Wall/ceiling-flush side can be trimmed in case of limited space.
7. Protect the interior of the fire protection damper from mortar and debris.
8. Completely seal the circumferential gap S with mortar across the entire wall thickness d.

Installation - Insert Element WFK-ES

Installation





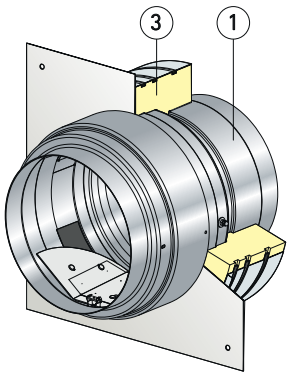


Fig. 26

DN Pipe diameter

W Possible walls: solid wall d ≥ 100 mm,
shaft wall d ≥ 90 mm,
Board stack / plywood wall d ≥ 100 mm,
Lightweight wall with wooden stud framework d ≥ 130 mm
Lightweight wall with metal stud framework d ≥ 100 mm

S Gap S ≤ 2,5 mm

1 Fire protection damper WFK

2 Installation position indicated by 'top' marking (corresponds to horizontal axis orientation of the closure flaps)

3 Insert element

4 Screw 6x60 mm

5 Metal anchors (Tox Tiger 6/32 mm)

Basics/data

- Performance class of
  EI 60 (ve i ↔ o) S in shaft wall, lightweight construction wall with metal studs
  EI 90 (ve i ↔ o) S in solid wall, lightweight wall with wooden stud framework, board plywood wall
- Lightweight construction wall with wooden studs, minimum thickness of 130 mm, and double-sided paneling according to European classification (EN 13501-2) or equivalent national classification
- Solid walls with a minimum thickness of 100 mm, e.g., made of concrete or aerated concrete
- Board stack / plywood wall with a minimum thickness of 100 mm
- Distance of the insert element to load-bearing components
- Distance between two insert elements ≥ 100 mm

Installation of the insert element

After completing the wall, the following steps are to be carried out:

1. Create installation opening through core drilling (see table below).
2. Insert and center the insert element with WFK (pay attention to 'top' marking, which indicates the horizontal axis length).
3. Secure the insert element to the wall using the provided screws (4 pieces of 6x60 mm) + metal anchors (4 pieces of Tox 6/32 mm). Pre-drill diameter: concrete = Ø9 mm; Aerated concrete = Ø7 mm; Lightweight construction wall = Ø7 mm (Follow guidelines from Tox company for other materials) 4. Cover the gap with commercially available acrylic.

	DN 100	DN 125	DN 160	DN 200	DN 250
max. Ø opening DN + 130 mm	230 mm	255 mm	290 mm	330 mm	380 mm
metal sheet □ DN + 170 mm	270 mm	295 mm	340 mm	370 mm	420 mm

Installation - Soft Firestop

Installation

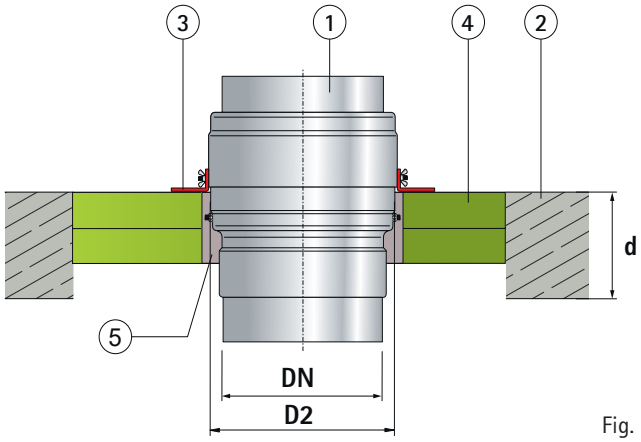


Fig. 27

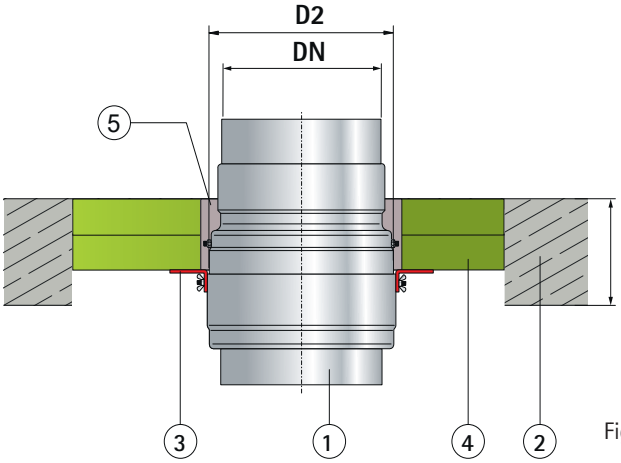


Fig. 28

DN Pipe diameter
d Wall thickness d ≥ 150 mm
1 Fire protection damper WFK
2 Solid ceiling (load-bearing structure)
3 Mounting brackets (use screws if necessary)
4 Soft firestop Hilti (2 x mineral wool boards of type HILTI CFS-CT B1S)
5 HILTI CFS-S ACR sealant (Filling of gaps and voids)

Basics/data

- Performance class EI 90 (h_o i ↔ o) S
- Solid ceilings with a minimum thickness of 150 mm
- Installation using HILTI soft firestop: 2 fire protection boards type CFS-CT B1S (DE: CP 673 PF) with a fire protection coating type CFS-CT (DE: CP 673), annular gap filling and edge coating with filling material type CFS-S ACR
- The distance between two protection dampers is ≥ 25 mm (page 8)
- Minimum distance to the load-bearing structure ≥ 200 mm to D2 (Fig. 9, page 7; red clearance area)
- Maximum distance to the load-bearing structure ≤ 400 mm to D2 (Fig. 9, page7; red clearance area)

Installation in ceiling penetration

The following steps are to be carried out:

1. Remove the transport safeguard from the fire protection damper (page 6).
2. Check the position of the triggering tabs (page 6).
3. Attach mounting brackets to the housing using wing nuts (Fig. 10, page 7).
4. Create an installation opening through penetration:
   - Max. installation opening size: 1150 x 850 mm
   - Maintain a distance of ≥ 25 mm between to fire dampers
5. Install a soft firestop according to the manufacturer's instructions from HILTI. Cut mineral wool boards closely to the fire protection damper. Gaps between the mineral wool boards and the fire protection damper must be filled completely with sealant to the entire thickness of the soft firestop. Position the fire protection damper with the mounting bracket flush on the upper edge of the soft firestop during installation on top of the firestop, or position the mounting bracket flush on the lower edge of the soft firestop during installation underneath the firestop (Fig. 28, Fig. 29).

Note: Protect the interior of the fire protection damper from mortar and debris.
Installation and assembly instructions for HILTI soft firestop must be followed.

Different application areas of the systems:
A combination firestop may only be used with cables and pipes according to the type approval.

Function Test

The functional test is carried out through camera inspection.
For vertically routed air ducts, access openings are required at the top and bottom ends. Deflections in the duct where the fire protection damper WFK is installed also require an opening to enable internal inspection of WFK using a camera.

Commissioning

After installing the fire protection damper WFK, and before sealing the shaft, the correct installation of WFK should be verified internally, for example, through camera inspection, endoscopy, or mirror, and externally through visual inspection.

Maintenance

Maintenance must be performed every five years through camera inspection. This inspection should include video documentation and an evaluation of the obtained inspection data by a qualified staff member. These data should be provided to the client in paper format and as a file on an appropriate storage medium. If contaminations within the duct are identified, duct cleaning should be carried out, and the WFK should be cleaned as well. For individual fire dampers, a visual inspection may suffice, but it should be documented (e.g., mirror inspection).

Local building regulations should be observed.

Note on Duct Cleaning

- **Do not use cleaning agents.**
- **Use only soft nylon brushes; brush hair diameter Ø 0.5 – max. Ø 0.8 mm.**
- **Brush diameter should be 2 cm larger than the DN diameter.**
- **Clean at a maximum speed of 100–200 revolutions per minute (possibly reduced speed near the seal**

Decomissioning, Removal and Disposal

Decomissionig

1. Turn off the air handling system.
2. Switch off the power supply.

Removal

3. Disconnect the connecting cable..
4. Remove the air ducts.
5. Close the fire protection damper.
6. Remove the fire protection damper..

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