geba brandschutz

Installation- and operation instruction

geba fire damper
WFK according to EN 15650

with a free cross-section for the usage in ventilation systems in buildings

Abbildung 1
DN 250

Tested according to EN 1366, part 2

CE

Stand: 10/2017

Table of content

General information

This installation and operation instruction describes fire damper of type WFK.

In order to secure the proper function of the fire damper, it is mandatory to read the included installation and operation instruction before any kind of usage and to pay attention to the information therein. Upon system hand-over, the system operator has to be provided with the instructions.

The system operator has to attach the instruction to the system documentation. Malfunctions or damages, which occur by non-observance of this instruction manual or non-compliance to legal provisions, do not lead to liability claims against the manufacturer. This installation and operation instruction is addressed to planners, developers and operators of plants, in which the fire dampers are to be integrated.

Aurthermore, the instruction is addressed to persons, who execute the following works:

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

Apart from this installation and operation instructions, the applicable standards and technical regulations are to be observed.

Security and intended use

Only qualified personnel should execute the described actions at the fire damper. There must be enough space for unimpeded activities during the installation, inspection and maintenance at the fire damper.

During all works at the fire damper, the following regulations and guideslines are to observed:

- German Equipment and Product Safety Act (Geräte- und Produktsicherheitsgesetz)
- Industrial Safety Regulation
- German Building Regulations
- Accident Prevention Regulation (BGV A1, BGV A3)

The fire damper WFK is a security component which has been developed for fire protection.

Certificates and standards

- Certificate of constancy of performance 1322-CPR-08678/01
- Declaration of performance DoP/WFK/DE/2017/001
- Classification according to DIN EN 13501-3:2010-02

Solid ceiling, wet installation (mortar) min. 100 mm:	EI 120 (h_o i↔o)-S (300 Pa)
Solid wall, wet installation (mortar) min. 100 mm:	EI 90 (v_e i↔o)-S (300 Pa)
Light partition wall with panels on both sides (mortar) min. 100 mm:	EI 90 (v_e i↔o)-S (300 Pa)

- Tested according to DIN EN 1366-2
- Damper leakage according to EN 1366-2
- Case leakage according to EN 1751, class C

All other relevant fire protection standards and regulations are to be observed.

Intended Use

The fire damper is used as thermal shut-off device in order to prevent fire and smoke transmission via air ducts. The fire damper can be used in supply and exhaust air systems, with and without waste heat recovery.

Intended installation sites are solid walls, solid ceilings and light partition walls. The installation is vertically possible with any direction of air stream. Suitable for the installation in ceilings, solid walls and shaft walls (≥ 100 mm).

Connection of air ducts made from flammable and inflammable materials, also single-sided with cover grill. In Europe, it can be used without double-sided pipe connection, if no national requirements indicate otherwise.

Provided that the damper is installed and operated in accordance to the intended use, the fire damper WFK has performance class DIN EN 13501-3:2010-02 + A1:2009; solid ceiling, wet installation EI 120 (ho i↔o)-S; solid wall, wet installation EI 90 (ve i↔o)-S; Light partition wall with panels on both sides EI 90 (ve i↔o)-S.

Furthermore, the general maintenance guidelines DIN 31051 and EN 13306 are to be applied.

Improper Usage

The fire damper must not be used under the following circumstances:

- Usage as smoke exhaust damper
- Usage in ex-zones
- Outdoor usage without sufficient protection against weather conditions
- Usage in exhaust air systems in commercial kitchens
- Usage in air ventilation systems, in which the proper function is impaired by heavy pollution,extreme moisture or chemical contamination
- Usage in installation situations, in which an internal inspection, e. g. camera inspection, and cleaning of the fire damper is impossible in installed condition.

Modifications at the fire damper and the usage of replacement parts, which are not authorised by Bartholomäus GmbH, are prohibited.

Residual hazards

geba-fire dampers are subject to strict quality controls. Additionally, a function test will be executed before delivery. Functional impairment is possible due to damages during transport or installation. The proper damage-free condition of the fire damper has to be checked before installation and commissioning.

Transport and storage

Caution!
Danger of injury due to edges and sheet metal parts.
Please wear protection gloves during transport and installation.

Inspection of shipment

Please check the shipment immediately after delivery for transport damages and completeness.
In case of transport damages or incomplete shipment, please inform the carrier and your supplier without delay.

The complete shipment includes:

- Fire damper
- Attachment parts/accessories, if applicable
- MInstallation and operation instructions

Transport at the construction site

If possible, please transport the fire damper to the construction site in the despatch packaging.

Storage

- Please consider the following, when you store the fire damper temporarily:
- Please protect the fire damper from dust and dirt.
- Please protect the fire damper from moisture and direct sun light.
- Please do not expose the fire damper (even if properly packed) directly to weather conditions.
- Please do not store the fire damper below -40°C and above 50°C.

Packaging

Please dispose the packaging material correctly after unpacking the fire damper.

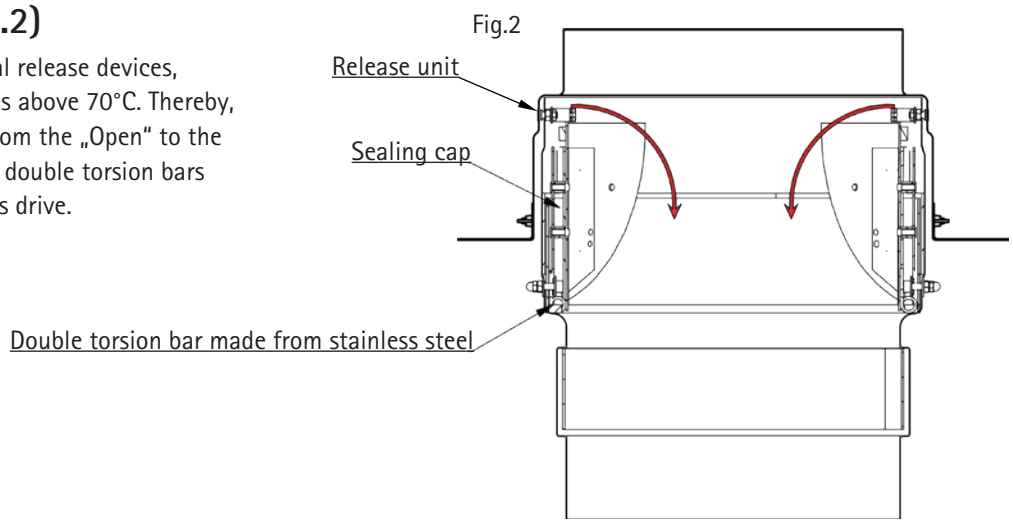
Product description

Fire dampers of the series WFK are used as safety-related components within ventilation systems.
The fire damper prevents fire and smoke transmission via the air duct. During operation at normal temperatures, the fire damper is open in order to secure the air delivery in the ventilation system.

Function description (Fig.2)

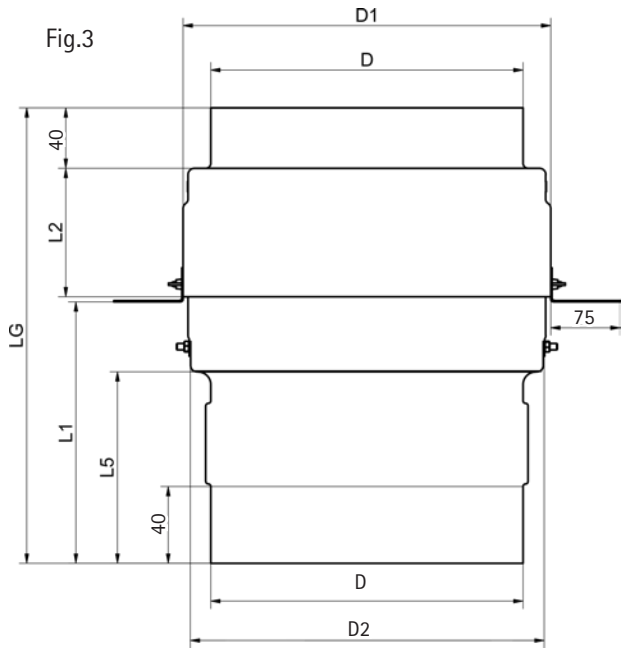
The fire damper includes two thermal release devices, which trigger if the temperature rises above 70°C. Thereby, the pre-loaded closing caps swing from the „Open" to the „Closed" position. Maintenance-free double torsion bars made from stainless steel are used as drive.

Fig.2



Case dimensions

Fig.3



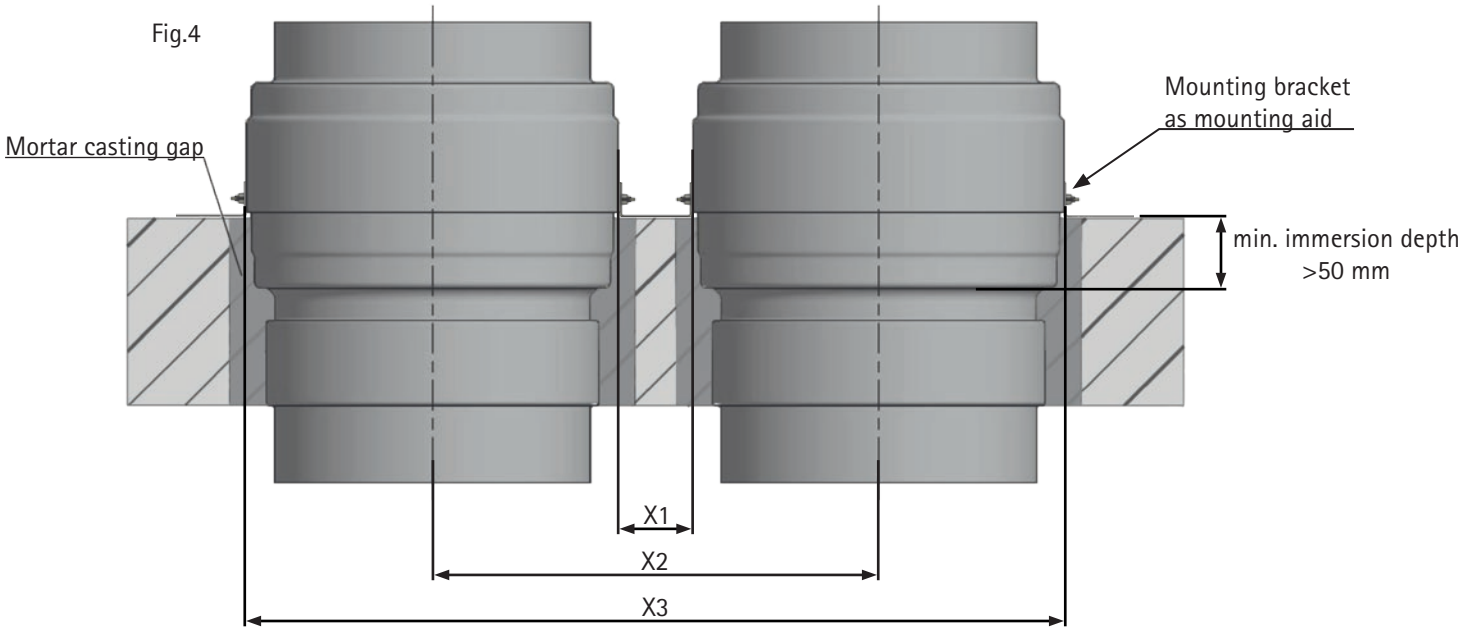
Nominal size DN in mm	100	125	160	200	250
D	98	123	158	198	248
D1	145	177	211	251	300
D2	130	155	190	230	280
L1	168	168	168	178	188
L2	32	41	60	76	101
L3	110	110	110	120	130
LG	245	255	270	300	335
Weight in kg	1,2	1,7	2,2	3,3	4,9

General installation information

1. Distance WFK - WFK

Illustration: installation on the ceiling

Fig.4



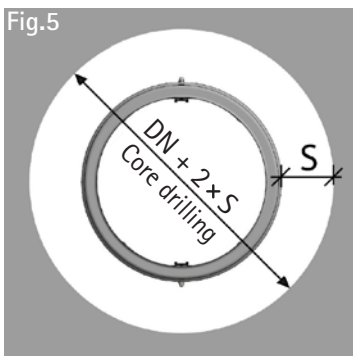
X1	Solid ceiling	Solid wall	Light Partition wall*
WFK-WFK (inside)	approx. 20 - 25 mm	approx. 20 - 25 mm	approx. 190 - 195 mm

X2	Solid ceiling	Solid wall	Light Partition wall*
Centre 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

X3	Solid ceiling	Solid wall	Light Partition wall*
WFK-WFK (outside)			
DN 100	315 mm	315 mm	485 mm
DN 125	372 mm	372 mm	542 mm
DN 160	441 mm	441 mm	611 mm
DN 200	521 mm	521 mm	691 mm
DN 250	620 mm	620 mm	790 mm

Core drilling (Fig.5)	
Installation	Ring gap S
Solid ceiling	45 mm
Solid wall	50 mm
Light Partition wall*	50 mm

Fig.5



Core drilling = DN + 2 x S

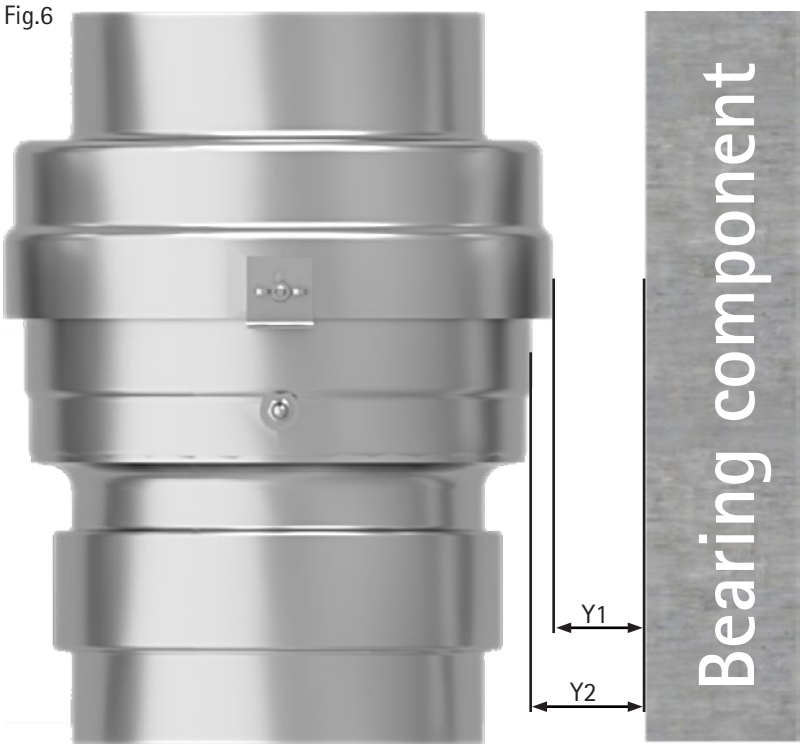
***Light partition wall:**

- Light partition walls with metal support and panels on both sides, classified according to EN 13501-2 or comparable national classifications
- LTW made from gypsum fiberboard or gypsum- or cement-bound panel building material (wall thickness ≥ 100 mm)
- Distance of the metal support ≤ 625mm
- Connection of the air duct with elastic connection piece

2. Distance to bearing components

	Y1	Y2
Solid ceiling	67 mm	75 mm
Solid wall	67 mm	75 mm
Light partition wall	67 mm	75 mm

Fig.6



3. Important information

Caution!
Malfunction of the fire damper due to contamination or damage.
Please protect the fire damper during installation from contamination and damages:
Please protect the fire damper before installation from possible contamination.

Caution!
Danger of injury due to edges and sheet metal parts.
Please wear protection gloves during transport and installation.

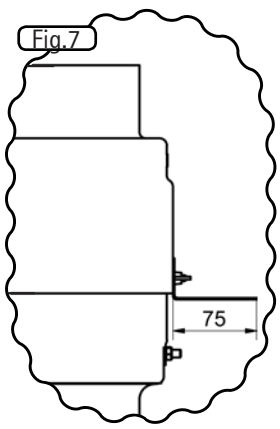
Connection of ventilation duct

The installation is vertically and horizontally possible with any direction of air stream. Suitable for the installation in ceilings, solid walls, shaft walls and reinforced steel wall systems (≥ 100 mm).
Connection of air ducts made from flammable and inflammable materials, also single-sided with cover grill. In Europe, it can be used without double-sided pipe connection, if no national requirements indicate otherwise.

Mounting bracket

Please attach the included mounting and stop bracket on both sides of the case cover using wing nuts.
The brackets are attached with the shorter side on the cover and adjusted according to figure 7.

Fig.7



Permitted mortar for wet installation

The cavities between fire damper and wall/ceiling are to be filled completely with mortar. Air pockets must be avoided. The depth of the mortar bed must be at least 100mm.
Zulässige Mörtel:

- DIN 1053: Group II, IIa, III, IIIa or fire protection mortar of group II, III
- EN 998-2: Class M2,5 to M10 or fire protection mortar of class M2,5 to M10
- Alternatively equivalent mortar according to the above mentioned standards, gypsum mortar or standards

Tragkonstruktionen nach DIN EN 1363-1:2012

- Massivkonstruktion mit hoher Rohdichte: Mauerwerk oder Massivbeton mit einer Gesamtdichte von ≥ 850 kg/m³
- Massivkonstruktion mit geringer Rohdichte: Porenbeton mit einer Gesamtdichte von (650 ± 200) kg/m³
- Leichtbauweise: leichte Trennwände in Stahlständerbauweise mit Bekleidung aus Gipskartonplatten, gemäß Punkt 7.2.2.4

Wet installation - solid ceilings

Minimum distance from outer edge of the case to bearing components 67 mm (please see page 7, picture 6)

Installation during preparation of the ceiling

The fire damper can directly be encased in the mortar during preparation of the ceiling.
This can also be done without gap s.

1. Remove the transport lock from the fire damper
2. Attach the mounting bracket with wing nuts on the case (please see pictures 7, 8)
3. Bring the fire damper in the intended installation position using the mounting bracket (mounting brackets must be flush with the ceiling, use a screw connection if needed)
4. Please protect the inner fire damper from mortar and contamination
5. Please encase the fire damper in concrete/mortar

Installation after completion of the ceiling

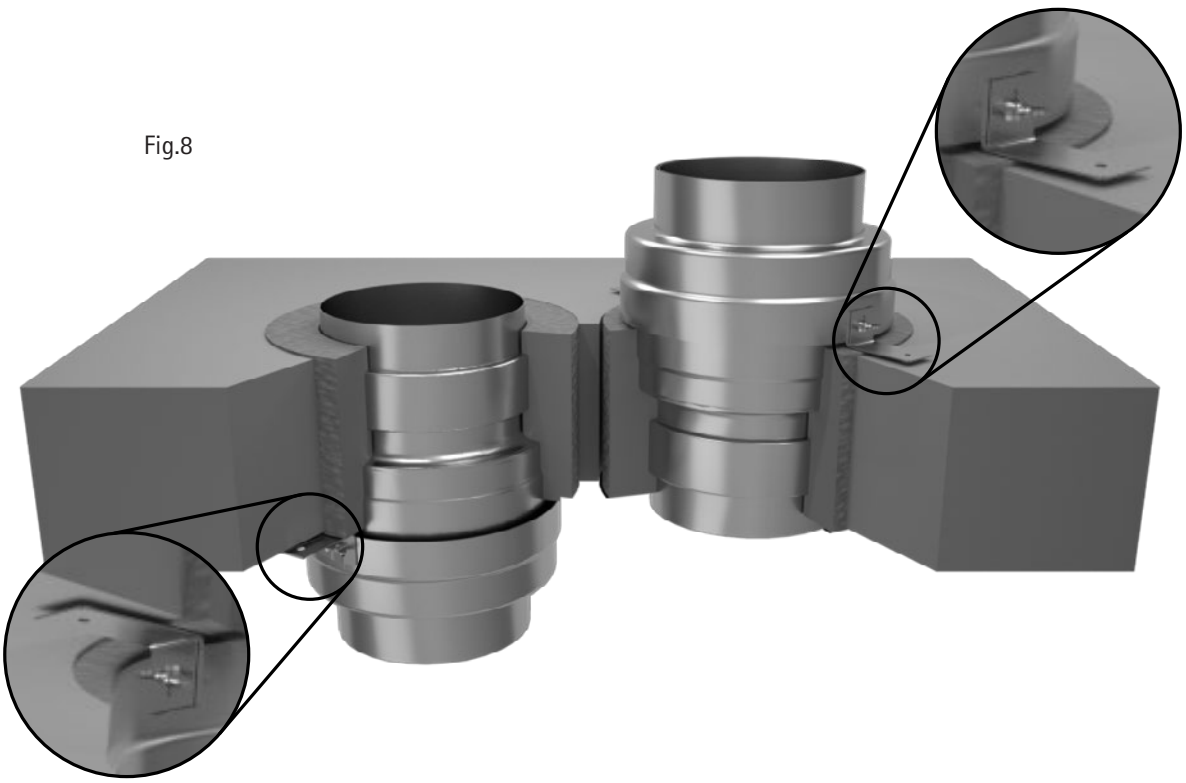
If the fire damper ist installed after completion of the ceiling, the following work stages are necessary:

1. Remove the transport lock of the fire damper
2. Attach the mounting bracket with wing nuts on the case (please see pictures 7, 8)
3. Create an installation opening by core drilling or breakthrough

>0	Solid ceiling
Core drilling	DN + 90 mm
DN 100	190 mm
DN 125	215 mm
DN 160	250 mm
DN 200	290 mm
DN 250	340 mm

4. Insert the fire damper in the installation opening and position it using the mounting bracket (mounting brackets must be flush with the ceiling, use a screw connection if needed)
5. Close the circumferential gap S (s ≥ 45 mm) with permitted mortar (page 7) in full wall thickness

Fig.8



Wet installation - solid walls

Installation during erection of the wall

The fire damper can be directly encased during the erection of the wall. This can also be done without gap s.

1. Remove the transport lock from the fire damper
2. Attach the mounting bracket with wing nuts on the case (please see pictures 7, 8)
3. Insert the fire damper during the erection of the wall in the intended installation position on a mortar bed and position it using counting brackets
   (mounting brackets must be flush with the ceiling, use a screw connection if needed)
4. Protect the inner fire damper from mortar and contamination
5. Immure the fire damper in the wall using a circumferential mortar bed

Installation after erection of the wall (core drilling)

The following work phases are necessary during the installation of the fire damper after the erection of the wall:

1. Remove the transport lock from the fire damper
2. Attach the mounting bracket with wing nuts on the case (please see pictures 7, 8)
3. Create an installation opening by core drilling or breakthrough

>0	Solid wall
Core drilling	DN + 100 mm
DN 100	200 mm
DN 125	225 mm
DN 160	260 mm
DN 200	300 mm
DN 250	350 mm

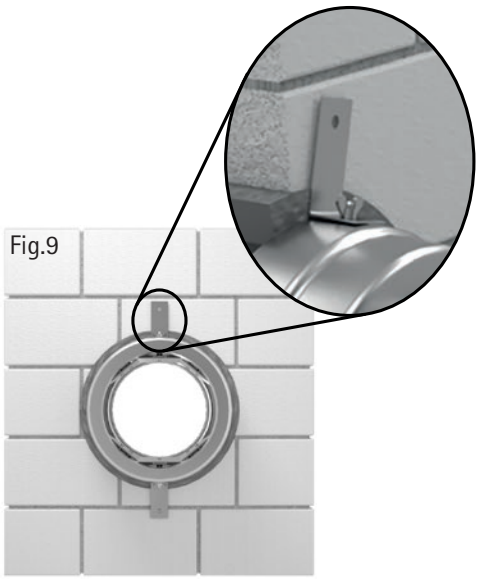


Fig.9

4. Insert the fire damper in the installation opening and position it using the mounting bracket
   (mounting brackets must be flush with the ceiling, use a screw connection if needed)
5. Protect the inner fire damper from mortar and contamination
6. Close the circumferential gap (s ≥ 50mm) with permitted mortar (page 7) in full wall thickness

Installation in drywall

Installation information for wet installation.

General information for installation in light partition wall, please see page 6 (*light partition wall)
The fire damper can be built in the drywall in any position
considering the required distance rules without latch and change

1. Remove the transport lock from the fire damper
2. Attach the mounting bracket with wing nuts on the case (please see pictures 7, 10)
3. Create an installation opening by core drilling or breakthrough

>0	Light partition wall
Core drilling	DN + 100 mm
DN 100	200 mm
DN 125	225 mm
DN 160	260 mm
DN 200	300 mm
DN 250	350 mm

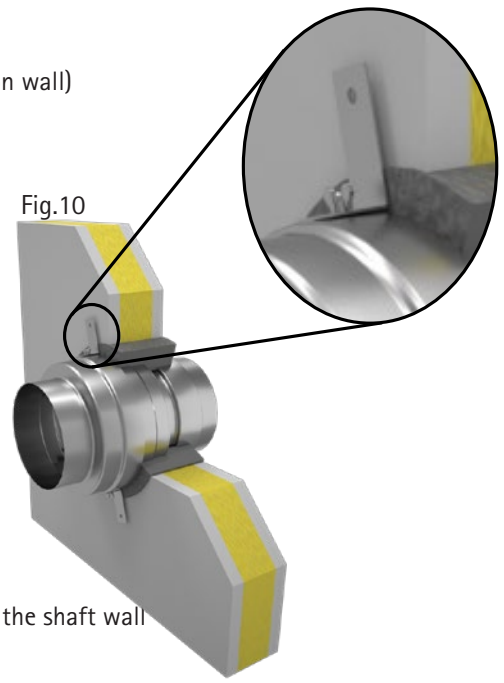


Fig.10

4. If applicable, close the existing gap between wall insulation and panels
5. Position the fire damper in the intended installation position with mounting brackets in the shaft wall
   (mounting brackets must be flush with the ceiling, use a screw connection, if needed)
6. Case in and close existing ring gap (s ≥ 45 mm) with permitted mortar (page 7)

Function test

Function tests or inspection openings on each floor are dispensable. The air duct should have a inspection opening at the upper and lower end, as well as at the duct warping, which allows a camera inspection.

Commissioning

After installation of the fire damper WFK and before the duct is sealed, it is mandatory to check the proper installation of the WFK, from the inside by camera inspection and from the outside by visual inspection. Single dampers can be checked by visual inspection only, e. g. by using a mirror.

Maintenance

Maintenance is to be performed at intervals of five years through a camera inspection, where a video documentation and the associated assessment of the inspection data obtained are prepared by a competent employee. These data are to be handed over to the customer in paper form and as a file on a suitable medium. If the pipe is contaminated, a pipe cleaning must be arranged. The WFK will also be cleaned in this process. Single dampers can be checked by visual inspection only, which has to be recorded, e. g. that a mirror has been used for the inspection.

The VdS-tested release element is 100 % corrosion-free, including the release unit. The double torsion bars made from stainless steel are covered and without hinge. The release unit has been used a million times by geba in the last 15 years and has been proven in practice. All components are abrasion-proof. The free cross-section allows a low pipe resistance with higher air velocity, e. g. more than 3m/s, which prevents dust from settling. The air flow without turbulences substantially contributes to the pipe cleaning. The Hermann Rietschel Institute determined, according to a CCI publication, dust precipitation with an air velocity of less than 3m/s. It was found that 4 – 5 m/s would be ideal. This also benefits the dimensioning of the pipe. Dampers in the air flow represent a resistance, lead to turbulences and thereby reduce the efficiency of a ventilation system. This inevitably results in lower air velocity, which then again requires larger pipe dimensions and makes the system more expensive.

The building regulations are to be observed.

Cleaning instructions
-Do not use cleaning agents
-Use only soft plastic brush for cleaning; brush hair: Ø 0.5 – Ø 0.8mm maximum
-Brush diameter: 2 cm larger than diameter DN
-Cleaning with 100-200 rotations/minute (possibly reduced speed at the sealing)

The delivered components are to be checked for completeness, type and damages according to operation and installation instructions. Components are to be used for the intended purpose. Bartholomäus GmbH cannot be held responsible for damages, which arise from improper installation and/or use due to non-compliance with this instructions and/or applicable standards or legal provisions. Technical changes reserved.

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