KOOLAIR

serie

FDR-3G

Circular fire dampers

ISO 9001
BUREAU VERITAS
Certification
Sistema de Gestión

www.koolair.com

Table of contents

Circular fire damper FDR-3G

Description

Fire dampers provide passive fire protection designed to aid compartmentalization to prevent the spread of toxic gases, smoke and fire. Standard fire dampers are designed and certified in accordance with EN 15650 and tested according to EIS criteria in accordance with EN 1366-2. Fire dampers, including how they are installed, are an essential part of the fire resistance classification. FDR-3G fire dampers are designed to be used in the installations listed and described in the User Manual. All fire dampers are supplied with either a manual or motor-driven mechanism by default. There is an option for the dampers to be supplied with a power supply and communication unit. Actuating mechanisms are detachable and interchangeable, e.g. an actuator-driven mechanism can be changed for a manual mechanism.

Standout features

- Lightweight construction
- Air-tightness class C3 as standard
- Low pressure loss
- Removable mechanism
- Built-in inspection access door
- Wide range of installations rated up to EI120S

Types of activation

Manually operated fire dampers

By default, all manually operated fire dampers are supplied with a manual control, with the option of position signalling microswitches and electromagnets. In the event of a fire, the fire damper closes automatically. Depending on the version, the damper either closes when the fusible link melts or when activated remotely via an electromagnet with shunt release. Once the damper has closed, it is mechanically locked in the closed position and can only be opened manually. The actuating mechanism is activated when the air temperature in the duct reaches 74 °C; the damper closes in less than 10 seconds after the fuse melts.

Fire dampers

• H0

Fire damper with actuating mechanism, complete with cover, manual lever and spring blocking mechanism to prevent reopening; activated by a fusible link set at 74 °C (100 °C on request).

• H2

Fire damper with H0 actuating mechanism + opening and closing indication with 2 start and end switches.

• H5-2

Fire damper with H0 actuating mechanism + electromagnetic AC/DC 24 V release mechanism with shunt release (released when the electromagnet is activated) + opening and closing indication with 2 start and end switches.

• H6-2

Fire damper with H0 actuating mechanism + electromagnetic AC 230 V release mechanism with shunt release (released when the electromagnet is activated) + opening and closing indication with 2 start and end switches.

Actuator-operated fire dampers

By default, all actuator-operated fire dampers are supplied with an actuator with position signalling microswitches. The fire damper can be equipped with a spring return actuator that can close the damper when commanded by the building management system or after the thermoelectric fuse has been broken. Actuator-operated fire dampers are equipped with a thermoelectric fuse as standard, which triggers the closing of the damper when the ambient temperature reaches or exceeds 72 °C. The actuator supply circuit is broken and a spring causes the damper to close within 20 seconds. Belimo actuator available with fusible link set at 95 °C or 120 °C on request.

• B230T (Belimo 230V AC Actuator)

Fire damper with actuating mechanism with a Belimo spring return actuator (CA 230 V) with thermoelectric fuse set at 72 °C and auxiliary switches.

• B24T (Belimo 24V AC/DC actuator)

Fire damper with actuating mechanism with a Belimo spring return actuator (AC/DC 24 V) with thermoelectric fuse set at 72°C and auxiliary switches.

• B24T-W (Belimo 24V AC/DC Actuator and cable connector for communication unit)

Fire damper with a release mechanism with a Belimo spring return actuator (AC/DC 24 V) and a thermoelectric fuse set at 72°C and auxiliary switches; cable connectors provided for the communication unit (the communication unit is not part of the mechanism). Connection type ST.

Design

The fire damper has a galvanised sheet metal casing and asbestos free isolation blades with a rubber gasket for cold smoke and an intumescent gasket that expands in event of a fire.

Material composition

The product consists of galvanised sheet metal, a calcium silicate panel, fire resistant carbon fibre glass, polyurethane foam and ethylene-propylene rubber. The materials are processed in accordance with local regulations. The product contains no hazardous substances, except for the solder in the fusible link, which contains one milligram of lead.

List of accessories

Detailed information on accessories available for the FDR-3G can be found in the catalogue and the fire damper technical selection guide.

Technical parameters

Durability test

- 50 cycles of the manually operated actuating mechanism - with no changes to the required properties
- 10000 + 100 + 100 cycles of the actuator-operated actuating mechanism - with no changes to the required properties

Fire test pressure
Sub pressure between 300 and 500 Pa

Safety position
Closed. (In the event of a fire, the damper is closed either by the spring of the actuator or the spring of the manual mechanism.)

Air flow direction
Both directions

Permitted air velocity
The damper can continue to operate at a maximum of 12 m/s. Air free from any mechanical or chemical contamination

Fire protection side
Depends on the classification of the installation: Both sides (i <-> o)

Repeated opening
Suitable for daily control procedure. It is not possible to operate the device once the activation temperature has been reached.

Activation temperature

- Manual operation: at 74 °C as standard, by means of a spring once the fusible link has melted (can be set at 100 °C on request).
- Actuator operated: at 72 °C as standard (95 °C or 120 °C on request with Belimo actuator) by means of a spring once the current in the thermoelectric fuse has been interrupted.

Operating temperature

- Minimum: 0 °C
- Maximum: 60 °C for the fusible link set at 74 °C and 72 °C.
- Maximum: 85 °C for the fusible link set at 95 °C and 100 °C.
- Maximum: 105 °C for the fusible link set at 120 °C.

Suitability for environmental conditions

Protection against inclement weather, with temperatures over 0 °C, up to 95% Rha,

(3K5 in accordance with EN 60721-3-3)

Opening/closing indicators

- Manually operated microswitches - Actuation types H2 to H6-2
- Microswitches incorporated in the actuator- Actuation types B230T/B24T and B24T-W

Closing/opening time
Manual activation < 10 s, actuator activation < 20 s

Maintenance
Not required. If required by law in the country where the dampers are installed, clean dry.

Servicing
Determined by the law of the country in which the fire dampers are installed: minimum every 12 months.

Permissible pressure

1200 Pa

Air-tightness of the blade (EN 1751)

Class 3 as standard

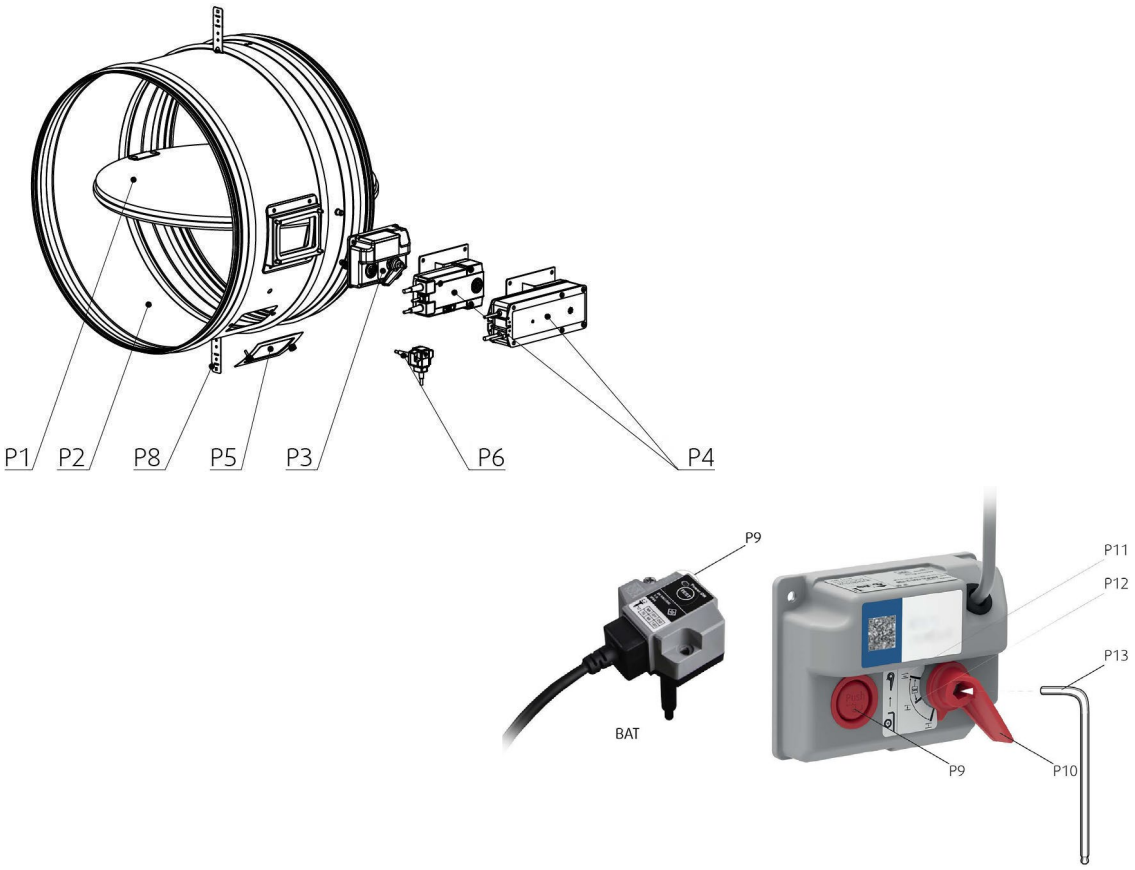
Air-tightness of the casing (EN 1751)

Class C as standard

Conforms with EC Directives
2006/42/EC Machinery Directive
2014/35/EU Low Voltage Directive
2014/30/EU Electromagnetic Compatibility Directive

Transport and storage
Store in a dry indoor location between -20 °C and +50 °C

Types of actuators
Belimo: BFL230-T, BFN230-T, BF230-T, BFL24-T, BFN24-T, BF-24-T, BFL24-T-ST, BFN24-T-ST, BF24-T-ST



Legend:

P1 Blade
P2 Casing
P3 Manual actuating mechanism (H0;H...)
P4 Actuator operated actuating mechanism (B...) P5
Inspection access door cover
P6 Thermoelectric fuse (BAT72)
P8 Foldable bracket
P9 Unblock and test button
P10 Switch
P11 Open position
P12 Closed position
P13 10 mm Allan key (not included)

Performance Evaluation - FDR-3G

22CE 1396

Safeair, S.L. (Spain)

Avda. San Isidro, nave C-3, 45223 Seseña – TOLEDO

1396-CPR-0218

(valid for subgroups: KS & KR)

EN 15650:2010

Circular fire damper

Nominal conditions for activation/sensitivity - Pass
- Load capacity of the sensor
- Sensor response temperature

Response Delay (response time) - Pass
- Closing time

Operating Reliability - Pass
- Motorised cycle = 10,200 cycles
- Manual cycle = 50 cycles

Fire resistance:
Resistivity depends on installation method and location.
- Integrity E
- Maintenance of cross-section (as per E)
- Mechanical stability (as per E)
- Cross-section (as per E)
- Isolation I
- Smoke leakage S

Durability of response delay - Pass
- Sensor response temperature and capacity

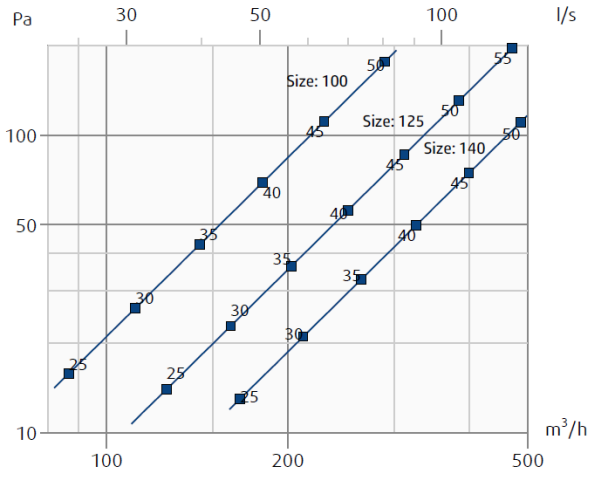
Durability of the operating reliability - Pass
- Opening and closing cycle

Diagrams

The pressure drop and the total A-weighted sound power level depend on the nominal diameter of the damper and the air flow volume at different pressures. The type of activation does not influence the air flow; therefore, the graphs only show one activation type.

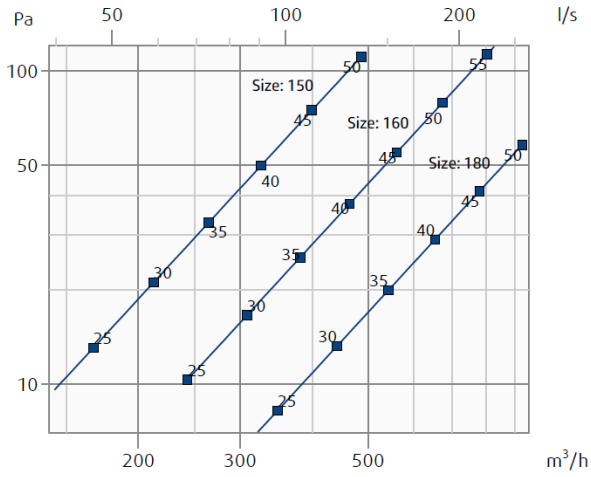
FDR-3G-...-H0

Pressure drop and noise level dB(A)



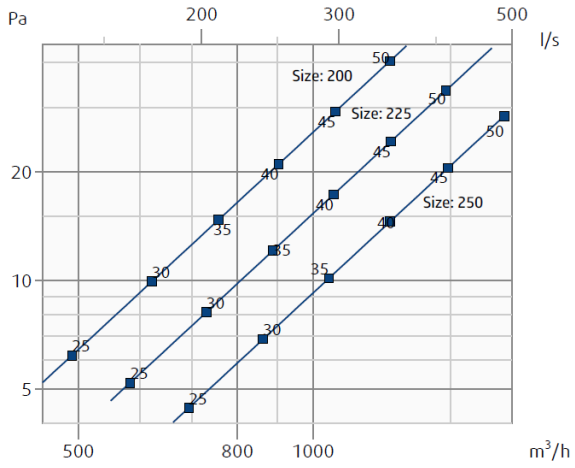
FDR-3G-...-H0

Pressure drop and noise level dB(A)



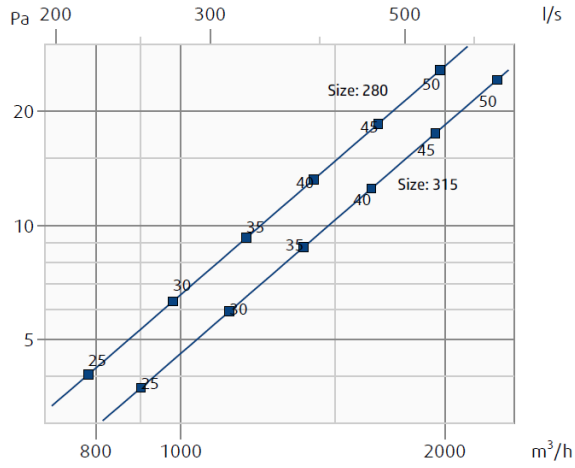
FDR-3G-...-H0

Pressure drop and noise level dB(A)



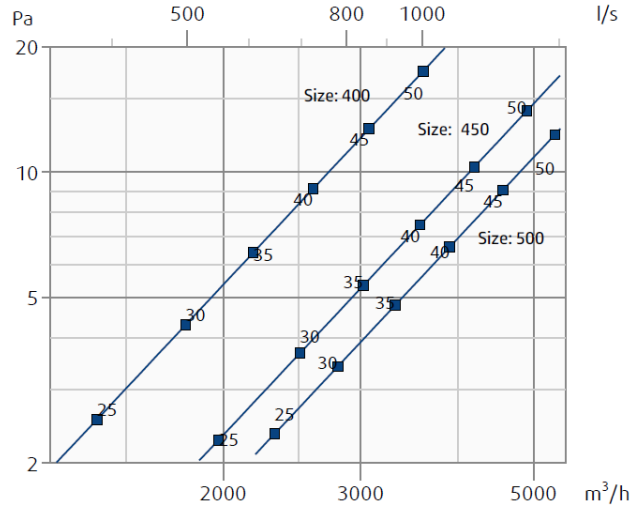
FDR-3G-...-H0

Pressure drop and noise level dB(A)



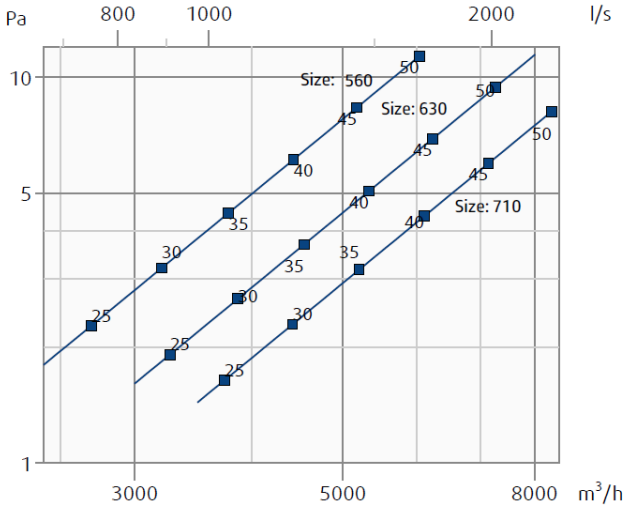
FDR-3G-...-H0

Pressure drop and noise level dB(A)



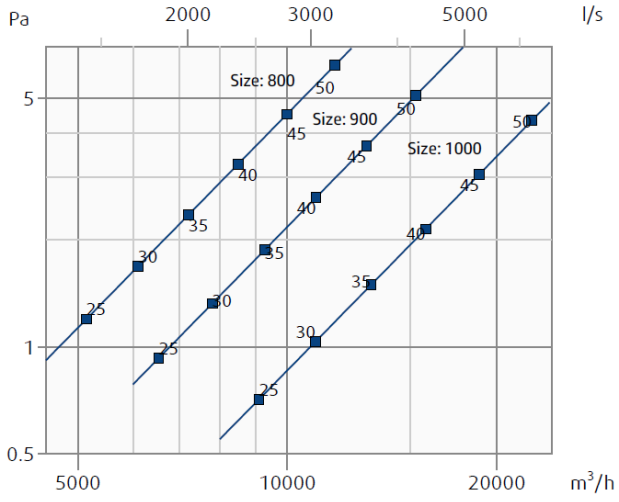
FDR-3G-...-H0

Pressure drop and noise level dB(A)



FDR-3G-...-H0

Pressure drop and noise level dB(A)



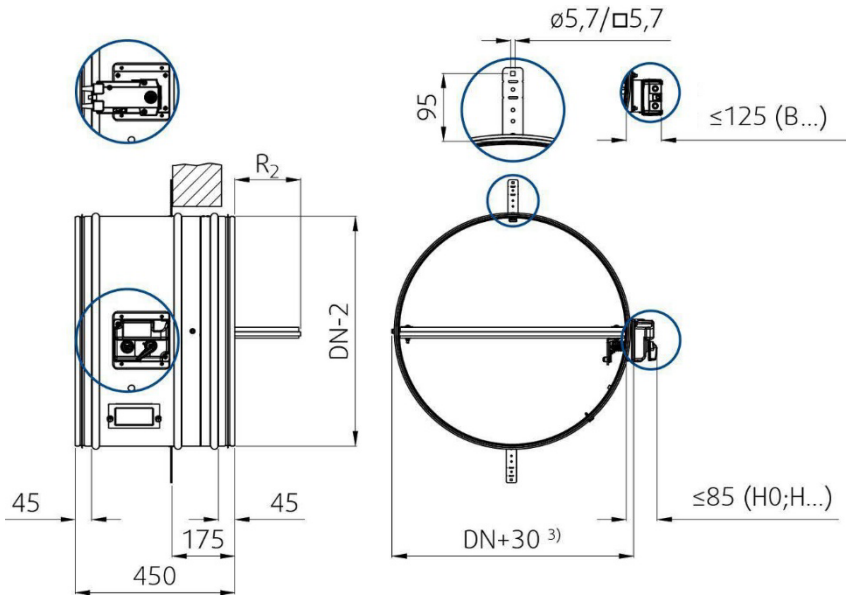
Dimensions

DN 100 to DN 630

Free area

	DN (mm)															
	100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	630
A_v (m^2)	0,003	0,007	0,009	0,011	0,013	0,018	0,023	0,031	0,039	0,050	0,065	0,085	0,110	0,138	0,173	0,220	0,283

Dimensions



Note: 3) Turning system

Blade protrusion

	DN (mm)																
	100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	630
R_1 (mm)	-300	-287,5	-280	-275	-270	-260	-250	-237,5	-225	-210	-192,5	-172,5	-150	-125	-100	-70	-35
R_2 (mm)	-67	-54,5	-47	-42	-37	-27	-17	-4,5	8	23	40,5	60,5	83	108	133	163	198

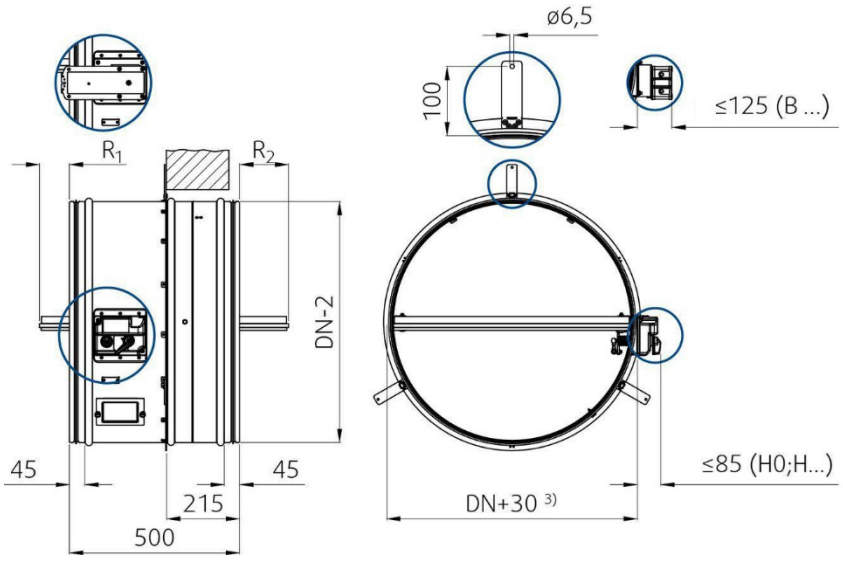
Weight

m (kg ±5%)	DN (mm)																
	100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	630
H0, H...	3,3	3,4	3,6	3,7	3,8	4,2	4,4	4,8	5,3	5,8	6,4	7,3	8,3	11,1	12,3	14,6	17,0
B	4,8	4,9	5,1	5,2	5,3	5,7	5,9	6,3	6,8	7,3	7,9	8,8	9,8	11,9	13,1	15,4	17,8

DN 710 to DN 1000

Free area

	DN (mm)			
	710	800	900	1000
A_v (m²)	0,357	0,459	0,587	0,731



Note: 3) Turning system

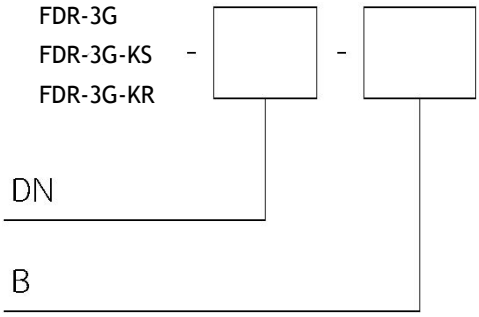
Blade protrusion

	DN (mm)			
	710	800	900	1000
R_1 (mm)	3	48	98	148
R_2 (mm)	191	236	286	336

Weight

m (kg ±5%)	DN (mm)			
	710	800	900	1000
H0, H...	33,5	39,4	46,5	54,2
B	35,6	41,5	48,6	56,3

Order code



DN

Dimension, øDN (from 100 mm to 1000 mm)

B - Activation type (H0 to B24T-W)

H0 (Manual lever, no switches)
H2 (Manual lever, 2 start and end switches).
H5-2 (Manual lever, 24V AC/DC electromagnet, 2 start and end switches).
H6-2 (Manual lever, 230V AC electromagnet, 2 start and end switches).
B230T (Belimo 230V AC Actuator)
B24T (Belimo 24V AC/DC Actuator)
B24T-W (Belimo 24V AC/DC Actuator and cable connector for communication unit)

Order code example for circular fire dampers

FDR-3G-1000-H5-2

Circular fire damper with 1000 mm nominal diameter, manual activator with open/closed indicated by 230 V contact microswitches. Note: Fire resistance depends on the installation method.

Access locations

Inspection access door locations (a removable mechanism is available for all sizes):
DN ≤ ø 150
Without inspection access door: inspection possible via a removable mechanism or an inspection access door must be added to the connecting duct.
ø 160 ≤ DN ≤ ø225
As standard in position L; An additional inspection access door cannot be added.
ø 250 ≤ DN ≤ ø1000
As standard in position B;

Installation methods

1. Wet	FDR-3G DN100 ... DN1000 (Subpressure: 300 Pa)	EI 60 (v_e h_o i ↔ o) S EI 90 (v_e h_o i ↔ o) S EI 120 (v_e h_o i ↔ o) S	a) 	b) 	c) 	360° 
1. Wet	FDR-3G DN100 ... DN1000 (Subpressure: 500 Pa)	EI 60 (v_e h_o i ↔ o) S EI 90 (v_e h_o i ↔ o) S EI 120 (v_e h_o i ↔ o) S	a) 	b) 	c)  c)  DN100...DN630	360°  
2. Dry	FDR-3G DN100 ... DN630 (Subpressure: 300 Pa)	EI 60 (v_e h_o i ↔ o) S EI 90 (v_e h_o i ↔ o) S	a) 	b) 	c) 	360° 
	FDR-3G DN630 ... DN1000 (Subpressure: 300 Pa)	EI 60 (v_e - i ↔ o) S EI 90 (v_e - i ↔ o) S	a) 	b) 	360° 	
3. Soft	FDR-3G DN100 ... DN630 (Subpressure: 300 Pa)	EI 60 (v_e h_o i ↔ o) S EI 90 (v_e h_o i ↔ o) S	a) 	b) 	c) 	360° 
3H Hilti	FDR-3G DN100 ... DN630 (Subpressure: 300 Pa)	EI 60 (v_e - i ↔ o) S EI 90 (v_e - i ↔ o) S	a) 	b) 	360° 	
5.1 On & Out	FDR-3G DN100 ... DN400 (Subpressure: 300 Pa)	EI 60 (v_e - i ↔ o) S EI 90 (v_e - i ↔ o) S	a) 	b) 		
5.2 On & Out	FDR-3G DN100 ... DN500 (Subpressure: 300 Pa)	EI 60 (v_e - i ↔ o) S	a) 	b) 		

Installation methods:

1. Wet - Installation in wet material, filled with plaster/mortar/concrete
2. Dry - Dry installation, made good with board and mineral wool filler
3. Soft - Soft installation using

3H mineral wool filler. Hilti - Made good with Hilti foam only.

5.1. In & Out - IN & OUT the wall installation with 2 layers of Mineral Wool rated EI90S

5.2. In & Out - IN & OUT the wall installation with 1 layer of mineral wool rated EI60S

Types of wall:

a) - Flexible wall (plasterboard)

b) - Wall made of concrete/masonry/aerated concrete (rigid)

c) - Floor/ceiling made of concrete/aerated concrete (rigid)

Classification:

Ve - Vertical wall

ho - Horizontal floor/ceiling

Installation, maintenance and operation

Some parts of the damper may have sharp edges - gloves must be worn when handling the damper and during installation to prevent injury. To avoid electric shock, fire or any other damage that could result from the improper use or operation of the damper, it is important to:

1. Ensure that the installation is carried out by a qualified person.
2. Precisely follow the instructions written and represented in the manual.
3. Inspect the damper in accordance with the manual.
4. Check the fire damper functions according to the section “Checking the fire damper functions correctly” before installation. This procedure prevents a damper that has been damaged during transport or handling from being installed.

Information on installation, maintenance and operation can be found at www.koolair.com.

Rules for installation

- The duct connected to the fire damper must be supported or hung so that the damper does not support its weight. The damper must not support any part of the building or wall in a way that could damage the damper or cause a fault as a consequence. The installation of an expansion joint is recommended on either side of the damper.
- The damper actuator mechanism can be placed on either side of the wall, but should be positioned to ensure easy access during inspection.
- According to EN 1366-2, there must be at least 200 mm between fire dampers.

  This condition does not apply to the distances tested. As such, wet and soft installations are approved for smaller distances on condition that the resulting fire resistance is reduced to EI90S.
- The distance between the wall/ceiling and the fire damper must be at least 75 mm. This condition does not apply to the distances tested. Therefore, wet and soft installations are approved for smaller distances on condition that the resulting resistivity is reduced to EI90S.
- The fire damper must be installed in a fire compartmentation structure in such a way that in its closed position the damper blade is located inside this structure. A foldable hinge is provided on the damper body to indicate where the plane of the supporting structure must begin. This condition does not apply to In & Out installations.
- According to EN 1366-2, the minimum thickness of the supporting construction must be maintained at least 200 mm around the installation opening, regardless of fire resistance.
- The gap between the fire damper and the wall/ceiling may be increased by up to 50% of the area of the opening, or reduced to the smallest possible amount that still provides sufficient space for the filling material to be installed.

IN ACCORDANCE WITH EN 15650, ALL FIRE DAMPERS MUST BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS!

 1. Wet	FDR-3G DN100 ... DN1000 (Subpressure: 300 Pa)	EI 60 (v_e h_o i ↔ o) S	a) 	b) 	c) 	 360°
		EI 90 (v_e h_o i ↔ o) S				
		EI 120 (v_e h_o i ↔ o) S				
 1. Wet	FDR-3G DN100 ... DN1000 (Subpressure: 500 Pa)	EI 60 (v_e h_o i ↔ o) S	a) 	b) 	c) 	 360°
		EI 90 (v_e h_o i ↔ o) S				
		EI 120 (v_e h_o i ↔ o) S			c)  DN100...DN630	

Wet installation

Using plaster/mortar/concrete filler

1. The opening in the supporting construction must be prepared as shown below. The surfaces of the opening must be clean and even.
2. Openings in flexible walls must be reinforced in line with the standards for plasterboard walls. The dimensions of the opening should be the nominal dimensions of the damper plus an additional clearance. For circular dampers, an opening with diameter D1 should be made.
3. Insert the closed damper in the centre of the opening so that the damper blade is in the wall. Use the foldable bracket (2; units) to secure the damper against the wall with a suitable screw (F1; recommended screw diameter 5.5 mm; e.g. DIN7981).
4. For damper diameters above 800 mm, it is recommended to use a duct support inside the damper to ensure the weight of the filling material does not damage or deform the damper casing.
5. Fill the area between the wall and the damper with plaster, mortar or concrete filler (2). Take care to avoid soiling the working parts of the damper, which could prevent it from functioning properly. It is recommended that the working parts are covered during installation. Boards can be used to avoid seepage of the filling material although they are not necessary for wet installation.
6. First allow the plaster, mortar or concrete filler to harden and then carry out the following steps.
7. Once the filling material has hardened, remove the duct support from inside the damper.
8. If necessary, uncover or clean the damper after installation.
9. Check damper operation

Installation - Standard Distances

According to EN 1366-2, there must be a minimum distance of 75 mm between the wall or ceiling and the damper body. Where multiple ducts cross through a fire wall, there must be a minimum distance of 200 mm between two damper bodies. This also applies to the distance between a damper and any foreign object passing through the fire wall nearby.

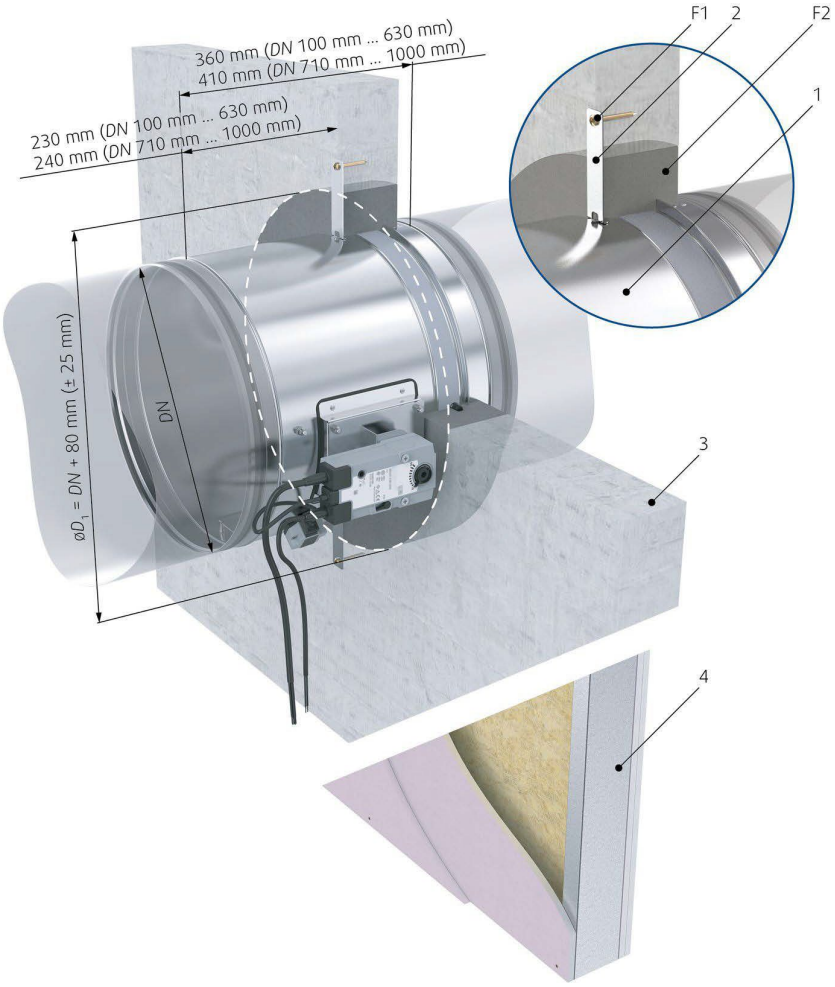
Installation - Smaller distances - Maximum fire resistance reduced to EI90S

The distance between 2 individual fire dampers may be reduced to 60 mm, measured from casing surface to casing surface, and the distance between the surface of the damper installed in the duct and the adjacent supporting construction (wall/floor) may be reduced to 40 mm, provided that the fire resistance classification is reduced as follows EI90 (ve i <-> o) S.

Installation in a thinner wall than tested

It is possible to install the damper in a thinner wall provided that an additional layer(s) of fire board is fixed to the wall surface so that the damper penetration is sealed to the same length as that tested. The minimum width of the boards added around the damper should be 200 mm. What is more, any thinner walls must be classified according to EN 13501-2:2007 + A1: 2009 for the fire resistance required for the intended use of the product. In the case of an overhanging wall, the additional layers of fire board must be fixed to the steel supporting structure.

1 Fire damper (actuator side)



4 Flexible wall (plasterboard)

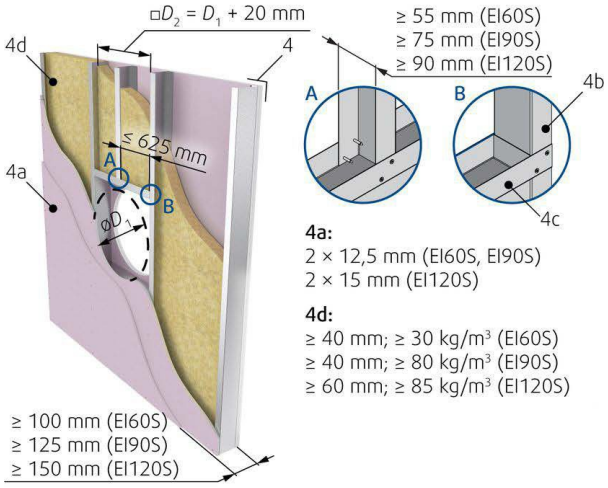
4a 2 layers of fire resistant plasterboard type F, EN 520

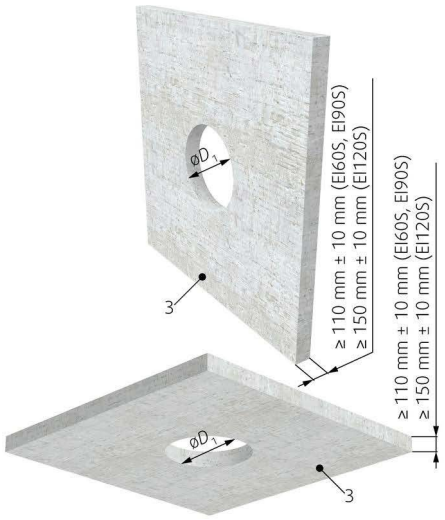
4b Vertical profiles CW

4c Horizontal profiles CW

4d Mineral wool; thickness/cubic density see picture.

3 Concrete/masonry/aerated concrete wall or ceiling

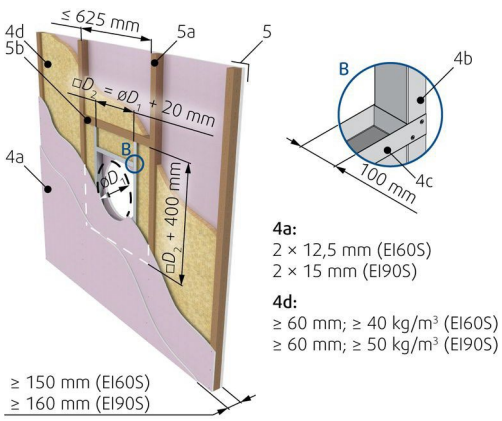


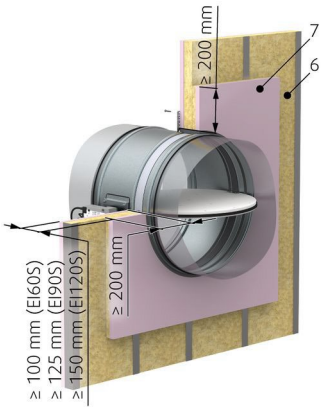


5 Flexible wall (timber trusses)

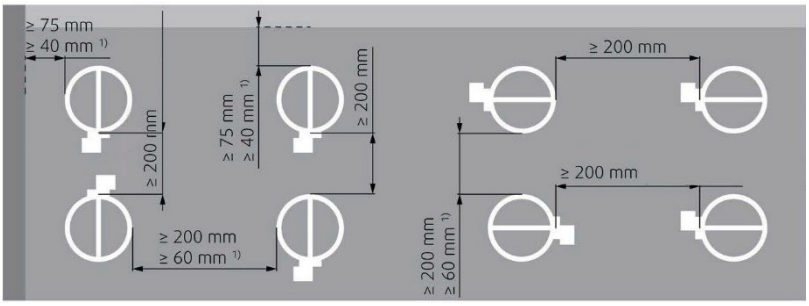
5a Vertical spruce timber truss ≥ 60 × 100 mm

5b Horizontal spruce timber truss ≥ 80 × 100 mm





6 Alternative thinner wall (classified according to EN 13501-2:2007 + A1: 2009 for the fire resistance required for the intended use of the product).



Multiple Mounting

Legend:

F1 Screw ≥ 5.5 mm DIN7981 or suitable plug and 6 mm screw.

F2 Plaster/mortar/concrete filler.

1 Fire damper (actuator side)

2 Foldable bracket

3 Concrete/masonry/aerated concrete wall or ceiling.

4 Flexible wall (plasterboard)

4a 2 layers of fire resistant plasterboard type F, EN 520

4b Vertical profiles CW

4c Horizontal profiles CW

4d Mineral wool; thickness/cubic density see picture.

5 Flexible wall (timber trusses)

5a Vertical spruce timber truss ≥ 60 × 100 mm

5b Horizontal spruce timber truss ≥ 80 × 100 mm

6 Alternative thinner wall (classified according to EN 13501-2:2007 + A1: 2009 for the fire resistance required for the intended use of the product.)

7 The 200 mm section from the opening around the damper must have the same composition and be created in the same way as the flexible (plasterboard) wall.

Notes:

ve Vertical (wall)

ho Horizontal (floor/ceiling)

1) Smaller distances - fire resistance must be reduced to EI90 (ve i<->o) S

Dry installation

Use of mineral wool and covered with boards

1. The opening of the supporting construction must be prepared as described below. The surfaces of the opening must be clean and even. Openings in flexible walls must be reinforced in line with the standards for plasterboard walls. The dimensions of the opening should be the nominal dimensions of the damper plus an additional clearance. For circular dampers, an opening with diameter D1 should be made.
2. These dampers require the foldable brackets (2) to be fitted to the covering boards using suitable screws or screws and plugs (F1). As such, the lower part(s) of the CBR-FD covering boards should be installed first. Insert the damper from the mechanism side and fix the foldable damper brackets to the covering board using appropriate screws (F1). Then mount the remaining covering boards from the mechanism side.
3. Fill the area between the wall and the damper with mineral wool with a density of at least 50 kg/m3 (F3). This should be done thoroughly but in such a way that the damper casing is not deformed and care must be taken to avoid soiling the functional parts of the damper, which could prevent it from functioning properly.
4. Fill the gap between the damper and the mounting opening; for circular dampers use CBR-FD covering boards with pre-drilled holes.
5. All gaps between the covering boards and the wall or between the covering boards and the fire damper must be filled with a fire resistant coating (F4).
6. If necessary, uncover or clean the damper after installation.
7. Check damper operation

Installation - Standard Distances

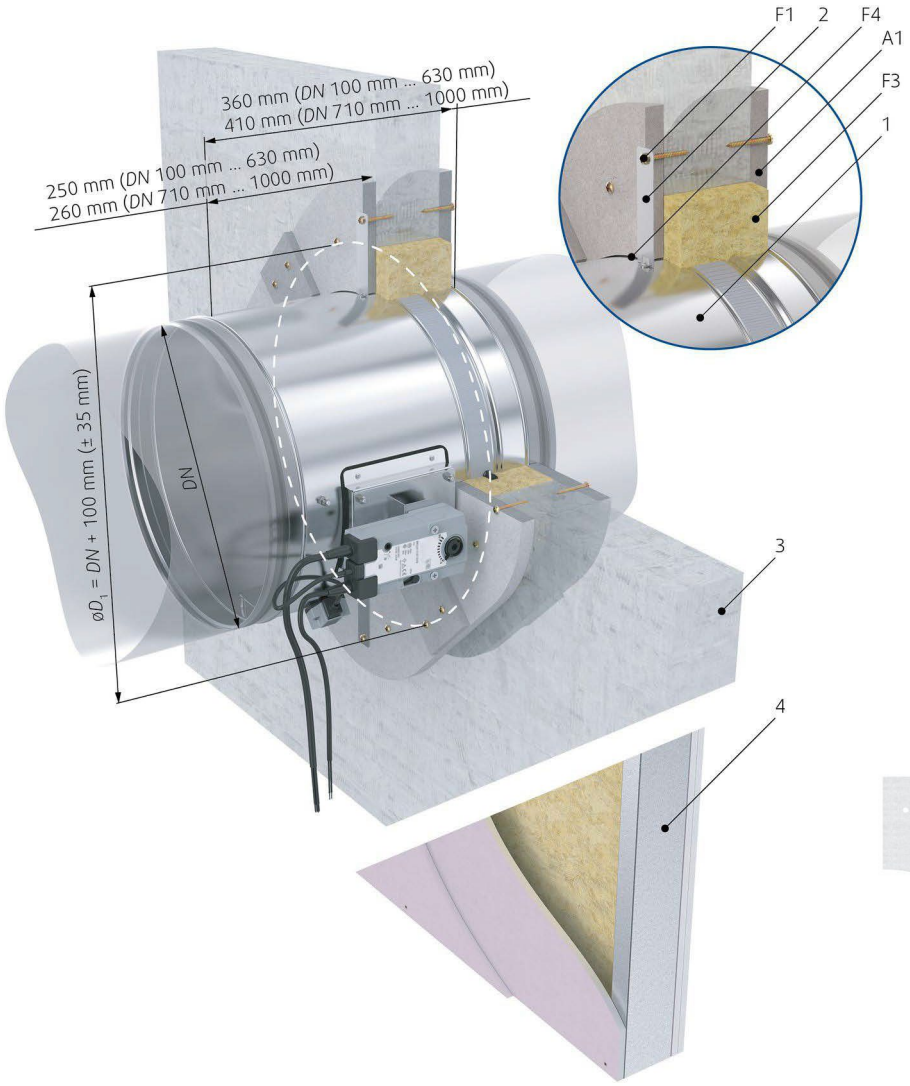
For dry installation, there should be a minimum distance of 100 mm from the wall or ceiling to the damper body and for DN>560 the distance should be 150 mm. Where multiple ducts cross through a fire wall, there must be a minimum distance of 200 mm between two damper bodies, or 300 mm for DN>560. This applies to the distances between the damper and any other objects passing through the fire resistant wall nearby.

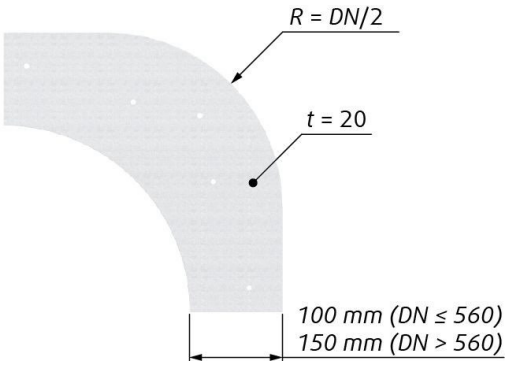
Installation in a thinner wall than tested

It is possible to install the damper in a thinner wall provided that an additional layer(s) of fire board is fixed to the wall surface so that the damper penetration is sealed to the same length as that tested. The minimum width of the boards added around the damper should be 200 mm. What is more, any thinner walls must be classified according to EN 13501-2:2007 + A1: 2009 for the fire resistance required for the intended use of the product. In the case of an overhanging wall, the additional layers of fire board must be fixed to the steel supporting structure.

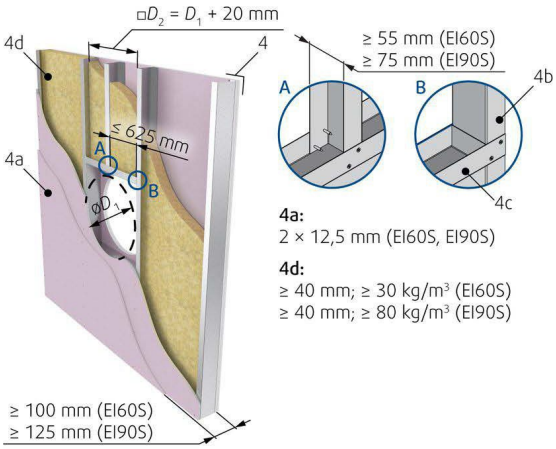
2. Dry	FDR-3G DN100 ... DN630 (Subpressure: 300 Pa)	EI 60 (v_a h_o i ↔ o) S EI 90 (v_a h_o i ↔ o) S	a) 	b) 	c) 	 360°
	FDR-3G DN630 ... DN1000 (Subpressure: 300 Pa)	EI 60 (v_a - i ↔ o) S EI 90 (v_a - i ↔ o) S	a) 	b) 	 360°	

1 Fire damper (actuator side)

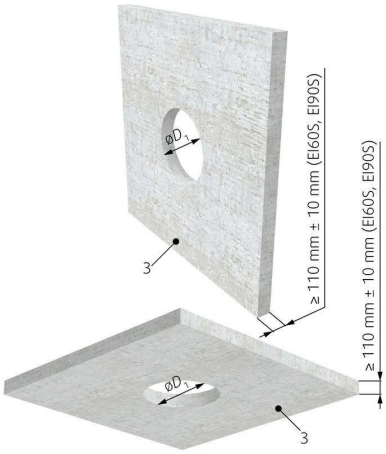




4 Flexible wall (plasterboard)
4a 2 layers of fire resistant plasterboard type F, EN 520
4b Vertical profiles CW
4c Horizontal profiles CW
4d Mineral wool; thickness/cubic density see picture.

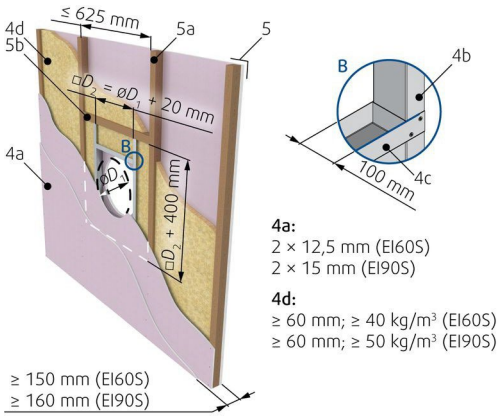


3 Concrete/masonry/aerated concrete wall or ceiling.



5 Flexible wall (timber trusses)

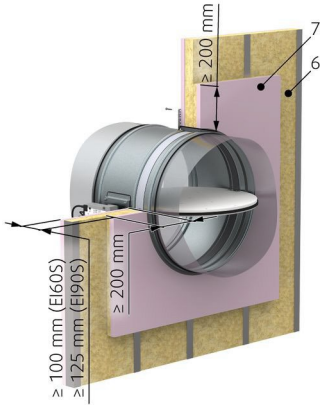
5a Vertical spruce timber truss ≥ 60 × 100 mm
5b Horizontal spruce timber truss ≥ 80 × 100 mm

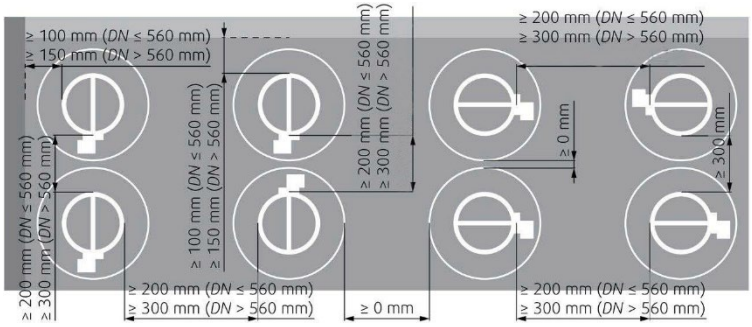


4a:
2 × 12,5 mm (EI60S)
2 × 15 mm (EI90S)

4d:
≥ 60 mm; ≥ 40 kg/m³ (EI60S)
≥ 60 mm; ≥ 50 kg/m³ (EI90S)

6 Alternative thinner wall (classified according to EN 13501-2:2007 + A1: 2009 for the fire resistance required for the intended use of the product.)





Multiple Mounting

Legend:

F1 Screw ≥ 5.5 mm DIN7981 or suitable plug and 6 mm screw.
F3 Mineral wool filler (min. 50 kg/m3)
F4 Fire-resistant coating, e.g. Promastop-CC/Promat
A1 Covering board CBR-FD (accessory) mandatory
1 Fire damper (actuator side)
2 Foldable bracket
3 Concrete/masonry/aerated concrete wall or ceiling
4 Flexible wall (plasterboard)
4a 2 layers of fire resistant plasterboard type F, EN 520
4b Vertical profiles CW
4c Horizontal profiles CW
4d Mineral wool; thickness/cubic density see picture.
5 Flexible wall (timber trusses)
5a Vertical spruce timber truss ≥ 60 × 100 mm
5b Horizontal spruce timber truss ≥ 80 × 100 mm
6 Alternative thinner wall (classified according to EN 13501-2:2007 + A1: 2009 for the fire resistance required for the intended use of the product.)
7 The 200 mm section from the opening around the damper must have the same composition and be created in the same way as the flexible (plasterboard) wall.

Notes:

ve Vertical (wall)
ho Horizontal (floor/ceiling)

Soft installation

Soft installation with fire resistant coating

For this type of installation the use of flexible connections is recommended (see accessory FCR) due to thermal expansion of the connected ducts in the event of a fire. Install flexible connections so that there is a minimum distance of 50 mm from the flexible part to the edge of the damper blade in the open position.

1. The opening in the supporting construction must be prepared as shown below. The surfaces of the opening must be clean and even. Openings in flexible walls must be reinforced in line with the standards for plasterboard walls. The dimensions of the opening should be the nominal dimensions of the damper plus an additional clearance. For circular dampers, an opening with diameter D1 should be made.
2. Prepare mineral wool segments with a thickness equal to the height of the opening (F5).
3. First apply a suitable fireproof coating (F6) on the damper at the place of its future installation: use the same fireproof coating to assemble and fix the filling material of the future installation. Once the fireproof coating has dried, the damper and the filling are ready for installation.
4. Apply the same fireproof coating (F6) on the internal surface of the wall cavity. Likewise, apply the fireproof coating on the external surface of the filler that is fixed to the surface of the damper. Immediately after applying the fireproof coating, insert the damper in the wall cavity. The damper blade must be located within the supporting structure.
5. After inserting the damper into the opening and securing it with the foldable brackets and the corresponding screws (F1), apply the same fireproof coating (F6). The coating should be at least 2 mm thick and 100 mm wide on the exposed filling material and applied evenly on the edges of the wall from both sides. Do not apply the coating where the mechanism, inspection access doors and manufacturer's labels are located.
6. If necessary, uncover or clean the damper after installation.
7. Check damper operation

Installation - Standard Distances

According to EN 1366-2, there must be a minimum distance of 75 mm between the wall or ceiling and the damper body. Where multiple ducts cross through a fire wall, there must be a minimum distance of 200 mm between two damper bodies. This also applies to the distance between a damper and any foreign object passing through the fire wall nearby.

Installation - Smaller distances

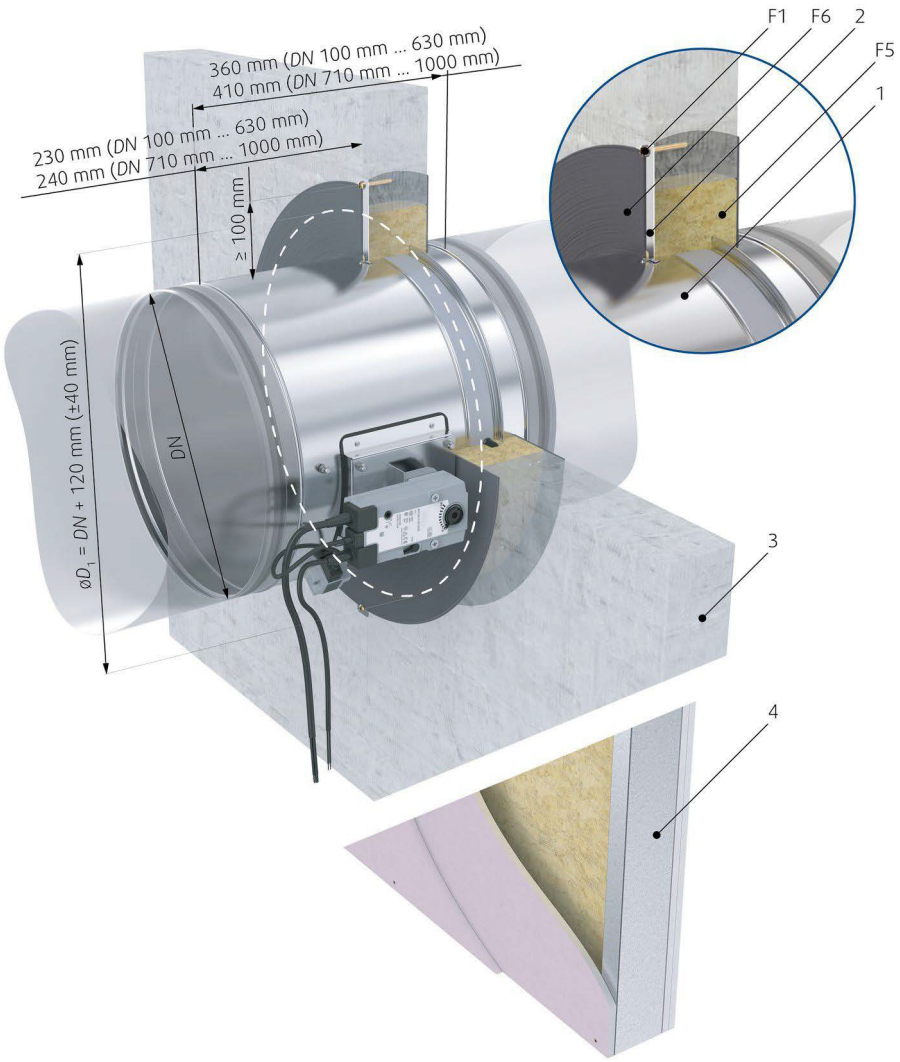
The distance between 2 individual fire dampers may be reduced to 60 mm, measured from casing surface to casing surface, and the distance between the surface of the damper installed in the duct and the adjacent supporting construction (wall/floor) may be reduced to 40 mm.

Installation in a thinner wall than tested

It is possible to install the damper in a thinner wall provided that an additional layer(s) of fire board is fixed to the wall surface so that the damper penetration is sealed to the same length as that tested. The minimum width of the boards added around the damper should be 200 mm. What is more, any alternative thinner walls must be classified according to EN 13501-2:2007 + A1: 2009 for the fire resistance required for the intended use of the product. In the case of an overhanging wall, the additional layers of fire board must be fixed to the steel supporting structure.

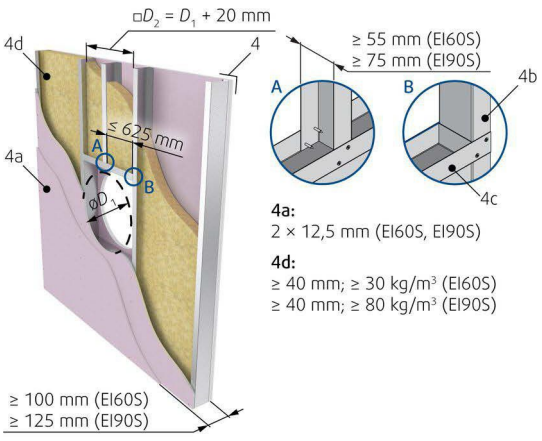
 3. Soft	FDR-3G DN100 ... DN630 (Subpressure: 300 Pa)	EI 60 (v_e h_o i ↔ o) S	a) 	b) 	c) 	 360°
		EI 90 (v_e h_o i ↔ o) S				

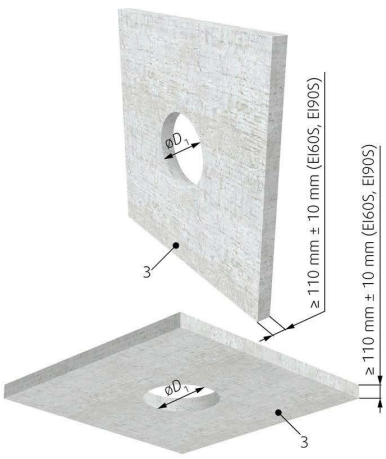
1 Fire damper (actuator side)



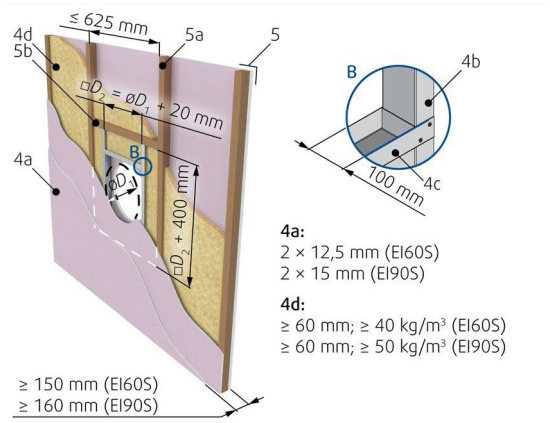
4 Flexible wall (plasterboard)
4a 2 layers of fire resistant plasterboard type F, EN 520
4b Vertical profiles CW
4c Horizontal profiles CW
4d Mineral wool; thickness/cubic density see picture.

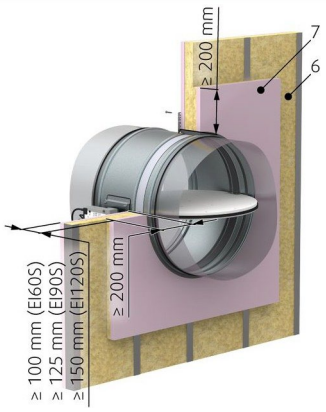
3 Concrete/masonry/aerated concrete wall or ceiling.



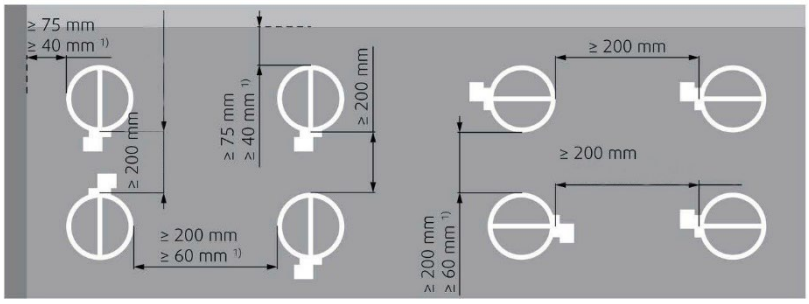


5 Flexible wall (timber trusses)
5a Vertical spruce timber truss ≥ 60 × 100 mm
5b Horizontal spruce timber truss ≥ 80 × 100 mm





6 Alternative thinner wall (classified according to EN 13501-2:2007 + A1: 2009 for the fire resistance required for the intended use of the product.)



Multiple Mounting

Legend:

F1 Screw ≥ 5.5 mm DIN7981 or suitable wall plug and 6 mm screw.
F5 Mineral wool segment (minimum 150 kg/m^3).
F6 Fireproof coating (Promastop-CC/Promat) at least 2 mm thick for exposed surfaces.
1 Fire damper (actuator side)
2 Foldable bracket
3 Concrete/masonry/aerated concrete wall or ceiling
4 Flexible wall (plasterboard)
4a 2 layers of fire resistant plasterboard type F, EN 520
4b Vertical profiles CW
4c Horizontal profiles CW
4d Mineral wool; thickness/cubic density see picture.
5 Flexible wall (timber trusses)
5a Vertical spruce timber truss ≥ 60 × 100 mm
5b Horizontal spruce timber truss ≥ 80 × 100 mm
6 Alternative thinner wall (classified according to EN 13501-2:2007 + A1: 2009 for the fire resistance required for the intended use of the product.)
7 The 200 mm section from the opening around the damper must have the same composition and be created in the same way as the flexible (plasterboard) wall.

Notes:

ve Vertical (wall)
ho Horizontal (floor/ceiling)

Hilti installation

Filled only with Hilti foam

For this type of installation the use of flexible connections is recommended (see accessory FCR) due to thermal expansion of the connected ducts in the event of a fire. Install flexible connections so that there is a minimum distance of 50 mm from the flexible part to the edge of the damper blade in the open position. Recommendation: surplus material can be reused as filler for this type of installation. It can be inserted into the cavity before adding foam using the pistol.

1. The opening of the supporting construction must be prepared as described. The surfaces of the opening must be clean and even. 2. Openings in flexible walls must be reinforced in line with the standards for plasterboard walls. The dimensions of the opening should be the nominal dimensions of the damper plus an additional clearance. For circular dampers, an opening with diameter D1 should be made.
2. Insert the damper concentrically into the opening and fix it using the foldable brackets and suitable screws (F1).
3. Wear protective gloves when handling the foam. Insert the barrel of the foam pistol into the centre of the cavity between the damper and the opening and fill completely with foam (F17): any excess foam can be quickly inserted back into the cavity by hand.
4. Once the filler (F17) has solidified it will always remain partially flexible and any excess foam protruding from the wall can be cut off.
5. If necessary, uncover or clean the damper after installation.
6. Check damper operation

Installation - Standard Distances

According to EN 1366-2, there must be a minimum distance of 75 mm between the wall or ceiling and the damper body. Where multiple ducts cross through a fire wall, there must be a minimum distance of 200 mm between two damper bodies.
This also applies to the distance between a damper and any foreign object passing through the fire wall nearby.

Installation - Smaller distances

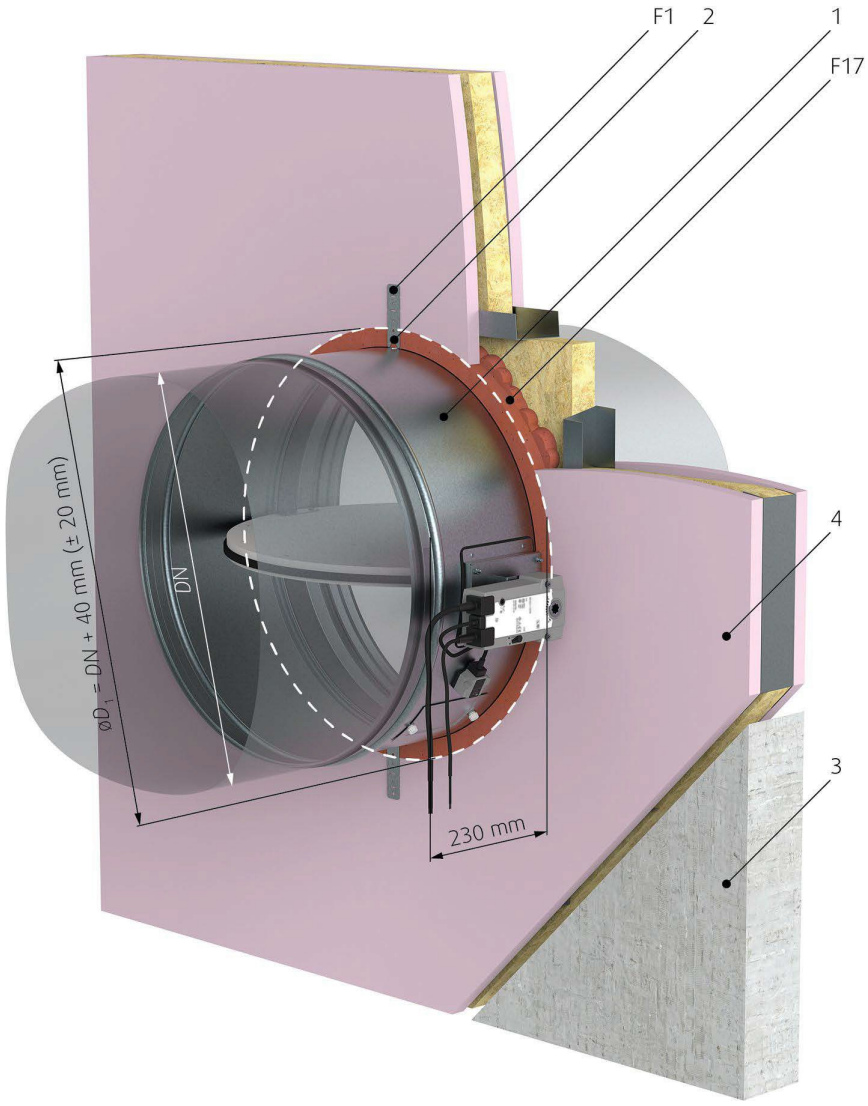
The distance between 2 individual fire dampers may be reduced to 60 mm, measured from casing surface to casing surface, and the distance between the surface of the damper installed in the duct and the adjacent supporting construction (wall/floor) may be reduced to 40 mm.

Installation in a thinner wall than tested

It is possible to install the damper in a thinner wall provided that an additional layer(s) of fire board is fixed to the wall surface so that the damper penetration is sealed to the same length as that tested. The minimum width of the boards added around the damper should be 200 mm. What is more, any alternative thinner walls must be classified according to EN 13501-2:2007 + A1: 2009 for the fire resistance required for the intended use of the product. In the case of an overhanging wall, the additional layers of fire board must be fixed to the steel supporting structure.

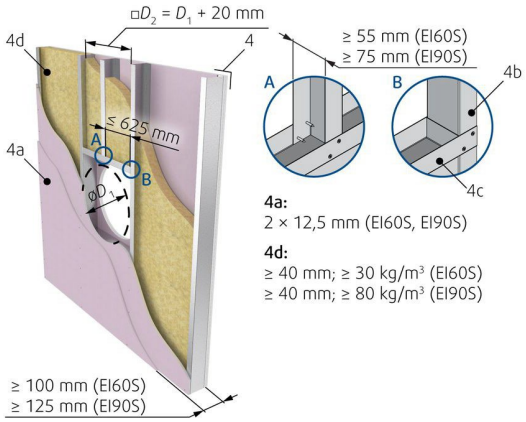
3H Hilti	FDR-3G DN100 ... DN630 (Subpressure: 300 Pa)	EI 60 (V_e - i ↔ o) S EI 90 (V_e - i ↔ o) S	a) 	b) 	 360°

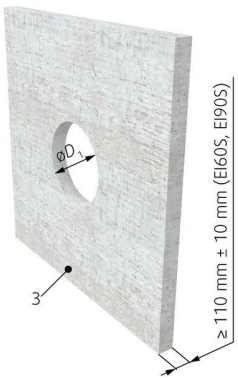
1 Fire damper (actuator side)



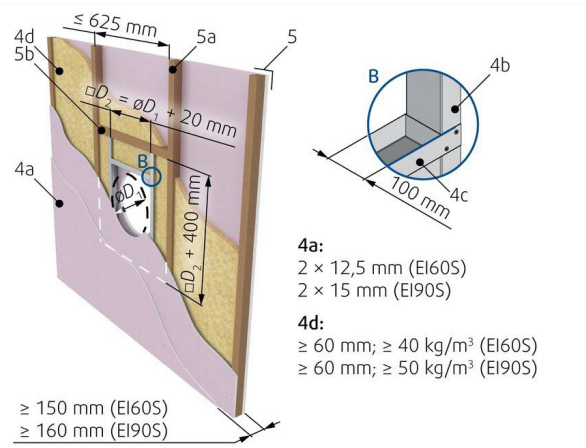
4 Flexible wall (plasterboard)
4a 2 layers of fire resistant plasterboard type F, EN 520
4b Vertical profiles CW
4c Horizontal profiles CW
4d Mineral wool; thickness/cubic density see picture.

3 Concrete/masonry/aerated concrete wall or ceiling.

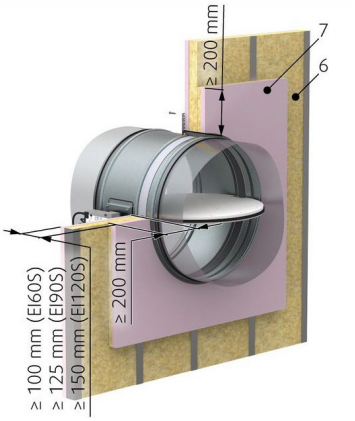




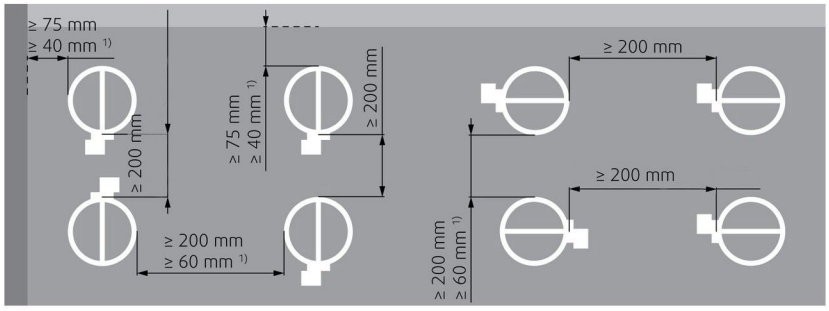
5 Flexible wall (timber trusses)
5a Vertical spruce timber truss ≥ 60 × 100 mm
5b Horizontal spruce timber truss ≥ 80 × 100 mm



6 Alternative thinner wall (classified according to EN 13501-2:2007 + A1: 2009 for the fire resistance required for the intended use of the product.)



Multiple Mounting



Legend:

F1 Screw ≥ 5.5 mm e.g. DIN7981 or suitable wall plug and 6 mm screw. F17
Foam CFS-F FX/HILTI.
1 Fire damper (actuator side).
2 Foldable bracket
3 Concrete/masonry/aerated concrete wall or ceiling
4 Flexible wall (plasterboard)
4a 2 layers of fire resistant plasterboard type F, EN 520
4b Vertical profiles CW
4c Horizontal profiles CW
4d Mineral wool; thickness/cubic density see picture.
5 Flexible wall (timber trusses)
5a Vertical spruce timber truss ≥ 60 × 100 mm
5b Horizontal spruce timber truss ≥ 80 × 100 mm
6 Alternative thinner wall (classified according to EN 13501-2:2007 + A1: 2009 for the fire resistance required for the intended use of the product.)
7 The 200 mm section from the opening around the damper must have the same composition and be created in the same way as the flexible (plasterboard) wall.

Notes:

ve Vertical (wall)
1) Smaller distances - maximum resistance EI90 (ve i<->o) S

ON & OUT wall installation, EI90S

Using 2 layers of mineral wool

SUGGESTION: Plaster/mortar/concrete (F2) can be used as an alternative filling material instead of the filler (F9) in the cavity in the wall with the duct, in which case the coating (F10) is not necessary. There are two possible ways to fix the damper: using the MP-MX ring or using the UVH30 ring, see point 3 of the instructions. Prepare the damper for installation by holding it in the opening using ceramic adhesive tape (12) and fix it with a suitable metal ring (13 or 14).

1. The opening in the supporting construction must be prepared as shown in the figure. The surfaces of the opening must be clean and even. Openings in flexible walls must be reinforced in line with the standards for plasterboard walls. The dimensions of the opening should be the nominal dimensions of the damper plus an additional clearance. For circular dampers, an opening with diameter D1 should be made.
2. Insert the duct into the load-bearing structure together with the damper so that the duct protrudes from the wall by the required distance. Push the insulation around the duct (F9) and trim the edges so that it is flush with the wall. Paint the surface of the insulation in line with the wall with a suitable coat of paint (F10) up to 100 mm from the duct so that it covers the insulation and part of the wall. Alternatively, plaster/mortar/concrete can be used as filling material (F2).
3. Fix the circular damper with L-shaped sheet metal brackets (F11) evenly all around the perimeter at 4 points.
4. Depending on the type of ring that is embedded in the blade location, the damper should be suspended with:
   - M12 threaded rod (11) when using the MP-MX ring (13).
   - 2 × M10 threaded rod (15) when using the UVH30 ring (14).
5. Insulate the parts of the damper and duct between the damper and the wall. Fix the insulation to the wall using a suitable fireproof coating (BSF, ISOVER). The circular part of the damper should be joined to the duct insulation with an access wire (9) for both insulation layers, as is normally applied when insulating circular ducts.
6. Cover the face of the insulation and the perimeter with galvanised sheet metal cladding (accessory A2) up to 150 mm from the edge of the insulation, fix the sheet metal against the damper casing via the holes in the accessories (10). Any protruding screws could obstruct the blade during opening and must be cut back so that they do not impede the movement of the blade.
7. If necessary, uncover or clean the damper after installation.
8. Ensure that the fixing screws do not interfere with the movement of the blade and check that the damper operates correctly.

Installation distances

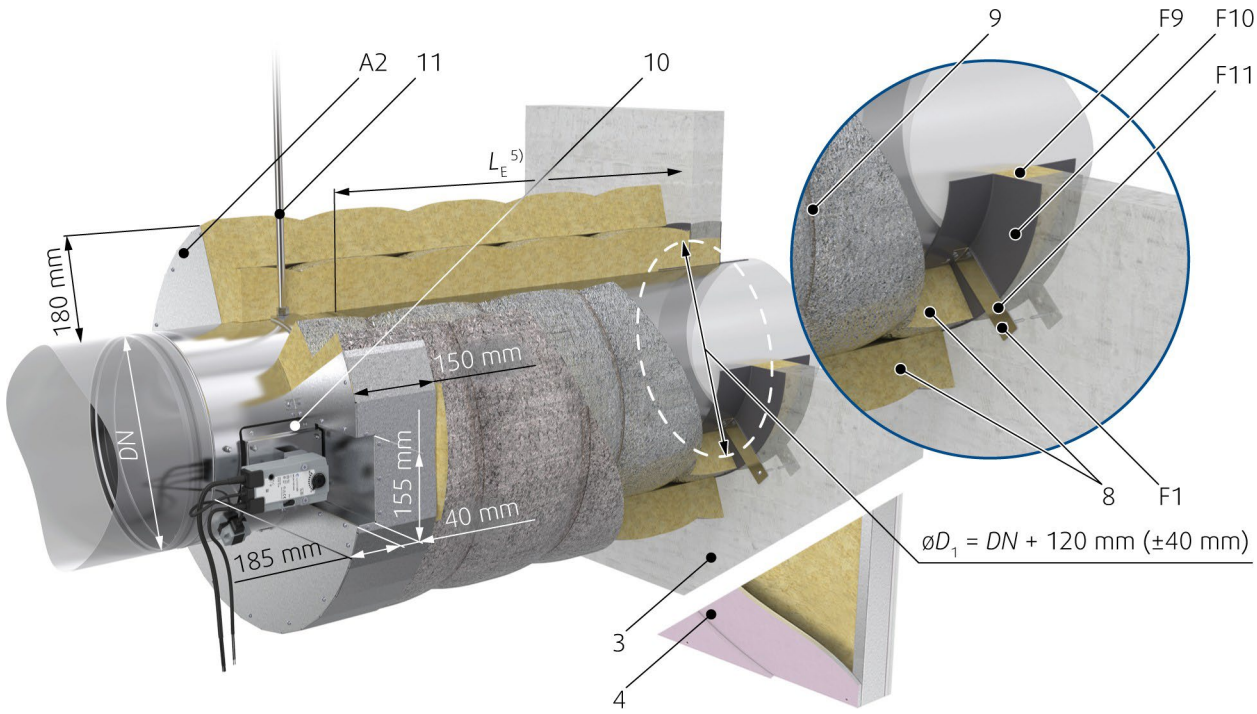
For installation 5.1 ON & OUT, the minimum distance from the wall or ceiling to the damper body is 200 mm. Where multiple ducts cross through a fire wall, there must be a minimum distance of 400 mm between two damper bodies. The damper and any foreign object passing nearby through the fire wall must be separated by a minimum distance of 200 mm.

Installation in a thinner wall than tested

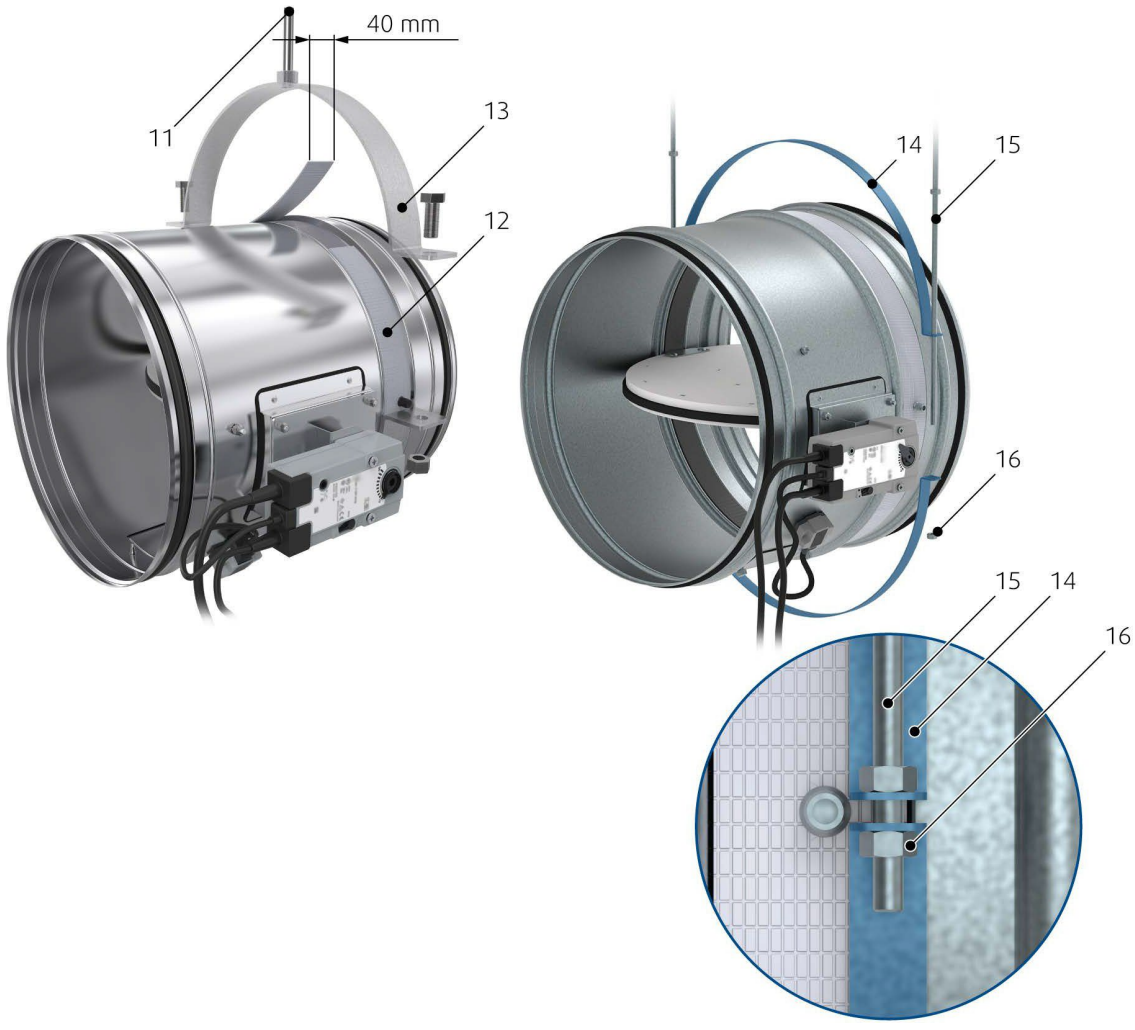
It is possible to install the damper in a thinner wall provided that an additional layer(s) of fire board is fixed to the wall surface so that the damper penetration is sealed to the same length as that tested. The minimum width of the boards added around the damper should be 200 mm. What is more, any thinner walls must be classified according to EN 13501-2:2007 + A1: 2009 for the fire resistance required for the intended use of the product. In the case of an overhanging wall, the additional layers of fire board must be fixed to the steel supporting structure.

 5.1 On & Out	FDR-3G DN100 ... DN400 (Subpressure: 300 Pa)	EI 60 (v_e - i ↔ o) S	a) 	b) 	
		EI 90 (v_e - i ↔ o) S			

1 Fire damper (actuator side)

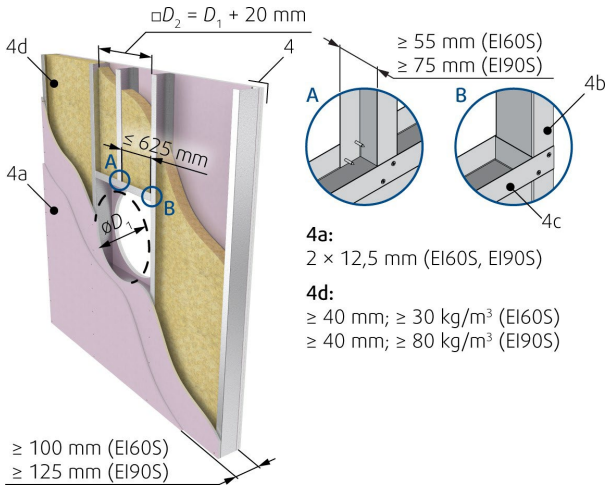


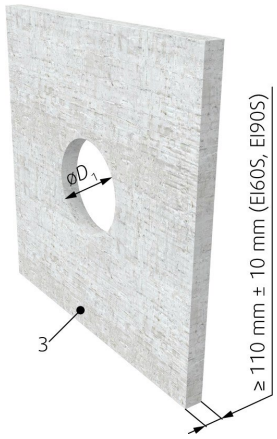
1 Fire damper (actuator side)



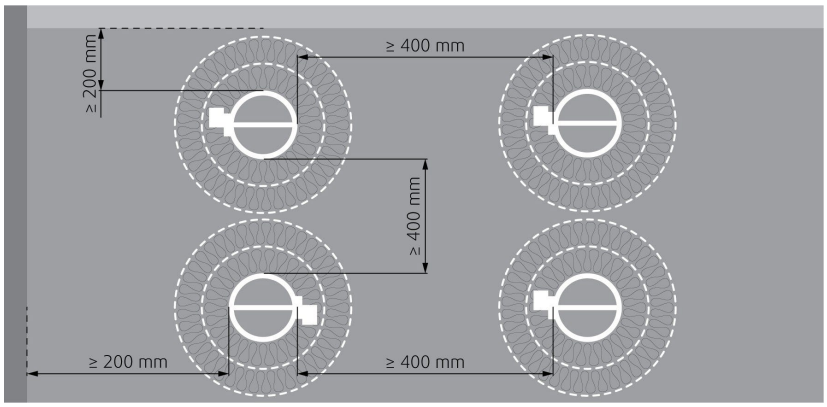
4 Flexible wall (plasterboard)
4a 2 layers of fire resistant plasterboard type F, EN 520
4b Vertical profiles CW
4c Horizontal profiles CW
4d Mineral wool; thickness/cubic density see picture.

3 Concrete/masonry/brick/aerated concrete wall or ceiling.

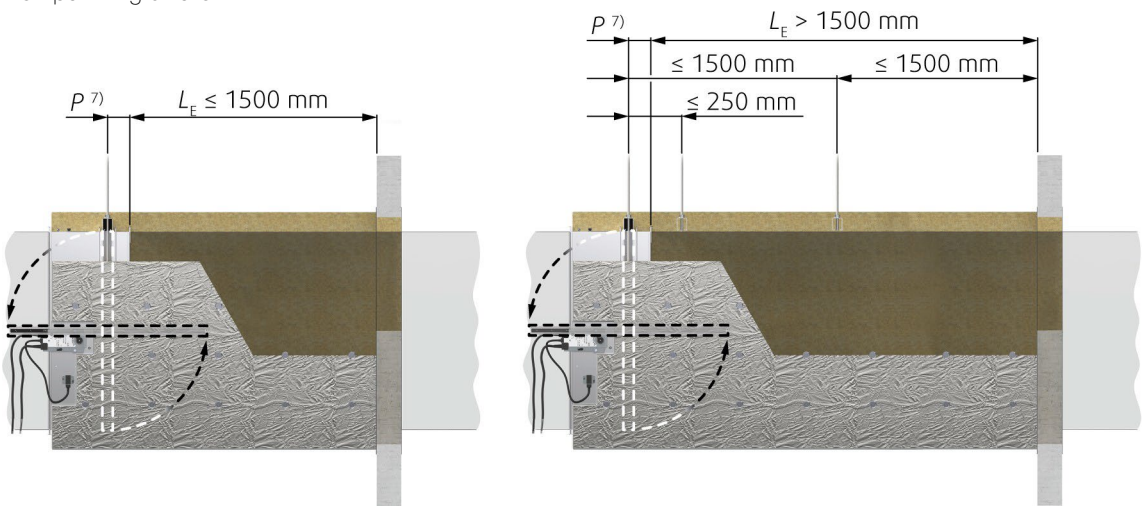




Multiple Mounting



Damper fixing criteria



Legend:

F9 Mineral wool section (min. 66 kg/m3) - in a wall
F10 Fireproof coating (BSF/ISOVER) at least 2 mm thick for exposed surfaces

F11 35 mm and 160 mm L-shaped 40 × 2 mm sheet metal belt bent into L-shape
A2 Insulating front cover IPOR-FD-DN (accessory)
1 Fire damper (actuator side)
3 Concrete/masonry/brick/aerated concrete wall or ceiling
4 Flexible wall (plasterboard)
4a 2 layers of fire resistant plasterboard type F, EN 520
4b Vertical profiles CW
4c Horizontal profiles CW
4d Mineral wool; thickness/cubic density see picture.
8 Mineral wool section ULTIMATE Protect Wired Mat 4.0 Alu1/ISOVER (min. 66 kg/m3) - inner and outer layer
9 Steel binding wire, 1.6 mm thick
10 Screw 3.9 mm × max. 13 mm; for example DIN7504
11 M12 steel threaded rod (1 ×)
12 Ceramic tape (A-KERA) width 40 mm, thickness 2 mm
13 Sheet metal bracket for suspending damper (MP-MX/HILTI) when using 1 x M12 rod
14 Sheet metal bracket for suspending damper (UVH30, Lindab), when using 2 × M10 rods
15 M10 threaded steel rod (2 ×)
16 M10 nut (4 ×)

Notes:

ve Vertical (wall)
5 The rules for the placement of brackets and duct hangers depend on the distance from the damper to the supporting construction LE.
7 The distance P is the distance from the blade axis to the damper flange. The distance depends on the type of damper used. F2 Plaster/mortar/concrete filler - can serve as a replacement for filling material F9. When using plaster/mortar/concrete filler, coating F10 is not required.

ON & OUT wall installation, EI60S

Using 1 layer of mineral wool

SUGGESTION: Plaster/mortar/concrete (F2) can be used as an alternative filling material instead of the filler (F9) in the cavity in the wall with the duct, in which case the coating (F10) is not necessary. There are two possible ways to fix the damper: using the MP-MX ring or using the UVH30 ring, see point 3 of the instructions. Prepare the damper for installation by holding it in the opening using ceramic adhesive tape (12) and fix it with a suitable metal ring (13 or 14).

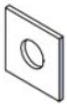
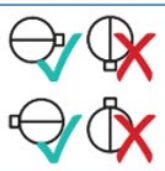
1. The opening in the supporting construction must be prepared as shown in the figure. The surfaces of the opening must be clean and even. Openings in flexible walls must be reinforced in line with the standards for plasterboard walls. The dimensions of the opening should be the nominal dimensions of the damper plus an additional clearance. For circular dampers, an opening with diameter D1 should be made.
2. Insert the duct into the load-bearing structure together with the damper so that the duct protrudes from the wall by the required distance.
3. Push the insulation around the duct (F9) and trim the edges so that it is flush with the wall. Paint the surface of the insulation in line with the wall with a suitable coat of paint (F10) up to 100 mm from the duct so that it covers the insulation and part of the wall. Alternatively, plaster/mortar/concrete can be used as filling material (F2).
4. Reinforce the circular duct on both sides of the junction with the wall using MP-MX rings (13) or UVH30 rings (14). Depending on the ring used, the damper should be suspended with:
   - M12 threaded rod (11) when using the Hilti MP-MX ring (13).
   - 2 × M10 threaded rod (15) when using the Lindab UVH30 ring (14) with nuts (16).
5. Insulate the parts of the damper and duct between the damper and the wall. Connect the circular damper and the duct with a layer of insulation (17). Fix the insulation to the wall with a suitable fireproof coating (F10). Secure the insulation (17) with binding wire (r 1.6 mm) in the standard way applied when insulating circular ducts, or by using wire clamps (26) to fix the mesh to the top of the insulation (17). The actuator, thermoelectric fuse and inspection access door must not be insulated, with a maximum gap of 15 mm.
6. Apply aluminium tape (25) around the front and on all surfaces not covered with aluminium foil.
7. If necessary, uncover or clean the damper after installation.
8. Ensure that the fixing screws do not interfere with the movement of the blades and check that the damper operates correctly.

Installation distances

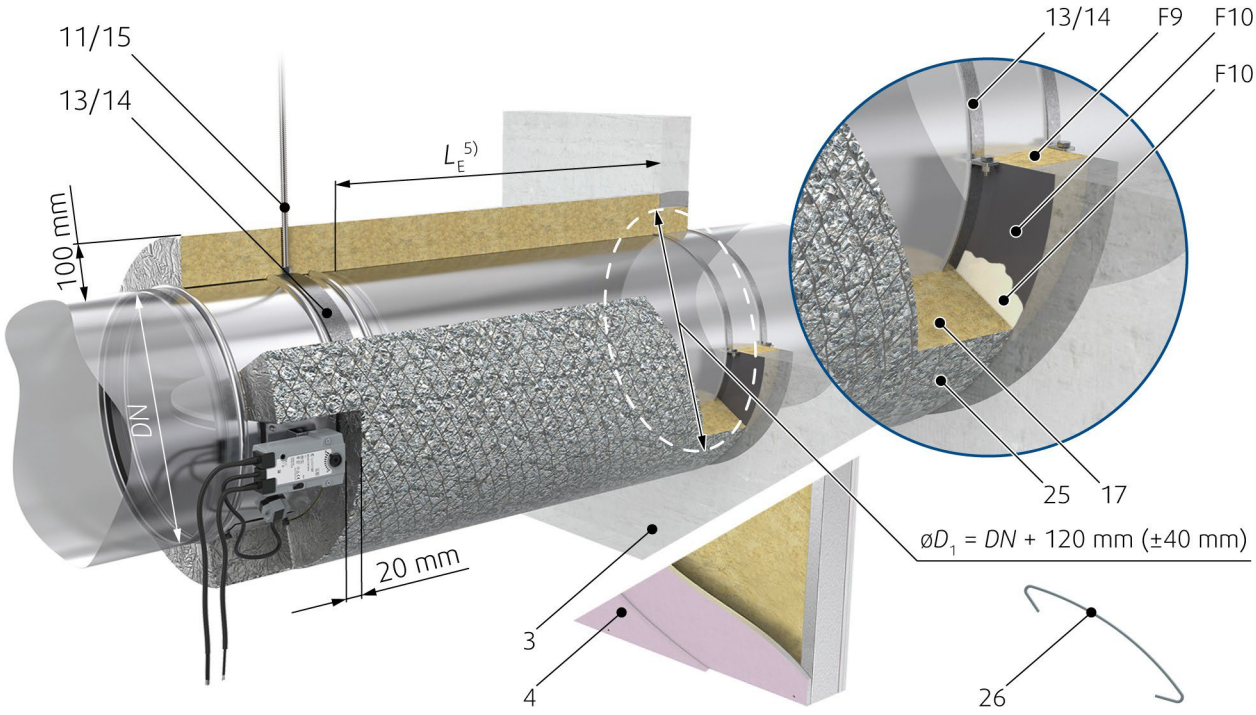
For the 5.2 ON & OUT installation, the minimum distance from the wall or ceiling to the damper body is 100 mm.
Where multiple ducts cross through a fire wall, there must be a minimum distance of 200 mm between two damper bodies. This distance also applies to the distance between a damper and any foreign object passing through the fire wall nearby.

Installation in a thinner wall than tested

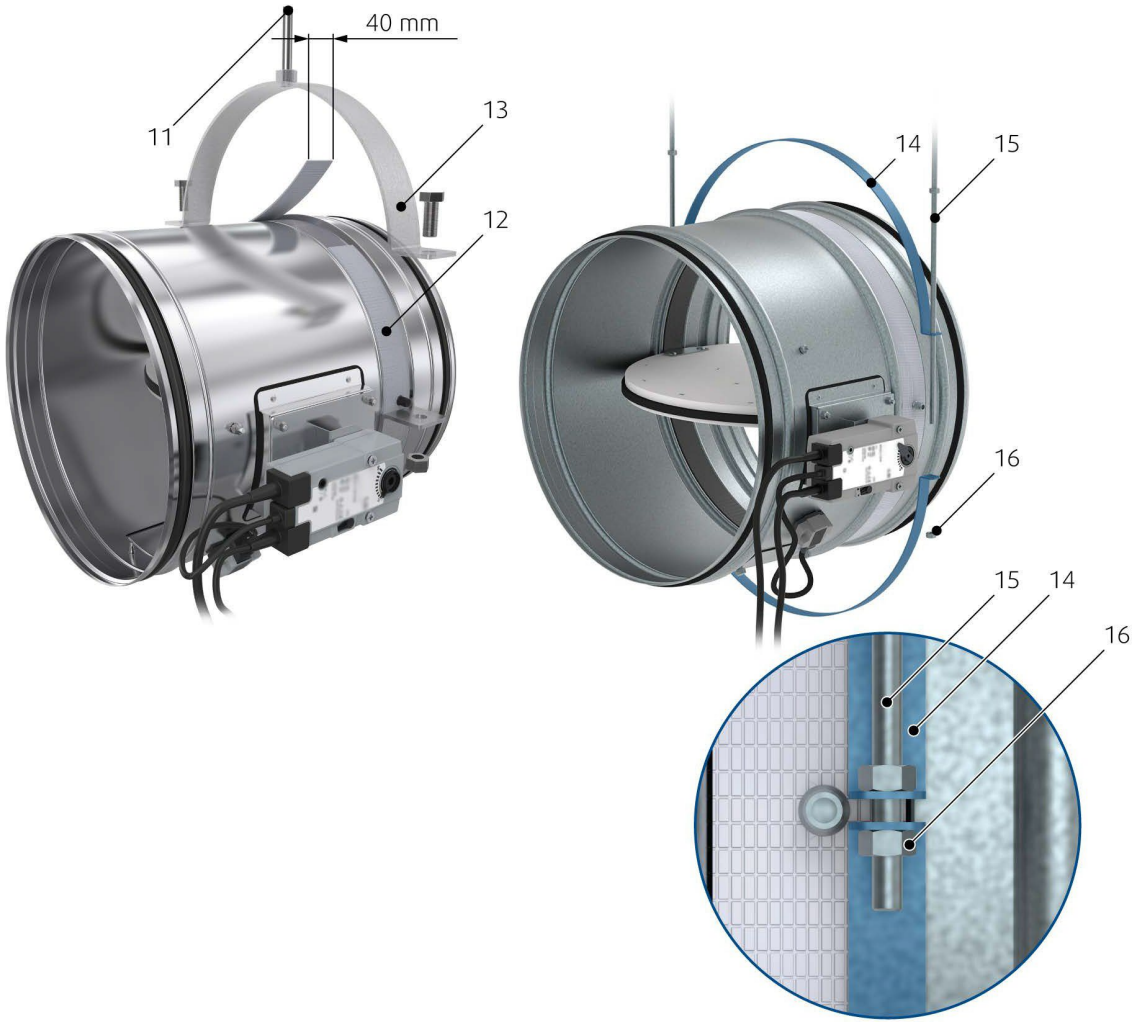
It is possible to install the damper in a thinner wall provided that an additional layer(s) of fire board is fixed to the wall surface so that the damper penetration is sealed to the same length as that tested. The minimum width of the boards added around the damper should be 200 mm. What is more, any alternative thinner walls must be classified according to EN 13501-2:2007 + A1: 2009 for the fire resistance required for the intended use of the product. In the case of an overhanging wall, the additional layers of fire board must be fixed to the steel supporting structure.

 5.2 On & Out	FDR-3G DN100 ... DN500 (Subpressure: 300 Pa)	EI 60 (v_e - i ↔ o) S	a) 	b) 	

1 Fire damper (actuator side)

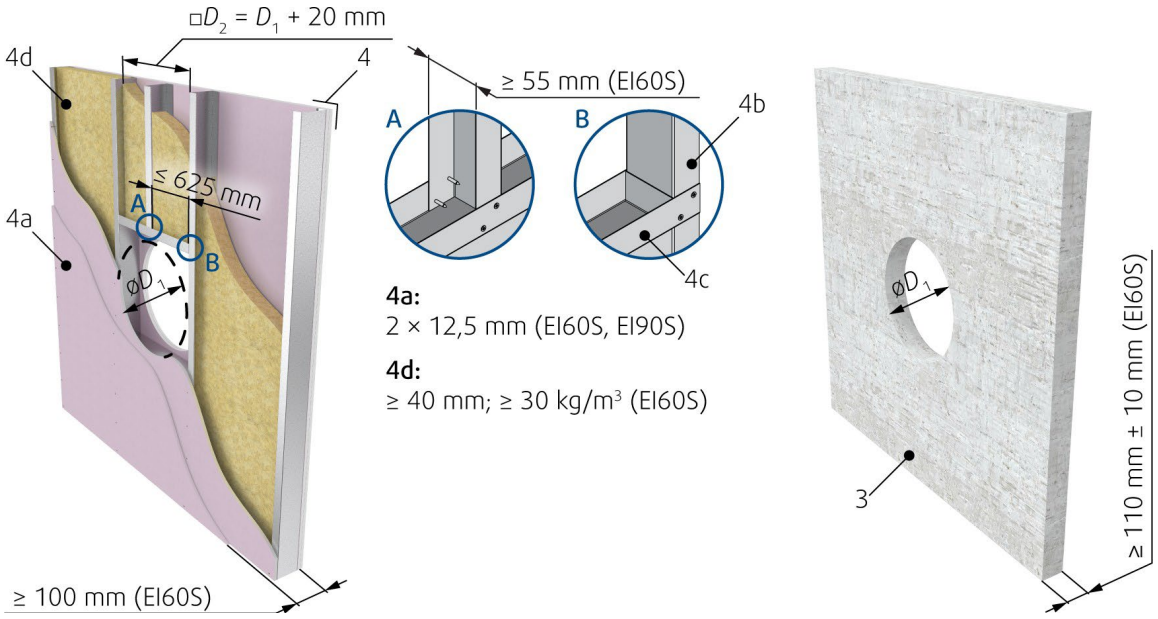


1 Fire damper (actuator side)

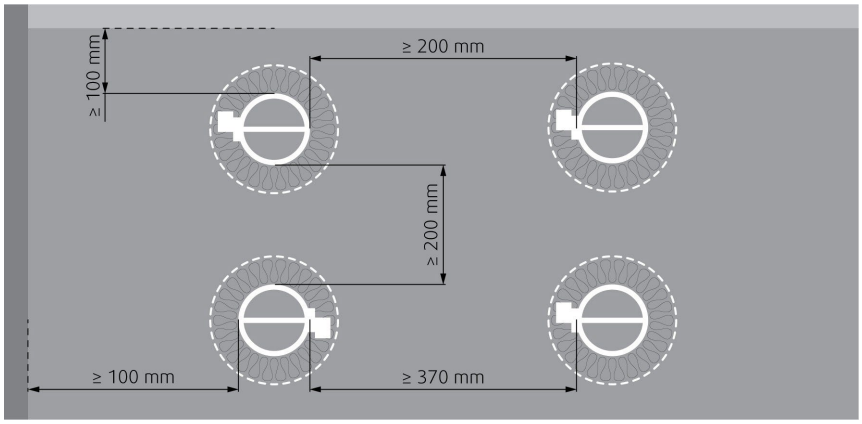


4 Flexible wall (plasterboard)
4a 2 layers of fire resistant plasterboard type F, EN 520
4b Vertical profiles CW
4c Horizontal profiles CW
4d Mineral wool; thickness/cubic density see picture.

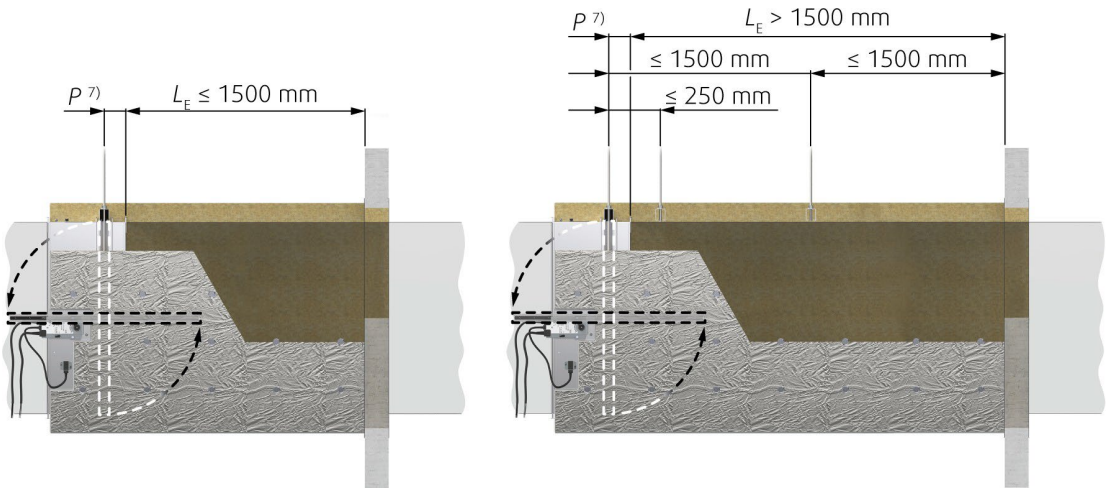
3 Concrete/masonry/brick/aerated concrete wall or ceiling.



Multiple Mounting



Damper fixing criteria



Legend:

F9 Mineral wool section (min. 66 kg/m3) - in a wall

F10 Fireproof coating (BSF/ISOVER) at least 2 mm thick for exposed surfaces

1 Fire damper (actuator side)

3 Concrete/masonry/brick/aerated concrete wall or ceiling

4 Flexible wall (plasterboard)

4a 2 layers of fire resistant plasterboard type F, EN 520

4b Vertical profiles CW

4c Horizontal profiles CW

4d Mineral wool; thickness/cubic density see picture.

11 M12 steel threaded rod (1 ×)

12 Ceramic tape (A-KERA) width 40 mm, thickness 2 mm

13 Sheet metal bracket for suspending damper (MP-MX, HILTI) when using 1 x M12 rod

14 Sheet metal bracket for suspending damper (UVH30, Lindab), when using 2 × M10 rods

15 M10 threaded steel rod (2 ×)

16 M10 nut (4 ×)

17 Mineral wool ULTIMATE Protect Slab 4.0 Alu1/ISOVER (min. 66 kg/m3)

25 Aluminium tape around the front and at places not covered with aluminium foil

26 Wire bracket for fastening U-ProtectWiredMat

Notes:

ve Vertical (wall)

5 The rules for the placement of brackets and duct hangers depend on the distance from the damper to the supporting construction LE.

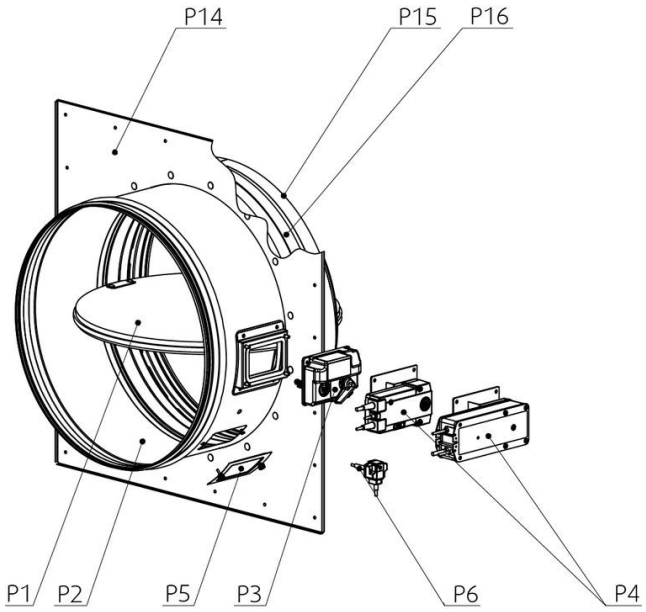
7 The distance P is the distance from the blade axis to the damper flange. The distance depends on the type of damper used. F2 Plaster/mortar/concrete filler - can serve as a replacement for filling material F9. When using plaster/mortar/concrete filler, coating F10 is not required.

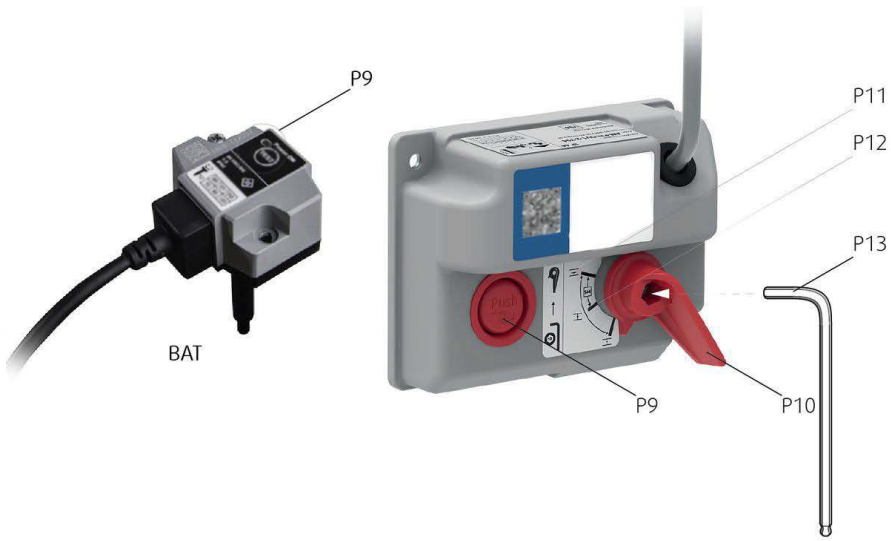
Circular fire damper FDR-3G-KR

Description

Fire dampers with round kits up to 630 mm that passive fire protection designed to aid compartmentalization that prevents the spread of toxic gases, smoke and fire. The FDR-3G...KR fire damper is designed to be installed with simplicity in mind. Standard fire dampers are designed and certified in accordance with EN 15650 and tested according to EIS criteria in accordance with EN 1366-2. All fire dampers are supplied with either a manual or motor-driven mechanism by default. There is an option for the dampers to be supplied with a power supply and communication unit.
IMPORTANT: The installation kit cannot be supplied separately! It is delivered pre-assembled on the damper.

Product parts





Legend:

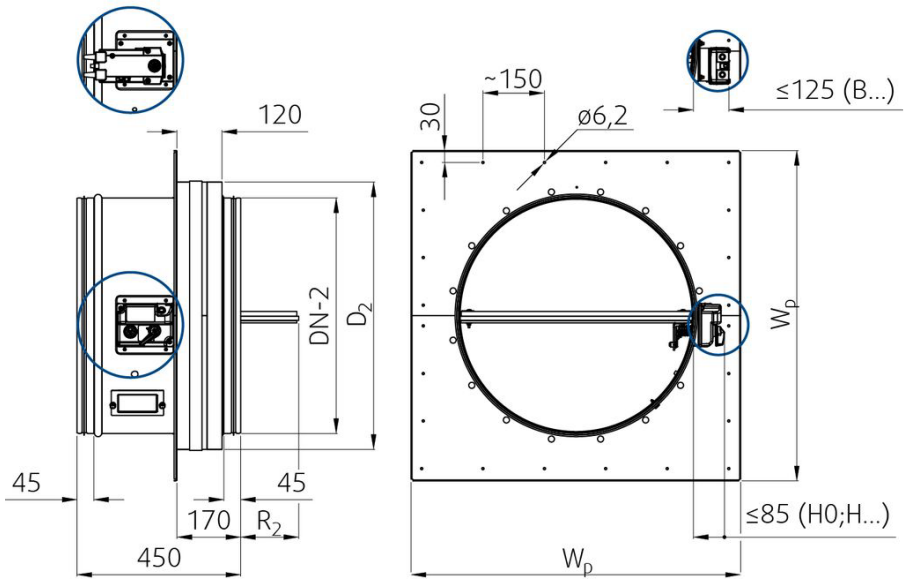
P1 Blade
P2 Casing
P3 Manual actuating mechanism (H0;H...)
P4 Actuator operated actuating mechanism (B...)
P5 Inspection access door cover
P6 Thermoelectric fuse (BAT72)
P14 Base plate kit
P15 Cover plate (PROMAT)
P16 Intumex
P9 Unblock and test button
P10 Switch
P11 Open position

Dimensions

Free area

	DN (mm)																
	100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	630
A_v (m²)	0,003	0,007	0,009	0,011	0,013	0,018	0,023	0,031	0,039	0,050	0,065	0,085	0,110	0,138	0,173	0,220	0,283

Dimensions



	DN (mm)																	
	100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	600	630
øD1 (mm)	200	250				300		350		400		450	500	550	600	660	700	730
øD2 (mm)	187	237				287		337		387		437	487	537	587	647	687	717
Wp (mm)	350	375	390	400	410	430	450	475	500	530	565	605	650	700	750	810	850	880

Note: 3) Including bearing

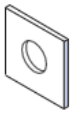
Blade protrusion

	DN (mm)																
	100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	630
R1 (mm)	-300	-287,5	-280	-275	-270	-260	-250	-237,5	-225	-210	-192,5	-172,5	-150	-125	-100	-70	-35
R2 (mm)	-67	-54,5	-47	-42	-37	-27	-17	-4,5	8	23	40,5	60,5	83	108	133	163	198

Weight

m (kg ±5%)	DN (mm)																
	100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	630
H0-KR ... H6-2-KR	5,1	6,3	6,4	6,4	6,4	7,7	7,6	9,3	9,2	11,0	10,9	13,0	15,6	20,0	22,8	26,7	30,7
B...-KR	6,3	7,0	7,0	7,1	7,2	8,6	8,5	10,2	10,2	12,0	11,7	13,6	15,6	20,0	22,8	26,7	30,7

Installation methods

 4 kit	FDR-3G...KR DN100 ... DN630	EI 60 (v_e i ↔ o) S	b) 	 360°	500 Pa	 360°
		EI 90 (v_e i ↔ o) S				
		EI 120 (v_e i ↔ o) S				

Notes:

4. Kit - installation with an Installation Kit

Ve – Vertical wall

Installation, maintenance and operation

Some parts of the damper may have sharp edges - gloves must be worn when handling the damper and during installation to prevent injury. To avoid electric shock, fire or any other damage that could result from the improper use or operation of the damper, it is important to:

1. Ensure that the installation is carried out by a qualified person.
2. Precisely follow the instructions written and represented in the manual.
3. Inspect the damper in accordance with the manual.
4. Check the fire damper functions according to the section “Checking the fire damper functions correctly” before installation. This procedure prevents a damper that has been damaged during transport or handling from being installed.

Information on installation, maintenance and operation is available at www.koolair.com.

Rules for installation

- The duct connected to the fire damper must be supported or hung so that the damper does not support its weight. The damper must not support any part of the building or adjoining wall in a way that could damage the damper or cause a fault as a consequence. The installation of an expansion joint is recommended on either side of the damper.
- The damper actuator mechanism can be placed on either side of the wall, but should be positioned to ensure easy access during inspection.
- The distance between the fire damper bodies is defined by the base plate of the kit. The smallest distance between two dampers with a kit is the distance given when the base plates of the two kits touch.
- The distance between the wall/ceiling is defined by the base plate of the Kit. The smallest distance between the wall/ceiling and a damper with a kit is when the base plate of the kit is touching the wall/ceiling.
- The fire damper must be installed in a fire compartmentation structure in such a way that the damper blade in its closed position is located inside this structure. The base plate of the kit on the damper body represents a plane where the supporting structure begins.
- According to EN 1366-2, for any resistance, the minimum thickness of the supporting construction must be maintained at least 200 mm around the installation opening.

IN ACCORDANCE WITH EN 15650, ALL FIRE DAMPERS MUST BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS!

Installation - Kit

Installation with an installation kit

IMPORTANT: The installation kit cannot be supplied separately! It is delivered pre-assembled on the damper.

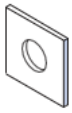
1. The opening in the supporting construction must be prepared as shown in the figure. The surfaces of the opening must be clean and even.
2. Openings in flexible walls must be reinforced in line with the standards for plasterboard walls. The dimensions of the opening should be the nominal dimensions of the damper plus an additional clearance. For circular dampers, an opening with diameter D1 should be made.
3. This is the simplest method of installation. Insert the damper into the opening and fix the front panel with suitable screws (recommended screw diameter 5.5 mm - e.g. DIN7981) in the pre-drilled holes.
4. If necessary, uncover or clean the damper after installation.
5. Check damper operation

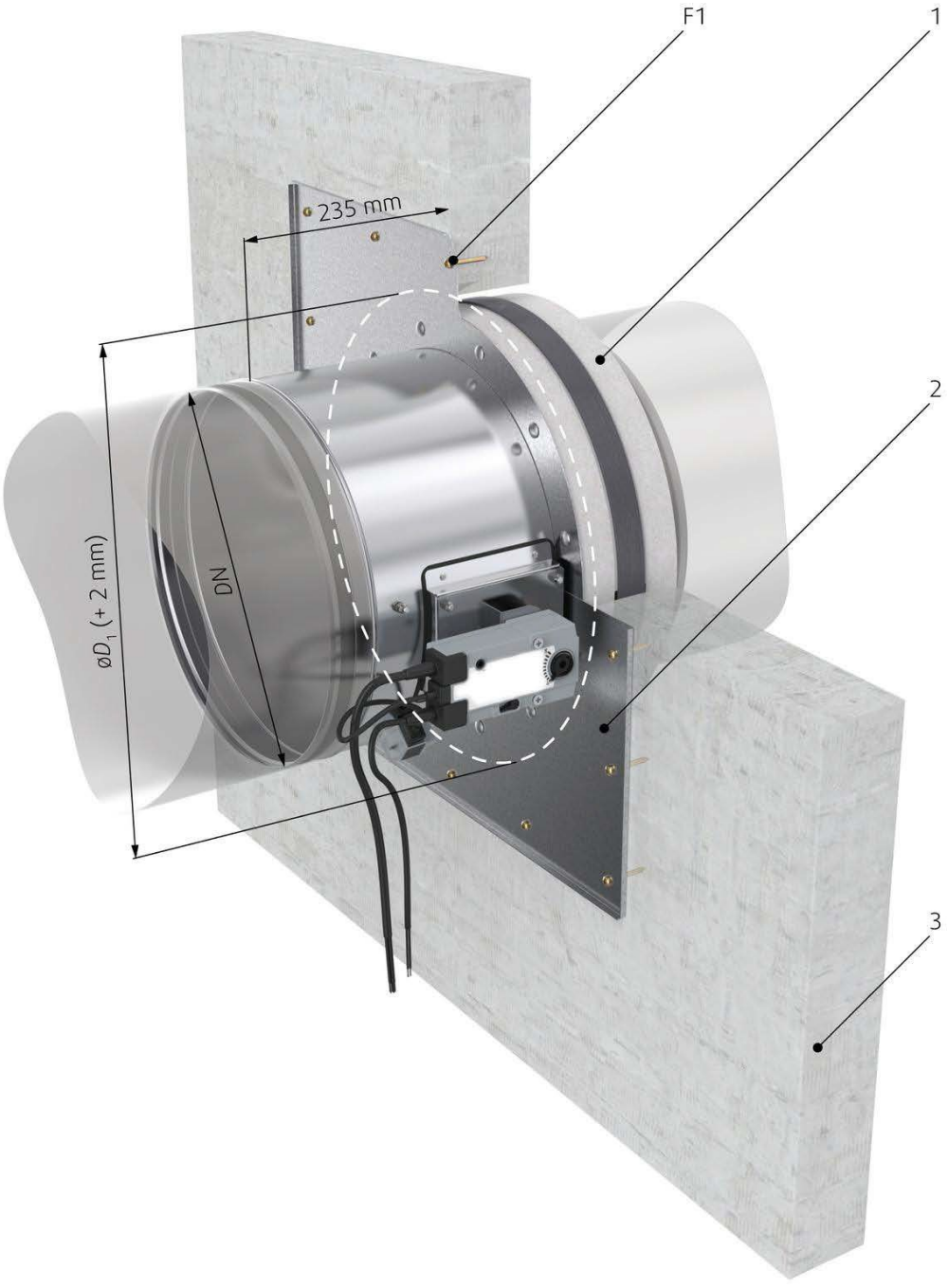
Installation - Standard Distances

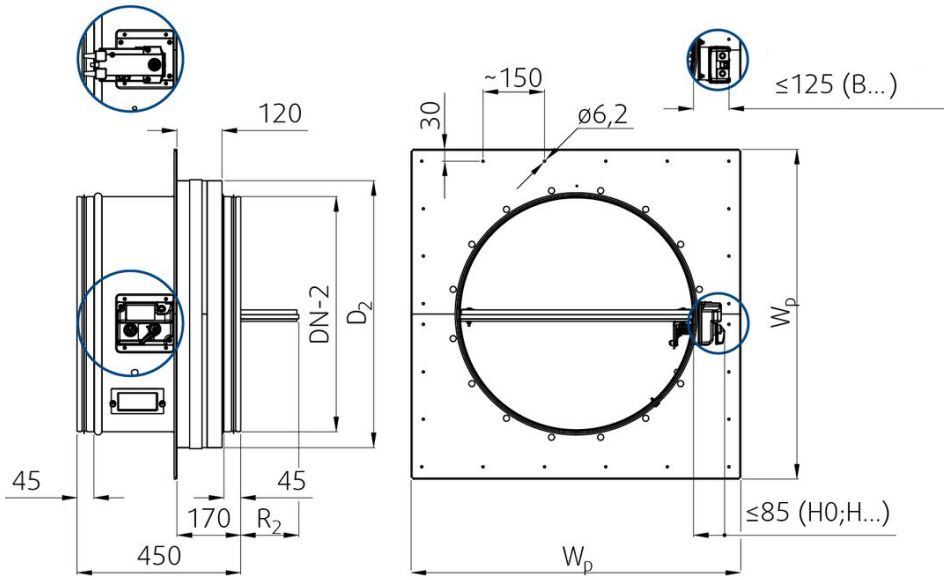
The distances are defined by the base plate of the kit. The minimum distance is that given when the base plate of the kit is in contact with the ceiling or side wall. This means that the distance from the wall or ceiling to the duct axis is Wp/2. Where multiple ducts cross through a fire wall, the minimum distance between two duct axes is Wp, which indicates that the base plates of the kits are touching. The base plate of the kit also serves as a distance limiter for any nearby foreign objects crossing the fire wall.

Installation in a thinner wall than tested

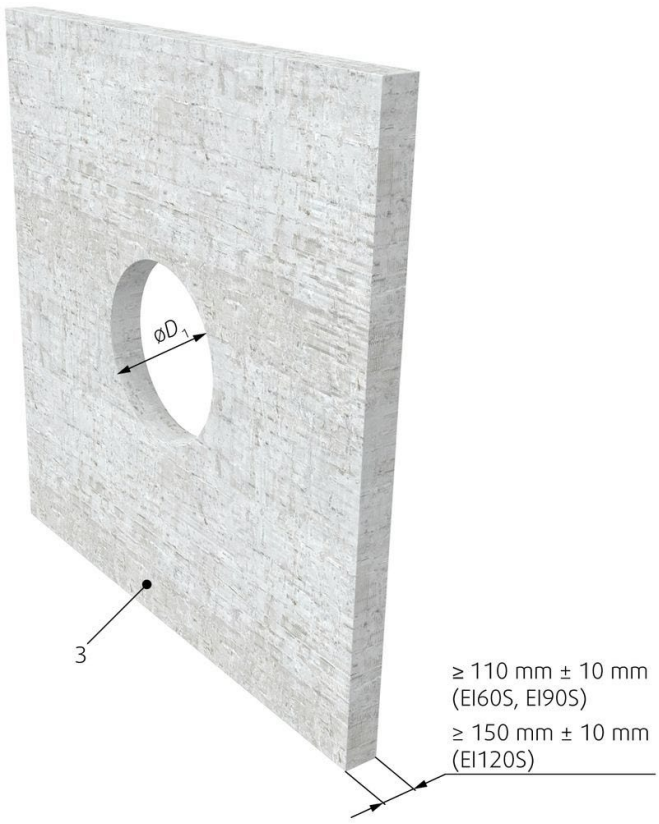
It is possible to install the damper in a thinner wall provided that an additional layer(s) of fire board is fixed to the wall surface so that the damper penetration is sealed to the same length as that tested. The minimum width of the boards added around the damper should be 200 mm. What is more, any alternative thinner walls must be classified according to EN 13501-2:2007 + A1: 2009 for the fire resistance required for the intended use of the product. In the case of an overhanging wall, the additional layers of fire board must be fixed to the steel supporting structure.

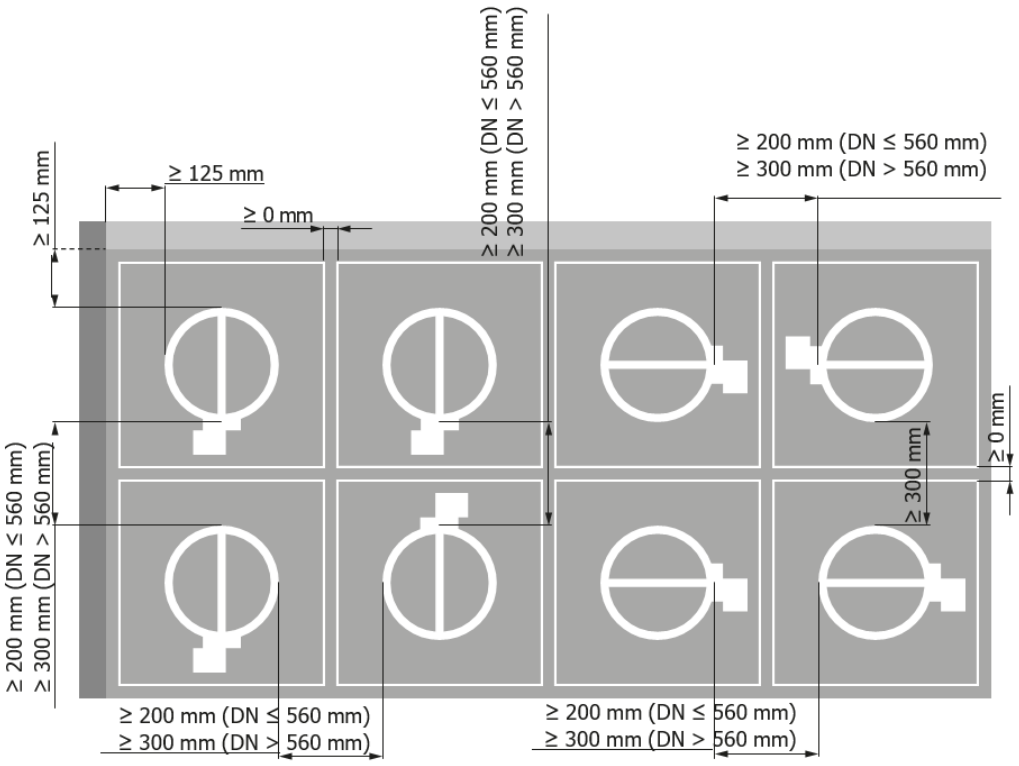
4 kit	FDR-3G...KR DN100 ... DN630	EI 60 (v_e i ↔ o) S	b) 	 360°	500 Pa	 360°
		EI 90 (v_e i ↔ o) S				
		EI 120 (v_e i ↔ o) S				


F1
1
2
3
235 mm
DN
øD1 (+ 2 mm)



	DN (mm)																	
	100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	600	630
øD_1 (mm)	200	250				300		350		400		450	500	550	600	660	700	730
øD_2 (mm)	187	237				287		337		387		437	487	537	587	647	687	717
W_P (mm)	350	375	390	400	410	430	450	475	500	530	565	605	650	700	750	810	850	880





Legend

F1 Screw ≥ 5.5 mm DIN7981 or suitable plug and 6 mm screw

1 Fire damper with KIT (factory fitted)

2 Base plate of Kit - fixed directly to the wall

3 Concrete/masonry/aerated concrete wall or ceiling

Notes

ve Vertical (wall)

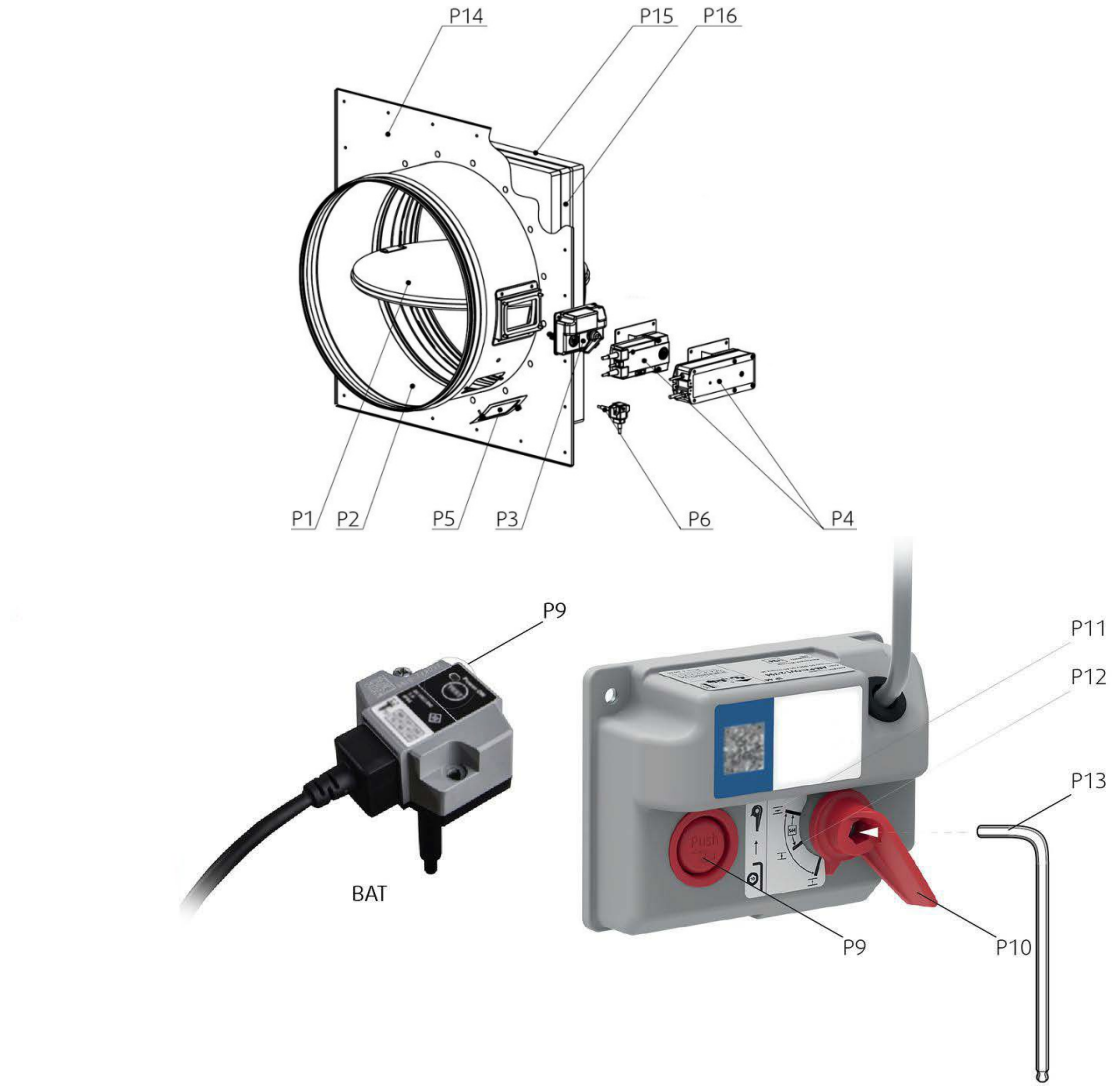
Circular fire damper FDR-3G-KS

Description

Fire dampers with square kits up to 630 mm provide passive fire protection designed to aid compartmentation that prevents the spread of toxic gases, smoke and fire. The FDR-3G-KS fire damper is designed to be installed with simplicity in mind. Standard fire dampers are designed and certified in accordance with EN 15650 and tested according to EIS criteria in accordance with EN 1366-2. All fire dampers are supplied with either a manual or motor-driven mechanism by default. There is an option for the dampers to be supplied with a power supply and communication unit.

IMPORTANT: The installation kit cannot be supplied separately! It is delivered pre-assembled on the damper.

Product parts



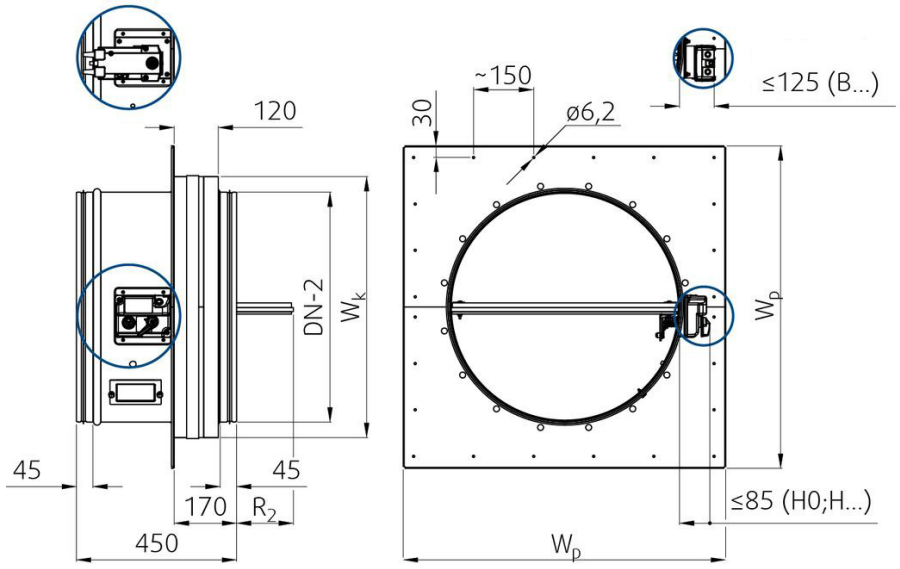
Legend

P1 Blade
P2 Casing
P3 Manual actuating mechanism (H0;H...)
P4 Actuator operated actuating mechanism (B...)
P5 Inspection access door cover
P6 Thermoelectric fuse (BAT72)
P14 Base plate kit
P15 Cover plate (PROMAT)
P16 Intumex
P9 Unblock and test button
P10 Switch
P11 Open position
P12 Closed position
P13 10 mm Allan key (not included)

Dimensions

Free area

	DN (mm)																
	100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	630
A_v (m²)	0,003	0,007	0,009	0,011	0,013	0,018	0,023	0,031	0,039	0,050	0,065	0,085	0,110	0,138	0,173	0,220	0,283



Note: 3) Including bearing

Blade protrusion

	DN (mm)																
	100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	630
R_1 (mm)	-300	-287,5	-280	-275	-270	-260	-250	-237,5	-225	-210	-192,5	-172,5	-150	-125	-100	-70	-35
R_2 (mm)	-67	-54,5	-47	-42	-37	-27	-17	-4,5	8	23	40,5	60,5	83	108	133	163	198

Weight

m (kg ±5%)	DN (mm)																
	100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	630
H0-KS ... H6-2-KS	5,6	6,6	7,3	8,3	8,8	8,8	8,7	10,8	10,7	13,0	13,0	15,6	18,8	23,2	25,9	29,7	33,6
B...-KS	7,1	8,1	8,8	9,1	10,3	10,3	10,2	12,3	12,2	14,5	14,5	17,1	20,3	24,0	26,7	30,5	34,4

Installation methods

4 Kit	FDR-3G...KS DN100 ... DN630	EI 60 (v_e i ↔ o) S EI 90 (v_e i ↔ o) S EI 120 (v_e i ↔ o) S	a) 	b) 	 360°	500 Pa	 360°

Legend

4 - Kit - with an installation kit

V_e - Vertical Wall

Installation, maintenance, and operation

Some parts of the damper may have sharp edges - gloves must be worn when handling the damper and during installation to prevent injury. To avoid electric shock, fire or any other damage that could result from the improper use or operation of the damper, it is important to:

1. Ensure that the installation is carried out by a qualified person.
2. Precisely follow the instructions written and represented in the User Manual.
3. Inspect the damper in accordance with the User Manual.
4. Check the fire damper functions according to the section “Checking the fire damper functions correctly” before installation. This procedure prevents a damper that has been damaged during transport or handling from being installed.

   Information on installation, maintenance and operation is available at www.koolair.com.

Rules for installation

- The duct connected to the fire damper must be supported or hung so that the damper does not support its weight. The damper must not support any part of the building or adjoining wall in a way that could damage the damper or cause a fault as a consequence. The installation of an expansion joint is recommended on either side of the damper.
- The damper actuator mechanism can be placed on either side of the wall but should be positioned to ensure easy access during inspection.
- The distance between the fire damper bodies is defined by the base plate of the kit. The smallest distance between two dampers with a kit is the distance given when the base plates of the two kits touch.
- The distance between the wall/ceiling is defined by the base plate of the Kit. The smallest distance between the wall/ceiling and a damper with a kit is when the base plate of the kit is touching the wall/ceiling.
- The fire damper must be installed in a fire compartmentation structure in such a way that the damper blade in its closed position is located inside this structure. The base plate of the kit on the damper body represents a plane where the supporting structure begins.
- According to EN 1366-2, the minimum thickness of the supporting construction must be maintained at least 200 mm around the installation opening, regardless of fire resistance.

IN ACCORDANCE WITH EN 15650, ALL FIRE DAMPERS MUST BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS!

Installation - Kit

Mounting with an installation kit

IMPORTANT: The installation kit cannot be supplied separately! It is delivered pre-assembled on the damper.

1. The opening in the supporting construction must be prepared as shown in the figure. The surfaces of the opening must be clean and even.
2. The dimensions of the opening should be the nominal dimensions of the damper plus an additional clearance. In the case of rectangular dampers, the opening shall have dimensions W1 × W1.
3. Openings in flexible walls must be reinforced in line with the standards for plasterboard walls. In addition, the opening in the flexible wall must be reinforced in line with the standards for plasterboard walls and the perimeter of the wall interior must be lined with a double layer of 12.5 mm thick plasterboard (see detail).
4. This is the simplest method of installation. Insert the damper into the opening and fix the base plaste of the Kit with suitable screws (recommended screw diameter 5.5 mm - e.g. DIN7981) in the pre-drilled holes.
5. If necessary, uncover or clean the damper after installation.
6. Check damper operation

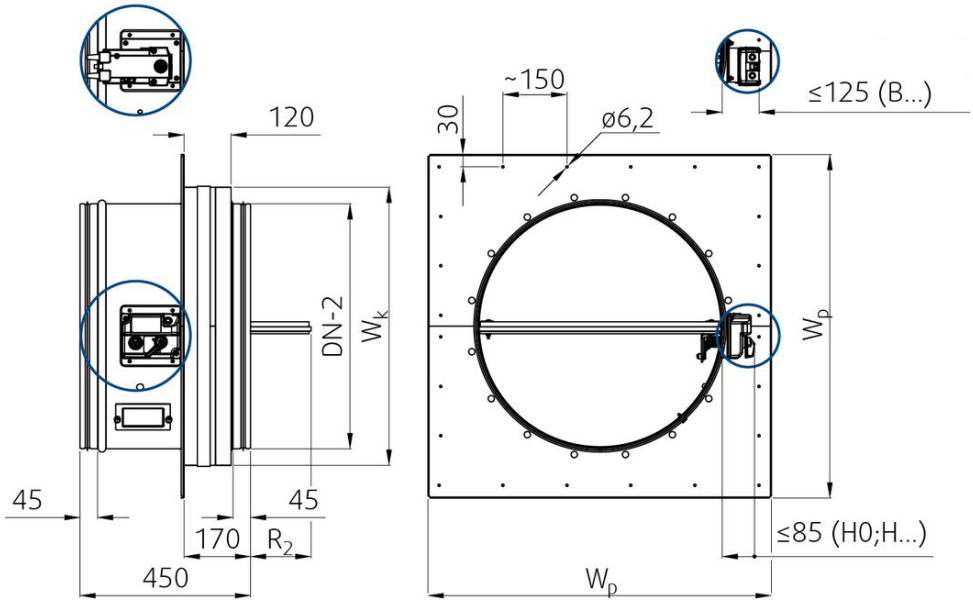
Installation - Standard Distances

The distances are defined by the base plate of the kit. The minimum distance is that given when the base plate of the kit is in contact with the ceiling or side wall. This means that the distance from the wall or ceiling to the duct axis is Wp/2. Where multiple ducts cross through a fire wall, the minimum distance between two duct axes is Wp, which indicates that the base plates of the kits are touching. The base plate of the kit also serves as a distance limiter for any nearby foreign objects crossing the fire wall.

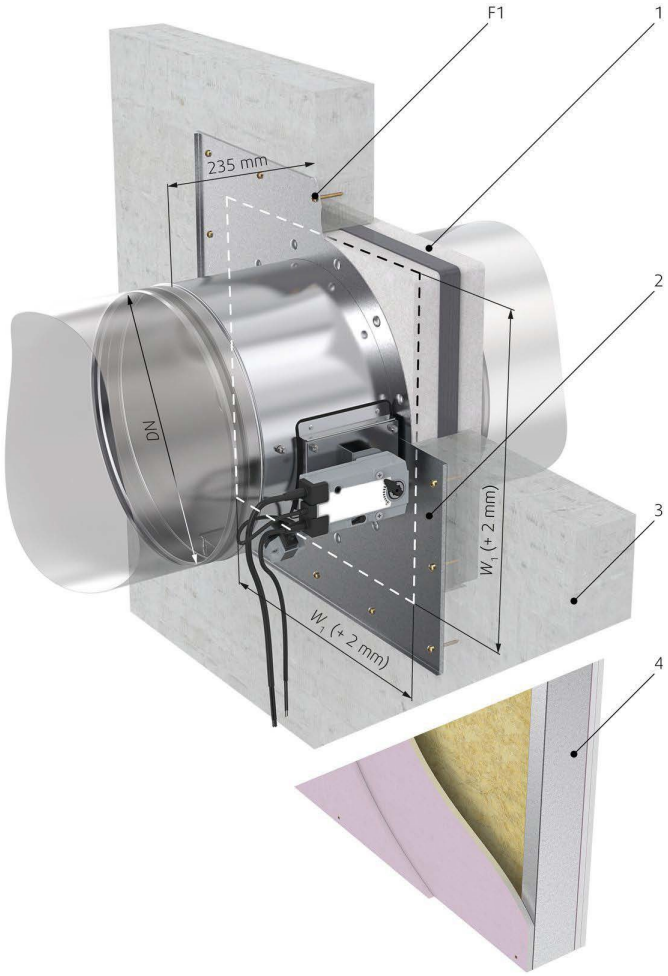
Installation in a thinner wall than tested

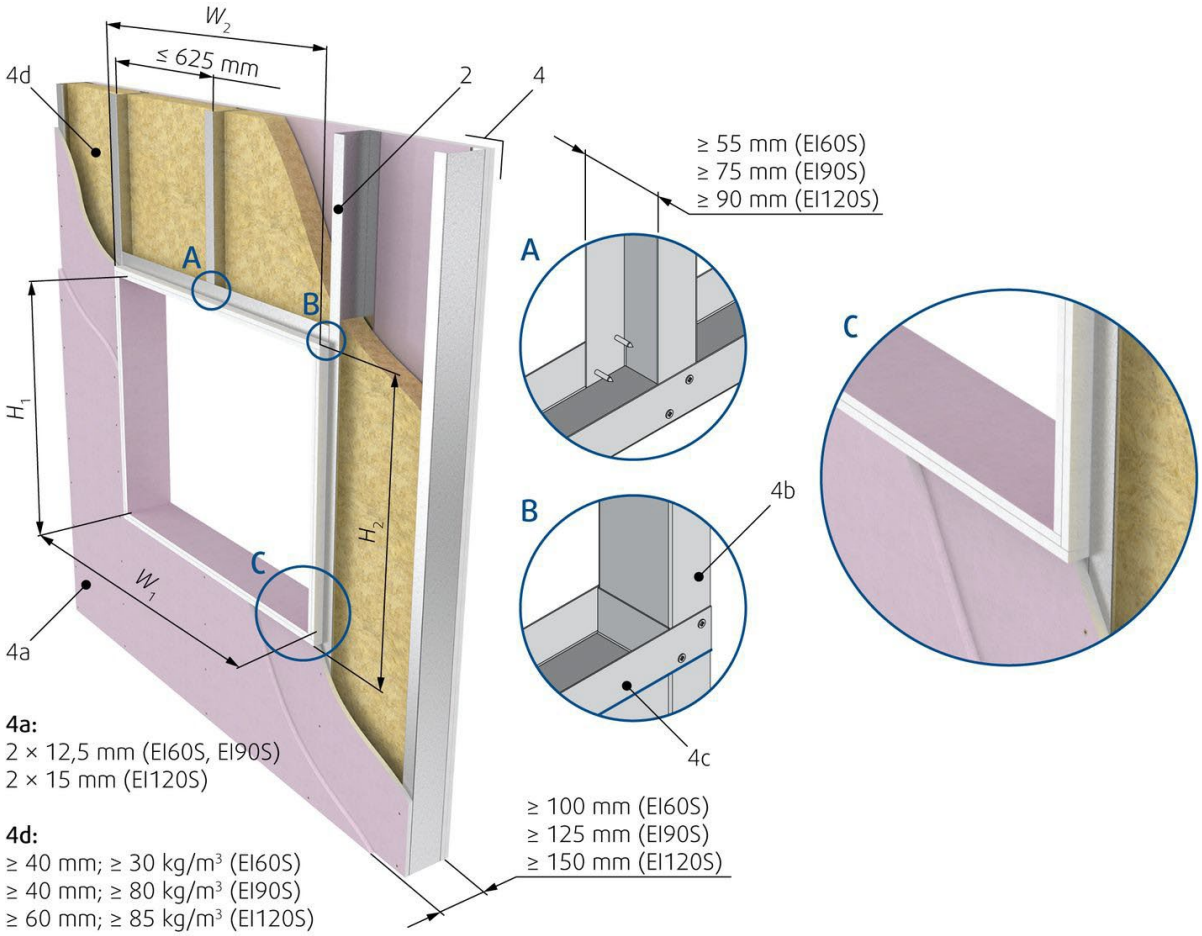
It is possible to install the damper in a thinner wall provided that an additional layer(s) of fire board is fixed to the wall surface so that the damper penetration is sealed to the same length as that tested. The minimum width of the boards added around the damper should be 200 mm.
What is more, any alternative thinner walls must be classified according to EN
13501-2:2007 + A1: 2009 for the fire resistance required for the intended use of the product. In the case of an overhanging wall, the additional layers of fire board must be fixed to the steel supporting structure.

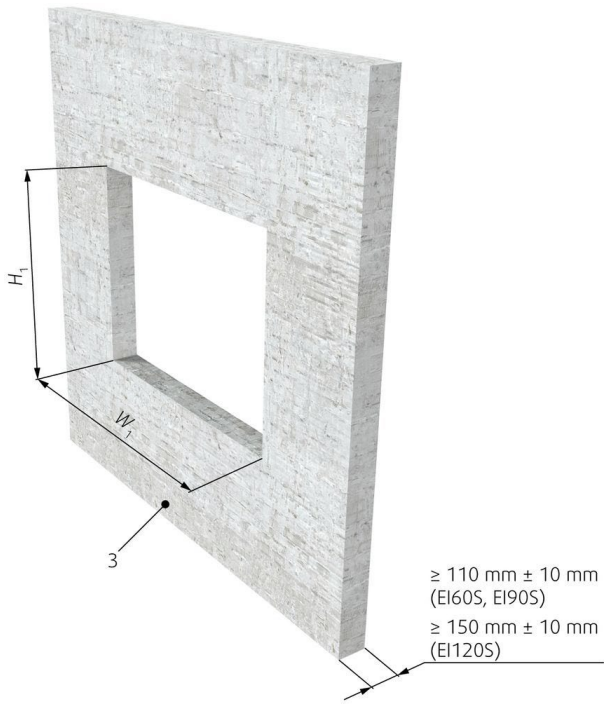
 4 Kit	FDR-3G...KS DN100 ... DN630	EI 60 (v_e i ↔ o) S	a) 	b) 	 360°	500 Pa	 360°
		EI 90 (v_e i ↔ o) S					
		EI 120 (v_e i ↔ o) S					

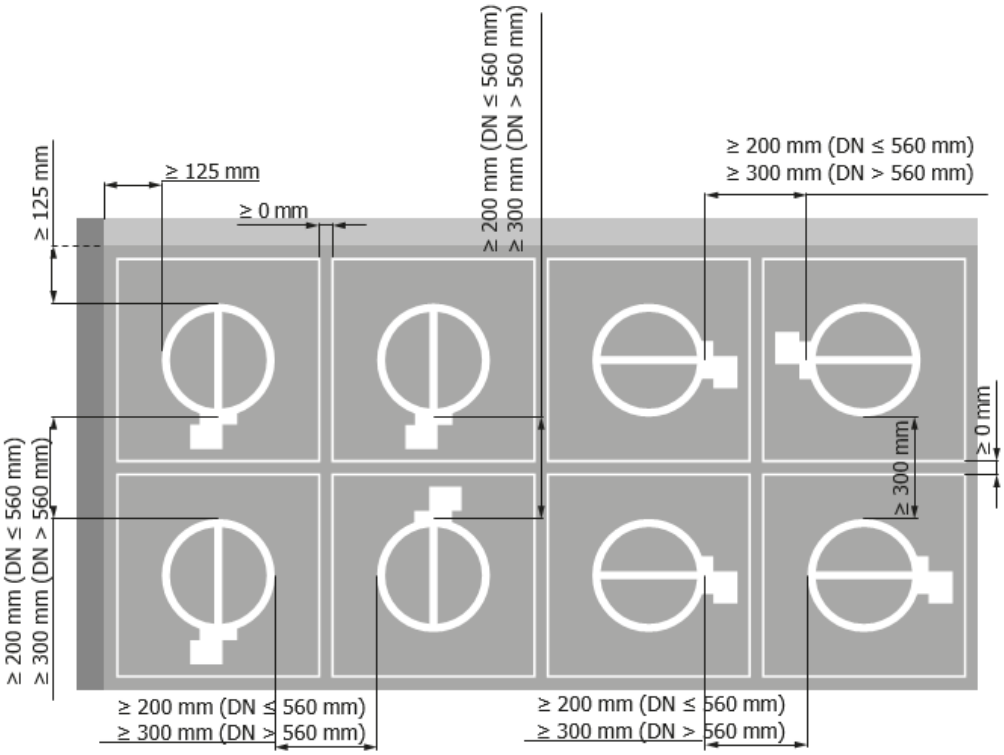


	DN (mm)																	
	100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	600	630
W_1 (mm)	200	250				300		350		400		450	500	550	600	660	700	730
W_K (mm)	187	237				287		337		387		437	487	537	587	647	687	717
W_P (mm)	350	375	390	400	410	430	450	475	500	530	565	605	650	700	750	810	850	880




W2
≤ 625 mm
4d
2
4
≥ 55 mm (EI60S)
≥ 75 mm (EI90S)
≥ 90 mm (EI120S)
A
B
C
H1
H2
W1
4a
4b
4c
4a:
2 × 12,5 mm (EI60S, EI90S)
2 × 15 mm (EI120S)
4d:
≥ 40 mm; ≥ 30 kg/m³ (EI60S)
≥ 40 mm; ≥ 80 kg/m³ (EI90S)
≥ 60 mm; ≥ 85 kg/m³ (EI120S)
≥ 100 mm (EI60S)
≥ 125 mm (EI90S)
≥ 150 mm (EI120S)


H1
W1
3
≥ 110 mm ± 10 mm
(EI60S, EI90S)
≥ 150 mm ± 10 mm
(EI120S)



Legend

F1 Screw ≥ 5.5 mm DIN7981 or suitable plug and 6 mm screw

1 Fire damper with KIT (factory fitted)

2 Base plate of Kit - fixed directly to the wall

3 Concrete/masonry/aerated concrete wall or ceiling

4 Flexible wall (plasterboard)

4a 2 layers of fire-resistant plasterboard type F, EN 520

4b Vertical profiles CW

4c Horizontal profiles CW

4d Mineral wool; thickness/cubic density see picture.

Notes

ve Vertical (wall)

Electrical connections

T/PC/A	DN (mm)																			
	100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	630	710	800	900	1000
	B230T/6,5 VA/BFL230-T B24T/4 VA/BFL24-T B24T-W/4 VA/BFL24-T-ST											B230T/10 VA/ BFN230-T B24T/6 VA/BFN24-T B24T-W/6 VA/BFN24-T-ST						B230T/11 VA/BF230-T B24T/10 VA/BF24-T B24T-W/10 VA/BF24-T-ST			

Type of activation H0

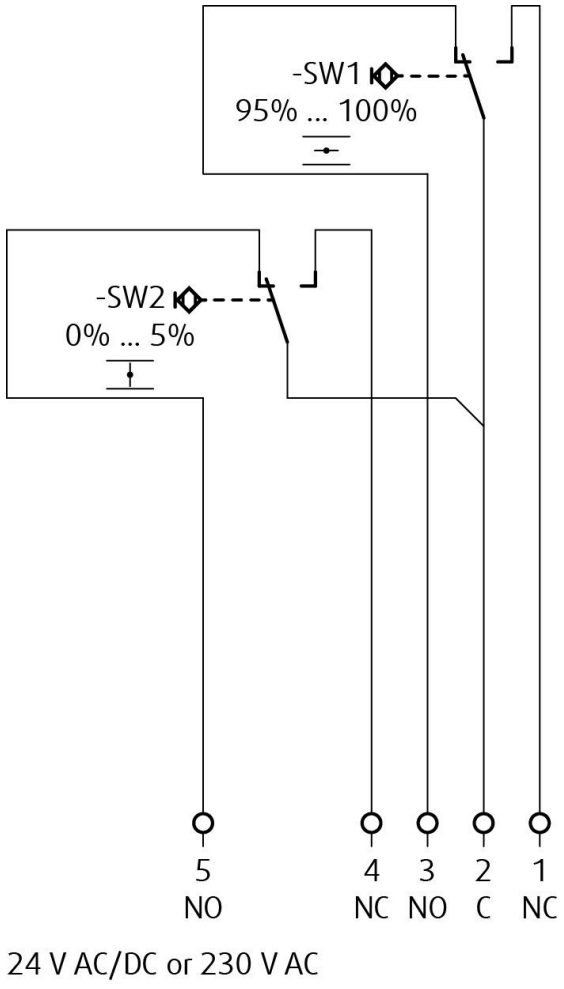
This type of actuating mechanism has no electrical components.

Type of activation H2

IMPORTANT: Danger of electric shock! Disconnect the power supply before working on any electrical equipment. Only qualified electricians should work on the electrical installation. Microswitch: Power supply: 125/250V AC or 12/24V DC Electrical parameters: 3A.

NOTES:

- For safety, power supplied via isolation transformer.
- Energy consumption must be monitored.



Legend

1 Grey cable
2 Orange cable
3 Pink cable
4 White cable
5 Red cable
6 Brown cable (Not to be used for type of activation H2)
X:7 Blue cable (Not to be used for type of activation H2)

Type of activation H5-2

IMPORTANT: Danger of electric shock!

Disconnect the power supply before working on any electrical equipment.

Only qualified electricians should work on the electrical installation.

Microswitch:

Power supply: 125/250V AC or 12/24V DC

Electrical parameters: 3A

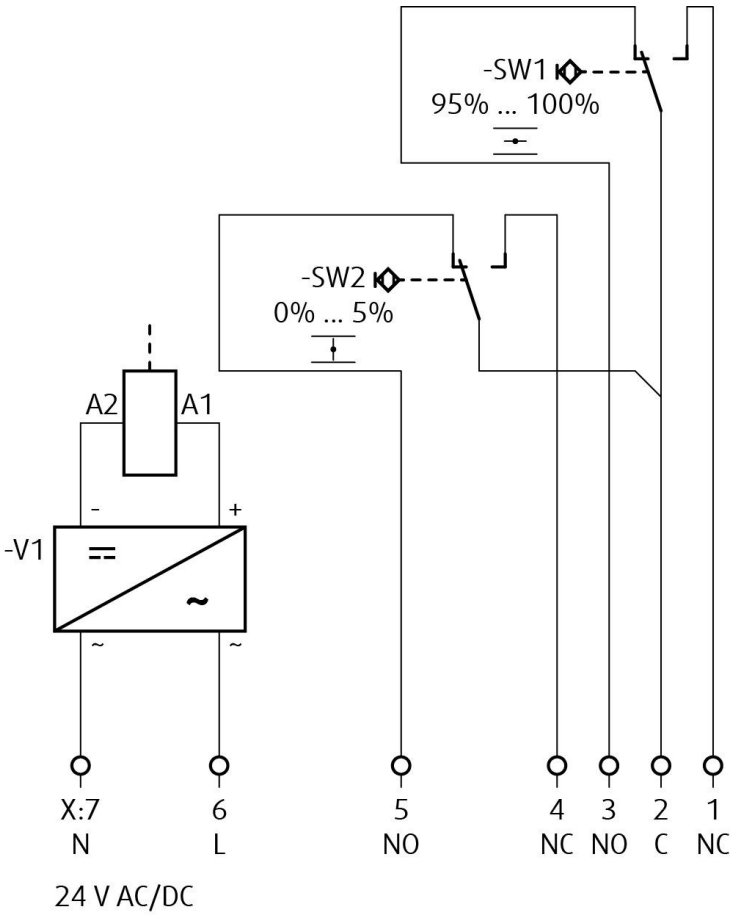
Impulse electromagnet:

Power supply: AC (50/60 Hz)/DC 24 V

Electrical parameters: 50 VA, 10% load factor (maximum 30 seconds in operation)

NOTES:

- 50 VA = Nominal activation power, maximum permissible magnetic load = 300 VA
- For safety, power supplied via isolation transformer.
- Power consumption must be observed!



Legend

1 Grey cable
2 Orange cable
3 Pink cable
4 White cable
5 Red cable
6 Brown cable
X:7 Blue cable

Type of activation H6-2

IMPORTANT: Danger of electric shock!

Disconnect the power supply before working on any electrical equipment.

Only qualified electricians should work on the electrical installation. Microswitch:

Power supply: 125/250V AC or 12/24V DC

Electrical parameters: 3A

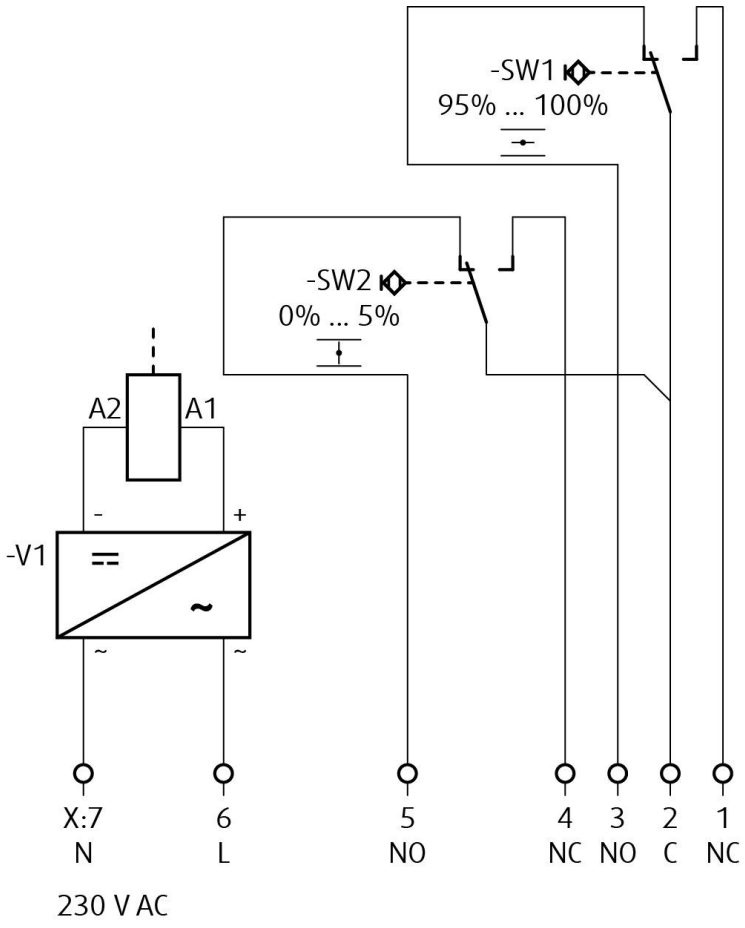
Shunt release electromagnet:

Power supply: 230V AC, 50/60 Hz

Electrical parameters: 50 VA, 10% load factor (maximum 30 seconds in operation)

NOTES:

- 50 VA = nominal activation power, maximum permissible magnetic load = 300 VA
- Caution! Main supply voltage!
- A device is required to disconnect the conductors from the poles (minimum contact gap of 3 mm) to isolate them from the power supply.
- Energy consumption must be monitored!



Legend

1 Grey cable
2 Orange cable
3 Pink cable
4 White cable
5 Red cable
6 Brown cable
X:7 Blue cable

Type of activation B230T

IMPORTANT: Danger of electric shock!

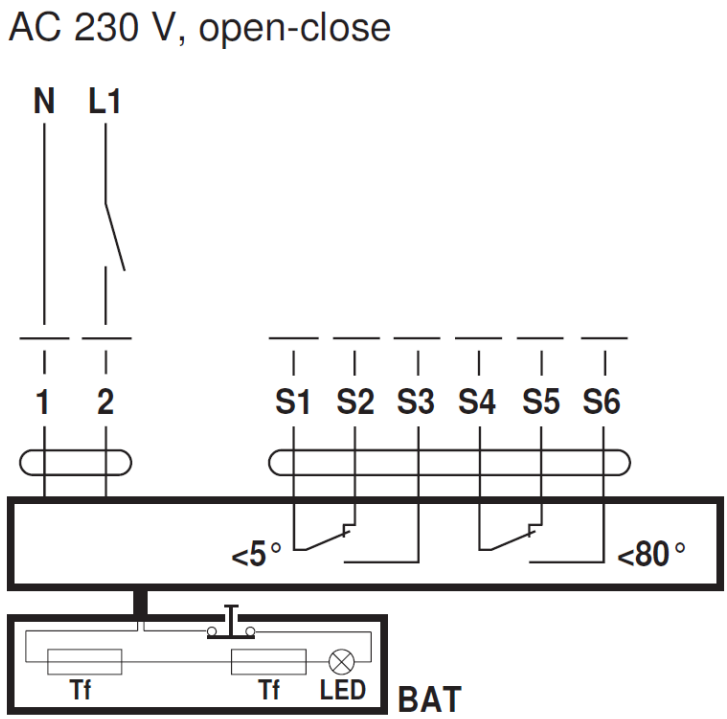
Disconnect the power supply before working on any electrical equipment.

Only qualified electricians should work on the electrical installation.

Actuator supply: 230V AC, 50/60 Hz

NOTES:

- Caution! Main supply voltage!
- A device is required to disconnect the conductors from the poles (minimum contact gap of 3 mm) to isolate them from the power supply.
- It is possible to connect several actuators in parallel.
- Energy consumption must be monitored!



Legend

1 Blue cable
2 Brown cable
S1 Purple cable
S2 Red cable
S3 White cable
S4 Orange cable
S5 Pink cable
S6 Grey cable
Tf Fusible link

Type of activation B24T / B24T-W

IMPORTANT: Danger of electric shock!

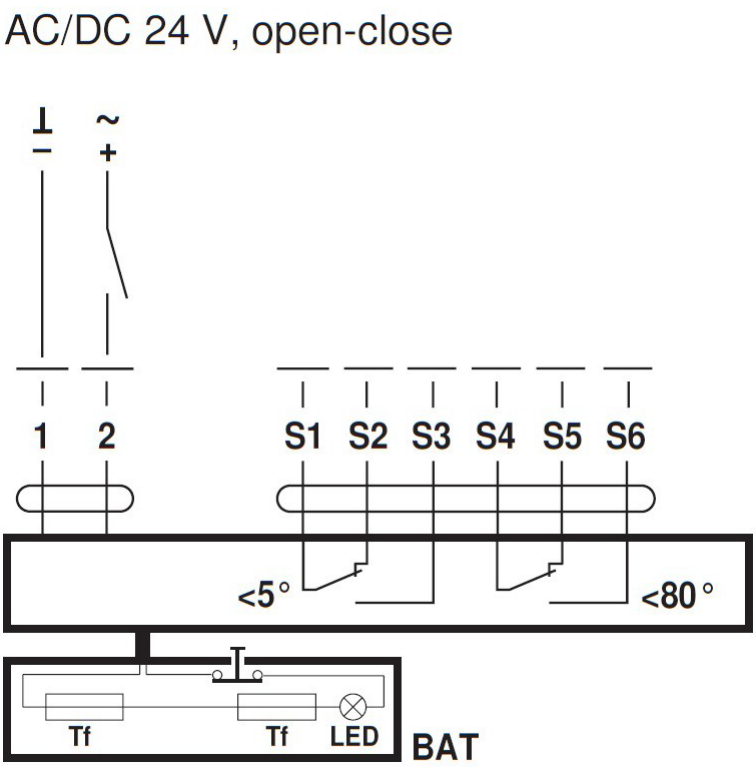
Disconnect the power supply before working on any electrical equipment.

Only qualified electricians should work on the electrical installation.

Actuator supply: 24 V AC (50/60 Hz)/DC

NOTES:

- For safety, power supplied via isolation transformer.
- It is possible to connect several actuators in parallel.
- Energy consumption must be monitored!



Legend

1 Black cable

2 Red cable (white for BF24-T-ST)

S1 Violet cable (white for BF24-T-ST)

S2 Red cable (white for BF24-T-ST)

S3 White cable (white for BF24-T-ST)

S4 Orange cable (white for BF24-T-ST)

S5 Pink cable (white for BF24-T-ST)

S6 Grey cable (white for BF24-T-ST)

Tf Fusible link

Operating manual

Warning

To avoid injury, always wear gloves and make sure the blade movement area is kept clear while working with the damper. NEVER OPEN THE INSPECTION ACCESS DOOR WHEN AIR IS FLOWING IN THE DUCT CONNECTED TO THE FIRE DAMPER.

Checking damper operation

Manual activation mechanism:

1. Open the damper - use a 10 mm Allan key (P13) to turn the red lever (P10). Turn the lever so that the arrow points to the “OPEN” position (P11). The lever must remain in the “OPEN” position and the microswitch that indicates the open position must be pressed in (if fitted).
2. Closing the damper - release the mechanism by pressing the red release button (P9); the arrow on the red lever will move to the “CLOSED” position (P12) and will remain locked in this position. The microswitch that indicates the open position must be pressed in (if fitted).
3. Open the damper - use a 10 mm Allan key (P13) to turn the red lever (P10). Turn the lever so that the arrow points to the “OPEN” position. The lever must remain in the “OPEN” position and the microswitch that indicates the open position must be pressed in (if fitted).

The actuating mechanism is operated by a spring return actuator:

1. The fire damper should open automatically after the actuator circuit is closed - the arrow on the actuator shaft should be at 90°.
2. Press the control switch (P9) on the thermoelectric fuse and hold it down until the fire damper is completely closed - the arrow on the actuator shaft should be at 0°.
3. Release the control switch on the thermoelectric fuse. The fire damper should be fully open - the arrow on the actuator shaft should be at 90° - the operating position.

Operating manual

After installation, the damper must be set to its operating position - open the fire damper.

The actuating mechanism is operated by a spring return actuator.

Connect the electric actuator to the corresponding power supply (see Electrical Connection section). The electric motor will be activated and the damper set to its opening position.

Manual activation mechanism:

Turn the red lever to the “OPEN” position. The damper must remain in the open position.

Inspecting the damper

The activator holds the damper in standby for its entire service life, in accordance with the manual issued by the manufacturer. The damper must not be altered in any way or any changes made to its structure without the manufacturer's consent. The operator must perform periodic checks of the damper in accordance with the established regulations and standards. Checks should be made at least once every 12 months. Checks must be carried out by an employee who has been specifically trained for this purpose. The condition of the fire dampers determined during the inspection must be recorded in the operating logbook, together with the date of the inspection and the name, surname and signature of the employee who performed the inspection.

Immediately after installation and activation of the damper, it must be checked in the same way as for the 12-month inspections mentioned above. A visual check ensures that there is no visible damage to the inspected parts of the damper. The damper casing and the actuating mechanism on the outside of the damper must be checked. Open the inspection access door to perform a visual inspection of the internal parts of the damper. For small size dampers the mechanism can be dismantled for inspection. The blade must always be closed when the removable mechanism is put back into the damper. The following must be checked: the inner casing of the damper, the fusible link, the seals, the foam substance, the condition of the damper and how precisely it rests against the non-return device in the closed position. There must be no foreign objects or layer of impurities from the air distribution systems inside the damper.

Recommended inspection steps according to EN 15 650:

1.Identification of the damper
2.Date of inspection
3.Inspection of the electrical connection of the actuation mechanism (if applicable)
4.Inspection of the damper for cleanliness and possible need for cleaning (where necessary)
5.Inspection of the condition of the blade and sealing, with any alterations and checks (where necessary)
6. Inspection to ensure the fire damper closes properly.
7.Inspection to ensure the damper functions correctly: opened and closed by the control system, physical examination of the damper behaviour and any alterations and checks (where necessary).
8.Inspection to ensure the limit switches function correctly in the open and closed positions and any alterations and checks (where necessary)
9.Inspection to ensure the damper fulfils its function as part of the control system (where necessary)
10. Inspection to ensure the damper remains in its standard operating position.
11. The damper is usually part of a system, in which case it is necessary to ensure that the entire system operates as designed and as established in the requirements published by the system designer.

Supplement

We reserve the right to make any changes to the product without prior notice provided as long as these changes do not affect the quality of the product or the required parameters.

CEN-FDR-3G-0723-00

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