

WK45

Installation booklet

This is a 17 page installation booklet.

English

FIRE DAMPER

RECTANGULAR SERIES WK45 - 500 Pa

Cert. N° 1812-CPR-1006 EN 15650

1MUBWK45EN-LIND rev 20-10



www.lindab.com - Fire dampers are manufactured by MP3 Srl www.mp3-italia.it
For further information please refer to the Technical Manual.

As the manufacturer is constantly improving its products, the aesthetic or dimensional features, the technical data, the equipment and accessories indicated could be subject to variations.

OVERVIEW

■ Fire resistance classification according to EN 13501-3-2009

		EI 180 S (500 Pa)	EI 120 S (500 Pa)	EI 90 S (500 Pa)	EI 60 S (500 Pa)	EI 30 S (500 Pa)	
Rigid wall	EI 120 S Installation within vertical rigid wall						
	Wall minimum thickness 100 mm Wall minimum density 500 kg/m ³ Mortar or plaster putty sealing ve (i↔o)	W	-	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800
	EI 120 S Installation within vertical rigid wall						
Rigid wall	Wall minimum thickness 100 mm Wall minimum density 500 kg/m ³ Plasterboard and rock wool 100 kg/m ³ sealing ve (i↔o)	D	-	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800
	EI 180 S Installation within vertical rigid wall						
Flexible wall	Wall minimum thickness 140 mm Wall minimum density 500 kg/m ³ Mortar sealing ve (i↔o)	W	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800	
	EI 120 S Installation within vertical light wall (plasterboard)						
Flexible wall	Wall minimum thickness 100 mm Wall rock wool density up to 100 kg/m ³ (optional) Mortar or plaster putty sealing ve (i↔o)	W	-	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800
	EI 90 S Installation within vertical light wall (plasterboard)						
	Wall minimum thickness 100 mm Wall rock wool density up to 100 kg/m ³ (optional) Plasterboard and rock wool 100 kg/m ³ sealing ve (i↔o)	D	-	-	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800
	EI 120 S Installation within vertical light wall (gypsum blocks wall)						
	Wall minimum thickness 100 mm Wall minimum density 995 kg/m ³ Plaster putty sealing ve (i↔o)	W	-	B X H min 200 X 200 max 1000 X 600	B X H min 200 X 200 max 1000 X 600	B X H min 200 X 200 max 1000 X 600	B X H min 200 X 200 max 1000 X 600
EI 90 S Installation within vertical light wall (gypsum blocks wall)							
Flexible wall	Wall minimum thickness 70 mm Wall minimum density 995 kg/m ³ Plaster putty sealing ve (i↔o)	W	-	-	B X H min 200 X 200 max 1000 X 600	B X H min 200 X 200 max 1000 X 600	B X H min 200 X 200 max 1000 X 600
	EI 180 S Installation within floor						
Floor	Floor minimum thickness 140 mm Floor minimum density 2200 kg/m ³ Mortar sealing ho (i↔o)	W	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800	
	EI 120 S Installation within floor						
	Floor minimum thickness 150 mm Floor minimum density 650 kg/m ³ Mortar sealing ho (i↔o)	W	-	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800
EI 90 S Installation within floor							
Floor	Floor minimum thickness 100 mm Floor minimum density 650 kg/m ³ Mortar sealing ho (i↔o)	W	-	-	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800

B X H are fire damper minimum and maximum nominal dimensions (base x height) in mm
ve Vertical installation
ho Horizontal installation
(i↔o) Origin of fire irrelevant

Pa Pascal of depression
E Integrity
I Thermal insulation
S Smoke seal

■ Fire Batt (Weichschott) sealings

		EI 120 S (300 Pa)	EI 90 S (300 Pa)	EI 60 S (300 Pa)	EI 30 S (300 Pa)	
Rigid wall	EI 90 S Installation within vertical rigid wall with Fire Batt (Weichschott) sealing					
	Wall minimum thickness 100 mm Wall rock wool minimum density 500 kg/m ³ Rock wool 140 kg/m ³ and endothermic varnish sealing ve (↔↔)	W	-	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800
	EI 90 S Installation within vertical light wall (plasterboard) with Fire Batt (Weichschott) sealing					
Flexible wall	Wall minimum thickness 100 mm Wall rock wool density up to 100 kg/m ³ (optional) Rock wool density 140 kg/m ³ and endothermic varnish sealing ve (↔↔)	W	-	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800
	EI 90 S Installation within vertical light wall (gypsum blocks wall) with Fire Batt (Weichschott) sealing					
	Wall minimum thickness 100 mm Wall minimum density 995 kg/m ³ Rock wool 140 kg/m ³ and endothermic varnish sealing ve (↔↔)	W	-	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800
Floor	EI 120 S Installation within floor with Fire Batt (Weichschott) sealing					
	Floor minimum thickness 150 mm Floor minimum density 650 kg/m ³ Rock wool 140 kg/m ³ and endothermic varnish sealing ho (↔↔)	W	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800	B X H min 200 X 200 max 1500 X 800

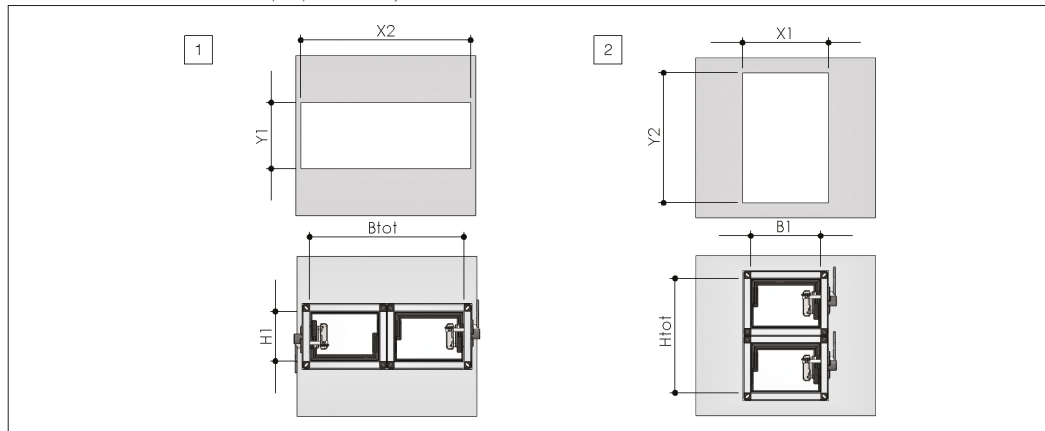
B X H are fire damper minimum and maximum nominal dimensions (base x height) in mm

- ve Vertical installation
- ho Horizontal installation
- (↔↔) Origin of fire irrelevant
- Pa Pascal of depression
- E Integrity
- I Thermal insulation
- S Smoke seal
- W Wet method sealing
- D Dry method sealing

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■ Paired fire dampers wall opening

1. Hole and installation for two fire dampers paired side by side with horizontal axis
2. Hole and installation for two fire dampers paired vertically with horizontal axis

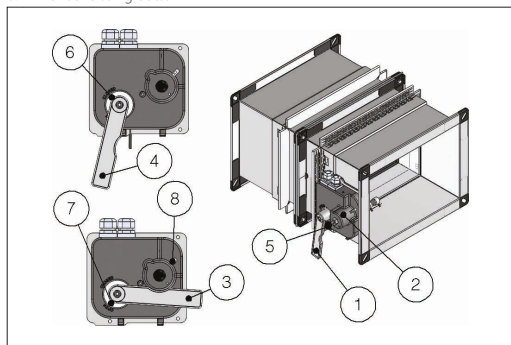


	X1	X2	Y1	Y2
vertical rigid wall EI 120 S	B1 + 80 mm	Btot + 80 mm	H1 + 80 mm	Htot + 80 mm
light vertical plasterboard wall EI 120 S	B1 + 100 mm	Btot + 100 mm	H1 + 100 mm	Htot + 100 mm
light vertical plasterboard wall EI 90 S	B1 + 75 mm	Btot + 75 mm	H1 + 75 mm	Htot + 75 mm
light vertical gypsum blocks wall EI 120 S	B1 + 80 mm	Btot + 80 mm	H1 + 80 mm	Htot + 80 mm
light vertical gypsum blocks wall EI 90 S	B1 + 80 mm	Btot + 80 mm	H1 + 80 mm	Htot + 80 mm
horizontal floor EI 180 S	B1 + 130 mm	Btot + 130 mm	H1 + 130 mm	Htot + 130 mm
horizontal floor EI 120 S	B1 + 130 mm	Btot + 130 mm	H1 + 130 mm	Htot + 130 mm
horizontal floor EI 90 S	B1 + 130 mm	Btot + 130 mm	H1 + 130 mm	Htot + 130 mm

■ Mechanism type

□ Manual / Manual with magnet

1. Manual opening lever
2. Protection box
3. Lever position when the blade is open
4. Lever position when the blade is closed
5. Magnet knob (for magnetic version)
6. Closed blade indicator
7. Open blade indicator
8. Manual closing button



Blade closing mode

Automatic closing with thermal fuse.

The control mechanism has a thermosensitive element that automatically closes the blade when the temperature in the duct exceeds 70°C (or 95°C for the fire damper with 95°C thermal fuse).

It is possible to close the damper by pressing the indicated button. If the manual mechanism is equipped with electromagnet it is possible to remotely close the fire damper.

The manual command mechanism with magnet is equipped with an electromagnet which, in case power is interrupted (interruption magnet version) or when power is supplied (input magnet version), commands the closing of the damper.

Blade opening mode

Make sure that the damper is open before the ventilation system start-up, otherwise there is a risk of product malfunction.

In case of closed damper by pressing the closing button or remotely by electromagnet (magnetic version), it is possible to manually open the fire damper blade by rotating the lever anticlockwise. For power supply interruption electromagnet, provide power supply and pull the magnet knob before opening the fire damper.

In case of closed damper as a result of the action of the thermosensitive element, it is possible to manually reopen the damper by rotating the lever counterclockwise once the element has been replaced.

Position indication microswitches

On request, the fire damper can be supplied with position microswitches (SA/SC/S2 optional) that signal the blade position (open or closed). Refer to Electrical connections paragraph for more details.

Closing by remote control

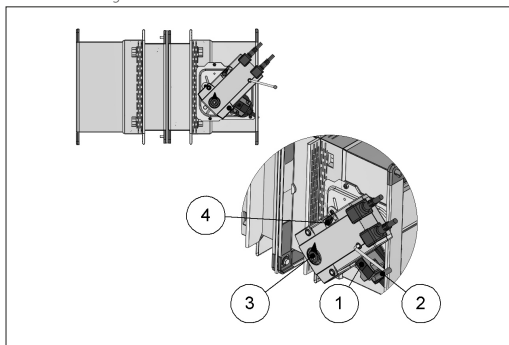
With power supply input or interruption magnet (WK45M version only).

Temperature calibration of thermosensitive element for automatic damper closing

70 °C±7 °C (Standard)
95 °C±9 °C (On request).

□ Belimo motorized version

1. Manual closing switch
2. Manual opening lever
3. Position indicator
4. Blade locking lever



Blade closing mode

Automatic closing with thermal fuse.

The control mechanism has a thermosensitive element that automatically closes the blade when the temperature in the duct or in the room exceeds 72°C (or 95°C for the 95°C version).

To close the damper when the motor is connected, press the switch on the temperature sensor or cut off the power supply.

Blade opening mode

Make sure that the damper is open before the ventilation system start-up, otherwise there is a risk of product malfunction.

To open the damper with the electric motor driven actuator, provide power supply to the motor. Refer to the section Electrical connections for further information.

To manually open the damper, use the handle supplied and carefully rotate clockwise to the 90° indicator. To hold the damper in open position operate on the lever indicated in figure.

For VGB/DGB versions to hold the damper in open position, carefully rotate the handle counterclockwise.

During the manual opening of the damper, power must not be supplied to the motor.

Position indication microswitches

The motorized versions are supplied with two microswitches to show the blade's position (open or closed). Refer to the section Electrical connections for further information.

Closing by remote control

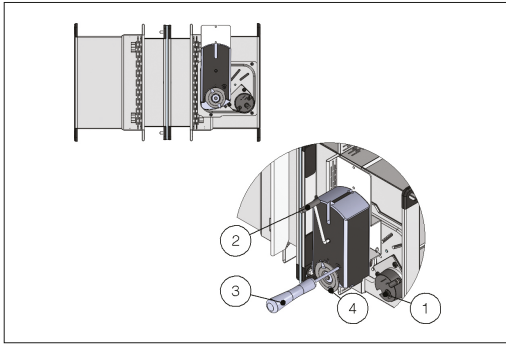
If power to the motor is cut off, the blade will close.

Temperature calibration of thermosensitive element for automatic damper closing

72 °C±7 °C (Standard)
95 °C±9 °C (On request).

■ Siemens motorized version

1. Manual closing switch
2. Manual opening lever
3. Screwdriver
4. Position indicator



Blade closing mode

Automatic closing with thermal fuse.

The control mechanism has a thermosensitive element that automatically closes the blade when the temperature in the duct or in the room exceeds 72°C (or 95°C for the 95°C version).

To close the damper when the motor is connected, press the switch on the temperature sensor or cut off the power supply.

Blade opening mode

Make sure that the damper is open before the ventilation system start-up, otherwise there is a risk of product malfunction.

To open the damper with the electric motor driven actuator, provide power supply to the motor. Refer to the section Electrical connections for further information.

To manually open the damper, use the handle supplied and carefully rotate counterclockwise to the 90 °C indicator. To hold the damper in open position, rotate the screw anticlockwise as shown in the picture.

During the manual opening of the damper, power must not be supplied to the motor.

Position indication microswitches

The motorized versions are supplied with two microswitches to show the blade's position (open or closed). Refer to the section Electrical connections for further information.

Closing by remote control

If power to the motor is cut off, the blade will close.

Temperature calibration of thermosensitive element for automatic damper closing

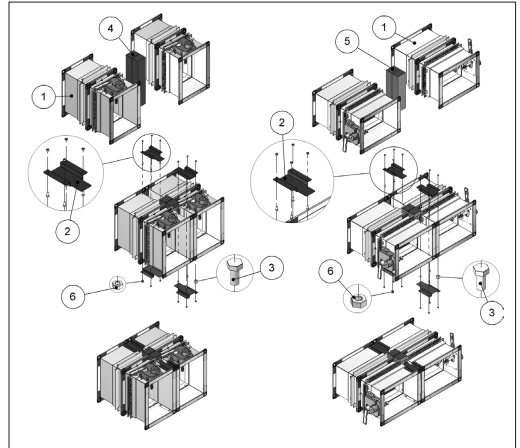
- 72 °C±7 °C (Standard)
- 95 °C±9 °C (On request).

■ Fire dampers pairing

The WK45 patented rectangular fire dampers can be paired side-by-side or vertically (not more than two) using the custom con-

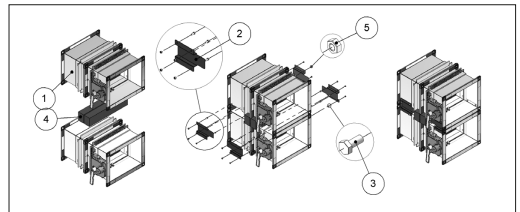
nection kit (see section Accessories and spare parts). Two insulating layers must be inserted between the two fire dampers. The pair of dampers, may be installed in vertical wall in the same way as a single damper.

1. WK45 Fire damper
2. Steel plate
3. Fixing screws
4. Rock wool strip 100 kg/m³ 80 x 65 x nominal fire damper base + 70 mm (not included in the connection kit WKBA2)
5. Rock wool strip 100 kg/m³ 80 x 65 x nominal fire damper height + 70 mm (not included in the connection kit WKBA2)
6. Nut



- It is forbidden to pair three or more fire dampers.

1. WK45 Fire damper
2. Steel plate
3. Fixing screws
4. Rock wool strip 100 kg/m³ 80 x 65 x nominal fire damper base + 70 mm (not included in the connection kit WKBA2)
5. Nut



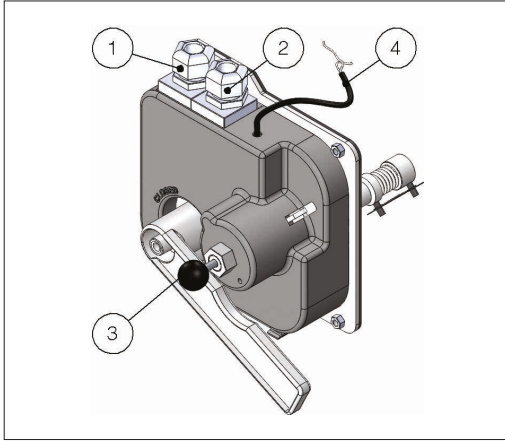
- It is forbidden to pair three or more fire dampers.
- It is forbidden to vertically pair two fire dampers with vertical axis.

ELECTRICAL CONNECTIONS

■ Electrical wiring

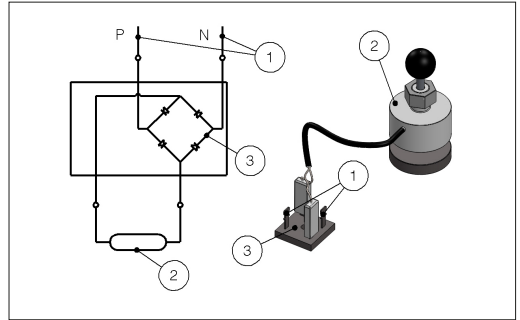
Electrical connections must be done by qualified and trained people. Switch off the power supply before starting any work on the electric elements. Never switch on the power supply during electrical connections.

1. SC (closed damper) microswitch - on request
2. SA (open damper) microswitch - on request
3. Magnet - on request
4. Magnet cables for wiring



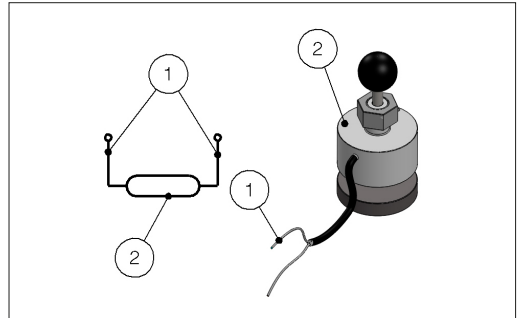
230 V AC magnet wiring

1. 230 V AC power supply
2. Magnet
3. Rectifier



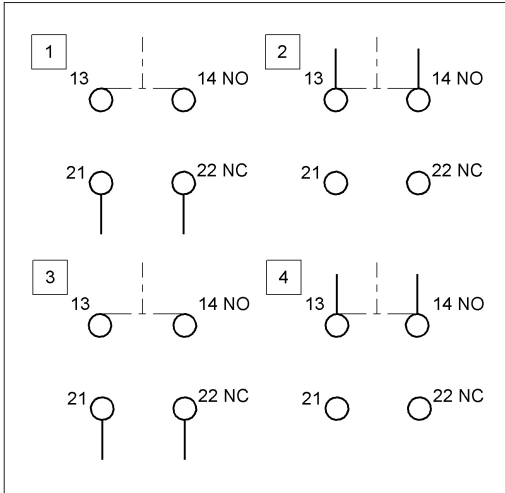
24 V DC magnet wiring

1. 24 V DC power supply
2. Magnet



SC/SA microswitches position

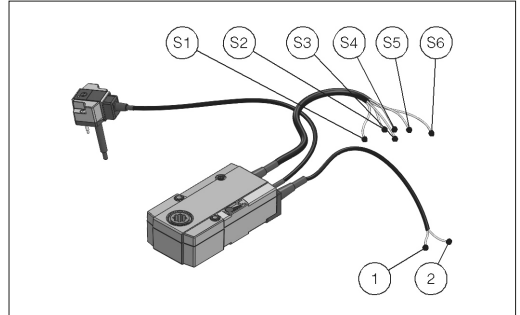
1. "NC" contact of SC microswitch. When the fire blade is closed the circuit is open.
2. "NO" contact of SC microswitch. When the fire blade is closed the circuit is closed.
3. "NC" contact of SA microswitch. When the fire blade is open the circuit is open.
4. "NO" contact of SA microswitch. When the fire blade is open the circuit is closed.



WK45 - Motorized version

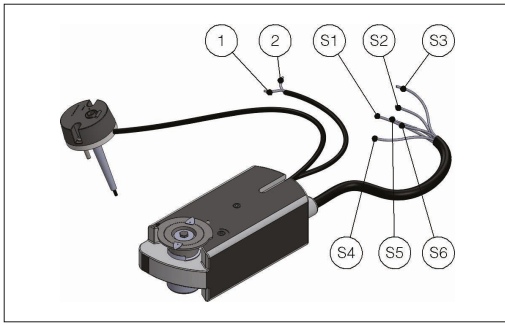
Belimo servomotor:

BFL24T, BFN24T, BF24T, BFL230T, BFN230T, BF230T.



Siemens servomotor:

GRA126, GNA126, GGA126.

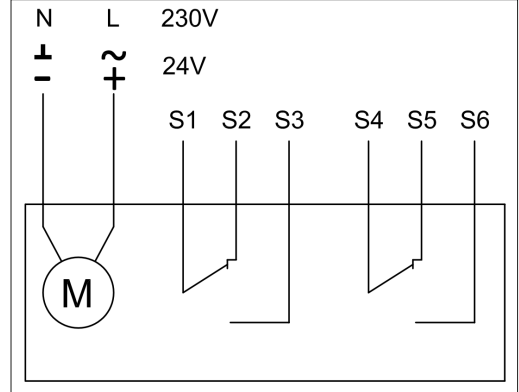
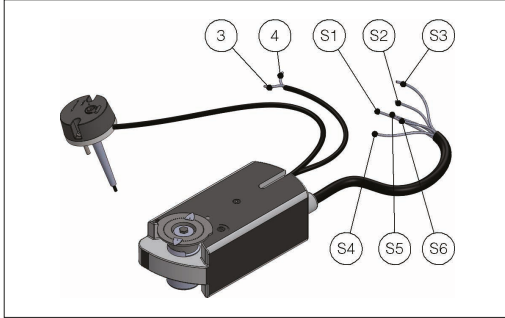


Motorized fire dampers electrical wiring

- To connect the dampers to the power supply, proceed as follows:
- Check that the voltage and electrical frequency are equivalent to those of the motor of the servomotor (check the motor's information label);
 - Make the connections as shown in the below diagram.

- 1 Negative (DC) or neutral (AC)
- 2 Positive (DC) or phase (AC)
- 3 Phase
- 4 Neutral
- S1 Common closed damper microswitch
- S2 Normally closed, closed damper microswitch
- S3 Normally opened, closed damper microswitch
- S4 Common open damper microswitch
- S5 Normally closed, open damper microswitch
- S6 Normally opened, open damper microswitch

Siemens servomotor: GRA326, GNA326, GGA326.



Electrical specifications

	Manual	Manual with magnet Belimo motorized version Siemens motorized version
Voltage and power consumption		Power interruption magnet: P=4,5 W (24V DC or 230 V AC version)
		Power input magnet: P=4,5 W (24V DC or 230 V AC version)
		Motor 24V AC/DC (WK45VMB): Belimo BFN24T Opening: 4 W In stand-by: 1,4 W
		Motor 230V AC (WK45DMB): Belimo BFN230T Opening: 5 W In stand-by: 2,1 W
	Motor 24V AC/DC (WK45VGB): Belimo BF24T Opening: 7 W In stand-by: 2 W	
	Motor 230V AC (WK45DGB): Belimo BF230T Opening: 8 W In stand-by: 3 W	
	Motor 24V AC/DC (WK45VPS) / (WK45VSS): Siemens GNA126 / GRA126 Opening: 3,5 W In stand-by: 2 W	
	Motor 230V AC (WK45DPS) / (WK45DSS): Siemens GNA326 / GRA326 Opening: 4,5 W In stand-by: 3,5 W	
	Motor 24V AC/DC (WK45VGS): Siemens GGA126 Opening: 6 W In stand-by: 1,5 W	
	Motor 230V AC (WK45DGS): Siemens GGA326 Opening: 6 W In stand-by: 2,5 W	
Microswitches position contacts	Manual control version: 15 - 400V 1,8 A	Motorized version: Siemens: AC 24V...230V / 6 (2) A Belimo: DC 5V...AC 250V / 1mA...3A (0,5A)
Blade closing time	Spring: 1 s	motor: < 30 s
Protection degree	IP42	IP42 MAGNETIC VERSION IP54 MOTORIZED VERSION

MAINTENANCE AND INSPECTIONS

Fire dampers and control mechanisms do not require routine maintenance.

Extraordinary maintenance (repairs) and periodic inspection operations are the responsibility of the ventilation system operator.

It is recommended to keep enough space (about 200mm) for using or replacing the control mechanism or for maintenance. Also provide the necessary space to remove the ventilation duct from the damper whenever necessary.

■ Periodic inspection and cleaning

Periodic inspection shall be performed in accordance with the requirements of the law or by the building regulations or other local regulations.

In the absence of specific regulations (or to their complement), in accordance with point 8.3 of the EN 1560 standard, it is recommended to carry out the following control activities at intervals of no more than 12 months:

- Check the servomotor electrical wiring for damage (where applicable);
- Check end-switch wiring for damage (where applicable);
- Check damper cleanliness and clean where necessary;
- Check the condition of blades and seals, rectify and report where necessary;

■ Repair

For safety reasons, repair activities involving fire-fighting components must be carried out only by qualified personnel.

Only original spare parts supplied by the fire damper manufacturer must be used.

A functional test must be performed after each repair.

■ Disposal

Disposal in case of destruction must be carried out in accordance with national legislation. For electrical and electronic parts also refer to EU Directive 2011/65.

It is recommended to provide inspection hatches on both sides of the ducts connected to the fire damper.

The implementation of a periodic inspection plan allows to guarantee the efficiency and functionality of the fire dampers for the fire safety of the building.

- Check the correct opening and closing of the fire damper by manual operation according to the instructions in the technical manual of the fire damper;
- Check the opening and closing operation of the damper controlled by the fire alarm system (if present);
- Check the operation of the end switches in open and closed state, adjust and report if necessary;
- Confirm that the damper fulfils its function as part of the control system (where necessary);
- Check that the damper is left in its normal operating position, which usually corresponds to the open position.

At the end of the inspection, cleaning or repair operations, check that the fire damper is in the normal operating position.

Keep records of all inspections, repair activities, any problems encountered and their resolution.

This practice, even when not mandatory, is very useful in practice.

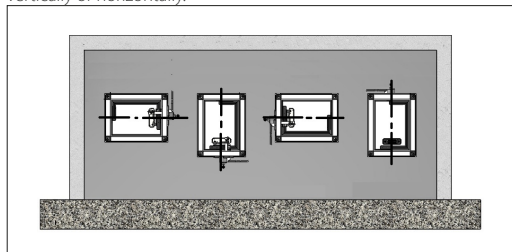
INSTALLATION

The sizes shown are in mm.

It is recommended to perform a functional test before installation to exclude possible damage during transport and another test immediately after installation to exclude accidental damage to the product and interference with mounting components.

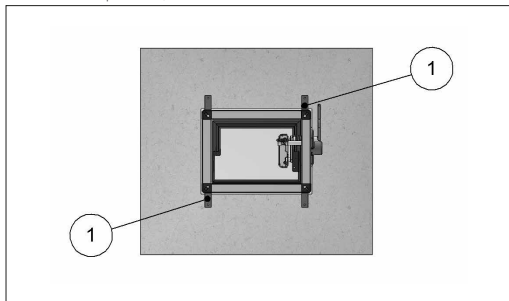
■ Blade rotation axis positioning

The fire damper can be installed both with the blade axis positioned vertically or horizontally.



■ Positioning brackets before fixing

1. WKGY100 fixing brackets (accessory to order separately, one size valid for all fire dampers kind)



WKGY100 fixing brackets are mandatory for vertical plasterboard wall installation with rock wool sealing.

They are not usable for installations with Fire Batt (Weichschott) sealing.

■ Installation of flexible connectors in order to balance out the ventilation ducts expansion

ATTENTION: the following indications must be considered binding only if legislation or local regulation where the fire dampers are installed require the use of flexible connectors.

Flexible connectors compensate any duct thermal expansion and wall bending in case of fire.

Flexible connectors are used to limit fire damper stresses due to external forces in case of fire and to preserve fire resistance class.

In general it is always appropriate the use of flexible connectors for the followings installations:

- light walls;
- Plasterboard and rock wool or Fire Batt (Weichschott) sealing;
- Applique fixing system.

Flexible connector must be normal flammability and in case of fire the grounding bonding should disconnect to guarantee the complete separation between fire damper and connected air duct. When flexible connectors made of conductive material (e.g. aluminum) are used, no additional grounding bonding is required. Despite flexible connector installation, the fire damper must be installed in the construction support so that its weight does not affect damper's installation position both during normal operation and in case of fire.

It is recommended not to compress flexible connectors in the installation phase.

Flexible connector must be at least 100mm long and in order that possible duct thermal expansions are balanced.

Take care that the flexible connector does not interfere with opening / closing movement of the blade.

■ Transfer Application (application not connected to air ducts on one or both sides)

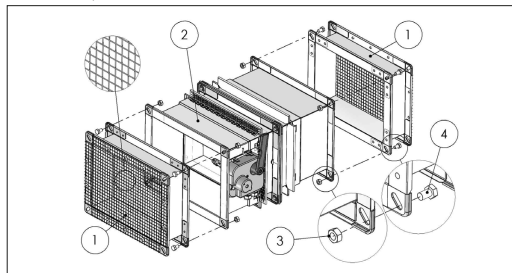
Note: For this application please refer to national legislation to verify if any specific obligation is required.

Following tests performed as per EN 1366-2, section 6.3.6 Standard, it is possible to install the fire damper free from air duct from one or both sides.

- Attention: fire resistance classification for transfer application is conform to section Fire resistance classification according to EN 13501-3-2009 limited to EI 120S if the ducted classification is higher.
- End cap with mesh shall be mounted on the side not connected to air duct.
- End cap with mesh is made from galvanized steel sheet and includes nuts and screws for fixing on fire damper.
- End cap with mesh is supplied not installed on the fire damper.

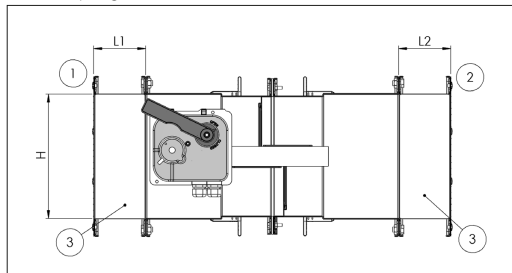
■ Components (Transfer Application)

1. End cap with mesh
2. Fire damper
3. M10 nut
4. M10 screw



■ Technical data (Transfer Application)

1. Mechanism side
2. Mechanism opposite side
3. End cap with mesh
- L1 End cap length mechanism side
- L2 End cap length mechanism opposite side
- H Nominal height of fire damper



Length of end cap with mesh depending on fire damper height H.

H	L1	L2
200	50	50
250	50	50
300	50	50
350	50	50
400	50	50
450	50	50
500	50	50
550	50	50
600	50	50
650	100	100
700	100	100
750	150	150
800	150	150

H Nominal height of fire damper
L1 End cap length mechanism side
L2 End cap length mechanism opposite side

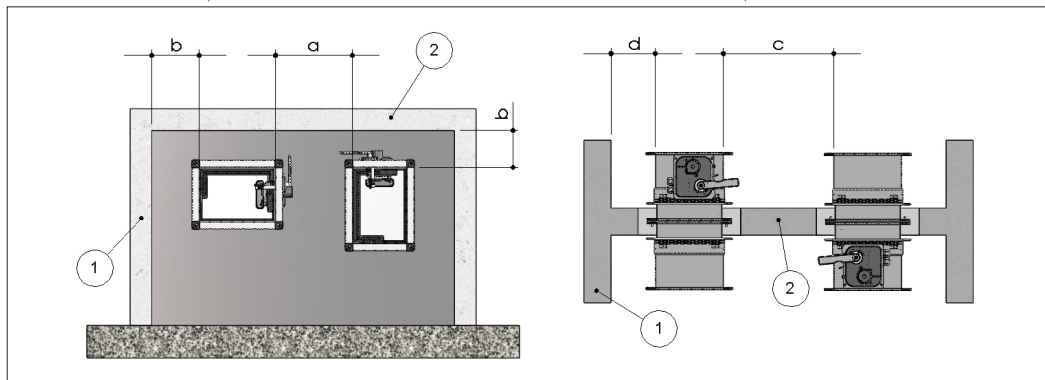
■ Minimum distances

It is recommended to keep enough space (about 200mm) for using or replacing the control mechanism or for maintenance. Also provide the necessary space to remove the ventilation duct from the damper whenever necessary.

In accordance with Articles 7 and 13 of EN 1366-2 respect the minimum distances indicated below.

Minimum distances

1. Side vertical wall
2. Floor
- a. Distance between fire dampers installed within vertical wall
- b. Distance between fire damper and vertical lateral wall / floor
- c. Distance between fire dampers installed within floor
- d. Distance between fire damper and vertical lateral wall



Installation		Fire dampers installed within vertical wall		Fire dampers installed within floor		Paired installation
		a [mm]	b [mm]	c [mm]	d [mm]	
Rigid wall	EI 180 S Installation within vertical rigid wall Mortar sealing	70	75	-	-	Yes. One air duct or separated air ducts
	EI 120 S Installation within vertical rigid wall Mortar or plaster putty sealing	70	75	-	-	Yes. One air duct or separated air ducts
	EI 120 S Installation within vertical rigid wall Plasterboard and rock wool 100 kg/m ³ sealing	70	75	-	-	Yes. One air duct or separated air ducts
Flexible wall	EI 120 S Installation within vertical light wall (plasterboard) Mortar or plaster putty sealing	70	75	-	-	Yes. Separate air duct
	EI 90 S Installation within vertical light wall (plasterboard) Plasterboard and rock wool 100 kg/m ³ sealing	70	75	-	-	Yes. Separate air duct
	EI 120 S Installation within vertical light wall (gypsum blocks wall) Plaster putty sealing	70	75	-	-	Yes. Separate air duct
	EI 90 S Installation within vertical light wall (gypsum blocks wall) Plaster putty sealing	200	75	-	-	No
Floor	EI 180 S Installation within floor Mortar sealing	-	-	70	75	Yes. Separate air duct
	EI 120 S Installation within floor Mortar sealing	-	-	70	75	Yes. Separate air duct
	EI 90 S Installation within floor Mortar sealing	-	-	70	75	Yes. Separate air duct

The minimum distance between two or more paired installations is 200 mm.

It is forbidden to pair three or more fire dampers.

■ Fire Batt (Weichschott) sealings

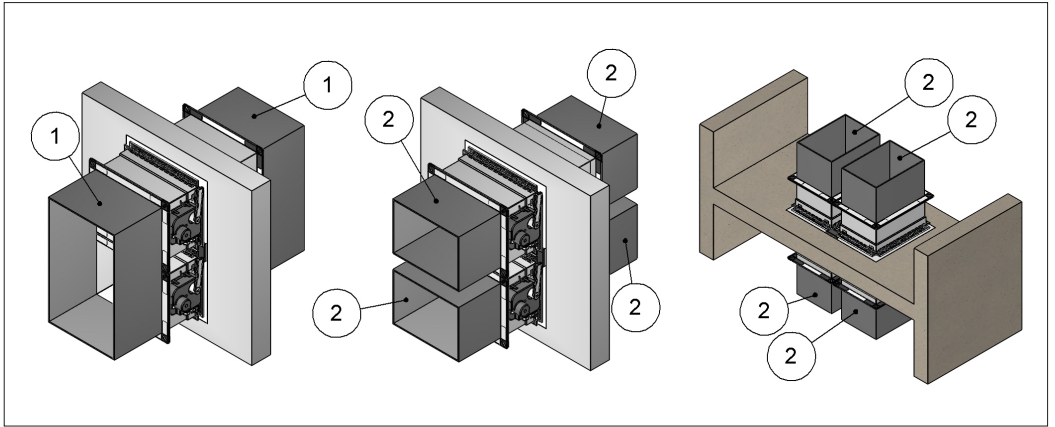
Installation		Fire dampers installed within vertical wall		Fire dampers installed within floor		
		a [mm]	b [mm]	c [mm]	d [mm]	Paired installation
Rigid wall	El 90 S Installation within vertical rigid wall with Fire Batt (Weichschott) sealing Rock wool 140 kg/m ³ and endothermic varnish sealing	70	50	-	-	Yes. One air duct
	El 90 S Installation within vertical light wall (plasterboard) with Fire Batt (Weichschott) sealing Rock wool 140 kg/m ³ and endothermic varnish sealing	70	50	-	-	Yes. One air duct
Flexible wall	El 90 S Installation within vertical light wall (gypsum blocks wall) with Fire Batt (Weichschott) sealing Rock wool 140 kg/m ³ and endothermic varnish sealing	70	50	-	-	Yes. One air duct
	El 120 S Installation within floor with Fire Batt (Weichschott) sealing Rock wool 140 kg/m ³ and endothermic varnish sealing	-	-	200	75	No

The minimum distance between two or more paired installations is 200 mm.

It is forbidden to pair three or more fire dampers.

1. One air duct

2. Separate air ducts



■ Construction supports characteristics

The European standard for fire dampers foresees a precise correlation between the wall/floor characteristics and the fire resistance class obtained, as well as the correlation between wall/floor used for the test and wall/floor used for the actual installation.

The test results obtained on a type of wall/floor are valid also for walls/floor of the same type but with greater thickness and/or density than those used in the test.

For plasterboard walls, the test results are also valid for walls with a greater number of plasterboard layers on each side.

As a result, the indicated thickness and density characteristics are to be considered as minimum values.

The wall/floor in which the fire dampers are installed must be fire class certified according to the standards foreseen for the structure.

■ Rigid walls

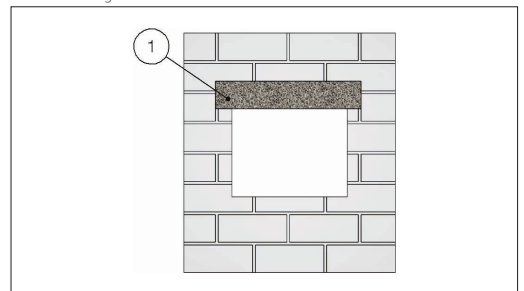
Can be made with aerated concrete blocks, poured concrete, concrete panels, perforated cell elements in concrete or brick in accordance with the following characteristics:

- minimum thickness 100 mm;
- minimum density 500 kg/m³.

The use of a reinforcing beam above the opening is recommended for walls made from concrete blocks, bricks or in concrete cell elements.

For walls built with perforated elements, it is also recommended that the area of the opening be made from full elements (for example aerated concrete blocks) to guarantee the correct adhesion of the mortar.

1. Reinforcing beam



■ Light plasterboard vertical walls

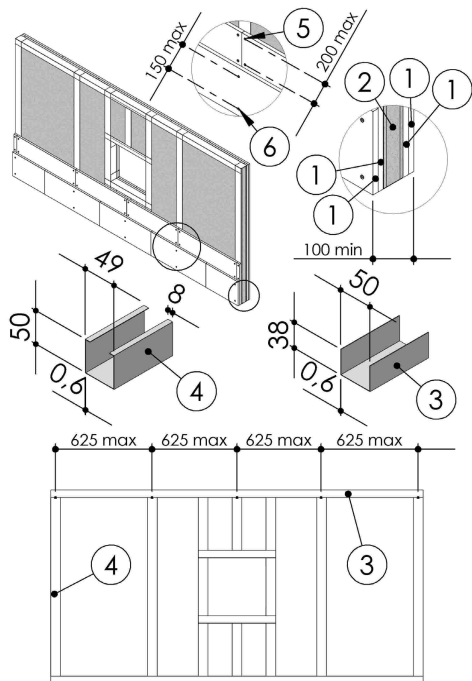
During testing, light plasterboard walls have been used with the following characteristics:

- U-shaped horizontal metal frame (50 mm) and C-shaped vertical frame (49 mm) made from 0,6 mm thick sheet metal;
- Vertical profiles placed with a maximum spacing of 625 mm between each other;
- Filling made of rock wool with density up to 100 kg/m³ (optional);
- Each side is made from two plasterboard layers 12,5 mm thick, unaligned to avoid alignment between the joints of the layer above and below.

The following indications are given for the installation walls:

- metal profiles minimum width: 49 mm;
- metal profiles minimum thickness: 0,6 mm;
- vertical profiles placed with a maximum spacing of 625 mm between each other;
- vertical profile fixing with selfthreading screws or by clinching to the bottom horizontal profile and insertion in the top horizontal profile;
- profiles fixed using self-threading screws or by clinching on every intersection.
- installation of a frame around the damper with base and height where shown in the installation instructions;
- Filling made of rock wool with density up to 100 kg/m³ (optional);
- each side is made from two plasterboard layers 12,5 mm minimum thick, unalined to avoid alignment between the joints of the layer above and below.
- the front plasterboards layers are fixed using long enough screws to pass through the lower plasterboard and attach to the steel profile underneath.

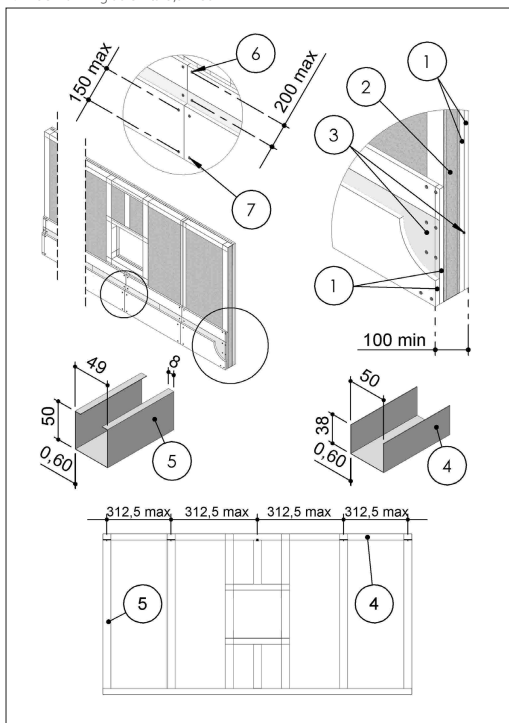
1. Plasterboard thickness 12,5 mm
2. Rock wool density up to 80 kg/m³ (optional)
3. Horizontal U-shaped profile
4. Vertical C-shaped profile
5. Self-drilling screw Ø 3,5 X 25 mm
6. Self-drilling screw Ø 3,5 X 35 mm



The following indications are given for the installation walls:

- metal profiles minimum width: 49 mm;
- metal profiles minimum thickness: 0,6 mm;
- vertical profiles placed with a maximum spacing of 312,5 mm between each other;
- vertical profile fixing with selfthreading screws or by clinching to the bottom horizontal profile and insertion in the top horizontal profile;
- profiles fixed using self-threading screws or by clinching on every intersection.
- installation of a frame around the damper with base and height where shown in the installation instructions;
- Filling made of rock wool with density up to 100 kg/m³ (optional);
- each side is made from two plasterboard layers 12,5 mm minimum thick, unalined to avoid alignment between the joints of the layer above and below.
- the front plasterboards layers are fixed using long enough screws to pass through the lower plasterboard and attach to the steel profile underneath.

1. Plasterboard thickness 12,5 mm
2. Rock wool density up to 100 kg/m³ (optional)
3. Reinforcement sheet
4. Horizontal U-shaped profile
5. Vertical C-shaped profile
6. Self-drilling screw Ø 3,5 X 25 mm
7. Self-drilling screw Ø 3,5 X 35 mm



■ Light plasterboard vertical walls with steel reinforcement

During testing, light plasterboard walls have been used with the following characteristics:

- U-shaped horizontal metal frame (50 mm) and C-shaped vertical frame (49 mm) made from 0,6 mm thick sheet metal;
- Vertical profiles placed with a maximum spacing of 312,5 mm between each other;
- reinforcement sheet;
- Filling made of rock wool with density up to 100 kg/m³ (optional);
- Each side is made from two plasterboard layers 12,5 mm thick, unalined to avoid alignment between the joints of the layer above and below.

■ Gypsum blocks light walls

Gypsum blocks wall can be built with special solid gypsum blocks with interlocking shaped edges as indicated in the supplier's instructions and according to the following characteristics:

- minimum thickness 70 or 100 mm according to the type and resistance class required;
- minimum density 995 kg/m³.

It is generally advisable to first build the wall and then provide the opening for the fire damper.

■ Installations within vertical rigid wall

Refer to the section Construction supports characteristics for further information.

Comply with the minimum distances indicated on section Minimum distances.

Before and after installation please perform a functional test. Refer to section Mechanism type for further information.

■ Wall opening

A opening must be provided in the wall as indicated in the table and in the drawing

■ Aerated concrete floors

Aerated concrete floors can be built during installation or with pre-formed slabs with interlocking shaped edges according to the following characteristics:

- minimum thickness 100 or 150 mm according to the type and resistance class required;
- minimum density 650 kg/m³

■ Poured concrete floors

Poured concrete floors can be built during installation or with pre-formed slabs with interlocking shaped edges according to the following characteristics:

- minimum thickness 100 or 150 mm according to the resistance class required;
- minimum density 2200 kg/m³.

■ Damper positioning

Position the damper in the opening so that the side of the closing mechanism extends as indicated in the table and in the drawing. Close the blade before installing the fire damper.

■ Filling

Fill the space between the wall and the damper as indicated in the table and in the drawing.

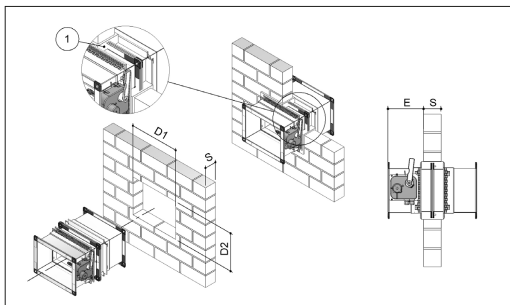
Sealing with concrete is not allowed.

	Fire resistance classification	Hole size "D1 x D2" [mm]	Damper protrusion from the wall "E" [mm]	Wall minimum thickness "S" [mm]	Sealing
EI 120 S Installation within vertical rigid wall					
Wall minimum density 500 kg/m ³	EI 120 S (500 Pa)	From (B+80) x (H+80) to (B+580) x (H+580)	205	100	Mortar or plaster putty sealing
EI 120 S Installation within vertical rigid wall					
Wall minimum density 500 kg/m ³	EI 120 S (500 Pa)	From (B+80) x (H+80) to (B+110) x (H+110)	205	100	Rock wool 100 kg/m ³ with infill plasterboard (thickness 12.5 mm)
EI 180 S Installation within vertical rigid wall					
Wall minimum density 500 kg/m ³	EI 180 S (500 Pa)	From (B+80) x (H+80) to (B+110) x (H+110)	185	140	Mortar sealing

B Nominal base of the damper
H Nominal height of the damper

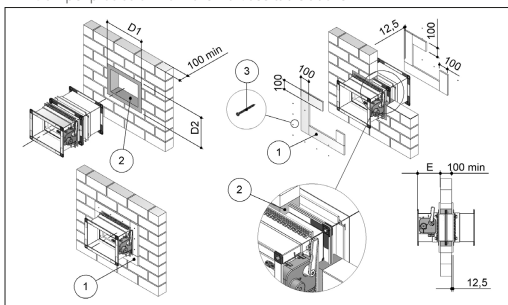
EI 120 S / EI 180 S Installations within vertical rigid wall

1. Sealing indicated in the table
- D1 Hole base: see table above
- D2 Hole height: see table above
- E Damper protrusion from the wall: see table above
- S Wall thickness: see table above



EI 120S Installation within vertical rigid wall

1. Plasterboard infill panel, thickness 12,5 mm, for rock wool sealing
 2. Rock wool, 100 kg/m³
 3. Self-drilling screw Ø 3,5 X 45 mm
- D1 Hole base: see table above
D2 Hole height: see table above
E Damper protrusion from the wall: see table above



■ Installations within vertical light wall (plasterboard)

Refer to the section Construction supports characteristics for further information.

Comply with the minimum distances indicated on section Minimum distances.

Before and after installation please perform a functional test. Refer to section Mechanism type for further information.

Wall opening

A opening must be provided in the wall as indicated in the table and in the drawing

Damper positioning

Fix the four flaps code WKGY100 on the four corners of the fire damper (in correspondence to the longer screws).

Position the damper in the opening so that the side of the closing mechanism extends as indicated in the table and in the drawing. Close the blade before installing the fire damper.

Filling

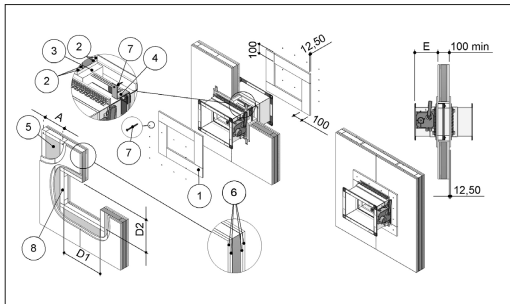
Fill the space between the wall and the damper as indicated in the table and in the drawing. Sealing with concrete is not allowed.

	Fire resistance classification	Hole size "D1 x D2" [mm]	Damper protrusion from the wall "E" [mm]	Wall minimum thickness "S" [mm]	Sealing
EI 90 S Installation within vertical light wall (plasterboard)					
Wall rock wool density up to 100 kg/m ³ (optional)	EI 90 S (500 Pa)	Da (B+75) x (H+75) a (B+95) x (H+95)	205	100	Rock wool 100 kg/m ³ with infill plasterboard (thickness 12.5 mm)
EI 120 S Installation within vertical light wall (plasterboard)					
Wall rock wool density up to 100 kg/m ³ (optional)	EI 120 S (500 Pa)	Da (B+100) x (H+100) to (B+580) x (H+580)	205	100	Mortar or plaster putty

- B Nominal base of the damper
- H Nominal height of the damper

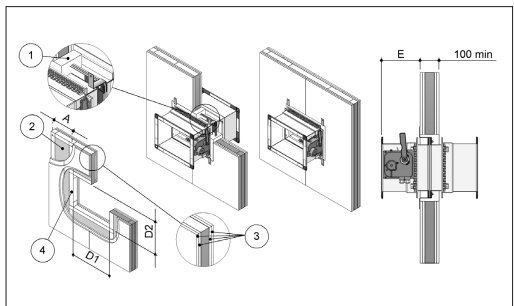
EI 90 S Installation within vertical light wall (plasterboard)

- D1 Hole base: see table above
 - D2 Hole height: see table above
 - E Damper protrusion from the wall: see table above
 - A Distance between vertical profiles: 625 mm see section Light plasterboard vertical walls or 312,5 mm see section Light plasterboard vertical walls with steel reinforcement
1. Plasterboard infill panel, thickness 12,5 mm
 2. Plasterboard infill panel, thickness 12,5 mm
 3. Rock wool, 100 kg/m³
 4. WKGY100 fixing brackets (accessory to order separately, one size valid for all fire dampers kind and wall thickness)
 5. Rock wool density up to 100 kg/m³ (optional)
 6. Plasterboard thickness 12,5 mm
 7. Self-drilling screw Ø 3,5 X 45 mm
 8. Metal frame



EI 120 S Installation within vertical light wall (plasterboard)

- D1 Hole base: see table above
 - D2 Hole height: see table above
 - E Damper protrusion from the wall: see table above
 - A Distance between vertical profiles: 625 mm see section Light plasterboard vertical walls or 312,5 mm see section Light plasterboard vertical walls with steel reinforcement
1. Mortar M-10, EN998-2 or plaster
 2. Rock wool density up to 100 kg/m³ (optional)
 3. Plasterboard thickness 12,5 mm
 4. Metal frame



Installation within vertical light wall (gypsum blocks wall)

Refer to the section for further information. Comply with the minimum distances indicated on section Minimum distances. Before and after installation please perform a functional test. Refer to section Mechanism type for further information.

Wall opening

A opening must be provided in the wall as indicated in the table and in the drawing

Damper positioning

Position the damper in the opening so that the side of the closing mechanism extends as indicated in the table and in the drawing. Close the blade before installing the fire damper.

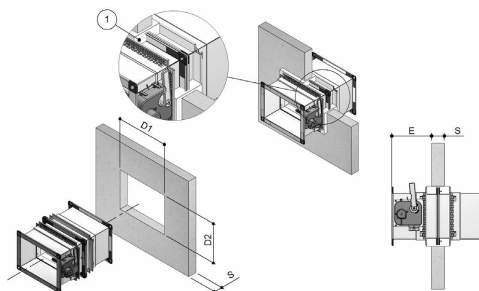
Filling

Fill the space between the wall and the damper as indicated in the table and in the drawing. Sealing with concrete is not allowed.

Fire resistance classification	Hole size "D1 x D2" [mm]	Damper protrusion from the wall "E" [mm]	Wall minimum thickness "S" [mm]	Sealing	
EI 90 S Installation within vertical light wall (gypsum blocks wall) (paired installation not available)					
Wall minimum density 995 kg/m ³	EI 90 S (500 Pa)	From (B+80) x (H+80) to (B+110) x (H+110)	220	70	Plaster putty sealing
EI 120 S Installation within vertical light wall (gypsum blocks wall)					
Wall minimum density 995 kg/m ³	EI 120 S (500 Pa)	From (B+80) x (H+80) to (B+110) x (H+110)	205	100	Plaster putty sealing

B Nominal base of the damper
H Nominal height of the damper

1. Plaster putty
- D1 Hole base: see table above
- D2 Hole height: see table above
- E Damper protrusion from the wall: see table above
- S Wall minimum thickness: see table above



■ Installations within floor

Refer to the section Construction supports characteristics for further information.

Comply with the minimum distances indicated on section Minimum distances.

Before and after installation please perform a functional test. Refer to section Mechanism type for further information.

■ Floor opening

A opening must be provided in the floor as indicated in the table and in the drawing

■ Damper positioning

Position the damper in the opening so that the side of the closing mechanism extends as indicated in the table and in the drawing. Close the blade before installing the fire damper.

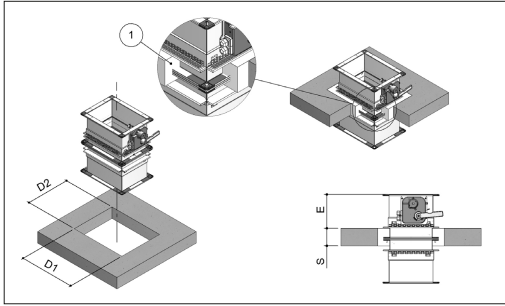
■ Filling

Fill the space between the floor and the damper as indicated in the table and in the drawing. Sealing with concrete is not allowed.

Fire resistance classification	Hole size "D1 x D2" [mm]	Damper protrusion from the wall "E" [mm]	Floor minimum thickness "S" [mm]	Sealing	
EI 90 S Installation within floor					
Floor minimum density 650 kg/m ³	EI 90 S (500 Pa)	From (B+130) x (H+130) to (B+170) x (H+170)	193	100	Mortar sealing
EI 120 S Installation within floor					
Floor minimum density 650 kg/m ³	EI 120 S (500 Pa)	From (B+130) x (H+130) to (B+170) x (H+170)	193	150	Mortar sealing
EI 180 S Installation within floor					
Floor minimum density 2200 kg/m ³	EI 180 S (500 Pa)	From (B+130) x (H+130) to (B+170) x (H+170)	185	140	Mortar sealing

B Nominal base of the damper
H Nominal height of the damper

- D1 Hole base: see table above
- D2 Hole height: see table above
- E Damper protrusion from the floor: see table above
- S Floor minimum thickness: see table above
- 1. Mortar M-10, EN998-2



■ Installations within vertical wall with Fire Batt (Weichschott) sealing
Refer to the section Construction supports characteristics for further information.

Comply with the minimum distances indicated on section Minimum distances.
Before and after installation please perform a functional test. Refer to section Mechanism type for further information.

■ Wall opening

A opening must be provided in the wall as indicated in the table and in the drawing

■ Damper positioning

Position the damper in the opening so that the side of the closing mechanism extends as indicated in the table and in the drawing.

Close the blade before installing the fire damper.

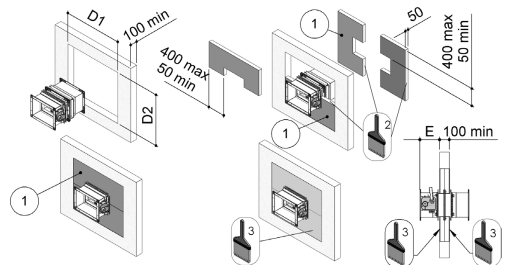
■ Filling

Fill the space between the damper and the wall using Fire Batt (Weichschott) sealing made from two rock wool panels with minimum thickness of 50 mm and minimum density of 140 kg/m³.
The panels must be covered on both faces of the wall with endothermic varnish type PROMASTOP E PASTE or HILTI CFS-CT (minimum thickness of 1 mm) and with an internal perimeter sealant type PROMASTOP E PASTE or HILTI CFS-S ACR (minimum thickness of 1 mm).

	Fire resistance classification	Hole size "D1 x D2" [mm]	Damper protrusion from the wall "E" [mm]	Wall minimum thickness "S" [mm]	Sealing	
Rigid wall	EI 90 S Installation within vertical rigid wall and Fire Batt (Weichschott) sealing					
	Wall minimum density 500 kg/m ³	EI 90 S (300 Pa)	(B+800 max) x (H+800 max)	205	100	Rock wool 140 kg/m ³ and endothermic varnish sealing
Flexible wall	EI 90 S Installation within vertical light wall (plasterboard) with Fire Batt (Weichschott) sealing					
	Wall rock wool density up to 100 kg/m ³ (optional)	EI 90 S (300 Pa)	(B+800 max) x (H+800 max)	205	100	Rock wool 140 kg/m ³ and endothermic varnish sealing
	EI 90 S Installation within vertical light wall (plasterboard) with Fire Batt (Weichschott) sealing					
	Wall minimum density 995 kg/m ³	EI 90 S (300 Pa)	(B+800 max) x (H+800 max)	205	100	Rock wool 140 kg/m ³ and endothermic varnish sealing

- B Nominal base of the damper
- H Nominal height of the damper

- D1 Hole base indicated in the table
- D2 Hole height indicated in the table
- E Damper protrusion from the wall indicated in the table
- 1. Rock wool panel 50 mm thick with 140 kg/m³ density.
- 2. PROMASTOP E PASTE or HILTI CFS-S ACR type sealant
- 3. PROMASTOP E PASTE or HILTI CFS-CT endothermic varnish



■ Installation within floor with Fire Batt (Weichschott) sealing
 Refer to the section for further information.
 Comply with the minimum distances indicated on section Minimum distances .
 Before and after installation please perform a functional test. Refer to section Mechanism type for further information .

■ Floor opening

A opening must be provided in the floor as indicated in the table and in the drawing

■ Damper positioning

Position the damper in the opening so that the side of the closing mechanism extends as indicated in the table and in the drawing.

Close the blade before installing the fire damper.

■ Filling

Fill the space between the damper and the floor using Fire Batt (Weichschott) sealing made from two rock wool panels with minimum thickness of 50 mm and minimum density of 140 kg/m³.
 The panels must be covered on both faces of the wall with endothermic varnish type PROMASTOP E PASTE or HILTI CFS-CT (minimum thickness of 1 mm) and with an internal perimeter sealant type PROMASTOP E PASTE or HILTI CFS-S ACR (minimum thickness of 1 mm).

	Fire resistance classification	Hole size "D1 x D2" [mm]	Damper protrusion from the wall "E" [mm]	Floor minimum thickness "S" [mm]	Sealing
EI 120 S Installation within floor and Fire Batt (Weichschott) sealing					
Floor minimum density 650 kg/m ³	EI 120 S (300 Pa)	(B+800 max) x (H+800 max)	205	150	Rock wool 140 kg/m ³ and endothermic varnish sealing

- B Nominal base of the damper
- H Nominal height of the damper
- D1 Hole base: see table above
- D2 Hole height: see table above
- E Damper protrusion from the floor: see table above
- 1. Rock wool panel 50 mm thick with 140 kg/m³ density.
- 2. PROMASTOP E PASTE or HILTI CFS-S ACR type sealant
- 3. PROMASTOP E PASTE or HILTI CFS-CT endothermic varnish

