

Installation booklet  
English

CIRCULAR SERIES WH45 - 500 Pa

Cert. N° 1812-CPR-1007 EN 15650

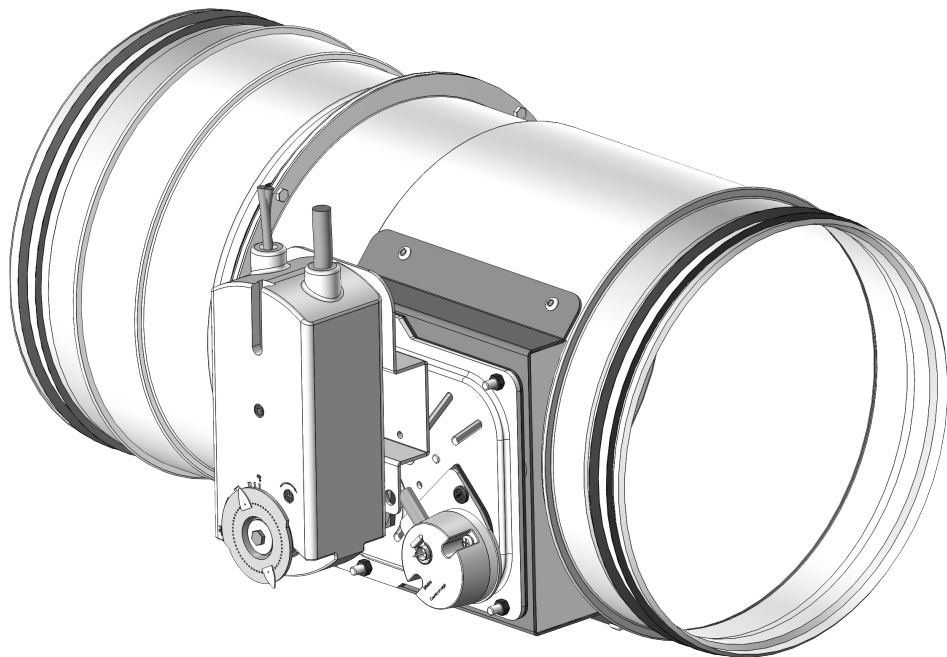
\*1MUBWH45UEN-LIND\* rev 17-04



[www.lindab.com](http://www.lindab.com) - Fire dampers are manufactured by MP3 Srl [www.mp3-italia.it](http://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)	
Rigid wall	EI 120 S Installation within vertical rigid wall					
	Wall minimum thickness 100 mm Wall minimum density 500 kg/m <sup>3</sup> Mortar or plaster putty sealing ve (↔)	W	-	∅ min 200 max 800	∅ min 200 max 800	∅ min 200 max 800
	EI 90 S Installation within vertical rigid wall					
	Wall minimum thickness 100 mm Wall minimum density 500 kg/m <sup>3</sup> Plasterboard and rock wool 100 kg/m <sup>3</sup> sealing ve (↔)	D	-	-	∅ min 200 max 800	∅ min 200 max 800
Flexible wall	EI 90 S Installation within vertical light wall (plasterboard)					
	Wall minimum thickness 100 mm Wall rock wool minimum density 100 kg/m <sup>3</sup> Plasterboard and rock wool 100 kg/m <sup>3</sup> or mortar or plaster putty sealing ve (↔)	D/W	-	-	∅ min 200 max 800	∅ min 200 max 800
	EI 90 S Installation within vertical light wall (gypsum blocks wall)					
	Wall minimum thickness 70 mm Wall minimum density 995 kg/m <sup>3</sup> Plaster putty sealing ve (↔)	W	-	-	∅ min 200 max 800	∅ min 200 max 800
	EI 120 S Installation within vertical light wall (gypsum blocks wall)					
	Wall minimum thickness 100 mm Wall minimum density 995 kg/m <sup>3</sup> Plaster putty sealing ve (↔)	W	-	∅ min 200 max 800	∅ min 200 max 800	∅ min 200 max 800
Floor	EI 90 S Installation within floor					
	Floor minimum thickness 100 mm Floor minimum density 650 kg/m <sup>3</sup> Mortar sealing ho (↔)	W	-	-	∅ min 200 max 800	∅ min 200 max 800
	EI 120 S Installation within floor					
	Floor minimum thickness 150 mm Floor minimum density 650 kg/m <sup>3</sup> Mortar sealing ho (↔)	W	-	∅ min 200 max 800	∅ min 200 max 800	∅ min 200 max 800
	EI 180 S Installation within floor					
	Floor minimum thickness 150 mm Floor minimum density 2200 kg/m <sup>3</sup> Mortar sealing ho (↔)	W	∅ min 200 max 800	∅ min 200 max 800	∅ min 200 max 800	∅ min 200 max 800

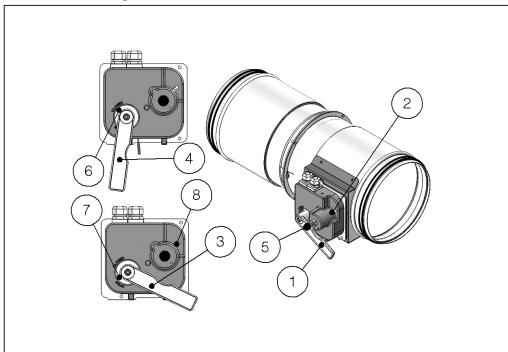
∅ is the minimum and maximum nominal diameter of fire dampers in mm

- 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
- Cert. N° 1812-CPR-1007 EN 15650

## ■ 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

The damper must be opened when the ventilation system is switched off.

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 (WH45M version only).

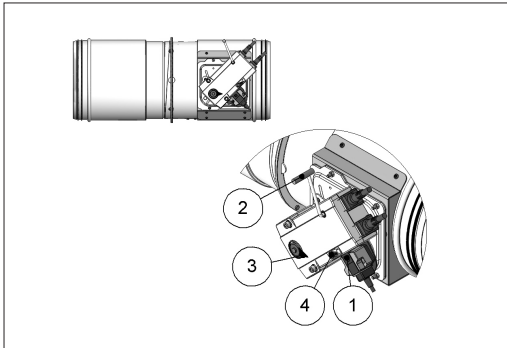
### Temperature calibration of thermosensitive element for automatic damper closing

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

The damper must be opened when the ventilation system is switched off.

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.

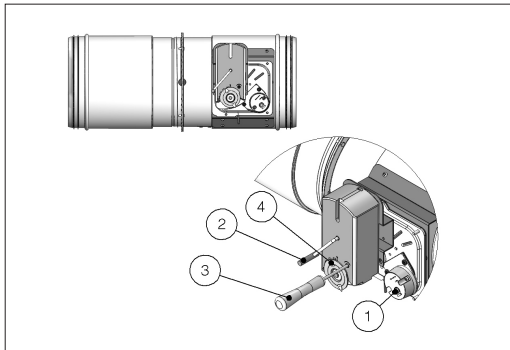
### Temperature calibration of thermosensitive element for automatic damper closing

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**

The damper must be opened when the ventilation system is switched off.

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**

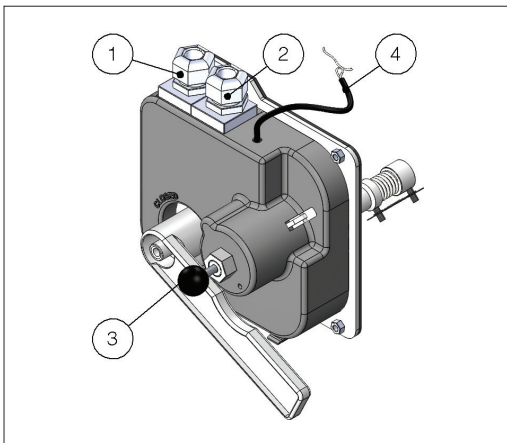
The motorized versions are supplied with two microswitches to show the blade's position (open or closed). Refer to the section Electrical connections for further information.

**Closing by remote control**

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

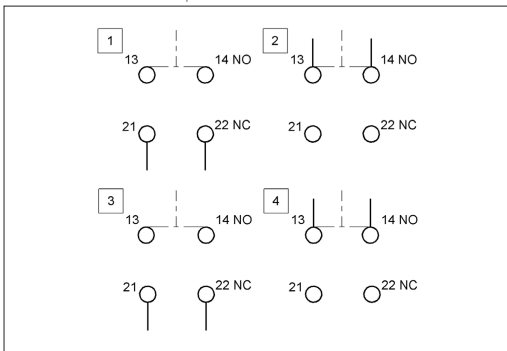
**Temperature calibration of thermosensitive element for automatic damper closing**

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



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

■ SC/SA microswitches position



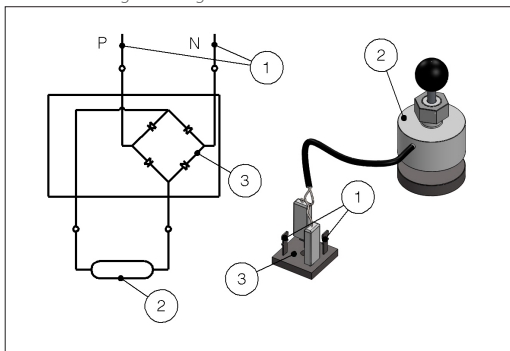
1. "NC" contact of SC microswitch. When the fire blade is closed the circuit is open.
2. "NO" contact of SC microswitch. When the fire blade is closed the circuit is closed.
3. "NC" contact of SA microswitch. When the fire blade is open the circuit is open.
4. "NO" contact of SA microswitch. When the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

## ELECTRICAL CONNECTIONS

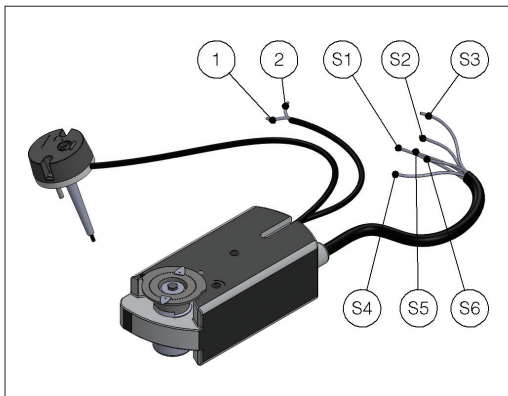
■ Electrical wiring

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.

230 V AC magnet wiring

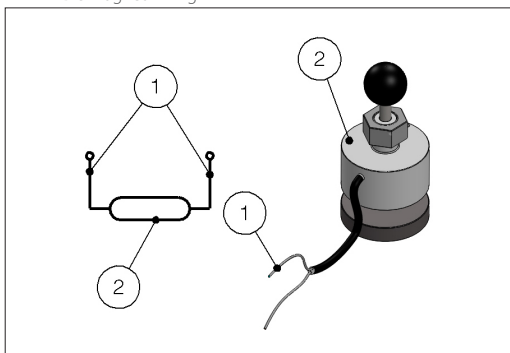


1. 230 V AC power supply
2. Magnet
3. Rectifier

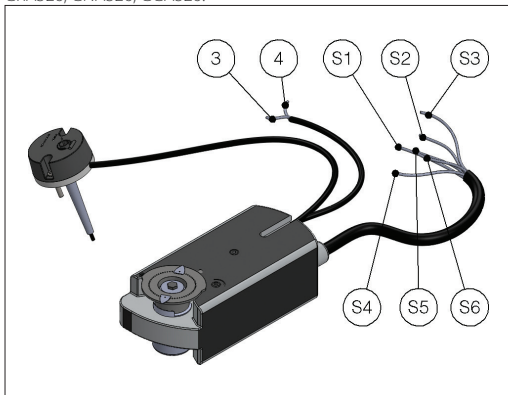


**Siemens servomotor:**  
GRA326, GNA326, GGA326.

24 V DC magnet wiring



1. 24 V DC power supply
2. Magnet



**Motorized fire dampers electrical wiring**

To connect the dampers to the power supply, proceed as follows:

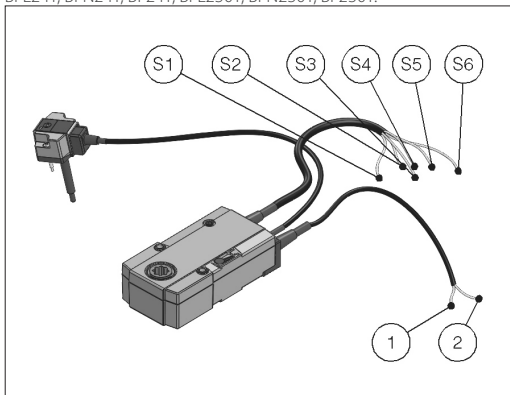
- Check that the voltage and electrical frequency are equivalent to those of the motor of the servomotor (check the motor's information label);

- Make the connections as shown in the below diagram.

WH45 - Motorized version

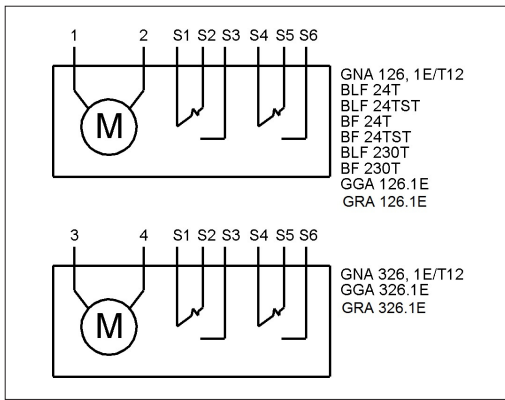
**Belimo servomotor:**

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



**Siemens servomotor:**

GRA126, GNA126, GGA126.



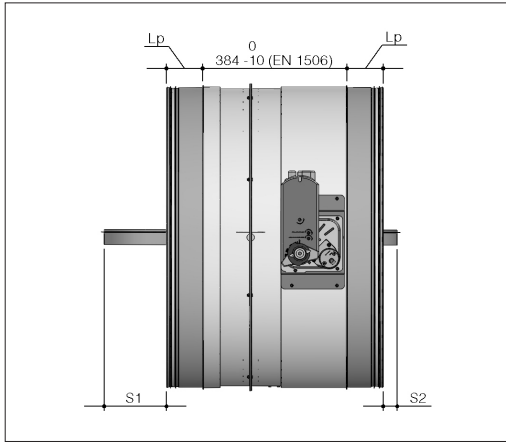
- 1 Negative (DC) or neutral (AC)
- 2 Positive (DC) or phase (AC)
- 3 Phase
- 4 Neutral
- S1 Common closed damper microswitch
- S2 Normally closed, closed damper microswitch
- S3 Normally opened, closed damper microswitch
- S4 Common open damper microswitch
- S5 Normally closed, open damper microswitch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

■ Electrical specifications

	Manual	Manual with magnet Belimo motorized version Siemens motorized version
Voltage and power consumption	-	<p>Power interruption magnet: P=4,5 W (24V DC or 230 V AC version)</p> <p>Power input magnet: P=4,5 W (24V DC or 230 V AC version)</p> <hr/> <p>Motor 24V AC/DC (WH45VMB): Belimo BFN24T Opening: 4 W In stand-by: 1,4 W</p> <p>Motor 230V AC (WH45DMB): Belimo BFN230T Opening: 5 W In stand-by: 2,1 W</p> <hr/> <p>24V AC/DC (WH45VGB) motor: Belimo BF24T Opening: 7 W In stand-by: 2 W</p> <p>230V AC (WH45DGB) Motor: Belimo BF230T Opening: 8 W In stand-by: 3 W</p> <hr/> <p>Motor 24V AC/DC (WH45VPS) / (WH45VSS): Siemens GNA126 / GRA126 Opening: 3,5 W In stand-by: 2 W</p> <p>Motor 230V AC (WH45DPS) / (WH45DSS): Siemens GNA326 / GRA326 Opening: 4,5 W In stand-by: 3,5 W</p> <hr/> <p>24V AC/DC motor (WH45VGS): Siemens GGA126 Opening: 6 W In stand-by: 1,5 W</p> <p>230V AC motor (WH45DGS): Siemens GGA326 Opening: 6 W In stand-by: 2,5 W</p>
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

# TECHNICAL DATA

## Dimension



Ø	mm	200	250	300	315	355	400	
S1 blade exposition	mm	0	0	0	0	0	0	
S2 blade exposition	mm	0	0	0	0	0	0	
Lp	mm	38	57	57	57	60	73	
Ø	mm	450	500	560	600	630	710	800
S1 blade exposition	mm	23	49	79	99	114	131	176
S2 blade exposition	mm	0	0	0	0	0	0	38
Lp	mm	73	73	73	73	73	95	95

Lp Overlap length between fire damper and duct

## MAINTENANCE AND INSPECTIONS

The MP3 fire dampers don't need maintenance.

### Periodic inspection

The damper inspection must be done according to national law. The periodic inspection must be according to EN 15423 annex C and EN 15650 annex D.

When a remote control system, such as a smoke or other alarm signal, is used to close fire dampers, the correct working of such alarm signals must be tested during the periodic maintenance and check of the full fire safety system.

### Disposal

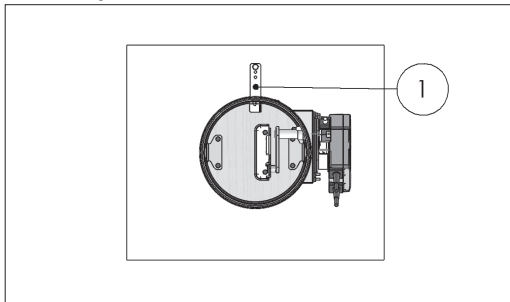
Disposal in case of destruction must be carried out in accordance with national legislation. For electrical and electronic parts also refer to EU Directive 2011/65.

## INSTALLATION

The sizes shown are in mm.

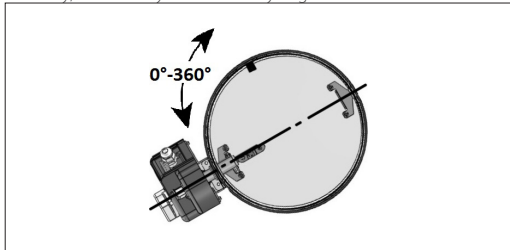
■ Positioning brackets before fixing

1. Positioning brackets



■ Blade rotation axis positioning

The fire damper can be installed both with the blade axis positioned vertically, horizontally or tilted in any angle.



■ Indications for the correct duct suspension and for damper connection

**CAUTION: Refer anyway to law and national standardization.** Flexible connectors compensate any duct thermal expansion and wall bending in case of fire.

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 should be normal flammability.

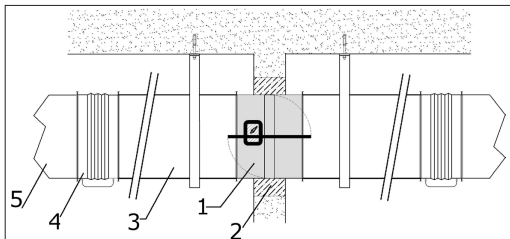
It is recommended not to compress flexible connectors in the installation phase.

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

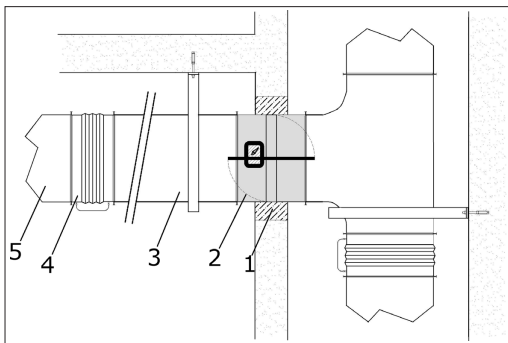
Refer to the section Technical data for blade exposition values.

Fire damper and short extension ducts have to be connected to each other and fixed at the bottom and near the damper and suspended from the ceiling.

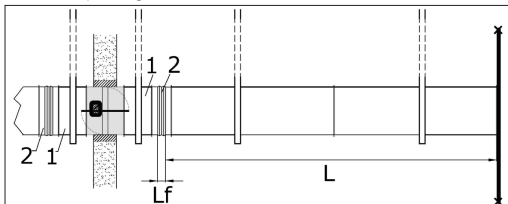
1. Fire damper
2. Sealing
3. Short extension duct
4. Flexible connector
5. Duct



1. Sealing
2. Fire damper
3. Short extension duct
4. Flexible connector
5. Duct



1. Short extension duct
  2. Flexible connector
- L Air duct length  
Lf Flexible part length of flexible connector

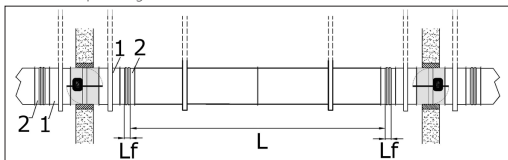


The length (Lf) of the flexible element must be equal or higher to 1% of air duct length.

The minimum length (Lf) of the flexible element is equal to 250 mm for circular damper.

The minimum length (Lf) of the flexible element is equal to 100 mm for rectangular damper.

1. Short extension duct
  2. Flexible connector
- L Air duct length  
Lf Flexible part length of flexible connector



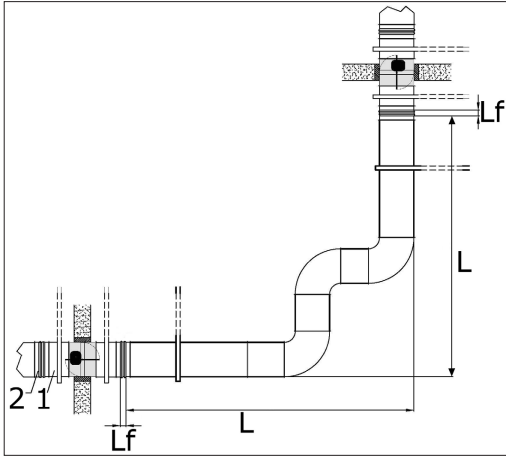
The length (Lf) of the flexible element must be equal or higher to 0.5% of air duct length.

The minimum length (Lf) of the flexible element is equal to 250 mm for circular damper.

The minimum length (Lf) of the flexible element is equal to 100 mm for rectangular damper.



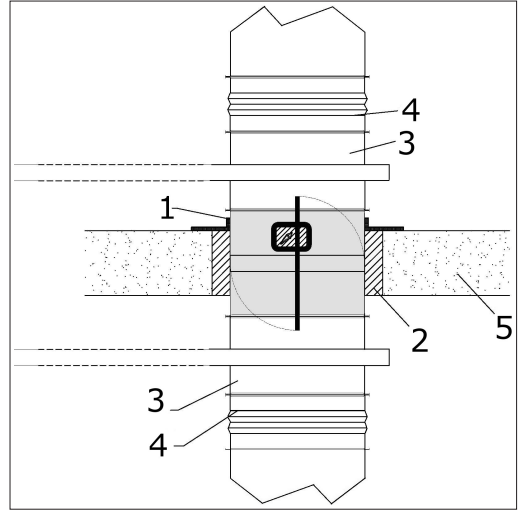
- 1. Short extension duct
- 2. Flexible connector
- L Air duct length
- Lf Flexible part length of flexible connector



The length (Lf) of the flexible element must be equal or higher to 1% of air duct length.  
 The minimum length (Lf) of the flexible element is equal to 250 mm for circular damper.

The minimum length (Lf) of the flexible element is equal to 100 mm for rectangular damper.

- 1. Positioning brackets
- 2. Sealing
- 3. Short extension duct
- 4. Flexible connector
- 5. Floor



#### ■ Minimum distances

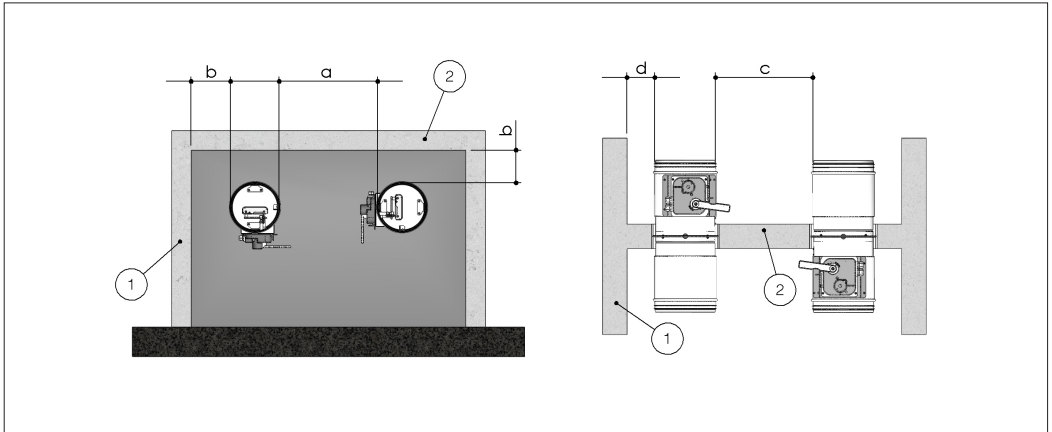
It is recommended to keep enough space for using the control mechanism or for maintenance.

Maintain a minimum distance of 200 mm between fire damper and any other element that crosses the wall (e.g. doors, electrical cables, hydraulic pipes etc.) and between different fire damper models.

- 1. Side vertical wall
- 2. Floor
- a. Distance between fire dampers installed within vertical wall

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

- 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	
		a [mm]	b [mm]	c [mm]	d [mm]
Rigid wall	EI 90 S Installation within vertical rigid wall Plasterboard and rock wool 100 kg/m <sup>3</sup> sealing	50	75	-	-
	EI 120 S Installation within vertical rigid wall Mortar or plaster putty sealing	50	75	-	-
Flexible wall	EI 90 S Installation within vertical light wall (plasterboard) Plasterboard and rock wool 100 kg/m <sup>3</sup> or mortar or plaster putty sealing	50	75	-	-
	EI 90 S Installation within vertical light wall (gypsum blocks wall) Plaster putty sealing	50	75	-	-
	EI 120 S Installation within vertical light wall (gypsum blocks wall) Plaster putty sealing	50	75	-	-
Floor	EI 90 S Installation within floor Mortar sealing	-	-	50	75
	EI 120 S Installation within floor Mortar sealing	-	-	50	75
	EI 180 S Installation within floor Mortar sealing	-	-	50	75

### 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

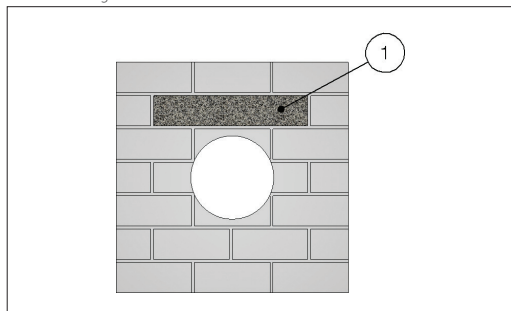
Can be made with aerated concrete blocks, poured concrete, concrete panels, perforated cell elements in concrete or brick in accordance with the following characteristics:

- minimum thickness 100 mm;
- minimum density 500 kg/m<sup>3</sup>.

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

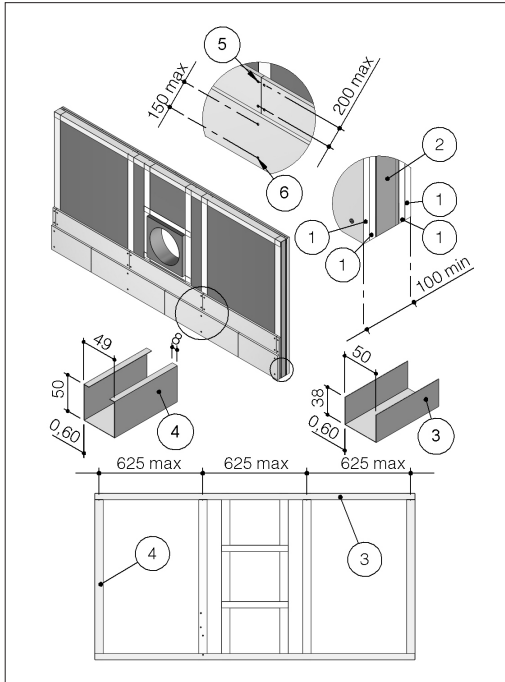
During testing, light plasterboard walls have been used with the following characteristics:

- 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;
- Rock wool filling which has density 100 kg/m<sup>3</sup>;
- 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 as shown in the installation instructions;
- rock wool filling which has minimum density 100 kg/m<sup>3</sup>;
- each side is made from two plasterboard layers 12,5 mm minimum thick, unaligned 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, 100 kg/m<sup>3</sup>
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



#### ■ 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 .

#### ■ Wall opening

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

#### ■ 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/m<sup>3</sup>.

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

#### ■ 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/m<sup>3</sup>

#### ■ 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/m<sup>3</sup>.

#### ■ 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.

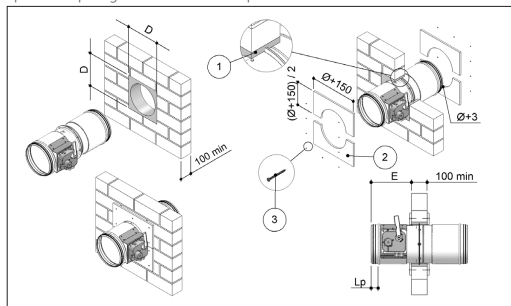
#### ■ Filling

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

	Fire resistance classification	"D" hole size [mm]	Damper protrusion from the wall "E" [mm]	Wall minimum thickness "S" [mm]	Sealing
<b>EI 90 S Installation within vertical rigid wall</b>					
Wall minimum density 500 kg/m <sup>3</sup>	EI 90 S (500 Pa)	From (Ø + 35) x (Ø + 35) to (B+50) x (H+50) (square hole)	215 + Lp	100	Rock wool 100 kg/m <sup>3</sup> with infill plasterboard (thickness 12.5 mm)
<b>EI 120 S Installation within vertical rigid wall</b>					
Wall minimum density 500 kg/m <sup>3</sup>	EI 120 S (500 Pa)	From Ø + 25 to Ø+35 (circular hole)	215 + Lp	100	Mortar or plaster putty sealing

### EI 90 S Installation within vertical rigid wall

1. Rock wool, 100 kg/m<sup>3</sup>
  2. Plasterboard arch infill, thickness 12,5 mm
  3. Self-drilling screw Ø 3,5 X 45 mm
- D Hole size: see table above  
 E Damper protrusion from the wall: see table above  
 Lp Overlap length between fire damper and duct: see section Dimension



#### ■ Installation within vertical light wall (plasterboard)

Refer to the section Construction supports characteristics for further information.

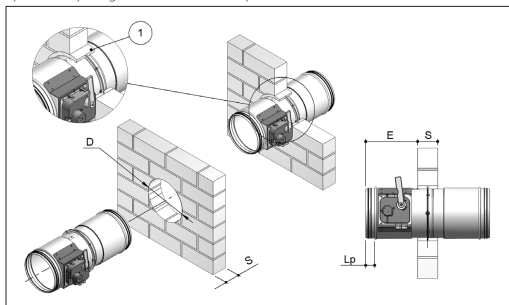
Comply with the minimum distances indicated on section Minimum distances .

#### ■ Wall opening

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

### EI 120 S Installation within vertical rigid wall

1. Mortar M-10, EN998-2 or plaster putty
- D Hole size: see table above  
 S Wall minimum thickness: see table above  
 E Damper protrusion from the wall: see table above  
 Lp Overlap length between fire damper and duct: see section Dimension



#### ■ 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.

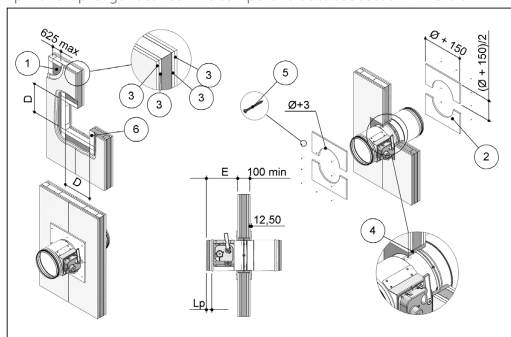
#### ■ Filling

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

Cover the sealing by applying on both faces of the wall a layer of plasterboard, to a total minimum thickness of 12,5 mm per side, to make a frame with a side 150 mm greater than the nominal diameter of the damper.

Fire resistance classification	"D" hole size [mm]	Damper protrusion from the wall "E" [mm]	Wall minimum thickness "S" [mm]	Sealing	
<b>EI 90 S Installation within vertical light wall (plasterboard)</b>					
Wall rock wool minimum density 100 kg/m <sup>3</sup>	EI 90 S (500 Pa)	From (Ø + 35) x (Ø + 35) to (B+50) x (H+50) (square hole)	215 + Lp	100	Rock wool 100 kg/m <sup>3</sup> with infill plasterboard (thickness 12,5 mm)

1. Rock wool, 100 kg/m<sup>3</sup>
  2. Plasterboard arch infill, thickness 12,5 mm
  3. Plasterboard thickness 12,5 mm
  4. Rock wool, 100 kg/m<sup>3</sup>, or mortar M-10, EN998-2 or plaster putty
  5. Self-drilling screw Ø 3,5 X 45 mm
  6. Metal frame
- D Hole size: see table above  
 E Damper protrusion from the wall: see table above  
 Lp Overlap length between fire damper and duct: see section Dimension



#### ■ Installations within vertical light wall (gypsum blocks wall)

Refer to the section Construction supports characteristics for further information.

Comply with the minimum distances indicated on section Minimum distances .

**Wall opening**

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

**Damper positioning**

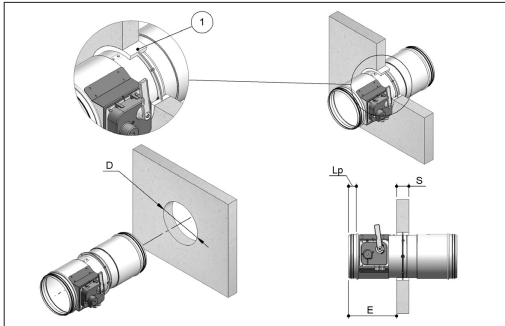
Position the damper in the opening so that the side of the closing mechanism extends as indicated in the table and in the drawing.

**Filling**

Fill the space between the wall and the damper using plaster putty.

	Fire resistance classification	"D" hole size [mm]	Damper protrusion from the wall "E" [mm]	Wall minimum thickness "S" [mm]	Sealing
<b>EI 90 S Installation within vertical light wall (gypsum blocks wall)</b>					
Wall minimum density 995 kg/m <sup>3</sup>	EI 90 S (500 Pa)	From Ø + 25 to Ø+35 (square hole)	230 + Lp	70	Plaster putty sealing
<b>EI 120 S Installation within vertical light wall (gypsum blocks wall)</b>					
Wall minimum density 995 kg/m <sup>3</sup>	EI 120 S (500 Pa)	From Ø + 25 to Ø+35 (circular hole)	215 + Lp	100	Plaster putty sealing

- 1. Plaster putty
- D Hole size: see table above
- S Wall minimum thickness: see table above
- E Damper protrusion from the wall: see table above
- Lp Overlap length between fire damper and duct: see section Dimension



**Installations within floor**

Refer to the section for further information.

Comply with the minimum distances indicated on section Minimum distances .

**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.

**Filling**

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

	Fire resistance classification	"D" hole size [mm]	Damper protrusion from the floor "E" [mm]	Floor minimum thickness "S" [mm]	Sealing
<b>EI 90 S Installation within floor</b>					
Floor minimum density 650 kg/m <sup>3</sup>	EI 90 S (500 Pa)	From Ø + 40 to Ø + 55 (circular hole)	215 + Lp	100	Mortar sealing
<b>EI 120 S Installation within floor</b>					
Floor minimum density 650 kg/m <sup>3</sup>	EI 120 S (500 Pa)	From Ø + 40 to Ø + 55 (circular hole)	190 + Lp	150	Mortar sealing
<b>EI 180 S Installation within floor</b>					
Floor minimum density 2200 kg/m <sup>3</sup>	EI 180 S (500 Pa)	From Ø + 40 to Ø + 55 (circular hole)	190 + Lp	150	Mortar sealing

- 1. Mortar M-10, EN998-2
- D Hole size: see table above
- S Floor minimum thickness: see table above
- E Damper protrusion from the floor: see table above
- Lp Overlap length between fire damper and duct: see section Dimension

