Fire Damper
Installation Guide for Halton Exe Sturdy Circular (ESC)

CE

Fire resistance class **EI 120 (v_e h_o i↔o) S**
CE certificate of Constancy of Performance No: 1391-CPR-2018/0202
Declaration of Performance No: 10033-ESC-2019/01/01
Tested according to fire test standard 1366-2

Contents

1 Introduction

1.1 About this document

This guide provides guidelines for installing the fire damper.

1.2 Document copyright and disclaimer

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2 Dimensions

2.1 Damper dimensions (mm)

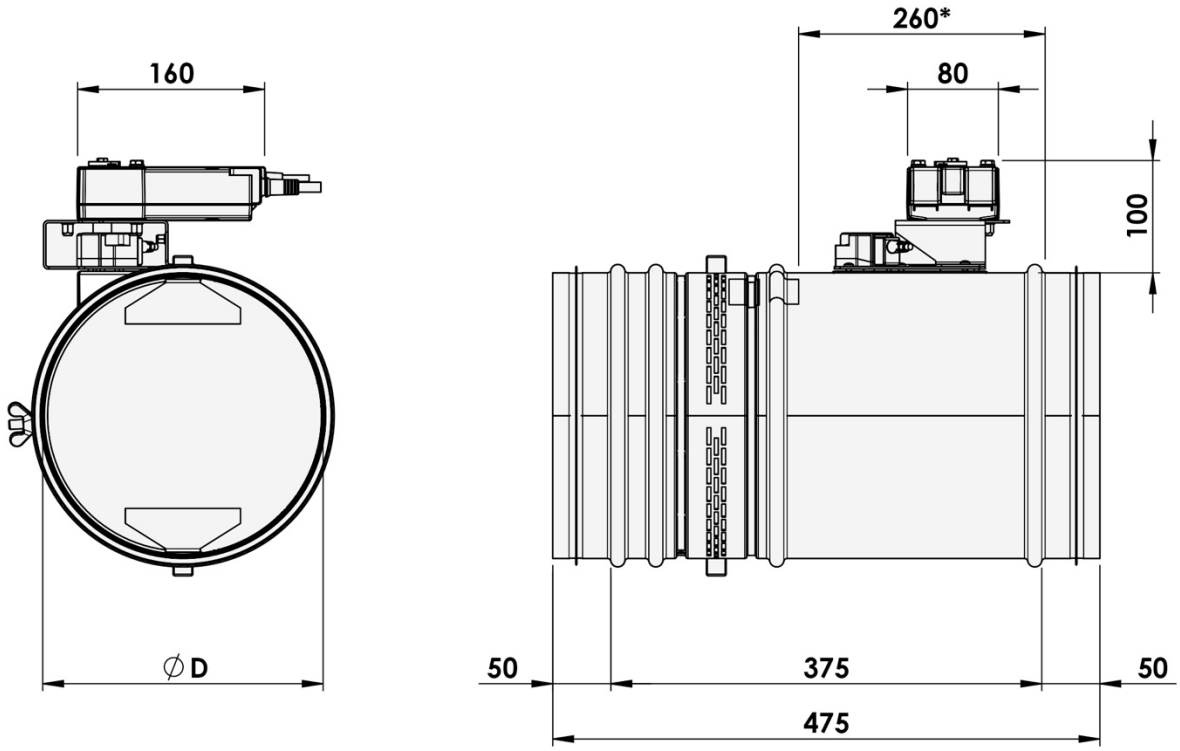


Fig.1.

* Space reservation for fire damper

NS	Ø D
160	159
200	199
250	249
315	314
355	354
400	399
500	499
630	629

2.2 Size of installation opening

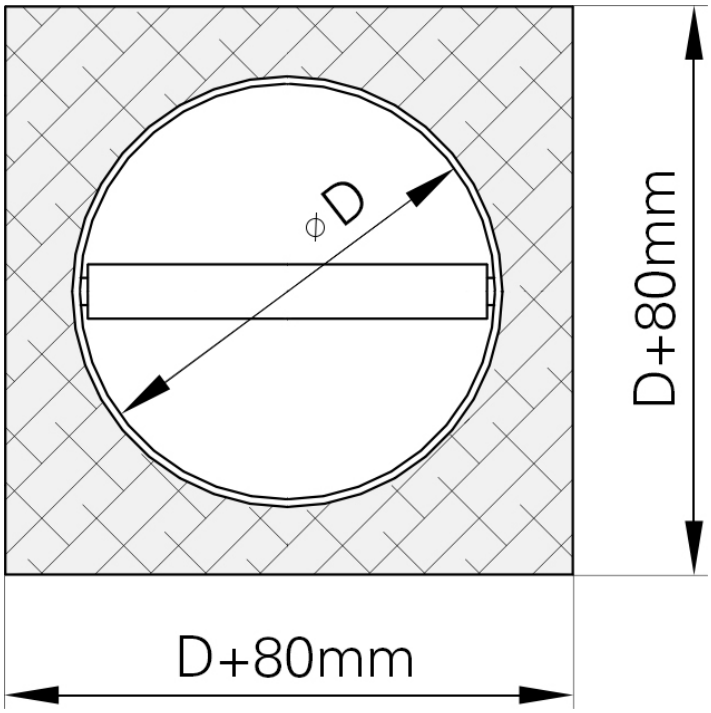


Fig. 2. Installation opening, rectangular

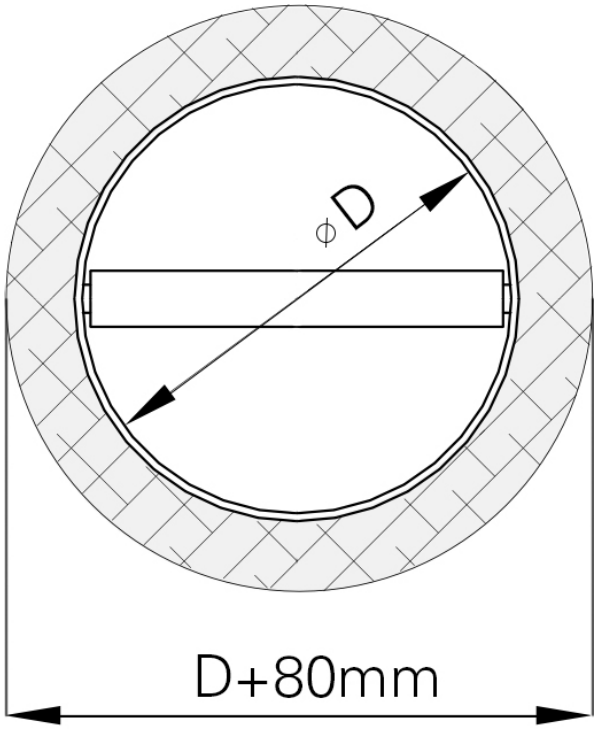


Fig. 3. Installation opening, circular

2.3 Minimum distances

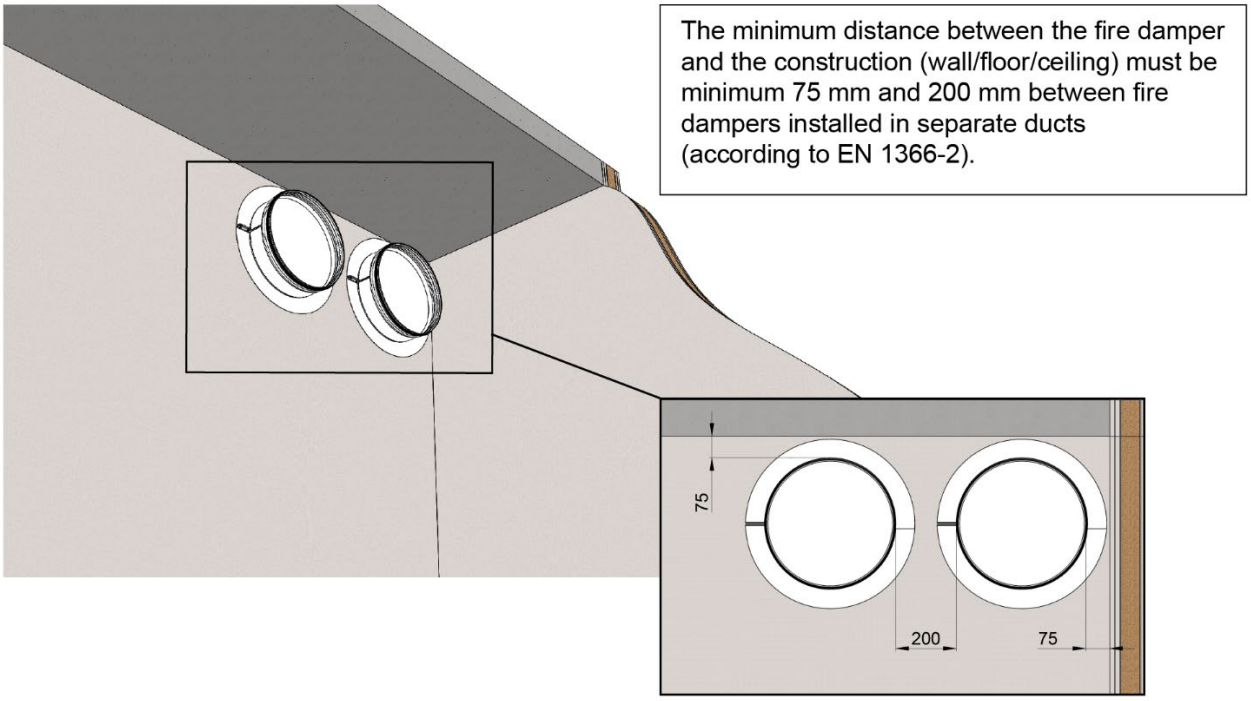


Fig. 4. The distance between the fire damper and construction

3 Installation

3.1 Before you start

1. Halton manufactures and supplies only the fire damper element of any installation method. All other components or materials mentioned in this guide must be supplied and fitted by the appropriate contractor as accepted best practice, regulation or guidelines for the country in which they are being installed.
2. Perform visual inspection of the condition of the damper before installation.
3. Operation of the damper does not depend on the direction of air circulation.
4. Spindle of the blade and the operating models (electric actuator or mechanical spring release) can be installed in any position (360°) in wall installation.
5. The blade must be in close position during installation.
6. The control mechanism must be protected against damage and pollution during installation process with e.g. plastic cover.
7. For installation of Halton fire dampers, hangers or supports should be fitted to ensure that there is no load on the fire damper itself and should be installed as accepted best practice, regulation or guidelines for the country in which they are being installed (e.g. for the UK this is DW144).
8. Functionality of the damper must be tested before and after installation and after filling the gap between damper and construction.
9. All damper installations where remote from construction (1m. maximum) is the preferred method of installation, all ducting should be certified according to EN 1366-1. Ducting and ancillary components such as fixings, hangers, drop rods etc. should be installed as per the ductwork suppliers specific installations instructions and the damper in accordance with Halton installation instructions.
10. Fill the gap between damper and construction with mortar or gypsum, e.g. HILTI, SIKLA, MÜPRO etc.

Note: The minimum recommended inspection period is every 6 months or according to the building code.

3.2 Mounting the fire damper

3.2.1 Solid wall construction (EI 120 S)

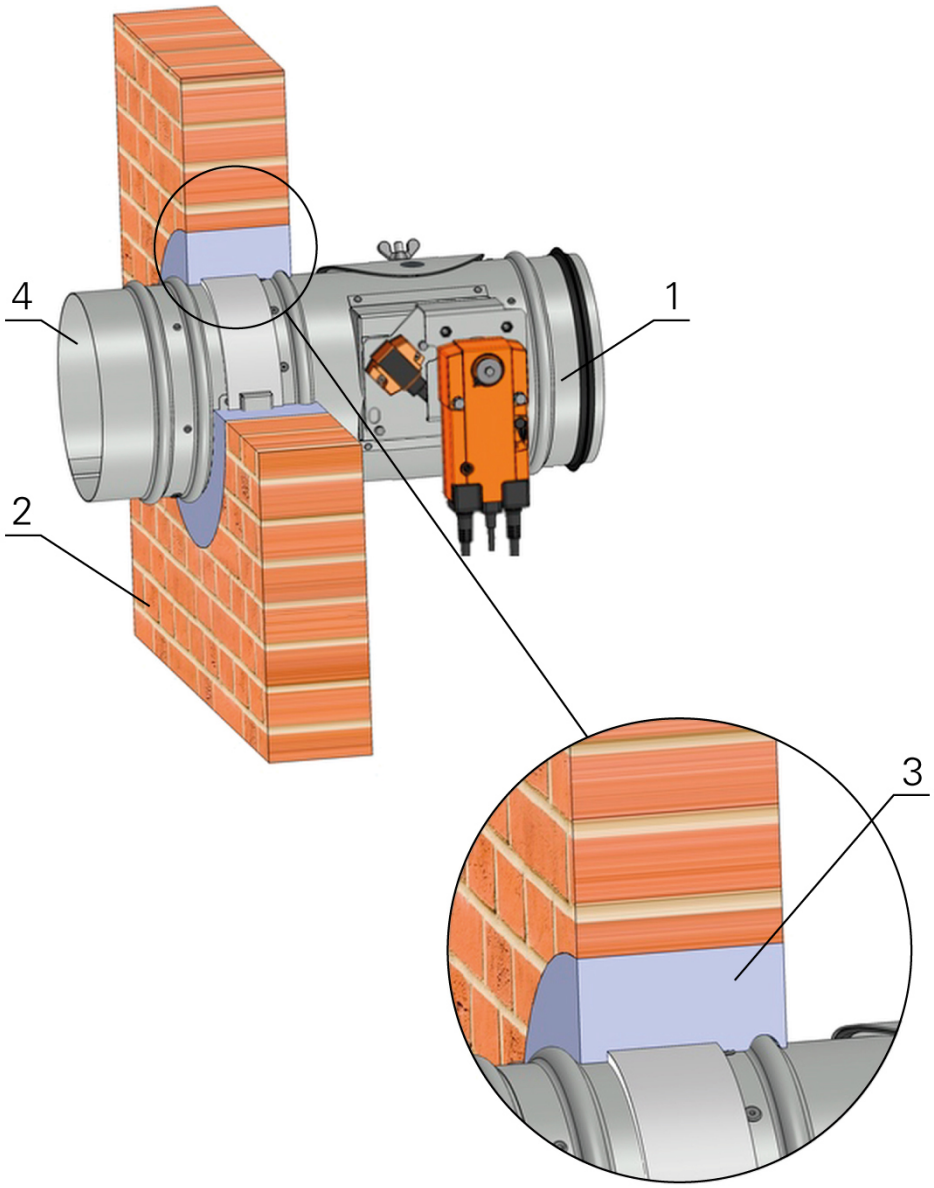


Fig. 5.

Key:

1. Halton fire damper
2. Solid wall construction
3. Mortar or gypsum
4. Duct

3.2.2 Lightweight wall construction (EI 120 S)

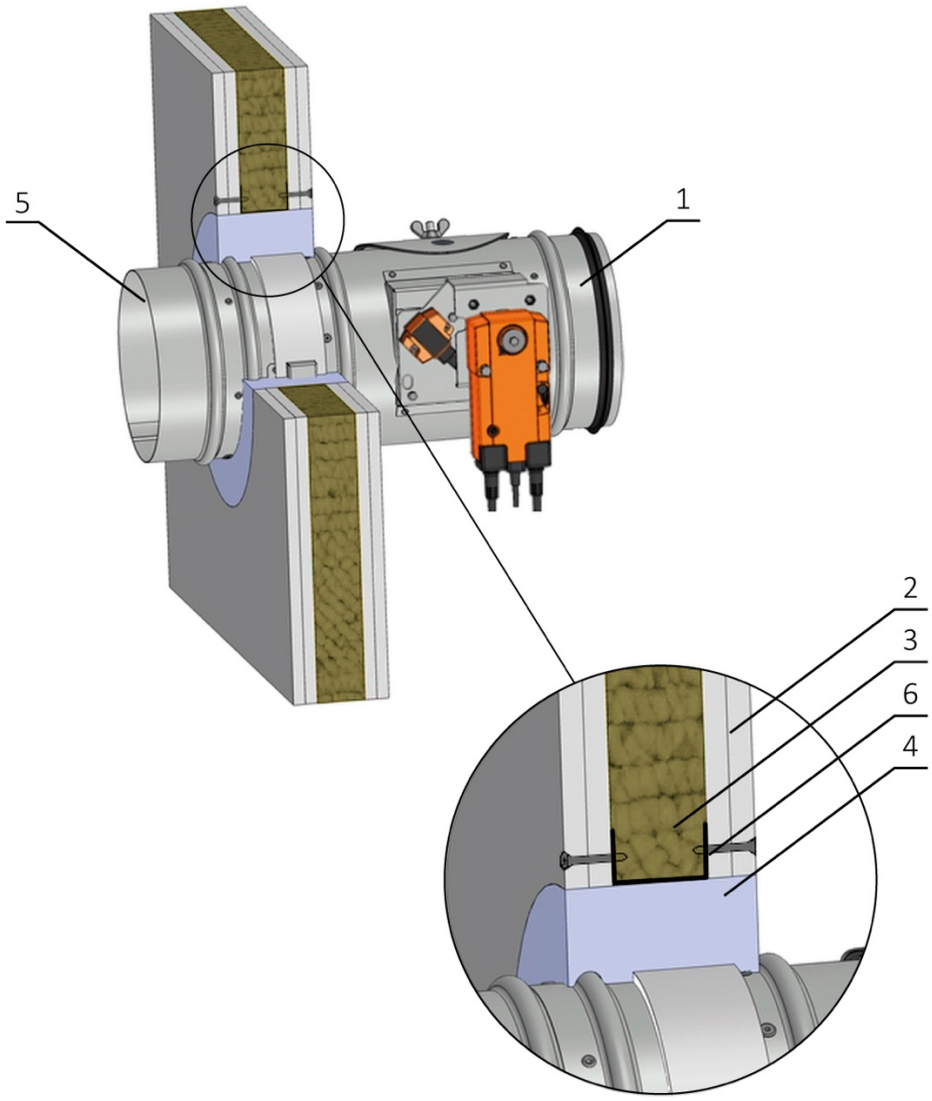


Fig. 6.

Key:

1. Halton fire damper
2. Gypsum plate
3. Fire resistant insulation
4. Mortar or gypsum
5. Duct
6. Cavity closer*)

*) Installation opening must be reinforced by steel profile (UW, CW). Profile is fixed by screws ≥ 3,5 mm with corresponding length. Distance between screws ≤ 200 mm.

3.2.3 Solid floor construction (EI 120 S)

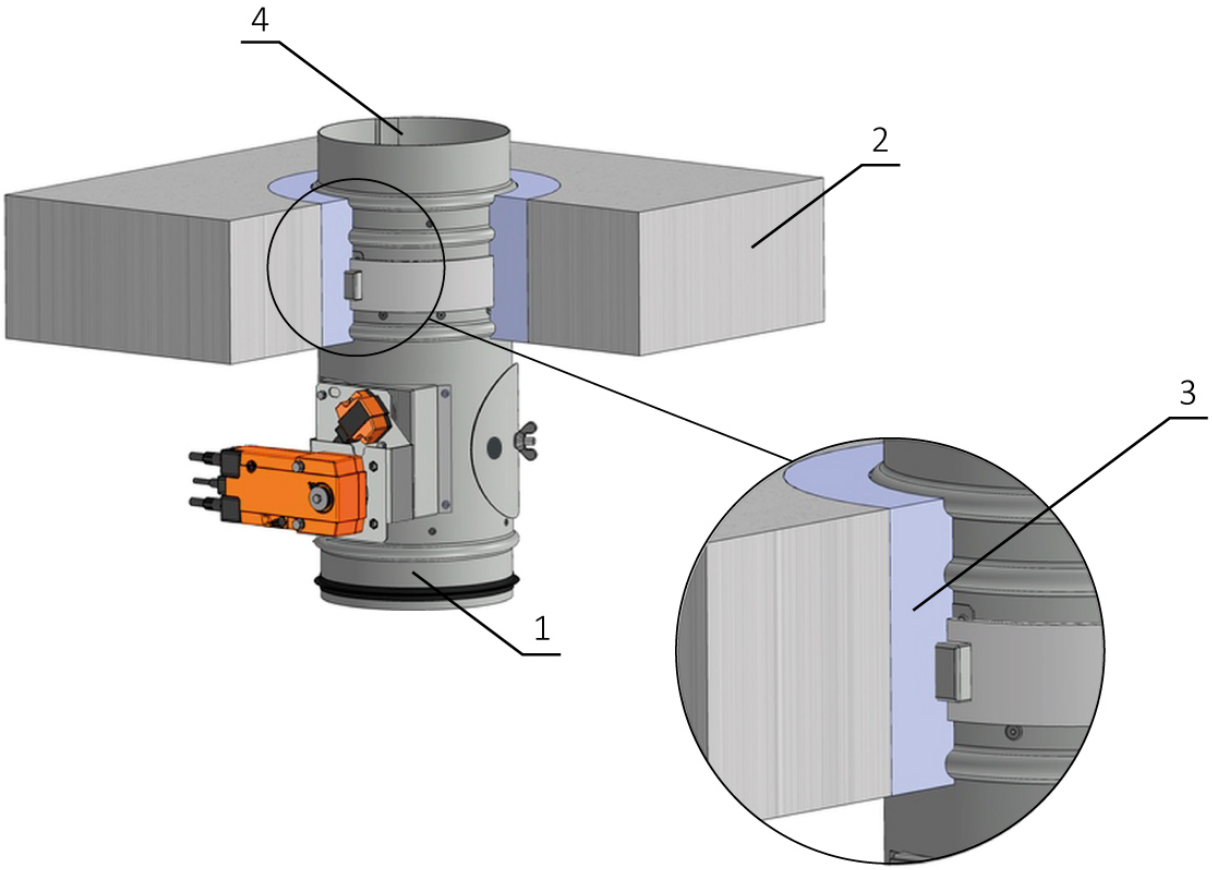


Fig. 7.

Key:

1. Halton fire damper
2. Solid floor construction
3. Mortar or gypsum
4. Duct

Note: Thickness of floor min. 110 mm – concrete / min. 125 mm – aerated concrete

3.2.4 Away from wall, solid construction (EI 90 S)

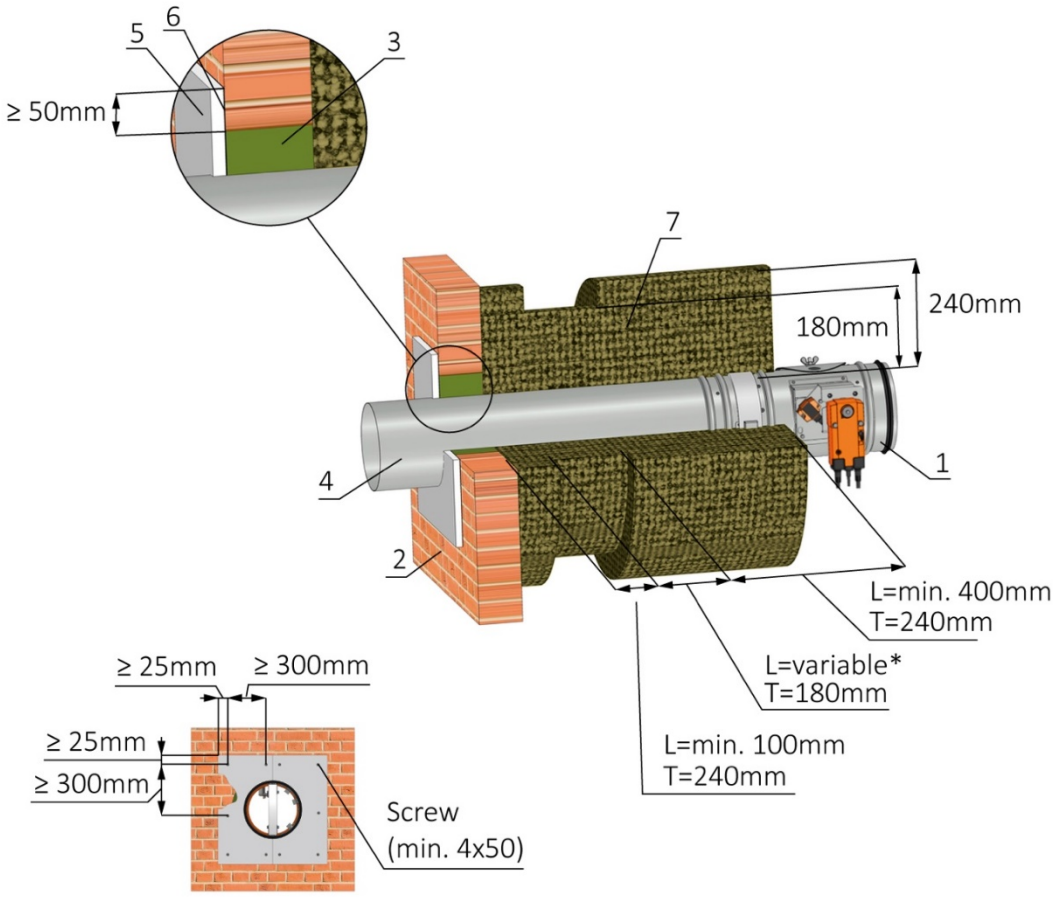


Fig. 8.

Key:

1. Halton fire damper
2. Solid wall construction
3. Rock wool (min. density 140 kg/m^3)
4. Duct
5. Cement lime plate min. thickness 15 mm (min. density 870 kg/m^3)
6. Fire protection mastic, min. thickness 1 mm
7. Rock wool with one side stitched on wire grids, bulk density 105 kg/m^3

*) Depends on the distance of the flap from the construction, when the maximum distance from the construct is not limited and according to EN 15882-2 must use the required number of hinges according to EN 13366-1:2014

T=Thickness of the insulation

Note: All damper installations where remote from construction (1m. maximum) is the preferred method of installation, all ducting should be certified according to EN 1366-1. Ducting and ancillary components such as fixings, hangers, drop rods etc. should be installed as per the ductwork suppliers specific installations instructions and the damper in accordance with Halton installation instructions.

3.2.5 Away from wall, lightweight construction (EI 90 S)

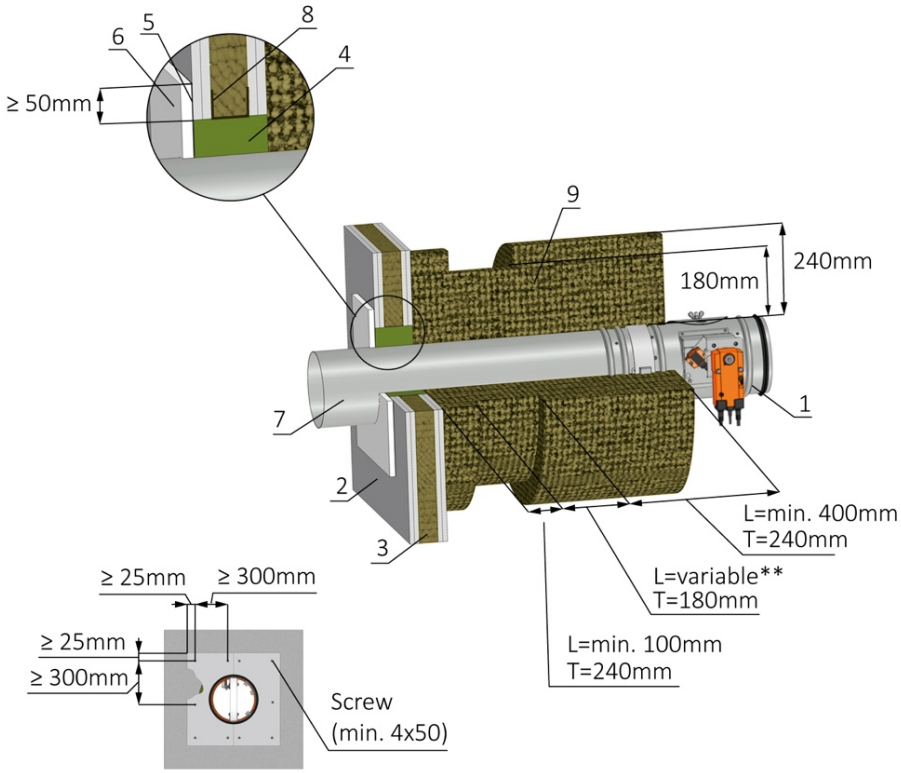


Fig. 9.

Key:

1. Halton fire damper
2. Lightweight wall construction
3. Fire resistant insulation
4. Rock wool (min. density 140 kg/m^3)
5. Fire protection mastic, min. thickness 1 mm
6. Cement lime plate, min. thickness 15 mm (min. density 870 kg/m^3)
7. Duct
8. Cavity closer *)
9. Rock wool with one side stitched on wire grids, bulk density 105 kg/m^3

*) Installation opening must be reinforced by steel profile (UW, CW). Profile is fixed by screws ≥ 3,5 mm with corresponding length. Distance between screws ≤ 200 mm.

**) Depends on the distance of the flap from the construction, when the maximum distance from the construct is not limited and according to EN 15882-2 must use the required number of hinges according to EN 13366-1:2014

T=Thickness of the insulation

Note: All damper installations where remote from construction (1m. maximum) is the preferred method of installation, all ducting should be certified according to EN 1366-1. Ducting and ancillary components such as fixings, hangers, drop rods etc. should be installed as per the ductwork suppliers specific installations instructions and the damper in accordance with Halton installation instructions.

3.2.6 Away from floor, solid construction (EI 90 S)

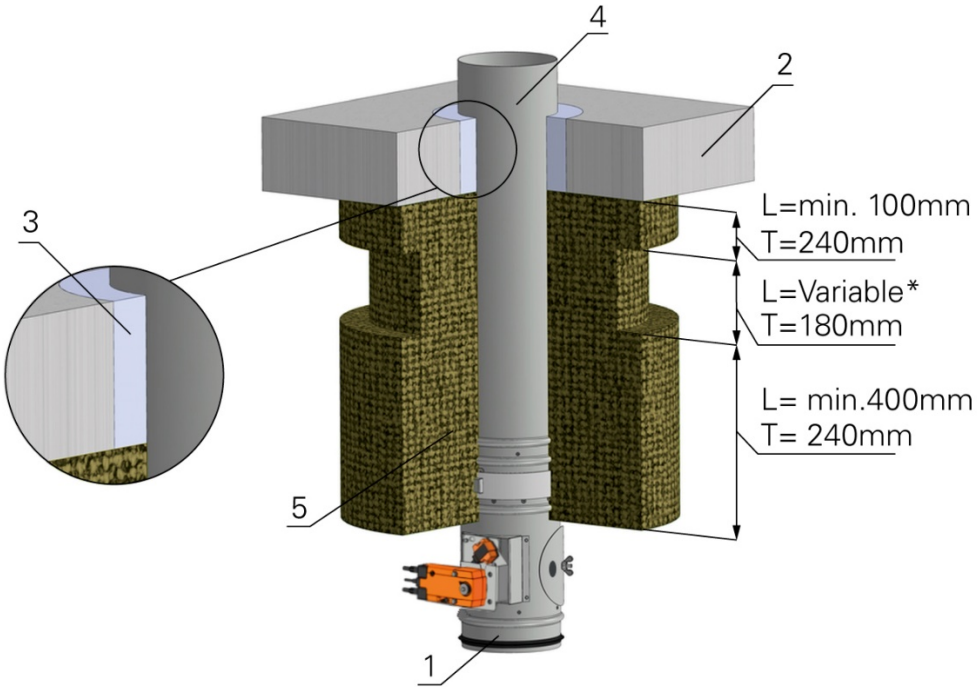


Fig. 10. Installation using rock wool

Key:

1. Halton fire damper
2. Solid floor construction
3. Mortar or gypsum
4. Duct
5. Rock wool with one side stitched wire fencing (min. density 105 kg/m^3)

Note: Thickness of floor min. 110 mm – concrete / min. 125 mm – aerated concrete

*) Depends on the distance of the flap from the construction, when the maximum distance from the construct is not limited and according to EN 15882-2 must use the required number of hinges according to EN 13366-1:2014

T=Thickness of the insulation

Note: All damper installations where remote from construction (1m. maximum) is the preferred method of installation, all ducting should be certified according to EN 1366-1. Ducting and ancillary components such as fixings, hangers, drop rods etc. should be installed as per the ductwork suppliers specific installations instructions and the damper in accordance with Halton installation instructions.

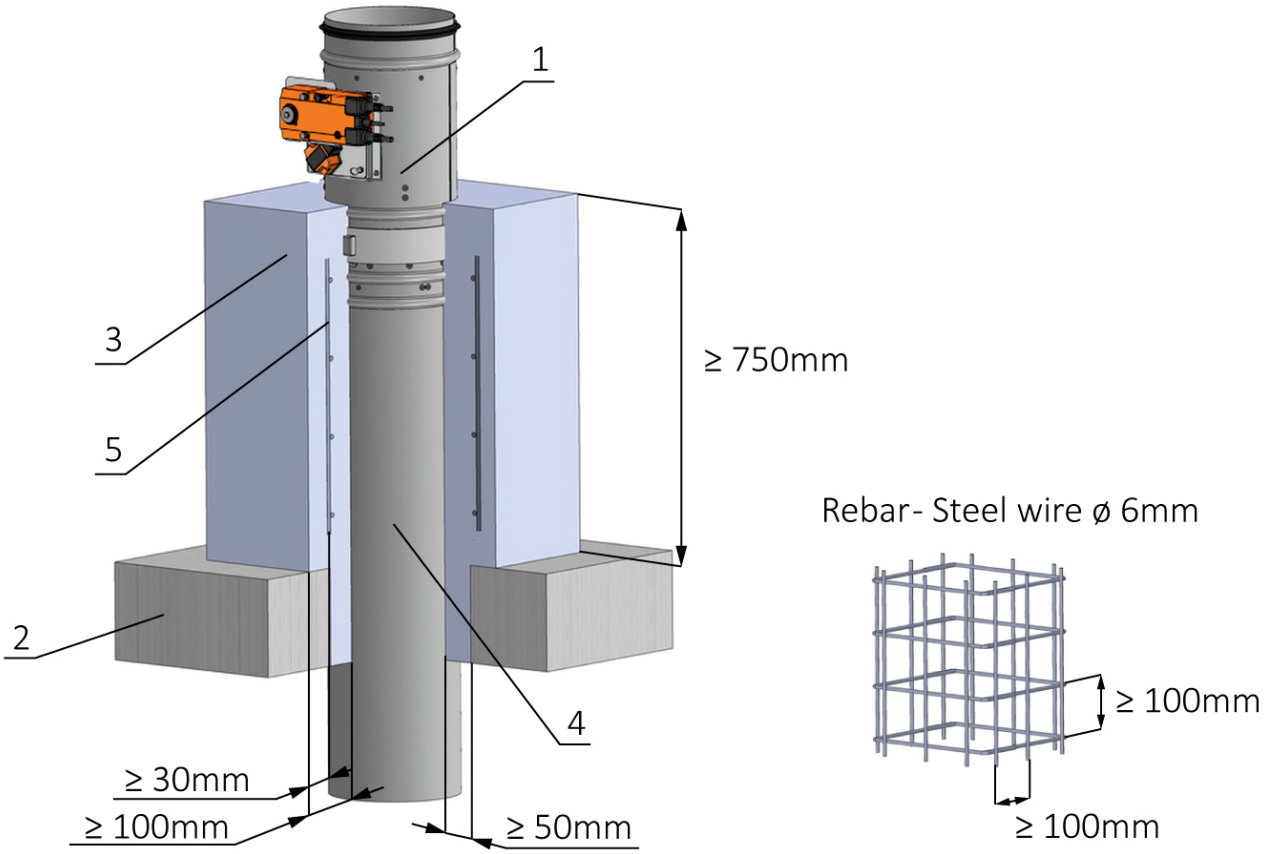


Fig. 11. Installation using concrete

Key:

1. Halton fire damper
2. Solid floor construction
3. Concrete
4. Duct
5. Rebar

Note: Thickness of floor min. 110 mm – concrete / min. 125 mm – aerated concrete

Note: All damper installations where remote from construction (1m. maximum) is the preferred method of installation, all ducting should be certified according to EN 1366-1. Ducting and ancillary components such as fixings, hangers, drop rods etc. should be installed as per the ductwork suppliers specific installations instructions and the damper in accordance with Halton installation instructions.

3.3 Fastening the fire damper

3.3.1 Horizontal ducts

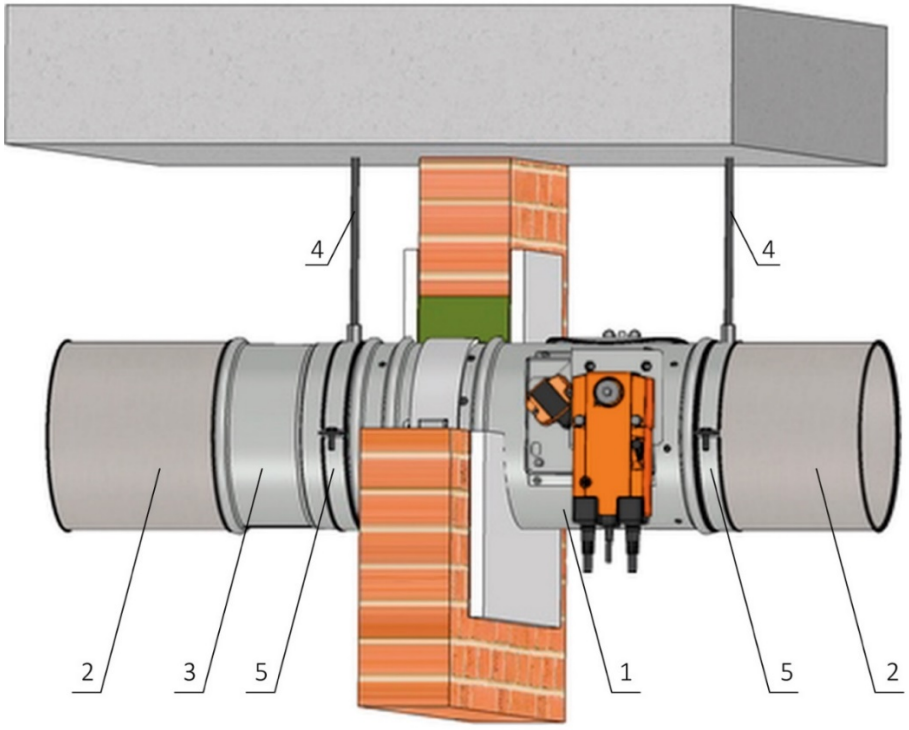


Fig. 12.

Key:

1. Halton fire damper
2. Duct
3. Duct extension
4. Threaded rod
5. Suspension ring

3.3.2 Vertical duct

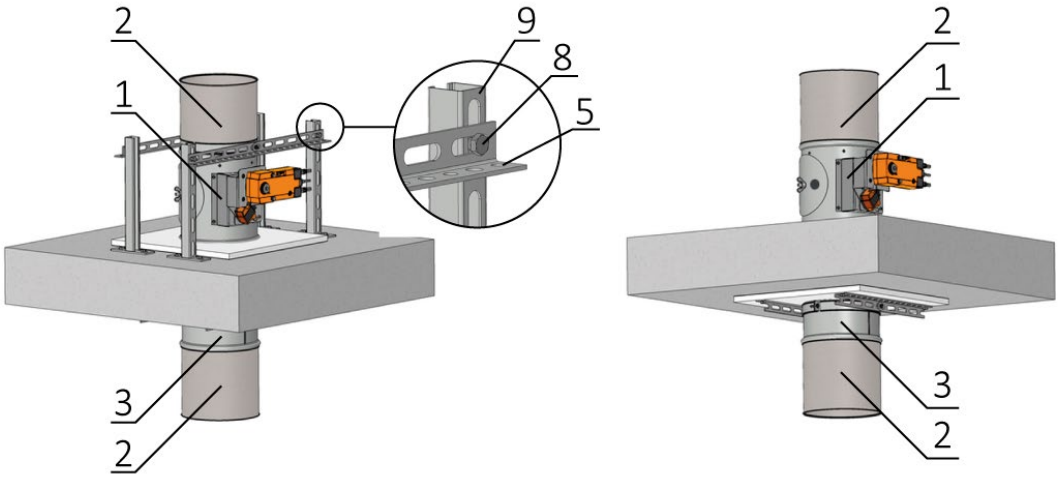


Fig. 13. Actuating mechanism above the floor construction

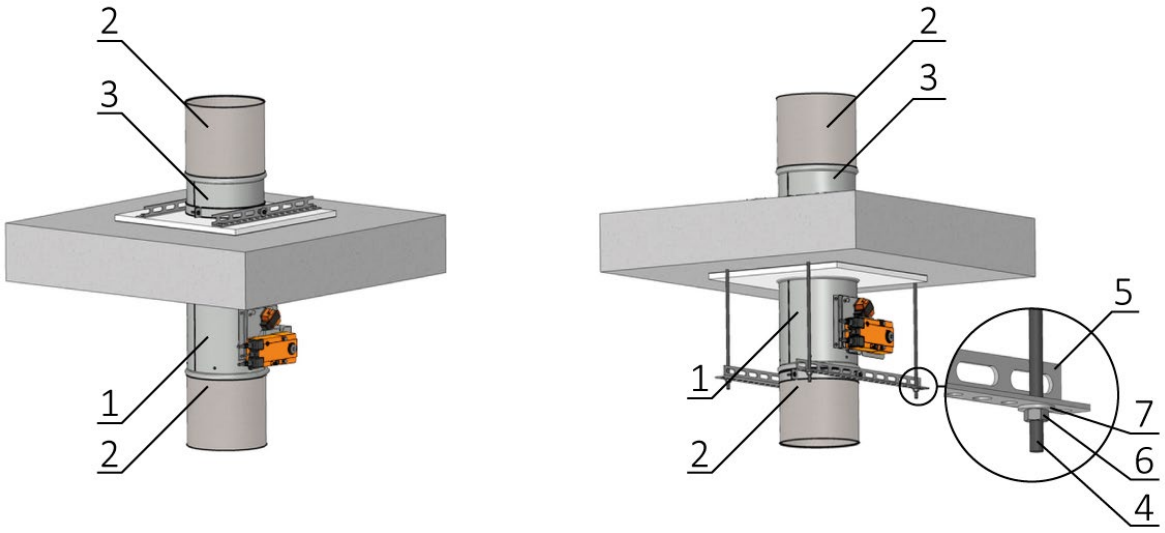


Fig. 14. Actuating mechanism below the floor construction

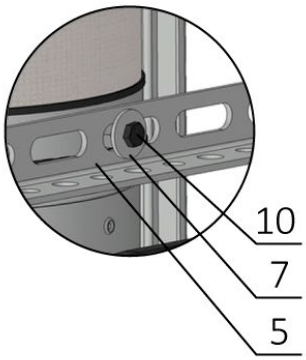


Fig 15. Suspension ring and mounting rail connected by bolt

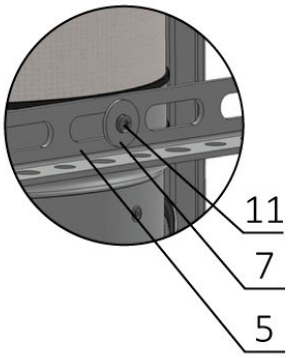


Fig 16. Suspension ring and mounting rail connected by screw or rivet

Key:

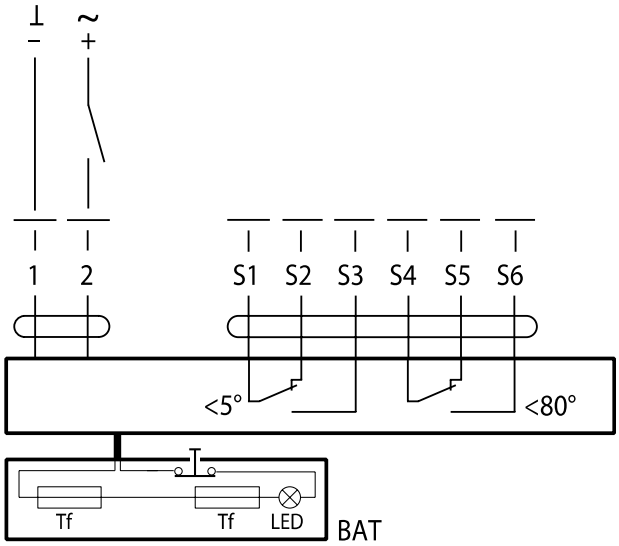
1. Halton fire damper
2. Duct
3. Duct extension
4. Threaded rod
5. Mounting rail
6. Nut
7. Washer
8. Screw connection
9. Mounting profile
10. Bolt
11. Screw or rivet

Note: Damper must be firmly connected with extension piece by screws or rivets.

4 Key technical data

4.1 Wiring

4.1.1 Belimo, AC/DC 24 V, open-close

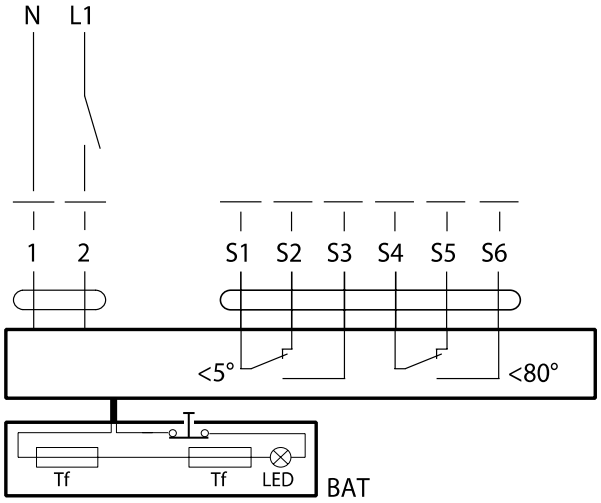


Cable colours

No	Colour
1	Black
2	Red
S1	Violet
S2	Red
S3	White
S4	Orange
S5	Pink
S6	Grey
Tf	Terminal fuse

Electrical installation	
	Notes • Connection via safety isolating transformer • Parallel connection of other actuators possible. Observe the performance data. • Combination of power supply voltage and safety extra-low voltage not permitted at the both auxiliary switches.

4.1.2 Belimo, AC 230 V, open-close



Cable colours

No	Colour
1	Blue
2	Brown
S1	Violet
S2	Red
S3	White
S4	Orange
S5	Pink
S6	Grey
Tf	Terminal fuse

Electrical installation	
 Notes	• Caution: Power supply voltage! • The actuator must be protected by a fuse that does not exceed 16 A. • Parallel connection of other actuators possible. Observe the performance data. • Combination of power supply voltage and safety extra-low voltage not permitted at the both auxiliary switches.

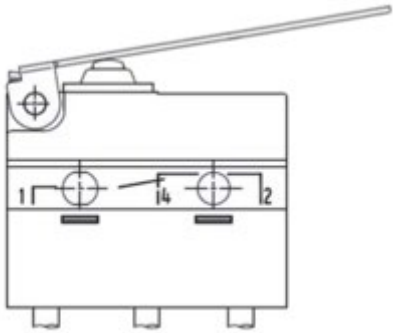
4.2 Actuators

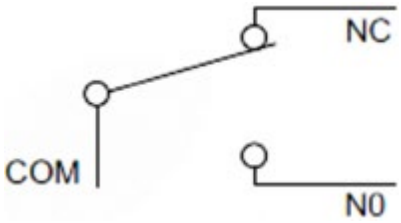
Actuating mechanism, Belimo	**BFL, BFN 230-T**	**BFL, BFN 24-T**
Nominal voltage	AC 230 V 50/60 Hz	AC/DC 24 V 50/60 Hz
Power consumption - in operation - at rest	3.5/5 W 1.1/2,1 W	25./4 W 0.8/1,4 W
Power consumption for wire sizing note	6.5/10 VA (Imax 4 A @ 5 ms)	4/6 VA (Imax 8,3 A @ 5 ms)
Protection class	II	III
Degree of protection IEC/EN	IP 54	
Running time - in operation - spring return	< 60 s / 90 ° 20 s @ -10 … 50 °C @ < 60 s -30…-10 °C	
Ambient temperature - normal duty - safety duty - non-operating temperature	- 30 °C...55 °C The safe position will be attained up to max. 75 °C - 40 °C...55 °C	
Connecting - in operation - auxiliary switch	Cable 1 m, 2 x 0,75 mm^2 (halogen-free) Cable 1 m, 6 x 0,75 mm^2 (halogen-free)	
Response temperature thermal fuse	Duct outside temperature 72 ºC Duct inside temperature 72 ºC	

Actuating mechanism, Belimo	**BF 230-T**	**BF 24-T**
Nominal voltage	AC 230 V 50/60 Hz	AC/DC 24 V 50/60 Hz
Power consumption - in operation - at rest	8.5 W 3 W	7 W 2 W
Power consumption for wire sizing note	11 VA (Imax 0,5 A @ 5 ms)	10 VA (Imax 8,3 A @ 5 ms)
Protection class	II	III
Degree of protection IEC/EN	IP 54	
Running time - in operation - spring return	< 120 s / 90 ° ~ 16 s (tamb = 20 °C)	
Ambient temperature - normal duty - safety duty - non-operating temperature	- 30 °C...50 °C The safety position will be attained up to max. 75 °C - 40 °C...55 °C	
Connecting - in operation - auxiliary switch	Cable 1 m, 2 x 0,75 mm^2 (halogen-free) Cable 1 m, 6 x 0,75 mm^2 (halogen-free)	
Response temperature thermal fuse	Tf1: Duct outside temperature 72 °C Tf2 and Tf3: Duct inside temperature 72 °C	

4.3 Mechanical spring release

4.3.1 Limit switch





1. (COM) – black wire
2. (NC) – grey wire
4. (NO) – blue wire

Limit switch		This limit switch is possible to connect in following two versions: **a)** **CUT-OFF** if the arm is moving **…** connect wire 1+2 **b)** **SWITCH-OFF** if the arm is moving **…** connect wire 1+4
Normal voltage, current	AC 230V / 5A	
Degree pf protection	IP 67	
Ambient temperature	-25°C … +120°C	