

Fire Damper Installation Guide for Halton Exe Tough Circular (ETC)



Fire resistance class **EI 120 (v_e h_o i↔o) S**
CE certificate of Constancy of Performance No: 1391-CPR-2018/0201
Declaration of Performance No: 10031-ETC-2019/01/01
Tested according to fire test standard 1366-2

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1 Introduction

1.1 About this document

This guide provides guidelines for installing fire damper.

1.2 Document copyright and disclaimer

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2 Dimensions

2.1 Damper dimensions (mm)

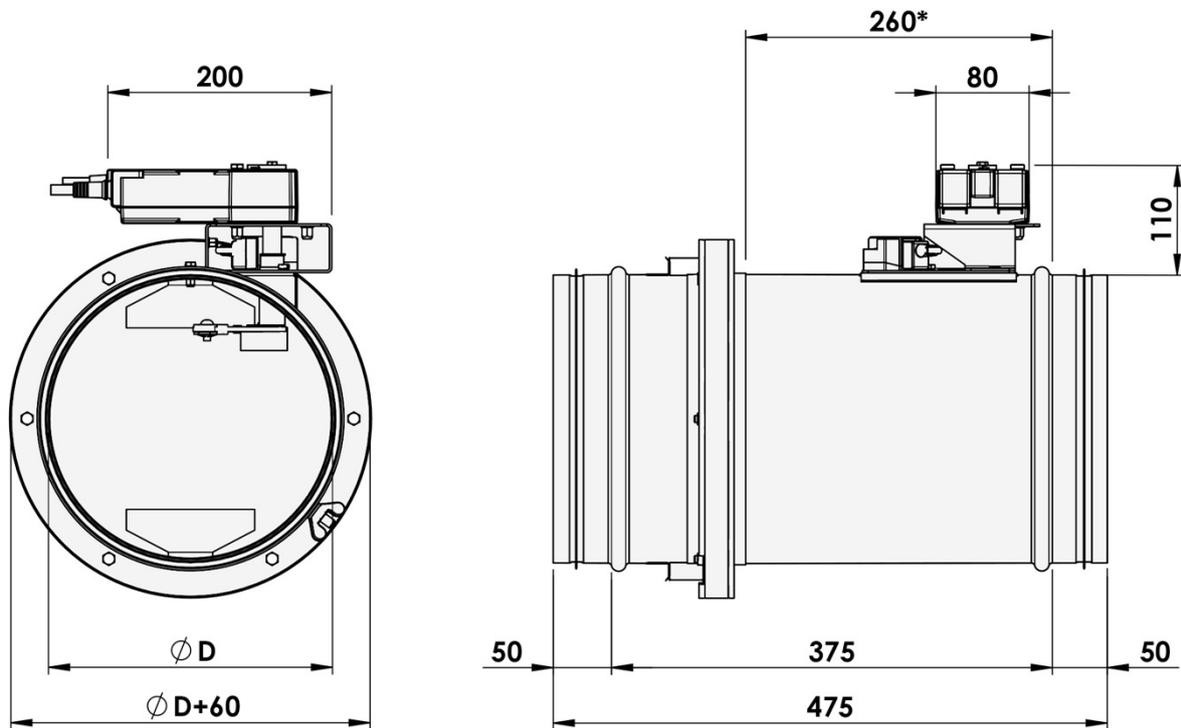


Fig. 1.

* Space reservation for fire damper

NS	$\varnothing D$
800	799
900	899
1000	999

2.2 Size of installation opening

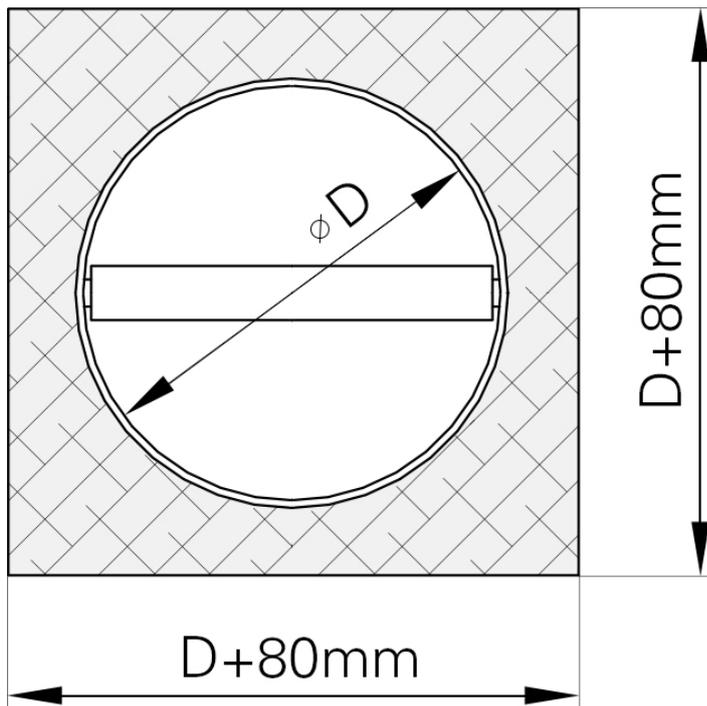


Fig. 2. Installation opening, rectangular

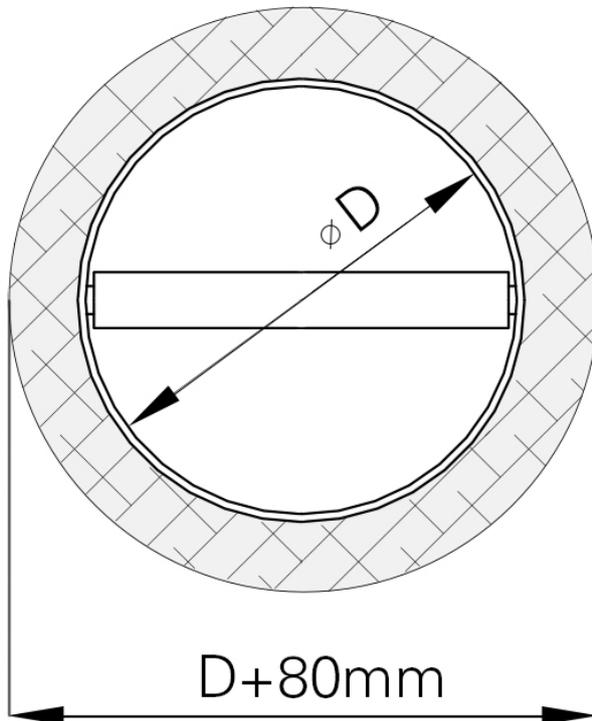


Fig. 3. Installation opening, circular

2.3 Minimum distances

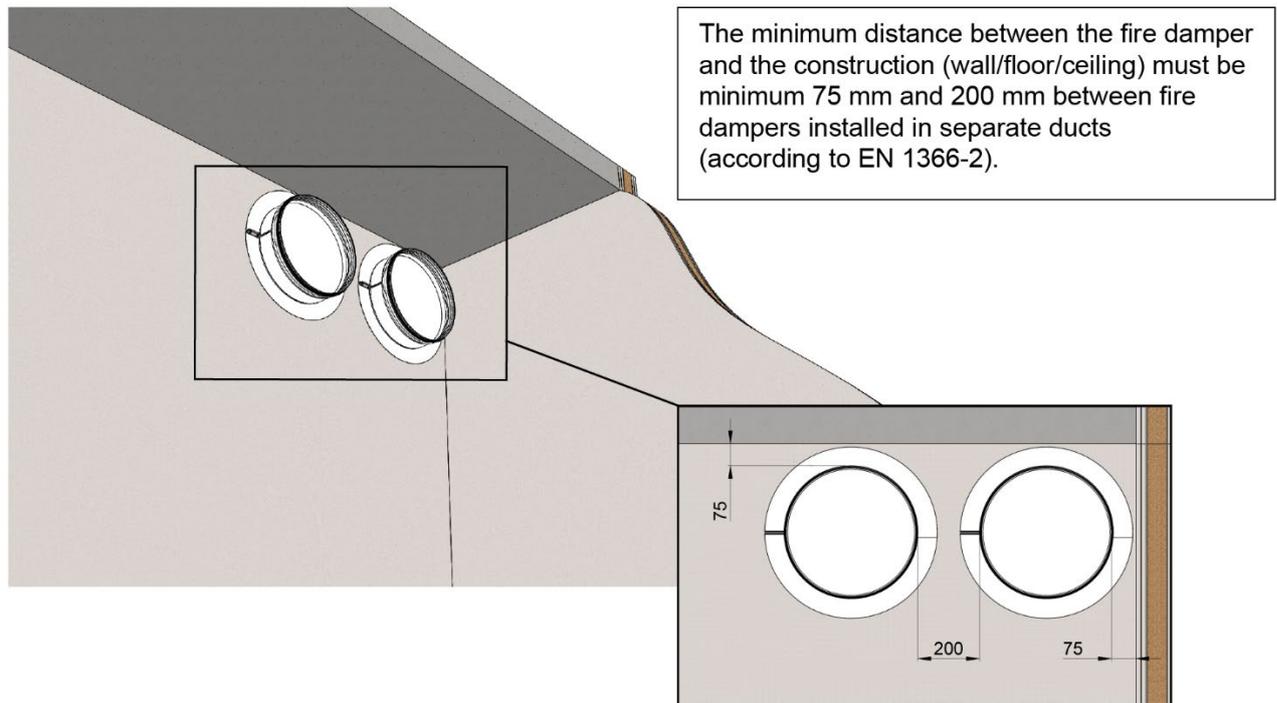


Fig. 4. The distance between the fire damper and construction

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)

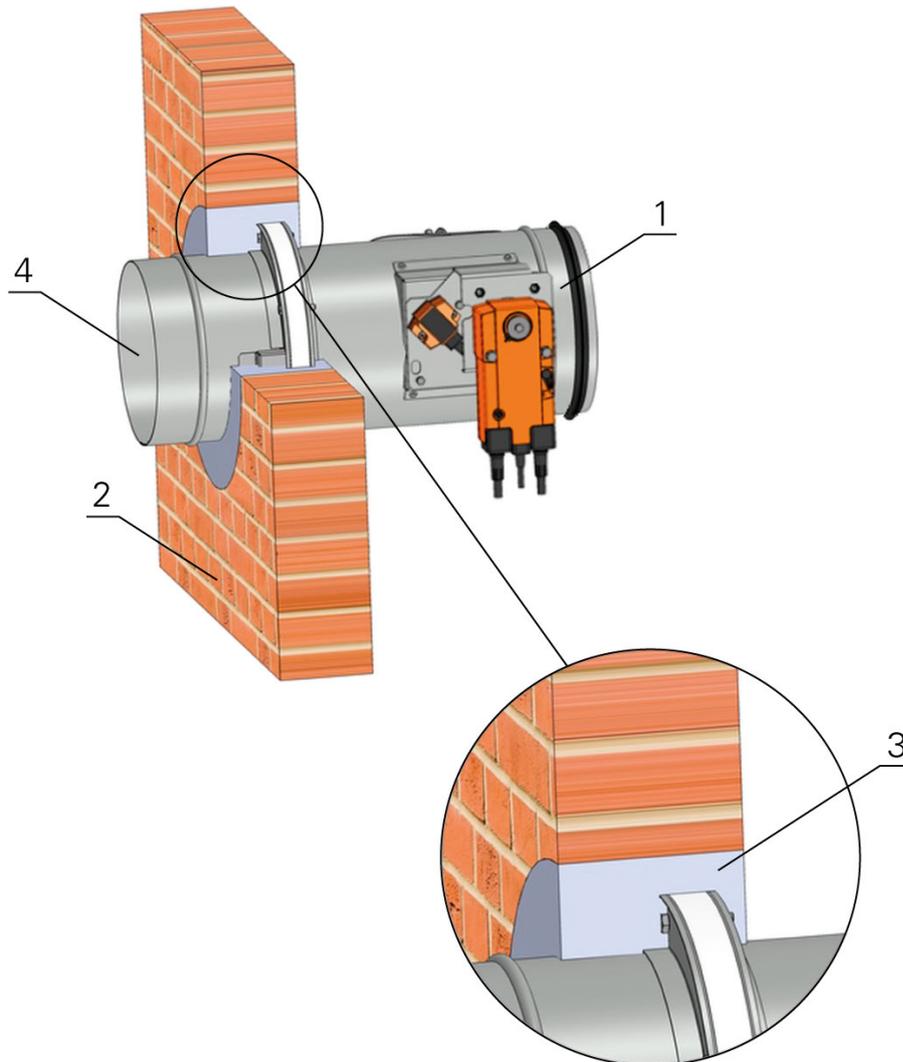


Fig. 5.

Key:

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

3.2.2 Lightweight wall construction (EI 120 S)

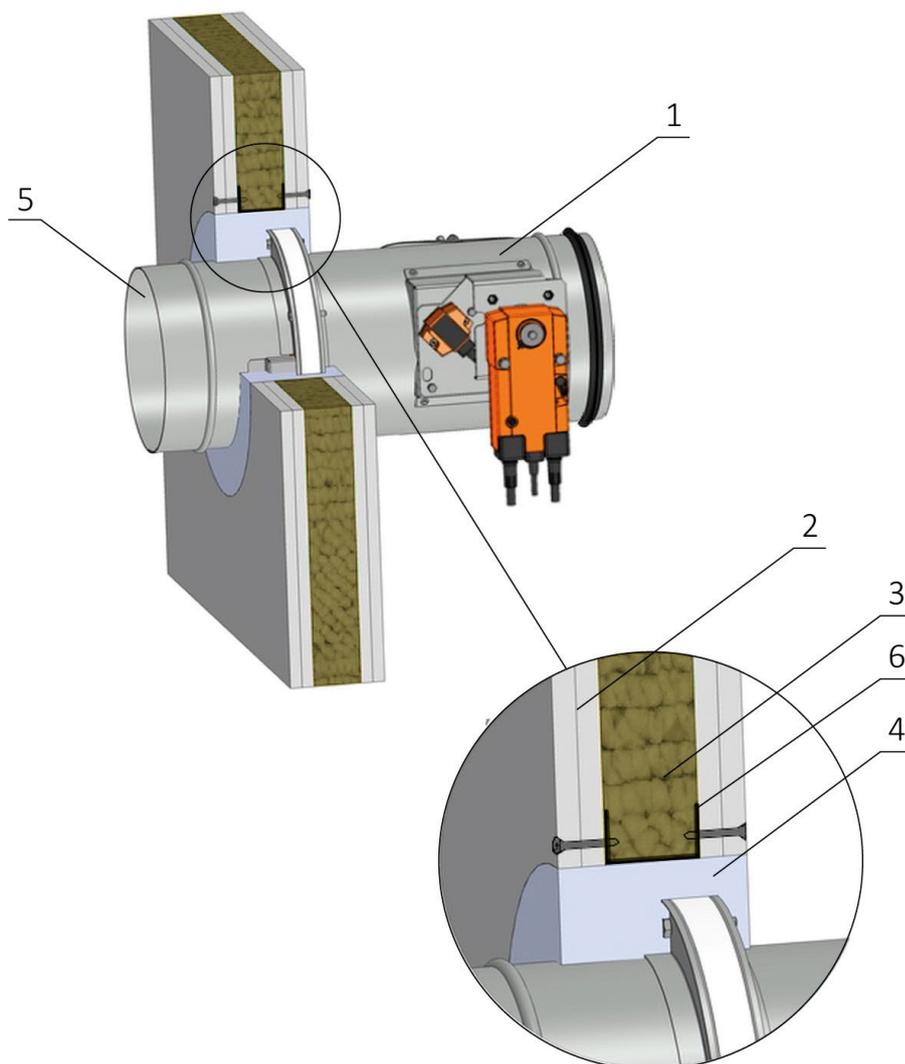


Fig. 6.

Key:

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

*) Installation opening has to be reinforced by profile (UW, CW). Profile is fixed by screws $\geq 3,5$ mm with corresponding length. Distance between screws ≥ 200 mm.

3.2.3 Solid floor construction (EI 120 S)

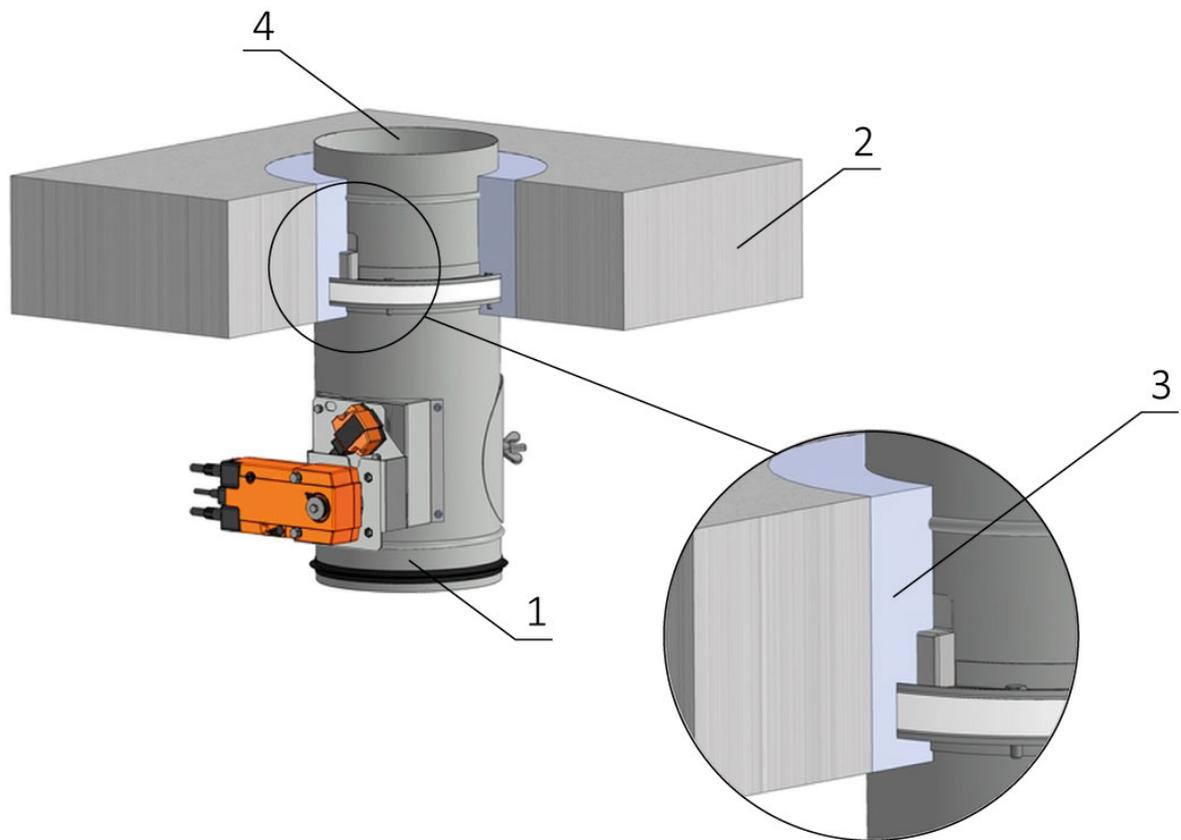


Fig. 7.

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)

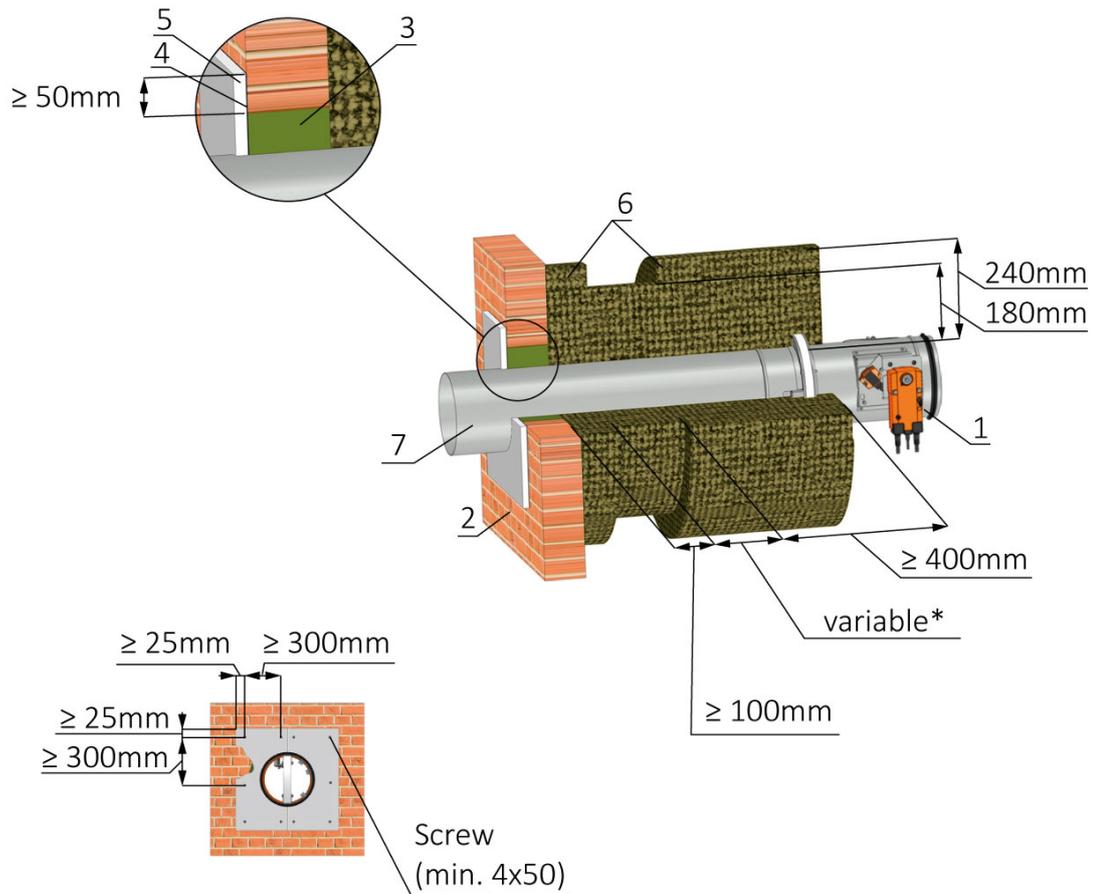


Fig. 8.

Key:

1. Halton fire damper
2. Solid wall construction
3. Rock wool (min. density 140 kg/m³)
4. Fire protection mastic, min. thickness 1 mm
5. Cement lime plate, min. thickness 15 mm (min. density 870 kg/m³)
6. Rock wool with use of an organic resin with crushed stone as a refrigerant, (min. density 105 kg/m³), EIS 90, thickness 60 mm (e.g. Rockwool Conlit Ductrock)
7. Duct

*) 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

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 (E 90 S)

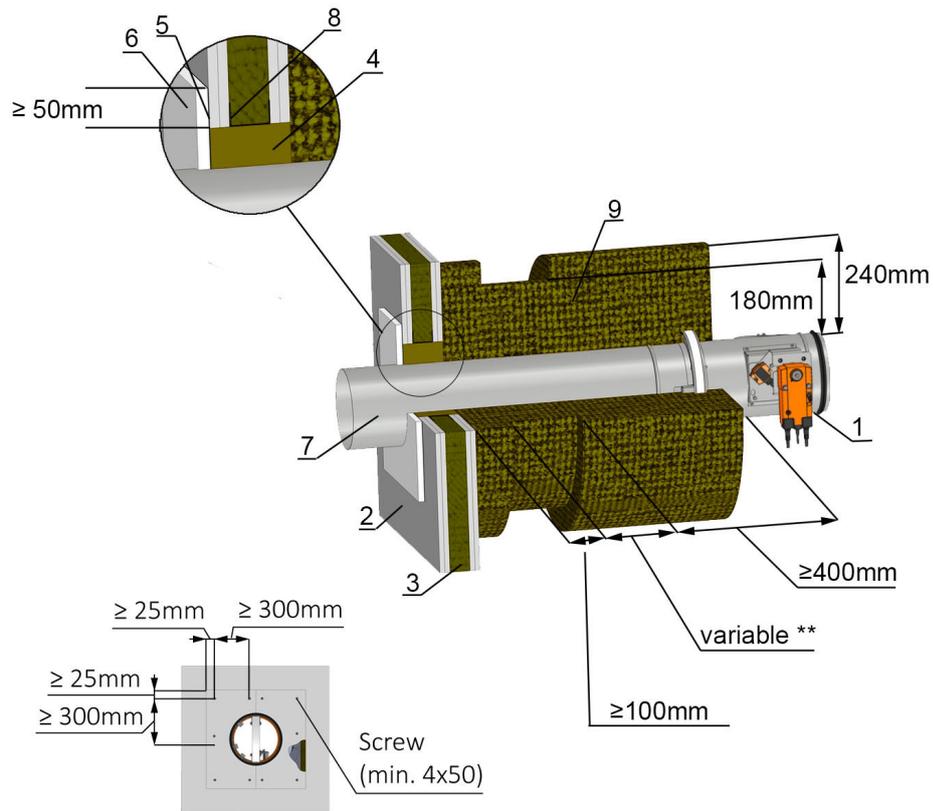


Fig. 9.

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 $\geq 3,5 \text{ mm}$ with corresponding length. Distance between screws $\leq 200 \text{ mm}$

***) 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.

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 (E 90 S)

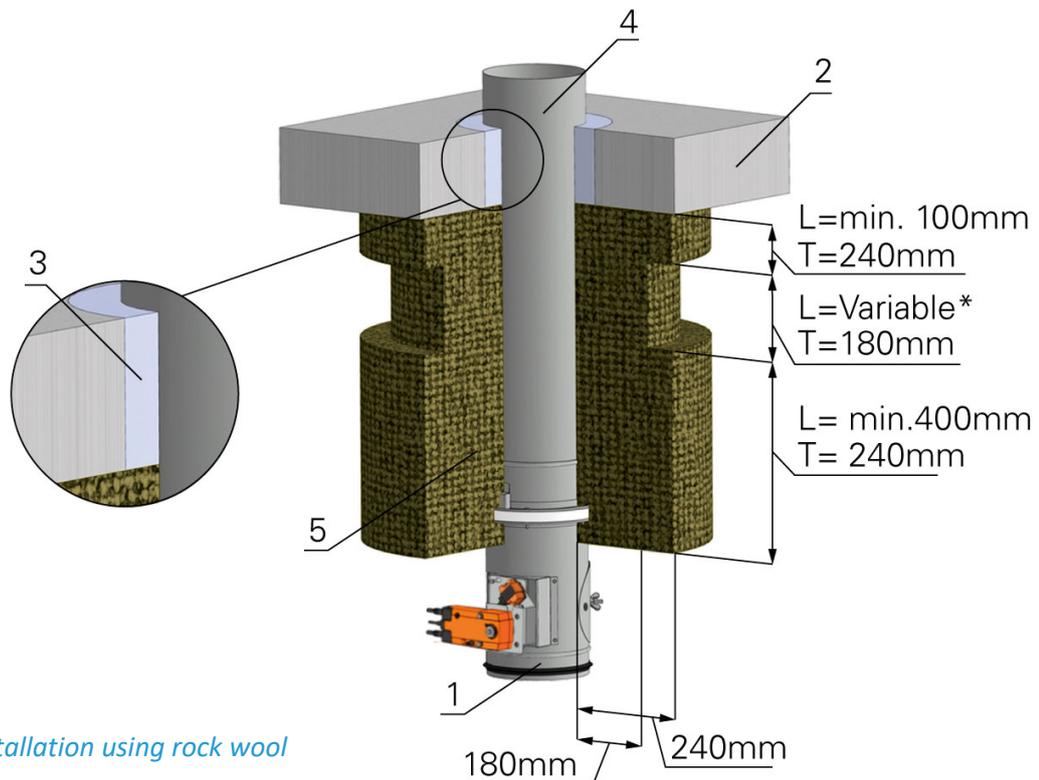


Fig. 10. Installation using rock wool

Key:

1. Halton fire damper
2. Solid floor construction
3. Mortar or gypsum
4. Duct
5. Rock wool with use of an organic resin with crushed stone as a refrigerant, (min. density 105 kg/m^3), EIS 90, thickness 60 mm (e.g. Rockwool Conlitt Ductrock)

Note: Thickness of the 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.

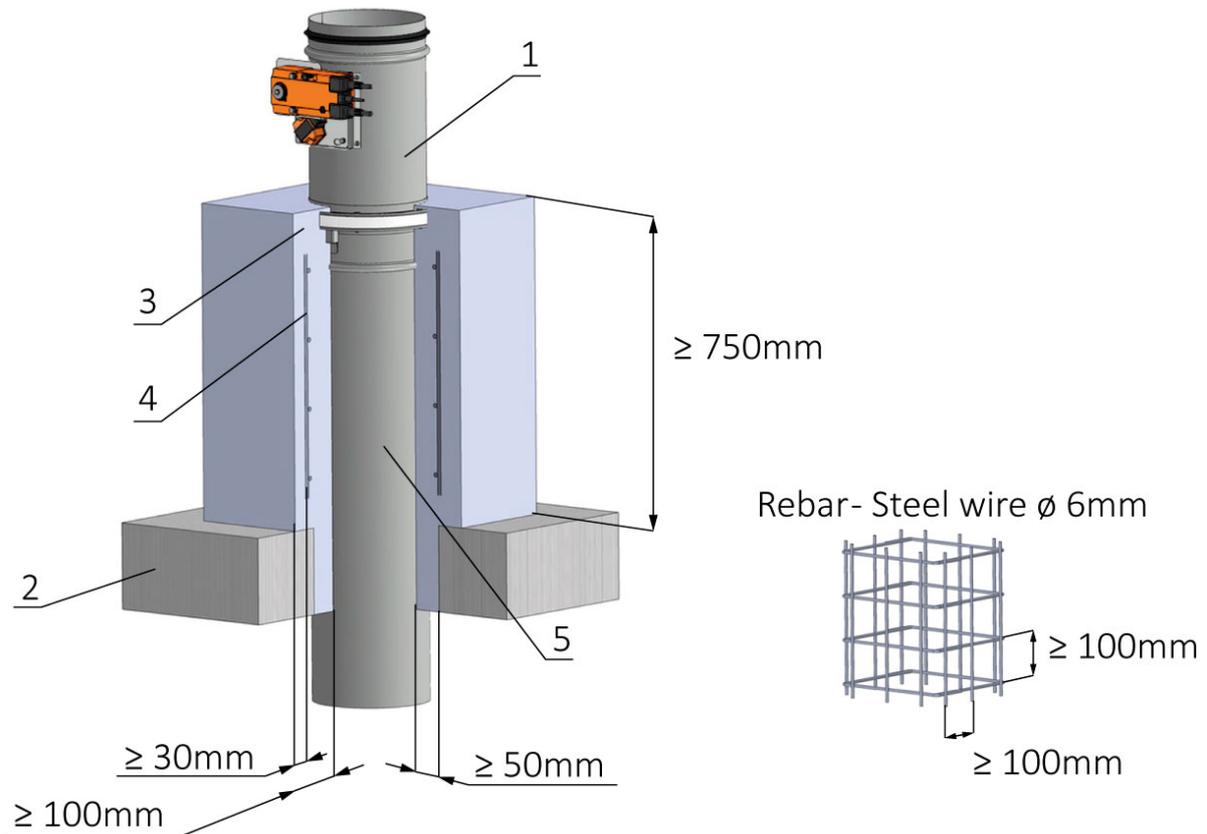


Fig. 11. Installation using concrete

Key:

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

Note: Thickness of the 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 duct

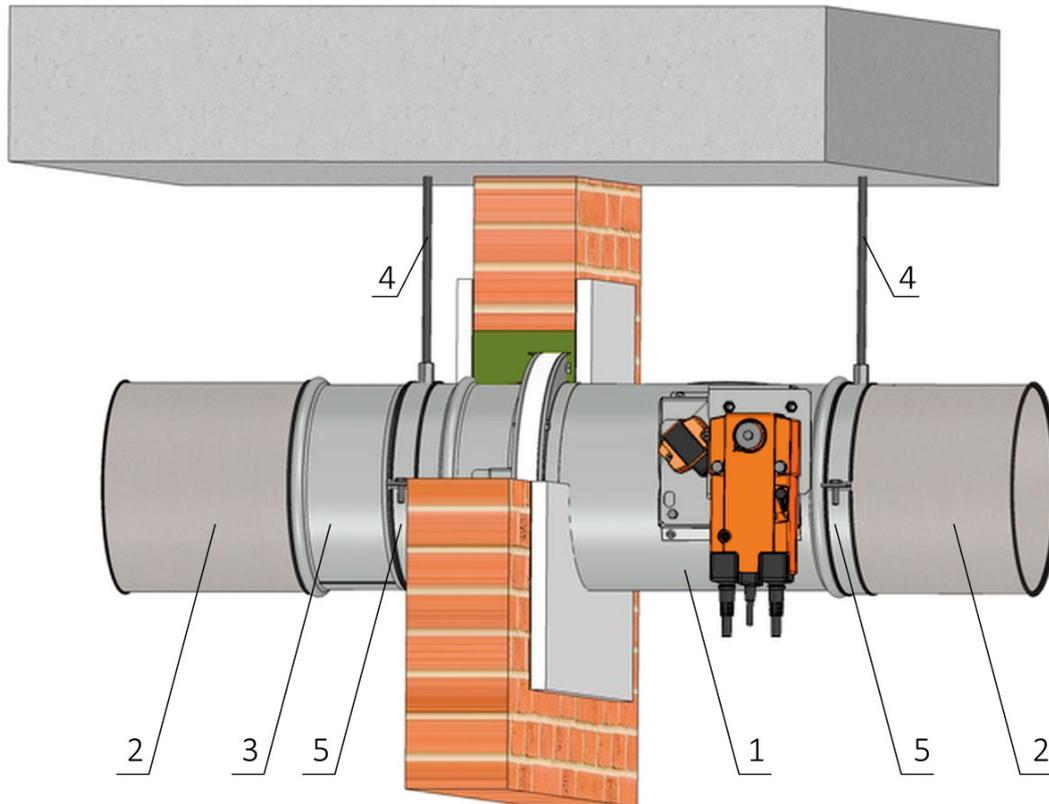


Fig. 12.

Key:

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

3.3.2 Horizontal duct, away from wall

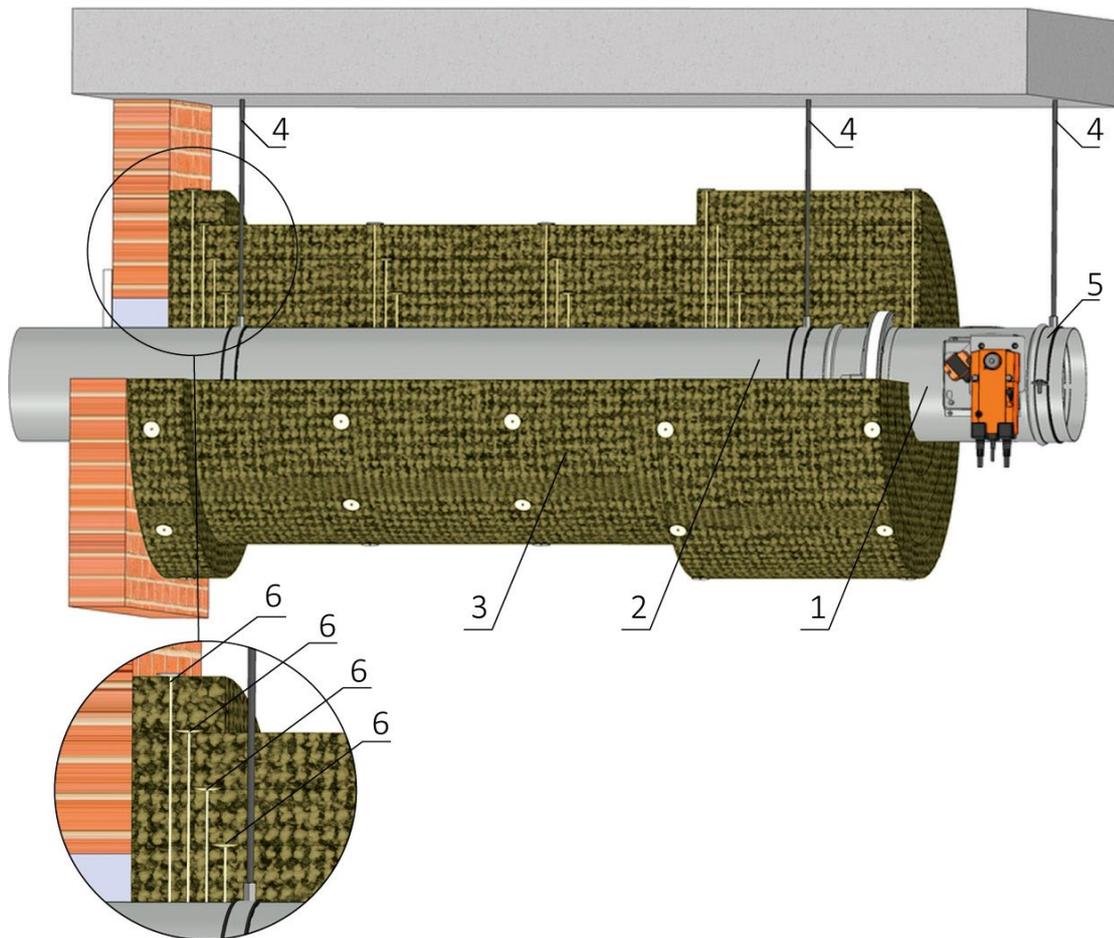


Fig. 12.

Key:

1. Halton fire damper
2. Duct
3. Insulation
4. Threaded rod
5. Suspension ring
6. Weld pin

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.

3.3.3 Vertical duct

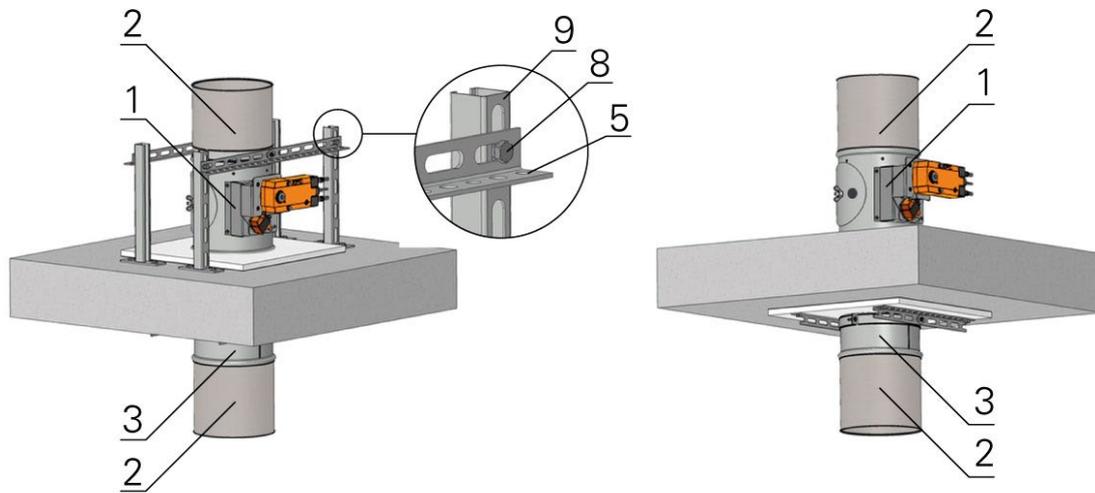


Fig. 13. Actuating mechanism above the floor construction

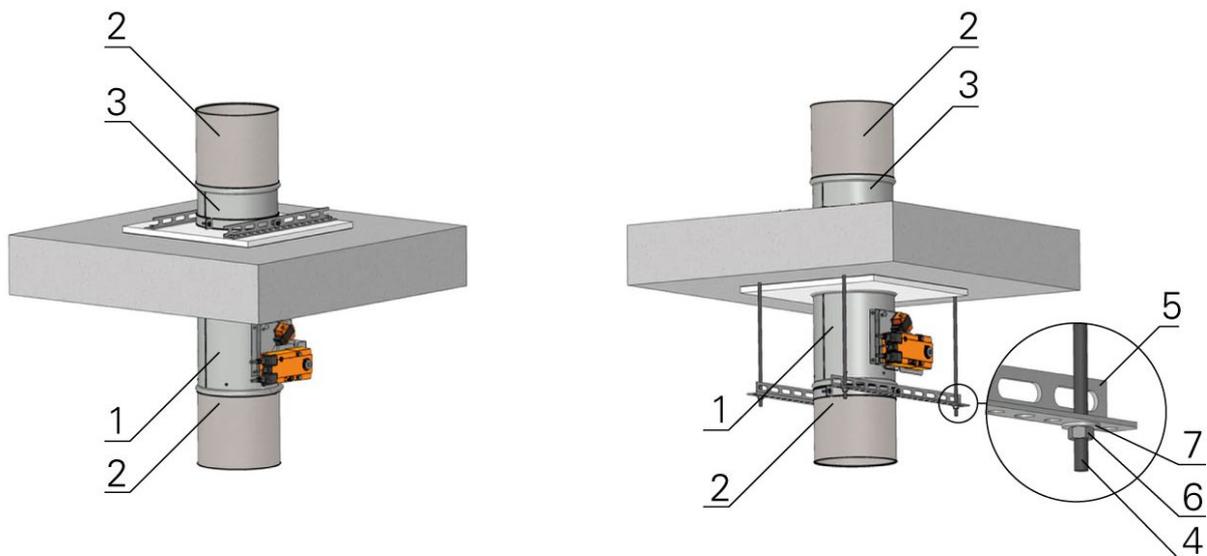


Fig. 14. Actuating mechanism below the floor construction

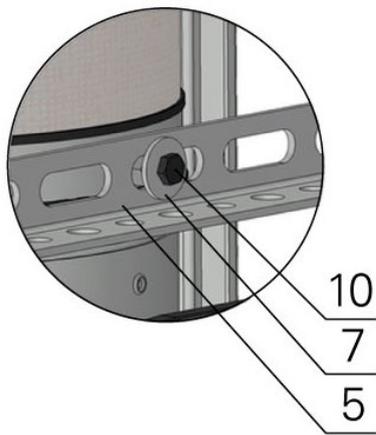


Fig 15. Suspension ring and mounting rail connected by bolt

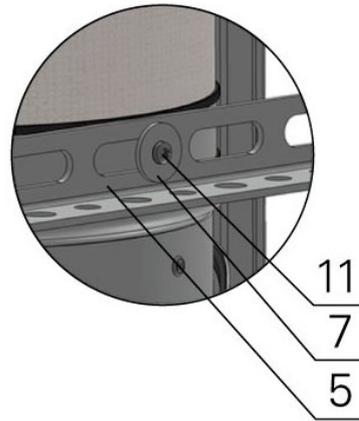


Fig 16. Suspension ring and mounting rail connected by screw or rivet

Key:

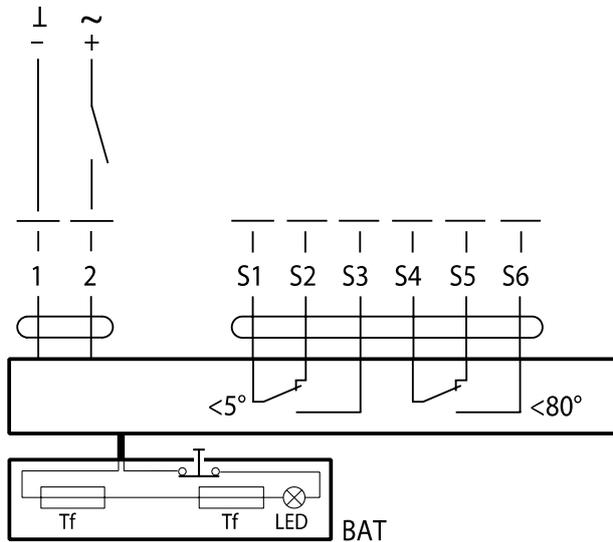
1. Fire damper
2. Duct
3. Duct extension
4. Threaded rod
5. Mounting rail
6. Nut
7. Washer
8. Screw connection
9. Mounting profile
10. Bolt
11. Screw or rivet

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

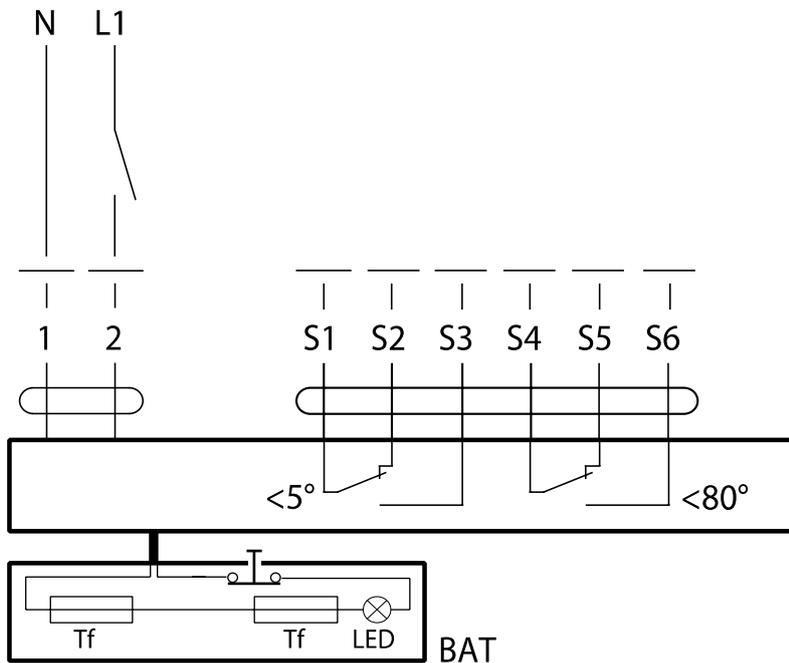
Electrical installation



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

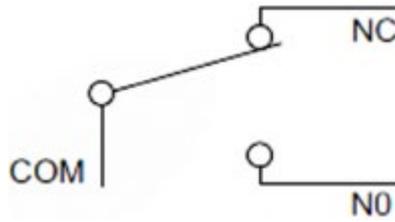
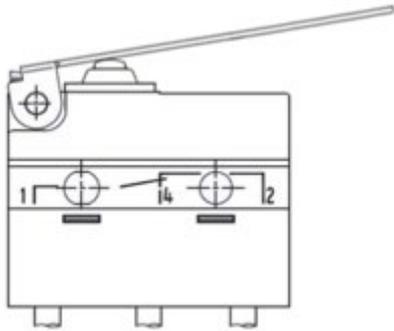
- Caution: Power supply voltage!
- The actuator must be protected by a fuse that does not exceed 16 A.
- Parallel connection of other actuators possible. Observe the performance data.
- Combination of power supply voltage and safety extra-low voltage not permitted at the both auxiliary switches.

4.2 Actuators

Actuating mechanism, Belimo	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 (I _{max} 0,5 A @ 5 ms)	10 VA (I _{max} 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 (t _{amb} = 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	