# Fire Damper
# Installation Guide for Halton Exe Tough Rectangular (ETR)

CE

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: 10032-ETR-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 the fire damper.

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# 2 Dimensions

## 2.1 Damper dimensions (mm)

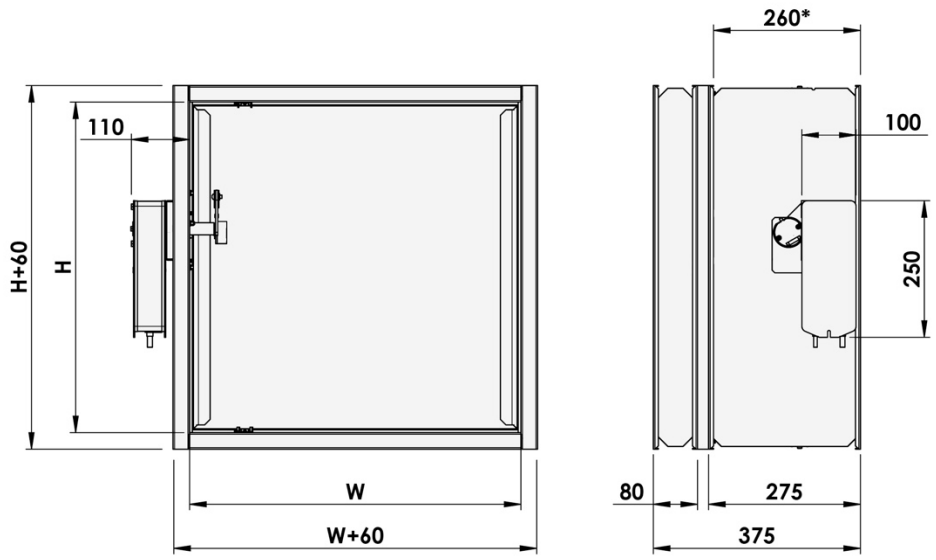



*Fig. 1.*

* Space reservation for fire damper

| W=Width | H=Height |
|---|---|
| 800,900, … 1500 | 600,700,800 |

## 2.2 Size of installation opening

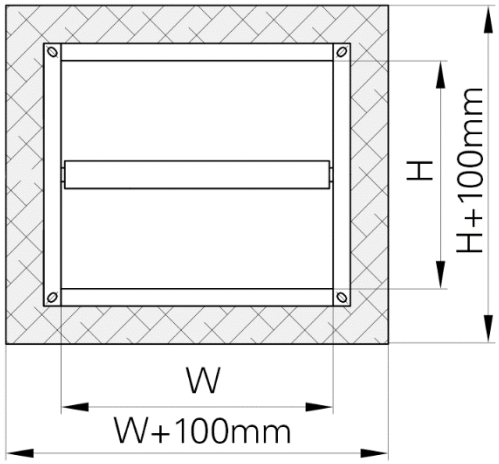



*Fig. 2. Installation opening, rectangular*

## 2.3 Minimum distances

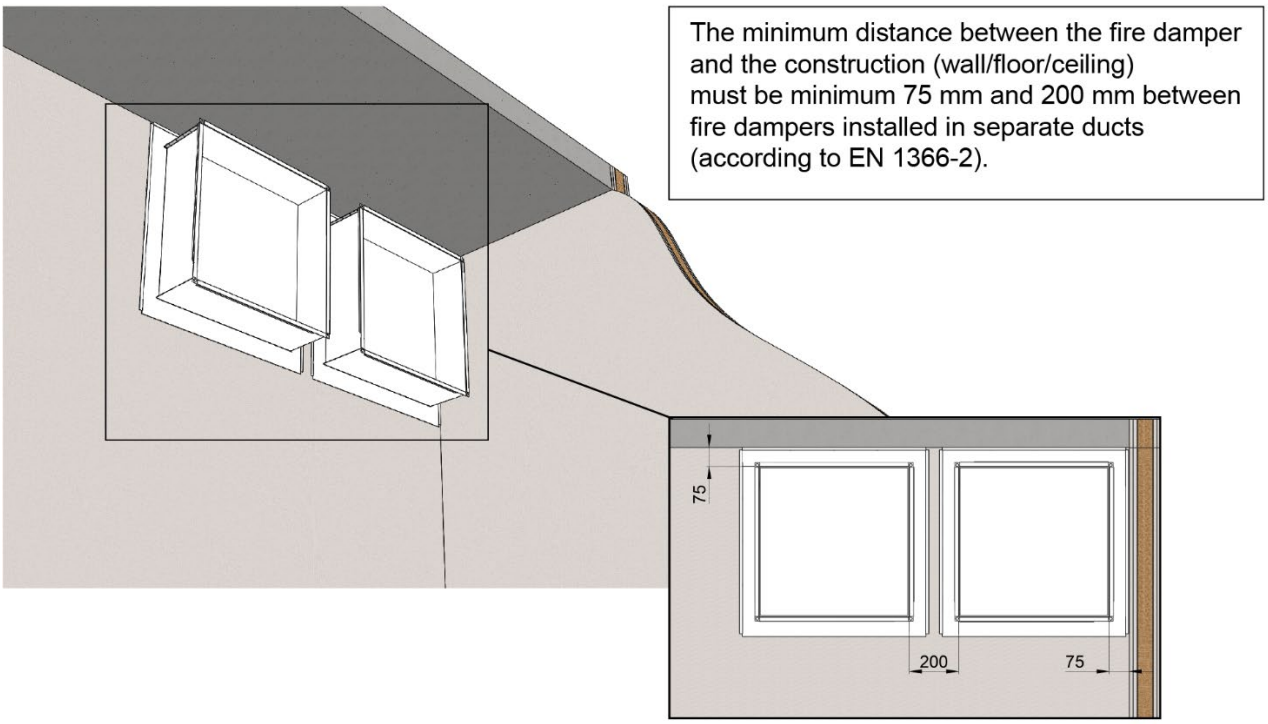



*Fig. 3. The distance between the fire damper and construction*

# 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 model can be installed in vertical or horizontal position 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, all ductwork must be installed so that there is no load on the fire damper. Connections to ductwork should be performed 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)

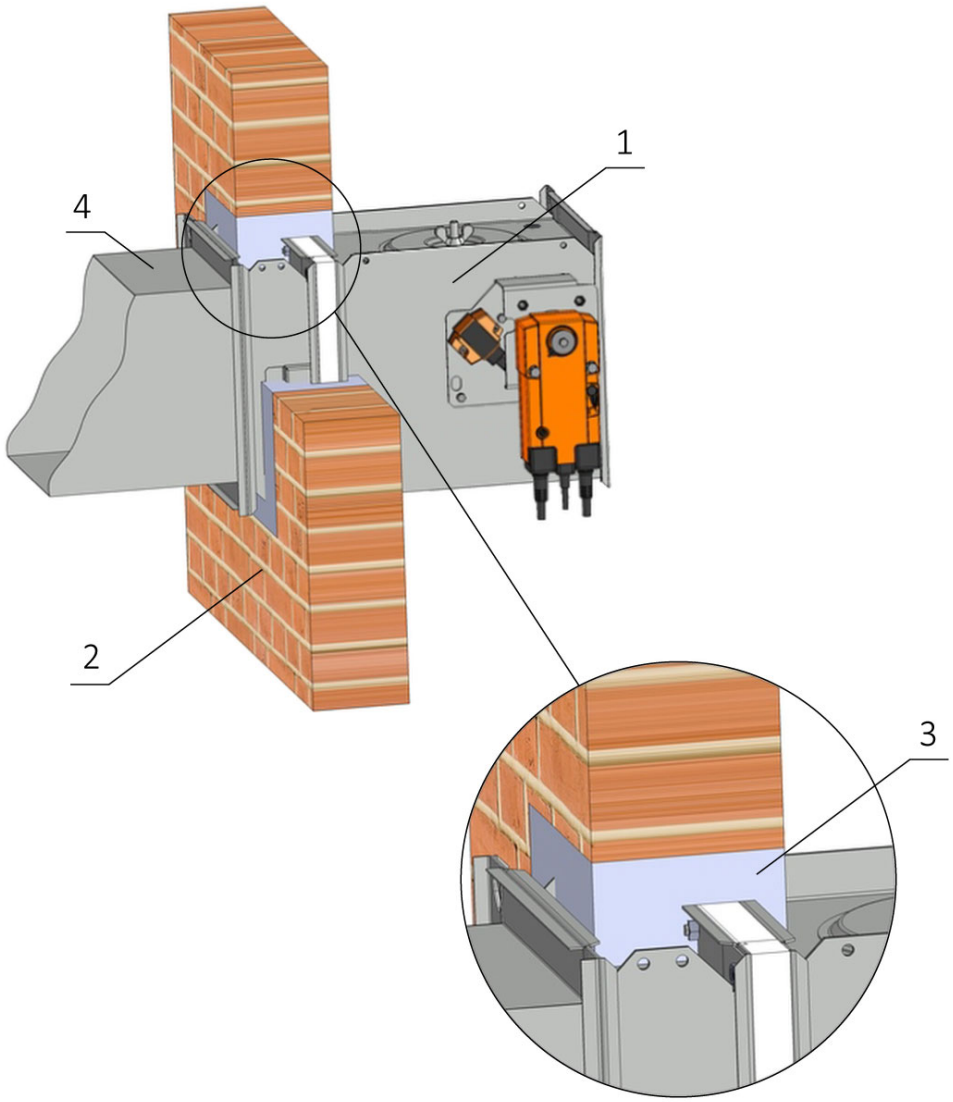



*Fig. 4.*

Key:

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

### 3.2.2 Lightweight wall construction (EI 120 S)

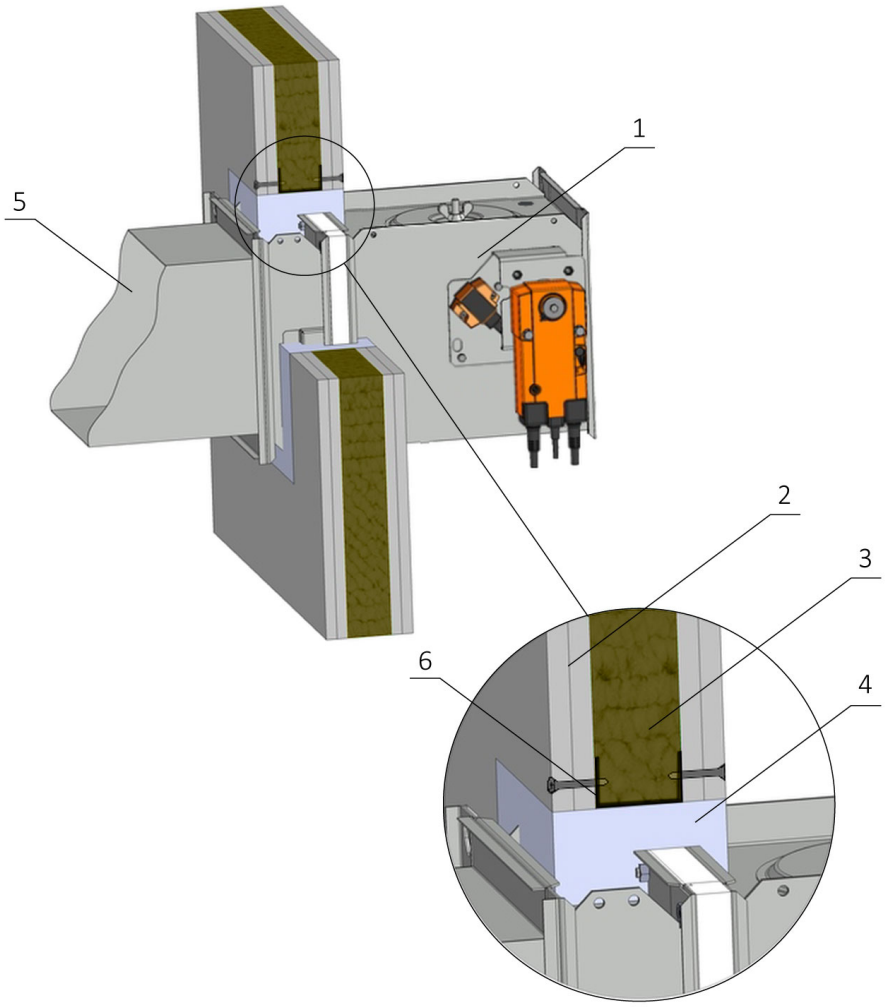



*Fig. 5.*

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)

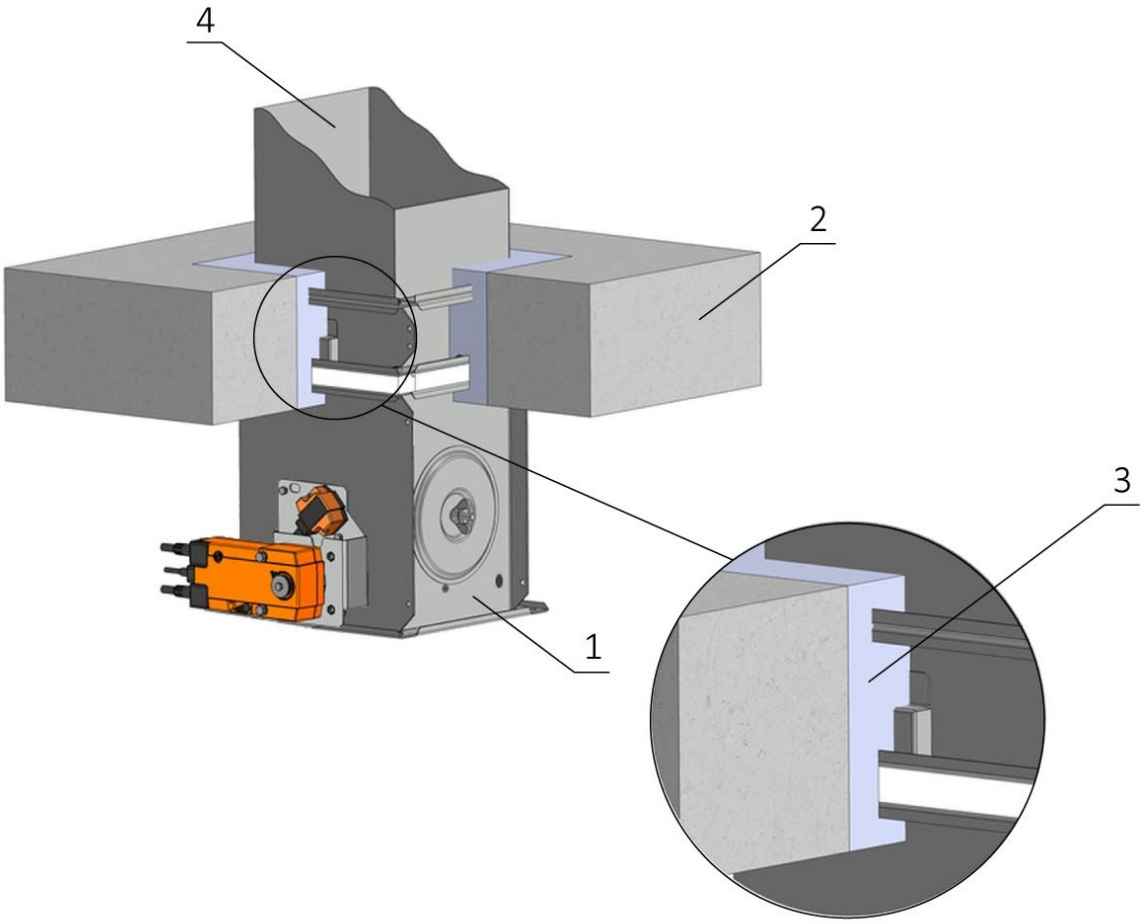



*Fig. 6.*

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)

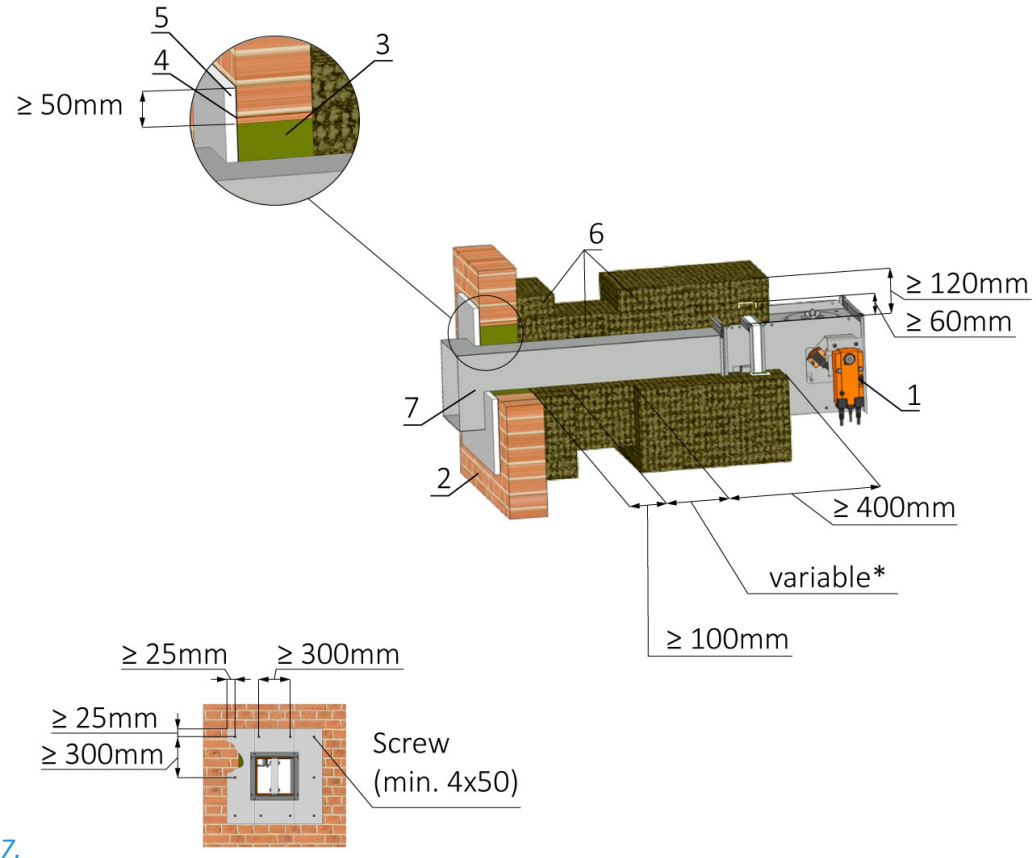






*Fig. 7.*

Key:

1. Halton fire damper
2. Solid wall construction
3. Rock wool (min. density 140 kg/m$^3$)
4. Fire protection mastic, min. thickness 1 mm
5. Cement lime plate, min. thickness 15 mm (min. density 870 kg/m$^3$)
6. Rock wool with use of an organic resin with crushed stone as a refrigerant, (min. density 300 kg/m$^3$), 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 (EI 90 S)

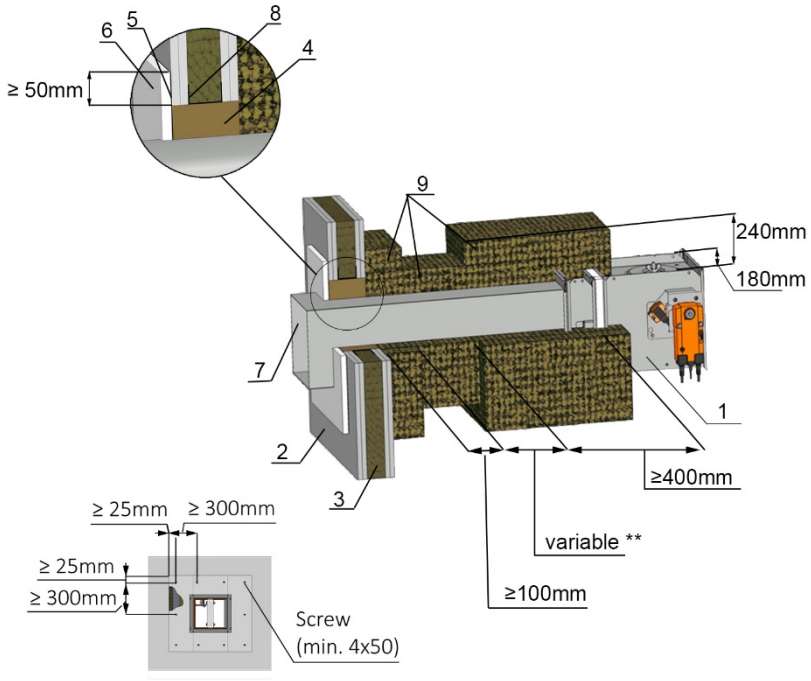



*Fig. 8.*

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 use of an organic resin with crushed stone as a refrigerant, (min. density 300 kg/m$^3$), EIS 60, thickness 60 mm (e.g. Rockwool Conlit Ductrock)

*) 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

**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)

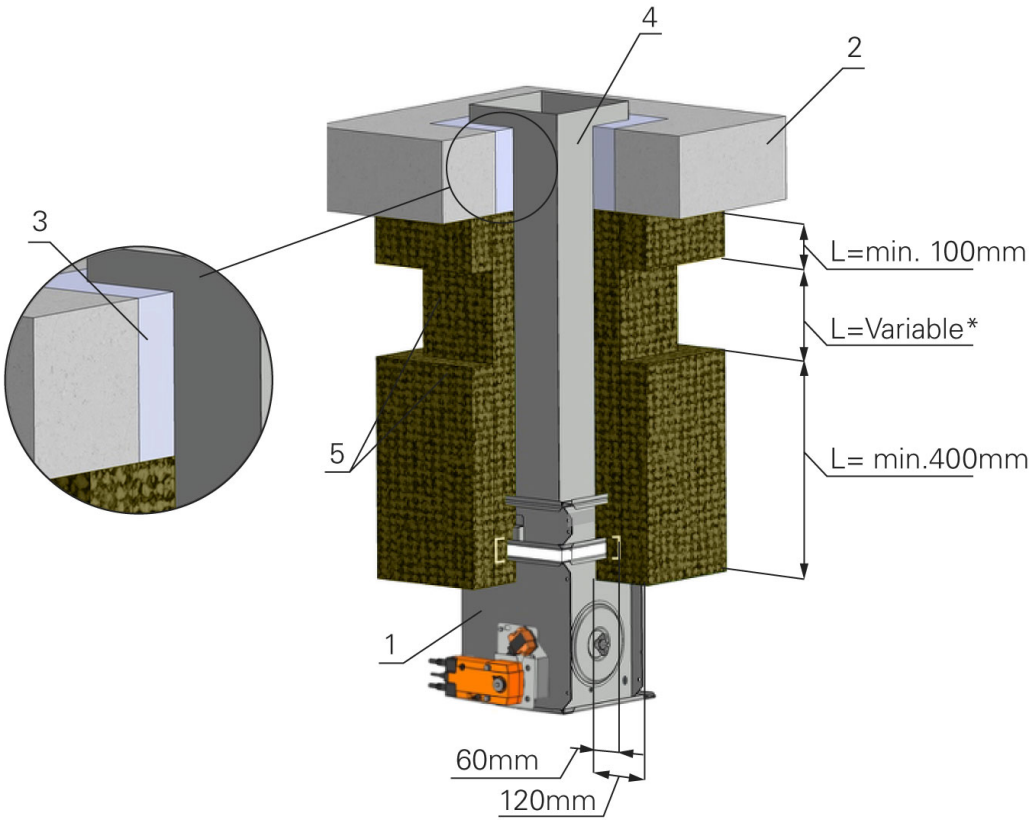



*Fig. 8. Installation using rock wool*

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 Conlit 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

**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.

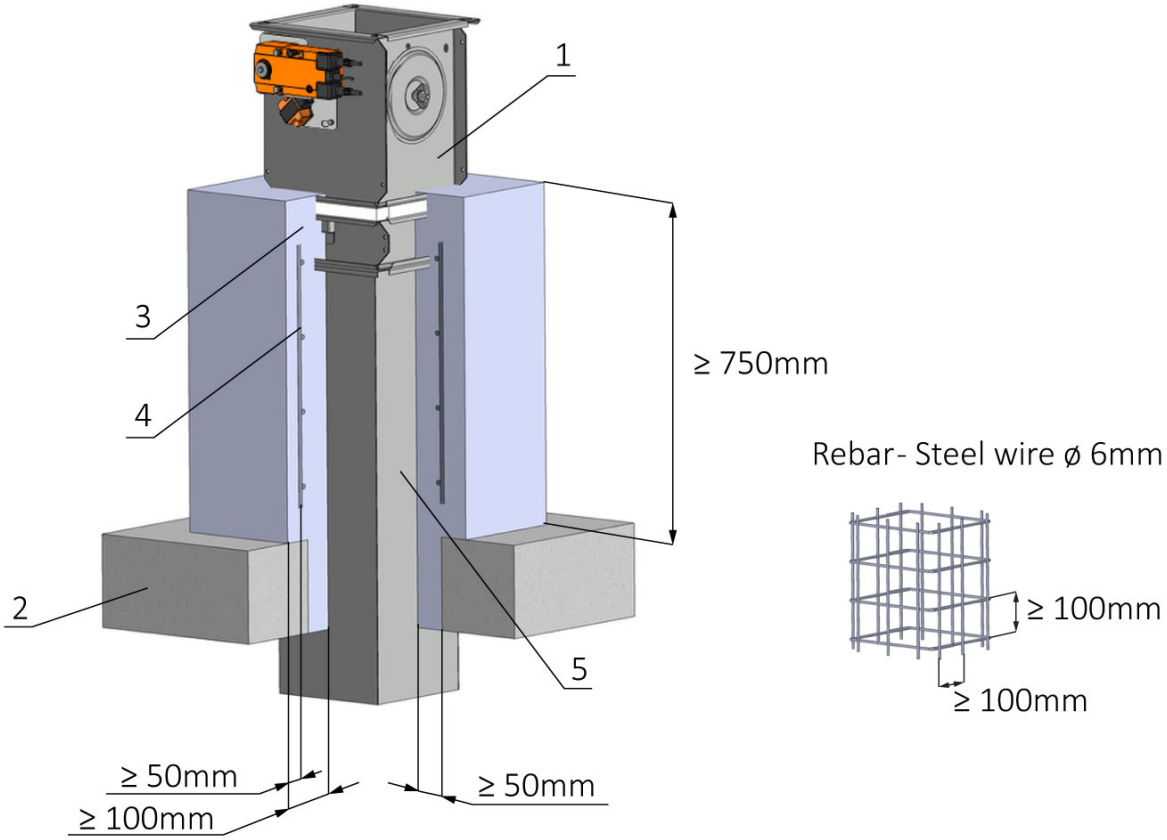



*Fig. 9. Installation using concrete*

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

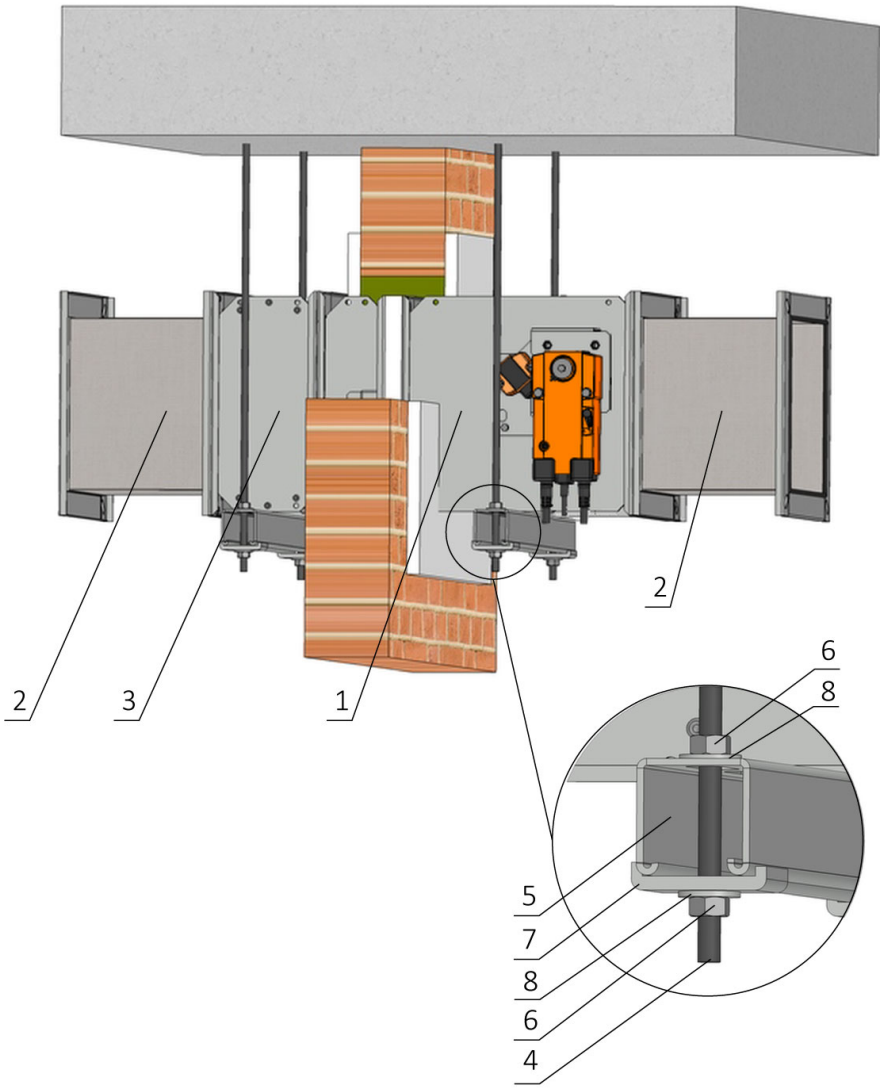



*Fig. 10.*

Key:

1. Halton fire damper
2. Duct
3. Duct extension
4. Threaded rod
5. Mounting rail
6. Nut
7. U – Washer
8. Washer

### 3.3.2 Horizontal duct, away from wall

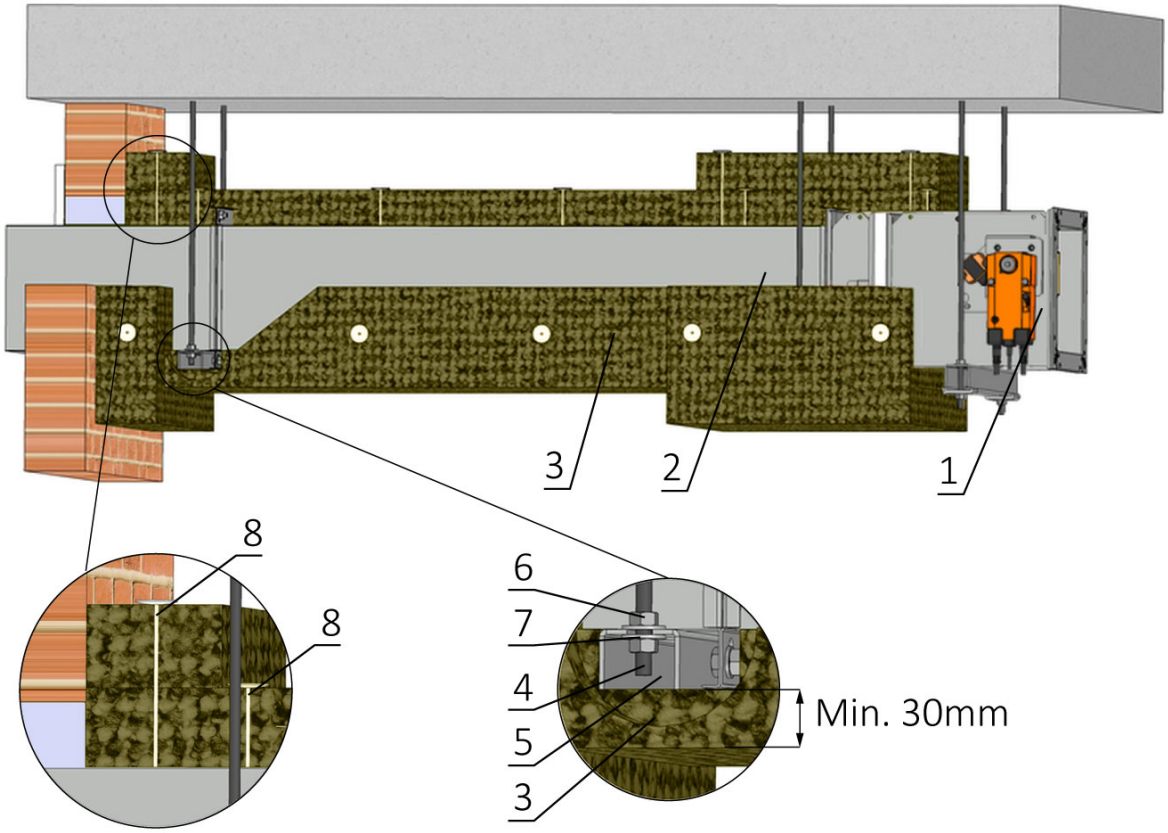



*Fig. 11.*

Key:

1. Halton fire damper
2. Duct
3. Insulation
4. Threaded rod
5. Mounting rail
6. Nut
7. Washer
8. 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

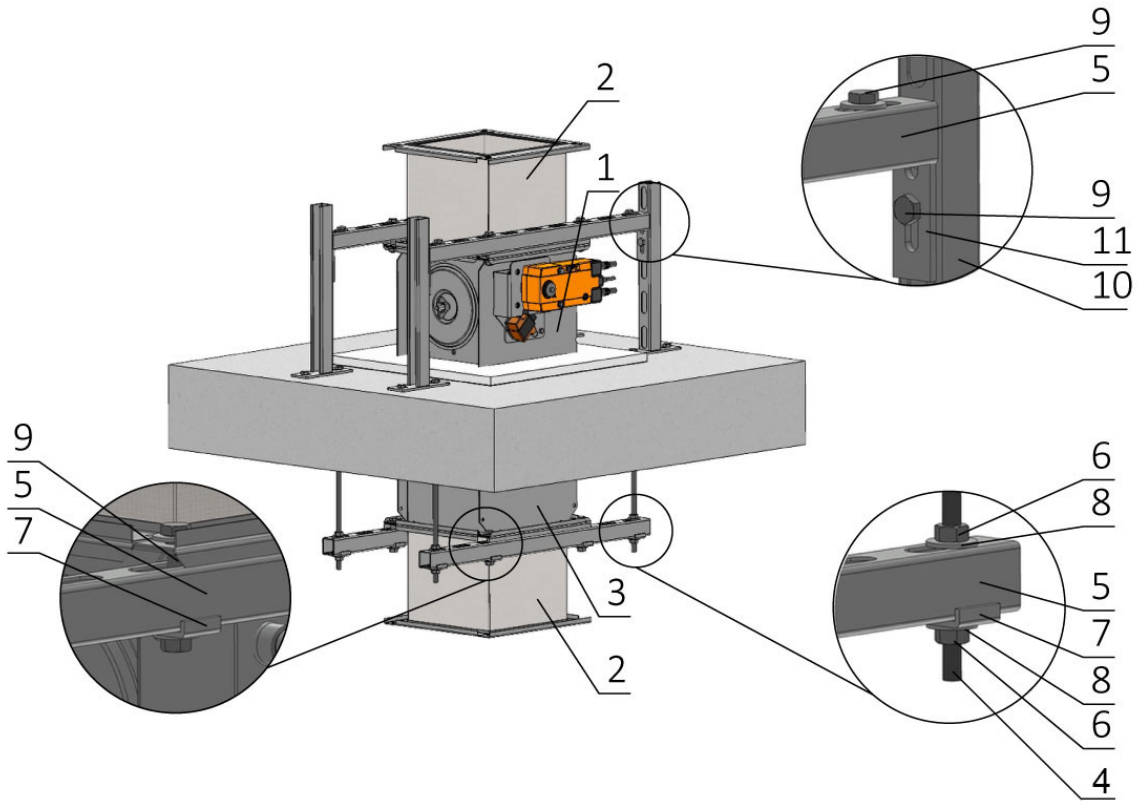



*Fig. 12. Actuating mechanism above the floor construction*

Key:

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

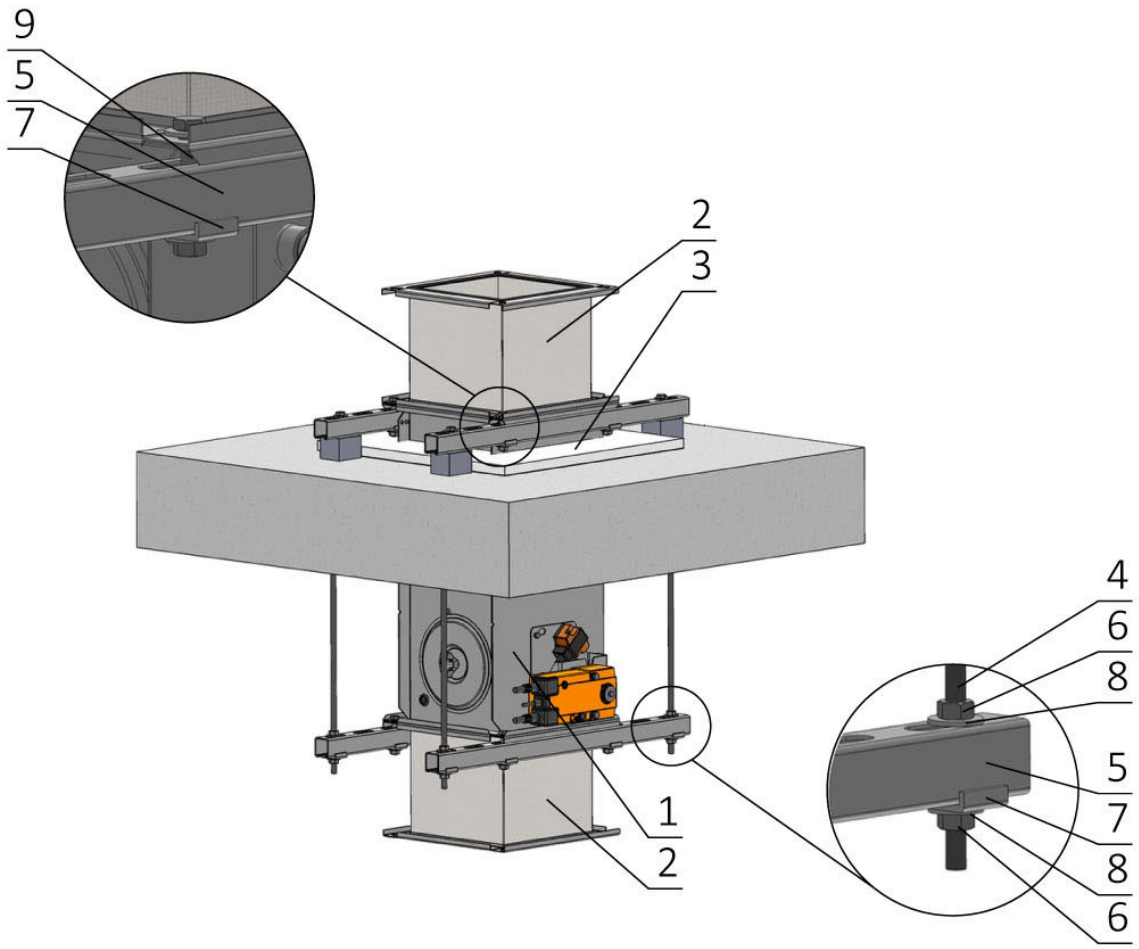



*Fig. 13. Actuating mechanism below the floor construction*

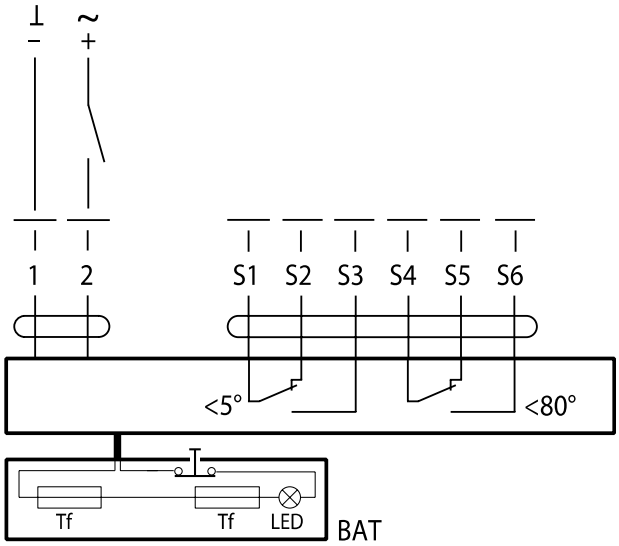
Key:

1. Halton fire damper
2. Duct
3. Duct extension
4. Threaded rod
5. Mounting rail
6. Nut
7. U – Washer
8. Washer
9. Screw connection

# 4 Key technical data

## 4.1 Wiring

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

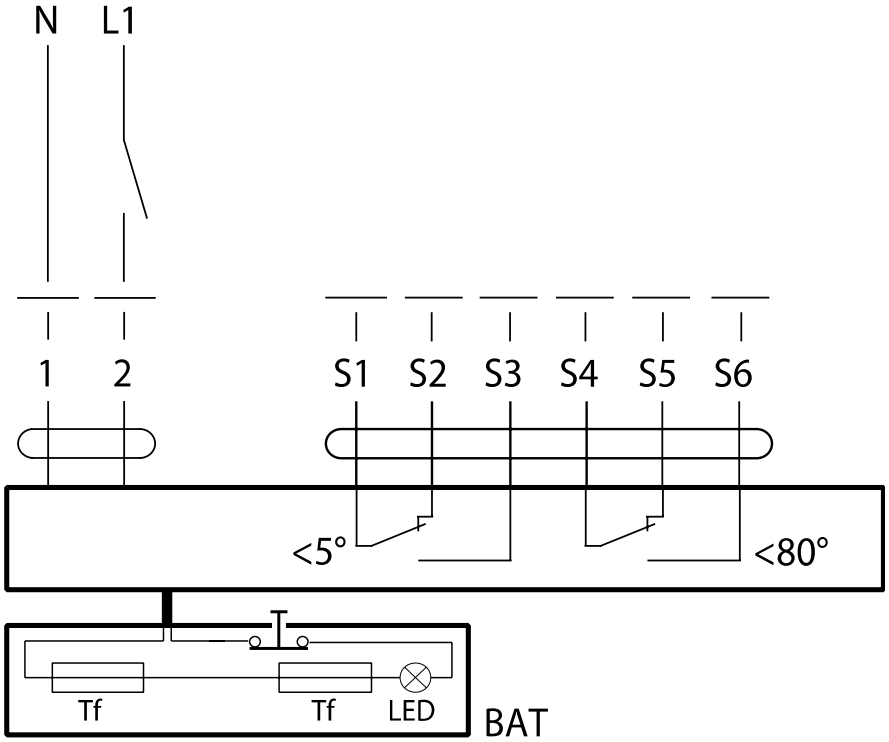



**Cable colours**

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

| **Electrical installation** | |
|---|---|
|  | Notes<br>• Connection via safety isolating transformer<br>• Parallel connection of other actuators possible. Observe the performance data.<br>• 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 |

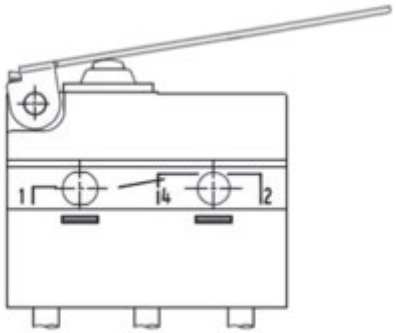
| **Electrical installation** | |
|---|---|
|  Notes | • Caution: Power supply voltage!<br>• The actuator must be protected by a fuse that does not exceed 16 A.<br>• Parallel connection of other actuators possible. Observe the performance data.<br>• Combination of power supply voltage and safety extra-low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

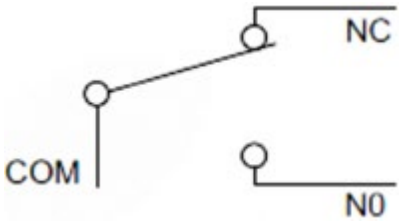
## 4.2 Actuators

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