

F-R60K

Fire Damper with Quick Mount Kit

Handbook



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Fire Damper with Quick Mount Kit



Description

Fire dampers represent passive fire protection, designed with the help of compartmentalization to prevent the spread of toxic gases, smoke and fire. The opening and closure of the damper blade can be activated remotely. In case of fire, when the air in the duct exceeds 72 °C, the thermal fuse melts. Melting of the thermal fuse activates the closure of the damper blade automatically. Damper blade is then mechanically locked in closed position.

Highlights

- Greatly reduced installation time
- 100 mm body length
- On & out of shaft wall installations
- Easy actuator and unit access
- Casing leakage according to EN 1751, class B
- Blade leakage according to EN 1751, class 3

Fire Resistivity

F-R60K fire dampers are CE certified following the Construction Products Regulation according to EN 15650:2010. Tested according to EN 1366-2:2015 and classified according to EN 13501-3 + A1:2009. The fire damper together with its installation form an inseparable part of the fire resistivity rating. F-R60K fire dampers are designed for the installations listed and described in their Handbook.

- Standard supporting construction in accordance with EN 1366-2:2015: **EI60 (v_e - h_o i↔o)S**
- Shaft wall – 2 layer, one side covered plasterboard construction: **EI60(v_e - i↔o)S**

Accessories

Detailed information about accessories is available on design.systemair.com

- FCR: Flexible Duct Connection
- R1-F-R60K: Ringlet for Out Installation

Design

Material Composition

F-R60K damper has galvanized sheet metal casing. High temperature resistant insulation ring around the casing from expanded vermiculite board with inorganic binder. The vermiculite boards are not harmful to health and do not contain any asbestos, glass or mineral fibers. Blades are made from non-asbestos calcium silicate board with polyurethane foam seals for cold smoke and an intumescent seal, that expands in case of fire. Ethylene-propylene rubber used as duct seal. The product contains no hazardous substances, except for the solder in the thermal fuse, which contains one milligram of lead. All materials are processed in accordance with local regulations.

Activation Types

By default, actuator operated fire dampers are supplied with an actuator with micro switches, optionally with a power and communication unit. A fire damper can be equipped with a spring return actuator can be closed with command from the building management system, or after the breaching of the thermoelectric fuse. Actuator operated fire dampers are standardly equipped with a thermoelectric fuse, that activates the closing of the damper after the reaching or exceeding of the ambient temperature of 72°C. The actuator power circuit is interrupted, and its spring closes the damper blade within 20 seconds.

• B230T or G230T

Fire damper with an activation mechanism with a Belimo or Gruner spring return actuator (AC 230 V) with electro-thermal fuse 72°C and auxiliary switches.

• B24T or G24T

Fire damper with an activation mechanism with a Belimo or Gruner spring return actuator (AC/DC 24 V) with electro-thermal fuse 72°C and auxiliary switches.

• B24T-W or G24T-W

Fire damper with an activation mechanism with a Belimo or Gruner spring return actuator (AC/DC 24 V) with an electro-thermal fuse 72°C and auxiliary switches, with provided cable connectors for the supply and communication unit (communication unit not part of the mechanism).

• B24T-SR or G24T-SR

Fire damper with an activation mechanism with a Belimo or Gruner spring return actuator (AC/DC 24 V) with electro-thermal fuse 72°C and auxiliary switches for Modulated dampers (possibility to open the blade at the desired angle).

• BST0 or GST0

Fire damper with an activation mechanism with a Belimo or Gruner spring return actuator (AC/DC 24 V) with an electro-thermal fuse 72°C and auxiliary switches, with a Belimo supply unit BKN230-24 (2-wire) or Gruner supply and communication unit FSC-UFC24-2 (Modbus/BACnet).

• BST1

Fire damper with an activation mechanism with a Belimo spring return actuator (AC/DC 24 V) with an electro-thermal fuse 72°C and auxiliary switches, with a supply and communication unit (SLC powered) BC24-G2 (THC).

• **BST2**

Fire damper with an activation mechanism with a Belimo spring return actuator (AC/DC 24 V) with an electro-thermal fuse 72°C and auxiliary switches, with a Belimo supply and communication unit (AC 230 V) BKN230-24-MOD (Modbus/BACnet).

• **BST3**

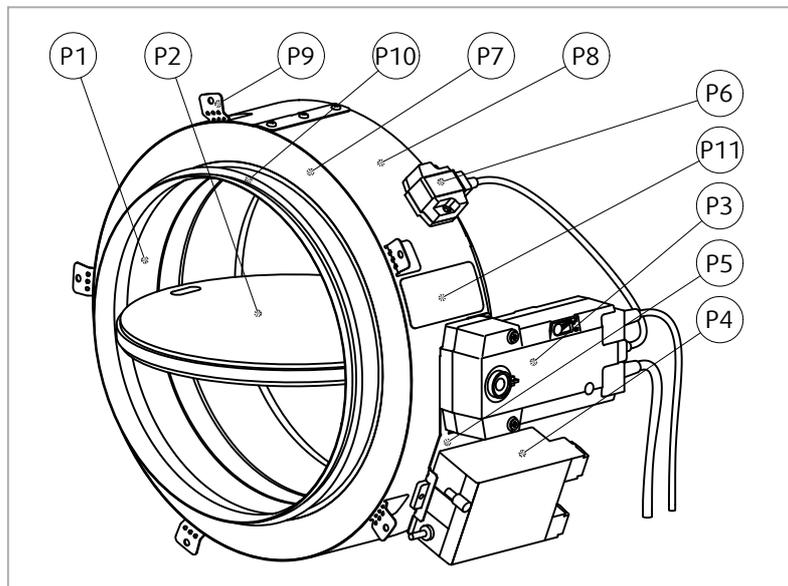
Fire damper with an activation mechanism with a Belimo spring return actuator (AC/DC 24 V) with an electro-thermal fuse 72°C and auxiliary switches, with a Belimo supply and communication unit (AC 230 V) BKN230-24-C-MP (SBS/MP).

• **BST10**

Fire damper with an activation mechanism with a Belimo spring return actuator (AC/DC 24 V) with an electro-thermal fuse 72°C and auxiliary switches, with a Belimo supply and communication unit (AC 230 V) BKN230-24-PL (Powerline).

Other communication units are possible on demand.

Product Parts



Note:

Depicting only BST0. Other activation types will look differently.

Legend:

P1 - Damper casing

P2 - Damper blade

P3 - Actuator

P4 - Communication unit (only for BST0 and GST0 activation types)

P5 - Holder for communication unit (only for B24T-W and G24T-W activation types)

P6 - Thermal fuse

P7 - High temperature insulating ring

P8 - Sheet metal ring cover

P9 - Bendable hangers

P10 - Duct connection sealings

P11 - Product label

Technical Parameters

Durability Test

10000 cycles, actuator controlled (0 ... 90 degrees rotation) – with no change of the required properties
10000 cycles, actuator controlled for modular possibility (45 ... 60 degrees rotation) - with no change of the required properties

Testing Pressure

Underpressure up to 300 Pa

Safe Position

Closed. (In case of fire the damper closes via a spring in the actuator)

Airflow Direction

Both directions

Allowed Air Velocity

Damper can still operate at max. 12 m/s. Air without any mechanical or chemical contamination

Side with Fire Protection

Depending on installation classification: From both sides (i <-> o)

Repeated Opening

Suitable for daily check procedure in suitable environment

Closing/Opening Time

Actuator operated < 20 s

Indicator Closed/Open

Actuator operated - built-in microswitches

Activation Temperature of the Fire Damper Closing

Actuator operated: 72 °C by means of the spring after current interruption in the electro-thermal fuse

Temperature of Transported Air

Minimum: 0 °C, for all types of mechanism

Maximum: 60 °C for 74 °C and 72 °C thermal fuse (All mechanism types)

Environment Suitability

Protected against weather disruptions, with temperature above 0 °C (3K5 according to EN 60721-3-3)

Inspection Possibility

Inspection of blade and gaskets can be done through electro thermal fuse hole with endoscopic camera. To have the possibility to access the damper internals a flexible connection or duct with access doors must be connected to the damper.

Maintenance

Not required. Dry cleaning if demanded by law in the country in which the dampers are installed.

Revisions

Determined by law in the country in which the fire dampers are installed. Recommended at least every 12 months.

Allowed Pressure

1200 Pa

Declared Blade Tightness (EN 1751)

Class 3 as standard up to 2500 Pa

Declared Housing Tightness (EN 1751)

Class B as standard up to 2500 Pa

Conformity with EC Directives

2006/42/EC Machinery Directive

2014/35/EU Low Voltage Directive

2014/30/EU Electromagnetic Compatibility Directive

Driving Actuator Types

Belimo BFL, BFN; Gruner 340-...-05, 360-...-12

Transport and Storage

Dry indoor conditions with a temperature range of -20 °C to +50 °C

Assessed Performance

21 CE 1396

Systemair Production a.s.

90043 Kalinkovo 371, Slovakia

21

1396-CPR-0194

EN 15650:2010

Circular fire dampers

F-R60K

Nominal Activation Conditions/Sensitivity

- sensing element load bearing capacity - **Pass**
- sensing element response temperature - **Pass**

Closure During Test at Correct Time and in Allowable Time

- closure time and in allowable time - **Pass**

Operational Reliability

- actuator mechanism = 10 200 cycles: 0° to 90° - **Pass** 10 000 cycles: 45° to 60° - **Pass**

Fire Resistance:

Resistivity depending on installation method and situation

- integrity **E**
- EI60($v_e-h_o-i\leftrightarrow o$)S
- Insulation **I**
- Smoke leakage **S**
- Mechanical stability (under E)
- Maintenance of the cross section (under E)

Durability of Response Delay

- sensing element response temperature and load bearing capacity - **Pass**

Durability of Operational Reliability

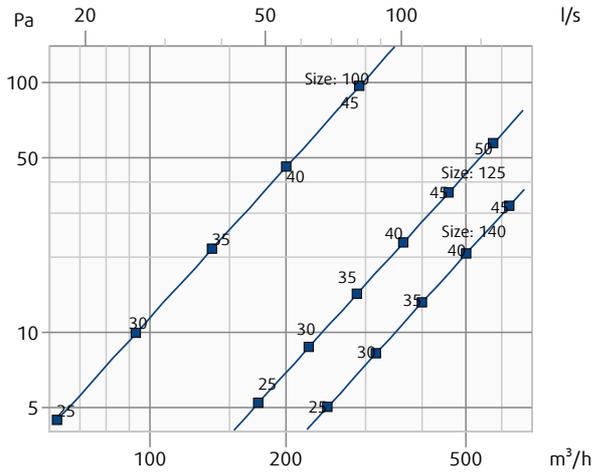
- open and closing cycle - **Pass**

Diagrams

The pressure drop and A-weighted total discharged sound power level depend on the nominal diameter of the damper and air flow volume at different duct pressures. The type of activation does not influence the airflow parameter, therefore the activation type is not shown in the diagrams.

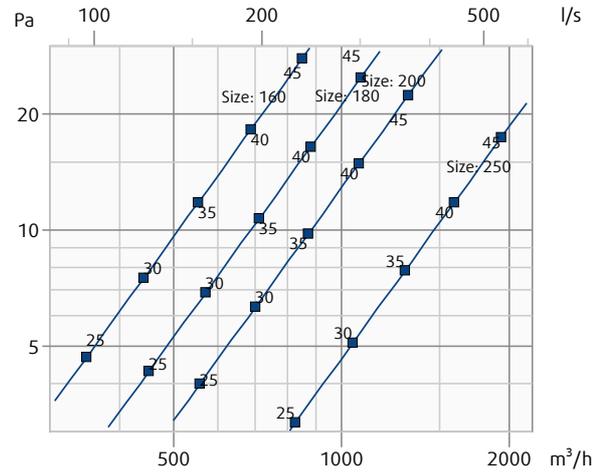
F-R60K-...-?

Pressure drop & A-weighted sound power level in dB(A)



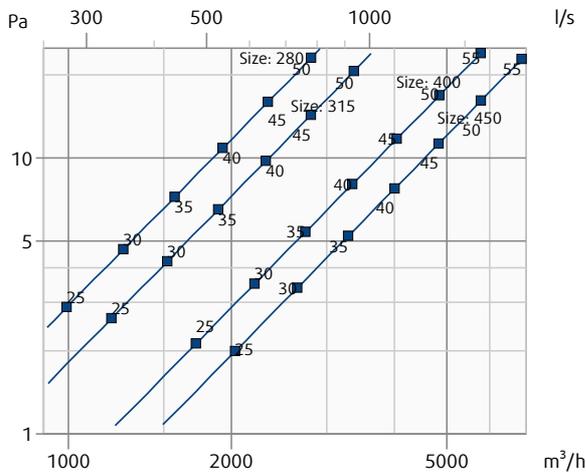
F-R60K-...-?

Pressure drop & A-weighted sound power level in dB(A)



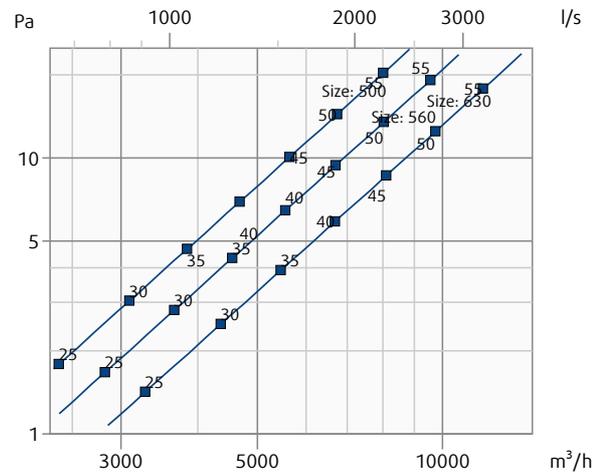
F-R60K-...-?

Pressure drop & A-weighted sound power level in dB(A)



F-R60K-...-?

Pressure drop & A-weighted sound power level in dB(A)



Legend:

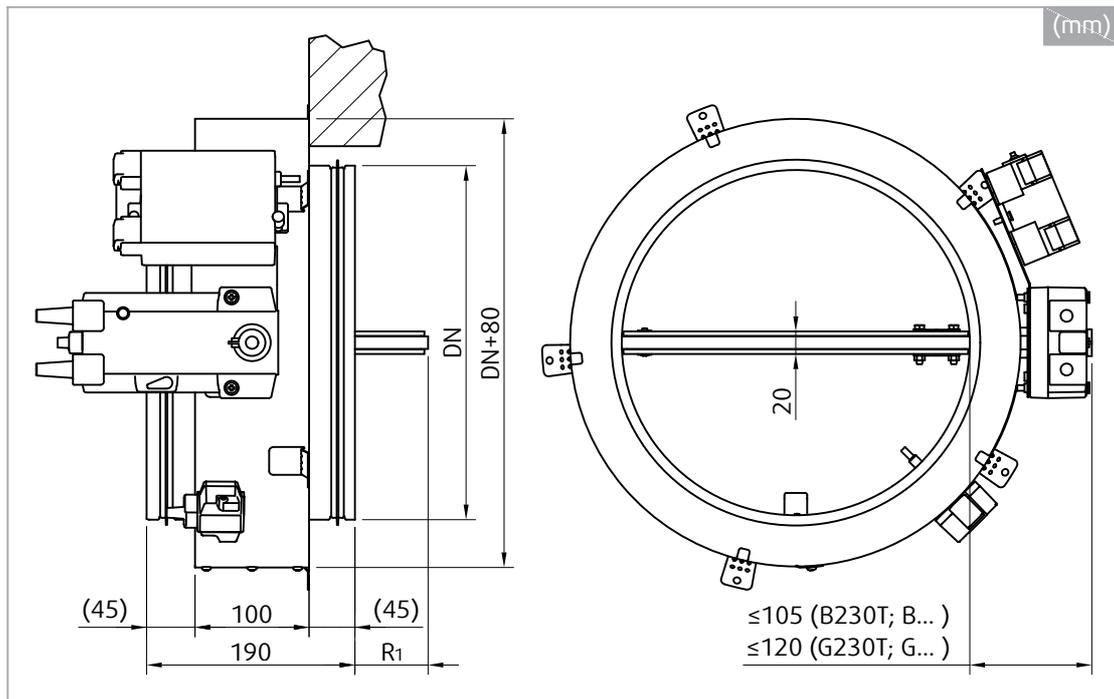
- p_s (Pa) - Pressure drop
- q_v (m³/h), (l/s) - Air flow volume
- $\pm\Delta$ (%) - Deviation from measured value
- L_{wa} (dB(A)) - A-weighted total sound power level
- v (m/s) - Air face velocity

Dimensions & Weights

Free Area

A _v (m ²)	DN (mm)																
	100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	630
	0,065	0,069	0,072	0,074	0,076	0,081	0,087	0,094	0,103	0,115	0,130	0,150	0,176	0,208	0,244	0,292	0,356

Dimensions



Note:

B... - Belimo activation types

G... - Gruner activation types

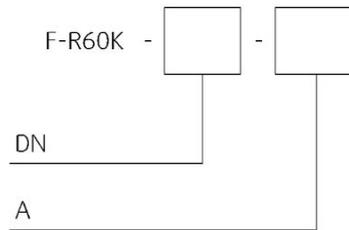
Overhangs

R1 (mm)	DN (mm)																
	100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	630
	-48,0	-35,0	-27,5	-22,5	-18,0	-7,5	2,0	15,0	27,0	42,5	60,0	77,0	102,0	127,0	152,0	182,0	217,0

Weights

m (kg)	DN (mm)																
	100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	630
B230T	4,7	4,9	5,3	5,3	5,3	5,7	6,0	6,5	7,0	7,6	8,7	10,1	12,2	14,9	16,5	19,5	22,6
G230T	4,8	5,0	5,4	5,4	5,4	5,8	6,1	6,6	7,1	7,7	8,8	10,2	12,3	15,0	16,6	19,6	22,7
BST0	5,3	5,5	5,9	5,9	5,9	6,3	6,6	7,1	7,6	8,2	9,3	10,7	12,8	15,5	17,1	20,1	23,2
GST0	5,3	5,5	5,9	5,9	5,9	6,3	6,6	7,1	7,6	8,2	9,3	10,7	12,8	15,5	17,1	20,1	23,2
B24T, B24T-W, B24T-SR	4,7	4,9	5,3	5,3	5,3	5,7	6,0	6,5	7,0	7,6	8,7	10,1	12,2	14,9	16,5	19,5	22,6
G24T, G24T-W, G24T-SR	4,8	5,0	5,4	5,4	5,4	5,8	6,1	6,6	7,1	7,7	8,8	10,2	12,3	15,0	16,6	19,6	22,7

Ordering Code



DN

Dimension, \varnothing DN:

100, 125, 140, 150, 160, 180, 200, 225, 250, 280, 315, 355, 400, 450, 500, 560, 630 mm

A - Type of Activation

B230T - 230V AC Belimo Actuator

G230T - 230V AC Gruner Actuator

B24T - 24V AC/DC Belimo Actuator

G24T - 24V AC/DC Gruner Actuator

B24T-W - 24V AC/DC Belimo Actuator & Wire connector for communication unit

G24T-W - 24V AC/DC Gruner Actuator & Wire connector for communication unit

B24T-SR - 24V AC/DC Belimo Actuator, modulated 0 V ...10 V

G24T-SR - 24V AC/DC Gruner Actuator, modulated 0 V ...10 V

BST0 - 230V AC Supply and communication unit BKN230-24 & 24V AC/DC Belimo spring return Actuator

GST0 - 24V AC/DC Supply and communication unit FSC-UFC24-2 (Modbus/BACnet) & 24V AC/DC Gruner spring return Actuator

BST1 - SLC powered supply and communication unit BC24-G2 (THC) & 24V AC/DC Belimo spring return actuator

BST2 - 230 V AC Supply and communication unit BKN230-24-MOD (Modbus/BACnet) & 24V AC/DC Belimo spring return actuator

BST3 - 230 V AC supply and communication unit BKN230-24-C-MP (SBS/MP) & 24V AC/DC Belimo spring return actuator

BST10 - 230 V AC supply and communication unit BKN230-24-PL (Powerline) & 24V AC/DC Belimo spring return actuator

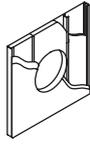
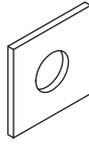
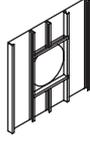
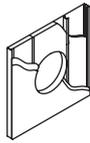
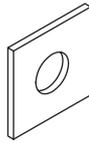
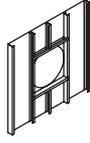
Example of the F-R60K Fire Damper Ordering Code

F-R60K-630-B24T-SR

Fire damper with nominal diameter 630 mm, with insulation ring for on and out of the wall EI60S installation.

Activated by thermal fuse and a 24 V Modulated Belimo actuator (0 V ...10 V) that can be used for airflow balancing.

Installation Methods

 F-R60K DN100 ... DN630 ON	EI 60 ($v_e - i \leftrightarrow o$) S	a)  ≥ 100 mm	b)  ≥ 100 mm	 360°
		d)  ≥ 80 mm		
	EI 60 ($h_o - i \leftrightarrow o$) S	c)  ≥ 100 mm ≥ 620 kg/m ³		
 F-R60K DN100 ... DN630 OUT	EI 60 ($v_e - i \leftrightarrow o$) S	a)  ≥ 100 mm	b)  ≥ 100 mm	 360°
		d)  ≥ 80 mm		

Notes:

- a) - Flexible (plasterboard) wall
- b) - Concrete/masonry/cellular concrete (rigid) wall
- c) - Concrete/cellular concrete (rigid) floor/ceiling
- d) - Shaft wall - one side covered with 2 layers of gypsum board
- v_e - Vertical wall placement
- h_o - Horizontal floor/ceiling placement

Installation Rules

- The duct connected to the fire damper must be supported or hung in such a way that the damper does not carry its weight. The damper must not support any part of the surrounding construction or wall which could cause damage and consequent damper failure.
- Easy access to mechanism and internal parts during inspection must be considered during damper placement.
- According to the standard EN 1366-2, the distance between the fire damper bodies must be at least 200 mm.
- The distance between the adjacent wall/ceiling and the damper must be at least 75 mm.
- When the damper is installed into a fire partition structure, it must be placed so that the damper blades in its closed position are located inside this structure.

- The gap in the installation opening between the damper and the wall/ceiling can be increased by up to 50% of the gap area or decreased to the smallest amount possible that still provides sufficient space for the installation of the seal.
- The damper must be earthed after being installed into the duct.
- Lists of all permitted installation methods are provided in Handbook.

Installation, Maintenance & Operation

Some damper parts may have sharp edges – therefore to protect yourself from harm, please use gloves during damper installation and manipulation. In order to prevent electric shock, fire or any other damage which could result from incorrect damper usage and operation, it is important to:

1. Ensure that installation is performed by a trained person.
2. Follow the written and depicted instructions provided within Handbook closely.
3. Perform damper inspection in accordance with Handbook.
4. Check the damper's functionality as per the chapter "Functionality Check" before you install the damper. This procedure prevents the installation of a damper that has been damaged during transportation or handling.

Information about installation, maintenance and operation is available in the "HandBook_F-R60K" document or more can be found at design.systemair.com.

Installation ON a Wall

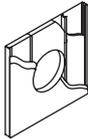
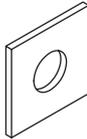
Standard Flexible & Rigid Wall

IMPORTANT: The insulation ring cannot be delivered separately! The insulation ring is delivered pre-mounted on a damper.

1. The supporting construction opening must be prepared as depicted in wall preparation. Opening surfaces must be even and cleaned off.
2. The opening dimension D1 is driven by the nominal dimensions of the damper with added clearance. The flexible wall opening must be reinforced as per the standards for plasterboard walls when a vertical beam was breached with the opening.
3. Insert the duct into the opening with its end flush with the supporting construction on the side where the fire damper will be mounted.
4. Bend outwards hangers on the metal sheet covering ring.
5. Apply a suitable fire resistive caulk (F2) to the fire damper insulation ring on the wall connection side.
6. Insert the damper into the duct and fix the insulation ring through bendable hangers to the wall with screws (F1).
7. If needed, uncover and clean the damper after installation.
8. Check the damper's functionality

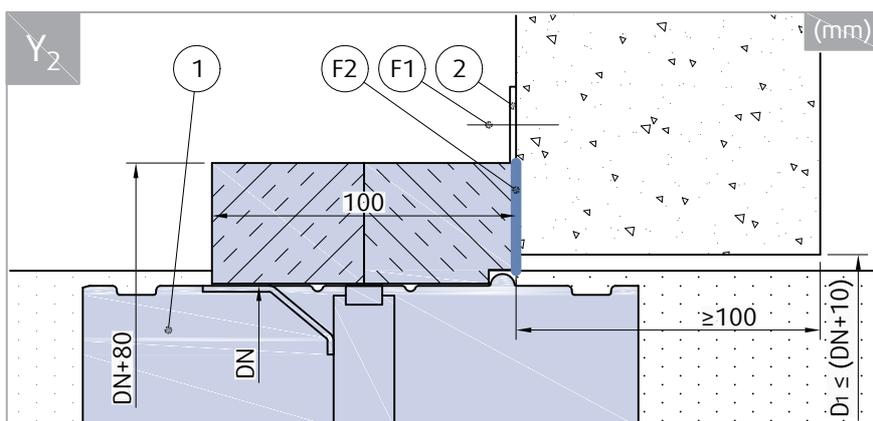
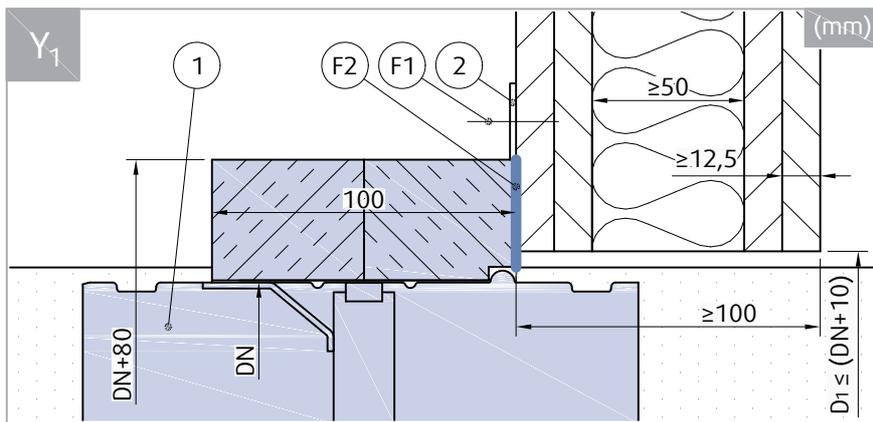
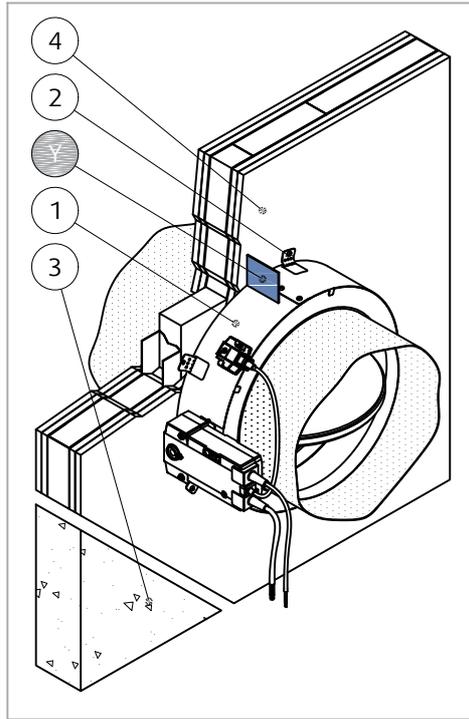
Installation Distances

According to the standard EN 1366-2, the minimum distance from the wall or ceiling to the duct holding the fire damper is 75 mm. For multiple crossings through a fire resistive wall the minimum distance between the duct opening is 200 mm. This applies for distances between the duct holding the damper and a nearby foreign object crossing the fire-resistive wall.

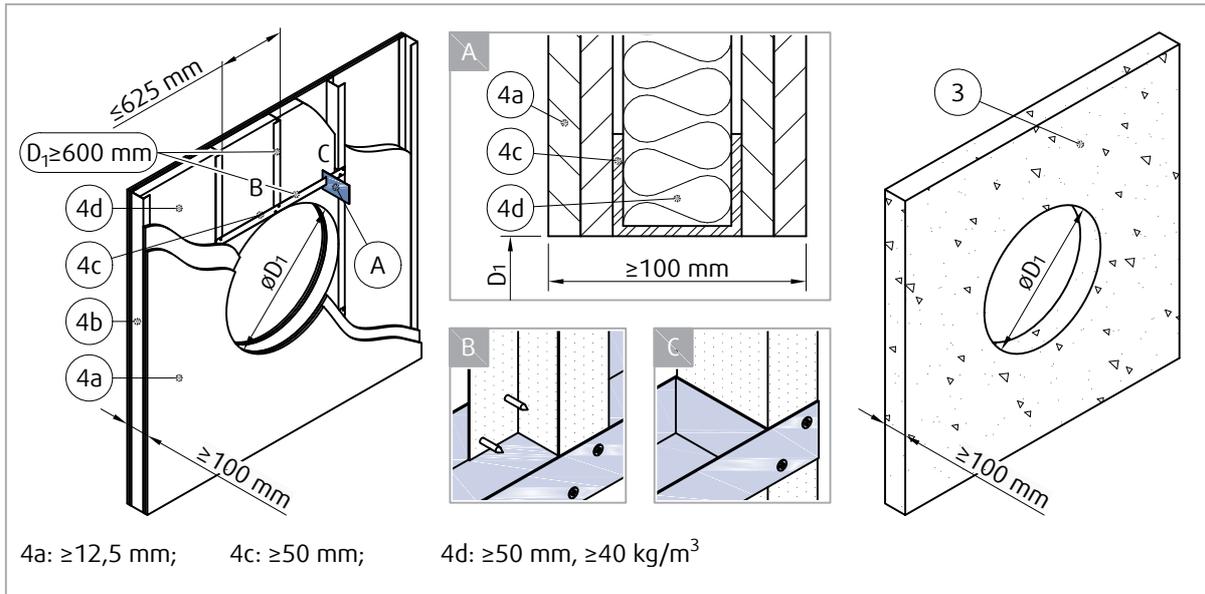
 ON	F-R60K DN100 ... DN630	EI 60 (v _e - i ↔ o) S	a)  $\geq 100 \text{ mm}$	b)  $\geq 100 \text{ mm}$	 360°
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Notes:

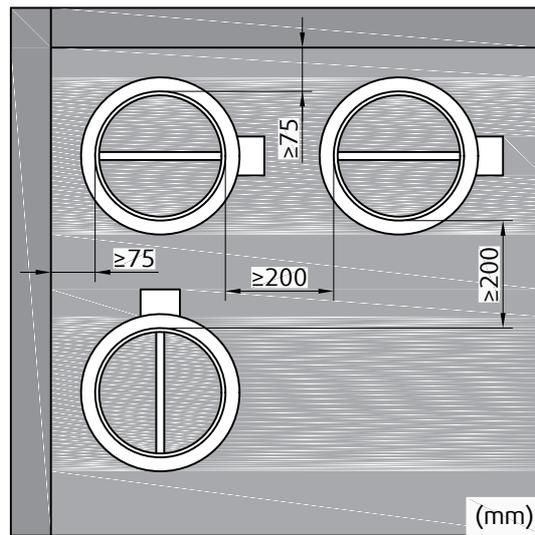
- a) - Flexible (plasterboard) wall
- b) - Concrete/masonry/cellular concrete (rigid) wall
- v_e - Vertical wall placement



Opening and Wall and/or Ceiling Preparations



Damper Minimum Distances



Legend for Installation ON a wall

- F1** - Screw d=4; e.g. DIN7981
- F2** - Fire resistive coating, Kleber K84/Promat or Grena-klebepaste/Grena
- 1** - Fire damper (F-R60K)
- 2** - Bendable hanger (part of the sheet metal ring cover)
- 3** - Concrete/masonry/cellular concrete wall or ceiling
- 4** - Flexible (plasterboard) wall
- 4a** - 2 layers of plasterboard fireproof plate type F, EN 520
- 4b** - Vertical CW – profiles
- 4c** - Horizontal CW – profiles
- 4d** - Mineral wool; thickness/cubic density see picture.

Installation ON a Shaft Wall

One Side Gypsum Covered Wall - 2 Layers

IMPORTANT: The insulation ring cannot be delivered separately! The insulation ring is delivered pre-mounted on a damper.

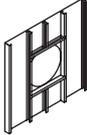
1. The supporting construction opening must be prepared as depicted in wall preparation. Opening surfaces must be even and cleaned off.
2. The opening dimension D1 is driven by the nominal dimensions of the damper with added clearance. The flexible wall opening must be reinforced as per the standards for plasterboard walls when a vertical beam was breached with the opening.

Note: Damper installation side is the opposite to the shaft wall beam side.

3. Insert the duct into the opening with its end flush with the supporting construction on the side where the fire damper will be mounted.
4. Bend outwards hangers on the metal sheet covering ring.
5. Apply a suitable fire resistive caulk (F2) to the fire damper insulation ring on the wall connection side.
6. Insert the damper into the duct and fix the insulation ring through bendable hangers to the wall with screws (F1) into the wall beams or with plugs for gypsum boards.
7. If needed, uncover and clean the damper after installation.
8. Check the damper's functionality

Installation Distances

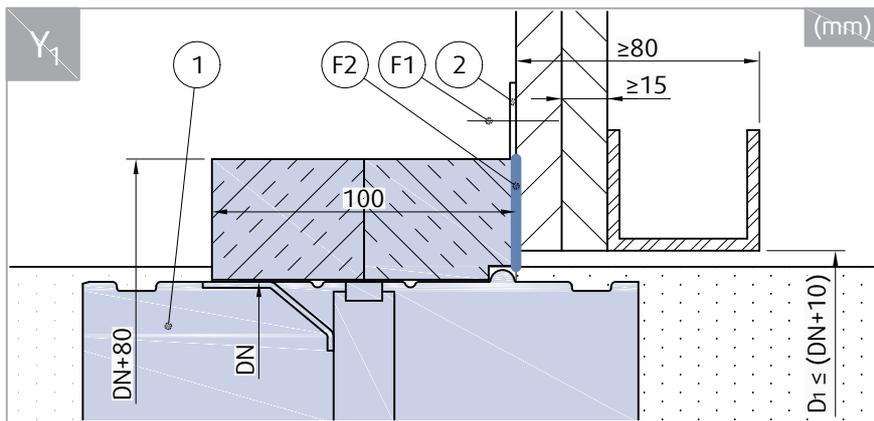
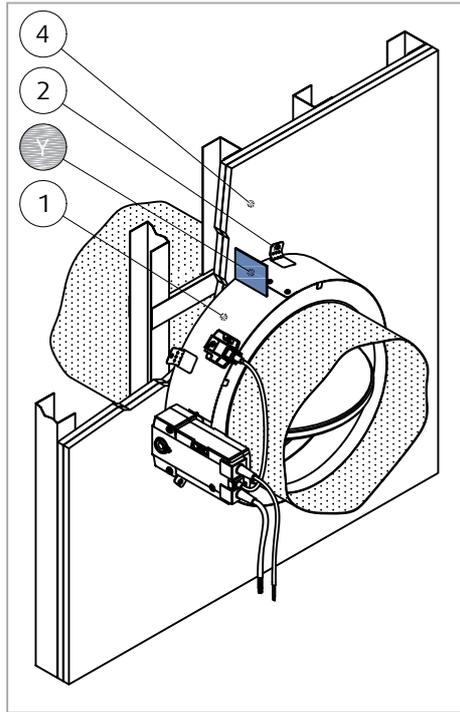
According to the standard EN 1366-2, the minimum distance from the wall or ceiling to the duct holding the fire damper is 75 mm. For multiple crossings through a fire resistive wall the minimum distance between the duct opening is 200 mm. This applies for distances between the duct holding the damper and a nearby foreign object crossing the fire-resistive wall.

 ON	F-R60K DN100 ... DN630	EI 60 ($v_e - i \leftrightarrow o$) S	d)  ≥ 80 mm	 360°
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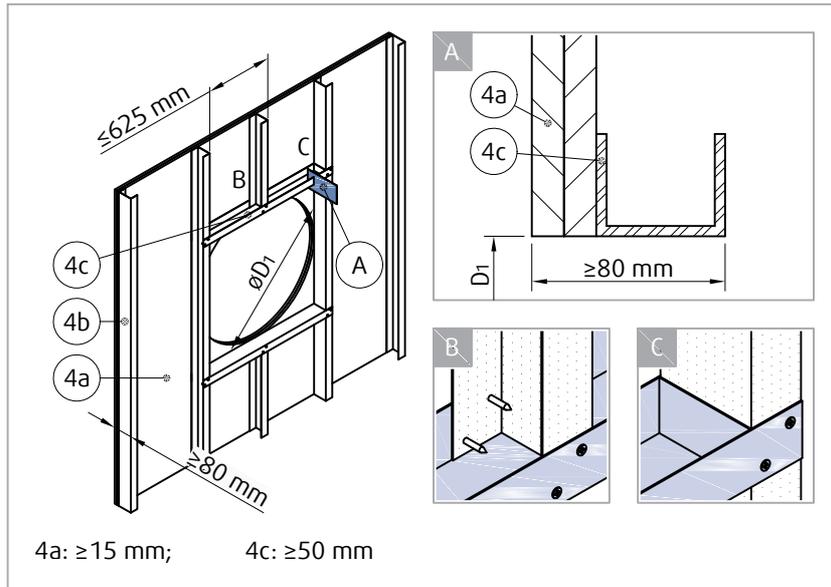
Notes:

d) - Shaft wall - one side covered with 2 layers of gypsum board

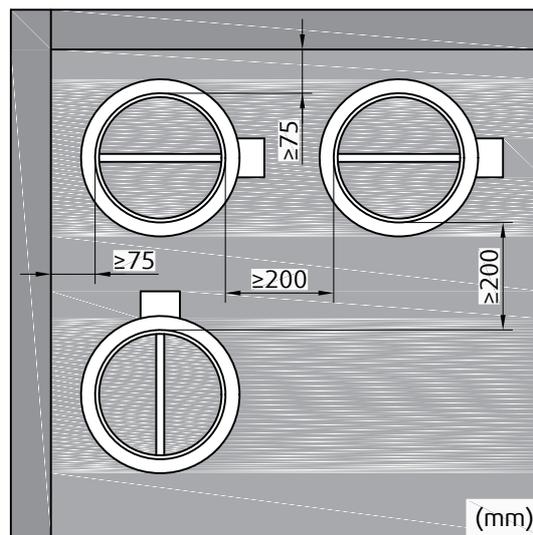
v_e - Vertical wall placement



Opening and Wall and/or Ceiling Preparations



Damper Minimum Distances



Legend for Installation ON a Shaft Wall

- F1** - Screw d=4; e.g. DIN7981
- F2** - Fire resistive coating, Kleber K84/Promat or Grena-klebepaste/Grena
- 1** - Fire damper (F-R60K)
- 2** - Bendable hanger (part of the sheet metal ring cover)
- 3** Concrete/masonry/cellular concrete wall or ceiling
- 4** Flexible (plasterboard) wall
- 4a** 2 layers of plasterboard fireproof plate type F, EN 520
- 4b** Vertical CW – profiles
- 4c** Horizontal UW – profiles

Installation ON a Ceiling

Rigid Ceiling, Floor

IMPORTANT: The insulation ring cannot be delivered separately! The insulation ring is delivered pre-mounted on a damper.

1. The supporting construction opening must be prepared as depicted in wall preparation. Opening surfaces must be even and cleaned off.
2. The opening dimension D1 is driven by the nominal dimensions of the damper with added clearance.
3. Insert the duct into the opening with its end flush with the supporting construction on the side where the fire damper will be mounted.
4. Apply glue (F4) to segments of mineral wool (F3). Fill the opening with segments of mineral wool (F3) with density at least 100 kg/m^3 to create filling between duct and wall.
5. Bend outwards hangers on the metal sheet covering ring.
6. Apply a suitable fire resistive caulk (F2) to the fire damper insulation ring on the wall connection side.
7. Insert the damper into the duct and fix the insulation ring through bendable hangers to the wall with screws (F1) into the wall beams or with plugs for gypsum boards.
8. If needed, uncover and clean the damper after installation.
9. Check the damper's functionality

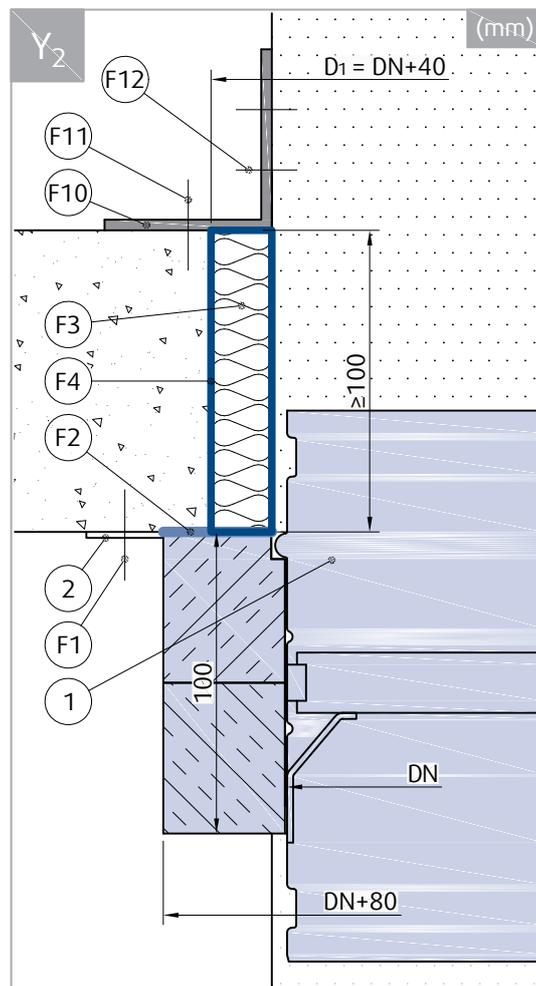
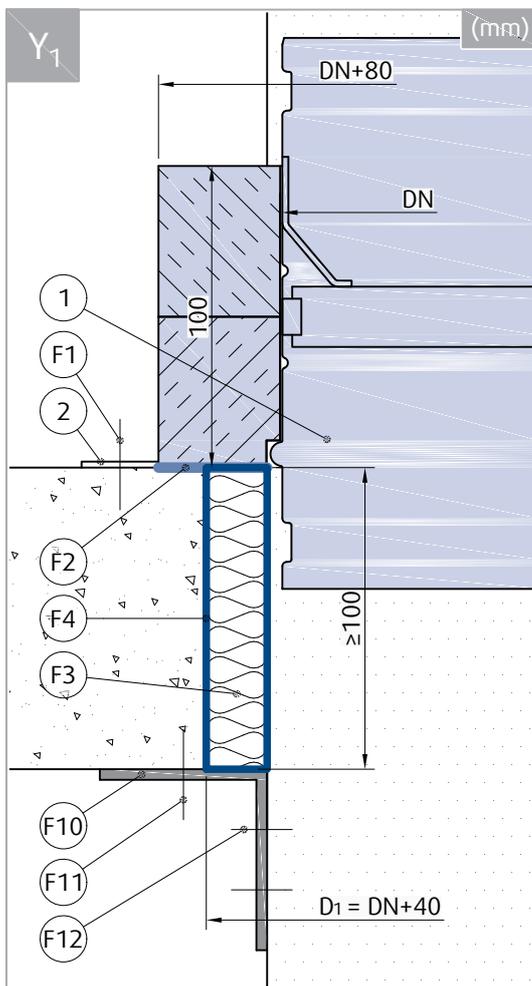
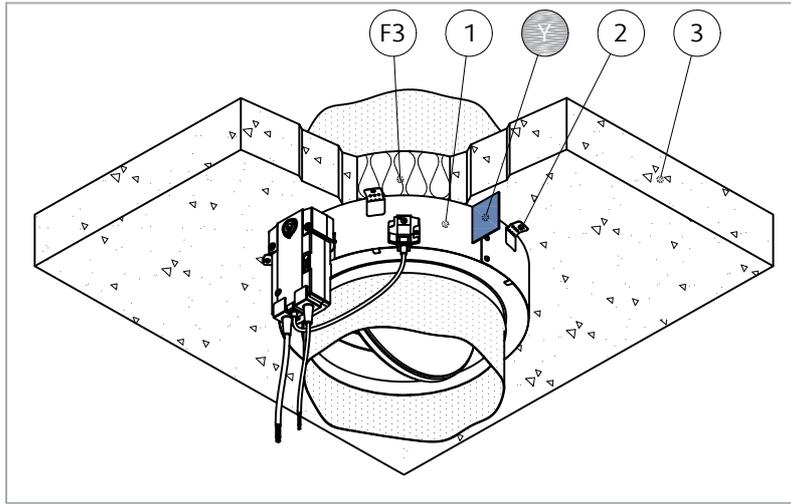
Installation Distances

According to the standard EN 1366-2, the minimum distance from the wall or ceiling to the duct holding the fire damper is 75 mm. For multiple crossings through a fire resistive wall the minimum distance between the duct opening is 200 mm. This applies for distances between the duct holding the damper and a nearby foreign object crossing the fire-resistive wall.

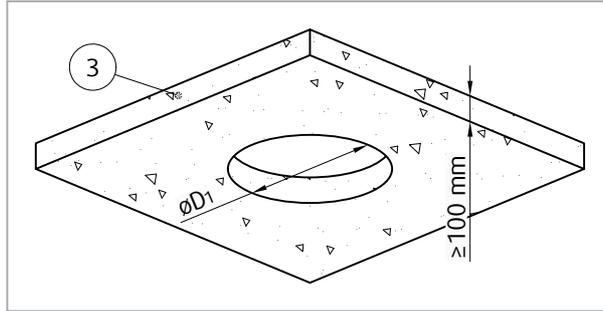
 ON	F-R60K DN100 ... DN630	EI 60 ($h_o - i \leftrightarrow o$) S	c)  $\geq 100 \text{ mm}$ $\geq 620 \text{ kg/m}^3$
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Notes:

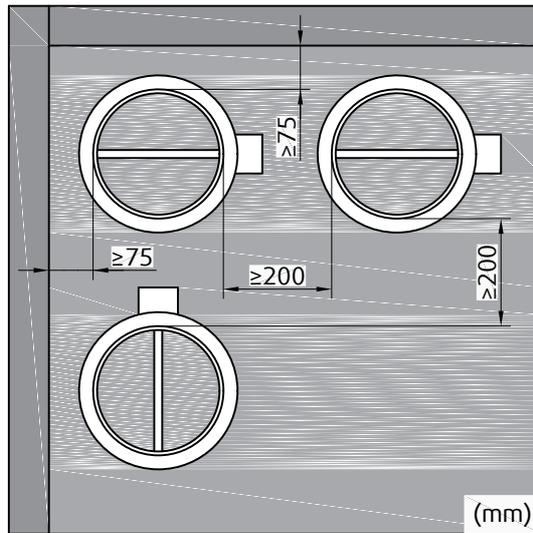
- c) - Concrete/cellular concrete (rigid) floor/ceiling
- d) - Shaft wall - one side covered with 2 layers of gypsum board
- h_o - Horizontal floor/ceiling placement



Opening and Wall and/or Ceiling Preparations



Damper Minimum Distances



Legend for Installation ON a Ceiling

F1 - Screw $d=4$; e.g. DIN7981

F2 - Fire resistive coating, Kleber K84/Promat or Grena-klebepaste/Grena

F3 - Mineral wool filling (min. 100 kg/m^3)

F4 - Fire resistive coating (Hilti CSF-CT).

F10 - L shaped hanger, (Hilti MVA-LC; $\text{DN}100 < 2x \leq \text{DN}250$; $\text{DN}250 < 3x \leq \text{DN}355$; $\text{DN}355 < 4x \leq \text{DN}630$)

F11 - Screw M8 with suitable wall plug.

1 - Fire damper (F-R60K)

2 - Bendable hanger (part of the sheet metal ring cover)

3 - Concrete/masonry/cellular concrete wall or ceiling

Installation OUT of the Wall

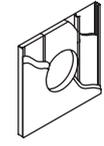
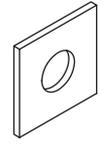
Standard Flexible & Rigid Wall

IMPORTANT: The insulation ring cannot be delivered separately! The insulation ring is delivered pre-mounted on a damper.

1. The supporting construction opening must be prepared as depicted in wall preparation. Opening surfaces must be even and cleaned off.
2. The opening dimension D1 is driven by the nominal dimensions of the damper with added clearance. The flexible wall opening must be reinforced as per the shaft plasterboard walls manufacturer instructions (usually only top and bottom horizontal metal beam).
3. Place the duct into the opening and onto the load bearing structure (hangers) in such a way that the duct will stick out of the wall to the needed distance.
4. Press the insulation (F3) for filling the opening around the duct and cut its edges to even it with the wall surface.
5. Fix the duct to a suitable sheet metal ringlet accessory (A1) or UVH30/Lindab ringlet at the wall surface. Then fix the ringlet through L-profile (F5) to the supporting construction with screws (F1).
6. Insert the damper into the duct and fasten through the duct that crosses the wall with screws (F6). Make sure the fixing screws are not interfering with the blade movement.
7. Place two threaded rods (F7) through the suitable sheet metal ringlet (accessory) or UVH30 ringlet.
8. Hang the damper weight and connected duct directly after the damper insulating ring also with nuts (F8).
9. Paint the insulation surface in alignment with the wall with a suitable glue (F2) up to 100 mm from the duct to cover the insulation and part of the wall.
10. Insulate the duct parts between the damper and the wall with one layer of insulation (F8). For easier fixing, the duct insulation should overlap the dampers' insulation ring at least 20 mm.
11. Entwine the insulation. Secure the insulation with a binding wire (d=1,6 mm) in the standard way that is applied when insulating circular ducts or by using wire clamps to sew together the meshes on the top of the insulation (F8).
12. Compress the overlapping insulation while applying aluminium tape (F9) to fix the insulation to the damper ring. The actuator and thermal sensor must remain uninsulated and without tape for future maintenance.
13. If needed, uncover and clean the damper after installation.
14. Make sure the fixing screws are not interfering with the blade movement and check the damper's functionality.

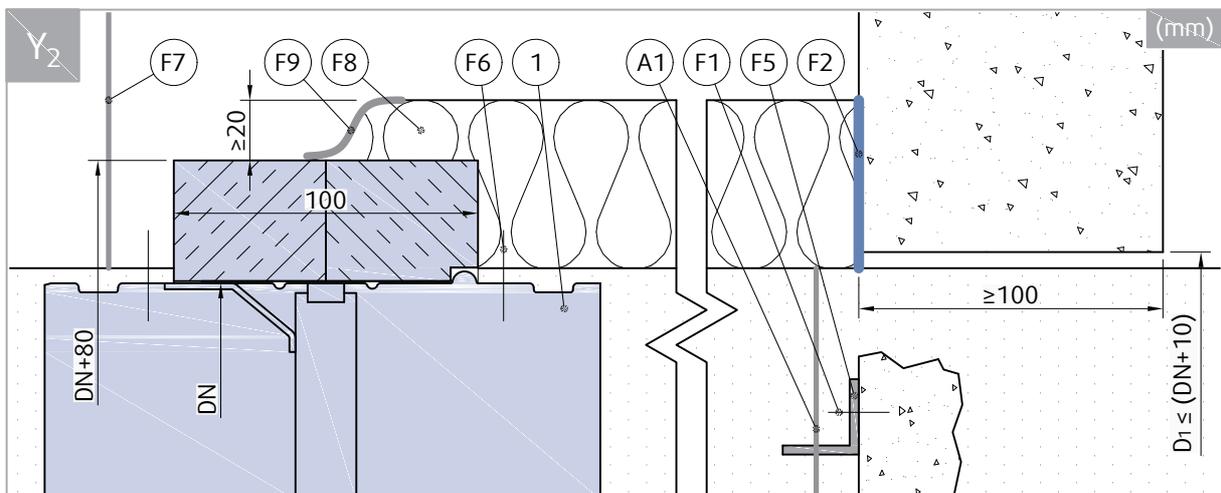
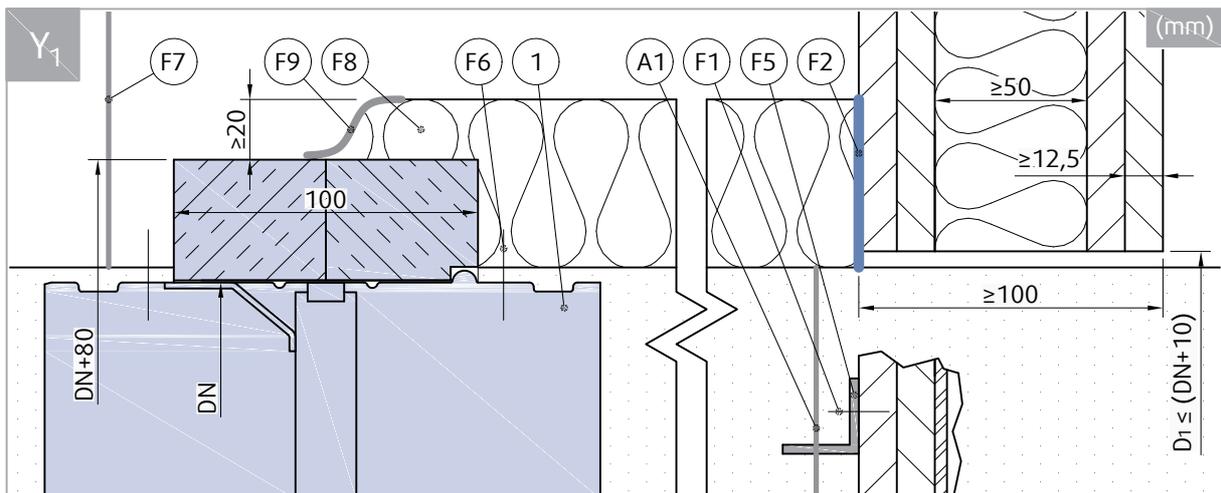
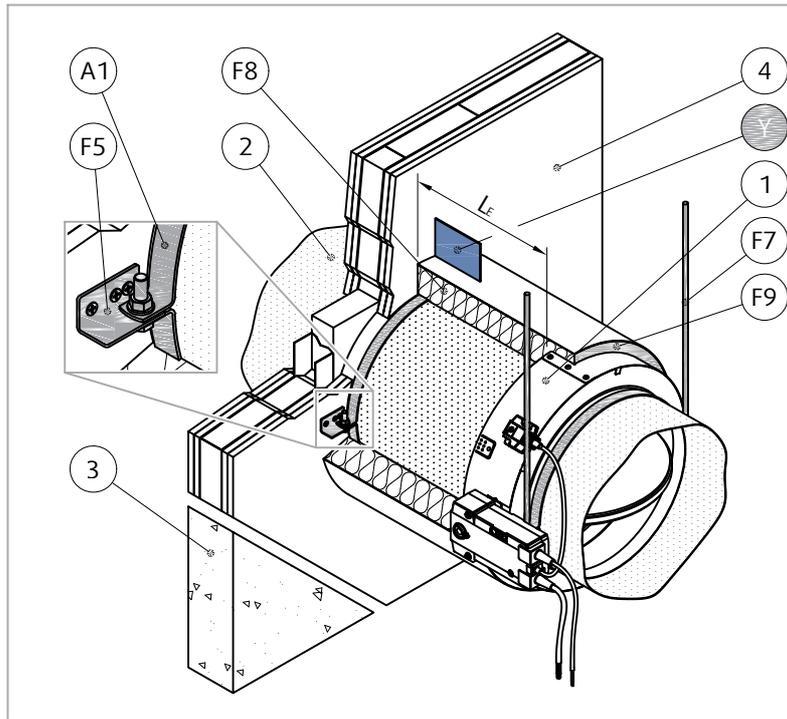
Installation Distances

For installation Out of the wall, the minimum distance from the wall or ceiling to the damper body is 100 mm. For multiple crossings through a fire resistive wall the minimum distance between the duct opening is 200 mm. This applies for distances between the duct holding the damper and a nearby foreign object crossing the fire-resistive wall.

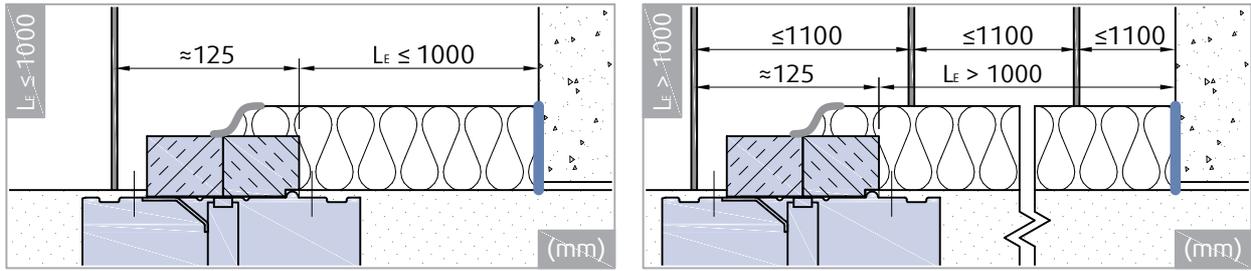
 OUT	F-R60K DN100 ... DN630	EI 60 (v _e - i ↔ o) S	a)  ≥ 100 mm	b)  ≥ 100 mm	 360°
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Notes:

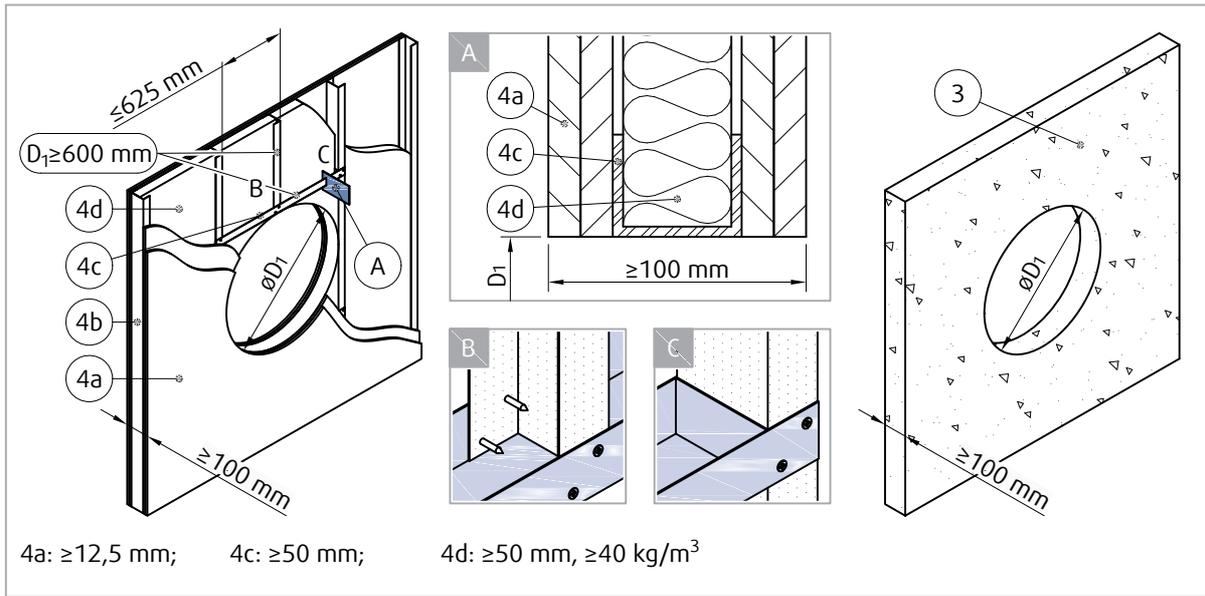
- a) - Flexible (plasterboard) wall
- b) - Concrete/masonry/cellular concrete (rigid) wall
- v_e - Vertical wall placement



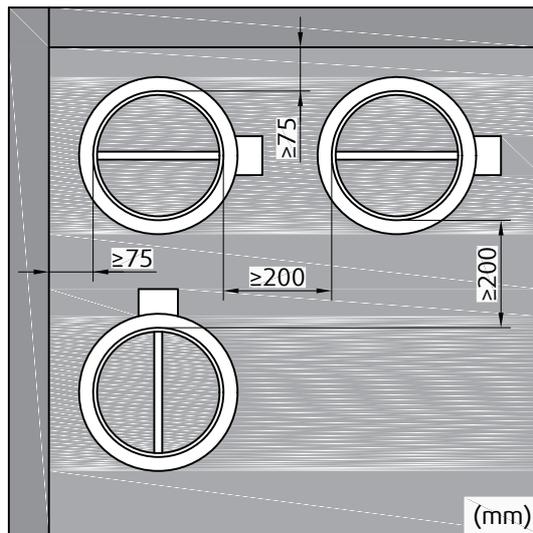
Duct Hanger Rules



Opening and Wall and/or Ceiling Preparations



Damper Minimum Distances



Legend for Installation OUT of the Standard Wall

- F1** - Screw $d=4$; e.g. DIN7981
- F2** - Fire resistive coating, Kleber K84/Promat or Grena-klebepaste/Grena
- F3** - Mineral wool filling (min. 100 kg/m^3)
- F5** - L-profile $25 \times 25 \times 3$ or part of accessory R1-F-R60K ringlet
- F6** - Self taping screws $d=4.2$
- F7** - M10 Steel threaded rod + M10 nuts (2x on each rod)
- F8** - Stone wool PAROC Pro Wired Mat 80 AL1 (PAROC), thickness 70 mm, nominal density 80 kg/m^3 ; Binding wires or wire clamps.
- F9** - Aluminium tape
- 1** - Fire damper (F-R60K)
- 2** - Bendable hanger
- A1** - Ringlet UVH30 (Lindab) or Accessory: R1-F-R60K ringlet for Out installation.
- 3** - Concrete/masonry/cellular concrete wall or ceiling.
- 4** - Flexible (plasterboard) wall
 - 4a** - 2 layers of plasterboard fireproof plate type F, EN 520
 - 4b** - Vertical CW – profiles
 - 4c** - Horizontal UW – profiles
 - 4d** - Mineral wool; thickness/cubic density see picture.

Installation OUT of the Shaft Wall

One Side Gypsum Covered Wall - 2 Layers

1. The supporting construction opening must be prepared as depicted in wall preparation. Opening surfaces must be even and cleaned off.
2. The opening dimension D1 is driven by the nominal dimensions of the damper with added clearance. The flexible wall opening must be reinforced as per the shaft plasterboard walls manufacturer instructions (usually only top and bottom horizontal metal beam).
3. Place the duct into the opening and onto the load bearing structure (hangers) in such a way that the duct will stick out of the wall to the needed distance.
4. Press the insulation (F3) for filling the opening around the duct and cut its edges to even it with the wall surface.
5. Fix the duct to a suitable sheet metal ringlet accessory (A1) or UVH30/Lindab ringlet at the wall surface. Then fix the ringlet through L-profile (F5) to the supporting construction with screws (F1).
6. Insert the damper into the duct and fasten through the duct that crosses the wall with screws (F6). Make sure the fixing screws are not interfering with the blade movement.
7. Place two threaded rods (F7) through the suitable sheet metal ringlet (accessory) or UVH30 ringlet.
8. Hang the damper weight and connected duct directly after the damper insulating ring also with nuts (F8).
9. Paint the insulation surface in alignment with the wall with a suitable glue (F2) up to 100 mm from the duct to cover the insulation and part of the wall.
10. Insulate the duct parts between the damper and the wall with one layer of insulation (F8). For easier fixing, the duct insulation should overlap the dampers' insulation ring at least 20 mm.
11. Entwine the insulation. Secure the insulation with a binding wire (d=1,6 mm) in the standard way that is applied when insulating circular ducts or by using wire clamps to sew together the meshes on the top of the insulation (F8).
12. Compress the overlapping insulation while applying aluminium tape (F9) to fix the insulation to the damper ring. The actuator and thermal sensor must remain uninsulated and without tape for future maintenance.
13. If needed, uncover and clean the damper after installation.
14. Make sure the fixing screws are not interfering with the blade movement and check the damper's functionality.

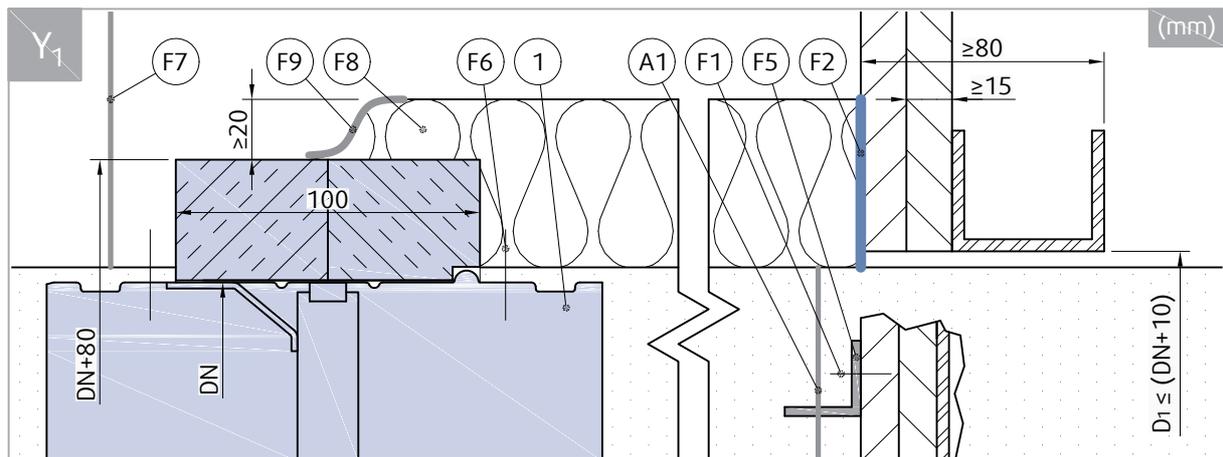
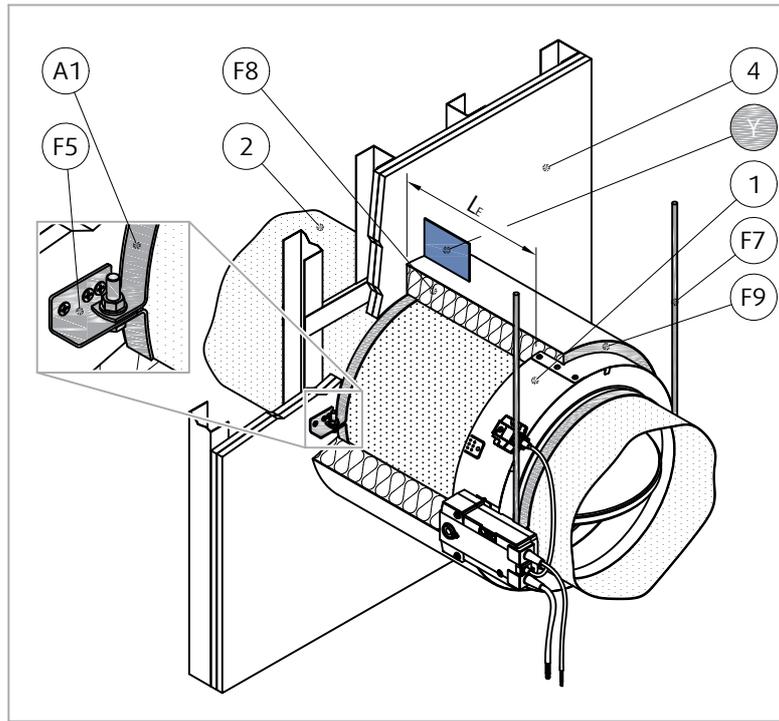
Installation Distances

For installation Out of the wall, the minimum distance from the wall or ceiling to the damper body is 100 mm. For multiple crossings through a fire resistive wall the minimum distance between the duct opening is 200 mm. This applies for distances between the duct holding the damper and a nearby foreign object crossing the fire-resistive wall.

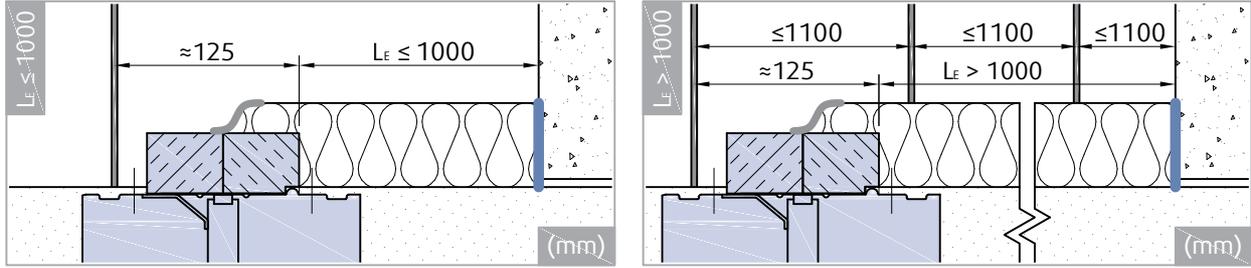
 <p>F-R60K DN100 ... DN630 OUT</p>	<p>El 60 (v_e - i ↔ o) S</p>	<p>d)</p>  <p>≥ 80 mm</p>	 <p>360°</p>
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Notes:

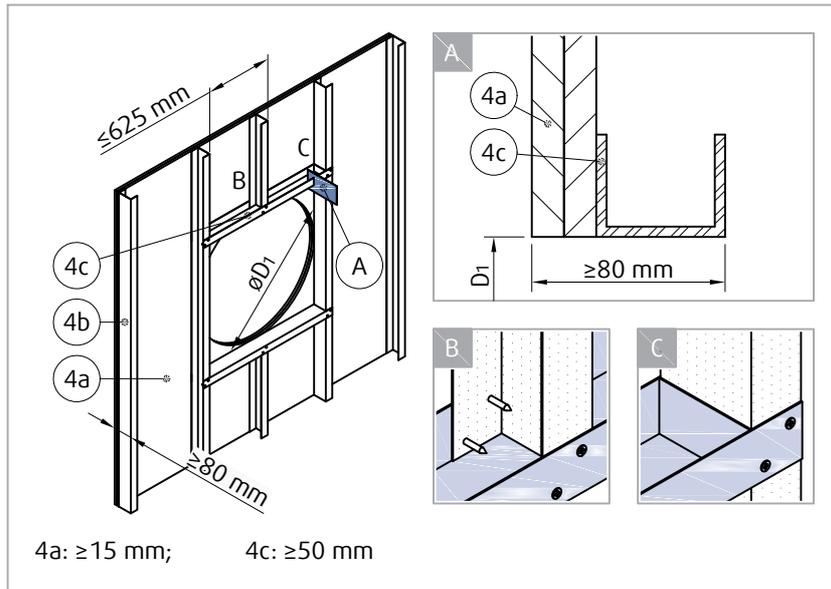
- d)** - Shaft wall - one side covered with 2 layers of gypsum board
- v_e** - Vertical wall placement



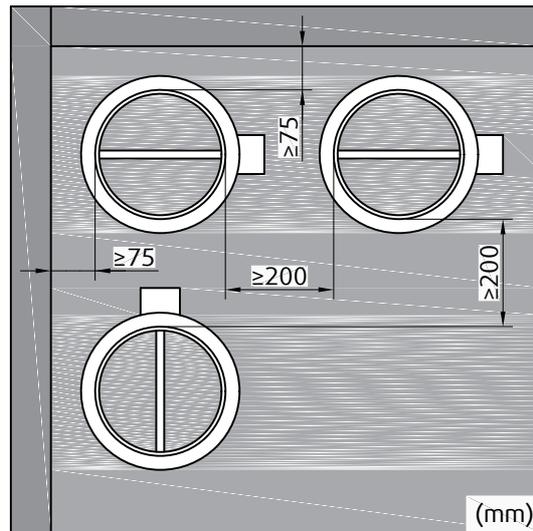
Duct Hanger Rules



Opening and Wall and/or Ceiling Preparations



Damper Minimum Distances



Legend for Installation OUT of the Shaft Wall

F1 - Screw d=4; e.g. DIN7981

F2 - Fire resistive coating, Kleber K84/Promat or Grena-klebepaste/Grena

F3 - Mineral wool filling (min. 100 kg/m³)

F5 - L-profile 25x25x3 or part of accessory R1-F-R60K ringlet

F6 - Self tapping screws d=4.2

F7 - M10 Steel threaded rod + M10 nuts (2x on each rod)

F8 - Stone wool PAROC Pro Wired Mat 80 AL1 (PAROC), thickness 70 mm, nominal density 80 kg/m³; Binding wires or wire clamps.

F9 - Aluminium tape

1 - Fire damper (F-R60K)

2 - Bendable hanger

A1 - Ringlet UVH30 (Lindab) or Accessory: R1-F-R60K ringlet for Out installation.

4 - Flexible (plasterboard) wall

4a - 2 layers of plasterboard fireproof plate type F, EN 520

4b - Vertical CW – profiles

4c - Horizontal UW – profiles

Electrical Connections

IMPORTANT

- Danger of electric shock!
- Switch off the power supply before working on any electrical equipment.
- Only qualified electricians are allowed to work on the electrical system.

Actuator Size Map

A	DN (mm)															
	100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560
	Belimo BFL...-T-... / Gruner 340TA-...-05									Belimo BFN...-T-... / Gruner 360TA-...-12						

Electrical Parameters per Activation and Actuator Type

AT	A	T (Nm)	NV (V)	F (Hz)	CO	CR	WS (VA)	WN
					(W)			
B230T	BFL230-T	4	AC 230	50/60	3,5	1,1	6,5	I _{max} 4 A @ 5 ms
	BFN230-T	9	AC 230		9	2,1	10	I _{max} 4 A @ 5 ms
G230T	340TA-230-...-05-...	5	AC 230		5,5	2	9,5	I _{max} 5,2 A @ 5 ms
	360TA-230-...-12-...	12	AC 230		5,5	1,5	11,5	I _{max} 5,2 A @ 5 ms
BST0	BFL24-T-ST & BKN230-24	4	AC 230		10	3,5	11	I _{max} 4 A @ 5 ms
	BFN24-T-ST & BKN230-24	9	AC 230		10	3,5	11	I _{max} 4 A @ 5 ms
GST0	340TA-24-...-05-.../ST01 & FSC-UFC24-2	5	AC/DC 24		8,5	4	11	I _{max} 5,6 A @ 5 ms
	360TA-24-...-12-.../ST01 & FSC-UFC24-2	12	AC/DC 24		7	4	9	I _{max} 5,6 A @ 5 ms
B24T, B24T-W	BFL24-T, BFL24-T-ST	4	AC/DC 24		2,5	0,8	4	I _{max} 8,3 A @ 5 ms
	BFN24-T, BFN24-T-ST	9	AC/DC 24		4	1,4	6	I _{max} 8,3 A @ 5 ms
G24T, G24T-W	340TA-24-...-05-... 340TA-24-...-05-.../ST01	5	AC/DC 24		6,5	2	9	I _{max} 5,6 A @ 5 ms
	360TA-24-...-12-... 360TA-24-...-12-.../ST01	12	AC/DC 24		5	2	7	I _{max} 5,6 A @ 5 ms
B24T-SR	BFL24-SR-T	4	AC/DC 24		3	1	6,5	I _{max} 8,3 A @ 5 ms
	BFN24-SR-T	9	AC/DC 24		4,5	1,7	8,5	I _{max} 8,3 A @ 5 ms
G24T-SR	340CTA-24-...-05-...	5	AC/DC 24	6,5	2	7,5	DC (0)2 V ...10 V / Ri > (100 kΩ)	
	360CTA-24-...-12-...	12	AC/DC 24	5	2	7	50 kΩ (0)4 ... 20 mA	

Notes

AT - Activation type

A - Belimo Actuator type

T - Torque

NV - Nominal Voltage

F - Frequency

CO - Consumption in Operation

CR - Consumption in Rest

WS - Wire sizing consumption

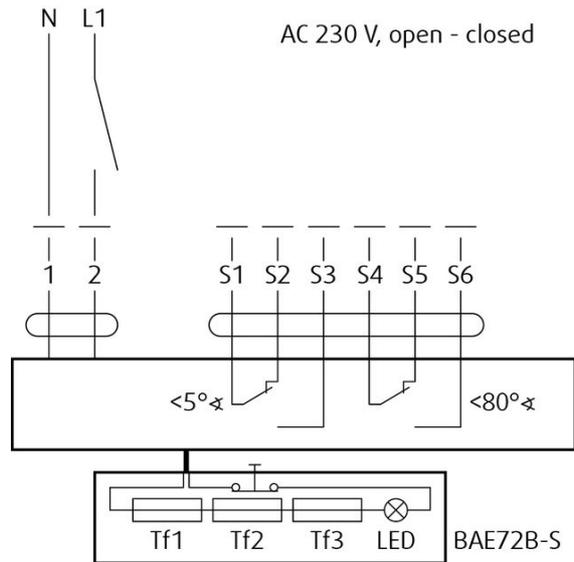
WS - Wire sizing consumption Note**Type of Activation B230T**

IMPORTANT: Risk of electric shock!

Switch off the power supply before working on any electrical equipment.

Only qualified electricians are allowed to work on the electrical system.

Actuator power supply: 230V AC, 50/60 Hz

**Notes:**

- A device that disconnects the pole conductors (minimum contact gap 3 mm) is required for isolation from the power supply.
- Parallel connection of several actuators possible.
- Power consumption must be observed!

Legend

- 1** - Blue cable colour
- 2** - Brown cable colour
- S1** - Violet cable colour
- S2** - Red cable colour
- S3** - White cable colour
- S4** - Orange cable colour
- S5** - Pink cable colour
- S6** - Grey cable colour
- Tf** - Thermal fuse

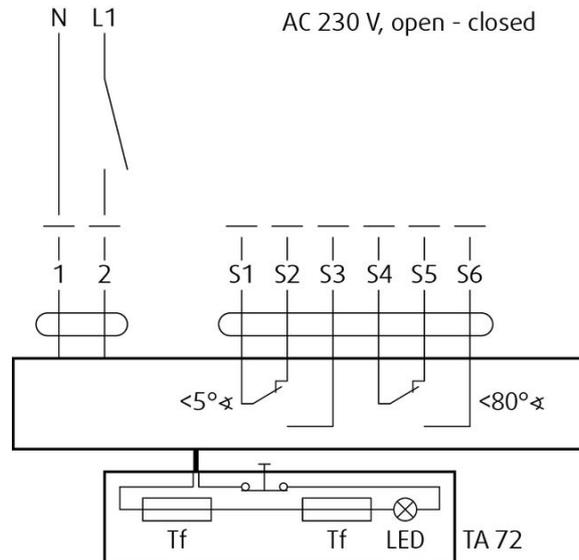
Type of Activation G230T

IMPORTANT: Risk of electric shock!

Switch off the power supply before working on any electrical equipment.

Only qualified electricians are allowed to work on the electrical system.

Actuator power supply: 230V AC, 50/60 Hz



Notes:

- A device that disconnects the pole conductors (minimum contact gap 3 mm) is required for isolation from the power supply.
- Parallel connection of several actuators possible.
- Power consumption must be observed!

Legend

- 1** - Blue cable colour
- 2** - Brown cable colour
- S1** - Violet cable colour
- S2** - Red cable colour
- S3** - White cable colour
- S4** - Orange cable colour
- S5** - Pink cable colour
- S6** - Grey cable colour
- Tf** - Thermal fuse

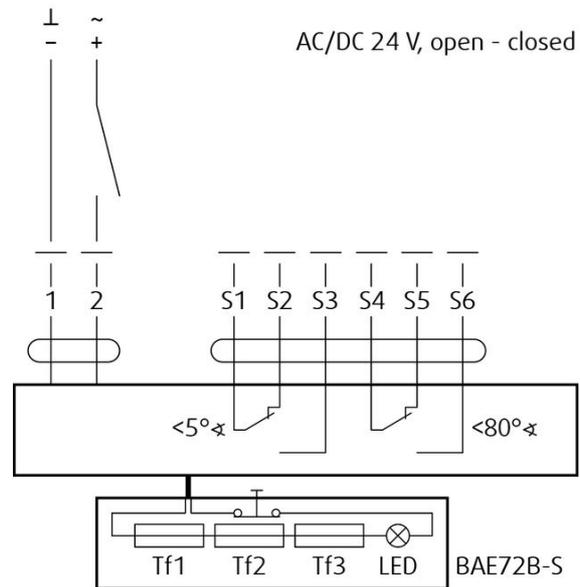
Type of Activation B24T

IMPORTANT: Risk of electric shock!

Switch off the power supply before working on any electrical equipment.

Only qualified electricians are allowed to work on the electrical system.

Actuator power supply: AC (50/60 Hz)/DC 24 V



Legend

- 1** - Blue cable colour (black for BF24-T)
- 2** - Red cable colour (white for BF24-T)
- S1** - Violet cable colour (white for BF24-T)
- S2** - Red cable colour (white for BF24-T)
- S3** - White cable colour (white for BF24-T)
- S4** - Orange cable colour (white for BF24-T)
- S5** - Pink cable colour (white for BF24-T)
- S6** - Grey cable colour (white for BF24-T)
- Tf** - Thermal fuse

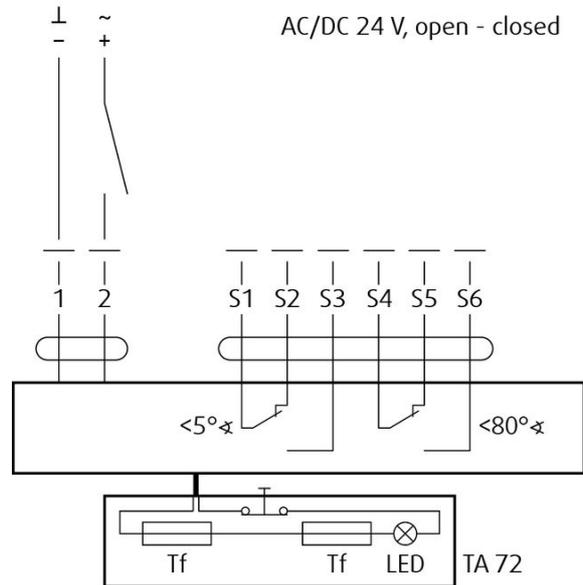
Type of Activation G24T

IMPORTANT: Risk of electric shock!

Switch off the power supply before working on any electrical equipment.

Only qualified electricians are allowed to work on the electrical system.

Actuator power supply: AC (50/60 Hz)/DC 24 V



Notes:

- Supply via safety isolation transformer.
- Parallel connection of several actuators possible.
- Power consumption must be observed!

Legend

- 1** - Black cable colour
- 2** - Red cable colour
- S1** - Violet cable colour
- S2** - Red cable colour
- S3** - White cable colour
- S4** - Orange cable colour
- S5** - Pink cable colour
- S6** - Grey cable colour
- Tf** - Thermal fuse

Type of Activation B24T-W

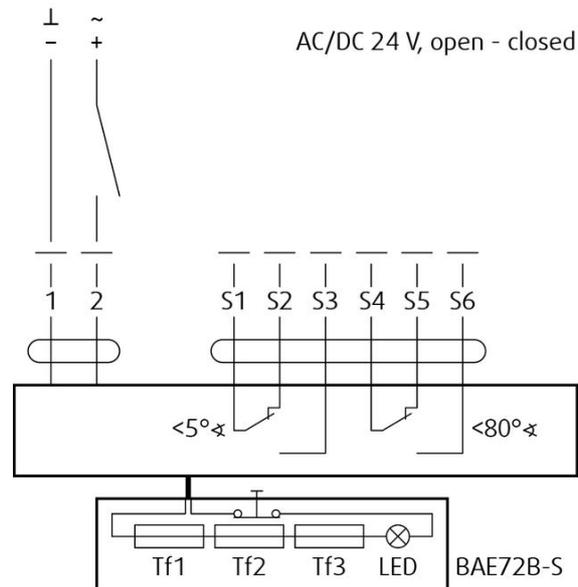
IMPORTANT: Risk of electric shock!

Switch off the power supply before working on any electrical equipment.

Only qualified electricians are allowed to work on the electrical system.

This type of activation is with provided cable connectors for the supply and communication unit (communication unit not part of the mechanism).

Actuator power supply: AC (50/60 Hz)/DC 24 V



Notes:

- Supply via safety isolation transformer.
- Parallel connection of several actuators possible.
- Power consumption must be observed!

Legend

- 1** Blue cable colour (black for BF24-T) in connector 1
- 2** Brown cable colour (white for BF24-T) in connector 1
- S1** Violet cable colour (white for BF24-T) in connector 2
- S2** Red cable colour (white for BF24-T) in connector 2
- S3** White cable colour (white for BF24-T) in connector 2
- S4** Orange cable colour (white for BF24-T) in connector 2
- S5** Pink cable colour (white for BF24-T) in connector 2
- S6** Grey cable colour (white for BF24-T) in connector 2
- Tf** Thermal fuse

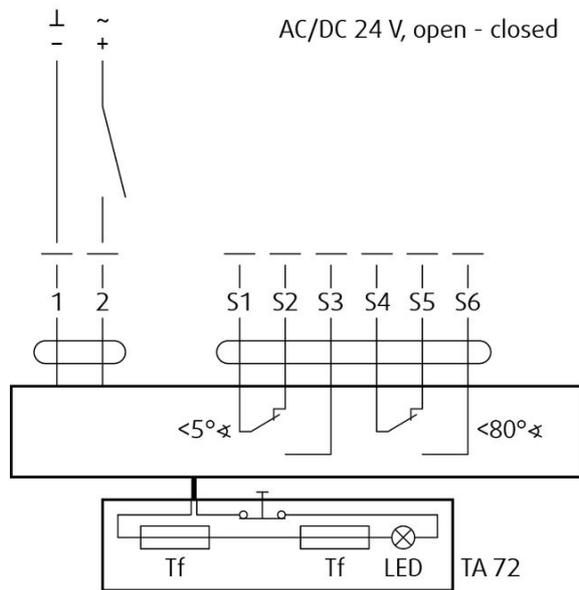
Type of Activation G24T-W

IMPORTANT: Risk of electric shock!

Switch off the power supply before working on any electrical equipment.

Only qualified electricians are allowed to work on the electrical system.

This type of activation is with provided cable connectors for the supply and communication unit (communication unit not part of the mechanism).



Notes:

- Supply via safety isolation transformer.
- Parallel connection of several actuators possible.
- Power consumption must be observed!

Legend

- 1** Black cable colour (black for BF24-T) in connector 1
- 2** Red cable colour (white for BF24-T) in connector 1
- S1** Violet cable colour (white for BF24-T) in connector 2
- S2** Red cable colour (white for BF24-T) in connector 2
- S3** White cable colour (white for BF24-T) in connector 2
- S4** Orange cable colour (white for BF24-T) in connector 2
- S5** Pink cable colour (white for BF24-T) in connector 2
- S6** Grey cable colour (white for BF24-T) in connector 2
- Tf** Thermal fuse

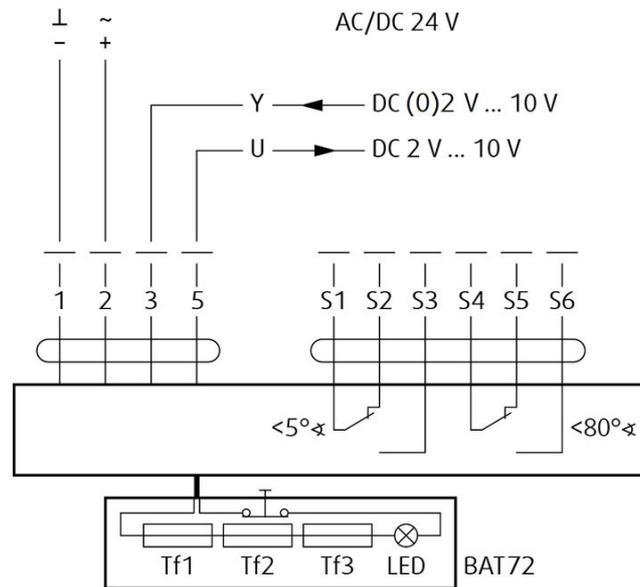
Type of Activation B24T-SR

IMPORTANT: Risk of electric shock!

Switch off the power supply before working on any electrical equipment.

Only qualified electricians are allowed to work on the electrical system.

Actuator power supply: AC (50/60 Hz)/DC 24 V



Notes:

- Supply via safety isolation transformer.
- Power consumption must be observed!

Legend

- 1** Blue cable colour
- 2** Brown cable colour
- 3** White cable colour
- 5** Orange cable colour
- S1** Violet cable colour
- S2** Red cable colour
- S3** White cable colour
- S4** Orange cable colour
- S5** Pink cable colour
- S6** Grey cable colour
- Tf** Thermal fuse

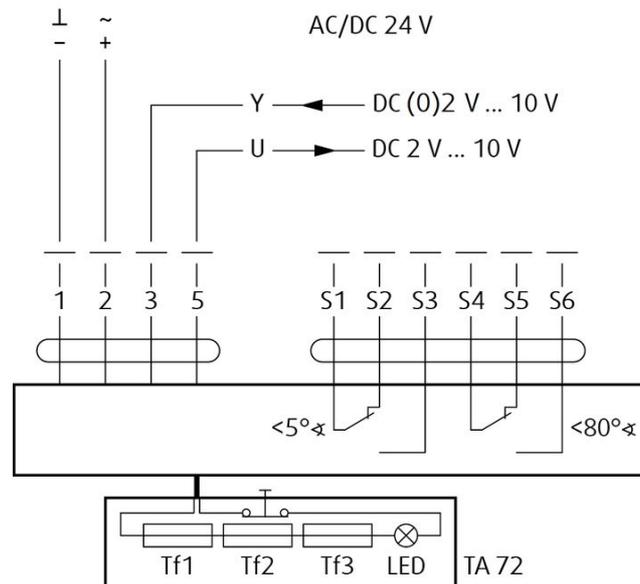
Type of Activation G24T-SR

IMPORTANT: Risk of electric shock!

Switch off the power supply before working on any electrical equipment.

Only qualified electricians are allowed to work on the electrical system.

Actuator power supply: AC (50/60 Hz)/DC 24 V



Notes:

- Supply via safety isolation transformer.
- Power consumption must be observed!

Legend

- 1** Blue cable colour
- 2** Brown cable colour
- 3** Black cable colour
- 4** Grey cable colour
- S1** Violet cable colour
- S2** Red cable colour
- S3** White cable colour
- S4** Orange cable colour
- S5** Pink cable colour
- S6** Grey cable colour
- Tf** Thermal fuse

Type of Activation BST0

- The actuator and the control module are factory wired.
- Connect the supply voltage to the connecting cable (approx. 1 m, with ferrules).
- Switch off the power supply before working on any electrical equipment.
- Only qualified electricians are allowed to work on the electrical system.
- This type of activation is with a Belimo supply and communication unit BKN230-24 (other communication units on demand).
- Actuator power supply: AC (50/60 Hz)/DC 24 V

LEDs status indication (BST0)

LED colour | LED state | Status

Yellow | ON | Damper open

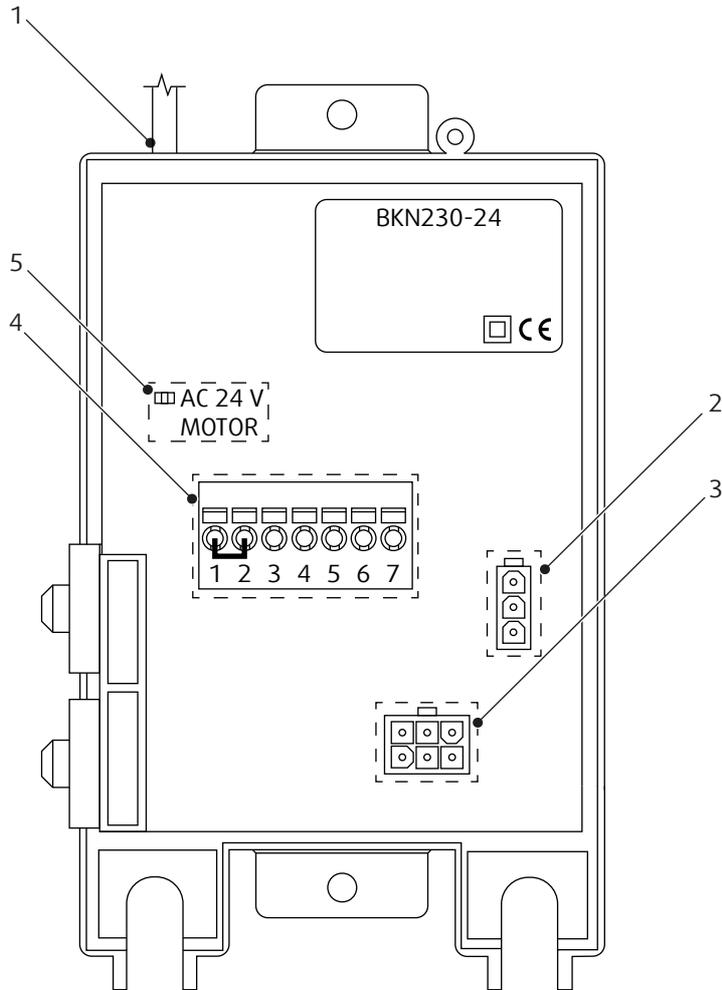
Yellow | Blinks | Damper is opening

Green | ON | Damper closed

Green | Blinks | Damper is closing

Yellow or green | Blinks at double frequency | Error

Yellow and green | OFF | Power failure



Notes:

- Caution! Main power supply voltage!
- Parallel connection of several actuators possible.
- Power consumption and switching thresholds must be observed!
- Combination of power supply voltage and safety extra-low voltage not permitted at the both auxiliary switches.

Legend

1 - Power supply: cable and plug, AC 230 V

2 - 3-pin connector: damper actuator (DC 24 V)

3 - 6-pin connector: damper actuator (position limit switches)

4 - Connecting terminals:

- 1 - 2 Jumper factory-fitted. Can be removed if necessary to be replaced by a thermoelectric trip (the safety function will be triggered if terminals 1 and 2 are not linked).

- 3 – 4 Use Jumper only for commissioning purposes and without BKS24-.. !
 - 5 -
 - 6 "a" connection to BKS24...
 - 7 "b" connection to BKS24...
- 5** - LED indication - Actuator power

Type of Activation GST0

- The actuator and the control module are factory wired.
- Individual control of 2 fire dampers
- Bus protocols (RS-485): BACnet MS/TP and Modbus RTU
- Automatic baud rate detection with BACnet
- Bus monitoring function

LEDs status indication (GST0)

LED color and type | LED state | Status

Yellow (Closed) | ON | Damper closed

Green (Open) | ON | Damper open

Yellow and green | Blinks in parallel | Damper is moving

Yellow and green | Alternately blinks - interval 0.5 sec | Actuator did not reach the end switch position within set time

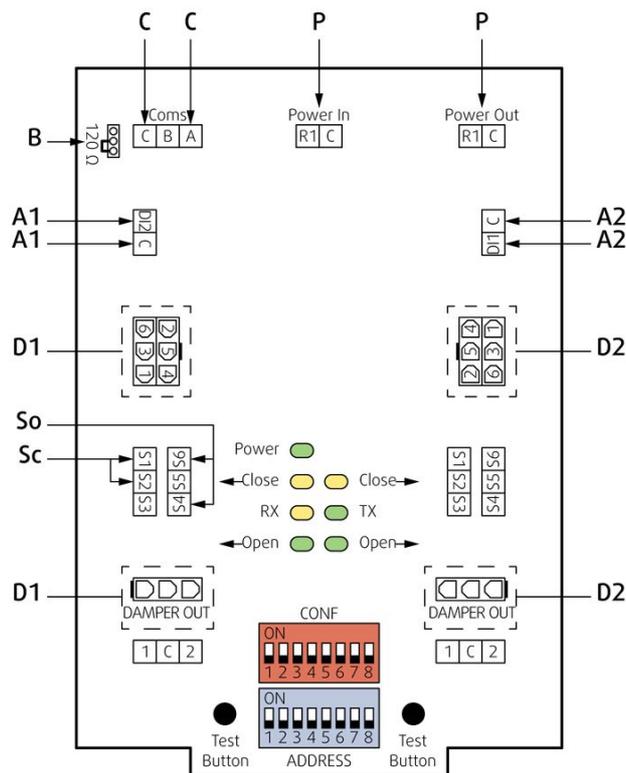
Yellow and green | Alternately blinks - interval 3 sec | Alarm active at damper: bus command = actuator open, actuator = in closed position

Power green | OFF | Power failure

Power green | ON | Power is connected

Yellow Rx | Blinks | Receive data

Green Tx | Blinks | Transmit data



Notes:

- Caution! Main power supply voltage!
- Power consumption and switching thresholds must be observed!
- Combination of power supply voltage and safety extra-low voltage not permitted at the both auxiliary switches.

IMPORTANT:

If only one actuator is connected to the FSC-UFC24-2 the LEDs of the side where no actuator is connected indicate an alarm. A jumper has to be installed between S4 and S6 in the terminal where there is no actuator connected, to indicate an "opened" position in the LED. If the second connection is not activated via bus, there will be no alarm signal on the bus system.

Legend

A1, A2 Analog Application; Digital input for manual override can be selected via bus as „Normally Open“ (= standard open) or „Normally Closed“ (= standard closed) Default: „Normally Open“

B Position of line termination 120 ohm if FSC-UFC24-2 is last Modbus or BACnet device in line

C RS-485 Coms; Modbus RTU or BACnet MS/TP dip switch selectable

D1, D2 Damper 1, Damper 2; Fire or smoke extraction application

P Main power 24 V AC/DC; Daisy chain from and to other FS-UFC24-2

So Contact open

Sc Contact closed

Type of activation BST1

IMPORTANT: Danger of electric shock! Parallel circuits, i.e. a smoke detector on multiple slave devices are not allowed!

Switch off the power supply before working on any electrical equipment.

Allow only qualified electricians to work on the electrical system.

Actuator power supply via fitted communication unit: DC 24 V

NOTES:

- Left: Connection scheme for fitted communication and supply unit BC24-G2 (THC).
- Right: Example connection scheme for smoke detector ORS 142 K from Hekatron - not part of the delivery.

LEDs status indication (BST1)

LED colour | LED state | Status

Green | ON | Damper open

Green | Blinks | Damper is opening

Yellow | ON | Damper closed

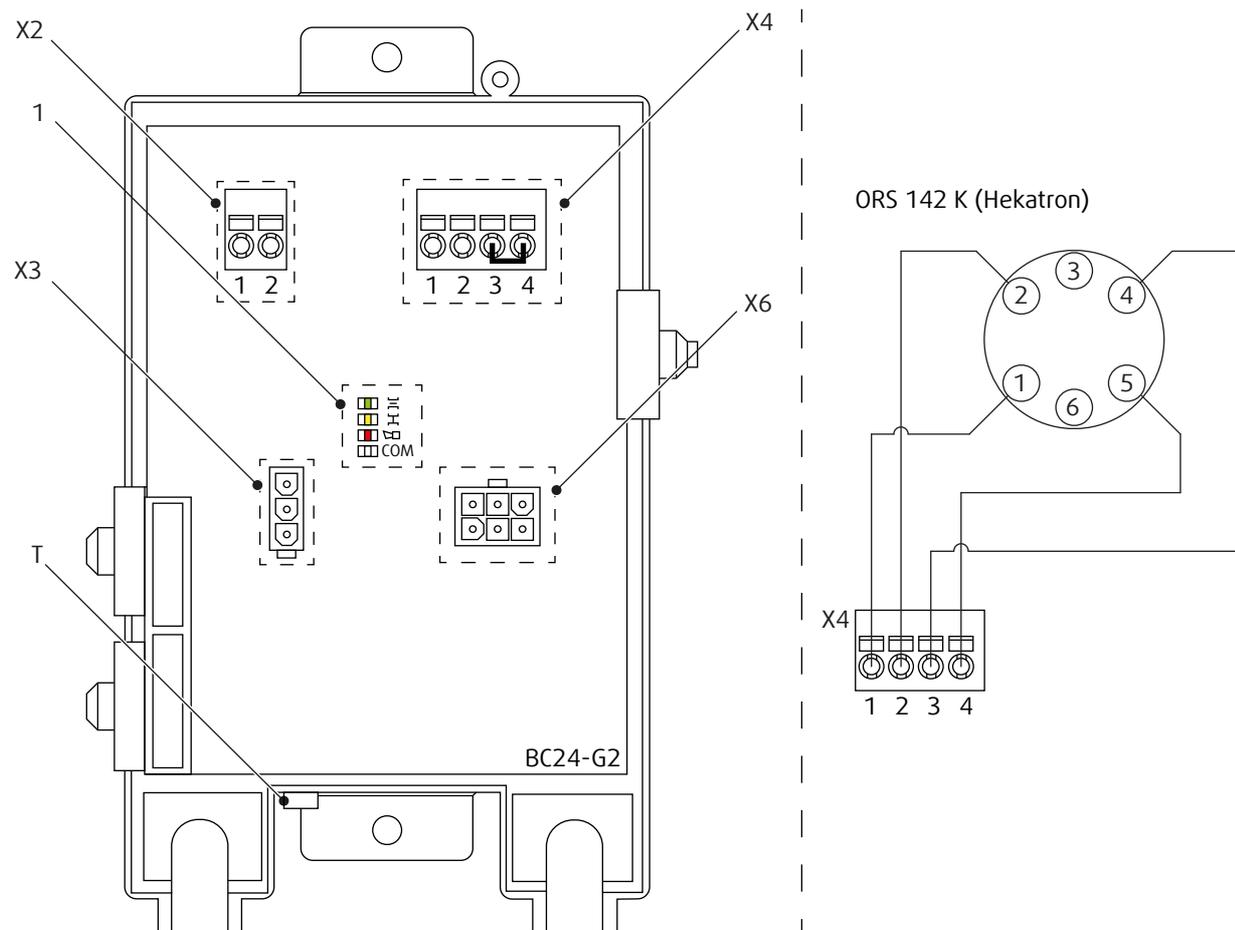
Yellow | Blinks | Damper is closing

White | Blinks | SLC-communication ok – control command „close damper“

White | Flashes | SLC-communication ok – control command „open damper“

Red | ON | Safety element triggered (at X4)

Red | Blinks | self-test active; error: communication loss; error: actuator not connected; error: thermoelectric tripping device of actuator triggered; runtime monitoring error; mechanical error triggered



Legend

1 - LEDs for status indication

T - Test button: This allows the simple function test on site of the damper. The button operation causes an error message at the control device which must be reset.

X2 - 2-pin spring terminal: 1/2 - connection for SLC two-wire line, wires interchangeable. Maximum cable lengths can be calculated with the SLC Planning Tool. Rule of thumb: 300m@1.5 mm²

X3 - 3-pin connector: damper actuator (DC 24 V)

X4 - 4-pin spring terminal: Connection for smoke detector

- 1- (+) DC 24 V / max. 30 mA

- 2- GND

- 3- IN1 (external relay contact 1)

- 4- IN2 (external relay contact 2)

X6 - 6-pin connector: damper actuator (position limit switches)

Type of activation BST2

IMPORTANT: Danger of electric shock!

Switch off the power supply before working on any electrical equipment.

Allow only qualified electricians to work on the electrical system.

Actuator power supply via fitted communication unit: DC 24 V

NOTES:

- Depiction of parts for fitted communication and supply unit BKN230-24-MOD (Modbus/BACnet).

6 - LEDs status indication of actuator

LED colour | LED state | Status

Green | ON | Damper open

Green | Blinks | Damper is opening

Yellow | ON | Damper closed

Yellow | Blinks | Damper is closing

Red | Blinks | Internal device fault (BKN230-24-MOD)

Red | Blinks | External fault: smoke detector triggered; nominal position not reached

Red | Flashes | External fault: If an error is stored (i.e. no longer pending, but not yet acknowledged), then this is displayed on the device by a periodic flash of the red LED.

7 - LED signalization of communication unit (BKN230-24-MOD)

LED colour | LED state | Status

Command OPEN / limit position not reached:

Green | ON | -

Yellow | ON | Damper closed

Yellow | OFF | Damper blade is between close and open

Yellow | Flickering | BACnet/Modbus communication is illuminated during RX and TX

Red | Blinks | Error message after 180 seconds

Command CLOSE / limit position not reached:

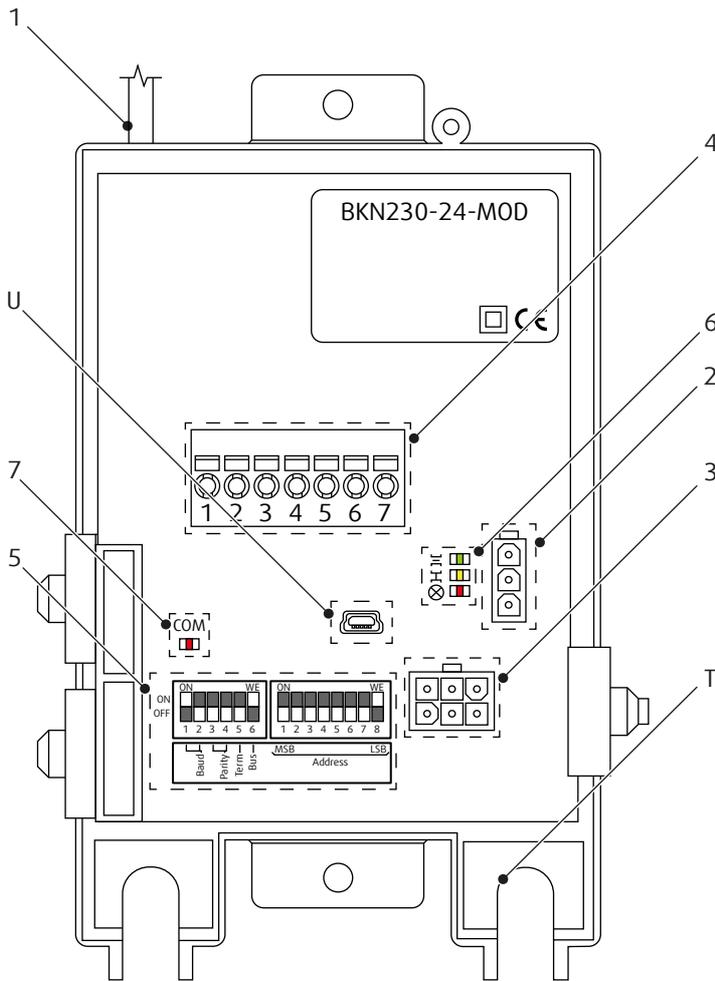
Green | ON | Damper open

Green | OFF | Damper blade is between open and close

Yellow | Blinks | -

Yellow | Flickering | BACnet/Modbus communication is illuminated during RX and TX

Red | Blinks | Error message after 60 seconds



A1	1	2
9'600	OFF	OFF
19'200	OFF	ON
38'400	ON	OFF
76'800	ON	ON

A2	3	4
1-8-N-1	OFF	OFF

A3	5
150 Ω	ON
OFF	OFF

A4	6
BACnet	ON
Modbus	OFF

B	1	2	3	4	5	6	7	8
0	-	OFF						
1	-	OFF	OFF	OFF	OFF	OFF	OFF	ON
2	-	OFF	OFF	OFF	OFF	OFF	ON	OFF
...	-	-	-	-	-	-	-	-
127	-	ON						

Legend

U - USB mini socket: BKN-MOD-BAC Update Tool

T - Test button: Test run / fault acknowledgement. Press the button for longer than one second to trigger the start of test run or to trigger a reset of present error message.

1 - Power supply: cable and plug, AC 230 V

2 - 3-pin connector: damper actuator (DC 24 V)

3 - 6-pin connector: damper actuator (position limit switches)

4 - 7-pin spring terminal:

- 1 External smoke detector, +24 V, max. 50 mA

- 2 External smoke detector, control input
- 3 GND
- 4 BKN Direct Control, override control input
- 5 Modbus GND
- 6 Modbus D+
- 7 Modbus D-

5 - Parametrization: DIL switch

- A1: Baud rate
- A2: Parity
- A3: Termination (on with 150 Ω)
- A4: Bus: BACnet (ON) or Modbus (OFF)
- B: Modbus address

Type of activation BST3

IMPORTANT: Danger of electric shock!

Switch off the power supply before working on any electrical equipment.

Allow only qualified electricians to work on the electrical system.

Actuator power supply via fitted communication unit: DC 24 V

NOTES:

- Depiction of parts for fitted communication and supply unit BKN230-24-C-MP (SBS/MP).
- The unit can communicate either with the BKS24...-1B, ...-9A control modules via an analogue 2-wire system or digitally via a 2-wire connection to a BELIMO MP-Bus system.

LEDs status indication of actuator

LED colour | LED state | Status Green | ON | Damper open

Green | Blinks | Damper is opening

Yellow | ON | Damper closed

Yellow | Blinks | Damper is closing

Red | ON | Internal device fault (BKN230-24-C-MP)

Red | Blinks | External fault: thermoelectrical device (BAT...) triggered; smoke detector triggered

Red | Blinks briefly | MP-Bus communication active (i.e. MP commands are being received)

LED signalization of communication unit (BKN230-24-C-MP)

LED colour | LED state

Command OPEN / limit position not reached:

Red | Blinks

Green | OFF

Yellow | Blinks

Yellow | Signaling after 150 seconds

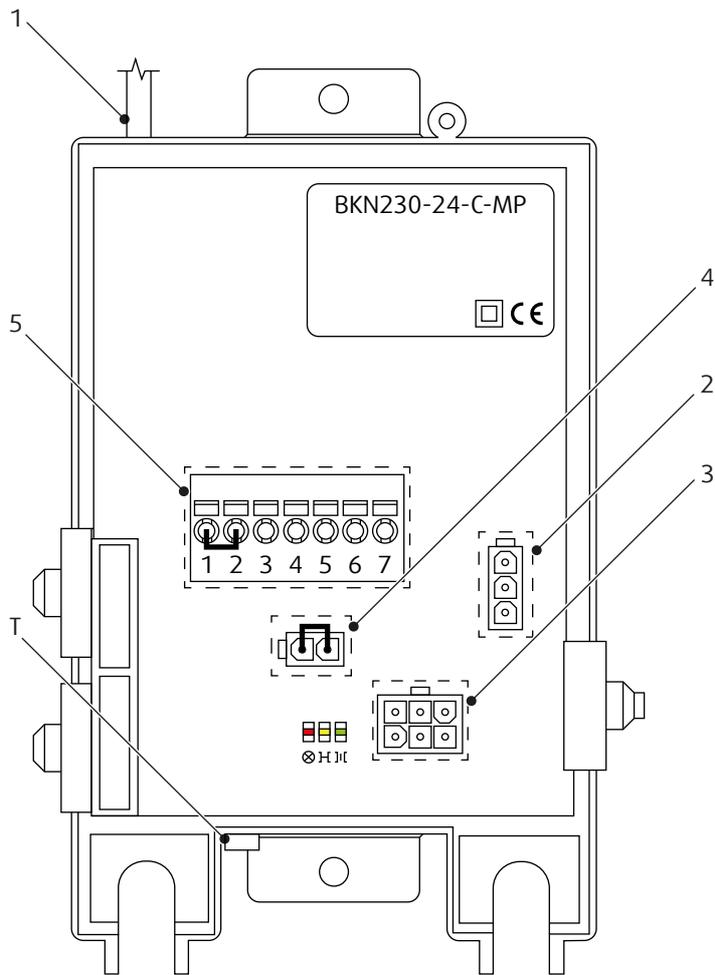
Command CLOSE / limit position not reached:

Red | Blinks

Green | Blinks

Yellow | OFF

Yellow | Signaling after 150 seconds



Legend

T - Button for test and address.

1 - Power supply: cable and plug, AC 230 V

2 - 3-pin connector: damper actuator (DC 24 V)

3 - 6-pin connector: damper actuator (position limit switches)

4 - 2-pin connector: BAT... thermoelectric tripping device

5 - Connecting terminals:

- 1 External smoke detector, +24 V, max. 50 mA
- 2 External smoke detector, control input
- 3 BKN slave
- 4 GND
- 5 MP-Bus
- 6 a BKS
- 7 b BKS

Type of activation BST10

IMPORTANT: Danger of electric shock! The BKN230-24-PL may only be used with a designated master (e.g. BKS64-PL).

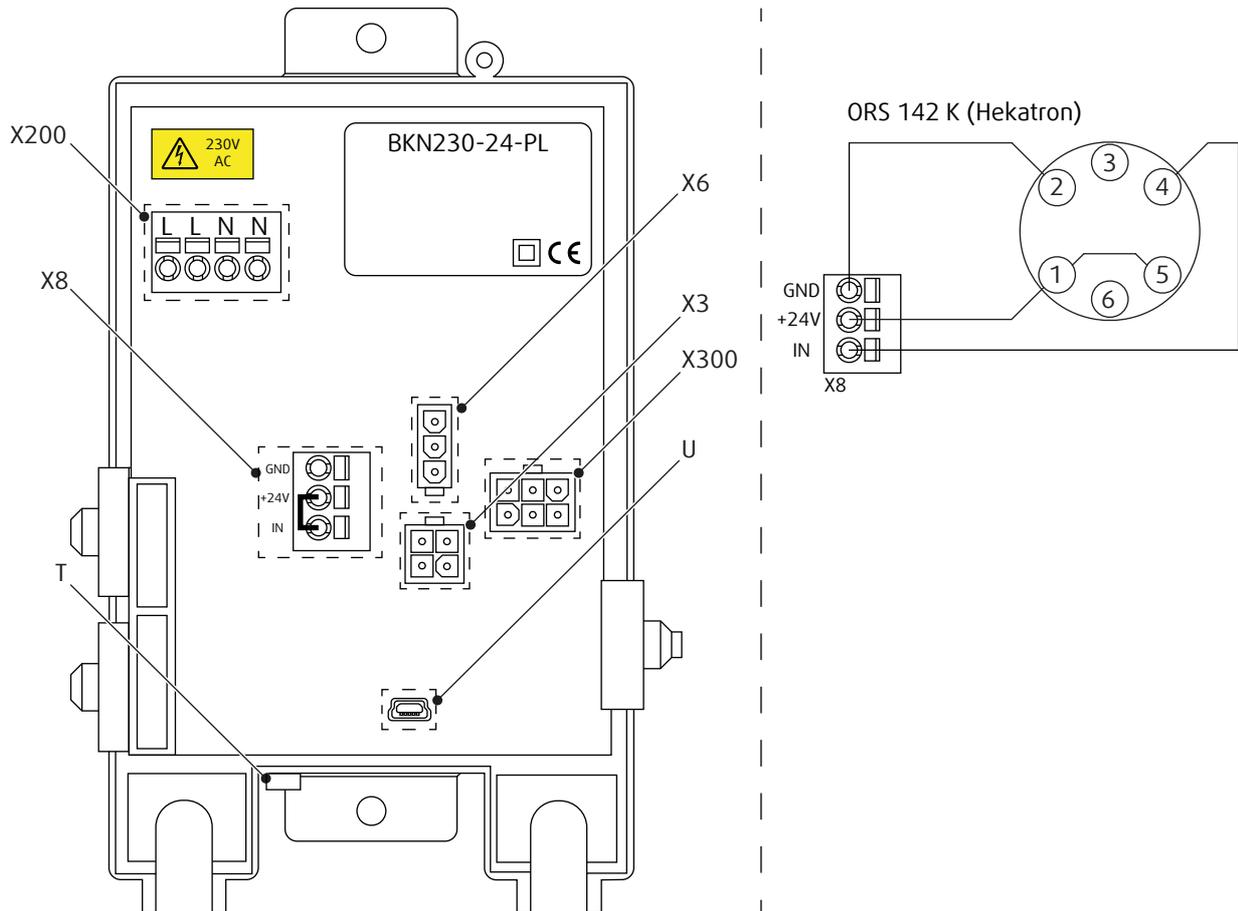
Switch off the power supply before working on any electrical equipment.

Allow only qualified electricians to work on the electrical system.

Actuator power supply via fitted communication unit: DC 24 V

NOTES:

- Left: Connection scheme for fitted communication and supply unit BKN230-24-PL (Powerline)
- Right: Example connection scheme for smoke detector ORS 142 K from Hekatron - not part of the delivery.



Legend

U - USB mini socket: reading of the MAC address, optionally setting the BUS-ID (1..64) and a device identifier in plain text

T - Test button: Test run / fault erase. Press the button for longer than one second to trigger the start of test run or short press to erase stored error.

X6 and X300 connector terminals are arranged so that only either a conventional actuator or a Belimo Top-Line actuator can be connected.

X200 - 2+2-pin spring terminal: (50/60Hz) AC 230 V with Powerline signal

X3 - 3-pin connector: damper actuator (DC 24 V)

X4 - 4-pin spring terminal: connection for smoke detector

X6 - 6-pin connector: damper actuator (position limit switches)

X8 - 3-pin spring terminal: connection for smoke detector (without smoke detector: connect +24 V and IN)

- 1- GND
- 2- (+) DC 24 V
- 3- IN

X300 - 4-pin connector: connection for belimo top-line actuator (not used)

Handling & Manipulation

Handling and manipulation must be done with care. For safety reasons manipulate the damper in its closed position and with gloves.

Operation Manual

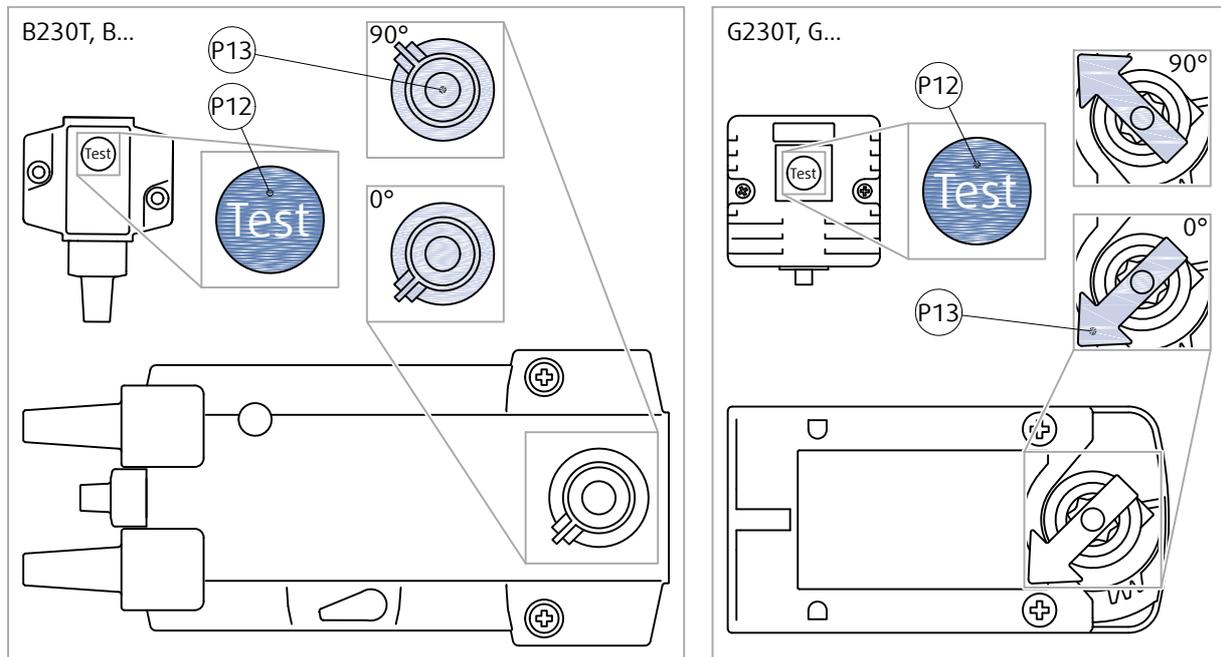
Warning: Damper blades are spring loaded in the open position and are closing very quick. To avoid injury, make sure to keep the blade movement area clear while manipulating with the fire damper.

After installation, it is necessary to adjust the damper into its operating position – open the fire damper.

Connect the electric driving mechanism to the relevant electric power supply (see Electrical connection section). The electromotor is activated and adjusts the damper into its open position.

Functionality Check

- While performing the check, focus on the thermal fuse link's integrity and a correct position of the damper blades after their detention in the OPEN and CLOSED positions.
- The fire damper must open automatically after the actuator receives power – the arrow (P13) on the actuator axis in open position must point to 90°.
- Press the control switch (P12) on the Thermo electric fuse and hold it until the fire damper is fully closed – the arrow (P13) on the actuator axis in closed position must point to 0° - safety position.
- Release the control switch (P12) on the Thermo electric fuse. The fire damper must become fully open – the arrow (P13) on the actuator axis in open position must point to 90° - operating position.



Damper Inspection

The activation mechanism keeps the dampers on stand-by during their entire life cycle in accordance with this manual issued by the manufacturer. It is not permitted to alter the dampers in any way nor perform any changes to their structure without the manufacturer's consent.

The operator performs regular checks of the dampers as per established regulations and standards at least once every 12 months. The check needs to be performed by an employee who has been specifically trained for this purpose. The current fire damper condition determined during the inspection needs to be entered into the "Operating Journal" along with the date of the inspection, the legible name, surname and signature of the employee who performed the inspection. The Operating Journal includes a copy of the employee's authorization.

If any discrepancies are discovered, these need to be entered in the Operating Journal along with a proposal for their removal. The Operating Journal can be found in product "Documents" section on design.systemair.com. Immediately after the installation and activation of the damper, it needs to be checked under the identical conditions as apply to the above mentioned 12-month inspections.

The visual check ensures that visible damages on the inspected damper parts are seen. On its external side, the damper housing and the activation mechanism are checked. Due to the need to perform a visual check of the damper's internal parts, open inspection lid connected to the damper or remove the flexible connection connected to the damper. Visual check can be performed with endoscopic camera through the hole where the thermal fuse is installed.

The damper's internal casing, thermal fuse, seals, foaming substance, the damper blade condition and accuracy of its closure during its leaning against the backstop in the closed position must all be checked. There must not be any strange objects or a layer of impurities from the air distribution systems inside the damper.

NEVER INSPECT THE DAMPERS WHEN THERE IS AIR FLOWING IN THE DUCT SYSTEM!

Recommended Inspection Steps According to the EN 15 650:

1. Damper identification
2. Date of inspection
3. Inspecting electric connection of the activation mechanism (where applicable)
4. Inspecting damper for cleanliness and possible need for cleaning (where needed)
5. Inspecting blade and sealing condition, possible correction and logging (where needed)
6. Inspecting proper fire damper closure
7. Inspecting damper functionality – opening and closing using the control system, physical examination of the damper's behavior, possible correction and logging (where needed)
8. Inspecting end switches' functionality in the open and closed position, possible correction and logging (where needed)
9. Inspect whether the damper is fulfilling its role as part of the regulation system (where needed)
10. Inspect whether the damper remains in its standard operating position.
11. The damper is usually part of a system. In that case the whole system needs to be checked as described in its operation and requirements published by the builder of the system.

Supplement

Any deviations from the technical specifications contained in SystemairDESIGN and the terms should be discussed with the manufacturer. We reserve the right to make any changes to the product without prior notice, provided that these changes do not affect the quality of the product and the required parameters.

