

FDR-3G...KS

Fire Damper FDR-3G with Kit-S

Handbook

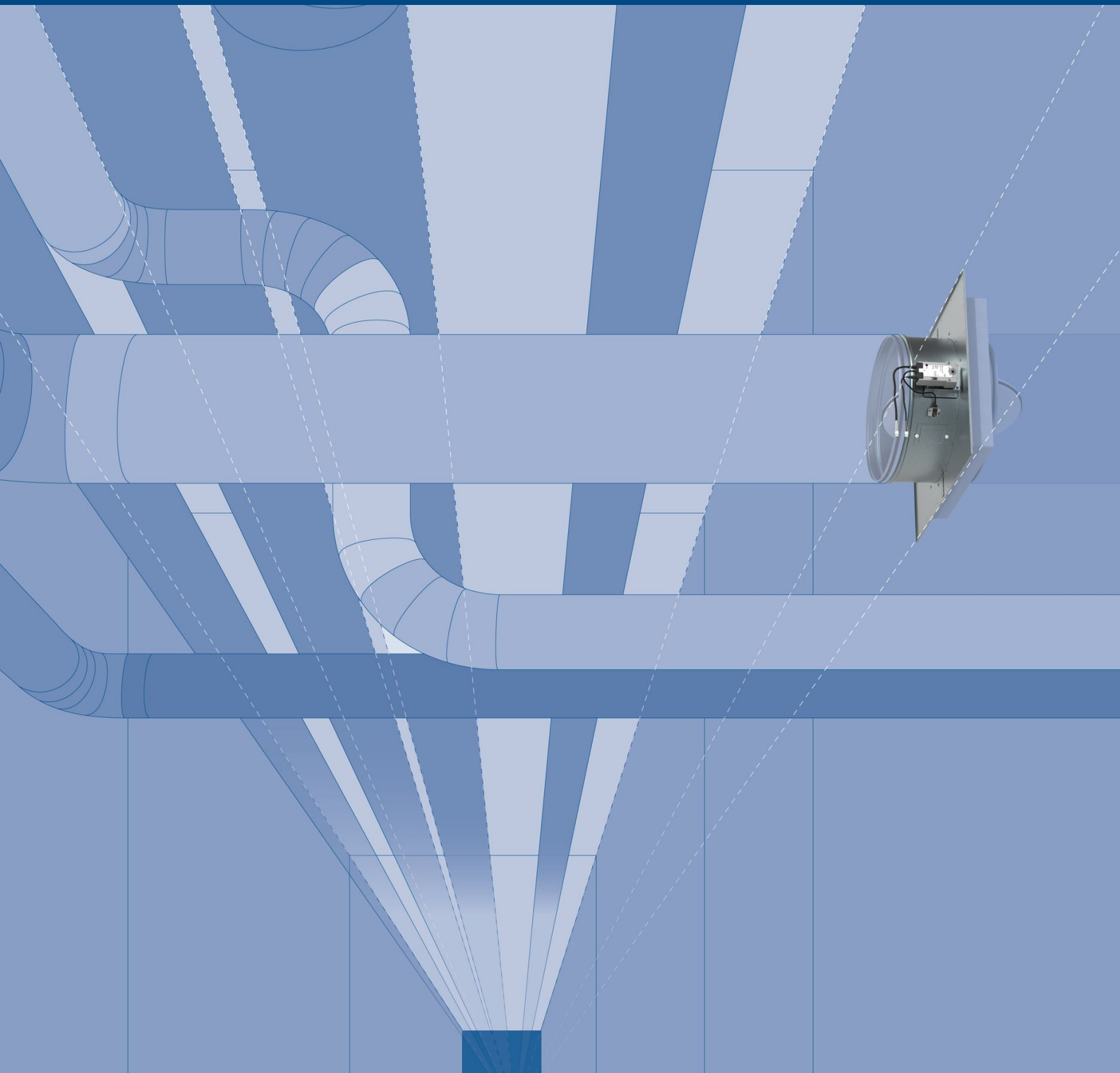


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Description

Fire dampers with square Kit up to size 630 mm represent passive fire protection, designed with the help of compartmentalization to prevent the spread of toxic gases, smoke and fire. FDR-3G...KS fire dampers installation is designed with simplicity in mind. Standard fire dampers are designed and certified in accordance with EN 15650 and tested for EIS criteria according to EN 1366-2. By default, all fire dampers are supplied with an manual mechanism or actuator mechanism, optionally with a supply and communication unit.

IMPORTANT: The installation kit can not be delivered separately! The installation kit is delivered pre-mounted on a damper.

Highlights

- Fast installation rated EI60S, EI90S, EI120S
- Tightness class 3C as standard
- Low pressure drop
- Changeable mechanism
- Inspection opening built-in
- Modulated actuator suitable for system balancing - possibility to open the blade at the desired angle

Activation Types

Manually Operated Fire Dampers

By default, all manually operated fire dampers are supplied with manual control, optionally with micro switches and electromagnets. In case of fire, the fire damper is closed automatically. Depending on the version, the damper closes either after the melting of the thermal fuse or by means of remote activation through an electromagnet in impulse connection. After the closing of the damper blade, it is mechanically locked in the closed position and can only be opened manually. The actuating mechanism is activated when the temperature of the air in the duct reaches 74°C and the damper closes within 10 seconds after the melting of the fuse.

- H0-KS

Fire damper with an activation mechanism with a cover, manual crank and with a spring return release mechanism activated by a fusible thermal link set to 74°C (on demand 100°C).

- H2-KS

Fire damper with an activation mechanism H0 + open and closed indication with AC 230 V or AC/DC 24 V contact switches.

- H5-2-KS

Fire damper with an activation mechanism H0 + a AC/DC 24 V electromagnetic release mechanism in the impulse connection (release takes place when the electromagnet is activated) + open and closed indication with AC 230 V or AC/DC 24 V contact switches.

- H6-2-KS

Fire damper with an activation mechanism H0 + an AC 230 V electromagnetic release mechanism in the impulse connection (release takes place when the electromagnet is activated) + open and closed indication with AC 230 V or AC/DC 24 V contact switches.

Actuator Operated Fire Dampers

By default, all 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. The activation mechanisms are removable and are interchangeable, for example an actuator operated mechanism instead of a manually operated mechanism.

Belimo actuator available with on demand fuse 95 °C or 120 °C.

- B230T-KS or G230T-KS

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-KS or G24T-KS

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.

- BST0-KS or GST0-KS

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 and communication unit BKN230-24 or Gruner supply and communication unit fs-UFC24-2 (other communication units on demand).

- B24T-W-KS or G24T-W-KS

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-KS or G24T-SR-KS

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). For fire dampers in the size DN ≥ 160 mm.

Design

Fire dampers have casings made from galvanized sheet metal. Blades from non-asbestos insulants have a rubber seal for cold smoke and an intumescent seal, that expands in a fire situation.

Material Composition

The product contains galvanized sheet metal, calcium silicate board, fireproof carbon fiberglass, polyurethane foam and ethylene - propylene rubber. These are processed in accordance with local regulations. The product contains no hazardous substances, except for the solder in the thermofuse, which contains a milligram of lead.

List of Accessories

Detailed information about accessories for FDR-3G is available in SystemairDESIGN under Fire Damper Accessories.

- AM-FD: Activation Mechanisms

Technical Parameters

Durability test

- 50 cycles/manually operated activation mechanism – with no change of the required properties
- 10000 + 100 + 100 cycles/actuator operated activation mechanism – with no change of the required properties
- 20 000 cycles/modulated actuator (B24T-SR-KS and G24T-SR-KS) – with no change of the required properties

Fire testing pressure

Underpressure up to 300 Pa

Safety position

Closed. (In fire scenario the damper closes via spring in actuator or spring in manual mechanism)

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. It is not possible to operate the device after reaching Activation temperature.

Activation Temperature

- Manually operated: 74 °C as standard (100 °C on request) by means of a spring after the melting of the thermofuse.
- Actuator operated: 72 °C as standard (95 °C or 120 °C on request with Belimo actuator) by means of the spring after current interruption in the electro-thermal fuse.

Operational temperature

- Minimum: 0 °C
- Maximum: 60 °C for 74 °C and 72 °C thermal fuse
- Maximum: 85 °C for 95 °C and 100 °C thermal fuse
- Maximum 105 °C for 120 °C thermal fuse

Environment suitability

Protected against weather disruptions, with temperature above 0 °C, up to 95% Rha, (3K5 according to EN 60721-3-3)

Open/Closed indication

- Manually operated microswitches - Activation types H2-KS up to H6-2-KS
- Actuator operated built-in microswitches - Activation types B230T-KS/G230T-KS up to B24T-SR-KS/G24T-SR-KS

Closing/Opening time

Manually operated < 10 s, actuator operated < 20 s

Inspection possibility

By opening of the inspection lid. For smaller than DN160 after removing of the activation mechanism, or a inspection opening must be added to the connecting duct.

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 but at least every 12 months.

Allowed pressure

1200 Pa

Blade tightness (STN EN 1751)

Class 3 as standard

Tightness of the housing (STN EN 1751)

Class C as standard

Conformity with EC directives

2006/42/EC Machinery Directive

2014/35/EU Low Voltage Directive

2014/30/EU Electromagnetic Compatibility Directive

Driving actuator types

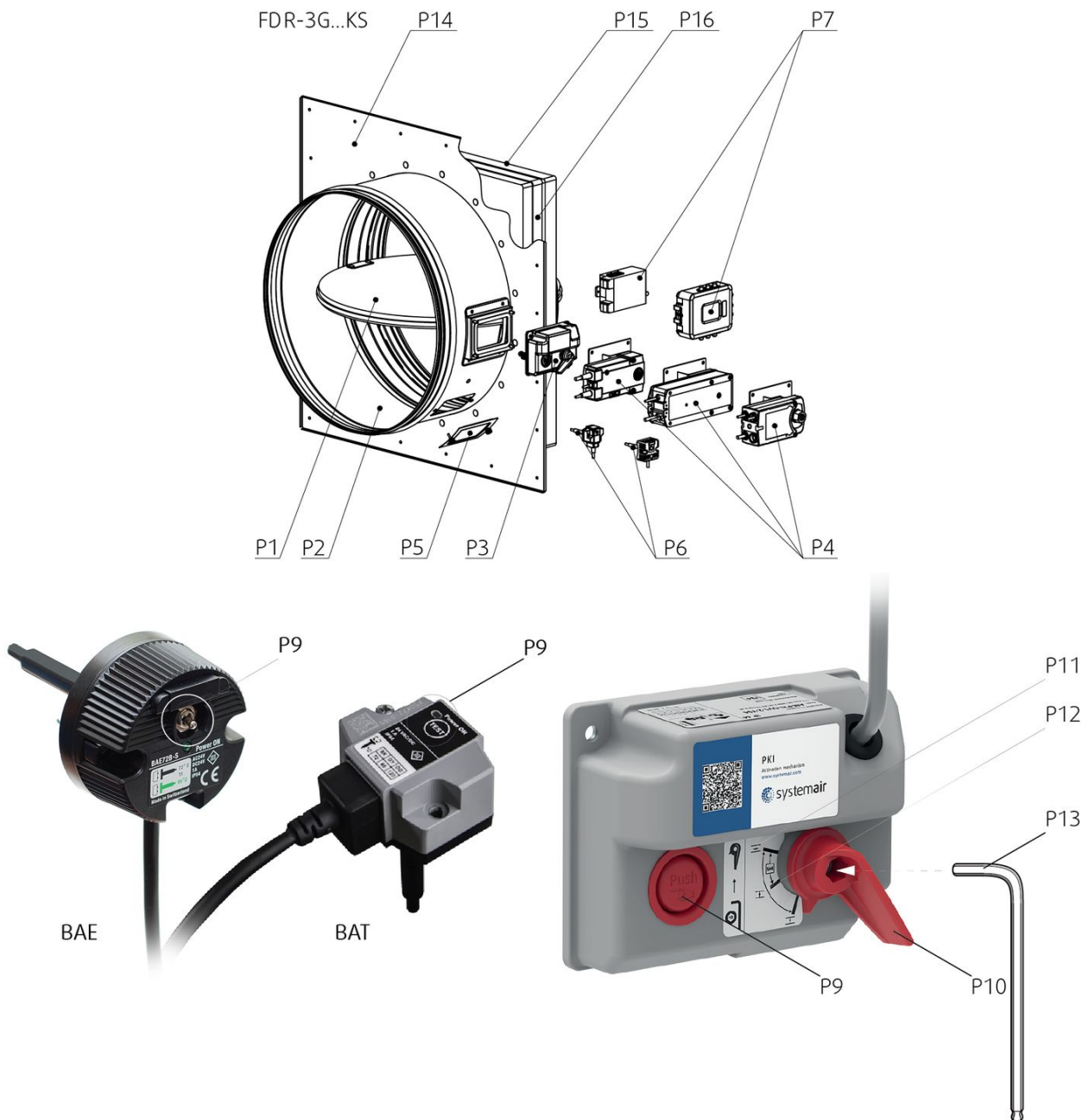
Belimo: BLF230-T, BLF24-T, BFL24-SR-T, BF230-T, BF24-T, BF24-SR-T, BFN230-T, BFN24-T, BFN24-T, BFL230-T, BFL24-T, BFL24-SR-T (also with connection possibilities with acronyms ST, W)

Gruner: 360TA-230-12-S2, 360CTA-024-12-S2, 360TA-024-12-S2, 340TA-230D-03-S2, 340TA-024D-03-S2, 340CTA-024D-03-S2, 340TA-230-05-S2, 340TA-024-05-S2, 340CTA-024-05-S2 (also with connection possibilities with acronyms ST, W)

Transport and Storage

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

Product parts



Legend

- P1** Blade
- P2** Casing
- P3** Manually operated activation mechanism (H0;H...)
- P4** Actuator operated activation mechanism (B...;G...)
- P5** Inspection lid
- P6** Thermoelectric fuse (BAT72;TA-72)
- P7** Supply and communication unit (BKN230-24;FS-UFC24-2)
- P14** Kit Base plate
- P15** Cover plate (PROMAT)
- P16** Intumex
- P9** Release and test button
- P10** Crank
- P11** Open position

P12 Closed position

P13 Hexagon bent wrench No.10 (not part of delivery)

Assessed Performance - FDR-3G

19 CE 1396

Systemair Production a.s.

Hlavná 371, 900 43 Kalinkovo, Slovakia

1396-CPR-0162, FDR-3G

(valid for subgroups: ...EX, ...KS, ...OF)

EN 15650 : 2010

Circular fire dampers

Nominal activation conditions/sensitivity - **Pass**

- sensing element load bearing capacity
- sensing element response temperature

Response delay (response time) - **Pass**

- closure time

Operational reliability - **Pass**

- motorized cycle = 10.200 cycles
- manual cycle = 50 cycles
- modulated = 20.200 cycles

Fire resistance:

Resistivity depending on installation method and situation

- integrity **E**
- maintenance of the cross section (under E)
- mechanical stability (under E)
- cross section (under E)
- insulation **I**
- smoke leakage **S**

Durability of response delay - **Pass**

- sensing element response temperature and load bearing capacity

Durability of operational reliability - **Pass**

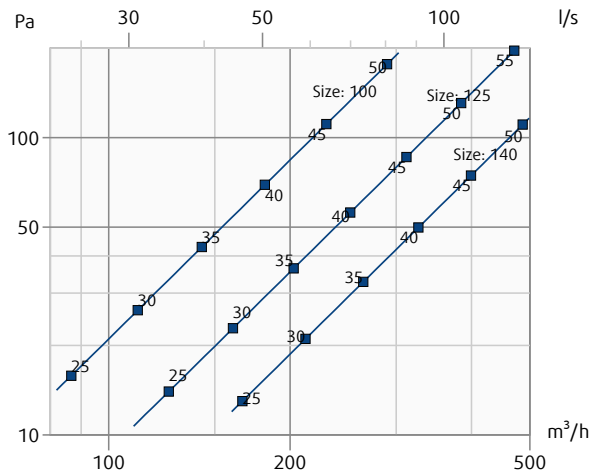
- open and closing cycle

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 only one activation type is shown in the diagrams.

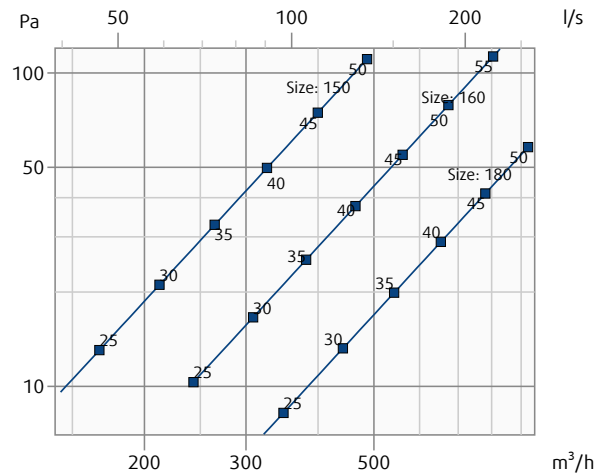
FDR-3G-...-H0-KS

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



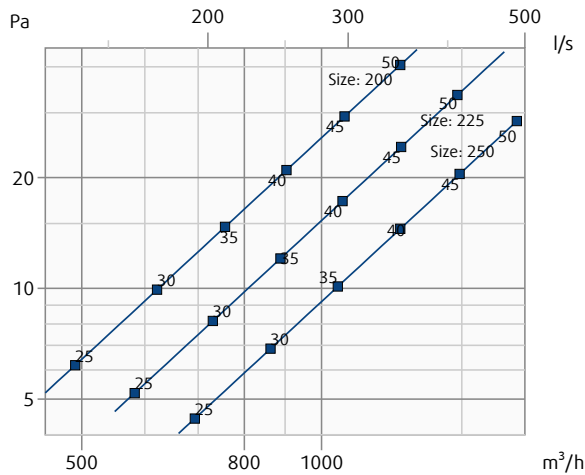
FDR-3G-...-H0-KS

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



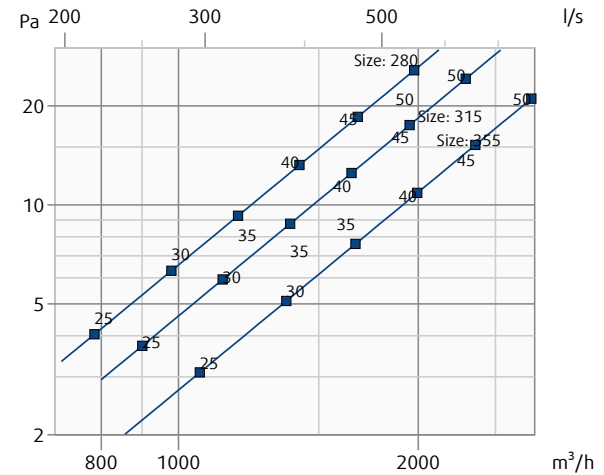
FDR-3G-...-H0-KS

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



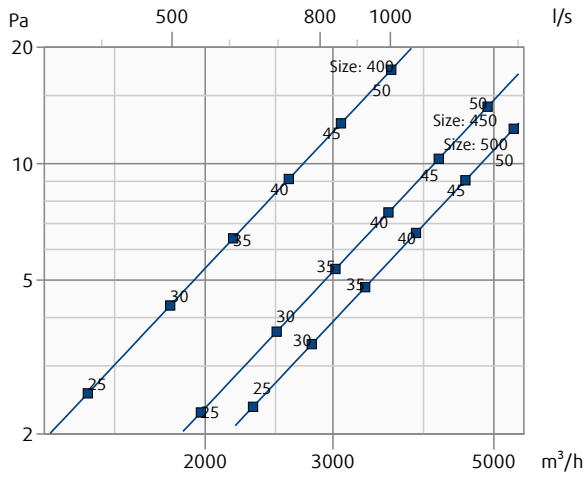
FDR-3G-...-H0-KS

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



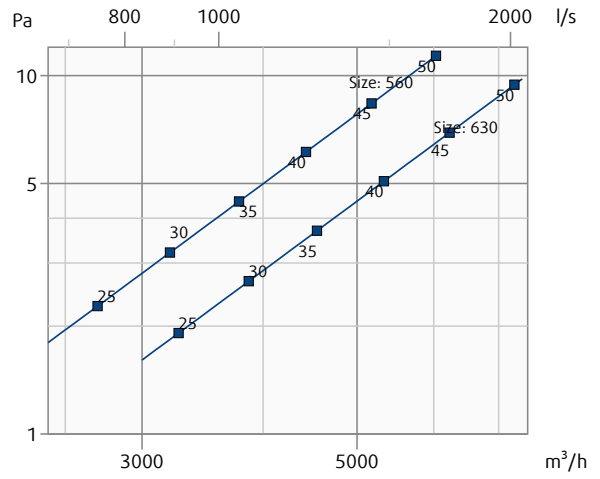
FDR-3G-...-H0-KS

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



FDR-3G-...-H0-KS

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

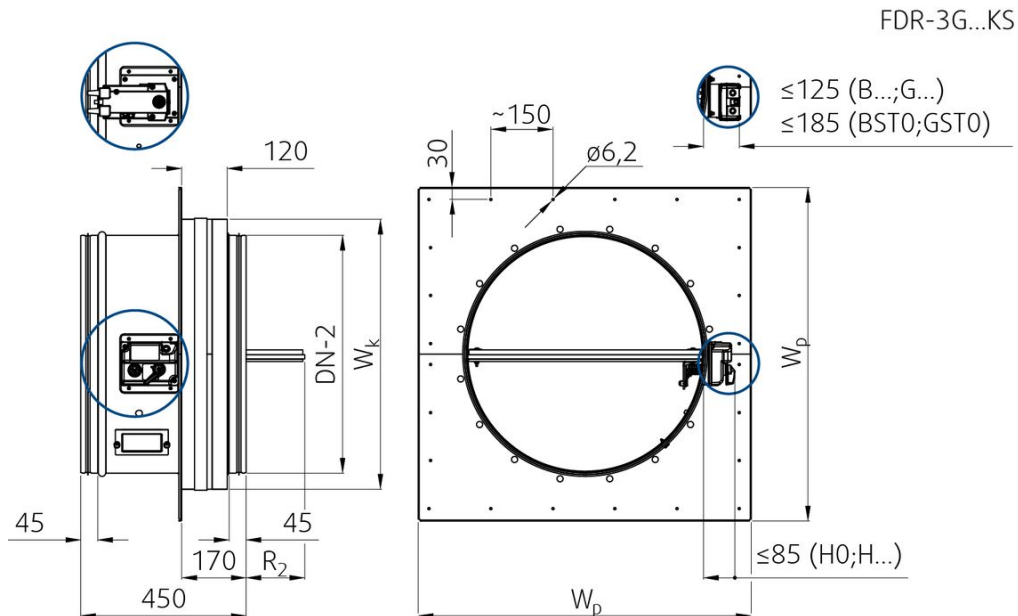


Dimensions

Free area

	DN (mm)																
	100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	630
A_v (m ²)	0,003	0,007	0,009	0,011	0,013	0,018	0,023	0,031	0,039	0,050	0,065	0,085	0,110	0,138	0,173	0,220	0,283

Dimensions



Note: 3) Inclusive bearing

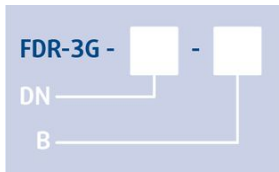
Overhangs

	DN (mm)																
	100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	630
R_1 (mm)	-300	-287,5	-280	-275	-270	-260	-250	-237,5	-225	-210	-192,5	-172,5	-150	-125	-100	-70	-35
R_2 (mm)	-67	-54,5	-47	-42	-37	-27	-17	-4,5	8	23	40,5	60,5	83	108	133	163	198

Weights

m (kg ±5%)	DN (mm)																
	100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	630
H0-KS ... H6-2-KS	5,6	6,6	7,3	8,3	8,8	8,8	8,7	10,8	10,7	13,0	13,0	15,6	18,8	23,2	25,9	29,7	33,6
B...-KS, G...-KS	7,1	8,1	8,8	9,1	10,3	10,3	10,2	12,3	12,2	14,5	14,5	17,1	20,3	24,0	26,7	30,5	34,4

Ordering Code



DN - Dimension, \varnothing DN

100 mm up to 630 mm

B - Type of Activation (H0-KS up to B24T-SR-KS)

H0-KS (Manual crank, no switches)

H2-KS (Manual crank, 2 switches AC 230 V or AC/DC 24 V)

H5-2-KS (Manual crank, AC/DC 24 V electromagnet, 2 switches AC 230 V or AC/DC 24 V)

H6-2-KS (Manual crank, AC 230 V electromagnet, 2 switches AC 230 V or AC/DC 24 V)

B230T-KS (AC 230 V Belimo Actuator)

G230T-KS (AC 230 V Gruner Actuator)

B24T-KS (AC/DC 24 V Belimo Actuator)

G24T-KS (AC/DC 24 V Gruner Actuator)

BST0-KS (AC 230 V Supply comm.unit & AC/DC 24 V Belimo Actuator)

GST0-KS (AC/DC 24 V Supply comm.unit & AC/DC 24 V Gruner Actuator)

B24T-W-KS (AC/DC 24 V Belimo Actuator & Wire connector for comm.unit)

G24T-W-KS (AC/DC 24 V Gruner Actuator & Wire connector for comm.unit)

Example of the Circular Fire Dampers with Kit-R Ordering Code

FDR-3G-630-H2-KS

Circular fire damper with Kit-S, nominal diameter 630 mm, manually operated activation mechanism with open and closed position indication with 230 V contact microswitches.



Inspection opening positions (Removable mechanism is available for all sizes):

DN $\leq \varnothing$ 150

No inspection opening. Inspection possible through removable mechanism or additional inspection opening must be added to the connecting duct.





\varnothing 160 \leq DN $\leq \varnothing$ 225

Standardly in position: L; Additional inspection opening cannot be added.

\varnothing 250 \leq DN $\leq \varnothing$ 1000

Standardly in position: B; On demand in position: L, T.

Installation Methods

 4 Kit	FDR-3G...KS	EI 60 (v_e i ↔ o) S			 360°
	DN100 ... DN630	EI 90 (v_e i ↔ o) S			
		EI 120 (v_e i ↔ o) S			

Legend:

4. Kit - Kit Installation, using an Installation Kit

v_e - Vertical wall

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 User Manual closely.
3. perform damper inspection in accordance with User Manual.
4. check the damper's functionality as per the chapter "Fire Damper Functionality Check" before you install the fire 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 "UserManual_FDR-3G" document or more can be found at SystemairDESIGN.

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. It is recommended to connect the damper to a dilatation compensator on either end of the damper.
- The damper driving mechanism can be placed on either side of the wall, however it needs to be placed so as to ensure easy access during inspection.
- The distance between the fire damper bodies is defined by the Kit base plate. Smallest distance between two dampers with kit is when the Kit base plates are touching.
- The distance between the wall/ceiling is defined by the Kit base plate. Smallest distance between wall/ceiling and a damper with kit is when the Kit base plates is touching wall/ceiling.
- The fire damper must be installed into a fire partition structure in such a way that the damper blade in its closed position is located inside this structure. Kit base plate on the damper body represents a plane where supporting constructure begins.
- For each resistivity the minimum thickness of a its supporting construction cannot be decreased as per EN 1366-2 at least 200 mm from the installation opening.

IN ACCORDANCE WITH EN 15650, EACH FIRE DAMPER MUST BE INSTALLED ACCORDING TO THE INSTALLATION INSTRUCTIONS PROVIDED BY THE MANUFACTURER!

Installation - Kit

Installation Using an Installation Kit

IMPORTANT: The installation kit can not be delivered separately! The installation kit is delivered pre-mounted on a damper.





1. The supporting construction opening must be prepared as depicted. Opening surfaces must be even and cleaned off.
2. The opening dimensions are driven by the nominal dimensions of the damper with added clearance. For rectangular dampers, the opening will have dimensions of $W1 \times W1$.
3. The flexible wall opening must be reinforced as per the standards for plasterboard walls. Additionally opening in the flexible wall must be reinforced as per the standards for plasterboard walls and the perimeter of its interior must be lined with a double layer of 12,5 mm thick plasterboard (see detail).
4. This is the simplest installation method. Insert the damper into the opening and fix the Kit base plate using appropriate screws (recommended screw diameter 5,5 - e.g. DIN7981) into pre-drilled holes.
5. If needed, uncover and clean the damper after installation.
6. Check the damper's functionality

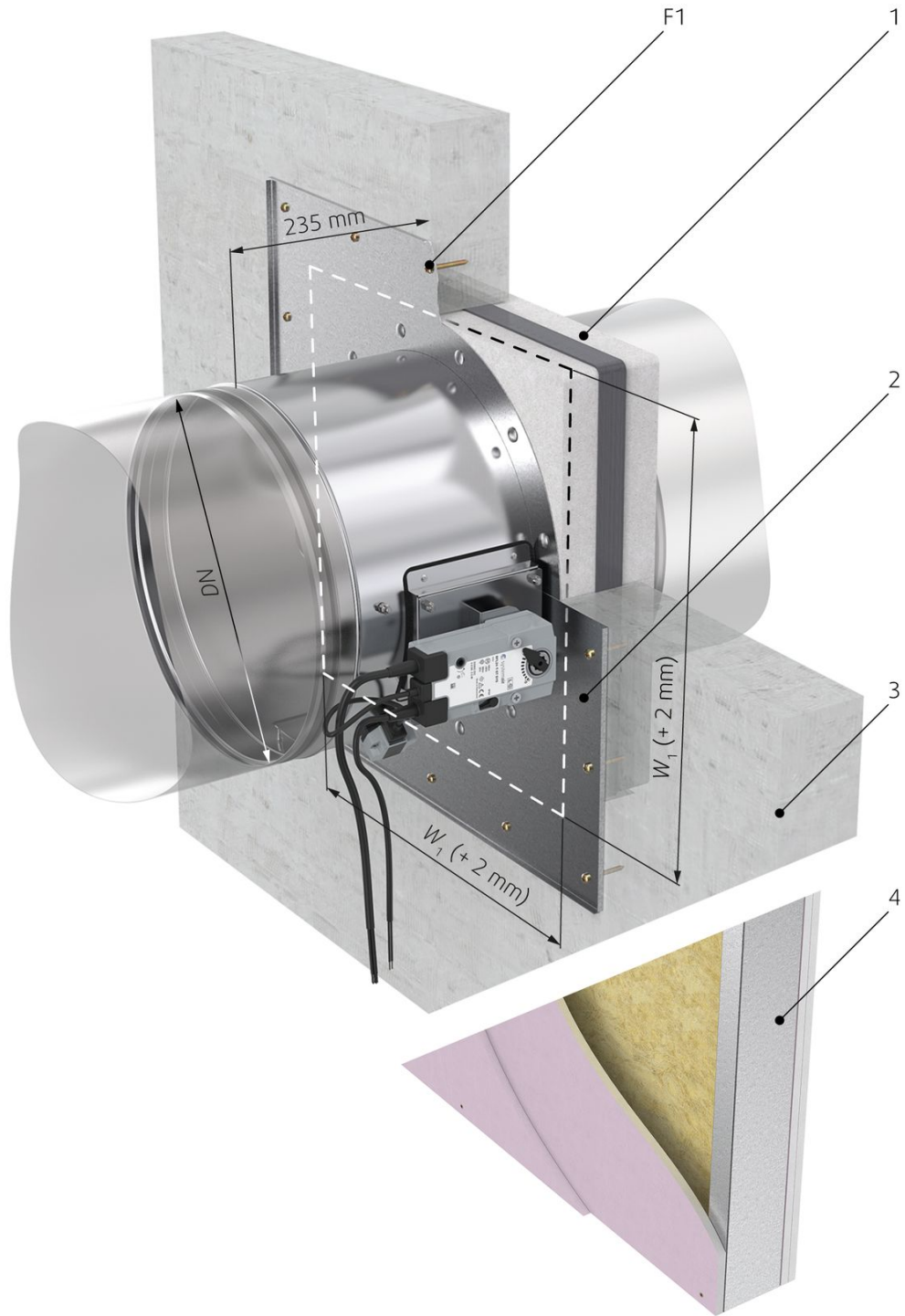
Installation - Standard Distances

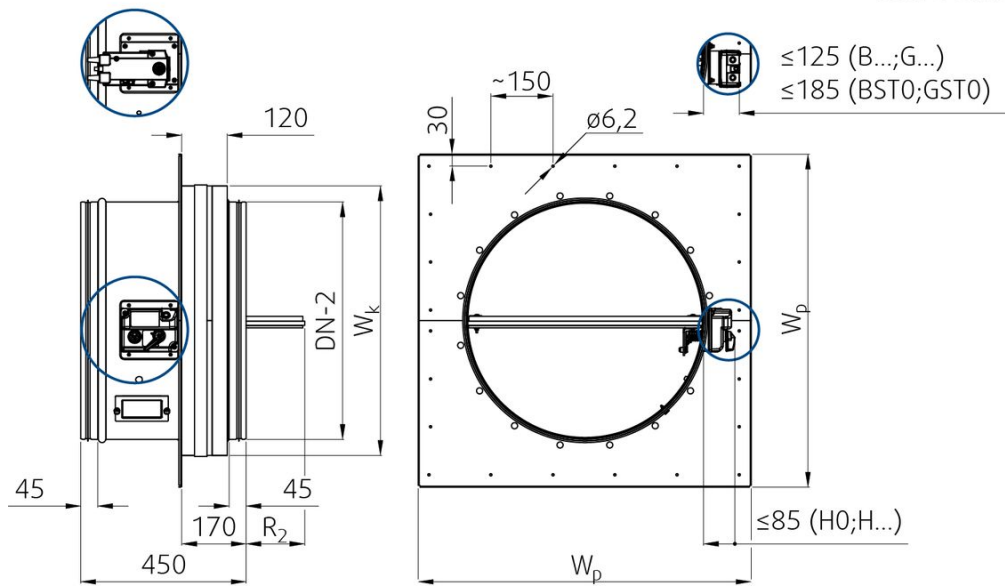
The distances are defined by the kit base plate. Minimum distances are when kit base plate is touching ceiling or side wall. This means from the wall or ceiling to the duct axis it is $Wp/2$. For multiple crossings through a fire resistive wall the minimum distance between two duct axes is Wp , this means the Kit base plates are touching. This Kit base plate also serves as a distance limiter for nearby foreign objects crossing the fire resistive wall.

Installation in a Wall thinner than tested

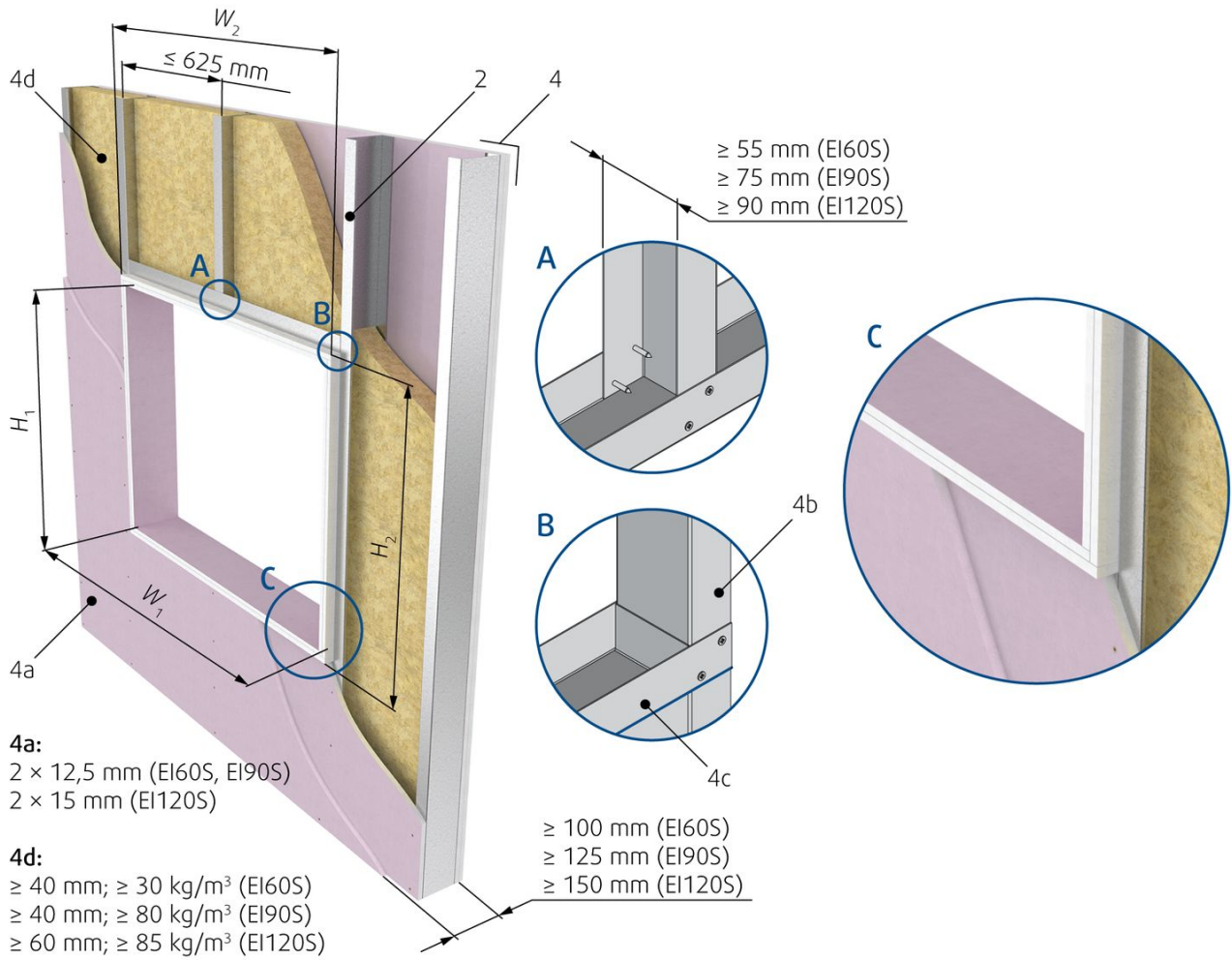
Installation in a thinner wall is allowed under the condition that an additional layer/layers of fire protective board are fixed to the surface of the wall in order to achieve the same length of damper penetration seal as was tested. The minimum width of added boards around the damper is 200 mm. In addition, the alternative thinner wall should be classified in accordance with EN 13501-2:2007 + A1: 2009 for fire resistance required for product application. For a protruding wall, the additional layers must be fixed on the steel supporting construction of the wall.

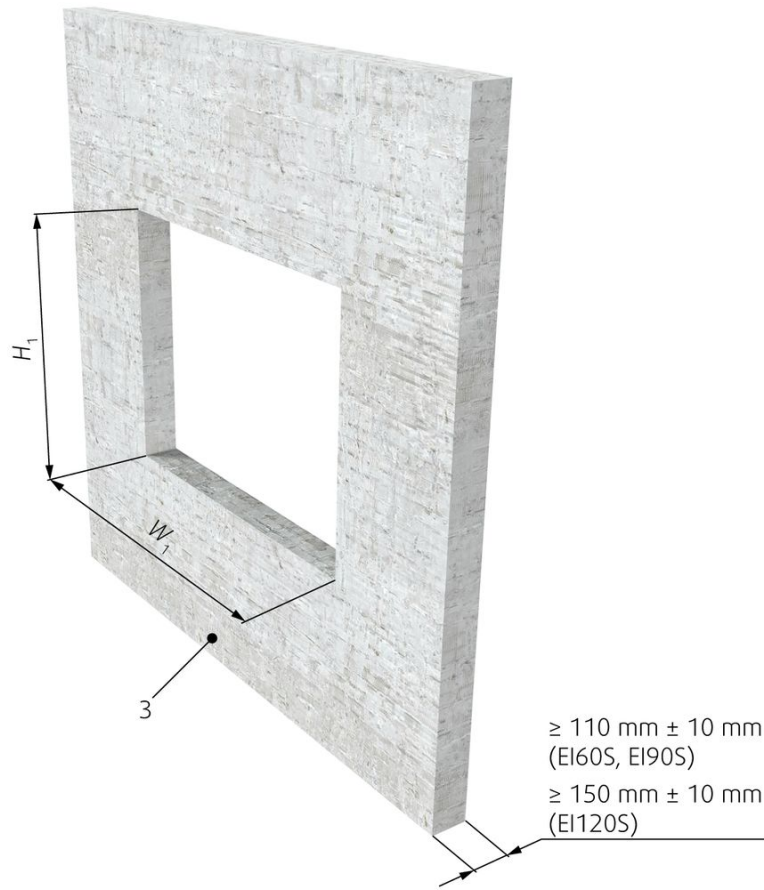
 4 Kit	FDR-3G...KS DN100 ... DN630	EI 60 ($v_e i \leftrightarrow o$) S	a) 	b) 	 360°
		EI 90 ($v_e i \leftrightarrow o$) S			
		EI 120 ($v_e i \leftrightarrow o$) S			

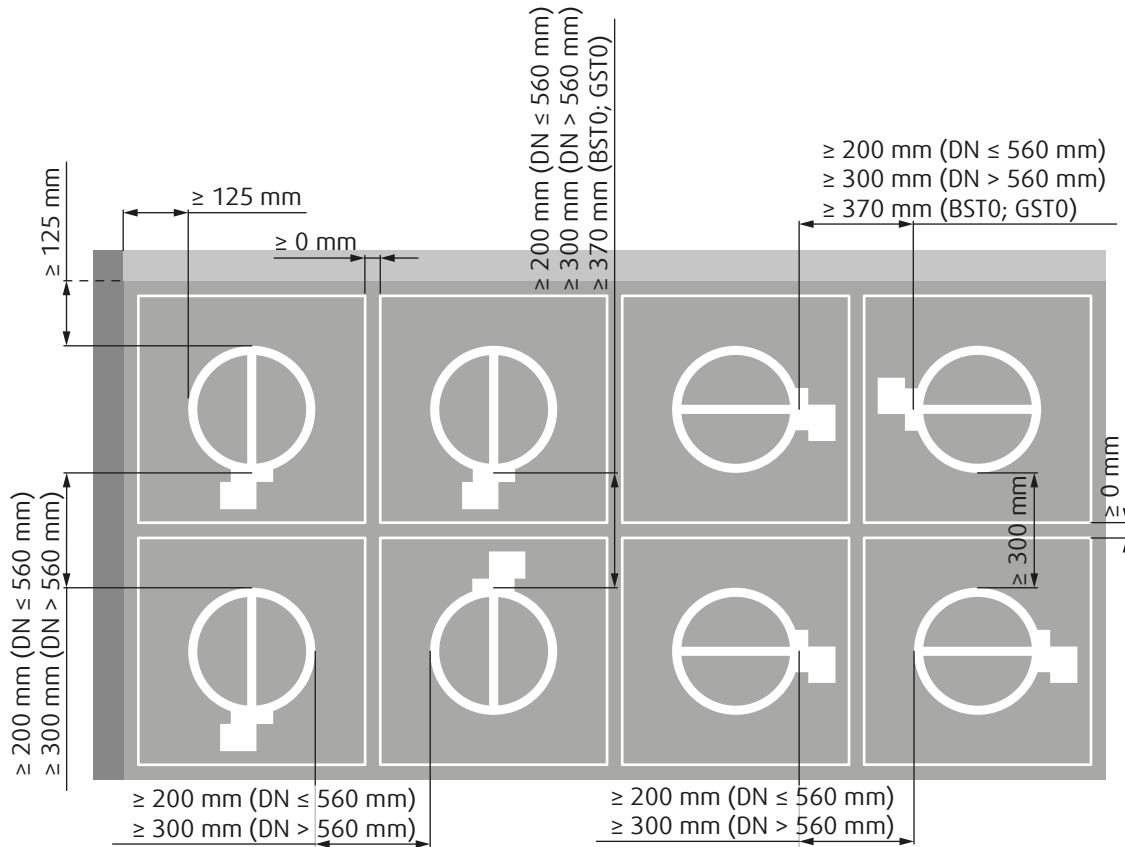




	DN (mm)																	
	100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	600	630
W_1 (mm)	200	250				300	350	400	450	500	550	600	660	700	730			
W_k (mm)	187	237				287	337	387	437	487	537	587	647	687	717			
W_p (mm)	350	375	390	400	410	430	450	475	500	530	565	605	650	700	750	810	850	880







Legend

- F1** Screw $\geq 5,5$ DIN7981 or suitable wall plug and screw size 6
- 1** Fire damper with KIT (factory fitted)
- 2** Kit base plate - fixed directly onto the wall
- 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.

Notes

- ve** Vertical (wall)

Electrical Connections

		DN (mm)																
		100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	630
T/PC/A	B230T-KS/6,5 VA/BFL230-T												B230T-KS/10 VA/BFN230-T					
	B24T-KS/4 VA/BFL24-T												B24T-KS/6 VA/BFN24-T					
	B24T-W-KS/4 VA/BFL24-T-ST												B24T-W-KS/6 VA/BFN24-T-ST					
	BST0-KS/11 VA/BFL24-T-ST + BKN230-24												BST0-KS/11 VA/BFN24-T-ST + BKN230-24					
	B24T-SR-KS/6,5 VA/BFL24-T-SR												B24T-SR-KS/8,5 VA/BFN24-T-SR					

		DN (mm)																
		100	125	140	150	160	180	200	225	250	280	315	355	400	450	500	560	630
T/PC/A	G230T-KS/9,5 VA/340TA-230-05...												G230T-KS/11,5 VA/360TA-230-12...					
	G24T-KS/9 VA/340TA-024-05...												G24T-KS/7 VA/360TA-024-12...					
	G24T-W-KS/9 VA/340TA-024-05...ST01												G24T-W-KS/7 VA/360TA-024-12...ST01					
	GST0-KS/11 VA/340TA-024-05...ST01 + fs-UFC24-2												GST0-KS/9 VA/360TA-024-12...ST01					
	G24T-SR-KS/7,5 VA/340CTA-024-05...												+ fs-UFC24-2 G24T-SR-KS/8 VA/360CTA-024-12...					

T/PC/A - Activation Type / Power Consumption / Actuator

Type of activation H0-KS

This type of activation mechanism does not have any electrical equipment.

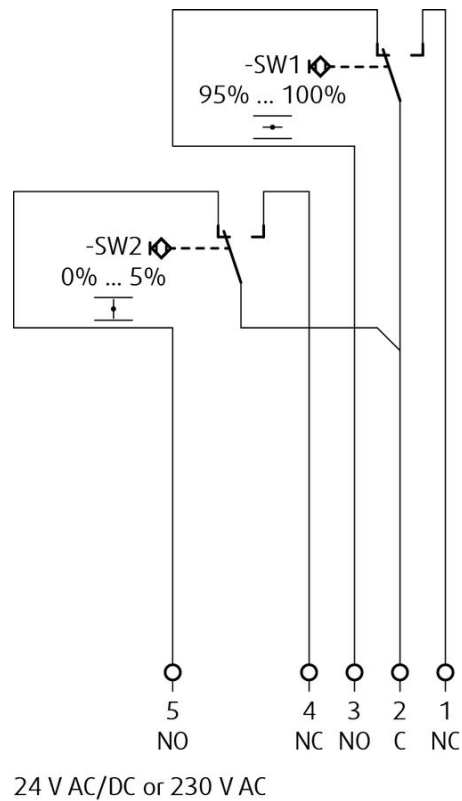
Type of activation H2-KS

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.

Microswitch: Power Supply: 125/250V AC or 12/24V DC Electric Parameters: 3A

NOTES:

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



Legend

- 1 Grey cable colour
- 2 Orange cable colour
- 3 Pink cable colour
- 4 White cable colour
- 5 Red cable colour
- 6 Brown cable colour (Do not use for type of activation H2)
- X:7 Blue cable colour (Do not use for type of activation H2)

Type of activation H5-2-KS

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.

Microswitch:

Power Supply: 125/250V AC or 12/24V DC

Electric Parameters: 3A

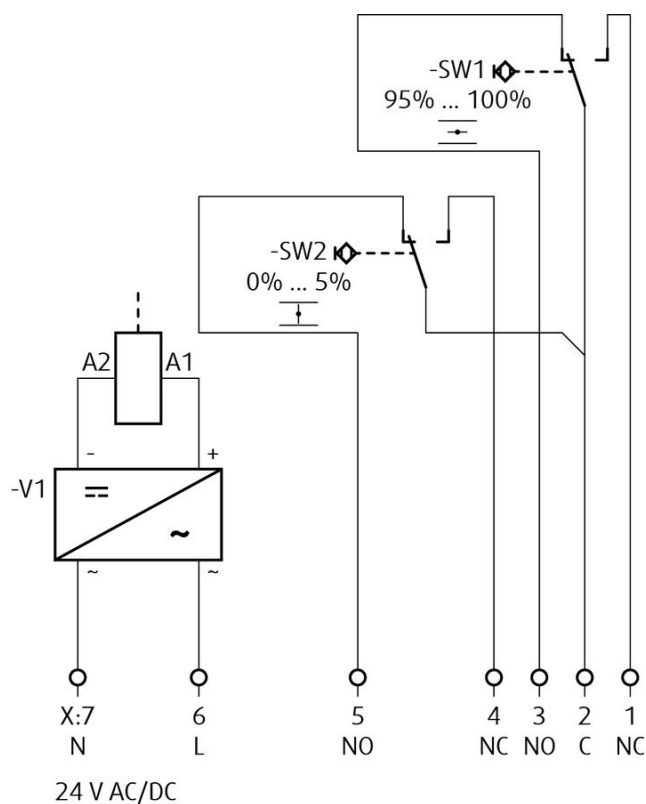
Impulse Electromagnet:

Power Supply: AC (50/60 Hz)/DC 24 V

Electric Parameters: 50 VA, load factor 10% (maximum 30 seconds in operation)

NOTES:

- 50 VA = Nominal activation power, maximum permissible magnet load = 300 VA
- Supply via safety isolation transformer.
- Power consumption must be observed!



Legend

- 1 Grey cable colour
- 2 Orange cable colour
- 3 Pink cable colour
- 4 White cable colour
- 5 Red cable colour
- 6 Brown cable colour
- X:7 Blue cable colour

Type of activation H6-2-KS

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.

Microswitch:

Power Supply: 125/250V AC or 12/24V DC

Electric Parameters: 3A

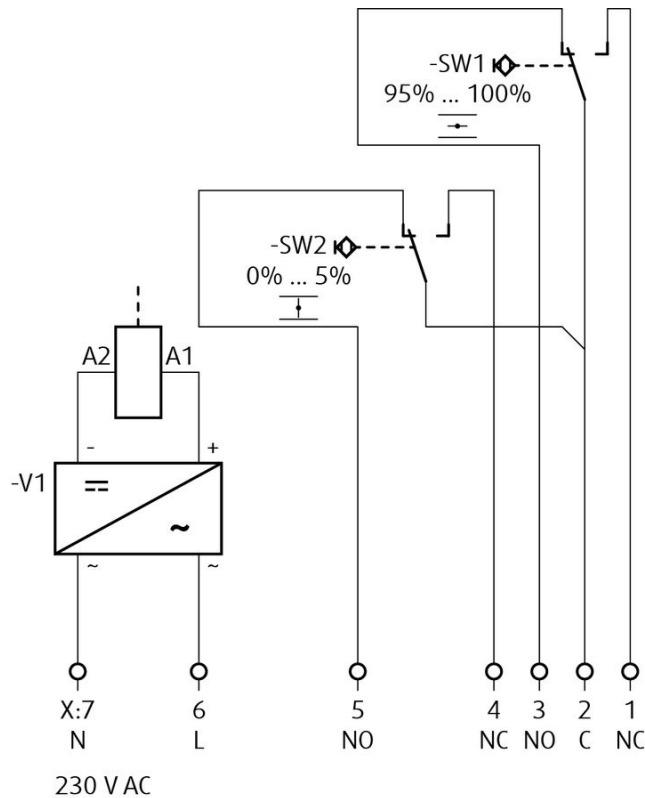
Impulse Electromagnet:

Power Supply: 230V AC, 50/60 Hz

Electric Parameters: 50 VA, load factor 10% (maximum 30 seconds in operation)

NOTES:

- 50 VA = Nominal activation power, maximum permissible magnet load = 300 VA
- Caution! Main power supply voltage!
- A device that disconnects the pole conductors (minimum contact gap 3 mm) is required for isolation from the power supply.
- Power consumption must be observed!



Legend

- 1 Grey cable colour
- 2 Orange cable colour
- 3 Pink cable colour
- 4 White cable colour
- 5 Red cable colour
- 6 Brown cable colour
- X:7 Blue cable colour

Type of activation B230T-KS

IMPORTANT: Risk of electric shock!

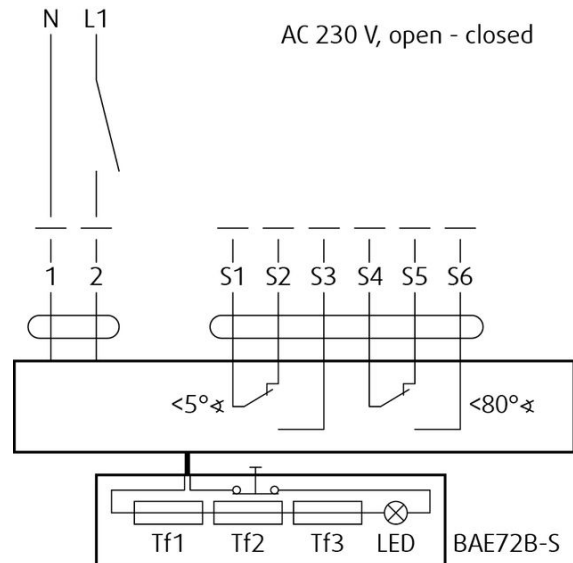
Switch off the power supply before working on any electrical equipment.

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

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

NOTES:

- Caution! Main power supply voltage!
- 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-KS

IMPORTANT: Risk of electric shock!

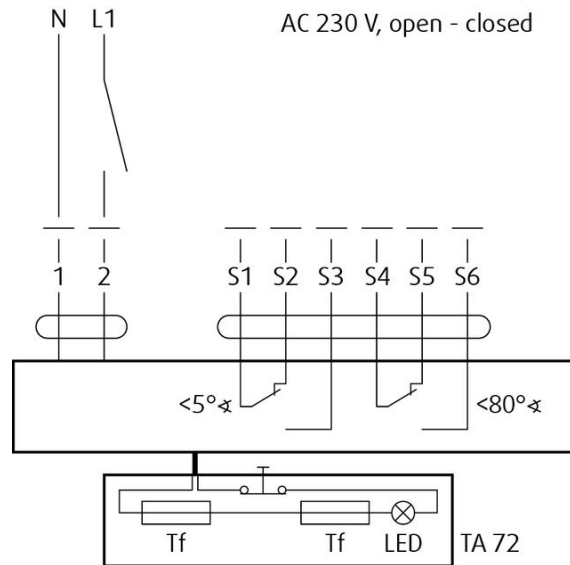
Switch off the power supply before working on any electrical equipment.

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

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

NOTES:

- Caution! Main power supply voltage!
- 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-KS

IMPORTANT: Risk of electric shock!

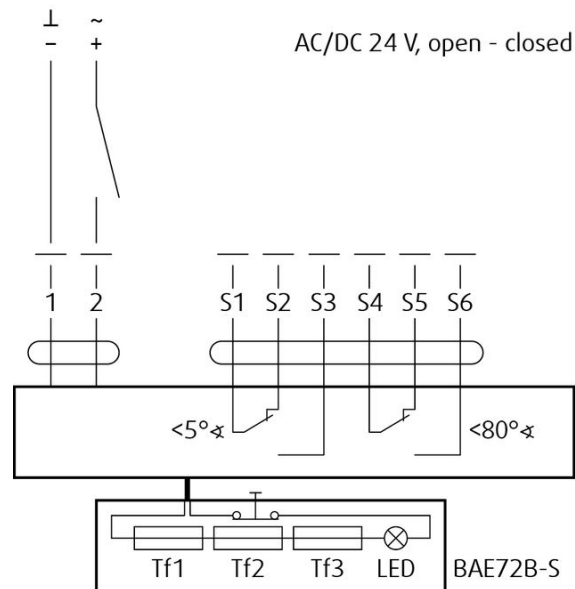
Switch off the power supply before working on any electrical equipment.

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** 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-KS

IMPORTANT: Risk of electric shock!

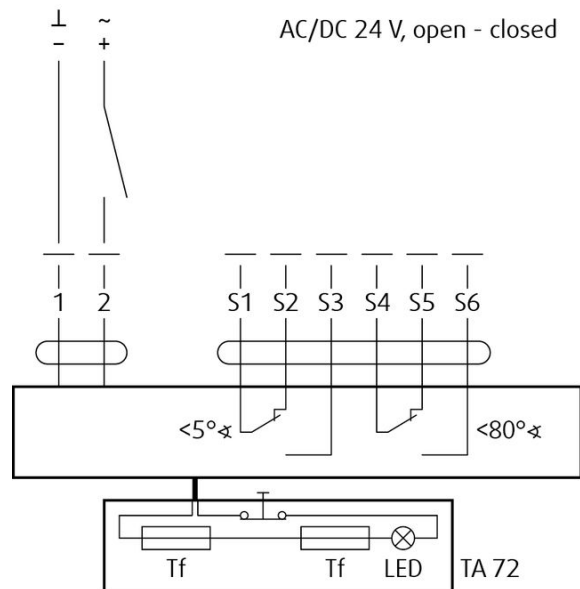
Switch off the power supply before working on any electrical equipment.

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 BST0-KS

IMPORTANT: Risk of electric shock!

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

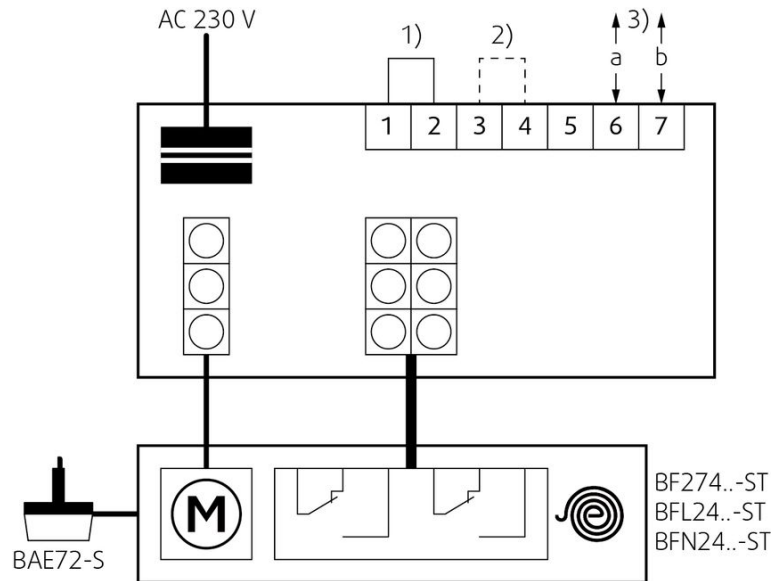
Only qualified electricians are allowed to work on the electrical system.

This type of activation is with a Belimo supply and communication unit BKN230-24 (other communication units on demand).

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

NOTES:

- Connection scheme for standardly fitted BKN230-24.
- Power consumption must be observed.



Legend

- 1)** 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).
- 2)** Jumper only used for commissioning purposes and without BKS24-.. !
- 3)** 2-wire conductor to BKS24-..

Type of activation GST0-KS

IMPORTANT: Risk of electric shock!

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

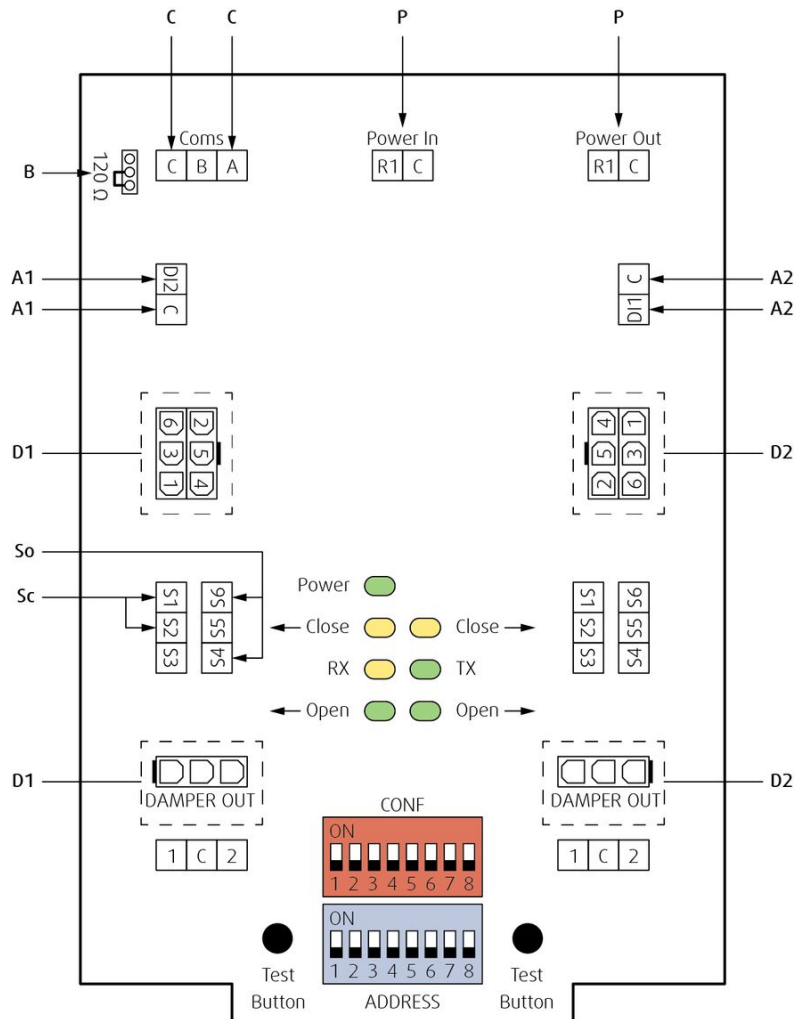
Only qualified electricians are allowed to work on the electrical system.

This type of activation is with a Gruner supply and communication unit fs-UFC24-2 (other communication units on demand).

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

NOTES:

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



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 FS-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 B24T-W-KS

IMPORTANT: Risk of electric shock!

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

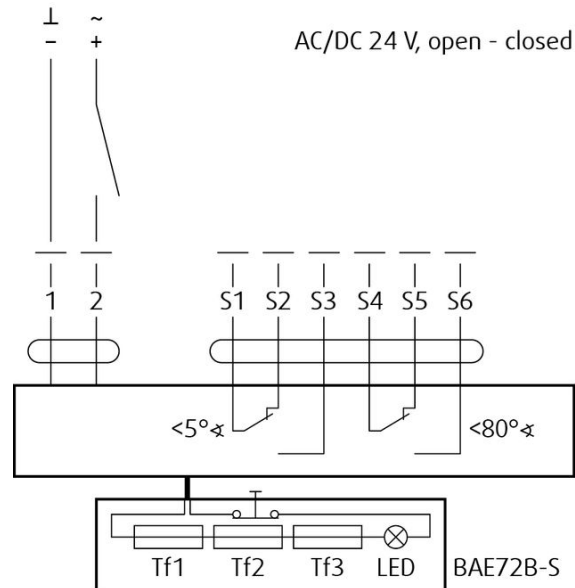
Only qualified electricians are allowed to work on the electrical system.

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-KS

IMPORTANT: Risk of electric shock!

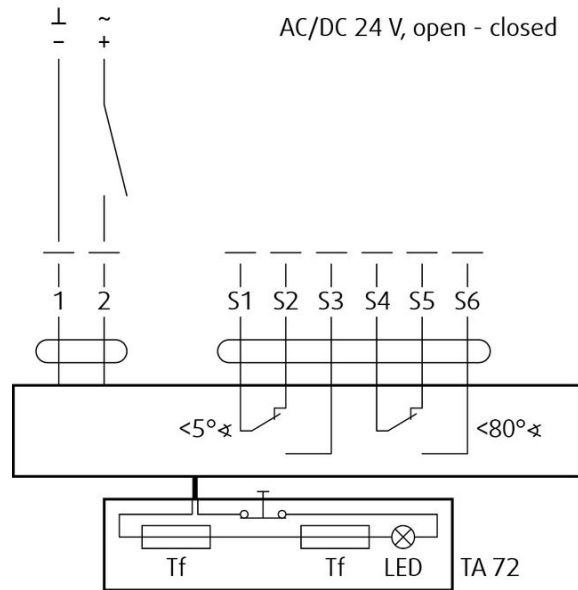
Switch off the power supply before working on any electrical equipment.

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-KS

IMPORTANT: Risk of electric shock!

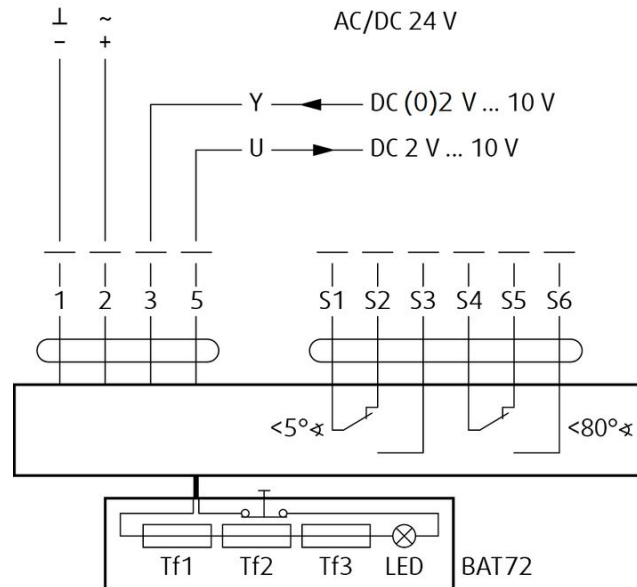
Switch off the power supply before working on any electrical equipment.

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-KS

IMPORTANT: Risk of electric shock!

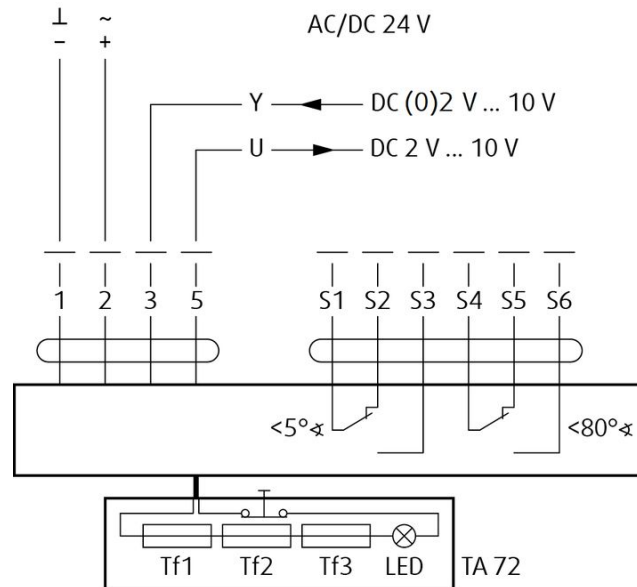
Switch off the power supply before working on any electrical equipment.

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

Operation Manual

Warning

To avoid injury, make sure to wear gloves and keep the blades movement area clear while manipulating with the damper. NEVER OPEN THE INSPECTION LID WHEN THERE IS AIR FLOWING IN THE DUCT CONNECTED TO THE FIRE DAMPER!

Fire Damper Functionality Check

Manually Operated Activation Mechanism

1. Open the damper - turn the red crank (P10) using a hexagon bent wrench No. 10 (P13). Turn the red crank so that the indicator arrow is pointing to the "OPEN" position (P11), the red crank needs to remain in the "OPEN" position, and the microswitch for the open position indication must be pushed (if installed).
2. Close the damper - release the mechanism by pressing the red release button (P9), the red crank will adjust its indicator arrow pointing to the "CLOSED" position (P12) and remain locked in this position, the microswitch for the closed position indication must be pushed (if installed).
3. Open the damper - turn the red crank (P10) using a hexagon bent wrench No. 10. (P13) Turn the red crank so that the indicator arrow is pointing to the "OPEN" position, the red crank needs to remain in the "OPEN" position, and the microswitch for the open position indication must be pushed (if installed).

Spring Return Actuator Operated Activation Mechanism

1. The fire damper must open automatically after the actuator circuit closes - the arrow on the actuator axis must show the position 90°.
2. Press the control switch (P9) on the Thermoelectric fuse and hold it until the fire damper is fully closed - the arrow on the actuator axis must show the position 0°.
3. Release the control switch on the Thermoelectric fuse. The fire damper must become fully open - the arrow on the actuator axis must show the position 90° - which is the operating position.

Operation Manual

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

Spring Return Actuator Operated Activation Mechanism

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.

Manually Operated Activation Mechanism

Turn the red crank into the "OPEN" position. The damper blade must remain in open 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 logbook 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. 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 the inspection lid. For small sizes there is the possibility of removing the mechanism to perform the inspection. The removable mechanism always needs to be replaced into the damper with the damper blade being closed.

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.

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.

