

# FDS-3G...OF

Overflow Fire Damper FDS-3G

Handbook



# Table of Contents

Overview . . . . .3

Technical Parameters . . . . .6

Diagrams . . . . .10

Dimensions & Weights . . . . .12

Ordering Code . . . . .16

Installation . . . . .18

Electrical Parameters . . . . .34

Operation Manual . . . . .47



## Description

Overflow fire dampers represent passive fire protection, designed with the help of compartmentalization to prevent the spread of toxic gases, smoke and fire. Standard fire dampers are designed and certified in accordance with EN 15650 and tested for EIS criteria according to EN 1366-2. Fire damper together with its installation form an inseparable part of fire resistivity rating. FDS-3G...OF fire dampers are to be used as Air Transfer Grilles - installations without connected ductwork. The installations are listed and described in their User Manual. By default, all Overflow fire dampers are supplied with an manual mechanism or actuator mechanism, optionally with smoke detector. FDR-3G...OF is equipped on both ends with Grilles that together with the duct extensions cover blade overhangs.

## Manually Operated Fire Dampers

By default, all manually operated fire dampers are supplied with hand crank, optionally with micro switches. In case of fire, the fire damper is closes automatically after the melting of the thermal fuse. 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.

## Actuator Operated Fire Dampers

By default, all actuator operated fire dampers are supplied with an actuator with micro switches. A fire damper 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.

## Highlights

- Activation types with fitted smoke detector
- Construction with included Grilles
- Casing tightness class C as standard
- Exceptionally low pressure drop
- Changeable mechanism
- Two inspection openings for all sizes
- Great variety of installations rated up to EI120S

## Activation Types

Manual activation mechanism - cannot be used for stand-alone activation at cold smoke detection.

- **H0-OF**

Overflow 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-OF**

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

- **H5-2-OF**

Overflow fire damper with an activation mechanism H0-OF + 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-OF**

Overflow fire damper with an activation mechanism H0-OF + 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 activation mechanism - cannot be used for stand-alone activation at cold smoke detection.

- **B230T-OF** or **G230T-OF**

Overflow 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-OF** or **G24T-OF**

Overflow 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.

Activation mechanism with stand-alone smoke detection and actuator - suitable for cold smoke detection.

- **BSD230T-OF** or **GSD230T-OF**

Overflow fire damper with smoke detector fitted activation mechanism with a Belimo or Gruner spring return actuator with an electro-thermal fuse 72°C and auxiliary switches, with a LRZ-Basis (Hekatron) supply and communication unit (AC 230 V). Actuator and Smoke Detector is DC 24 V powered from LRZ-Basis (Hekatron).

Actuator activation mechanism without smoke detection and with various communication modules.

- **BST1-OF**

Overflow 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-OF**

Overflow 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-OF**

Overflow 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-OF**

Overflow 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).



## 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. Overflow fire damper is equipped on both ends with galvanized sheet metal Grilles mounted on sheetmetal duct extensions.

## 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 FDS-3G...OF is available in SystemairDESIGN under Fire Damper Accessories.

- AM-FD: Activation Mechanisms
- CBS-FD: Cover Boards

## 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

### 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 by means of a spring after the melting of the thermofuse and/or after smoke sensor detection.
- Actuator operated: 72 °C as standard by means of the spring after current interruption in the electro-thermal fuse and/or after smoke sensor detection.

### Operational temperature

- Minimum: 0 °C
- Maximum: 60 °C for 74 °C and 72 °C thermofuse

### 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-OF up to H6-2-OF
- Actuator operated built-in microswitches - Activation types B230T-OF/G230T-OF up to BSD24T-OF/GSD24T-OF

### Closing/Opening time

Manually operated < 10 s, actuator operated < 20 s

### Inspection possibility

By opening of the inspection lid. For smaller sizes than 200 mm after removing of the activation mechanism, or a inspection opening must be added to the connecting duct. Smoke sensor can be tested with test button or through damper grille with smoke spray tester.

### 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 2 as standard; Class 3 on demand

### 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

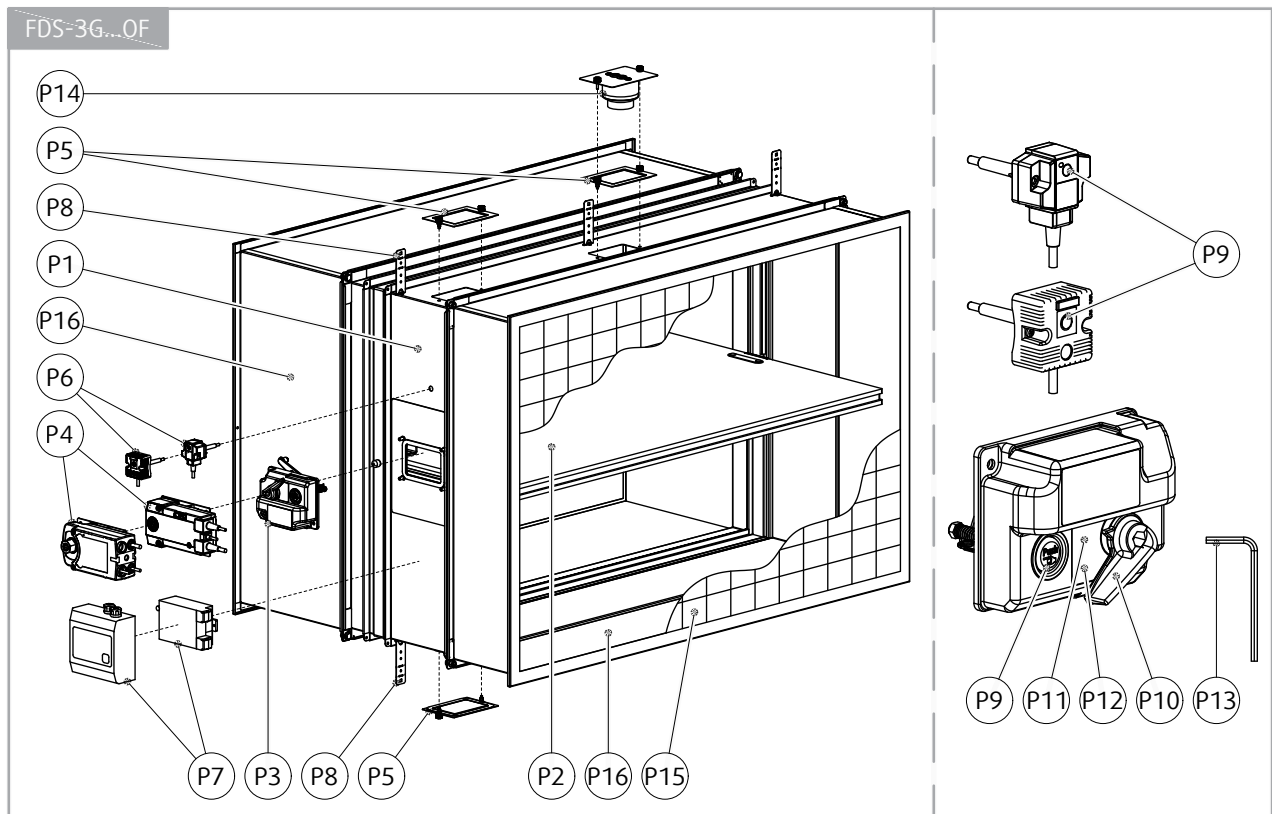
Belimo: BLF230-T, BLF24-T, BF230-T, BF24-T, BFN230-T, BFN24-T, BFN24-T, BFL230-T, BFL24-T (also with connection possibilities with acronyms ST, W)

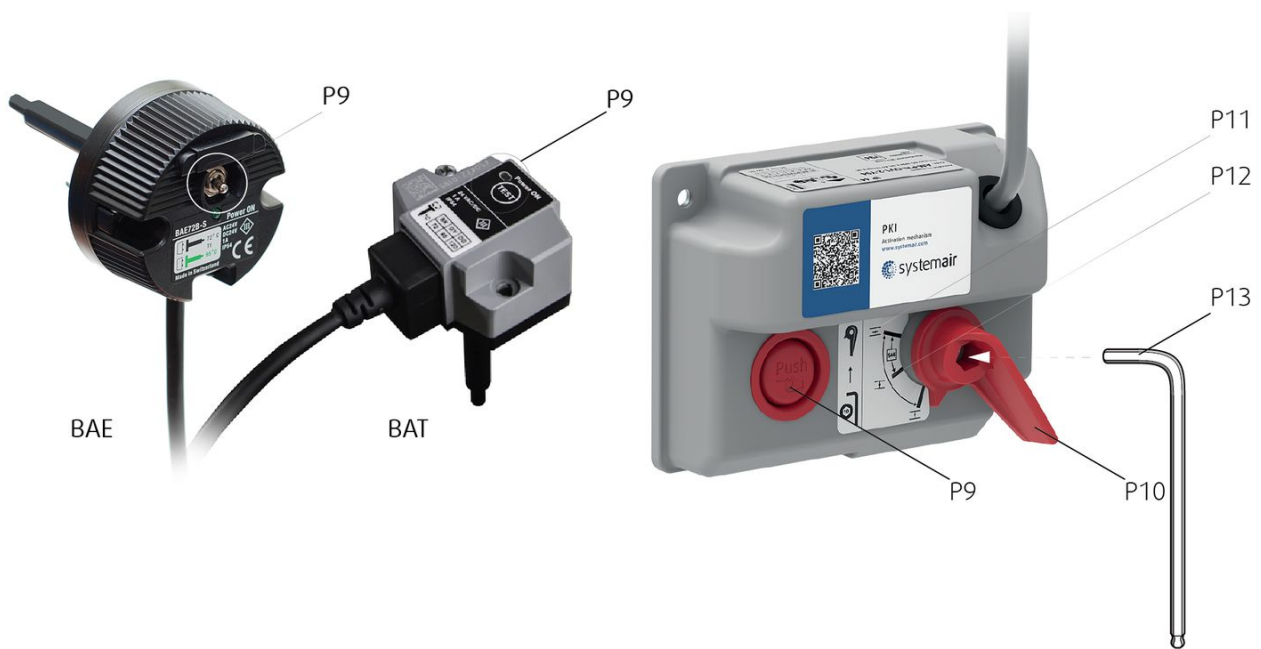
Gruner: 360TA-230-12-S2, 360TA-024-12-S2, 340TA-230D-03-S2, 340TA-024D-03-S2, 340TA-230-05-S2, 340TA-024-05-S2 (also with connection possibilities with acronyms ST, W)

### 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;LRZ Basis)
- P8** Bendable hanger
- P9** Release and test button
- P10** Crank
- P11** Open position
- P12** Closed position
- P13** Hexagon bent wrench No.10 (not part of delivery)
- P14** Smoke detector (Hekatron ORS 142)
- P15** Grid
- P16** Extended ductwork



**Assessed Performance - FDS-3G**

19 CE 1396

**Systemair Production a.s.**

Hlavná 371, 900 43 Kalinkovo, Slovakia

**1396-CPR-0163, FDS-3G**

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

EN 15650 : 2010

## Rectangular fire dampers

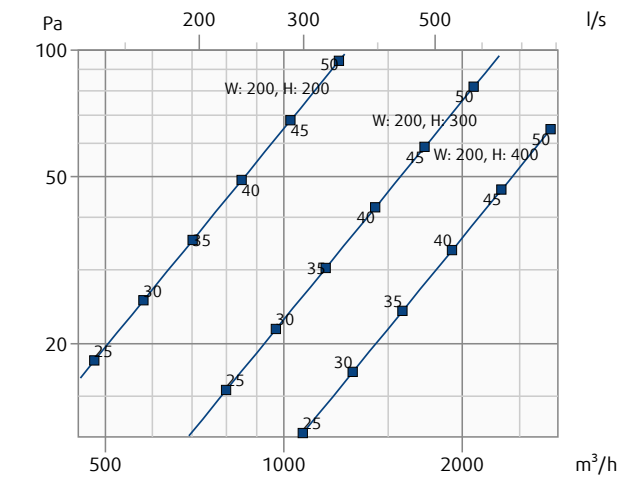
Nominal activation conditions/sensitivity	Pass
<ul style="list-style-type: none"> <li>sensing element load bearing capacity</li> <li>sensing element response temperature</li> </ul>	
Response delay (response time)	Pass
<ul style="list-style-type: none"> <li>closure time</li> </ul>	
Operational reliability	Pass
<ul style="list-style-type: none"> <li>motorized cycle 10.200 cycles</li> <li>manual cycle 50 cycles</li> <li>modulated 20.200 cycles</li> </ul>	
Fire resistance:	
Resistivity depending on installation method and situation	
<ul style="list-style-type: none"> <li>integrity <b>E</b></li> <li>maintenance of the cross section (under E)</li> <li>mechanical stability (under E)</li> <li>cross section (under E)</li> <li>insulation <b>I</b></li> <li>smoke leakage <b>S</b></li> </ul>	
Durability of response delay	Pass
<ul style="list-style-type: none"> <li>sensing element response temperature and load bearing capacity</li> </ul>	
Durability of operational reliability	Pass
<ul style="list-style-type: none"> <li>open and closing cycle</li> </ul>	

# Diagrams

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

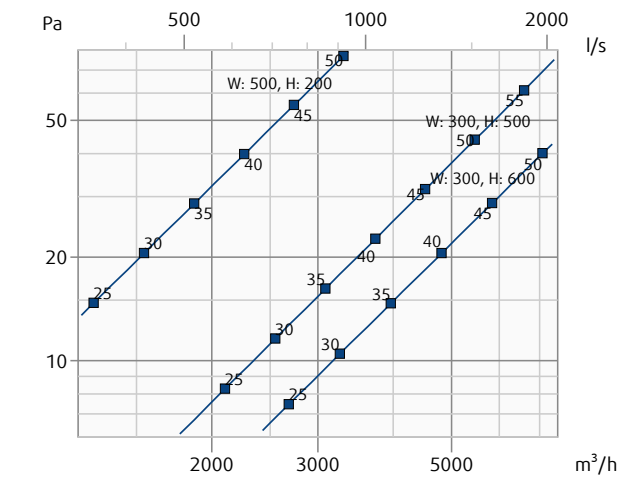
FDS-3G-...-H0-OF

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



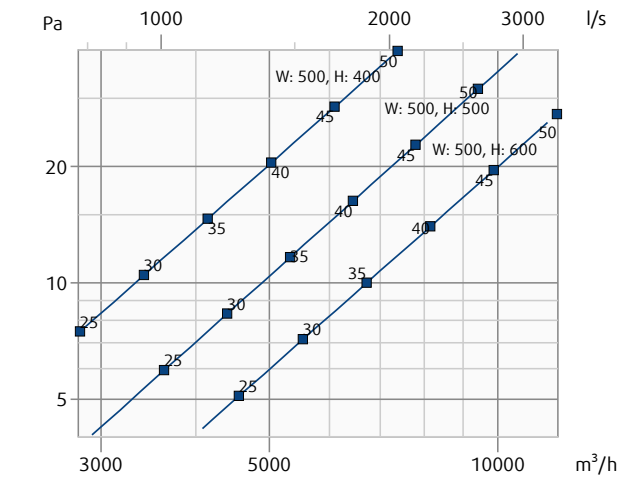
FDS-3G-...-H0-OF

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



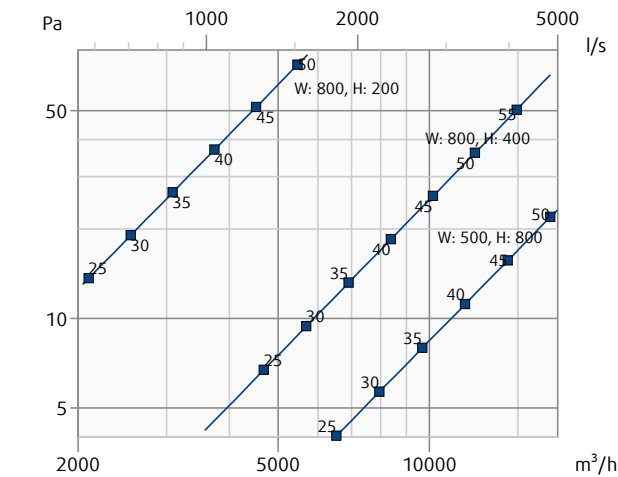
FDS-3G-...-H0-OF

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



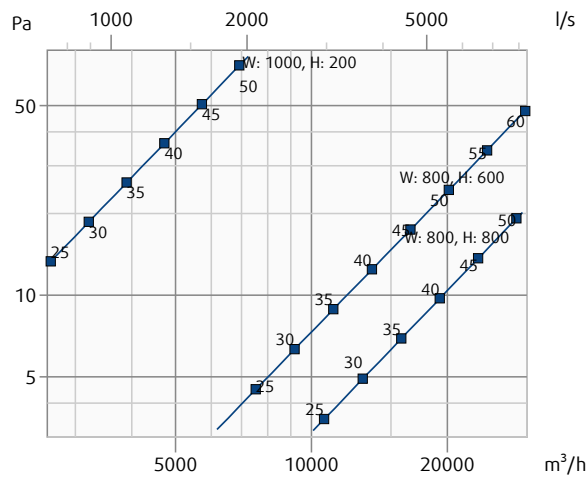
FDS-3G-...-H0-OF

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



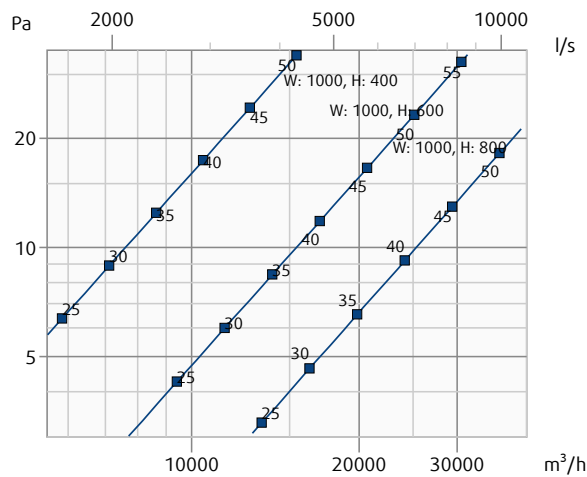
FDS-3G-...-H0-OF

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



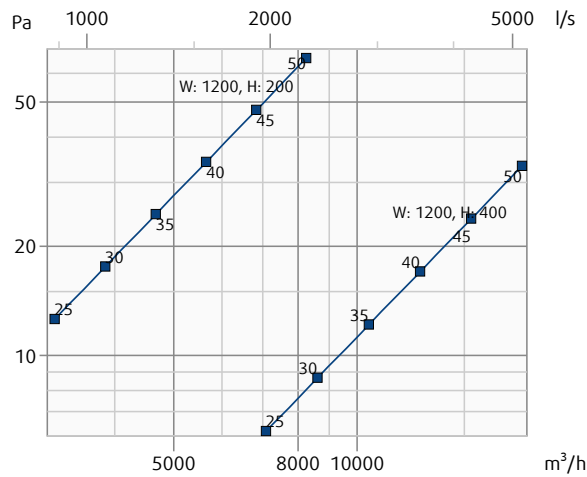
FDS-3G-...-H0-OF

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



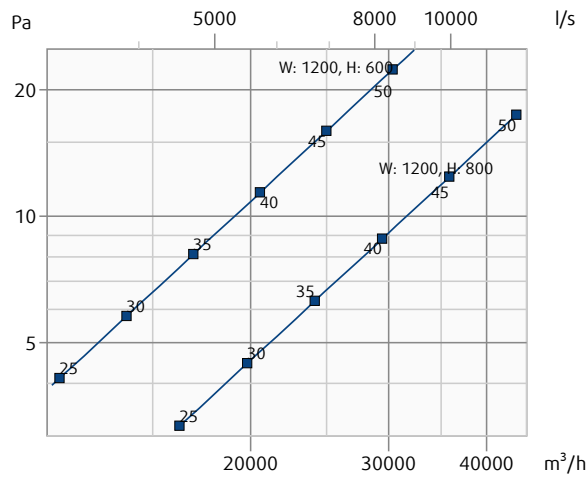
FDS-3G-...-H0-OF

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



FDS-3G-...-H0-OF

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



Free area

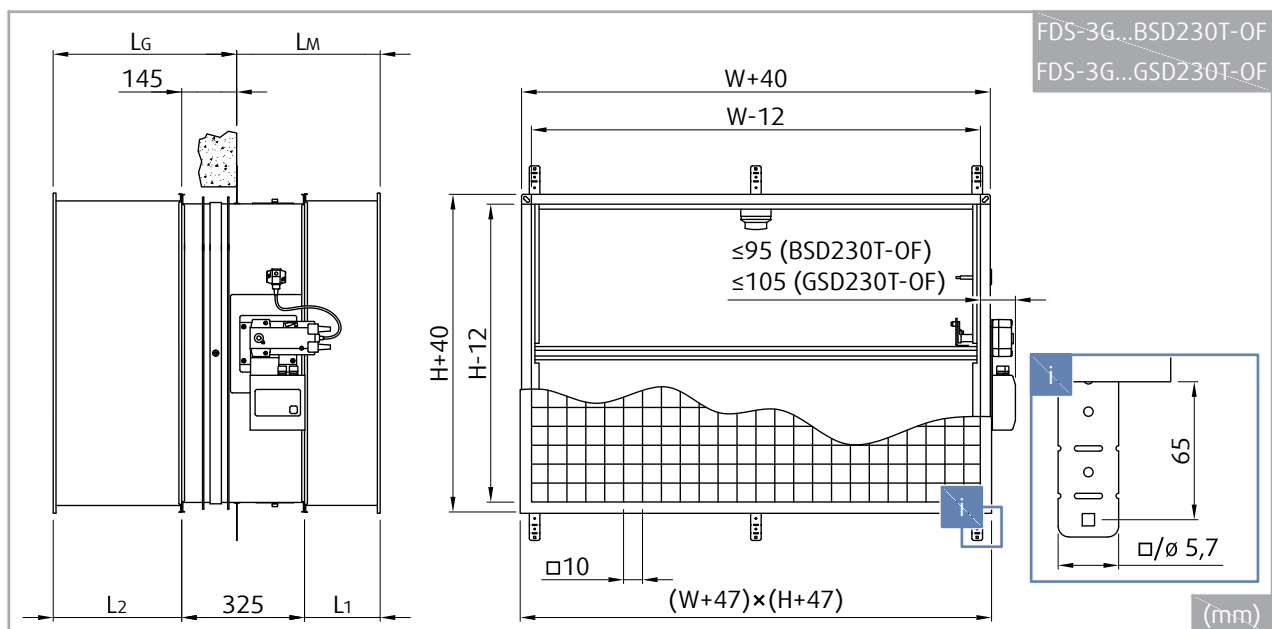
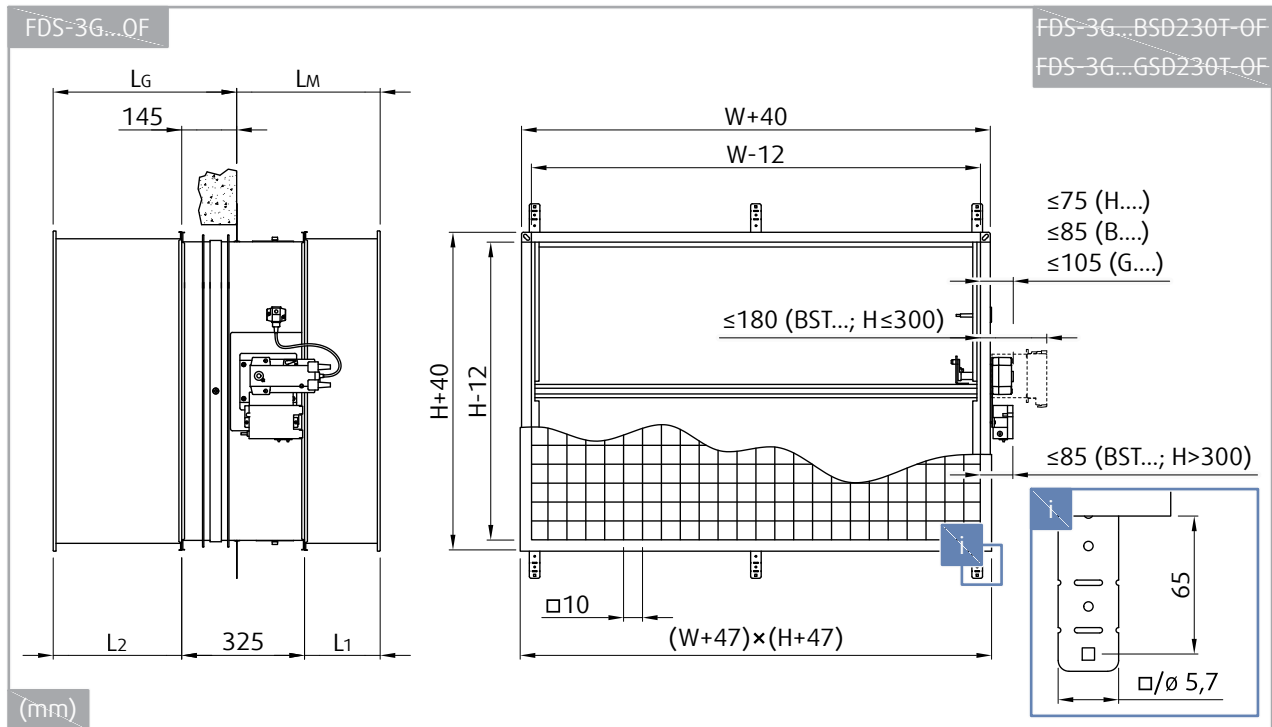
[illegible]



# Dimensions

## Dimensions

FDS-3G...OF, 200 x 200 up to 1200 x 800



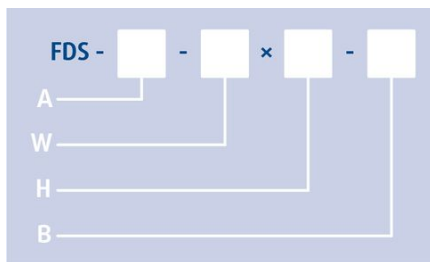
## Overhangs

	H (mm)		
	$H \leq 460$	$460 < H \leq 600$	$600 < H \leq 800$
$L_G$ (mm)	315	385	485
$L_M$ (mm)	180	280	380
$L_1$ (mm)	0	100	200
$L_2$ (mm)	170	240	340

## Weights

m (kg ± 5%)	W (mm)																												
	100	150	200	250	300	315	350	355	400	450	500	550	560	600	630	650	700	710	750	800	850	900	950	1000	1050	1100	1120	1150	1200
H (mm)	100	150	200	250	300	315	350	355	400	450	500	550	560	600	630	650	700	710	750	800	850	900	950	1000	1050	1100	1120	1150	1200
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200	-	-	8,2	9,0	9,9	10,2	10,7	10,9	11,6	12,4	13,3	14,1	14,3	15,0	15,4	15,8	16,7	16,8	17,4	18,3	26,4	30,0	31,8	34,0	36,1	38,2	40,1	40,3	41,8
250	-	-	9,8	10,6	11,5	11,8	12,3	12,5	13,2	14,0	14,9	15,7	15,9	16,6	17,0	17,4	18,3	18,4	19,0	19,9	28,0	31,6	33,4	35,6	37,7	39,8	41,7	41,9	43,4
300	-	-	10,2	11,0	11,9	12,2	12,7	12,9	13,6	14,4	15,3	16,1	16,3	17,0	17,4	17,8	18,7	18,8	19,4	20,3	28,4	32,0	33,8	36,0	38,1	40,2	42,1	42,3	43,8
350	-	-	9,0	10,0	10,9	11,1	11,8	11,9	12,7	13,7	14,6	15,6	15,7	16,4	17,0	17,4	18,3	18,4	19,2	20,1	29,7	32,1	33,5	35,6	37,8	40,0	42,0	42,1	43,1
400	-	-	10,6	11,6	12,5	12,7	13,4	13,5	14,3	15,3	16,2	17,2	17,3	18,0	18,6	19,0	19,9	20,0	20,8	21,7	31,3	33,7	35,1	37,2	39,4	41,6	43,6	43,7	44,7
450	-	-	11,0	12,0	12,9	13,1	13,8	13,9	14,7	15,7	16,6	17,6	17,7	18,4	19,0	19,4	20,3	20,4	21,2	22,1	31,7	34,1	35,5	37,6	39,8	42,0	44,0	44,1	45,1
500	-	-	9,9	10,9	11,8	12,2	12,9	13,0	13,9	15,0	15,9	16,9	17,1	17,9	18,5	18,9	19,8	20,1	20,9	21,9	32,6	35,3	36,8	38,4	39,9	41,4	42,8	42,9	44,1
550	-	-	11,5	12,5	13,4	13,8	14,5	14,6	15,5	16,6	17,5	18,5	18,7	19,5	20,1	20,5	21,4	21,7	22,5	23,5	34,2	36,9	38,4	40,0	41,5	43,0	44,4	44,5	45,7
600	-	-	11,9	12,9	13,8	14,2	14,9	15,0	15,9	17,0	17,9	18,9	19,1	19,9	20,5	20,9	21,8	22,1	22,9	23,9	34,6	37,3	38,8	40,4	41,9	43,4	44,8	44,9	46,1
650	-	-	10,2	11,1	12,2	12,5	13,2	13,3	14,2	15,3	16,3	17,3	17,6	18,3	19,0	19,4	20,3	20,6	21,4	22,4	27,4	29,6	30,8	32,6	33,9	34,6	35,3	35,5	36,6
700	-	-	11,8	12,7	13,8	14,1	14,8	14,9	15,8	16,9	17,9	18,9	19,2	19,9	20,6	21,0	21,9	22,2	23,0	24,0	29,0	31,2	32,4	34,2	35,5	36,2	36,9	37,1	38,2
750	-	-	12,2	13,1	14,2	14,5	15,2	15,3	16,2	17,3	18,3	19,3	19,6	20,3	21,0	21,4	22,3	22,6	23,4	24,4	29,4	31,6	32,8	34,6	35,9	36,6	37,3	37,5	38,6
800	-	-	10,7	11,8	12,9	13,2	13,9	14,0	15,0	16,2	17,3	18,2	18,5	19,3	20,0	20,4	21,5	21,7	22,6	23,7	29,1	31,5	32,7	34,6	35,9	36,6	37,3	37,5	38,9
850	-	-	12,3	13,4	14,5	14,8	15,5	15,6	16,6	17,8	18,9	19,8	20,1	20,9	21,6	22,0	23,1	23,3	24,2	25,3	30,7	33,1	34,3	36,2	37,5	38,2	38,9	39,1	40,5
900	-	-	12,7	13,8	14,9	15,2	15,9	16,0	17,0	18,2	19,3	20,2	20,5	21,3	22,0	22,4	23,5	23,7	24,6	25,7	31,1	33,5	34,7	36,6	37,9	38,6	39,3	39,5	40,9
950	-	-	10,9	11,9	13,0	13,3	14,0	14,2	15,1	16,3	17,4	18,4	18,6	19,5	20,1	20,6	21,6	21,9	22,7	23,8	29,3	31,7	33,0	34,9	36,3	37,0	37,7	37,8	39,1
1000	-	-	12,5	13,5	14,6	14,9	15,6	15,8	16,7	17,9	19,0	20,0	20,2	21,1	21,7	22,2	23,2	23,5	24,3	25,4	30,9	33,3	34,6	36,5	37,9	38,6	39,3	39,4	40,7
1050	-	-	12,9	13,9	15,0	15,3	16,0	16,2	17,1	18,3	19,4	20,4	20,6	21,5	22,1	22,6	23,6	23,9	24,7	25,8	31,3	33,7	35,0	36,9	38,3	39,0	39,7	39,8	41,1
1100	-	-	11,6	12,7	13,9	14,2	15,0	15,1	16,2	17,4	18,5	19,7	19,9	20,8	21,5	22,0	23,1	23,3	24,3	25,4	31,5	34,1	35,5	37,5	38,9	39,6	40,4	40,6	42,0
1150	-	-	13,2	14,3	15,5	15,8	16,6	16,7	17,8	19,0	20,1	21,3	21,5	22,4	23,1	23,6	24,7	24,9	25,9	27,0	33,1	35,7	37,1	39,1	40,5	41,2	42,0	42,2	43,6
1200	-	-	13,6	14,7	15,9	16,2	17,0	17,1	18,2	19,4	20,5	21,7	21,9	22,8	23,5	24,0	25,1	25,3	26,3	27,4	33,5	36,1	37,5	39,5	40,9	41,6	42,4	42,6	44,0
1250	-	-	-	13,6	14,9	15,3	16,1	16,2	17,3	18,6	19,8	21,0	21,3	22,2	23,0	23,5	24,8	25,0	26,0	27,2	33,9	36,7	38,2	40,3	41,8	42,6	43,5	43,7	45,2
1300	-	-	-	15,2	16,5	16,9	17,7	17,8	18,9	20,2	21,4	22,6	22,9	23,8	24,6	25,1	26,4	26,6	27,6	28,8	35,5	38,3	39,8	41,9	43,4	44,2	45,1	45,3	46,8
1350	-	-	-	15,6	16,9	17,3	18,1	18,2	19,3	20,6	21,8	23,0	23,3	24,2	25,0	25,5	26,8	27,0	28,0	29,2	35,9	38,7	40,2	42,3	43,8	44,6	45,5	45,7	47,2
1400	-	-	-	16,9	18,4	18,8	19,9	20,0	21,3	22,8	24,3	25,8	26,1	27,2	28,0	28,6	30,1	30,4	31,6	33,0	40,5	43,7	45,5	47,7	49,5	50,6	51,6	51,8	53,6
1450	-	-	-	18,5	20,0	20,4	21,5	21,6	22,9	24,4	25,9	27,4	27,7	28,8	29,6	30,2	31,7	32,0	33,2	34,6	42,1	45,3	47,1	49,3	51,1	52,2	53,2	53,4	55,2
1500	-	-	-	18,9	20,4	20,8	21,9	22,0	23,3	24,8	26,3	27,8	28,1	29,2	30,0	30,6	32,1	32,4	33,6	35,0	42,5	45,7	47,5	49,7	51,5	52,6	53,6	53,8	55,6
1550	-	-	-	-	19,5	20,0	21,1	21,3	22,6	24,2	25,8	27,2	27,5	28,8	29,7	30,3	31,9	32,2	33,4	34,9	43,1	46,4	48,2	50,7	52,6	53,7	54,7	55,0	56,9
1600	-	-	-	-	21,1	21,6	22,7	22,9	24,2	25,8	27,4	28,8	29,1	30,4	31,3	31,9	33,5	33,8	35,0	36,5	44,7	48,0	49,8	52,3	54,2	55,3	56,3	56,6	58,5
1650	-	-	-	-	21,5	22,0	23,1	23,3	24,6	26,2	27,8	29,2	29,5	30,8	31,7	32,3	33,9	34,2	35,4	36,9	45,1	48,4	50,2	52,7	54,6	55,7	56,7	57,0	58,9
1700	-	-	-	-	19,8	20,3	21,3	21,4	22,9	24,5	25,9	27,5	27,8	29,1	30,0	30,6	32,2	32,5	33,8	35,3	43,6	47,0	48,9	51,3	53,2	54,3	55,3	55,6	57,6
1750	-	-	-	-	21,4	21,9	22,9	23,0	24,5	26,1	27,5	29,1	29,4	30,7	31,6	32,2	33,8	34,1	35,4	36,9	45,2	48,6	50,5	52,9	54,8	55,9	56,9	57,2	59,2
1800	-	-	-	-	21,8	22,3	23,3	23,4	24,9	26,5	27,9	29,5	29,8	31,1	32,0	32,6	34,2	34,5	35,8	37,3	45,6	49,0	50,9	53,3	55,2	56,3	57,3	57,6	59,6
1850	-	-	-	-	20,6	21,2	22,2	22,5	23,9	25,5	27,2	28,8	29,1	30,4	31,3	32,0	33,6	33,9	35,2	36,8	45,6	49,1	51,1	53,7	55,7	56,8	57,9	58,2	60,2
1900	-	-	-	-	22,2	22,8	23,8	24,1	25,5	27,1	28,8	30,4	30,7	32,0	32,9	33,6	35,2	35,5	36,8	38,4	47,2	50,7	52,7	55,3	57,3	58,4	59,5	59,8	61,8
1950	-	-	-	-	22,6	23,2	24,2	24,5</																					

# Ordering Code



## A - Damper type

**3G**

## W - Width Dimension

200 mm up to 1200 mm

## H - Height Dimension

200 mm up to 800 mm

## B - Type of Activation (H0-OF up to GSD230T-OF)

**H0-OF** - Manual crank, no switches

**H2-OF** - Manual crank, 2 switches AC 230 V or AC/DC 24 V

**H5-2-OF** - Manual crank, AC/DC 24 V electromagnet, 2 switches AC 230 V or AC/DC 24 V

**H6-2-OF** - Manual crank, AC 230 V electromagnet, 2 switches AC 230 V or AC/DC 24 V

**B230T-OF** - AC 230 V Belimo Actuator

**G230T-OF** - AC 230 V Gruner Actuator

**B24T-OF** - AC/DC 24 V Belimo Actuator

**G24T-OF** - AC/DC 24 V Gruner Actuator

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

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

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

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

**BSD230T-OF** - 230 V AC Supply unit LRZ-Basis with reset button & Smoke detector 24 V AC/DC & 24 V AC/DC Belimo Actuator

**GSD230T-OF** - 230 V AC Supply unit LRZ-Basis with reset button & Smoke detector 24 V AC/DC & 24 V AC/DC Gruner Actuator

## Example of the Rectangular Overflow Fire Dampers Ordering Code

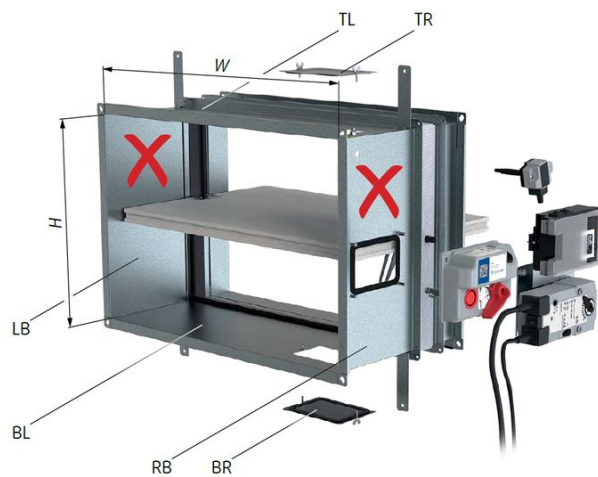
FDS-3G...OF

**FDS-3G-1200x800-H2-OF**

Rectangular overflow fire damper, nominal dimensions width × height = 1200 × 800 mm, with open and closed position indication with switches AC 230 V or AC/DC 24 V.

Note: The fire resistivity depends on the installation method.





### Inspection opening possitions

(Removable mechanism is available for all sizes)

$W$  and  $H < 200$

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

$W$  and  $H \geq 200$

Standarddly in position: BR and TR; On demand in positions: TL\*, BL.

















$H \geq 250$

Standarddly in position: BR, TR; On demand in position: TL\*, LB, BL.

### NOTES:

\* An inspection lid cannot be placed on position BR and BL on one damper. \*\* An inspection lid cannot be placed on position TL and TR on one damper.

# Installation Methods

 1 Wet	FDS-3G-OF 200 × 200 ... ... 1200 × 800	EI 60 ( $v_e i \leftrightarrow o$ ) S	a) 	b) 	 * ≠ BSD..., GSD...
		EI 90 ( $v_e i \leftrightarrow o$ ) S			
		EI 120 ( $v_e i \leftrightarrow o$ ) S			
 2 Dry	FDS-3G...OF 200 × 200 ... ... 1200 × 800	EI 60 ( $v_e i \leftrightarrow o$ ) S	a) 	b) 	 * ≠ BSD..., GSD...
		EI 90 ( $v_e i \leftrightarrow o$ ) S			
 3 Soft	FDS-3G...OF 200 × 200 ... ... 1200 × 800	EI 60 ( $v_e i \leftrightarrow o$ ) S	a) 	b) 	 * ≠ BSD..., GSD...
		EI 90 ( $v_e i \leftrightarrow o$ ) S			
 3H Hilti	FDS-3G...OF 200 × 200 ... ... 1200 × 800	EI 60 ( $v_e - i \leftrightarrow o$ ) S	a) 	b) 	 * ≠ BSD..., GSD...

## Note:

Installations of subtype **FDS-3G...OF** were tested without connected duct, with natural convection.

## Legend:

- 1. Wet** - Wet installation, using Plaster/Mortar/Concrete Filling
- 2. Dry** - Dry installation, using cover boards and mineral wool filing
- 3. Soft** - Soft installation, using mineral wool filing
- 3H. Hilti** - Filling made only from Hilti foam
- a)** - Flexible (plasterboard) wall
- b)** - Concrete/masonry/cellular concrete (rigid) wall
- $v_e$**  - 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 Handbook closely.
3. perform damper inspection in accordance with Handbook.

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 "Handbook\_FDR-3G" document or more can be found at SystemairDESIGN.

### Installation rules

- The damper with smoke detector (activation types BSD.../GSD...) must be oriented with smoke detector on the highest place when installed.
- The damper must not support any part of the surrounding construction or wall which could cause damage and consequent damper failure.
- 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.
- According to the standard EN 1366-2, the distance between the fire damper bodies must be at least 200 mm. This condition does not apply for tested distances. Therefore installations Wet and Soft are approved for smaller distances under condition that the resulted resistivity is reduced to EI90S.
- The distance between the wall/ceiling and the fire damper must be at least 75 mm. This condition does not apply for tested distances. Therefore installations Wet and Soft are approved for smaller distances under condition that the resulted resistivity is reduced to EI90S.
- 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. A bendable hinge is provided on the damper body which 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.
- The gap in the installation opening between the fire 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 filling.

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

Installation 1 - Wet

Using Plaster/Mortar/Concrete Filling

- Important: Use support inside the damper when adding filling. The weight of the filling can damage or bend the damper casing.
1. The supporting construction opening must be prepared as depicted. Opening surfaces must be even and cleaned off. The flexible wall opening must be reinforced as per the standards for plasterboard walls. The opening dimensions are driven by the nominal dimensions of the damper with added clearance. For rectangular dampers, the opening will be with the dimensions of W1 and H1.
  2. Insert the closed damper into the middle of the opening so that the damper blade is in the wall. Use the bendable hanger (2; or hangers) to secure the damper against the wall using a suitable screw (F1; recommended screw diameter 5,5; e.g. DIN7981).
  3. For damper widths greater than 800 mm, it is recommended to use a duct support inside the damper to avoid any damage, bend to the damper housing from the weight of the filling.
  4. Fill in the area between the wall and the damper with plaster or mortar or concrete filling (2), while paying attention to prevent the fouling of the damper's functional parts, which could limit its correct functionality. The best way is to cover the functional parts during installation. The seepage of the filling material can be prevented by using boards. However, these are not required for wet installation.

First let the plaster or mortar or concrete filling harden and then perform the next steps!

5. After the filling hardens, remove the duct support from inside of the damper.
6. If needed, uncover and clean the damper after installation.
7. Check the damper's functionality

Installation - Standard Distances





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

Installation - Smaller Distances, Maximum resistivity reduced to EI90S

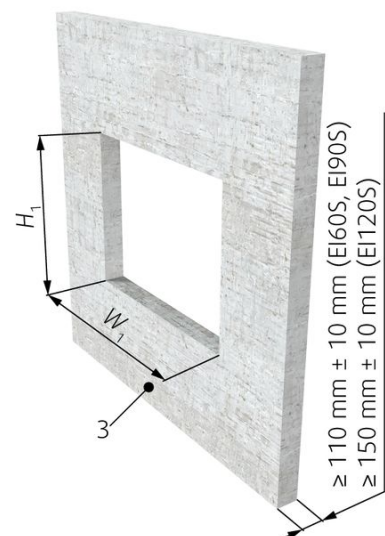
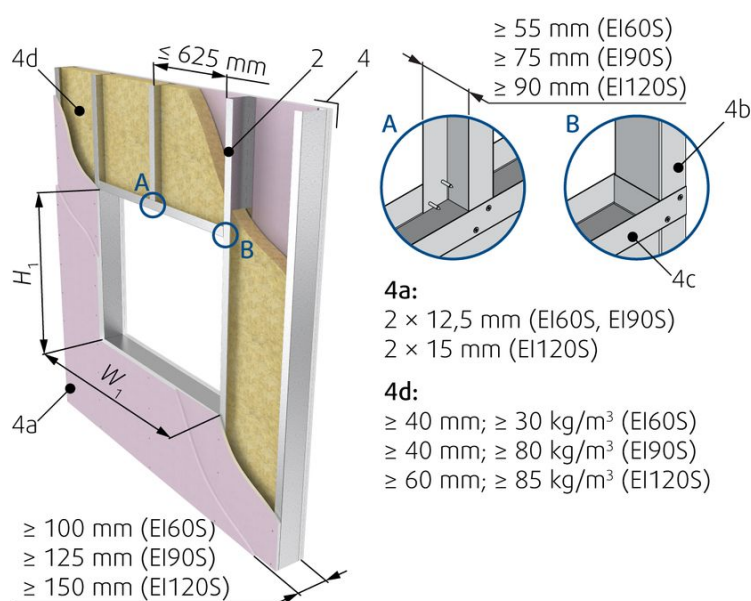
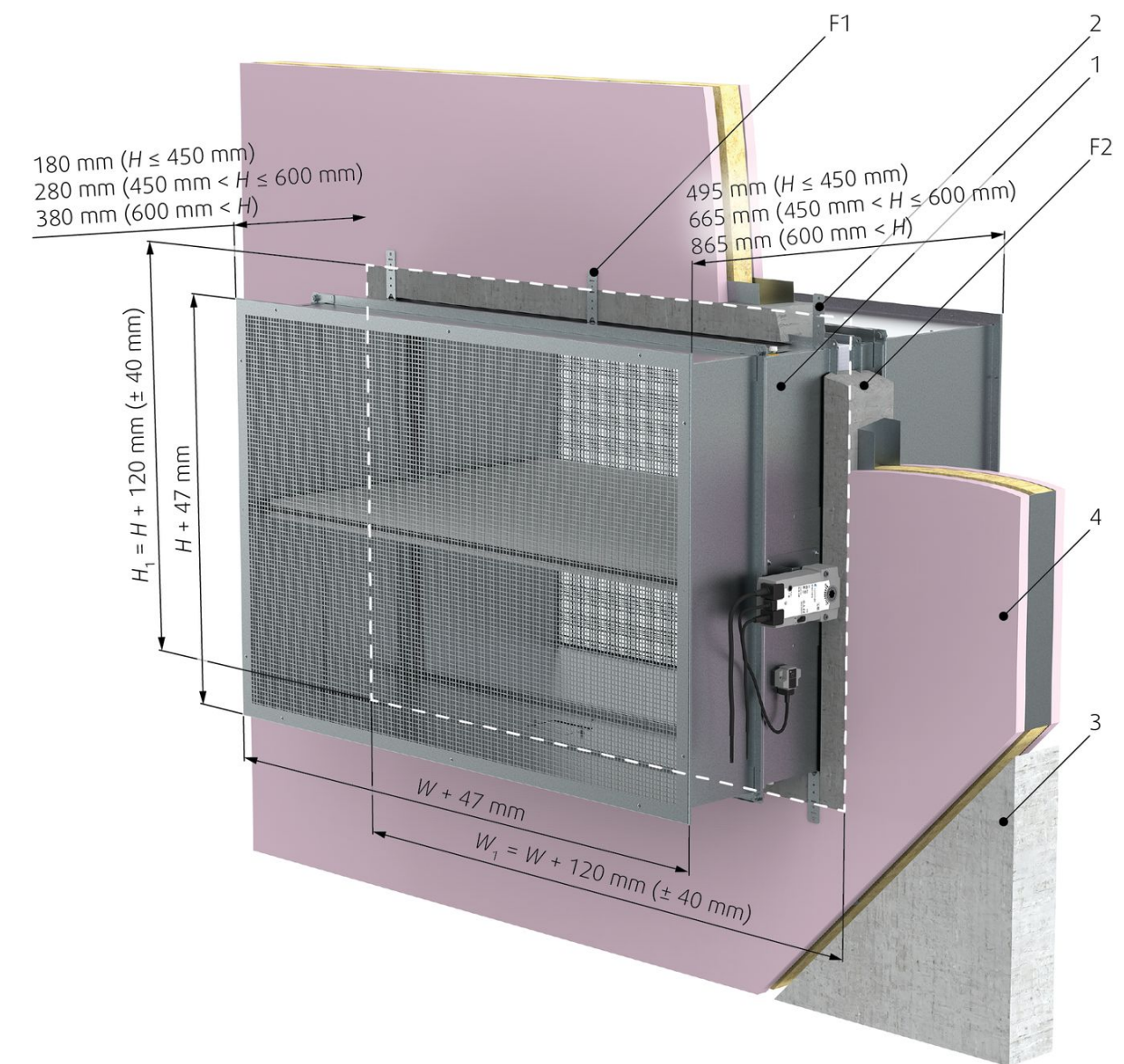
The distance between 2 individual fire dampers can be reduced to 60 mm, measured from surface to surface of the housing and the distance between the surface of the damper installed in the duct and the adjacent supporting construction (wall/floor) can be reduced to 40 mm, provided that the fire resistance classification will be reduced as follows: EI90 (ve i <-> o) S.

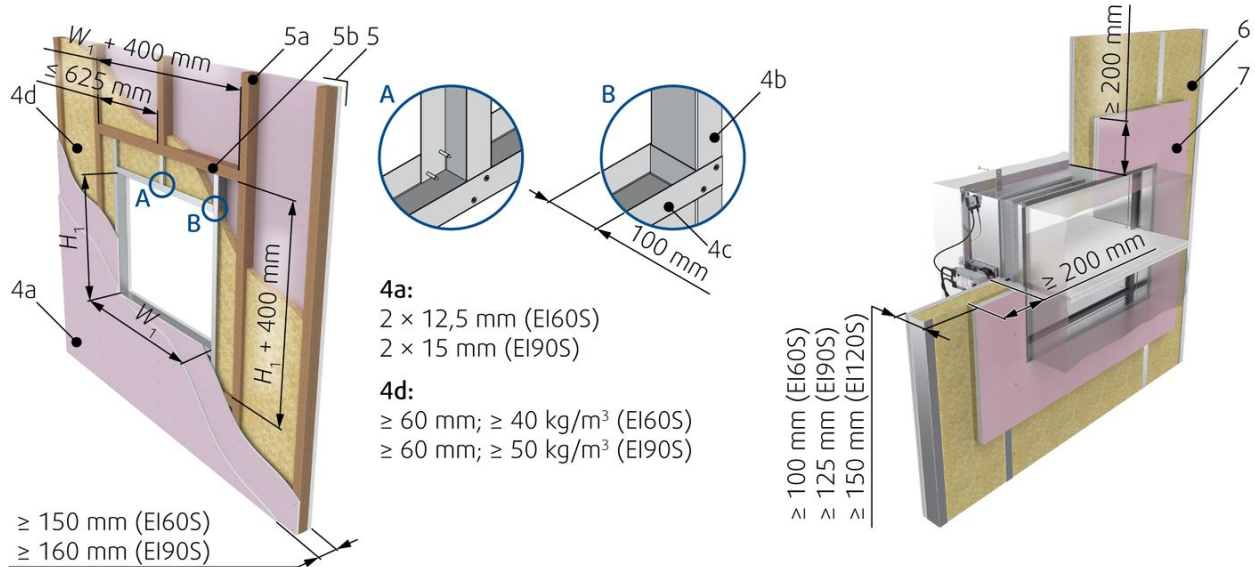
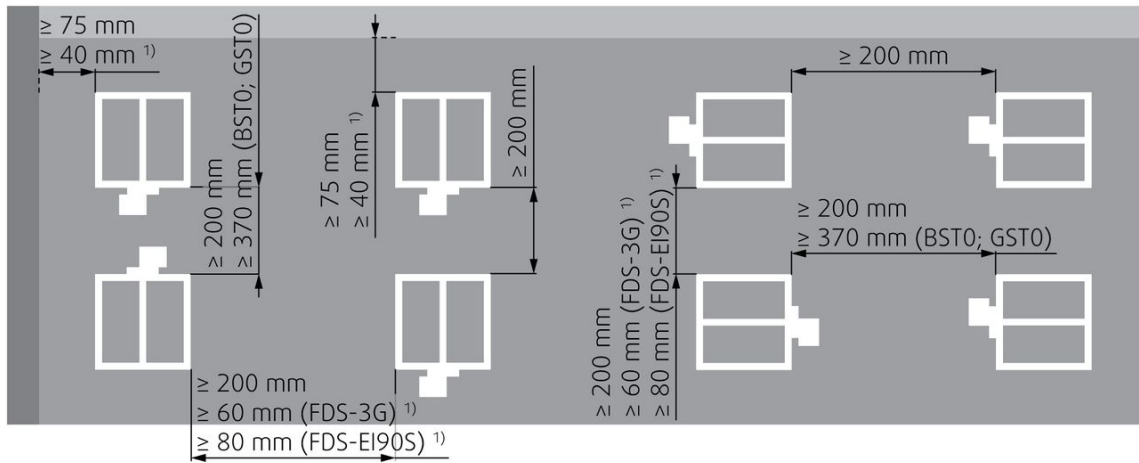
Installation in a Wall thinner than tested

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.

 1 Wet	FDS-3G-OF 200 × 200 ... ... 1200 × 800	EI 60 (v <sub>e</sub> i ↔ o) S			 * ≠ BSD..., GSD...
		EI 90 (v <sub>e</sub> i ↔ o) S			
		EI 120 (v <sub>e</sub> i ↔ o) S			







## Legend

- F1** Screw  $\geq 5,5$  DIN7981 or suitable wall plug and screw size 6.
- F2** Plaster/mortar/concrete filling
- 1** Fire damper (actuator side)
- 2** Bendable hanger
- 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.
- 5** Flexible (wood beam) wall
- 5a** Vertical spruce wooden beam  $\geq 60 \times 100$  mm
- 5b** Horizontal spruce wooden beam  $\geq 80 \times 100$  mm
- 6** Alternative thinner wall (classified in accordance with EN 13501-2:2007 + A1: 2009 for fire resistance required for product application)
- 7** Area of 200 mm from opening around the damper must have the same composition and be created the same way as Flexible (plasterboard) wall.

## Notes

- a)** - Flexible (plasterboard) wall
- b)** - Concrete/masonry/cellular concrete (rigid) wall
- v<sub>e</sub>** - Vertical wall
- 1)** - Smaller distances – resistivity must be reduced to EI90 ( ve i<->o ) S

Installation 2 - Dry

Using Mineral Wool and Cover Boards





1. The supporting construction opening must be prepared as depicted. Opening surfaces must be even and cleaned off. The flexible wall opening must be reinforced as per the standards for plasterboard walls. 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 and H1.
2. With FDS-3G dampers it is necessary to install the bendable hangers (2) onto the cover boards using suitable screws or screws with wall plug (F1). Insert the damper from the mechanism side and secure the bendable hangers of the damper into the cover board using suitable screws (F1). Subsequently mount the remaining cover boards from the mechanism side.
3. Fill in the area between the wall and the damper with mineral wool (F3) with a density of at least 50 kg/m3 thoroughly but in such a way that will not deform the damper housing, while paying attention to prevent the fouling of the damper’s functional parts, which could limit its correct functionality.
4. Close the gap between the damper and the mounting opening, with CBS-FD cover boards and screws (F1) through pre-drilled holes.
5. All the gaps between the cover boards, between cover boards and the wall and between cover boards and the fire damper need to be filled with fire resistive coating (F4).
6. If needed, uncover and clean the damper after installation.
7. Check the damper’s functionality

Installation - Standard Distances

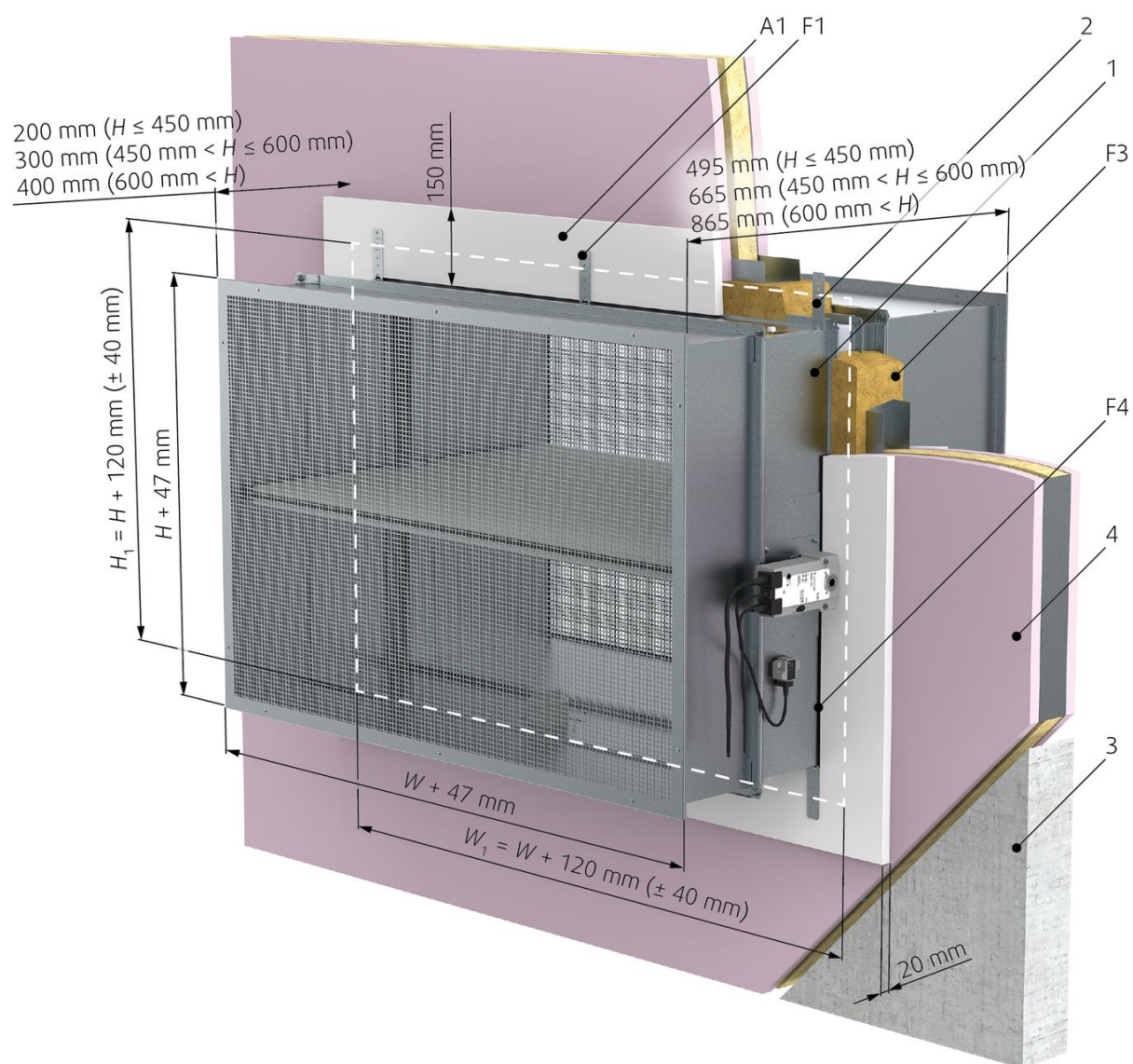
For Dry installation, the minimum distance from the wall or ceiling to the damper body is 150 mm. For multiple crossings through a fire resistive wall the minimum distance between two damper bodies is 300 mm. Distances between the damper and a nearby foreign object crossing the fire resistive wall is 200 mm.

Installation in a Wall thinner than tested

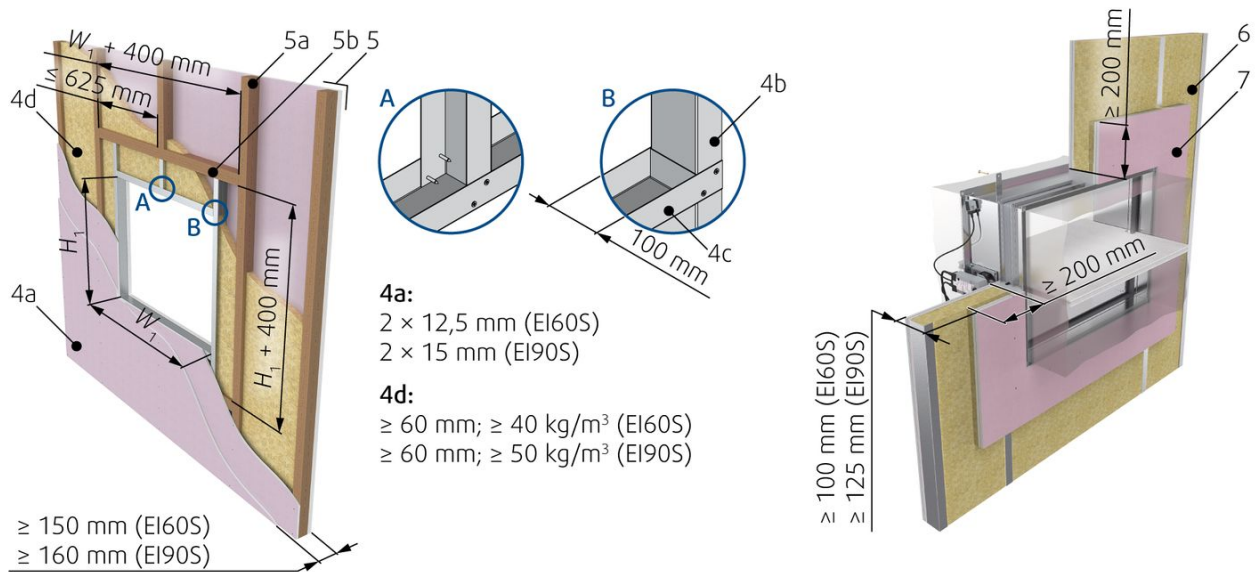
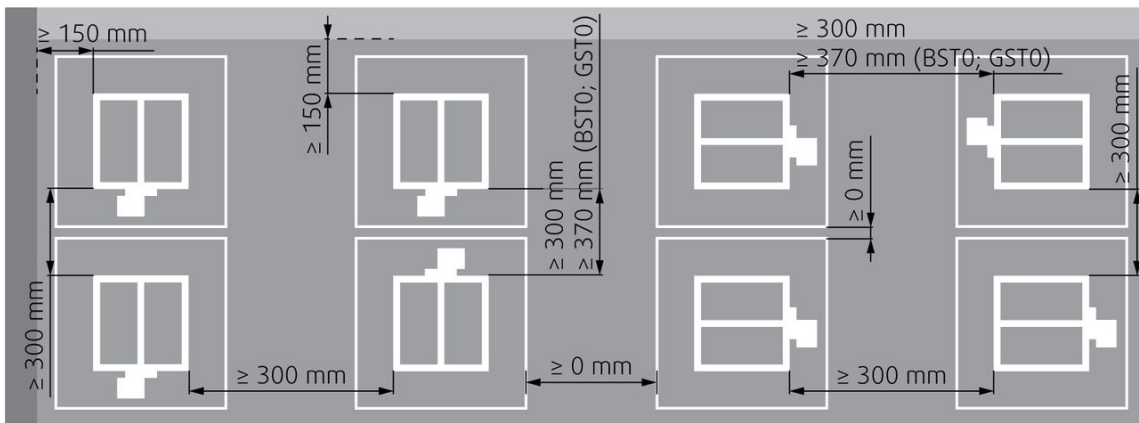
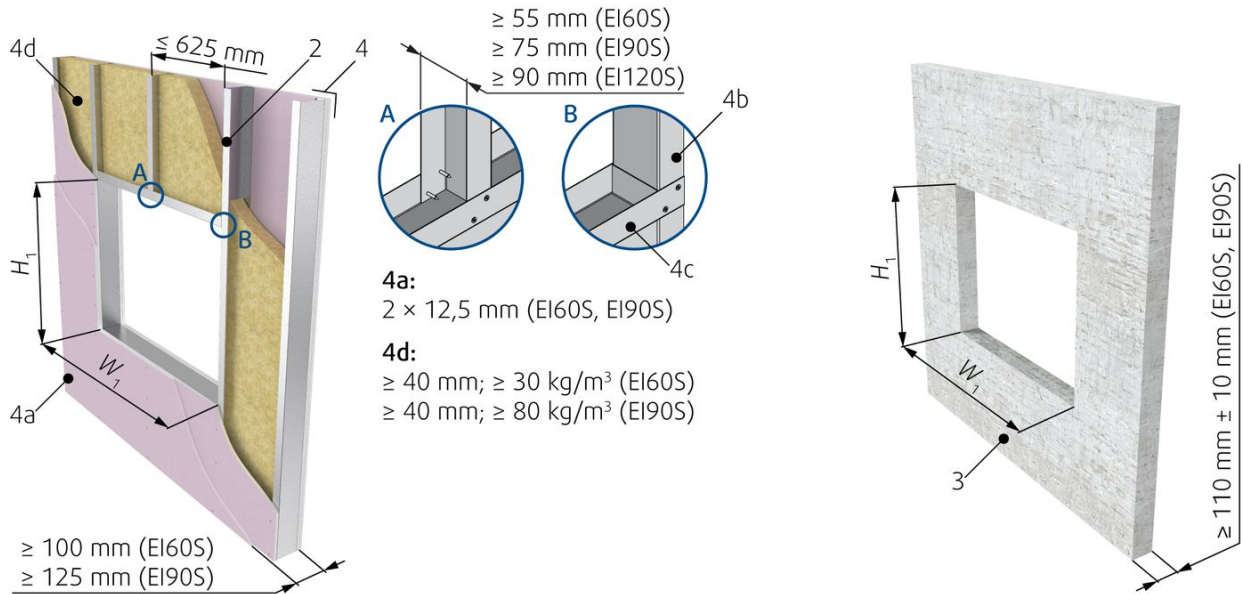
Installation in a thinner wall is allowed under the condition that an additional layer/ layers of fire protective board are fixed to the surface of the wall in order to achieve the same length of damper penetration seal as was tested. The minimum width of added boards around the damper is 200 mm. In 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.

 2 Dry	FDS-3G...OF 200 × 200 ... ... 1200 × 800	EI 60 (v <sub>e</sub> i ↔ o) S			
		EI 90 (v <sub>e</sub> i ↔ o) S			

\* ≠ BSD..., GSD...







## Legend

- F1** Screw  $\geq 5,5$  DIN7981 or suitable wall plug and screw size 6.
- F3** Mineral wool filling (min. 50 kg/m<sup>3</sup>)
- F4** Fire resistive coating, e.g. Promastop-CC/Promat
- A1** Cover board CBS-FD (accessory) obligatory
- 1** Fire damper (actuator side)
- 2** Bendable hanger
- 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.
- 5** Flexible (wood beam) wall
- 5a** Vertical spruce wooden beam  $\geq 60 \times 100$  mm
- 5b** Horizontal spruce wooden beam  $\geq 80 \times 100$  mm
- 6** Alternative thinner wall (classified in accordance with EN 13501-2:2007 + A1: 2009 for fire resistance required for product application)
- 7** Area of 200 mm from opening around the damper must have the same composition and be created the same way as Flexible (plasterboard) wall.

## Notes:

- a)** - Flexible (plasterboard) wall
- b)** - Concrete/masonry/cellular concrete (rigid) wall
- v<sub>e</sub>** - Vertical wall

## Installation 3 - Soft

### Installation into a Soft Crossing with fire resistive coating

1. The supporting construction opening must be prepared as depicted. Opening surfaces must be even and cleaned off. The flexible wall opening must be reinforced as per the standards for plasterboard walls. The opening dimensions are driven by the nominal dimensions of the damper with added clearance. For rectangular dampers, the opening will be with the dimensions of W1 and H1.
2. Prepare mineral wool installation segments (F5) with thickness of the opening height. First apply a suitable fire resistive coating (F6) onto the damper at the place of its future placement, assemble and glue the filling of the future installation with the same fire resistive coating. After the fire resistive coating has dried the damper along with the filling are ready for installation.
3. Apply the same fire resistive coating (F6) onto the internal surface of the wall opening. Also apply the fire resistive coating on the external surface of the filling glued on the damper surface. Immediately after the fire resistive coating is applied, place the damper into the wall opening. The damper blade must be located in the supporting structure.
4. After inserting the damper into the opening and fixing it using the bendable hangers and suitable screws (F1), apply the same fire resistive coating (F6), at least 2 mm thick and 100 mm wide, on the exposed filling and wall edges evenly from both sides. Do not apply this layer in the place where the mechanism is located, inspection openings and manufacturer labels.
5. If needed, uncover and clean the damper after installation.
6. Check the damper's functionality

### Installation - Standard Distances





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

### Installation - Smaller Distances

The distance between 2 individual fire dampers can be reduced to 60 mm, measured from surface to surface of the housing and the distance between the surface of the damper installed in the duct and the adjacent supporting construction (wall/floor) can be reduced to 40 mm.

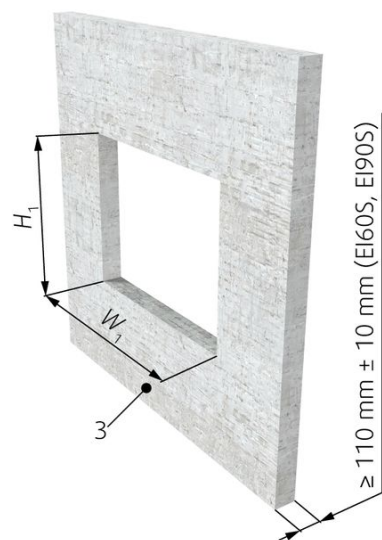
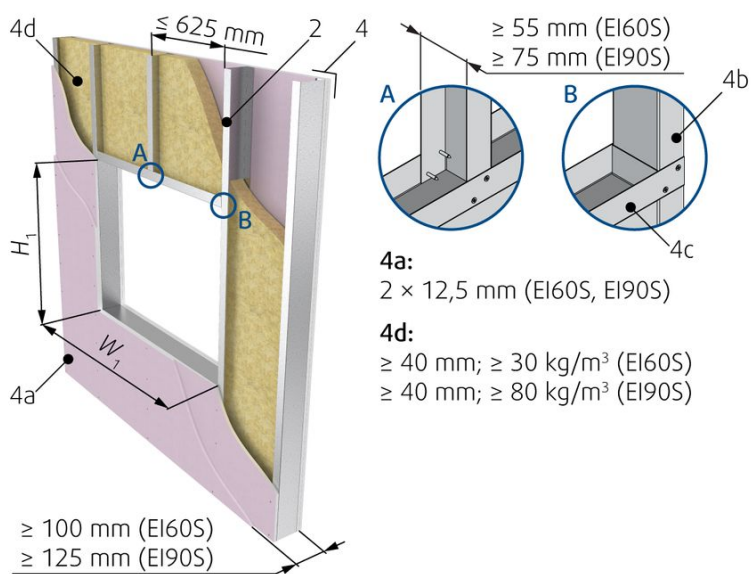
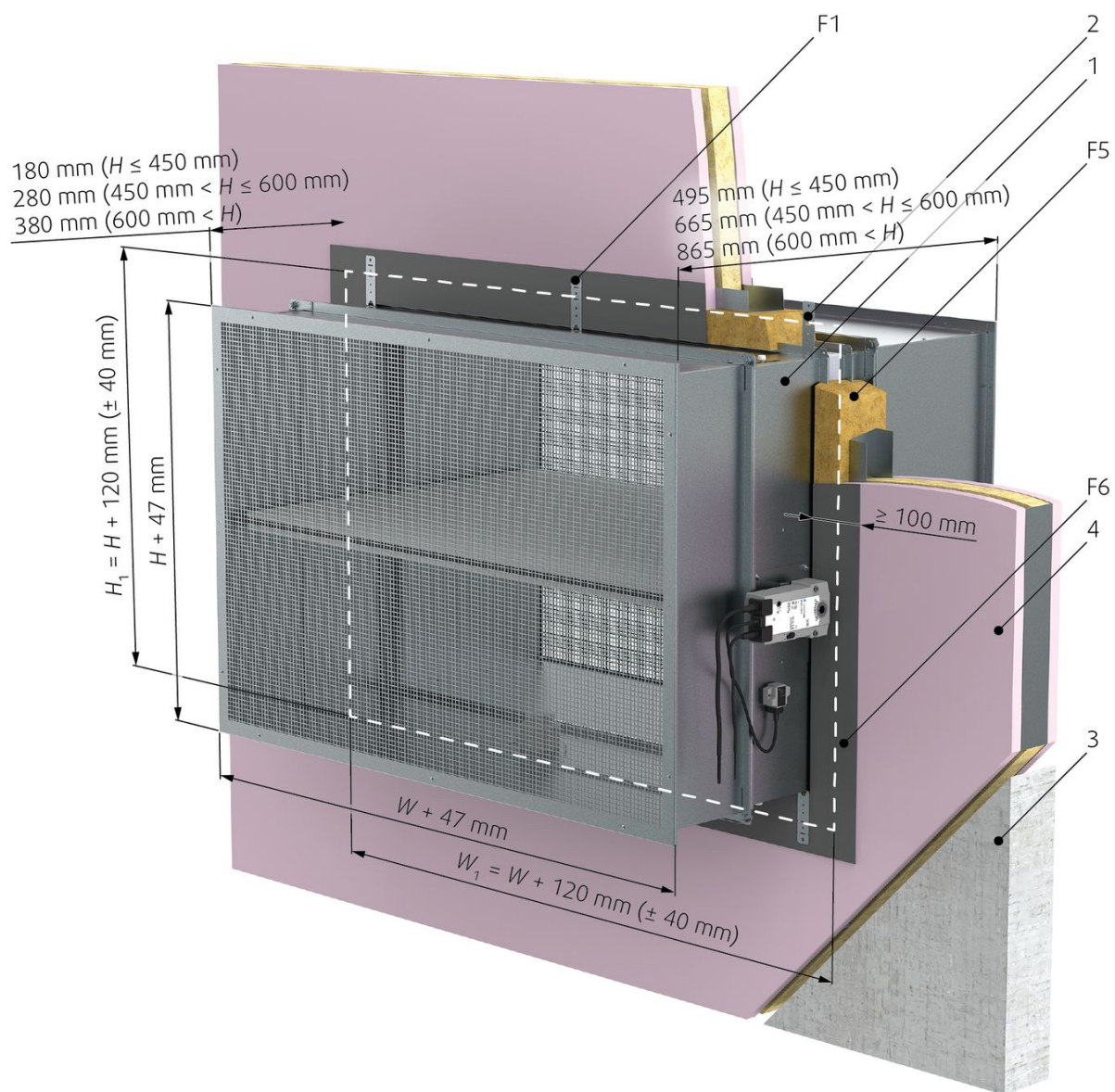
### Installation in a Wall thinner than tested

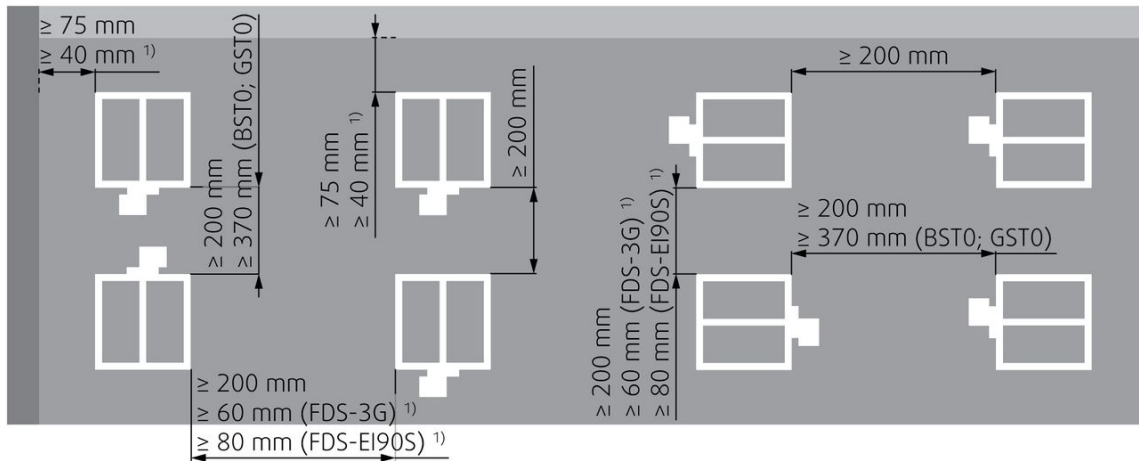
Installation in a thinner wall is allowed under the condition that an additional layer/layers of fire protective board are fixed to the surface of the wall in order to achieve the same length of damper penetration seal as was tested. The minimum width of added boards around the damper is 200 mm. In addition, 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.

 <b>3 Soft</b>	FDS-3G...OF	EI 60 ( $v_e i \leftrightarrow o$ ) S	a) 	b) 	
	200 × 200 ... ... 1200 × 800	EI 90 ( $v_e i \leftrightarrow o$ ) S			

\* ≠ BSD..., GSD...







### Legend

**F1** Screw  $\geq 5,5$  DIN7981 or suitable wall plug and screw size 6.

**F5** Mineral wool segment (minimum 150 kg/m<sup>3</sup>).

**F6** Layer of fire resistive coating (Promastop-CC/Promat) at least 2 mm thick for exposed surfaces.

**1** Fire damper (actuator side)

**2** Bendable hanger

**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.

**5** Flexible (wood beam) wall

**5a** Vertical spruce wooden beam  $\geq 60 \times 100$  mm

**5b** Horizontal spruce wooden beam  $\geq 80 \times 100$  mm

**6** Alternative thinner wall (classified in accordance with EN 13501-2:2007 + A1: 2009 for fire resistance required for product application)

**7** Area of 200 mm from opening around the damper must have the same composition and be created the same way as Flexible (plasterboard) wall.

### Notes:

**a)** - Flexible (plasterboard) wall

**b)** - Concrete/masonry/cellular concrete (rigid) wall

**v<sub>e</sub>** - Vertical wall

**1)** - Smaller distances – resistivity maximum EI90 (ve i<->o ) S

Installation 3H - Hilti

Filling made only from Hilti foam

Tip: Excess material can be reused as the filling for this installation. It can be inserted into the cavity before you add new foam from the gun.

1. The supporting construction opening must be prepared as depicted. Opening surfaces must be even and cleaned off. The flexible wall opening must be reinforced as per the standards for plasterboard walls. The opening dimensions are driven by the nominal dimensions of the damper with added clearance. For rectangular dampers, the opening will be with the dimensions of W1 and H1.
2. Insert the damper into the opening concentric and fixing it with the opening using the bendable hangers and suitable screws (F1).
3. Wear protective gloves when handling foam. Insert the barrel of the foam gun into the middle of the cavity between damper and opening and fill it completely with foam (F17) pushed out foam can be quickly hand pushed back into the cavity.
4. After the filling (F17) is solidified, though it will always remain partly flexible, you can cut the excess foam that stands out from the wall.
5. If needed, uncover and clean the damper after installation.
6. Check the damper's functionality

Installation - Standard Distances




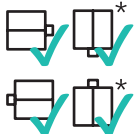
According to the standard EN 1366-2, the minimum distance from the wall or ceiling to the damper body is 75 mm. For multiple crossings through a fire resistive wall the minimum distance between two damper bodies is 200 mm. This applies for distances between the damper and a nearby foreign object crossing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

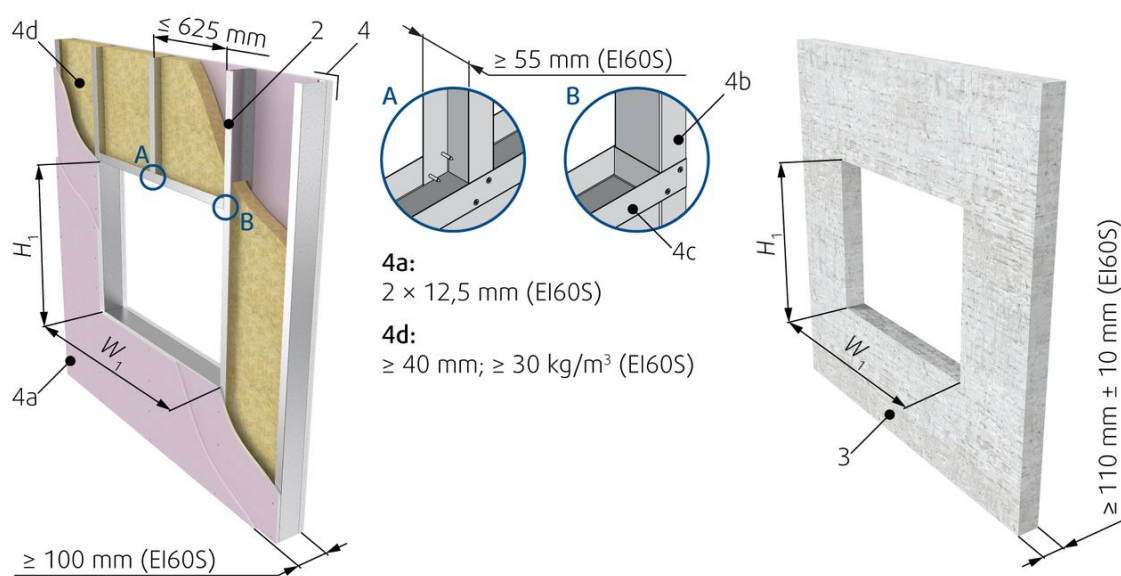
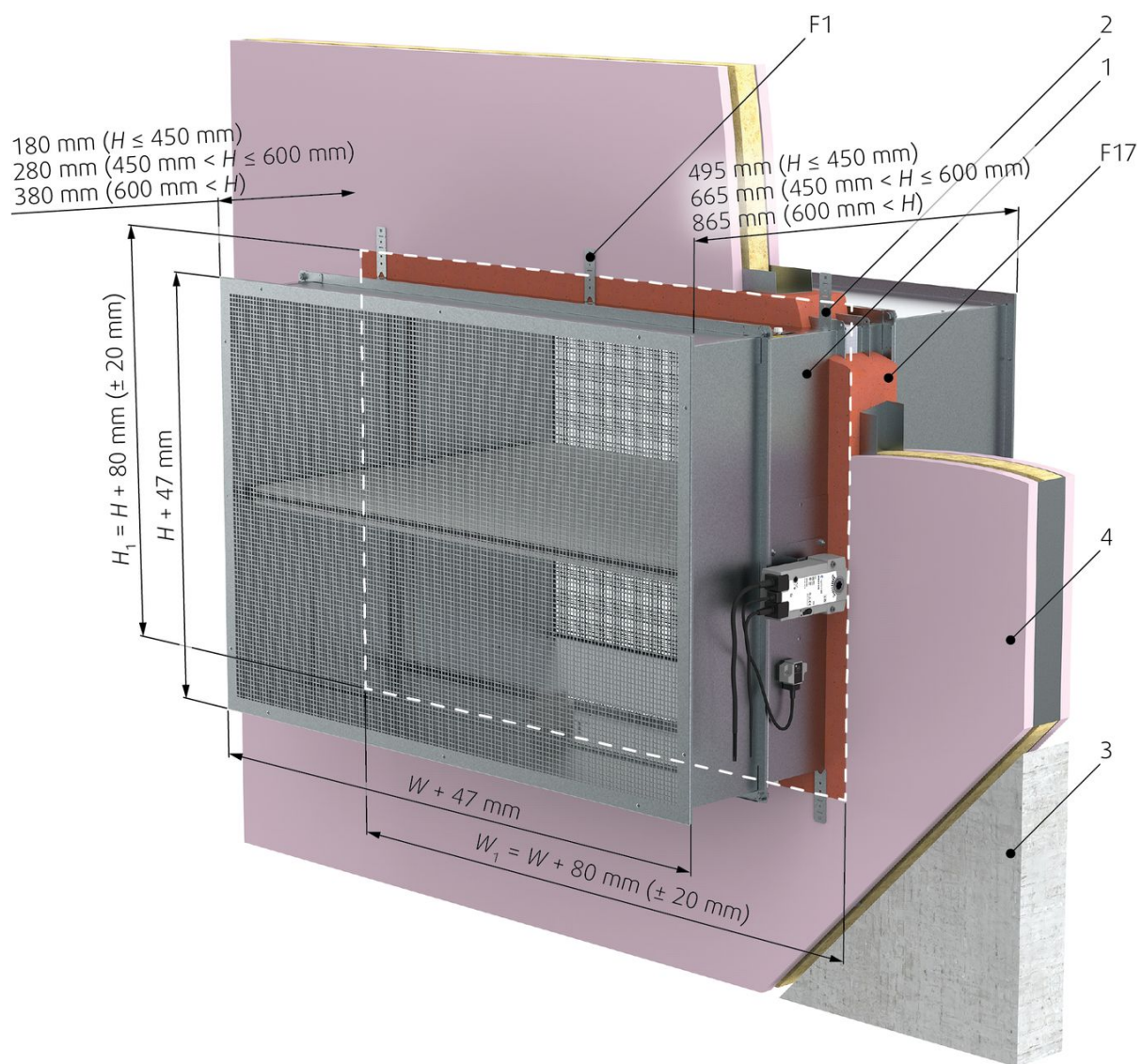
Installation - Smaller Distances

The distance between 2 individual fire dampers can be reduced to 60 mm, measured from surface to surface of the housing and the distance between the surface of the damper installed in the duct and the adjacent supporting construction (wall/floor) can be reduced to 40 mm.

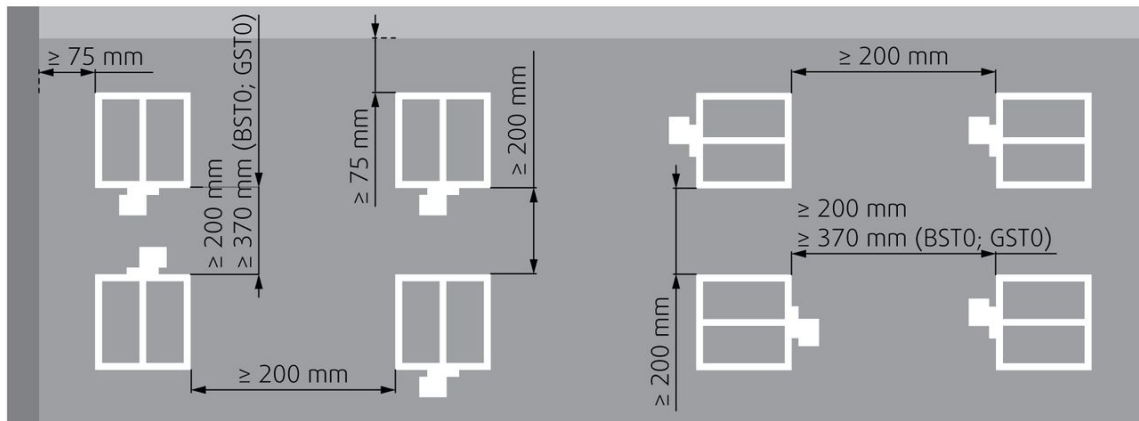
Installation in a Wall thinner than tested

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.

 3H Hilti	FDS-3G...OF 200 × 200 ... ... 1200 × 800	EI 60 (v <sub>e</sub> - i ↔ o) S	a) 	b) 	 * ≠ BSD..., GSD...
---	--	----------------------------------	--	--	---







### Legend

**F1** Screw  $\geq 5,5$  e.g. DIN7981 or suitable wall plug and screw size 6.

**F17** Foam CFS-F FX/HILTI.

**1** Fire damper (actuator side)

**2** Bendable hanger

**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.

**5** Flexible (wood beam) wall

**5a** Vertical spruce wooden beam  $\geq 60 \times 100$  mm

**5b** Horizontal spruce wooden beam  $\geq 80 \times 100$  mm

**6** Alternative thinner wall (classified in accordance with EN 13501-2:2007 + A1: 2009 for fire resistance required for product application)

**7** Area of 200 mm from opening around the damper must have the same composition and be created the same way as Flexible (plasterboard) wall.

### Notes:

**a)** - Flexible (plasterboard) wall

**b)** - Concrete/masonry/cellular concrete (rigid) wall

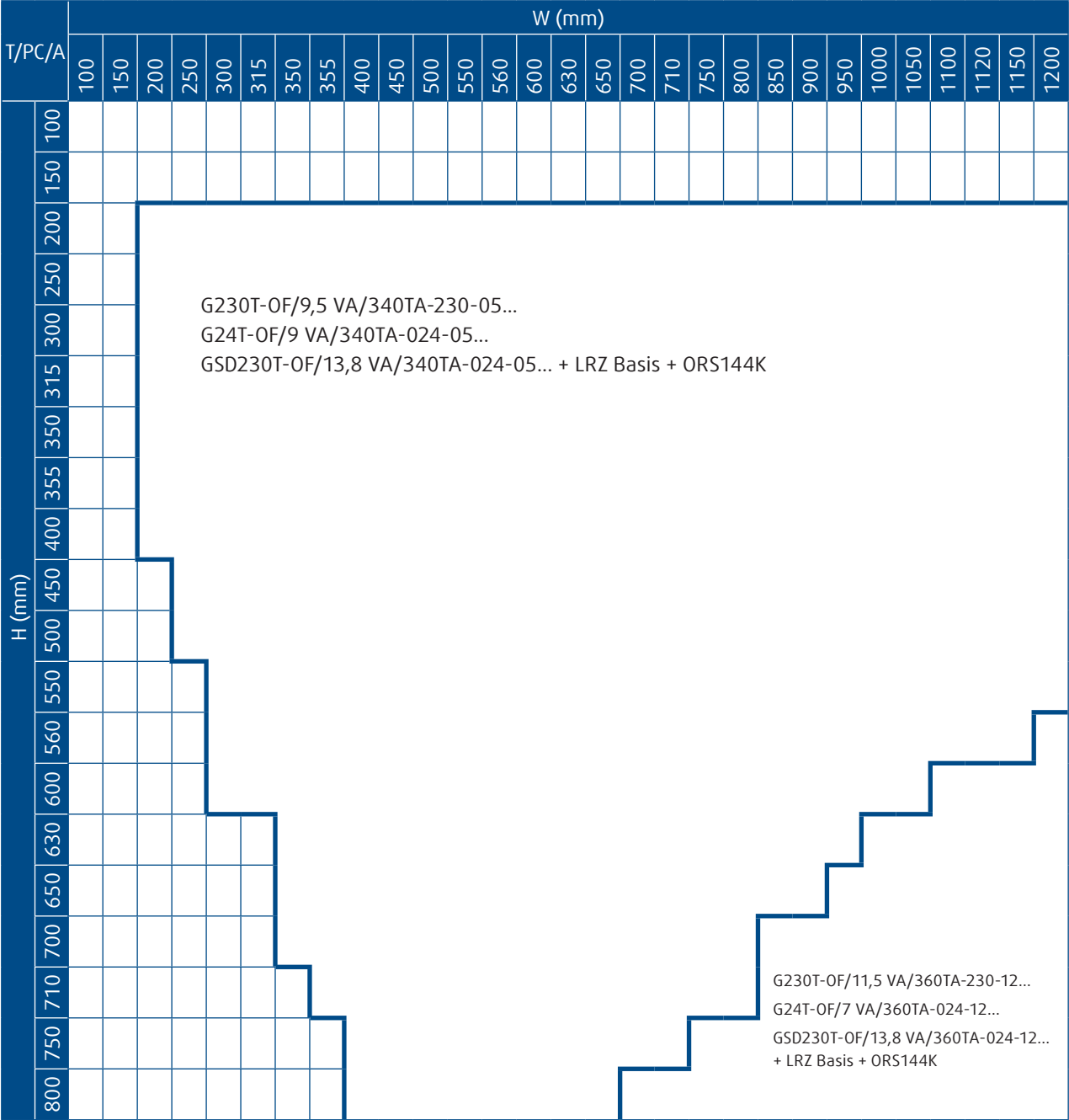
**v<sub>e</sub>** - Vertical wall

# Electrical Connections

T/PC/A		W (mm)																			
		100	150	200	250	300	315	350	355	400	450	500	550	560	600	630	650	700	710	750	800
H (mm)	100																				
	150																				
	200																				
	250																				
	300																				
	315																				
	350																				
	355																				
	400																				
	450																				
	500																				
	550																				
	560																				
	600																				
	630																				
	650																				
	700																				
	710																				
	750																				
	800																				

B230T-OF/6,5 VA/BFL230-T  
B24T-OF/4 VA/BFL24-T  
BSD230T-OF/13,8 VA/BFL24-T + LRZ Basis + ORS144K  
BST1-OF/5 VA/BFL24-T-ST + BC24-G2  
BST2-OF/14 VA/BFL24-T-ST + BKN230-24-MOD  
BST3-OF/10 VA/BFL24-T-ST + BKN230-24-C-MP  
BST10-OF/20 VA/BFL24-T-ST + BKN230-24-PL

B230T-OF/10 VA/BFN230-T  
B24T-OF/6 VA/BFN24-T  
BSD230T-OF/13,8 VA/BFN24-T + LRZ Basis + ORS144K  
BST1-OF/7 VA/BFN24-T-ST + BC24-G2  
BST2-OF/14 VA/BFN24-T-ST + BKN230-24-MOD  
BST3-OF/10 VA/BFN24-T-ST + BKN230-24-C-MP  
BST10-OF/20 VA/BFN24-T-ST + BKN230-24-PL



NOTE:

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

Type of activation H0-OF

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

**Type of activation H2-OF**

IMPORTANT: Risk of electric shock!

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

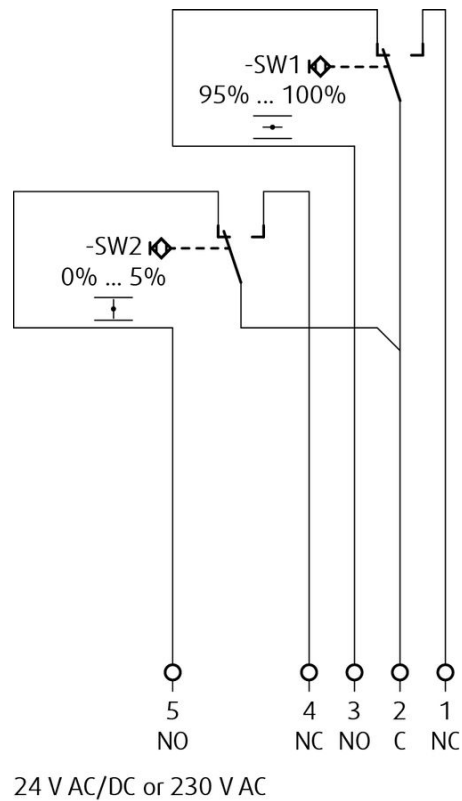
Allow only qualified electricians to work on the electrical system.

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

Electric Parameters: 3A

NOTES:

- Supply via safety isolation transformer!

**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 H5-2-0F

IMPORTANT: Risk of electric shock!

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

Allow only qualified electricians to work on the electrical system.

Microswitch:

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

Electric Parameters: 3A

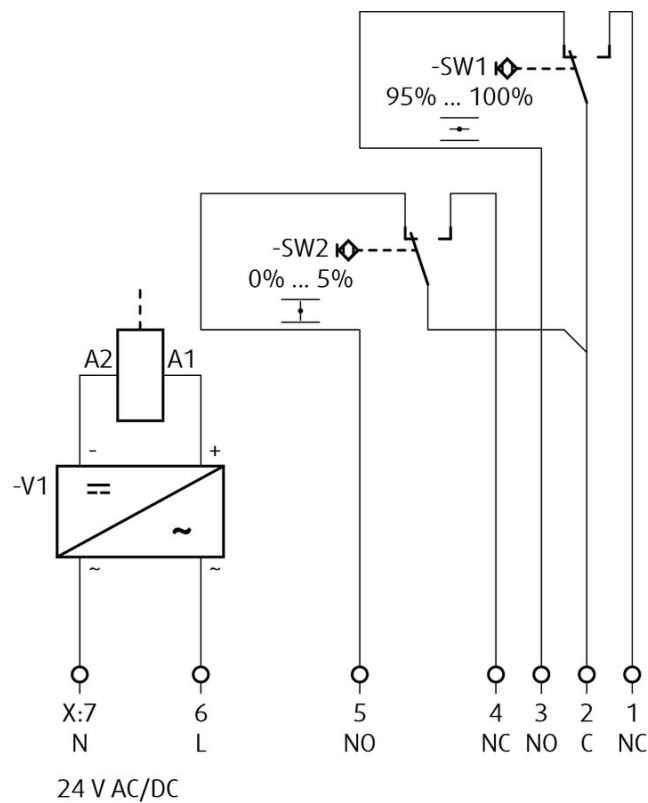
Impulse Electromagnet:

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 monitored!



### 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-OF

IMPORTANT: Risk of electric shock!

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

Allow only qualified electricians to work on the electrical system.

Microswitch:

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

Electric Parameters: 3A

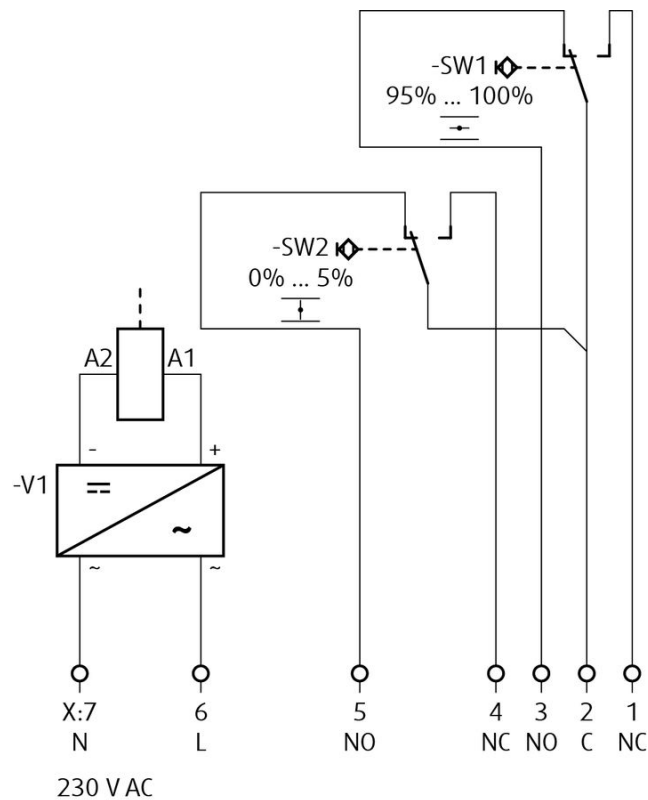
Impulse Electromagnet:

Power Supply: AC 230 V, 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 monitored!



### 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-OF

IMPORTANT: Risk of electric shock!

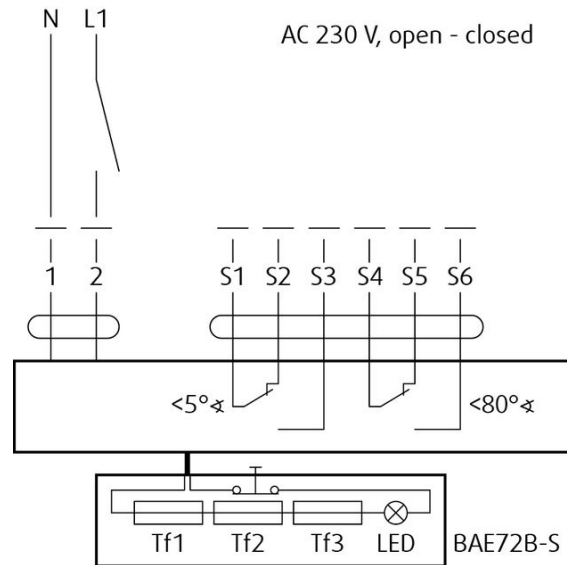
Switch off the power supply before working on any electrical equipment.

Allow only qualified electricians to work on the electrical system.

Actuator power supply: AC 230 V, 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 monitored!



### 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-OF

IMPORTANT: Risk of electric shock!

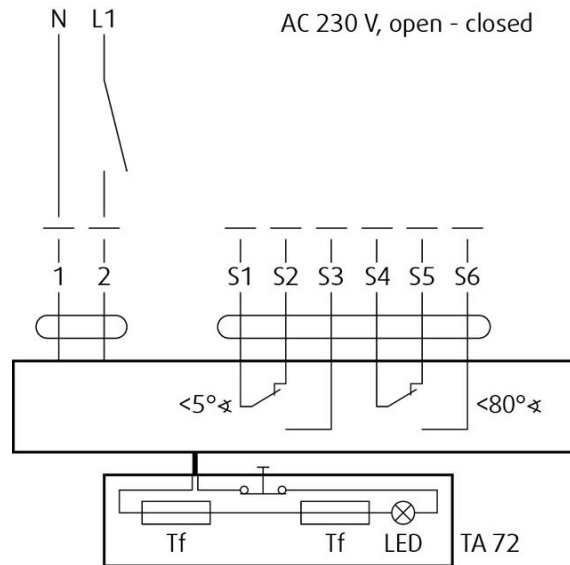
Switch off the power supply before working on any electrical equipment.

Allow only qualified electricians to work on the electrical system.

Actuator power supply: AC 230 V, 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 monitored!



### 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-OF

IMPORTANT: Risk of electric shock!

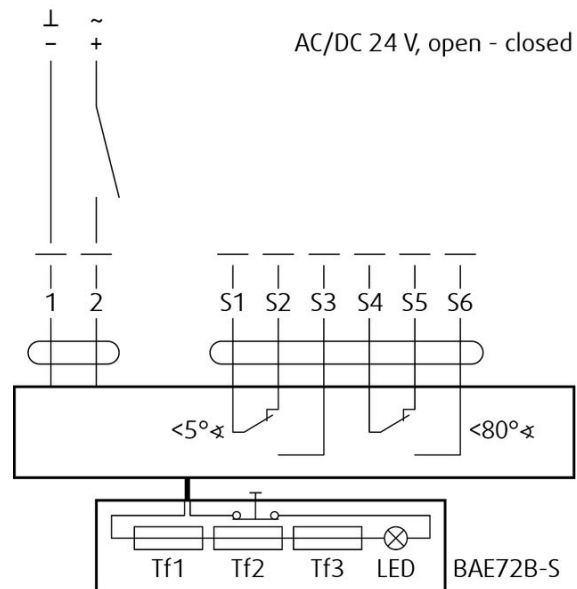
Switch off the power supply before working on any electrical equipment.

Allow only qualified electricians to work on the electrical system.

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

NOTES:

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



### 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-OF

IMPORTANT: Risk of electric shock!

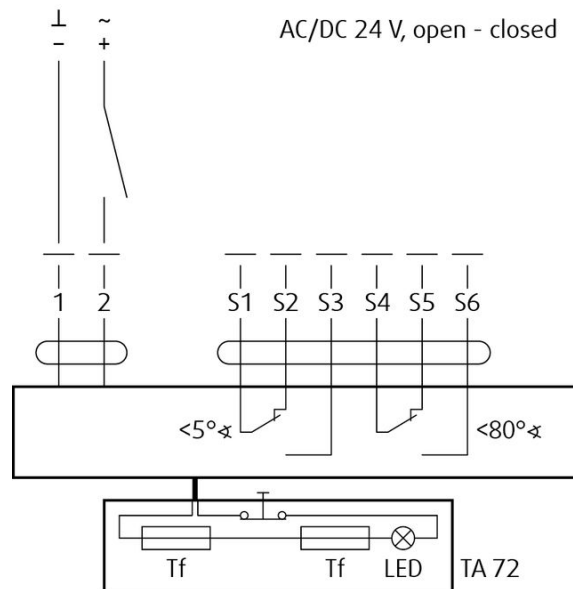
Switch off the power supply before working on any electrical equipment.

Allow only qualified electricians to work on the electrical system.

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

NOTES:

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



### 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 BSD230T-OF

IMPORTANT: Risk of electric shock!

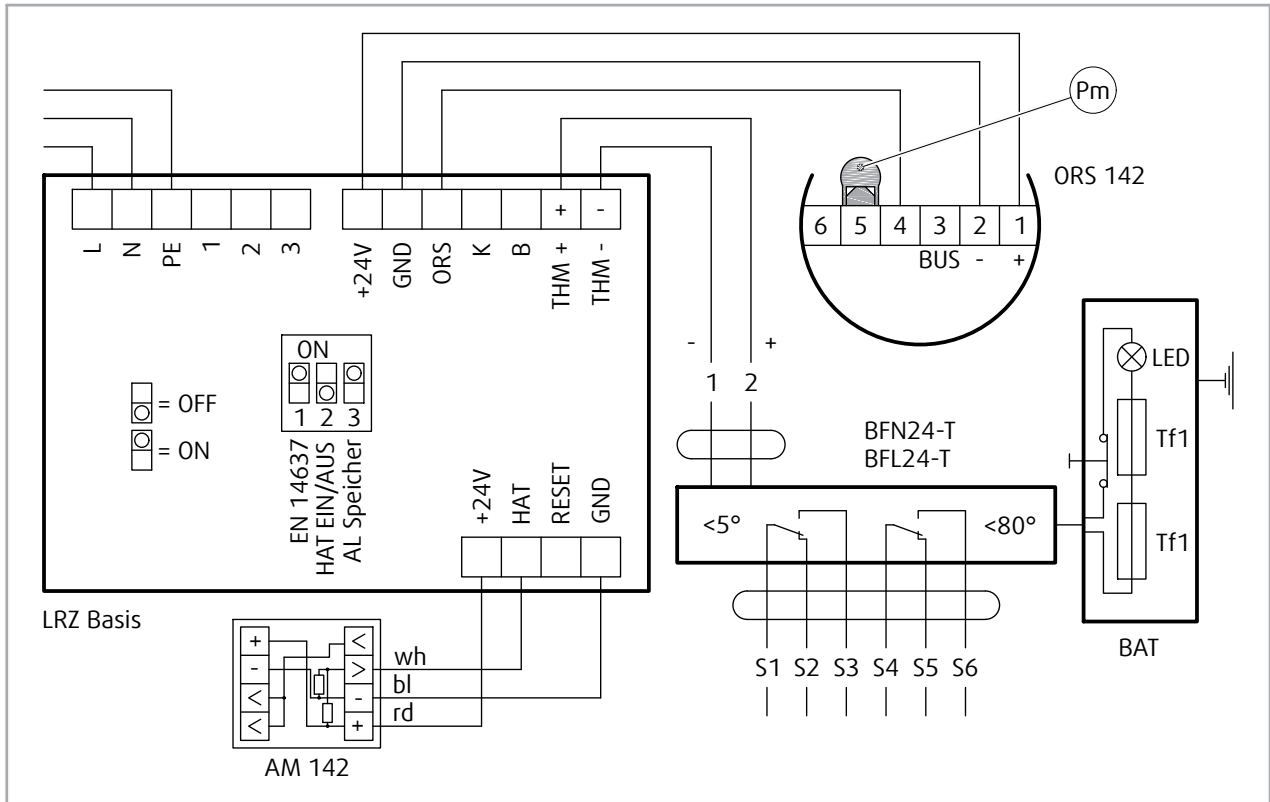
Switch off the power supply before working on any electrical equipment.

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

Power consumption must be observed and cannot exceed 400 mA.

NOTES:

- Caution! Main power supply voltage!



### Legend

Actuator position indication switches:

- S1** Violet cable colour
- S2** Red cable colour
- S3** White cable colour
- S4** Orange cable colour
- S5** Pink cable colour
- S6** Grey cable colour

## LED signalization of LRZ Basis

Three LED's on LRZ Basis signal the current state

Note: Flashing sequence starts with long ON state (for 1,5 seconds) following with one short OFF state (for 0,5 seconds) or several short OFF/ON state (for 0,5 seconds)

Green LED	Orange LED	Red LED	24 V Output	Relay	State
ON	OFF	OFF	ON	ON	In operation
ON	OFF	ON	OFF	OFF	Alarm - smoke switch
ON	OFF	Flashing 1x	OFF	OFF	Alarm - internal manual release button
ON	OFF	Flashing 2x	OFF	OFF	Alarm - external manual release button
ON	ON	OFF	OFF	OFF	Fault - LRZ Basis (needs replacing)
ON	Flashing 2x	OFF	OFF	OFF	Fault - smoke switch (ORS)
ON	Flashing 3x	OFF	OFF	OFF	Fault - manual release button loop
ON	Flashing 4x	OFF	OFF	OFF	Fault - high temperature in LRZ Basis
ON	Flashing 5x	OFF	OFF	OFF	Fault - short circuit (output 24 V)
ON	Flashing 6x	Flashing 6x	OFF	OFF	Fault - membrane keyboard
ON	Flashing 9x	OFF	OFF	OFF	Fault - power output limit exceeded
ON	Flashing 10x	OFF	OFF	OFF	Fault - short circuit in LRZ Basis (input 24 V)



### Type of activation GSD230T-OF

IMPORTANT: Risk of electric shock!

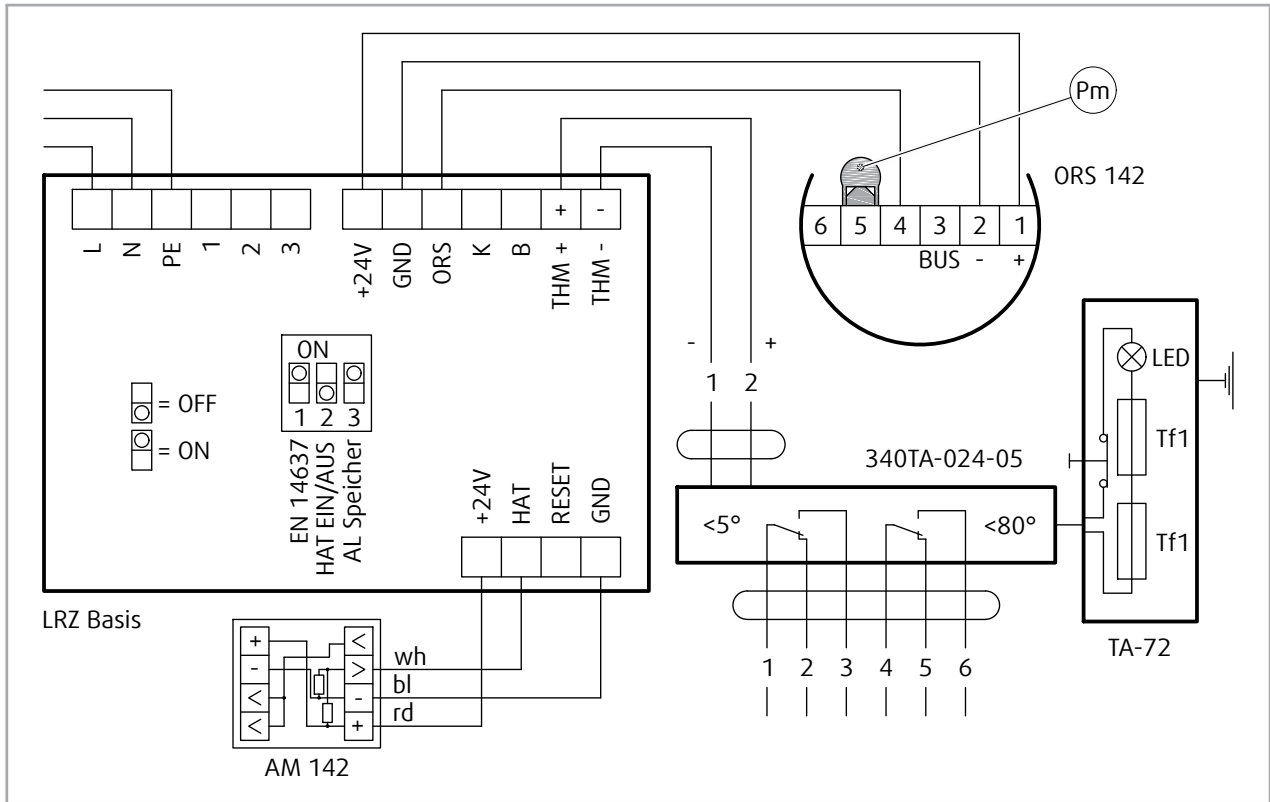
Switch off the power supply before working on any electrical equipment.

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

Power consumption must be observed and cannot exceed 400 mA.

NOTES:

- Caution! Main power supply voltage!



### Legend

Actuator position indication switches:

- 1 White
- 2 White
- 3 White
- 4 White
- 5 White
- 6 White

## LED signalization of LRZ Basis

Three LED's on LRZ Basis signal the current state

Note: Flashing sequence starts with long ON state (for 1,5 seconds) following with one short OFF state (for 0,5 seconds) or several short OFF/ON state (for 0,5 seconds)

Green LED	Orange LED	Red LED	24 V Output	Relay	State
ON	OFF	OFF	ON	ON	In operation
ON	OFF	ON	OFF	OFF	Alarm - smoke switch
ON	OFF	Flashing 1x	OFF	OFF	Alarm - internal manual release button
ON	OFF	Flashing 2x	OFF	OFF	Alarm - external manual release button
ON	ON	OFF	OFF	OFF	Fault - LRZ Basis (needs replacing)
ON	Flashing 2x	OFF	OFF	OFF	Fault - smoke switch (ORS)
ON	Flashing 3x	OFF	OFF	OFF	Fault - manual release button loop
ON	Flashing 4x	OFF	OFF	OFF	Fault - high temperature in LRZ Basis
ON	Flashing 5x	OFF	OFF	OFF	Fault - short circuit (output 24 V)
ON	Flashing 6x	Flashing 6x	OFF	OFF	Fault - membrane keyboard
ON	Flashing 9x	OFF	OFF	OFF	Fault - power output limit exceeded
ON	Flashing 10x	OFF	OFF	OFF	Fault - short circuit in LRZ Basis (input 24 V)

# Operation Manual

## Warning

To avoid injury, make sure to wear gloves and keep the blades movement area clear while manipulating with the damper.

## Fire Damper Functionality Check

### Manually Operated Activation Mechanism

1. Open the damper - turn the red crank (P10) using an Allen 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 an Allen 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.

### Smoke detector and 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 (P9) on the Thermoelectric fuse. The fire damper must now open automatically.
4. Press the control switch on the smoke sensor and hold it until the fire damper is fully closed. Or use a smoke spray for sensor testing and spray into the grille directly onto the smoke detector. Check if the fire damper will fully close. After a while the smoke detector will clear itself from the testing spray and the damper will open again.
5. 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 returned back into the damper with the damper blade being closed. The damper's internal casing, thermal fuse, sealings, 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.

