

Product manual

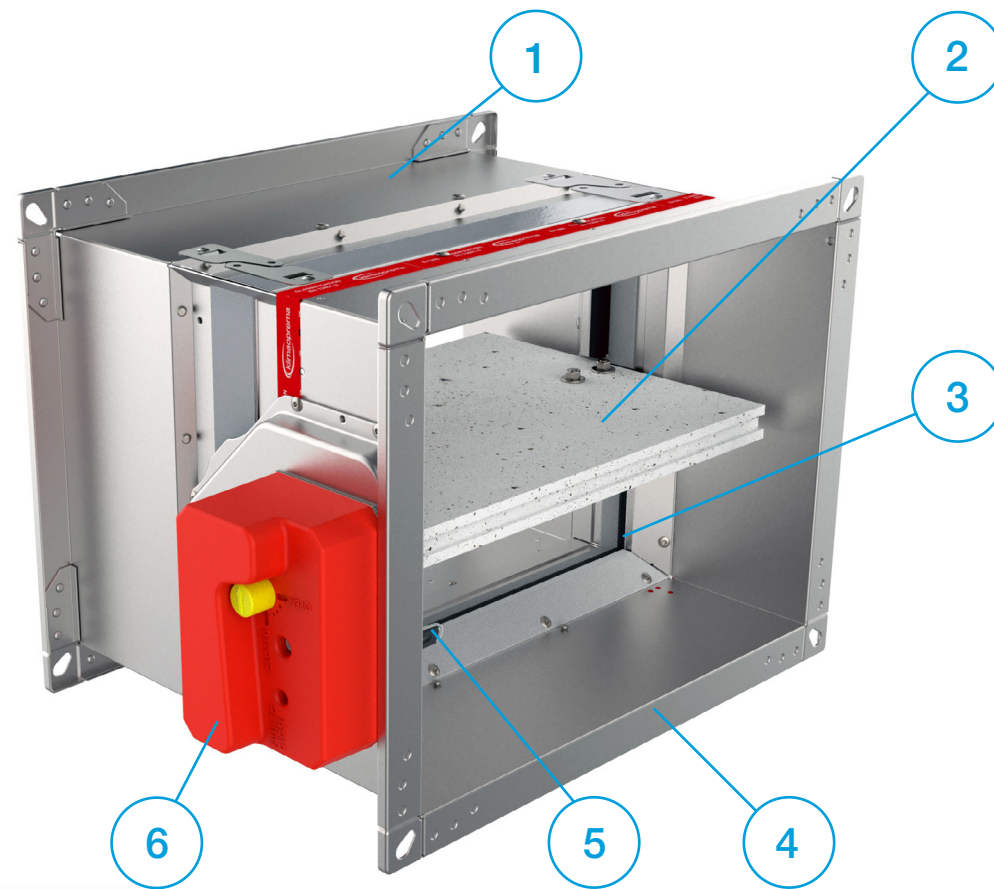
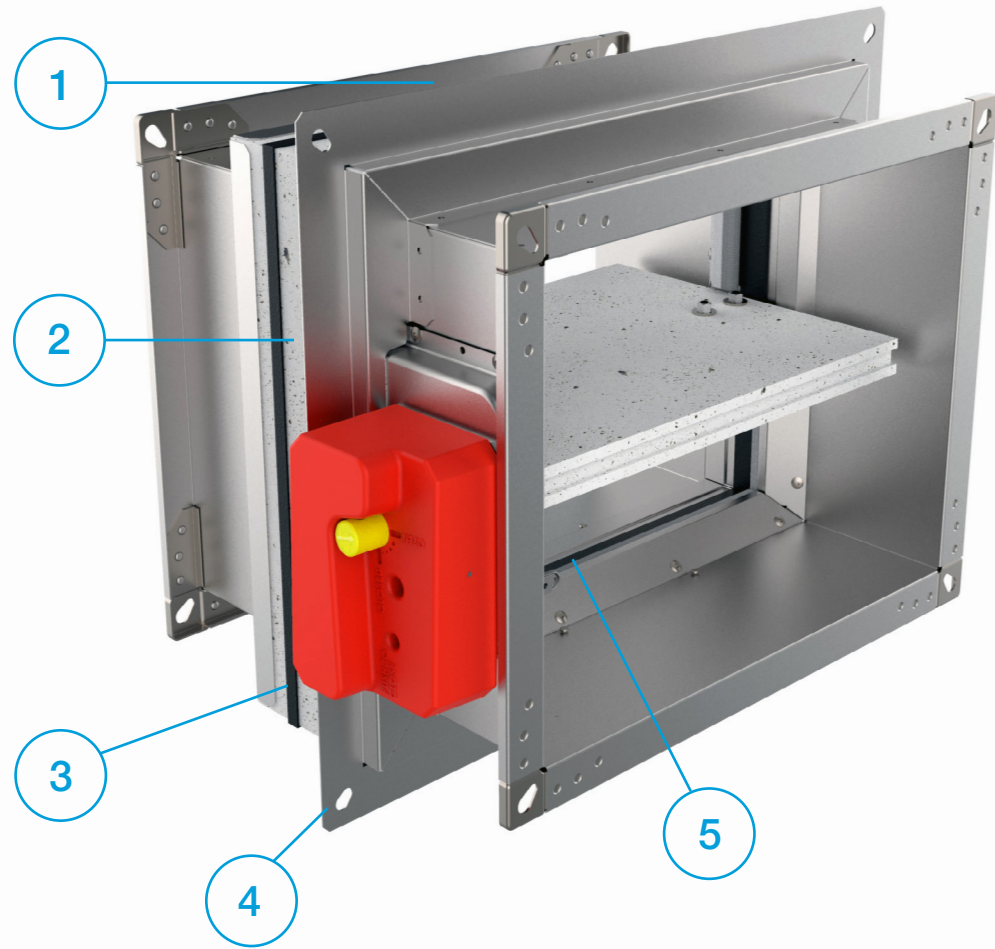
FD

Fire damper

Fire protection

Version 2.2.6
Issue Date: 02.03.2021

1. Flange
2. Gypsum layers
3. Intumescent joint
4. Contact layer
5. Cold smoke seal



1. Galvanized steel casing
2. Fire resistant damper blade
3. Intumescent joint
4. Connection flanges
5. Thermal fuse
6. Actuator

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FIRE DAMPER - FD

PRODUCT OVERVIEW

Fire dampers FD are used for prevention of fire spread through the ventilation ducts and between fire sections. Fire dampers consist of steel sheet case, calcium silicate damper blade, damper blade mechanism outside of the airflow and a manual, electromagnetic or electric actuator.

Fire damper case is made out of galvanized steel sheet. Variants produced from stainless steel and powder coated steel are also available. Calcium silicate blade is equipped with brass bearings and seals made out of polyurethane and elastomer rubber.

Fire dampers FD25 are produced up to size 800x600 and have 25mm thick damper blade. Fire dampers FD40 are produced in sizes 800x600 up until 1500x800 and have 40 mm thick damper blade.

FD25 fire dampers are equipped with R25 manual mechanism and FD40 fire dampers are equipped with R40 manual mechanism.

Manual spring return mechanism is equipped with thermal fuse that is triggered automatically when the temperature inside the duct reaches 72 °C. It can also be activated manually by the push of the button on the mechanism.

Additional equipment for manual mechanism include end contact switches for damper position signalling. Electromagnetic actuators feature spring return mechanism with electromagnet for remote activation. Additional equipment for electromagnetic mechanism include end contact switches for damper position signalling. Rearming of the electromagnetic actuator is manual.

Fire dampers with electric actuators are equipped with Belimo actuator drives in 24 V or 230 V versions. Activation of fire dampers equipped with electric drives can be via 72 °C or 95 °C thermal fuse or remotely via control signal. Rearming of the electric fire damper can also be done remotely via control signal. All electric actuators are equipped with end switches for position signalling.

ATEX rated versions of fire dampers can be delivered with Schischek 24 V / 230 V electric actuators that are rated for installation in explosive atmosphere areas.

All fire dampers are tested according to the EN 1751 for airtightness and retain class 2 leakage on the closed damper blade and class C on the casing air leakage.



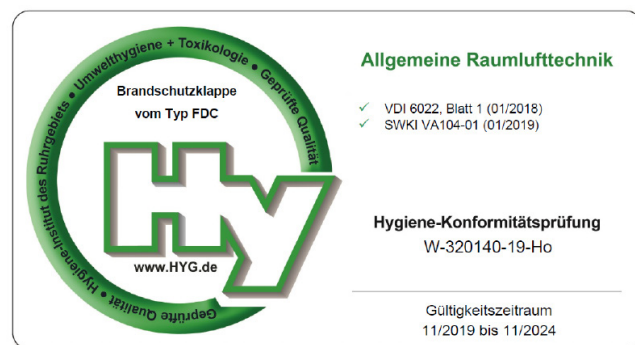
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TESTS AND CERTIFICATES

All our dampers are submitted to a number of tests by official test institutes. Reports of these tests form the basis for the approvals of our dampers. Klimaoprema fire dampers are also suitable for installation in buildings with high hygienic demands such as hospitals, clinics and pharmaceutical areas.

To confirm this, our products are tested in independent Institute of Hygiene, based in Gelsenkirchen, Ruhr, and comply with directives and guidelines in VDI 6022.



FIRE RESISTANCE CLASSIFICATION

FD fire resistance is tested according to EN 1366-2 "Fire resistance tests for service installations- Part 2: Fire dampers". Classification of the fire dampers is defined according to EN 13501-3 Fire classification of construction products and building elements.

Installation in both, vertical and horizontal axis of rotation of the dampers blade is acceptable (with the axis angle 0 - 360°).

Fire resistance of fire damper depends on classification of walls or ceilings. It is allowed to install products to walls or ceilings only according to products Declaration of Performance. Walls or ceilings with greater fire resistance can also be used. Fire damper should be installed according installation manual which can be found within this document.

Please consult latest Declaration of Performance on our website:



www.klimaoprema.com/fd/dop

For more information about certificates, visit our website:

www.klimaoprema.com/fd

- E** - Integrity
- I** - Insulation
- 120/90/60** - Classification time in minutes
- S** - Smoke leakage
- ve** - Damper installed in vertical compartment
- ho** - Damper installed in horizontal compartment
- i↔o** - Fire performance criteria are met on both sides



TECHNICAL DATA

Fire damper casing is manufactured from galvanized steel sheet, but on demand can be produced out of:

- Galvanized steel and powder coated
- Stainless steel (AISI 304/316)
- Stainless steel and powder coated (AISI 304/316)

Fire damper for areas with potentially explosive atmospheres are also available

CLASS C EN1751

klimaoprema

SERIAL NUMBER: 29611500100001

PRODUCTION DATE: 13.10.2020

TYPE: FD25 – 800x400 – M230 – S

DIMENSION: 800x400x350 **LOCATION:**

ACT. MECHANISM: M230 **IP PROTECTION:** IP54

NOMINAL VOLTAGE: AC 230V **FREE SPACE (dm2):**

SIGNALISATION: Yes **THERMAL FUSE:** 72°C

CE 1812 17 1812 – CPR – 1162

EN15650:2010
Eltt(Ve – Ho) S Cxx
For fire classification of product consult declaration of performance.
DOP 710/2017N
EI60/90/120 (Ve Ho i < – > o)S 500Pa

PRODUCT MUST BE INSTALLED BY INSTRUCTIONS SUPPLIED BY MANUFACTURER

29611500100001

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PRODUCT OVERVIEW

FIRE DAMPER - FD

Rating plate

- 1 - Casing air leakage classification
- 2 - Serial number
- 3 - Production date
- 4 - Type
- 5 - Dimension of the fire damper
- 6 - Mechanism type
- 7 - Nominal voltage
- 8 - Signalisation (end contacts)
- 9 - IP protection
- 10 - Free space
- 11 - Thermal fuse temperature
- 12 - Number of the European standard and year of its publication
- 13 - Declaration of performance
- 14 - Classification according to EN 13501-3
- 15 - Barcode

Product specifications

Nominal sizes FD25	100x200 - 800x600 [mm]
Nominal sizes FD40	800x600 - 1500x800 [mm]
Casing length	350 mm
Temperature range	-20 °C ... 50 °C
Release temperature	72 °C (standard) or 95 °C (optional with electric actuator)
Volume flow rate range	up to 20.700 m³/h
Differential pressure ranges	up to 1.000 Pa
Casing air leakage	Class C, EN 1751
Closed blade air leakage	Class 2, EN 1751
Upstream velocity	< 12 m/s
EC conformity	EN 13501-3, EN 1366-2, EN 15650, EN 1751, CPR no.305/2011
Declaration of performance	DoP 710/2020_12_EN

MODELS

Casings

FD25

Cylindrical fire damper with 25 mm damper blade and fire classification up to EI120S. Sizes range from 100x200 till 800x600.

FD40

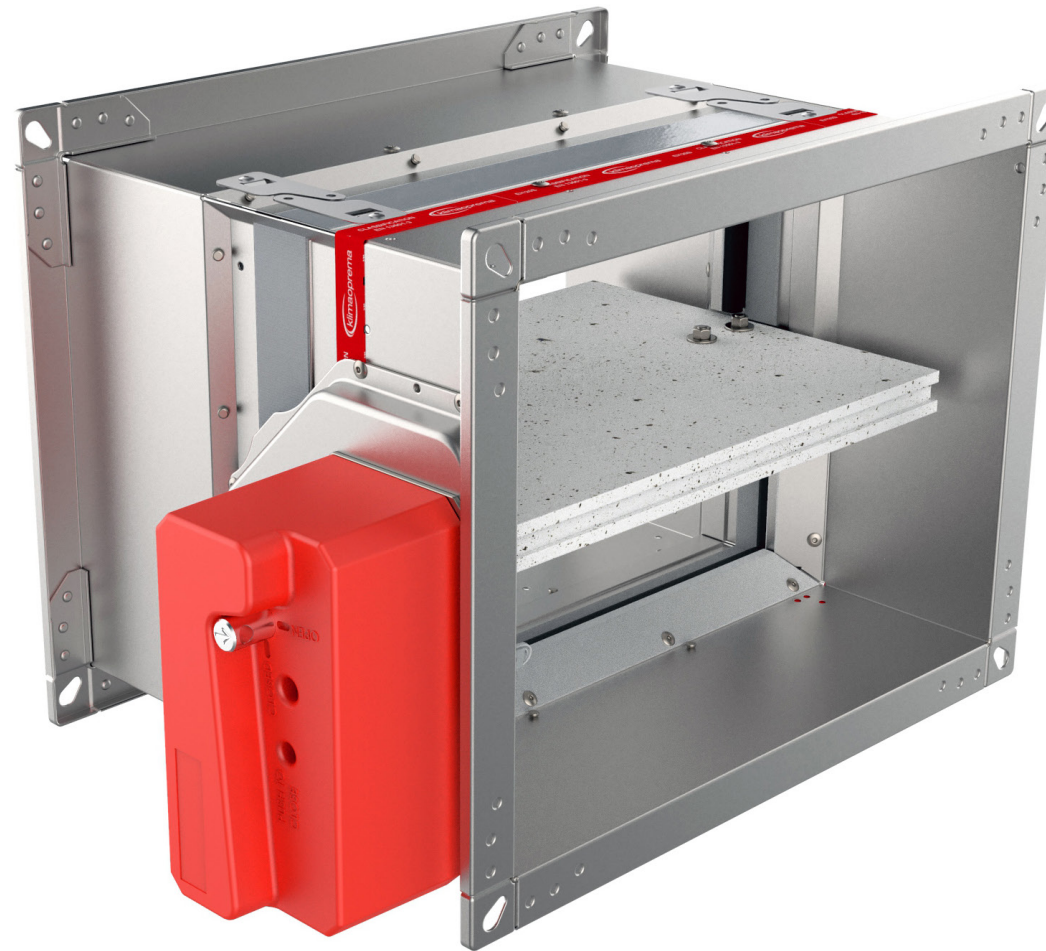
Cylindrical fire damper with 40 mm damper blade and fire classification up to EI120S. Sizes range from 800x600 till 1500x800.

FD25-APP

Fire damper with integrated Applique installation kit with 25 mm damper blade and fire classification up to EI90S. Sizes range from 100x200 till 800x600.

FD25/FD40-MF2

Fire damper with integrated MF2 installation frame with and fire classification up to EI90S. Sizes range from 100x200 till 1500x800.



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PRODUCT OVERVIEW

FIRE DAMPER - FD

Actuators

R (R-S)

Manual operating mechanism, optionally with end switches (R-S). In case of fire, the fire damper closes automatically. Damper closing can be initiated either by thermal fuse melting, or by manual activation on the operating mechanism. Upon closure, damper blade is locked in closed position and can only be opened manually. Thermal fuse melting point is 72 °C.

EMS-S

Electromagnetic operating mechanism, comes with end switches as standard. In case of fire, the fire damper closes automatically. Damper closing can be initiated either by thermal fuse melting or remotely by triggering the electromagnet. Electromagnet is constantly under power and activates closing of the damper blade in case the power cuts out. Upon closure, damper blade is locked in closed position and can only be opened manually. Thermal fuse melting point is 72 °C.

M230-S

Belimo 230 V electro motor operating mechanism, comes with integrated end switches. In case of fire, the fire damper closes automatically. Damper closing can be initiated either by thermoelectric release device or remotely by triggering the electro motor. Upon closure, damper blade is locked in closed position and can be opened by sending a signal to electro motor. Standard thermoelectric release point is 72 °C, optional 95 °C.

M24-S

Belimo 24 V electro motor operating mechanism, comes with integrated end switches. In case of fire, the fire damper closes automatically. Damper closing can be initiated either by thermoelectric release device or remotely by triggering the electro motor. Upon closure, damper blade is locked in closed position and can be opened by sending a signal to electro motor. Standard thermoelectric release point is 72 °C, optional 95 °C.

M24-S-ST

Belimo 24 V electro motor operating mechanism, comes with integrated end switches. In case of fire, the fire damper closes automatically. Damper closing can be initiated either by thermoelectric release device or remotely by triggering the electro motor. Upon closure, damper blade is locked in closed position and can be opened by sending a signal to electro motor. Standard thermoelectric release point is 72 °C, optional 95 °C. Actuator is additionally equipped with connection plug for easy connection with power supply and communication modules.

EX

ATEX rated fire dampers are equipped with Schischek ExMax actuators, Exbox-TT thermal switches and ExBox plenum boxes. Optional casing can be produced in AISI316L stainless steel.

Ordering key

(1) Damper type (2) Dimension (3) Mechanism type (4) Mounted accessories

FD25 - 400x300 - M230-S - IH

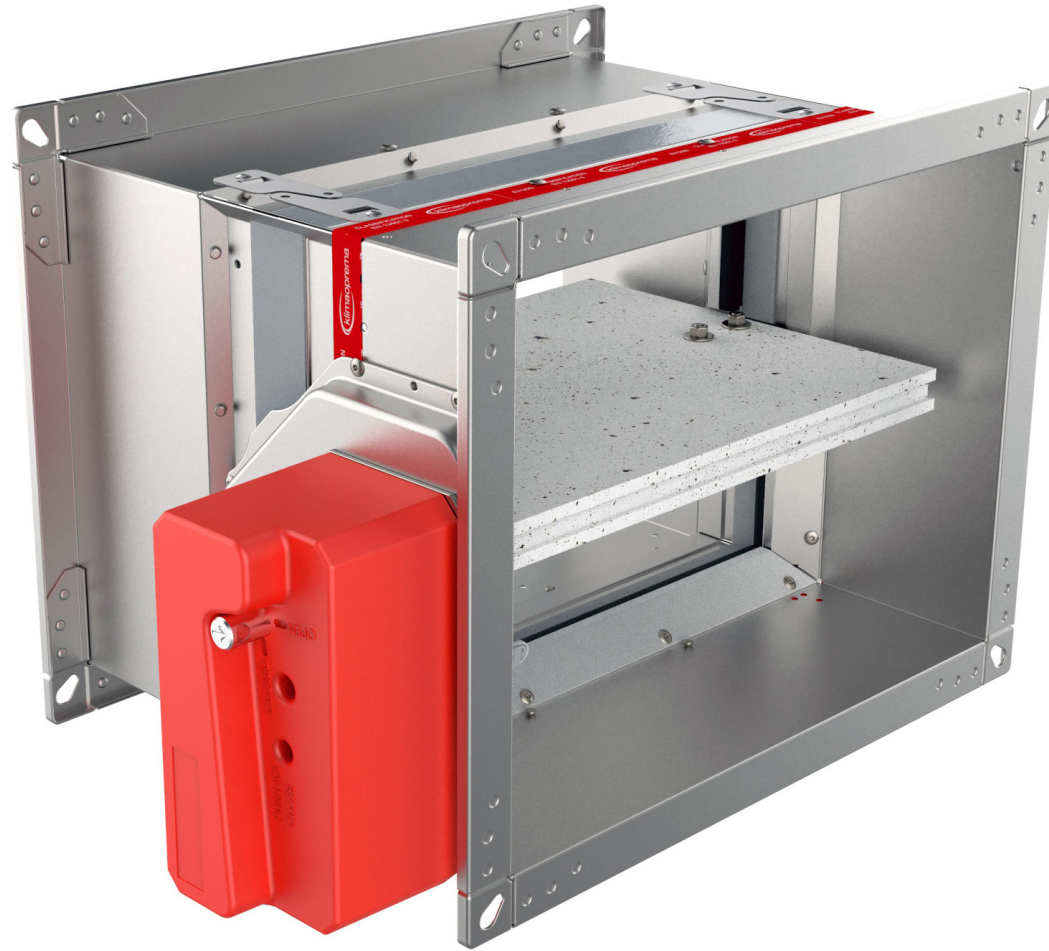
- (1) **FD25** 100x200 till 800x600
FD40 800x600 till 1500x800
FD25-APP 100x200 till 800x600
FD25-MF2 100x200 till 800x600
FD40-MF2 800x600 till 1500x800

- (3) **R** - manual drive
R-S - manual drive with limit switches
M230-S - electric actuator AC230 V
M24-S - electric actuator AC/DC 24 V
M24-S-ST - electric actuator AC/DC 24 V with connection plug
EMS-S - electromagnetic drive, permanent
EX - ATEX rated Schischek 230/24 V electric actuator
(4) **IH** - inspection hatch

- (2) Damper dimensions
B(W) x H [mm]

FD25 / FD40 -R (manual mechanism)

- Automatic closure when the temperature in the duct exceeds 72 °C
- Manual re arming with handle
- Manual unlocking possible for periodical test of fire damper
- Optional with end position switches (-R-S)
- FDC25 fire dampers are equipped with R25 manual mechanism
- FDC40 fire dampers are equipped with R40 manual mechanism



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DIMENSIONS

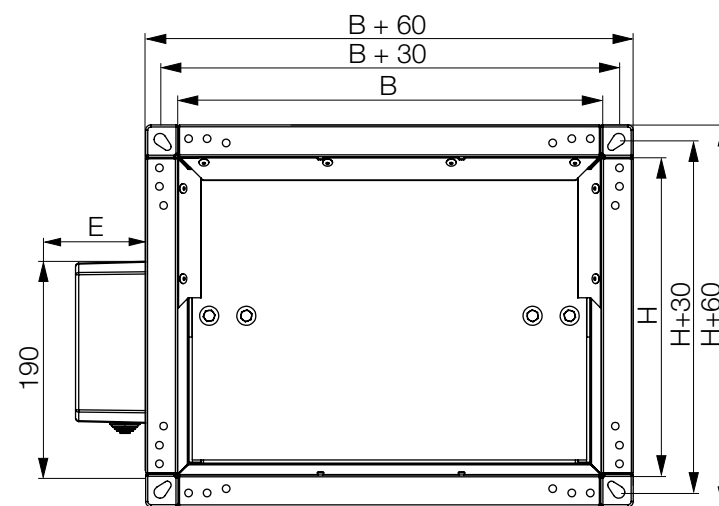
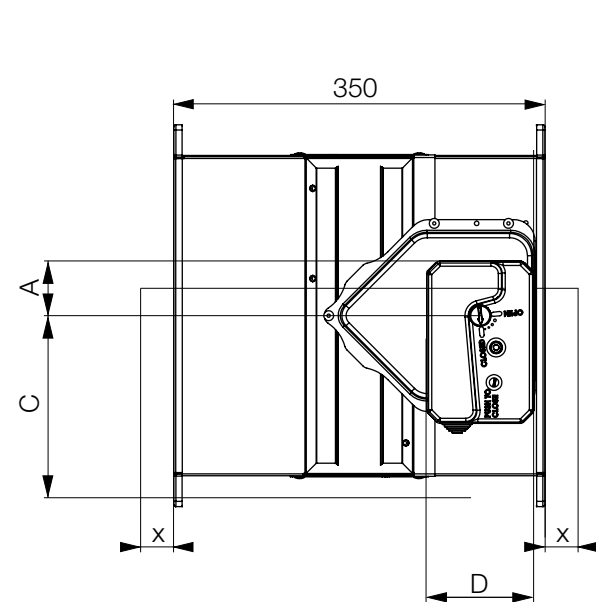
Product	A [mm]	C [mm]	D [mm]	E [mm]
FD 25	55	150	105	150
FD 40	55	200	105	200

FIRE DAMPER - FD

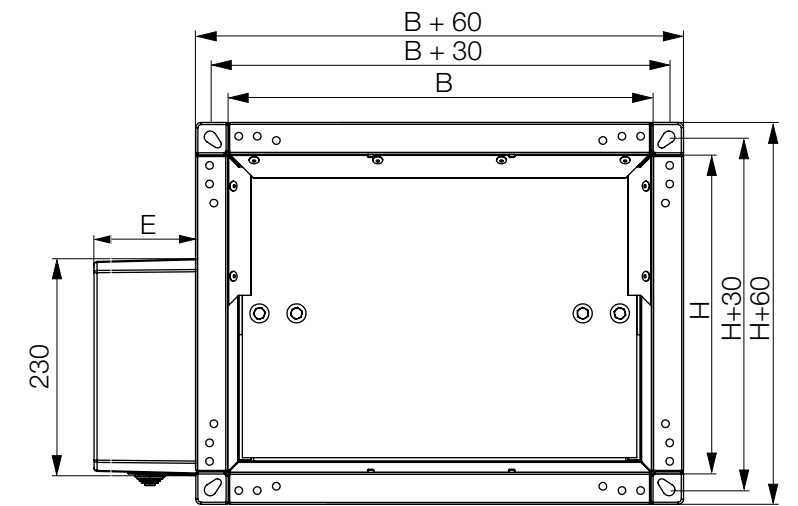
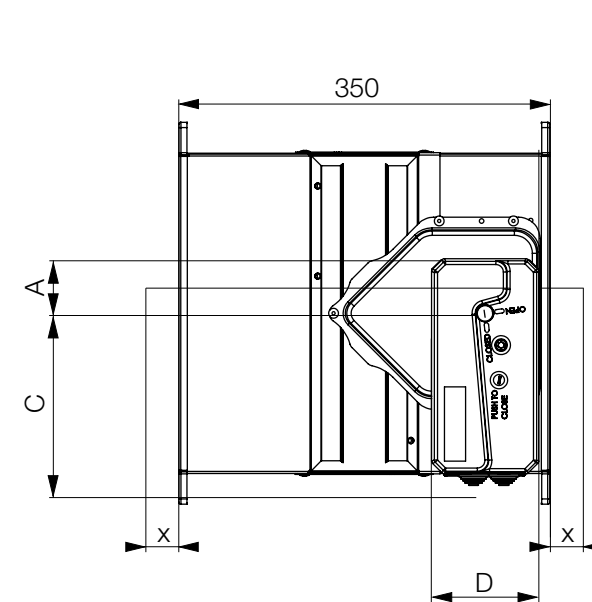
Length of damper blade outside of casing:

$$X=(H/2)-175 \text{ [mm]}$$

FD25-R

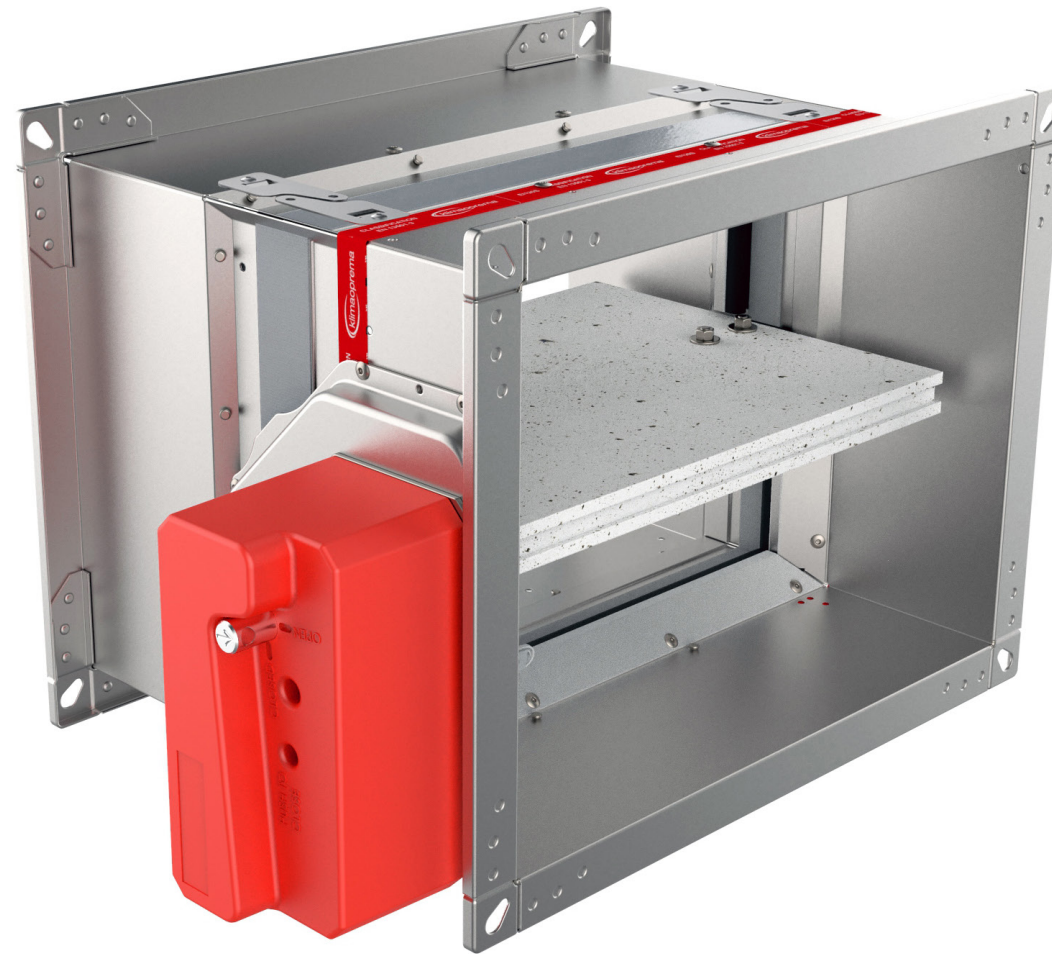


FD40-R



FD25/FD40 -EMS (solenoid actuator)

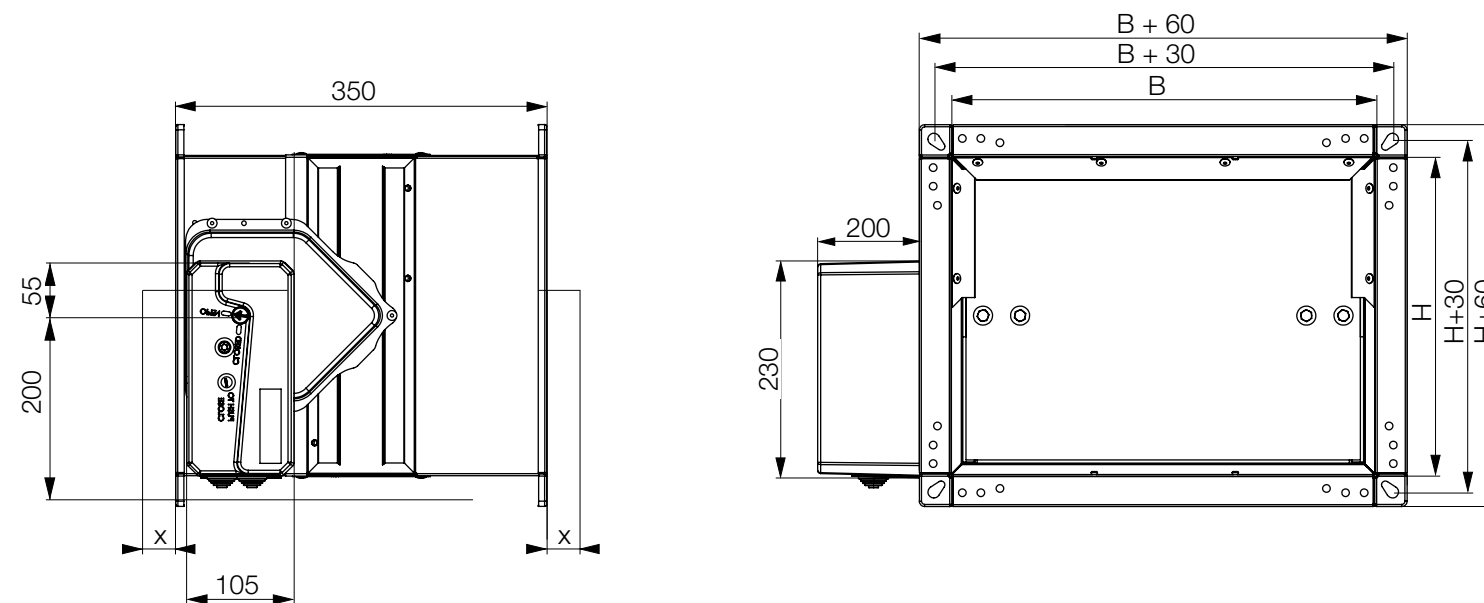
- Spring return actuator with integrated limit switches and thermal fuse release mechanism (72 °C)
- Manual re arming with handle
- Possible closing with solenoid
- Manual closing possible
- EMS - solenoid actuator is constantly under power. Actuating mechanism is tripped when the power is interrupted, or thermal fuse is melted.



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↑ DIMENSIONS

FIRE DAMPER - FD

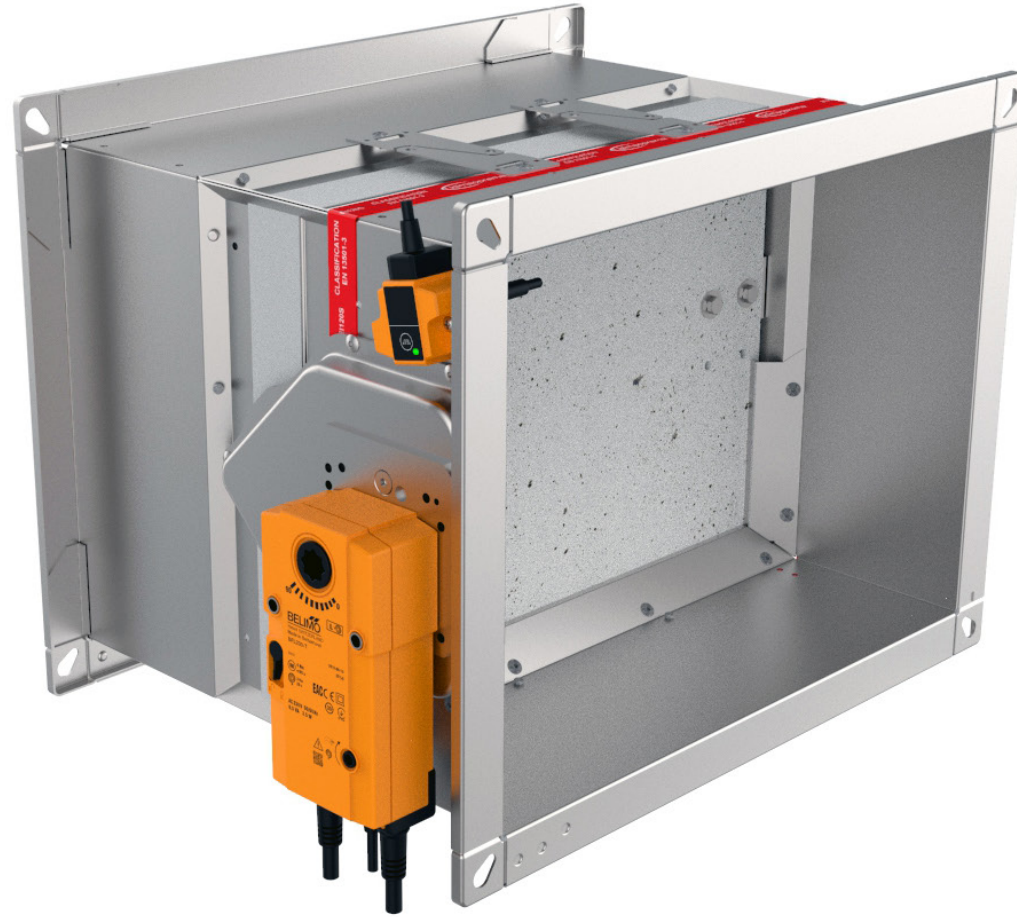


Length of damper blade outside of casing:

$$X=(H/2)-175 \text{ [mm]}$$

FD25 / FD40 -M (electric actuator)

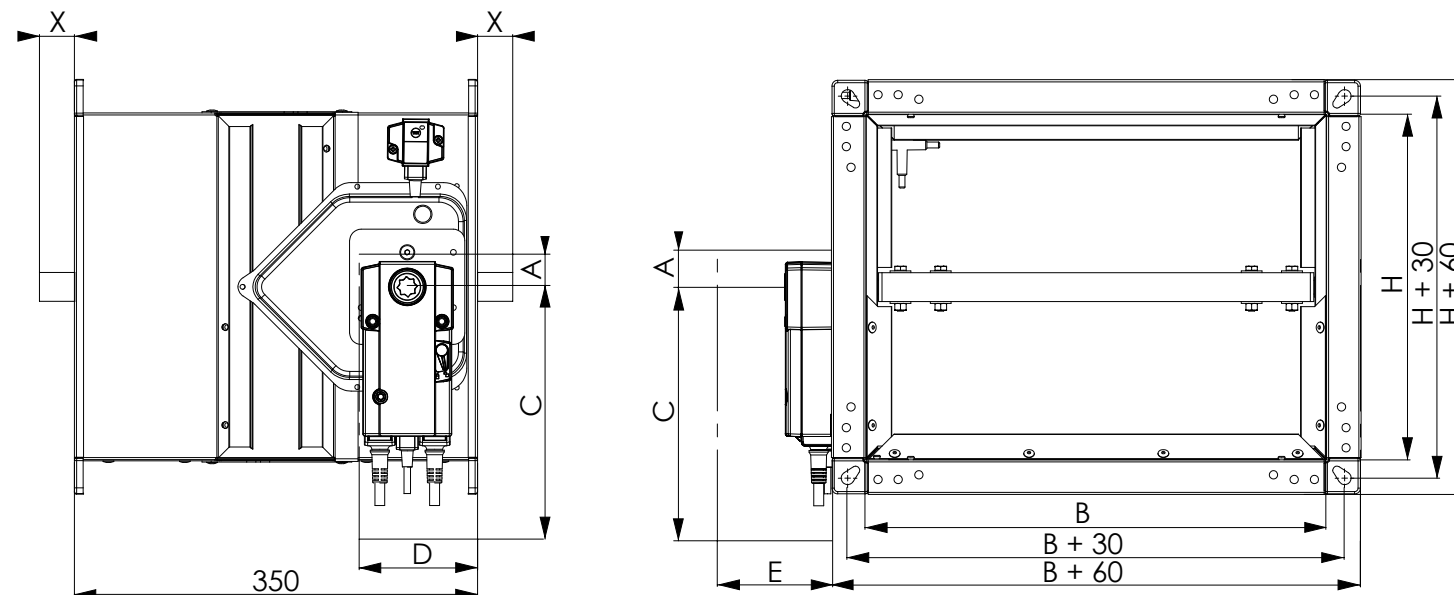
- Thermoelectric release device (72 °C) with electric actuator and return spring
- Integrated end switches
- Fully automatic operation
- Optional 95 °C thermoelectric release device for warm air installations
(see pg. 48 Accessories)



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↑ DIMENSIONS

Actuator	A [mm]	C [mm]	D [mm]	E [mm]
BFL (M)	25	200	90	120
BFN (M)	25	225	100	120
BF (M)*	50	250	100	120



FIRE DAMPER - FD

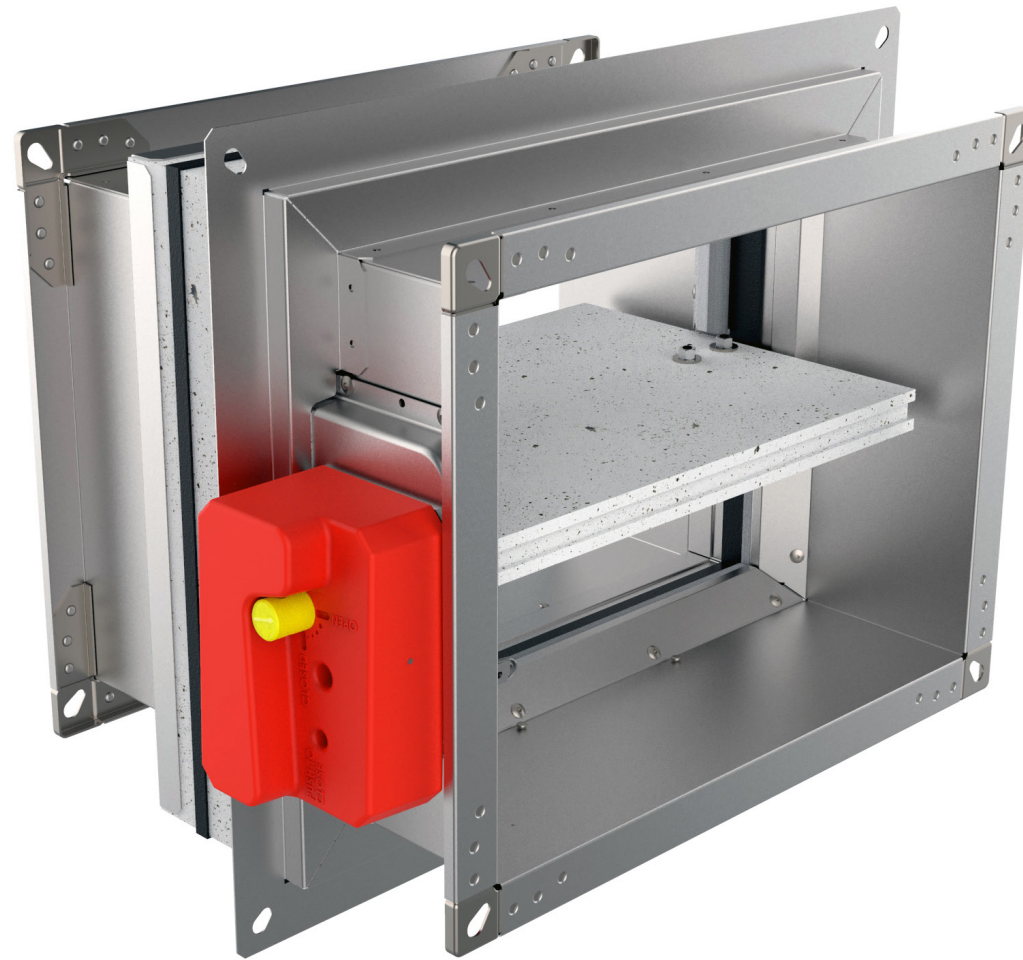
Length of damper blade outside of casing:

$$X=(H/2)-175 \text{ [mm]}$$

FD25-APP

Applique installation frame

- Applique kit is an installation subframe for quick and easy installation in rigid and flexible walls
- Made out of calcium silicate boards
- Quick wall mounting with screws
- Factory assembled to the fire damper

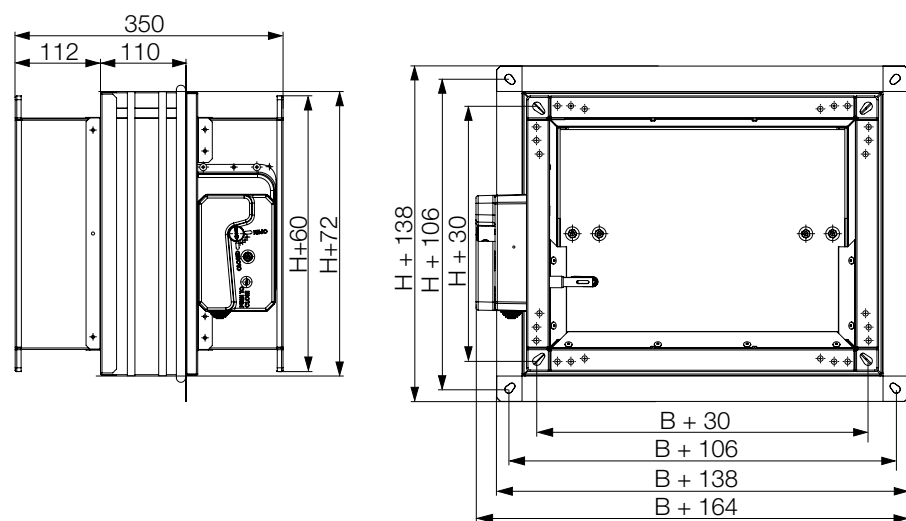


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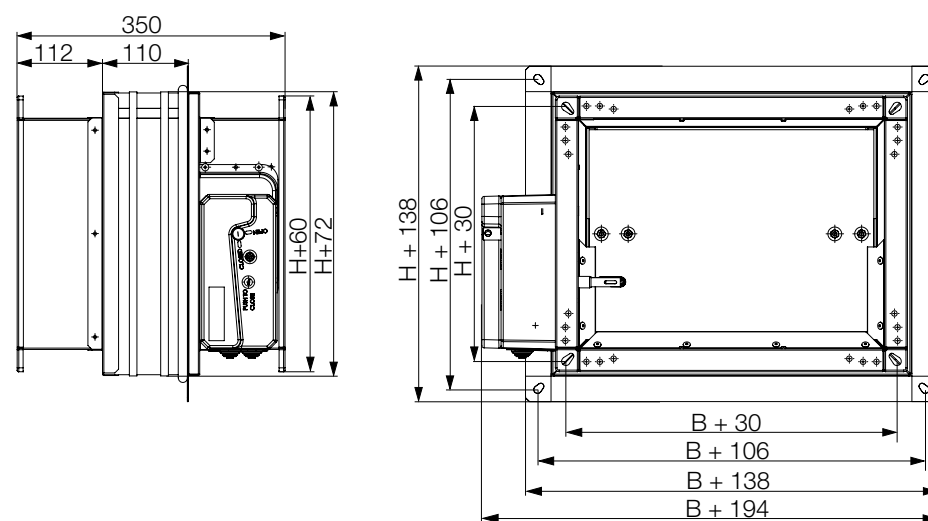
DIMENSIONS

FIRE DAMPER - FD

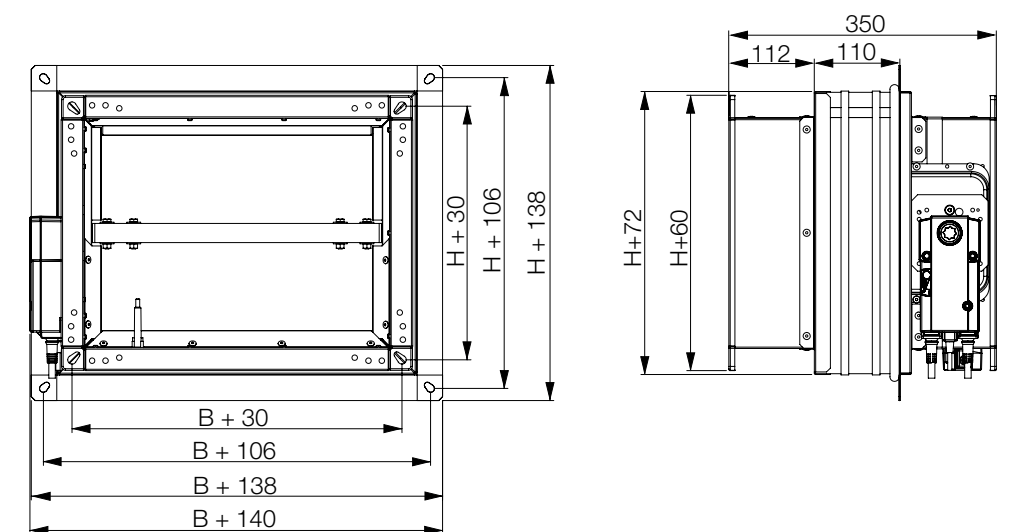
FD25-APP-R



FD25-APP-EMS

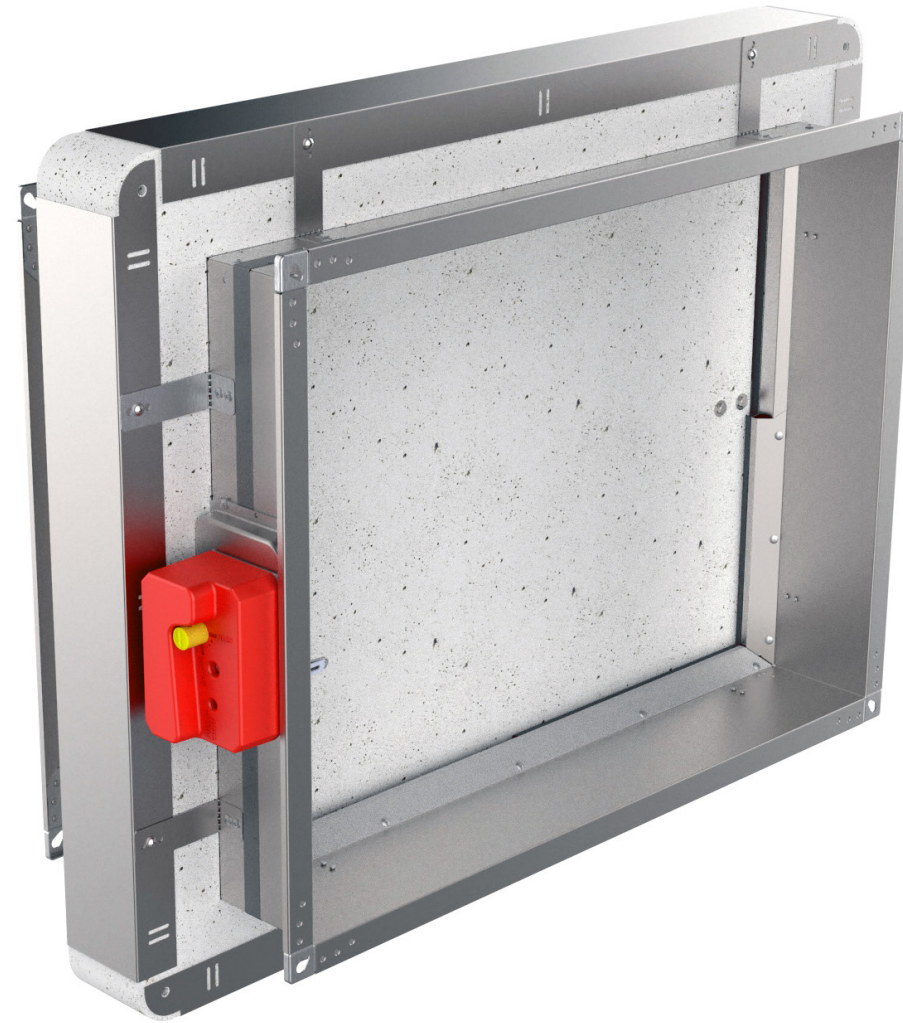


FD25-APP-M



FD25/FD40 MF2 installation frame

- MF2 is an installation frame for quick and easy installation in rigid and flexible walls
- Made out of calcium silicate boards
- Quick wall mounting with screws
- Factory assembled to the fire damper

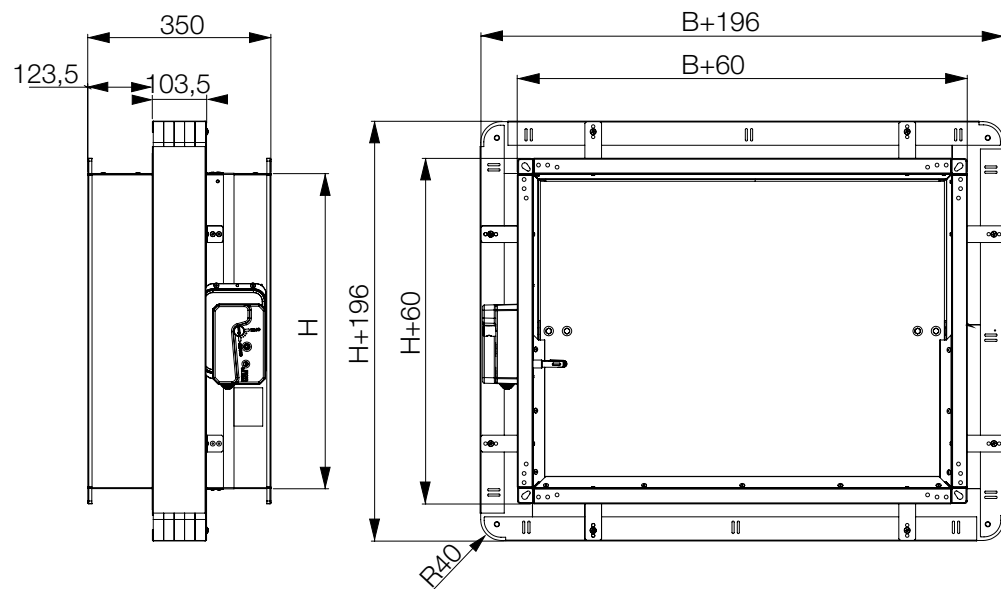


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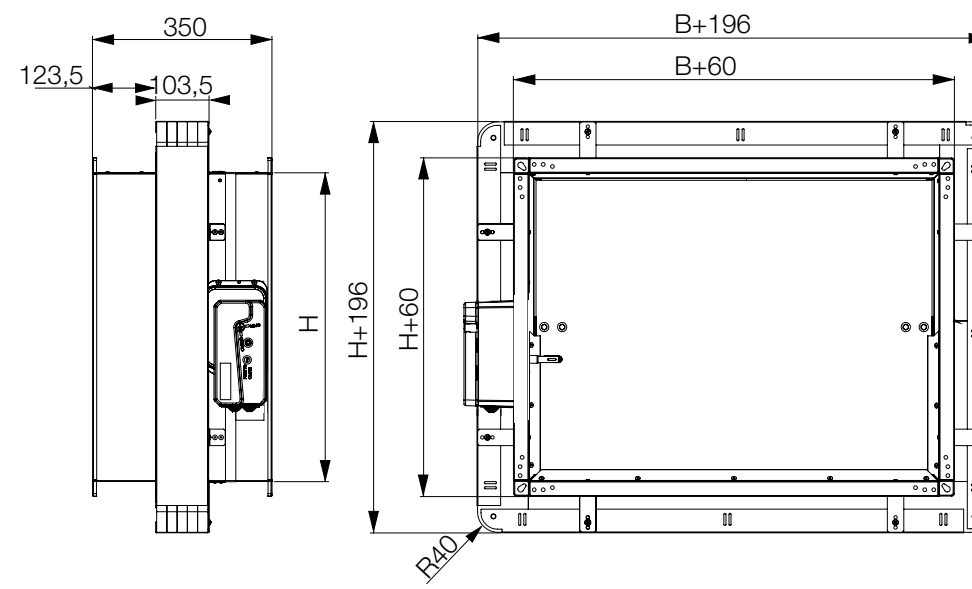
↑ DIMENSIONS

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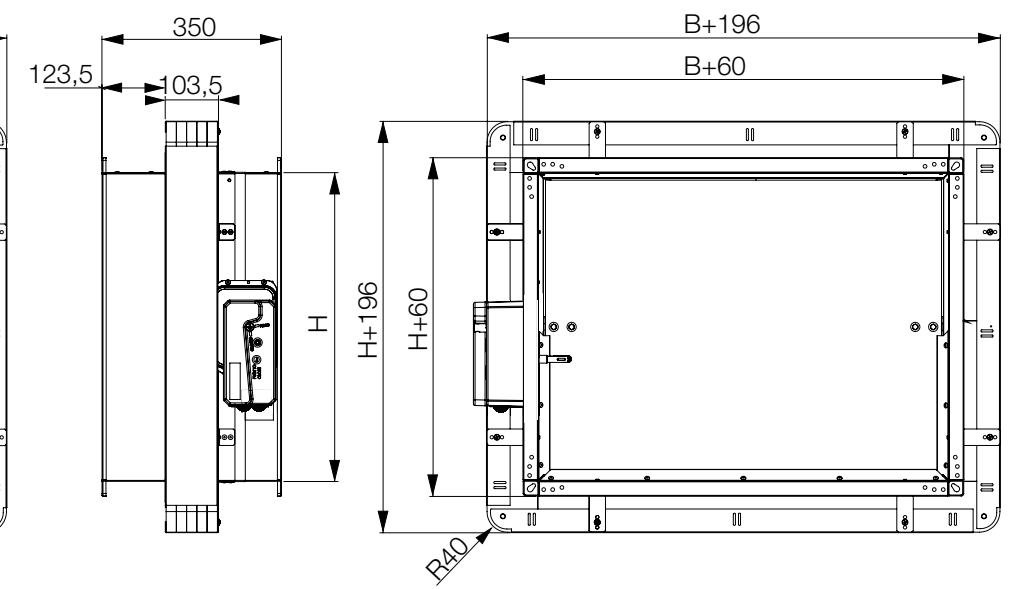
FD25-MF2-R



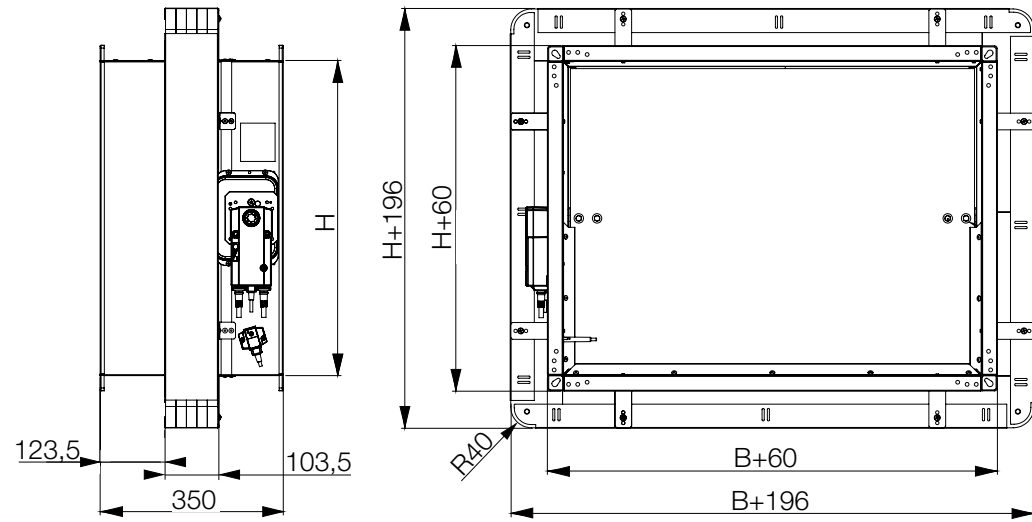
FD25-MF2-EMS



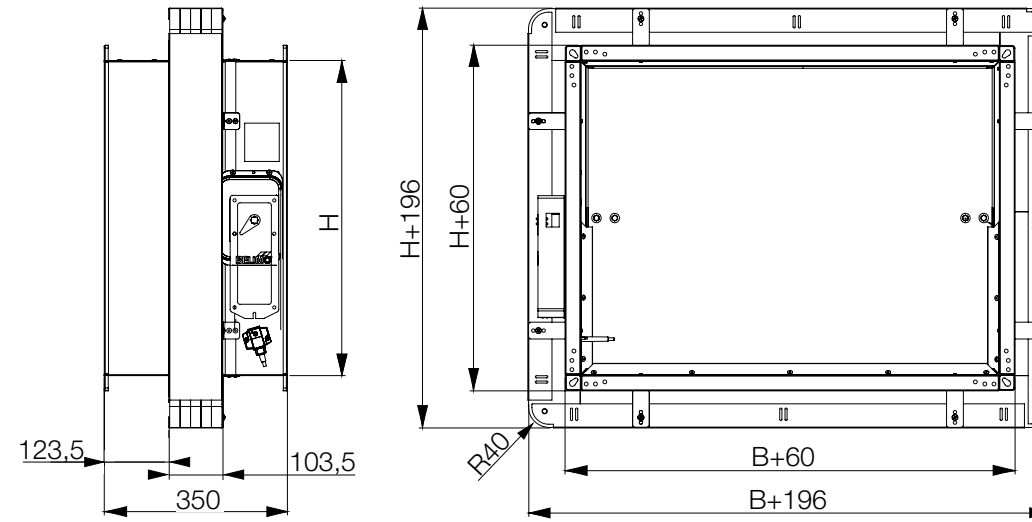
FD40-MF2-R / FD40-MF2-EMS



FD25-MF2-M



FD40-MF2-M



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Weights tables

FD-R Weight [kg]

H\B	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
200	5,0	5,6	6,1	6,7	7,3	7,9	8,6	9,2	9,8	10,5	11,1	11,7	12,3	13,0	13,6	17,0	17,7	18,4	19,2	19,9	20,6	21,3	22,1	22,8	23,5	24,3	25,0	25,7	26,4
250	5,7	6,2	6,7	7,4	8,1	8,8	9,5	10,1	10,8	11,5	12,2	12,9	13,6	14,3	15,0	19,0	19,8	20,7	21,5	22,3	23,1	24,0	24,8	25,6	26,5	27,3	28,1	28,9	29,8
300	6,3	6,8	7,3	8,1	8,8	9,6	10,3	11,1	11,8	12,6	13,3	14,1	14,8	15,6	16,3	21,0	22,0	22,9	23,8	24,7	25,7	26,6	28,3	29,2	30,1	31,1	32,0	32,9	33,9
350	6,9	7,4	7,9	8,8	9,6	10,4	11,2	12,0	12,8	13,6	14,5	15,3	16,1	16,9	17,7	23,1	24,1	25,1	26,1	27,2	28,2	29,2	31,0	32,0	33,1	34,1	35,1	36,2	37,2
400	7,6	8,1	8,6	9,5	10,3	11,2	12,1	13,0	13,8	14,7	15,6	16,5	17,3	18,2	19,1	25,8	27,0	28,1	29,2	30,4	31,5	32,6	33,7	34,9	36,0	37,1	38,3	39,4	40,5
450	8,2	8,7	9,2	10,1	11,1	12,0	13,0	13,9	14,8	15,8	16,7	17,7	18,6	19,5	20,5	27,9	29,1	30,3	31,6	32,8	34,0	35,2	36,5	37,7	38,9	40,2	41,4	42,6	43,8
500	8,8	9,3	9,8	10,8	11,8	12,8	13,8	14,8	15,8	16,8	17,8	18,8	19,8	20,8	21,8	29,9	31,2	32,6	33,9	35,2	36,5	37,9	39,2	40,5	41,9	43,2	44,5	45,8	47,2
550	9,4	9,9	10,5	11,5	12,6	13,6	14,7	15,8	16,8	17,9	19,0	20,0	21,1	22,2	23,2	31,9	33,4	34,8	36,2	37,6	39,1	40,5	41,9	43,4	44,8	46,2	47,6	49,1	50,5
600	10,1	10,6	11,1	12,2	13,3	14,5	15,6	16,7	17,8	19,0	20,1	21,2	22,3	23,5	24,6	34,0	35,5	37,0	38,5	40,1	41,6	43,1	44,7	46,2	47,7	49,2	50,8	52,3	53,8
650			16,5	18,1	19,7	21,3	23,0	24,6	26,2	27,8	29,5	31,1	32,7	34,4	36,0	37,6	39,2	40,9	42,5	44,1	45,8	47,4	49,0	50,6	52,3	53,9	55,5	57,1	
700				19,0	20,7	22,5	24,2	25,9	27,6	29,4	31,1	32,8	34,6	36,3	38,0	39,7	41,5	43,2	44,9	46,7	48,4	50,1	51,8	53,6	55,3	57,0	58,7	60,5	
750					21,8	23,6	25,4	27,2	29,1	30,9	32,7	34,6	36,4	38,2	40,0	41,9	43,7	45,5	47,4	49,2	51,0	52,8	54,7	56,5	58,3	60,1	62,0	63,8	
800						24,7	26,6	28,6	30,5	32,4	34,4	36,3	38,2	40,1	42,1	44,0	45,9	47,9	49,8	51,7	53,6	55,6	57,5	59,4	61,3	63,3	65,2	67,1	

- R25
- R40



FIRE DAMPER - FD

FD-EMS Weight [kg]

H\B	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
200	5,8	6,4	7,1	7,7	8,3	8,9	9,6	10,2	10,8	11,5	12,1	12,7	13,3	14,0	14,6	17,5	18,2	18,9	19,7	20,4	21,1	21,8	22,6	23,3	24,0	24,8	25,5	26,2	26,9
250	6,3	7,0	7,7	8,4	9,1	9,8	10,5	11,1	11,8	12,5	13,2	13,9	14,6	15,3	16,0	19,5	20,3	21,2	22,0	22,8	23,6	24,5	25,3	26,1	27,0	27,8	28,6	29,4	30,3
300	6,8	7,6	8,3	9,1	9,8	10,6	11,3	12,1	12,8	13,6	14,3	15,1	15,8	16,6	17,3	21,5	22,5	23,4	24,3	25,2	26,2	27,1	28,0	29,0	29,9	30,8	31,7	32,7	33,6
350	7,3	8,1	8,9	9,8	10,6	11,4	12,2	13,0	13,8	14,6	15,5	16,3	17,1	17,9	18,7	23,6	24,6	25,6	26,6	27,7	28,7	29,7	30,8	31,8	32,8	33,8	34,9	35,9	36,9
400	7,8	8,7	9,6	10,5	11,3	12,2	13,1	14,0	14,8	15,7	16,6	17,5	18,3	19,2	20,1	25,6	26,7	27,8	29,0	30,1	31,2	32,4	33,5	34,6	35,7	36,9	38,0	39,1	40,3
450	8,3	9,3	10,2	11,1	12,1	13,0	14,0	14,9	15,8	16,8	17,7	18,7	19,6	20,5	21,5	27,6	28,8	30,1	31,3	32,5	33,8	35,0	36,2	37,4	38,7	39,9	41,1	42,4	43,6
500	8,8	9,8	10,8	11,8	12,8	13,8	14,8	15,8	16,8	17,8	18,8	19,8	20,8	21,8	22,8	29,6	31,0	32,3	33,6	35,0	36,3	37,6	38,9	40,3	41,6	42,9	44,3	45,6	46,9
550	9,3	10,4	11,5	12,5	13,6	14,6	15,7	16,8	17,8	18,9	20,0	21,0	22,1	23,2	24,2	31,7	33,1	34,5	36,0	37,4	38,8	40,2	41,7	43,1	44,5	46,0	47,4	48,8	50,2
600	9,8	11,0	12,1	13,2	14,3	15,5	16,6	17,7	18,8	20,0	21,1	22,2	23,3	24,5	25,6	34,3	35,8	37,3	38,8	40,4	41,9	43,4	45,0	46,5	48,0	49,5	51,1	52,6	54,1
650			13,4	14,6	15,8	17,0	18,2	19,3	20,5	21,7	22,9	31,5	33,1	34,7	36,3	38,0	39,6	41,2	42,8	44,5	46,1	47,7	49,4	51,0	52,6	54,2	55,9	57,5	
700				15,3	16,6	17,8	19,1	20,3	21,6	22,8	31,5	33,2	35,0	36,7	38,4	40,1	41,9	43,6	45,3	47,1	48,8	50,5	52,2	54,0	55,7	57,4	59,1	60,9	
750					17,4	18,7	20,0	21,3	22,7	24,0	33,1	35,0	36,8	38,7	40,5	42,3	44,1	46,0	47,8	49,6	51,5	53,3	55,1	56,9	58,8	60,6	62,4	64,3	
800						19,6	21,0	22,3	23,7	25,1	34,7	36,7	38,7	40,6	42,6	44,5	46,4	48,4	50,3	52,2	54,1	56,1	58,0	59,9	61,8	63,8	65,7	67,6	









		FD-M Weight [kg]																												
		100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
200		5,6	6,2	6,9	7,5	8,1	8,7	9,4	10,0	10,6	11,3	11,9	12,5	13,1	13,8	14,4	17,8	18,5	19,2	20,0	20,7	21,4	22,1	22,9	23,6	24,3	25,1	25,8	26,5	27,2
250		6,1	6,8	7,5	8,2	8,9	9,6	10,3	10,9	11,6	12,3	13,0	13,7	14,4	15,1	15,8	19,8	20,6	21,5	22,3	23,1	23,9	24,8	25,6	26,4	27,3	28,1	28,9	29,7	30,6
300		6,6	7,4	8,1	8,9	9,6	10,4	11,1	11,9	12,6	13,4	14,1	14,9	15,6	16,4	17,1	21,8	22,8	23,7	24,6	25,5	26,5	27,4	28,3	29,3	30,2	31,1	32,0	33,0	33,9
350		7,1	7,9	8,7	9,6	10,4	11,2	12,0	12,8	13,6	14,4	15,3	16,1	16,9	17,7	18,5	23,9	24,9	25,9	26,9	28,0	29,0	30,0	31,1	32,1	33,1	34,1	35,2	36,2	37,2
400		7,6	8,5	9,4	10,3	11,1	12,0	12,9	13,8	14,6	15,5	16,4	17,3	18,1	19,0	19,9	25,9	27,0	28,1	29,3	30,4	31,5	32,7	33,8	34,9	36,0	37,2	38,3	39,4	40,6
450		8,1	9,1	10,0	10,9	11,9	12,8	13,8	14,7	15,6	16,6	17,5	18,5	19,4	20,3	21,3	27,9	29,1	30,4	31,6	32,8	34,1	35,3	36,5	37,7	39,0	40,2	41,4	42,7	43,9
500		8,6	9,6	10,6	11,6	12,6	13,6	14,6	15,6	16,6	17,6	18,6	19,6	20,6	21,6	22,6	29,9	31,3	32,6	33,9	35,3	36,6	37,9	39,2	40,6	41,9	43,2	44,6	45,9	47,2
550		9,1	10,2	11,3	12,3	13,4	14,4	15,5	16,6	17,6	18,7	19,8	20,8	21,9	23,0	24,0	32,0	33,4	34,8	36,3	37,7	39,1	40,5	42,0	43,4	44,8	46,3	47,7	49,1	50,5
600		9,6	10,8	11,9	13,0	14,1	15,3	16,4	17,5	18,6	19,8	20,9	22,0	23,1	24,3	25,4	34,6	36,1	37,6	39,1	40,7	42,2	43,7	45,3	46,8	48,3	49,8	51,4	52,9	54,4
650				13,7	14,9	16,1	17,3	18,5	19,6	20,8	22,0	30,1	31,8	33,4	35,0	36,6	38,3	39,9	41,5	43,1	44,8	46,4	48,0	49,7	51,3	52,9	54,5	56,2	57,8	
700					15,6	16,9	18,1	19,4	20,6	21,9	23,1	31,8	33,5	35,3	37,0	38,7	40,4	42,2	43,9	45,6	47,4	49,1	50,8	52,5	54,3	56,0	57,7	59,4	61,2	
750						17,7	19,0	20,3	21,6	23,0	24,3	33,4	35,3	37,1	39,0	40,8	42,6	44,4	46,3	48,1	49,9	51,8	53,6	55,4	57,2	59,1	60,9	62,7	64,6	
800							19,9	21,3	22,6	24,0	25,4	35,0	37,0	39,0	40,9	42,9	44,8	46,7	48,7	50,6	52,5	54,4	56,4	58,3	60,2	62,1	64,1	66,0	67,9	

BFL

BFN

BF



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MF2

		MF2 installation frame weight [kg]																												
		100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
200		10,7	11,8	12,9	14,0	15,1	16,2	17,3	18,4	19,5	20,6	21,7	22,8	23,9	25,0	26,1	27,2	28,3	29,4	30,5	31,6	32,7	33,8	34,9	36,0	37,1	38,2	39,3	40,4	41,5
250		11,8	12,9	14,0	15,1	16,2	17,3	18,4	19,5	20,6	21,7	22,8	23,9	25,0	26,1	27,2	28,3	29,4	30,5	31,6	32,7	33,8	34,9	36,0	37,1	38,2	39,3	40,4	41,5	42,6
300		12,9	14,0	15,1	16,2	17,3	18,4	19,5	20,6	21,7	22,8	23,9	25,0	26,1	27,2	28,3	29,4	30,5	31,6	32,7	33,8	34,9	36,0	37,1	38,2	39,3	40,4	41,5	42,6	43,7
350		14,0	15,1	16,2	17,3	18,4	19,5	20,6	21,7	22,8	23,9	25,0	26,1	27,2	28,3	29,4	30,5	31,6	32,7	33,8	34,9	36,0	37,1	38,2	39,3	40,4	41,5	42,6	43,7	44,8
400		15,1	16,2	17,3	18,4	19,5	20,6	21,7	22,8	23,9	25,0	26,1	27,2	28,3	29,4	30,5	31,6	32,7	33,8	34,9	36,0	37,1	38,2	39,3	40,4	41,5	42,6	43,7	44,8	45,9
450		16,2	17,3	18,4	19,5	20,6	21,7	22,8	23,9	25,0	26,1	27,2	28,3	29,4	30,5	31,6	32,7	33,8	34,9	36,0	37,1	38,2	39,3	40,4	41,5	42,6	43,7	44,8	45,9	47,0
500		17,3	18,4	19,5	20,6	21,7	22,8	23,9	25,0	26,1	27,2	28,3	29,4	30,5	31,6	32,7	33,8	34,9	36,0	37,1	38,2	39,3	40,4	41,5	42,6	43,7	44,8	45,9	47,0	48,1
550		18,4	19,5	20,6	21,7	22,8	23,9	25,0	26,1	27,2	28,3	29,4	30,5	31,6	32,7	33,8	34,9	36,0	37,1	38,2	39,3	40,4	41,5	42,6	43,7	44,8	45,9	47,0	48,1	49,2
600		19,5	20,6	21,7	22,8	23,9	25,0	26,1	27,2	28,3	29,4	30,5	31,6	32,7	33,8	34,9	36,0	37,1	38,2	39,3	40,4	41,5	42,6	43,7	44,8	45,9	47,0	48,1	49,2	50,4
650				23,9	25,0	26,1	27,2	28,3	29,4	30,5	31,6	32,7	33,8	34,9	36,0	37,1	38,2	39,3	40,4	41,5	42,6	43,7	44,8	45,9	47,0	48,1	49,2	50,4	51,5	
700					26,1	27,2	28,3	29,4	30,5	31,6	32,7	33,8	34,9	36,0	37,1	38,2	39,3	40,4	41,5	42,6	43,7	44,8	45,9	47,0	48,1	49,2	50,4	51,5	52,6	
750						28,3	29,4	30,5	31,6	32,7	33,8	34,9	36,0	37,1	38,2	39,3	40,4	41,5	42,6	43,7	44,8	45,9	47,0	48,1	49,2	50,4	51,5	52,6	53,7	
800							30,5	31,6	32,7	33,8	34,9	36,0	37,1	38,2	39,3	40,4	41,5	42,6	43,7	44,8	45,9	47,0	48,1	49,2	50,4	51,5	52,6	53,7	54,8	



DIMENSIONS

FIRE DAMPER - FD

Applique

		Applique installation frame weight [kg]																												
		100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
200		4,2	4,7	5,2	5,7	6,2	6,7	7,2	7,7	8,2	8,7	9,2	9,7	10,3	10,8	11,3														
250		4,7	5,2	5,7	6,2	6,7	7,2	7,7	8,2	8,7	9,2	9,7	10,3	10,8	11,3	11,8														
300		5,2	5,7	6,2	6,7	7,2	7,7	8,2	8,7	9,2	9,7	10,3	10,8	11,3	11,8	12,3														
350		5,7	6,2	6,7	7,2	7,7	8,2	8,7	9,2	9,7	10,3	10,8	11,3	11,8	12,3	12,8														
400		6,2	6,7	7,2	7,7	8,2	8,7	9,2	9,7	10,3	10,8	11,3	11,8	12,3	12,8	13,3														
450		6,7	7,2	7,7	8,2	8,7	9,2	9,7	10,3	10,8	11,3	11,8	12,3	12,8	13,3	13,8														
500		7,2	7,7	8,2	8,7	9,2	9,7	10,3	10,8	11,3	11,8	12,3	12,8	13,3	13,8	14,3														
550		7,7	8,2	8,7	9,2	9,7	10,3	10,8	11,3	11,8	12,3	12,8	13,3	13,8	14,3	14,8														
600		8,2	8,7	9,2	9,7	10,3	10,8	11,3	11,8	12,3	12,8	13,3	13,8	14,3	14,8	15,3														









Pressure drop tables

Pressure drop values are described with the “Zeta” values for each size. The exact pressure drop in [Pa] is calculated using the following formula:

$$\Delta p \text{ [Pa]} = \zeta * v^2 * 0,6$$

where ζ is Zeta value from the tables below, v is airflow velocity in [m/s]



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ZETA VALUES FD25															
	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
200	1.92	1.67	1.42	1.18	0.99	0.86	0.82	0.77	0.71	0.66	0.65	0.64	0.62	0.59	0.59
250	1.43	1.22	1.02	0.82	0.68	0.61	0.58	0.54	0.52	0.49	0.48	0.43	0.43	0.42	0.42
300	1.15	0.98	0.82	0.65	0.51	0.47	0.45	0.43	0.40	0.40	0.39	0.33	0.33	0.32	0.31
350	0.91	0.78	0.66	0.54	0.44	0.40	0.38	0.37	0.35	0.34	0.33	0.28	0.28	0.27	0.27
400	0.77	0.67	0.58	0.49	0.39	0.35	0.34	0.32	0.30	0.29	0.29	0.25	0.25	0.25	0.24
450	0.61	0.54	0.47	0.40	0.31	0.28	0.28	0.26	0.25	0.25	0.24	0.23	0.22	0.22	0.22
500	0.57	0.50	0.43	0.36	0.28	0.26	0.25	0.24	0.23	0.22	0.22	0.21	0.20	0.20	0.20
550	0.51	0.42	0.33	0.24	0.21	0.18	0.18	0.18	0.17	0.15	0.15	0.15	0.15	0.15	0.14
600	0.49	0.40	0.31	0.22	0.19	0.17	0.17	0.16	0.15	0.15	0.15	0.14	0.13	0.13	0.13

ZETA VALUES FD40																											
	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500
200	11.64	9.56	7.48	6.91	6.33	5.71	5.09	5.06	5.04	4.75	4.46	4.45	4.44	4.42	4.39	4.11	3.84	3.83	3.81	3.80	3.79	3.74	3.69	3.69	3.69	3.67	3.66
250	8.58	7.11	5.65	5.20	4.76	4.29	3.82	3.80	3.78	3.56	3.33	3.32	3.31	3.29	3.27	3.07	2.86	2.85	2.84	2.83	2.83	2.80	2.78	2.78	2.78	2.77	2.76
300	5.51	4.67	3.83	3.50	3.18	2.86	2.55	2.54	2.53	2.36	2.20	2.19	2.18	2.17	2.15	2.02	1.89	1.88	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86
350	4.47	3.78	3.10	2.84	2.58	2.32	2.07	2.05	2.03	1.91	1.78	1.77	1.76	1.75	1.75	1.64	1.53	1.52	1.52	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51
400	3.42	2.89	2.37	2.17	1.98	1.78	1.59	1.56	1.53	1.45	1.36	1.35	1.34	1.34	1.34	1.26	1.17	1.17	1.17	1.16	1.15	1.15	1.15	1.15	1.15	1.15	1.15
450	2.91	2.47	2.02	1.85	1.67	1.50	1.33	1.31	1.30	1.23	1.15	1.15	1.14	1.14	1.14	1.07	1.00	1.00	1.00	0.99	0.97	0.97	0.97	0.97	0.97	0.97	0.97
500	2.40	2.04	1.68	1.52	1.36	1.21	1.07	1.07	1.07	1.00	0.94	0.94	0.94	0.94	0.94	0.88	0.82	0.82	0.82	0.81	0.80	0.80	0.80	0.80	0.80	0.80	0.80
550	2.13	1.81	1.48	1.35	1.22	1.09	0.97	0.95	0.93	0.88	0.82	0.82	0.82	0.82	0.82	0.76	0.71	0.71	0.71	0.70	0.70	0.70	0.70	0.70	0.70	0.69	0.68
600	1.86	1.57	1.28	1.18	1.08	0.97	0.87	0.84	0.80	0.76	0.71	0.70	0.69	0.69	0.69	0.64	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.58	0.57
650			1.10	1.02	0.93	0.85	0.77	0.74	0.70	0.66	0.62	0.62	0.61	0.61	0.61	0.57	0.53	0.53	0.53	0.53	0.53	0.53	0.52	0.52	0.52	0.51	0.50
700			0.93	0.85	0.78	0.72	0.67	0.63	0.60	0.57	0.53	0.53	0.53	0.53	0.53	0.50	0.47	0.47	0.47	0.47	0.47	0.47	0.46	0.45	0.44	0.44	0.44
750				0.75	0.71	0.65	0.60	0.58	0.56	0.53	0.50	0.49	0.47	0.47	0.47	0.44	0.42	0.42	0.42	0.42	0.42	0.41	0.40	0.40	0.40	0.40	0.40
800					0.63	0.58	0.54	0.53	0.52	0.49	0.46	0.44	0.41	0.41	0.41	0.39	0.36	0.36	0.36	0.36	0.36	0.36	0.35	0.35	0.35	0.35	0.35



FIRE DAMPER - FD



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FIRE DAMPER - FD

INSTALLATION

The FD25 / FD40 fire damper is always tested in standardized support frames (both in a concrete wall and in a flexible wall) in accordance with EN 1366-2: 2015 table 3/4/5. The results obtained are valid for all similar support frames which have a thickness and / or density and / or fire resistance similar or greater than the one of the tests.

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 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.

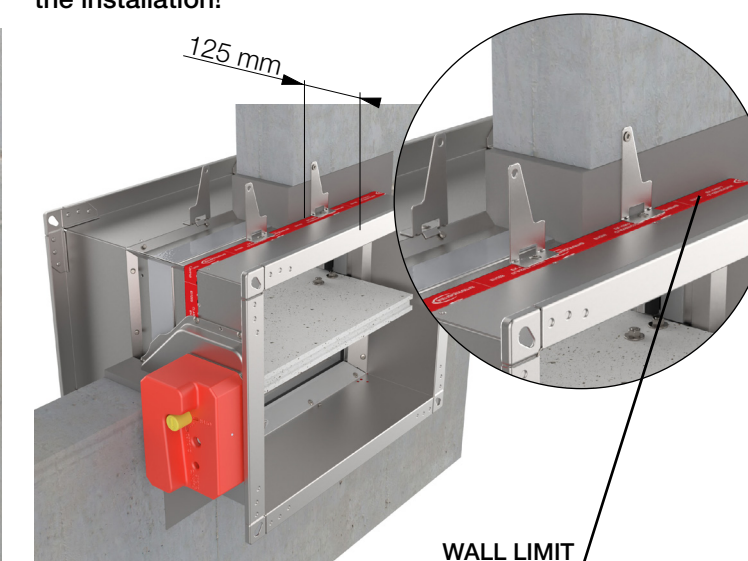
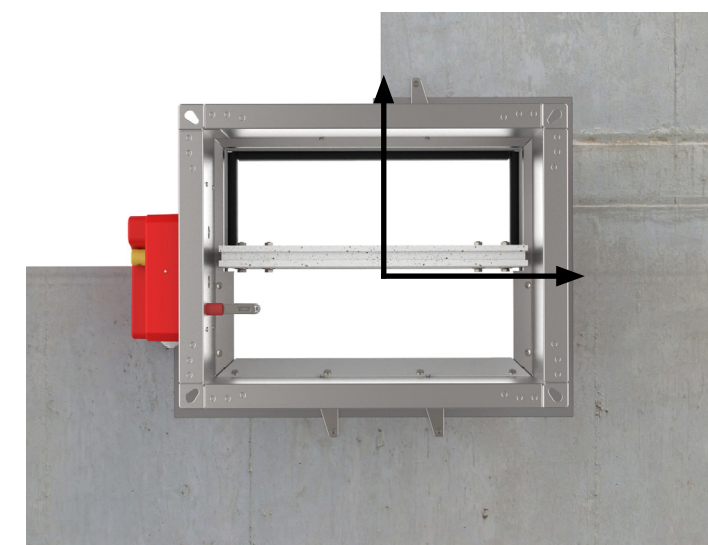
The gap in the installation opening between the fire damper and the wall/ceiling can be increased by up to 50% of the gap area, or decreased to the smallest dimension (B + 60 x H + 60)

- Mounting is possible with the blade axis in horizontal or in vertical position
- The installation must comply with the tests that were performed during certification
- Avoid any obstruction of the moving blade by the connected ducts
- The class of air-tightness is maintained in case the installation of the damper is made in accordance with the technical manual
- Operating temperature: 50 °C max
- For indoor use only

All dampers can be installed with the blade axis in a horizontal position or a vertical position in all installation types except installation remote from the wall and battery installation. 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.

To help you find the suspension plane, a bendable fixing bracket is provided on the damper body and the red tape is placed on the casing to mark the location of the wall limit (**distance from wall limit to the end of fire damper is 125mm**). This does not apply for Applique / MF2 kit installations.

Check the operation of the fire damper before commencing the installation!




Range	Supporting construction	Type of installation	Wall	Supporting construction details	Classification	Tested under pressure	Details	
FD25 & FD40	Rigid wall	Gypsum plaster / Mortar			EI 120 (ve i↔o)S	500Pa	▼	
		Mineral wool and cover boards	≥ 100 mm	Aerated concrete (≥ 550 kg/m³) Reinforced concrete (≥ 2200 kg/m³)	EI 90 (ve i↔o)S	500Pa	▼	
		Fire Batt/ Weichschott				300Pa	▼	
	Flexible wall	Gypsum plaster / Mortar and cover boards	≥ 70 mm	Gypsum blocks (≥ 995 kg/m³)	EI 120 (ve i↔o)S	500Pa	▼	
		Mineral wool and cover boards	≥ 100 mm	Plasterboard type A (EN520))	EI 90 (ve i↔o)S	500Pa	▼	
		Fire Batt/ Weichschott			EI 90 (ve i↔o)S	300Pa	▼	
	Floor/ceiling	Gypsum plaster / Mortar	≥ 100 mm	Aerated concrete (≥ 550 kg/m³) Reinforced concrete (≥ 2200 kg/m³)	EI 120 (ho i↔o)S	500Pa	▼	
		Fire Batt/ Weichschott			EI 90 (ho i↔o)S	300Pa	▼	
	FD25	Rigid wall	APPLIQUE (installation frame)	≥ 100 mm	Aerated concrete (≥ 550 kg/m³) Reinforced concrete	EI 90 (ve i↔o)S	500Pa	▼
		Flexible wall	APPLIQUE (installation frame)	≥ 70 mm	Gypsum blocks (≥ 995 kg/m³)	EI 90 (ve i↔o)S	500Pa	▼
APPLIQUE (installation frame)			≥ 100 mm	Plasterboard type A (EN520)	EI 90 (ve i↔o)S	500Pa	▼	
FD25 & FD40	Rigid wall	MF2 (installation frame)	≥ 100 mm	Aerated concrete (≥ 550 kg/m³) Reinforced concrete	FD25: EI 60 (ve i↔o)S FD40: EI 90 (ve i↔o)S	500Pa	▼	
	Flexible wall	MF2 (installation frame)	≥ 70 mm	Gypsum blocks (≥ 995 kg/m³)	FD25: EI 60 (ve i↔o)S FD40: EI 90 (ve i↔o)S	500Pa	▼	
	Flexible wall	MF2 (installation frame)	≥ 100 mm	Plasterboard type A (EN520)	FD25: EI 60 (ve i↔o)S FD40: EI 90 (ve i↔o)S	500Pa	▼	
	Flexible wall	MF2 (installation frame)	≥ 90 mm	Shaft wall (steel frame)	EI 60 (ve i↔o)S	500Pa	▼	
FD40	Rigid wall	REMOTE FROM WALL (Promat)	≥ 110 mm	Aerated concrete (≥ 650 kg/m³) Reinforced concrete	EI 60 (ve i↔o)S	300Pa	▼	
	Flexible wall	REMOTE FROM WALL (Isover)	≥ 100 mm	Plasterboard type A (EN520)	EI 60 (ve i↔o)S	300Pa	▼	
FD40 up to 1200x800mm	Rigid wall	Battery 2x2, 1x2		Aerated concrete (≥ 650 kg/m³) Reinforced concrete (≥ 2200 kg/m³)	EI 120 (ve i↔o)S	500Pa	▼	




Check for more information about certificate installations in the declaration of performance:





www.klimaoprema.com/fd/dop

 Aerated concrete (≥ 550 kg/m³) or reinforced concrete (≥ 2200 kg/m³) wall, more than 100 mm thick

 Gypsum blocks (≥ 995 kg/m³) wall, more than 70 mm thick

 Plasterboard wall, type A (EN520), more than 100 mm thick


 Shaft wall, steel frame construction

 Aerated concrete (≥ 550 kg/m³) or reinforced concrete (≥ 2200 kg/m³) ceiling / floor, more than 100 mm thick

FIRE DAMPER - FD


 Gypsum plaster, mortar sealing of mortar and cover boards

 Sealing with mineral wool and cover boards

 Sealing with mineral wool and fireproof coating - FireBatt

 Applique kit installation

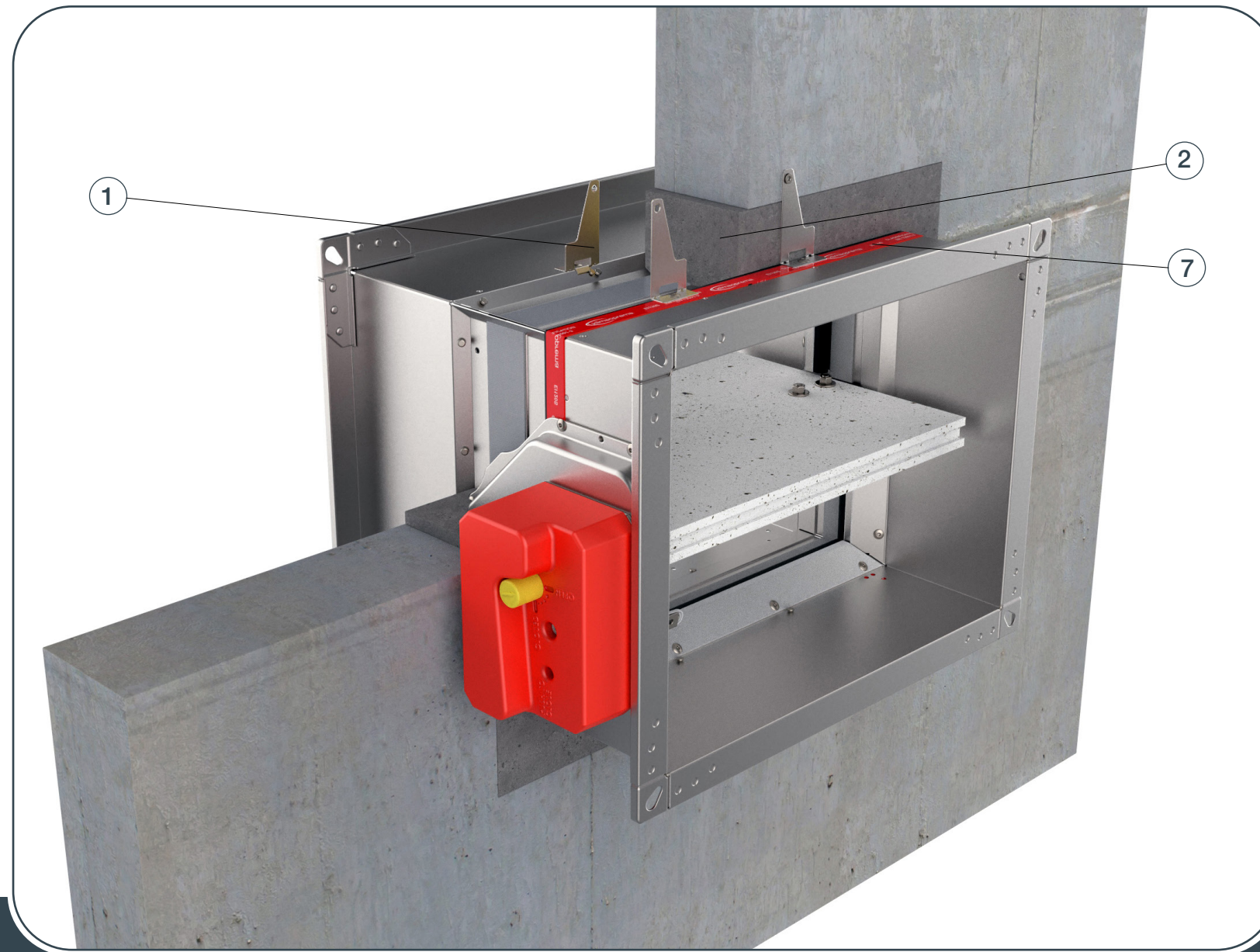
 MF2 kit installation

 Remote from wall installation

 Battery installation

Rigid wall installation (mortar sealing)

The wall is composed of concrete blocks (minimum density of 550 kg/m³) or reinforced concrete (minimum density of 2200 kg/m³) and with a minimum thickness of 100 mm. Installation material: mortar.



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 INSTALLATION

FIRE DAMPER - FD

1. Prepare opening in the wall according to B (H) + 80 mm or more (up to 50% more). Insert fire damper into wall to the wall limit mark **(7)** on the damper and bend the fixing bracket **(1)** 90°. **Damper blade must be closed during the installation!**

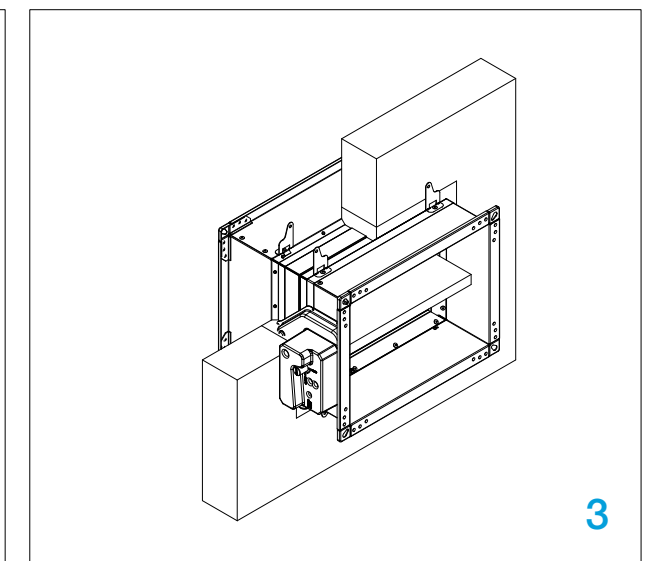
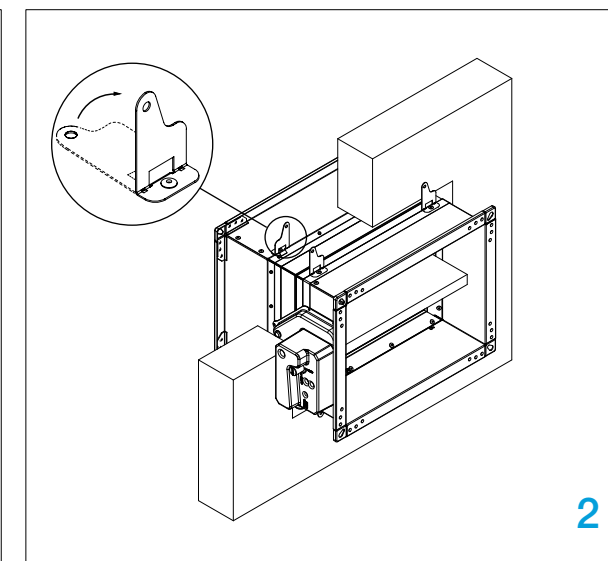
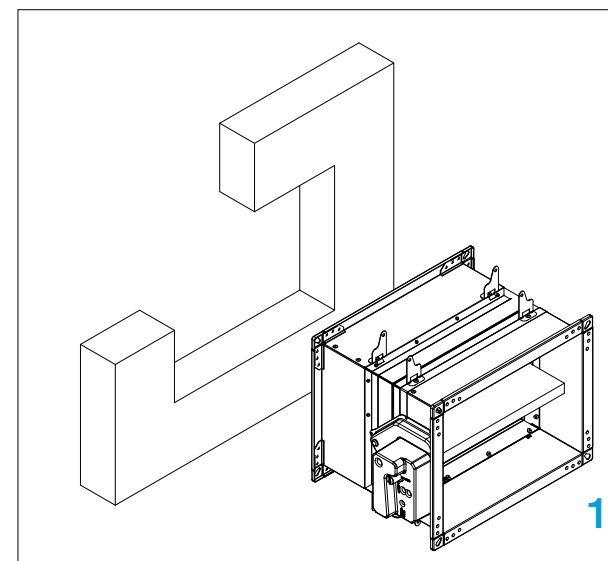
2. Fix the fire damper to the wall with the screws. Bracket screw hole is 6 mm in diameter.

3. Fill the space between the damper and the wall with mortar. **(2)**.

*Multiple fire dampers can be installed next to each other or ceiling/wall with the minimal distance of 30 mm between them. (see page 40)

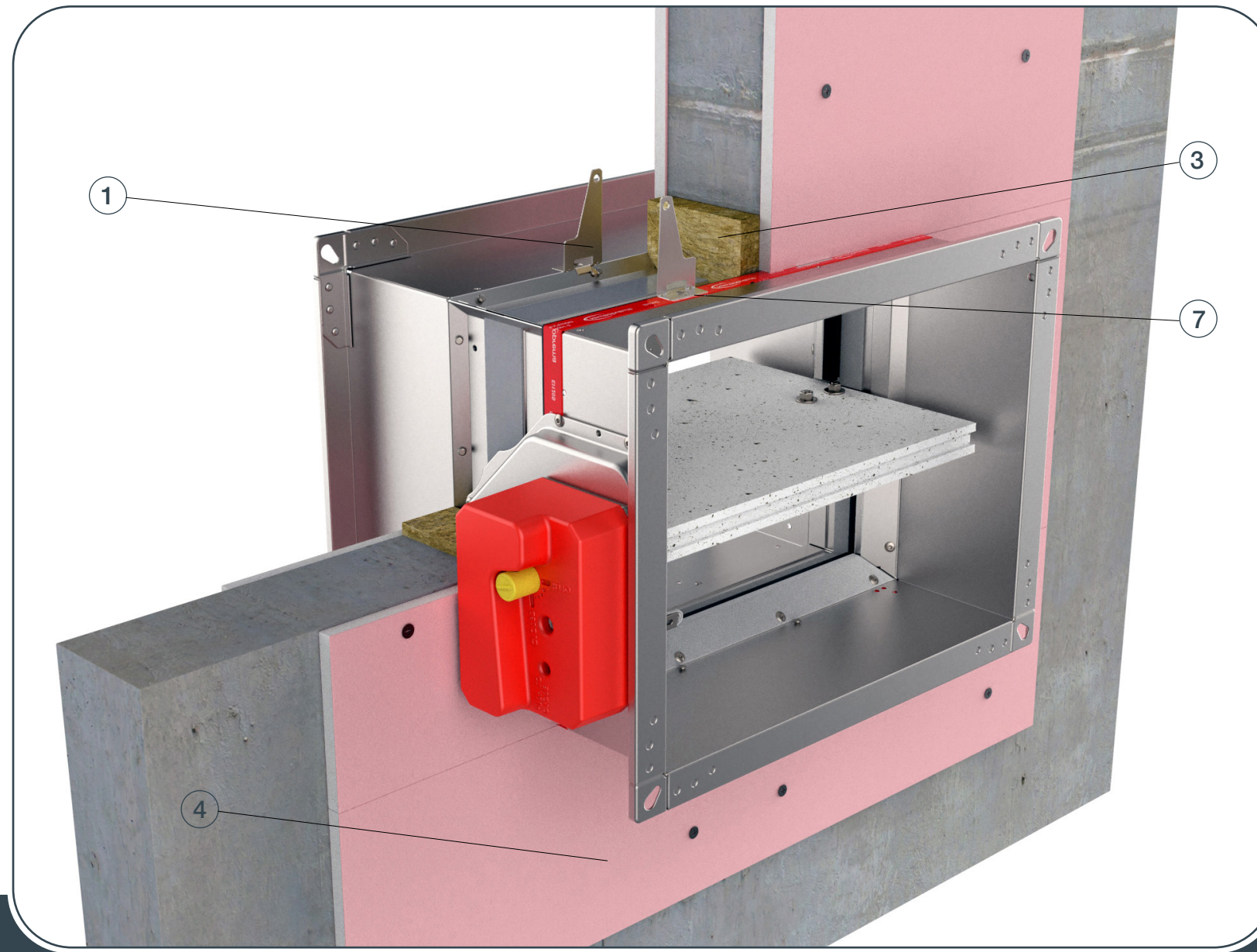
* Build the support for installation according to the drawing see page 41.

Test the operation of the damper blade!



Rigid wall installation (mineral wool sealing)

The wall is composed of concrete blocks (minimum density of 550 kg/m³) or reinforced concrete (minimum density of 2200 kg/m³) and with a minimum thickness of 100 mm.
Installation material: mineral wool, covered with plasterboard cover boards.



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INSTALLATION

FIRE DAMPER - FD

1. Prepare opening in the wall according to B (H) + 80 mm or more (up to 50% more). Insert fire damper into wall to the wall limit mark (7) on the damper and bend the fixing bracket (1) 90° (bracket screw hole is 6 mm in diameter). **Damper blade must be closed during the installation!**

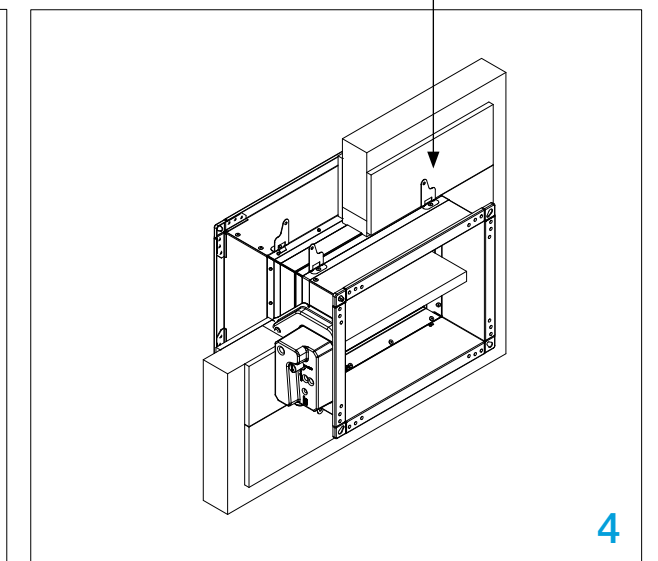
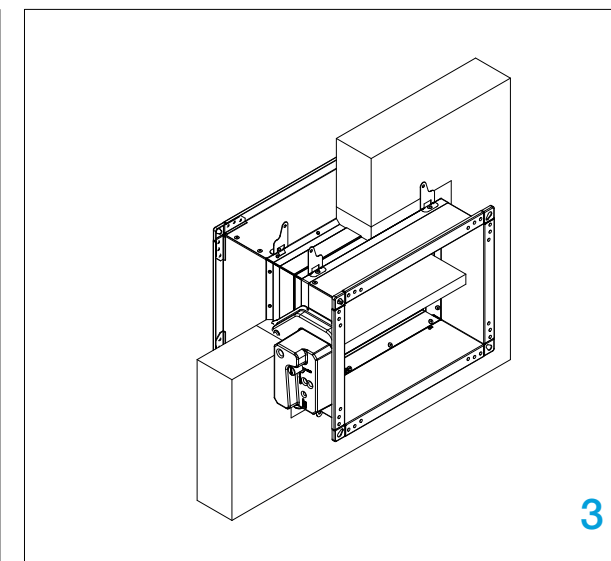
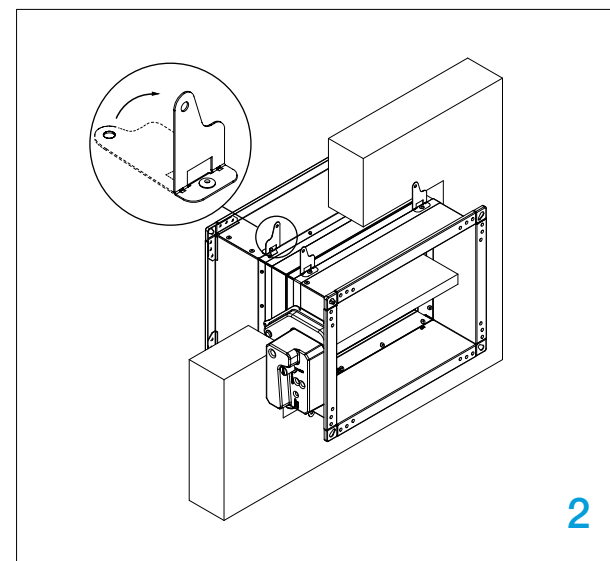
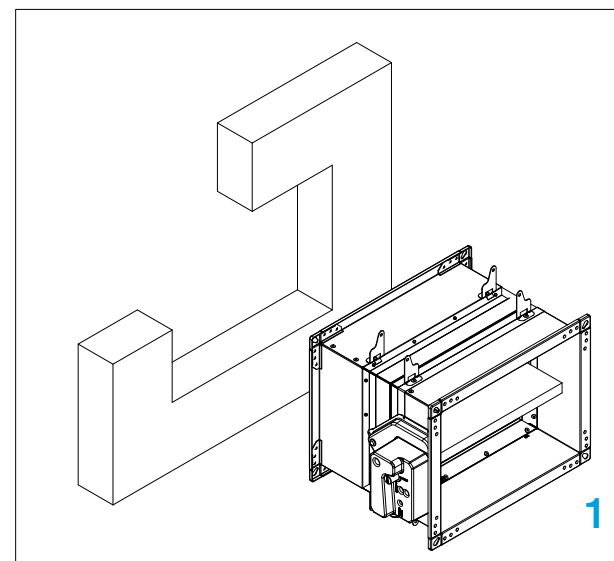
2. Fix the fire damper to the wall with the screws.

3. Fill the space between casing and wall with mineral wool (3).

4. Cover the wool with GKF gypsum boards (4) (12,5 mm thick).

*Multiple fire dampers can be installed next to each other or ceiling/wall with the minimal distance of 30 mm between them. (see page 40)

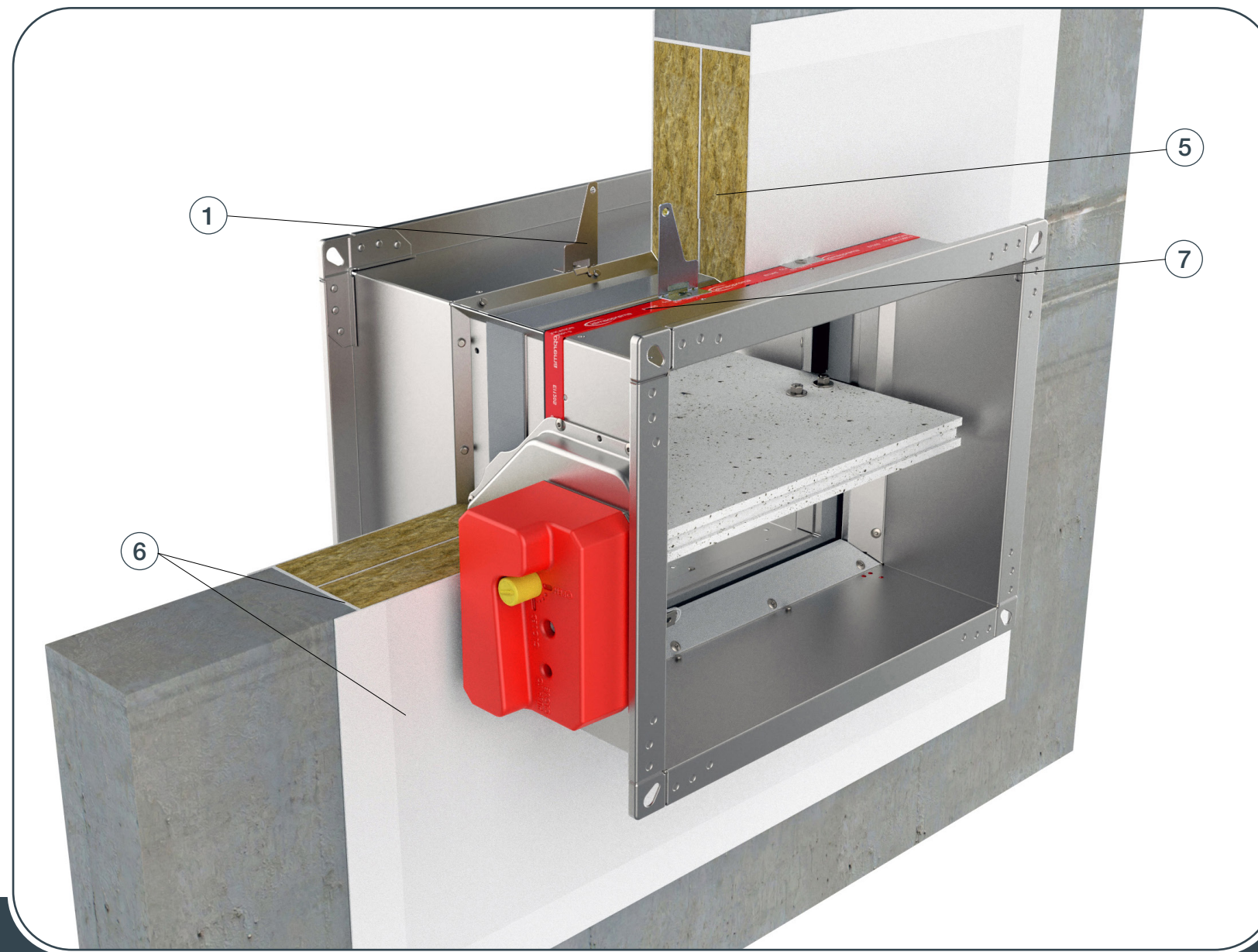
Test the operation of the damper blade!



Rigid wall installation (Fire Batt / Weichschott)

The wall is composed of concrete blocks (minimum density of 550 kg/m³) or reinforced concrete (minimum density of 2200 kg/m³) and with a minimum thickness of 100 mm.

Installation material: mineral wool ≥ 140 kg/m³, fire protection coating.



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1. Recommended wall opening for fire damper installation is B(H) + 200 mm, but openings from B(H) + 80...300 mm can also be used.

2. Insert fire damper into wall to the wall limit mark (7) on the damper and bend the fixing bracket (1) 90°.

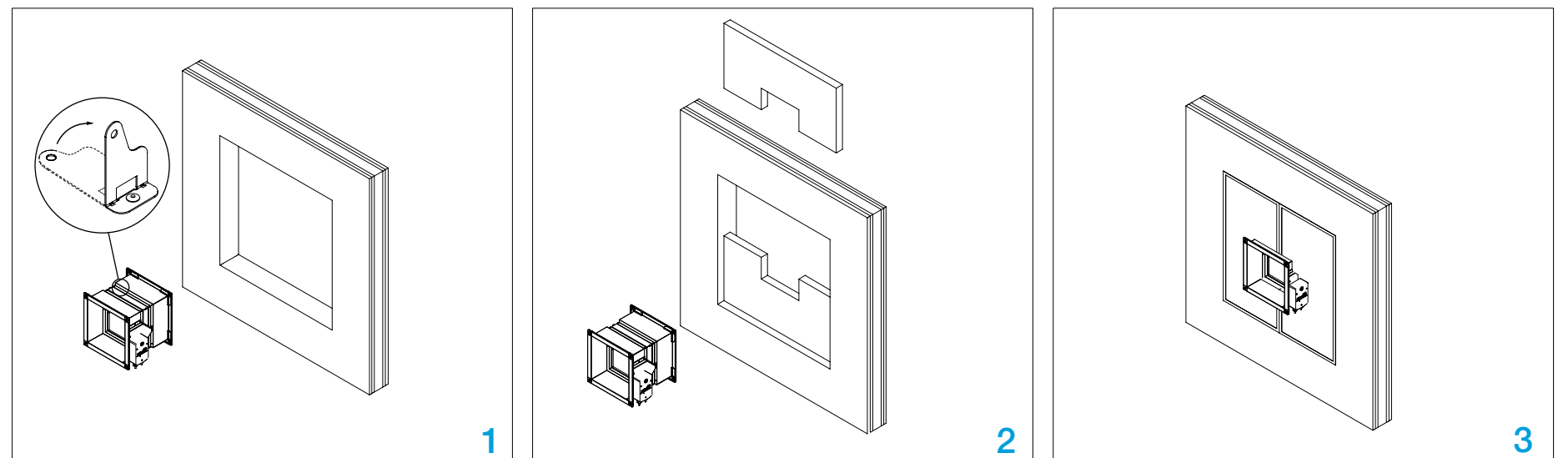
Damper blade must be closed during installation!

3. Close space between casing and wall with two layers of mineral wool (5) (density 140 kg/m³ or more, 50 mm thick, coated on one side). Seal the connections of mineral wool with wall and damper with intumescent (6) fire resistant sealant. Mineral wool and damper casing must be coated with 2 mm thick fire protection coating. Damper casing should be coated up to profile flanges.

*Multiple fire dampers can be installed next to each other or ceiling/wall with the minimal distance of 30 mm between them. (see page 40)

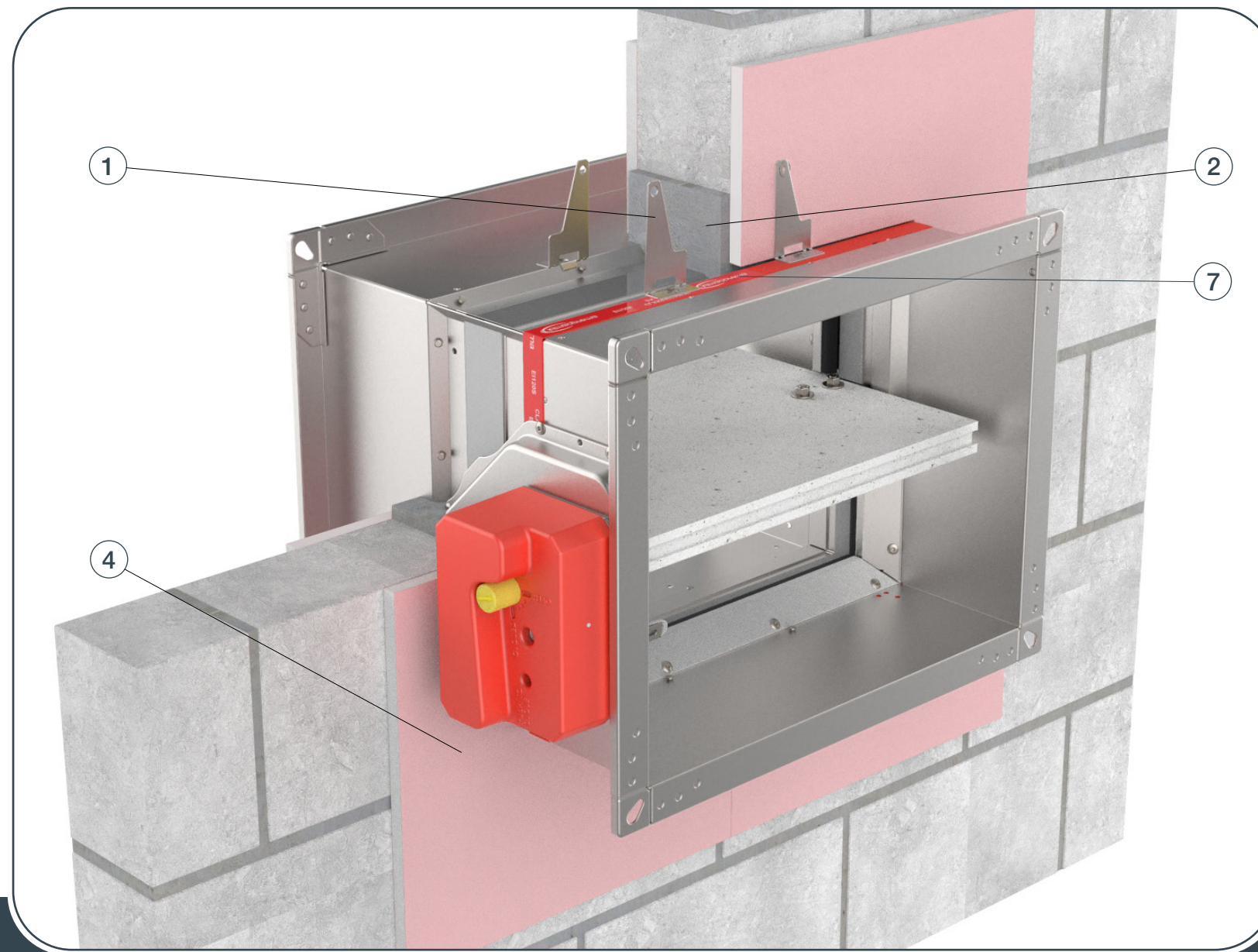
**Fire Batt/ Weichschott installations adjacent to ceiling or wall require a suspension for the fire damper. For more details, check page 27 of this manual.

Test the operation of the damper blade!



Gypsum blocks wall installation (mortar sealing)

The wall is composed of gypsum blocks (minimum density of 995 kg/m³), and with minimum thickness of 70 mm. Installation material: gypsum plaster or mortar, covered with plasterboard cover boards.



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 INSTALLATION

FIRE DAMPER - FD

1. Prepare opening in the wall according to B (H) + 80 mm or up to 50% more. Insert fire damper into wall to the wall limit mark **(7)** on the damper and bend the fixing bracket **(1)** 90° (bracket screw hole is 6 mm in diameter). **Damper blade must be closed during the installation!**

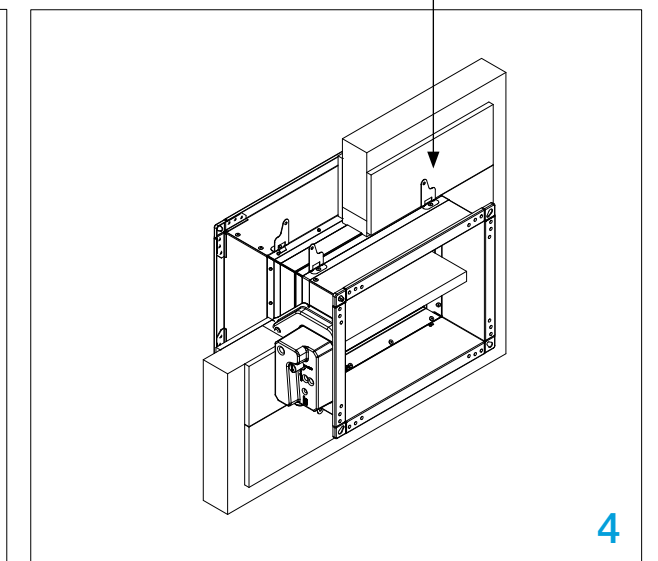
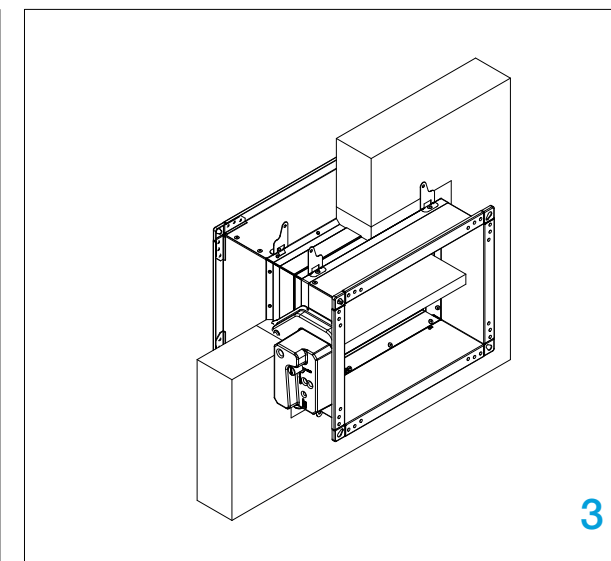
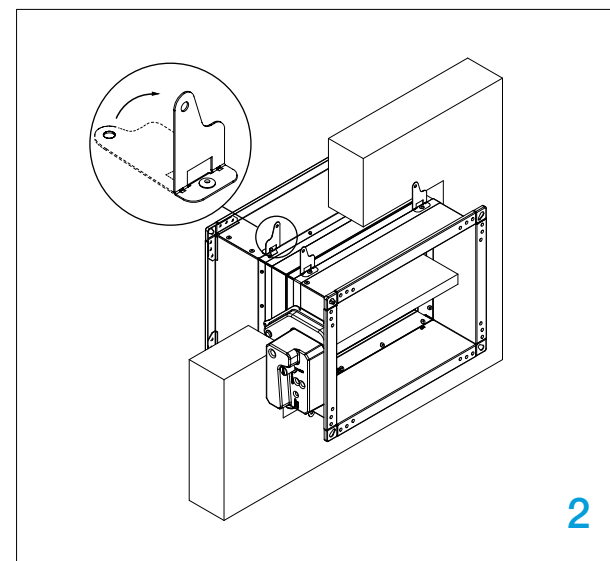
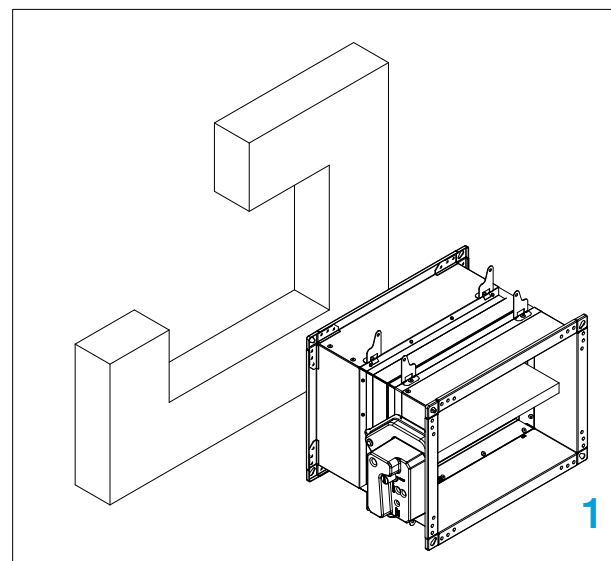
2. Fix the cover boards on bottom side to the wall, place the damper on the cover boards and fix the damper.

3. Fill the space between casing and wall with mortar **(2)**.

4. Cover the mortar with GKF gypsum boards **(4)** (12,5 mm thick).

*Multiple fire dampers can be installed next to each other or ceiling/wall with the minimal distance of 30 mm between them. [\(see page 40\)](#)

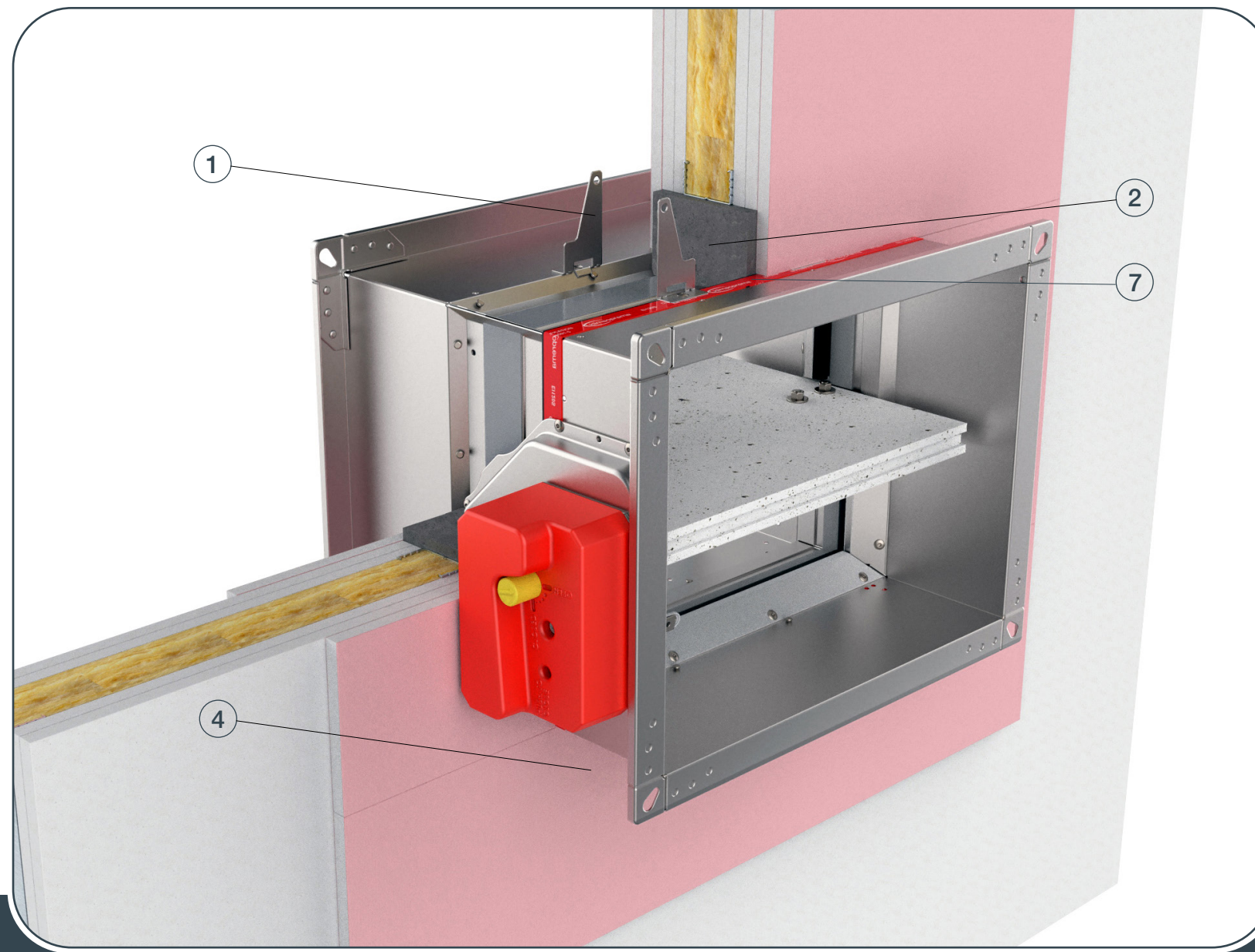
* Build the support for installation according to the drawing [see page 41](#).
Test the operation of the damper blade!



FD-A-CSP-BxH
For more details see [pg.48](#)

Flexible wall installation (mortar sealing)

The wall is composed of 2x2 plasterboard boards, 12,5 mm thick, installed on a steel frame construction. The interior of the wall is filled with mineral wool ($\geq 100 \text{ kg/m}^3$). Installation material: gypsum plaster or mortar, covered with GKF cover boards. The minimum thickness of the wall is 100 mm.



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INSTALLATION

FIRE DAMPER - FD

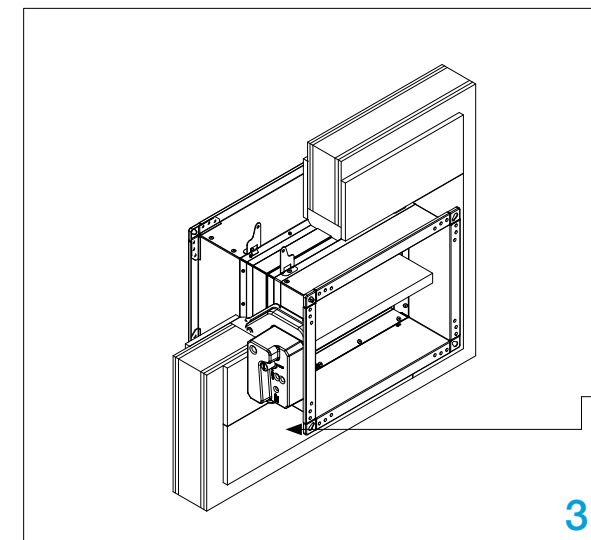
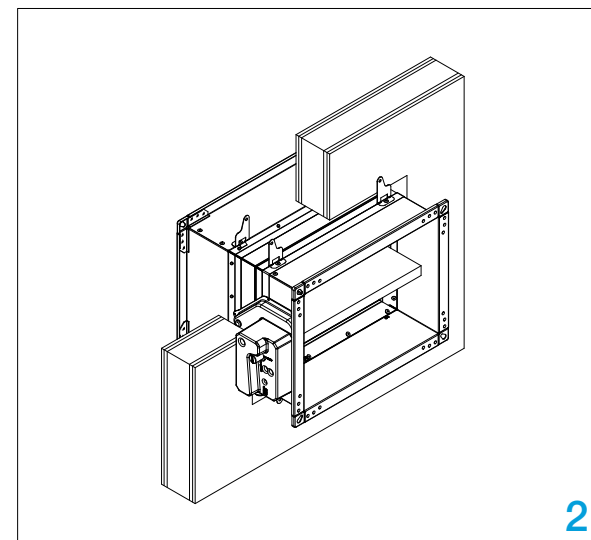
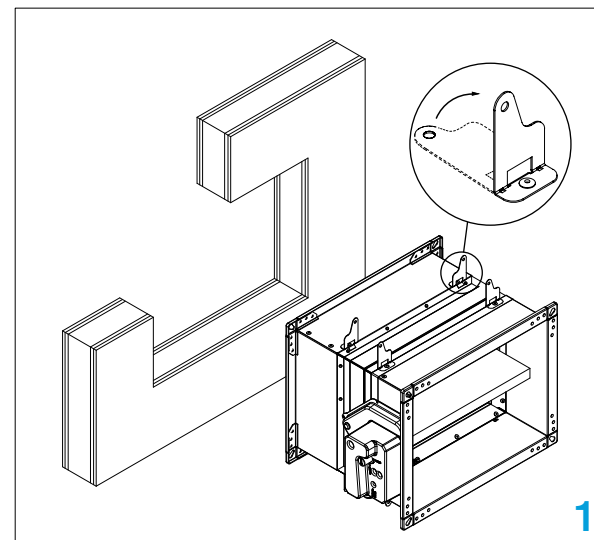
1. Prepare opening in the wall according to $B(H) + 80 \text{ mm}$ or more (up to 50% more), and build the subframe according to the drawing, [see page 41](#). Bend the fixing bracket (1) 90°. Place the damper in the opening up to the wall limit mark (7) on the damper.
Damper blade must be closed during the installation!

2. Fix the damper to the wall using self-tapping screws $\text{Ø}3,5 \times 45 \text{ mm}$ (bracket screw hole is 6 mm in diameter).

3. Fill the space between the damper and the wall with mortar sealing (2). Cover the mortar with (4) GKF gypsum boards (12,5 mm thick, FD-A-CSP-BxH).

*Multiple fire dampers can be installed next to each other or ceiling/wall with the minimal distance of 30 mm between them. [\(see page 40\)](#)

* Build the support for mortar installation according to the drawing [see page 41](#).



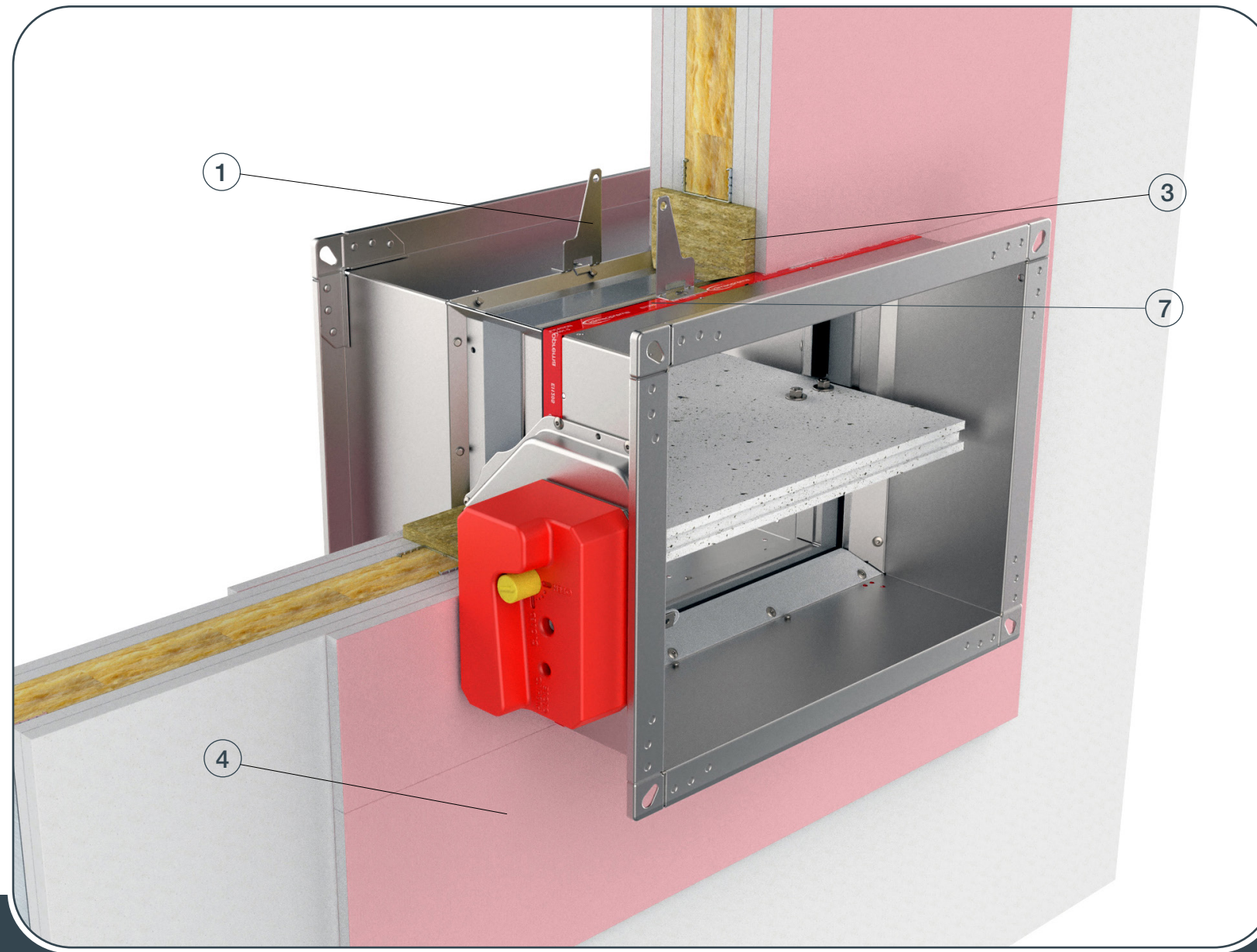
FD-A-CSP-BxH
For more details see [pg.48](#)

Test the operation of the damper blade!

Flexible wall installation (mineral wool sealing)

The wall is composed of 2x2 plasterboard boards, 12,5 mm thick, installed on a steel frame construction. The interior of the wall is filled with mineral wool ($\geq 100 \text{ kg/m}^3$).

Installation material: mineral wool covered with GKF cover boards. The minimum thickness of the wall is 100 mm.



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INSTALLATION

FIRE DAMPER - FD

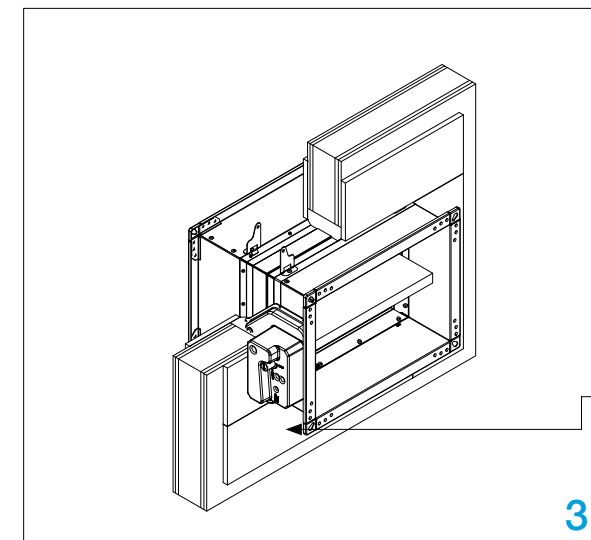
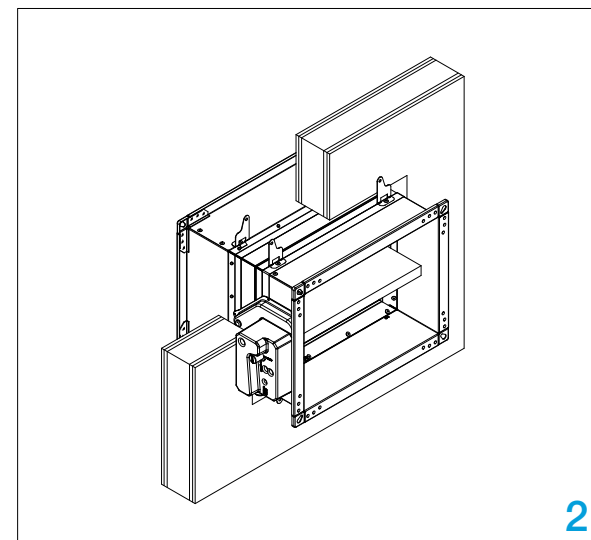
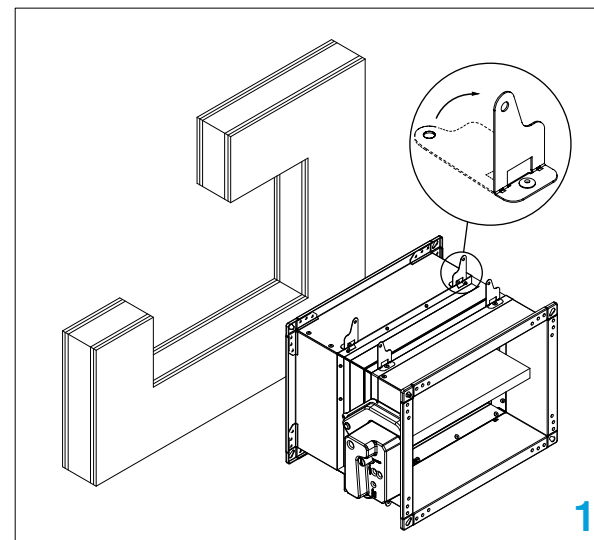
1. Prepare opening in the wall according to $B(H) + 80 \text{ mm}$ or more (up to 50% more), and build the subframe according to the drawing [see page 41](#). Bend the fixing bracket **(1)** 90°. Place the damper in the opening up to the wall limit mark **(7)** on the damper.

Damper blade must be closed during the installation!

2. Fix the damper to the wall using self-tapping screws $\text{Ø}3,5 \times 45 \text{ mm}$ (bracket screw hole is 6 mm in diameter).

3. Fill the space between the damper and the wall with mineral wool ($\geq 100 \text{ kg/m}^3$) **(3)**. Cover the mineral wool with GKF gypsum boards (12,5 mm thick) **(4)** and fix them with self-tapping screws $\text{Ø}3,5 \times 45 \text{ mm}$.

*Multiple fire dampers can be installed next to each other or ceiling/wall with the minimal distance of 30 mm between them. ([see page 40](#))



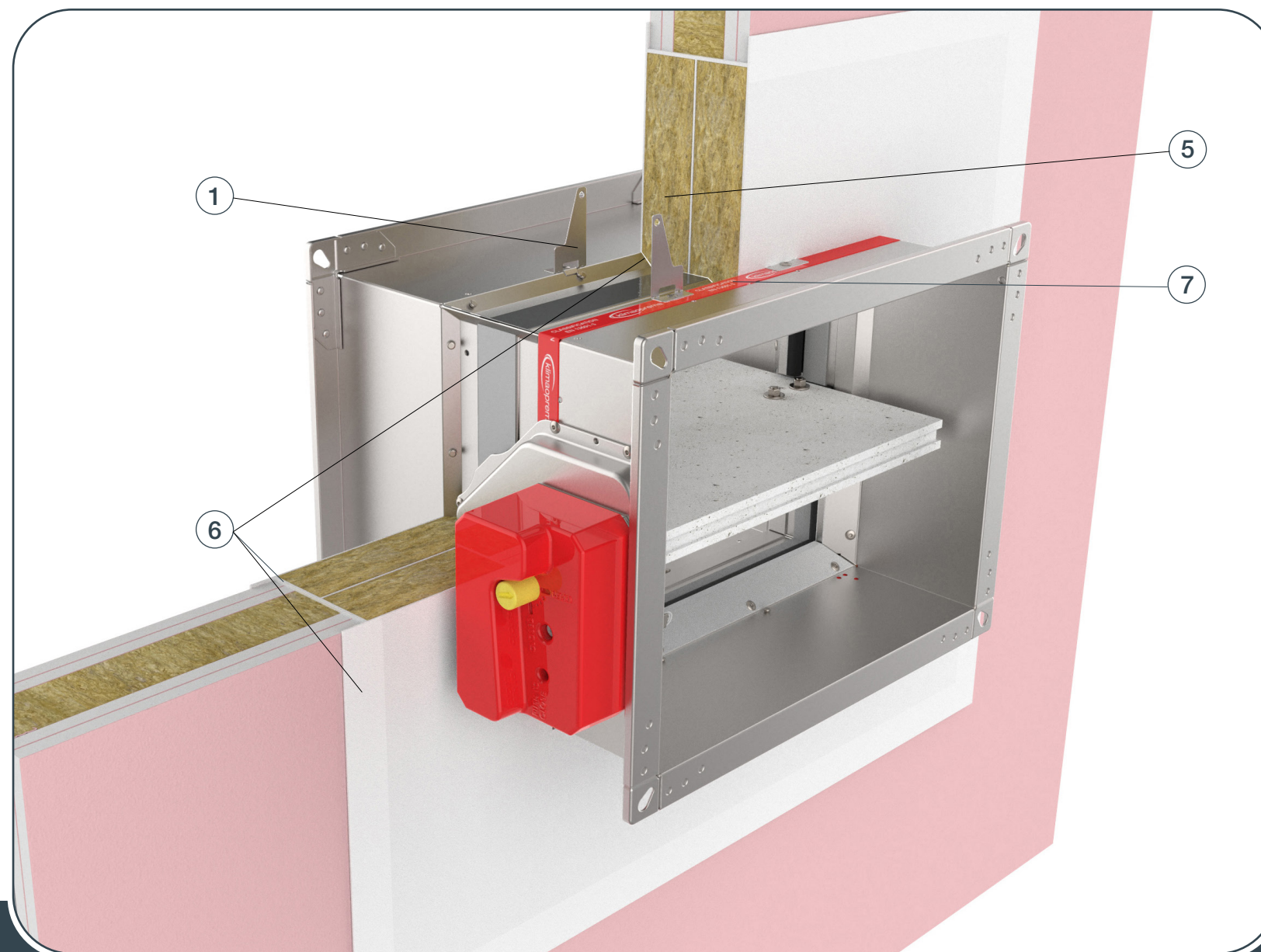
FD-A-CSP-BxH
For more details see [pg.48](#)

Test the operation of the damper blade!

Flexible wall installation (Fire Batt / Weichschott)

The wall is composed of 2x2 plasterboard boards, 12,5 mm thick, installed on a steel frame construction. The interior of the wall is filled with mineral wool ($\geq 100 \text{ kg/m}^3$).

Installation material: mineral wool ($\geq 140 \text{ kg/m}^3$) and fire protection coating. The minimum thickness of the wall is 100 mm.



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INSTALLATION

FIRE DAMPER - FD

1. Recommended wall opening for fire damper installation is $B(H) + 200 \text{ mm}$, but openings from $B(H) + 80 \dots 300 \text{ mm}$ can also be used. Bend the fixing bracket **(1)** 90°.

2. Insert fire damper into wall to the wall limit mark **(7)** on the damper.

Damper blade must be closed during installation!

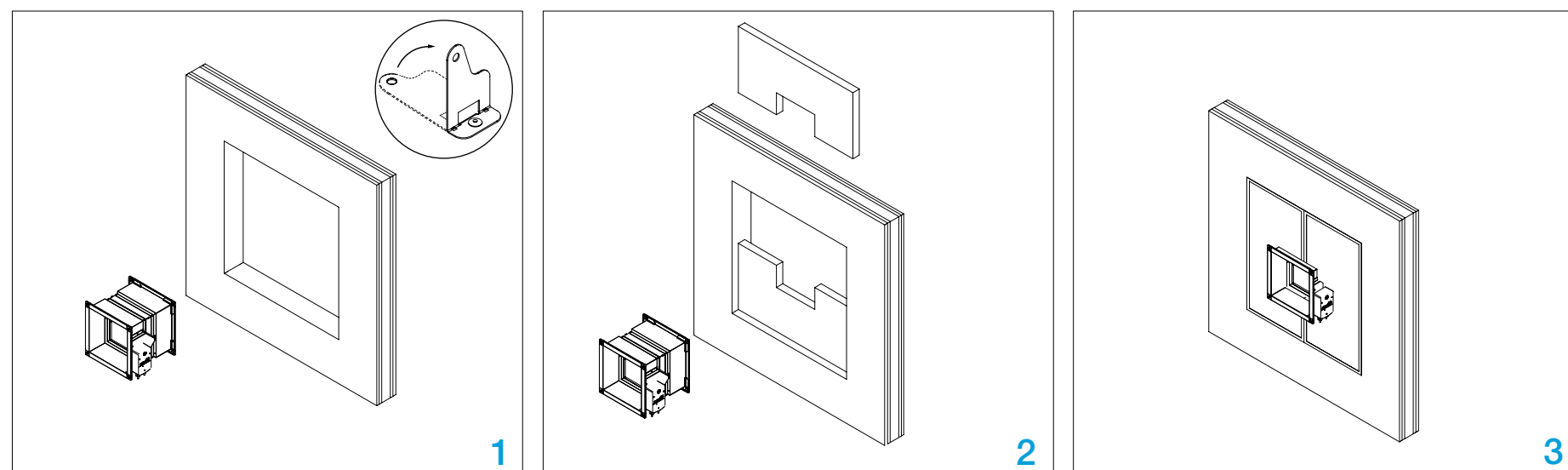
3. Fill the space between casing and wall, close with two layers of mineral wool **(5)** (density 140 kg/m^3 or more, 50 mm thick, coated on one side).

Seal the connections of mineral wool with intumescent **(6)** fire resistant sealant. Mineral wool and damper casing must be coated with 2 mm thick fire protection coating. Damper casing should be coated up to profile flanges.

*Multiple fire dampers can be installed next to each other or ceiling/wall with the minimal distance of 30 mm between them. ([see page 40](#))

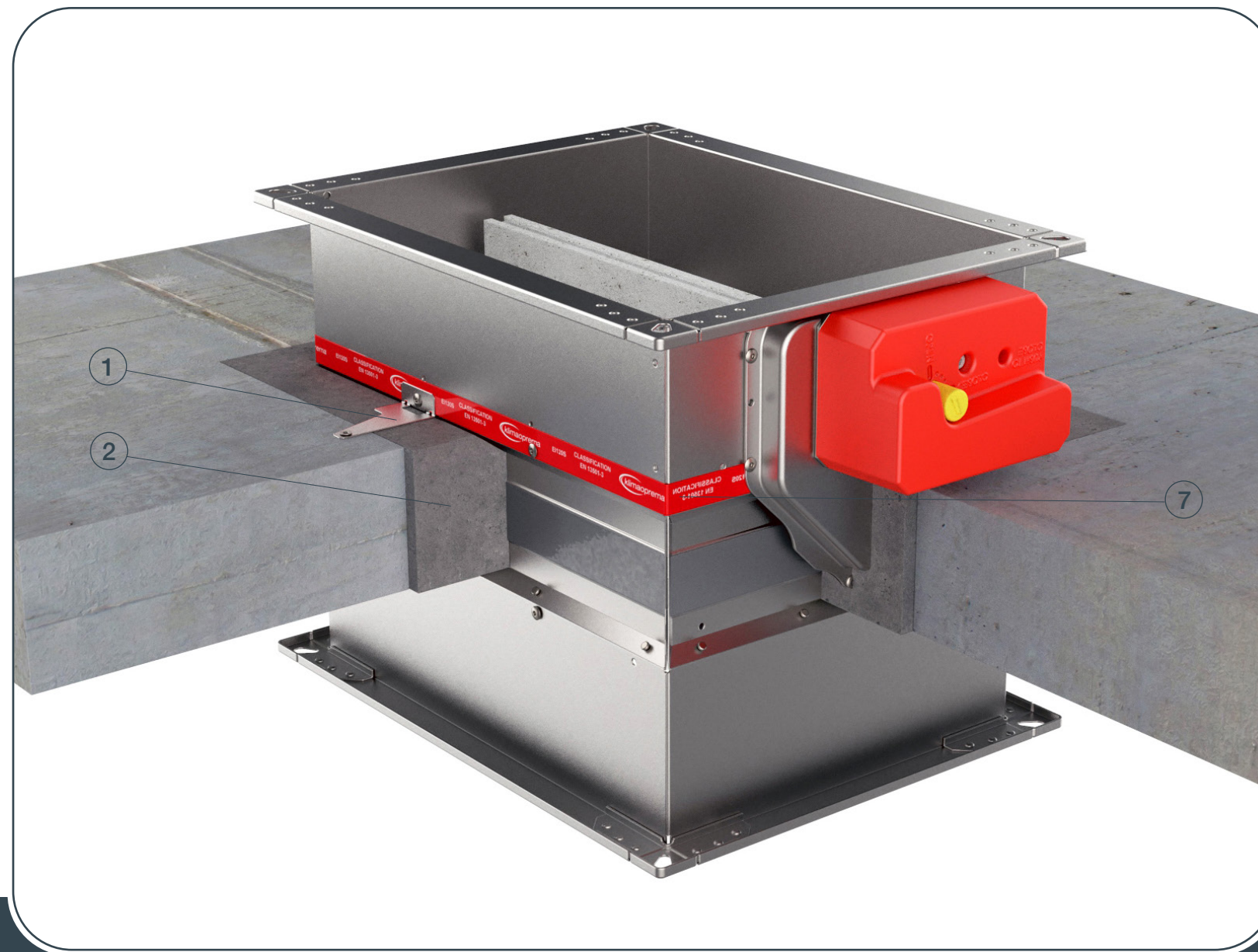
**Fire Batt/ Weichschott installations adjacent to ceiling or wall require a suspension for the fire damper. For more details, check [page 27](#) of this manual.

Test the operation of the damper blade!



Rigid floor/ceiling installation (mortar sealing)

The floor/ceiling is composed of concrete blocks (minimum density of 550 kg/m³) or reinforced concrete (minimum density of 2200 kg/m³) and with a minimum thickness of 100 mm.
Installation material: gypsum plaster or mortar.



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INSTALLATION

FIRE DAMPER - FD

1. Prepare opening in the wall according to B (H) + 80 mm or more (up to 50% more), insert the damper to the wall limit mark **(7)** on the damper and bend the fixing bracket **(1)** 90° (bracket screw hole is 6 mm in diameter).

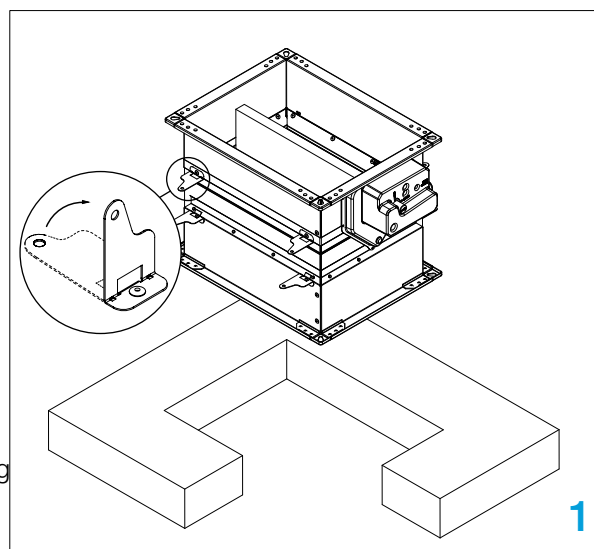
Damper blade must be closed during installation!

2. Fix the damper to the floor/ceiling using screws.

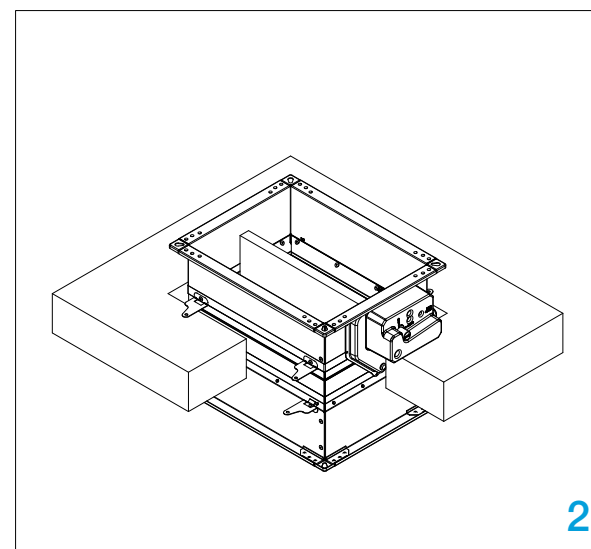
3/3*. Fill the space between the damper and the floor/ceiling with mortar. **(2)**

Test the operation of the damper blade!

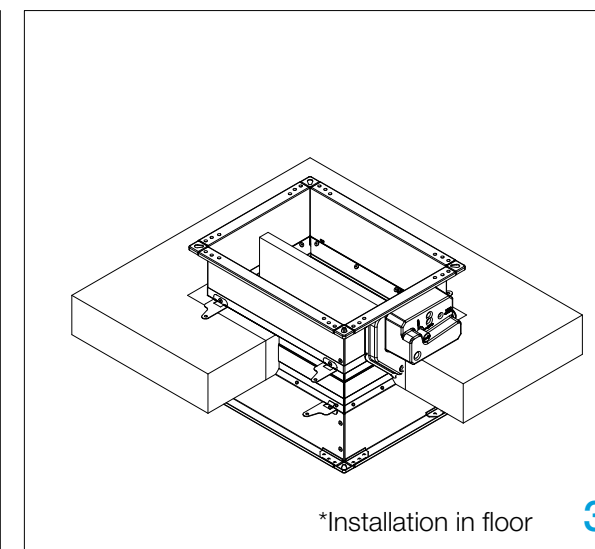
* Build the support for installation according to the drawing [see page 41](#).



1

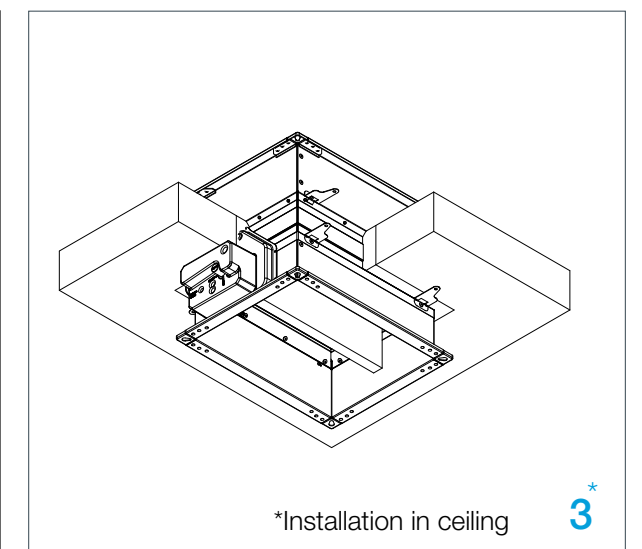


2



*Installation in floor

3

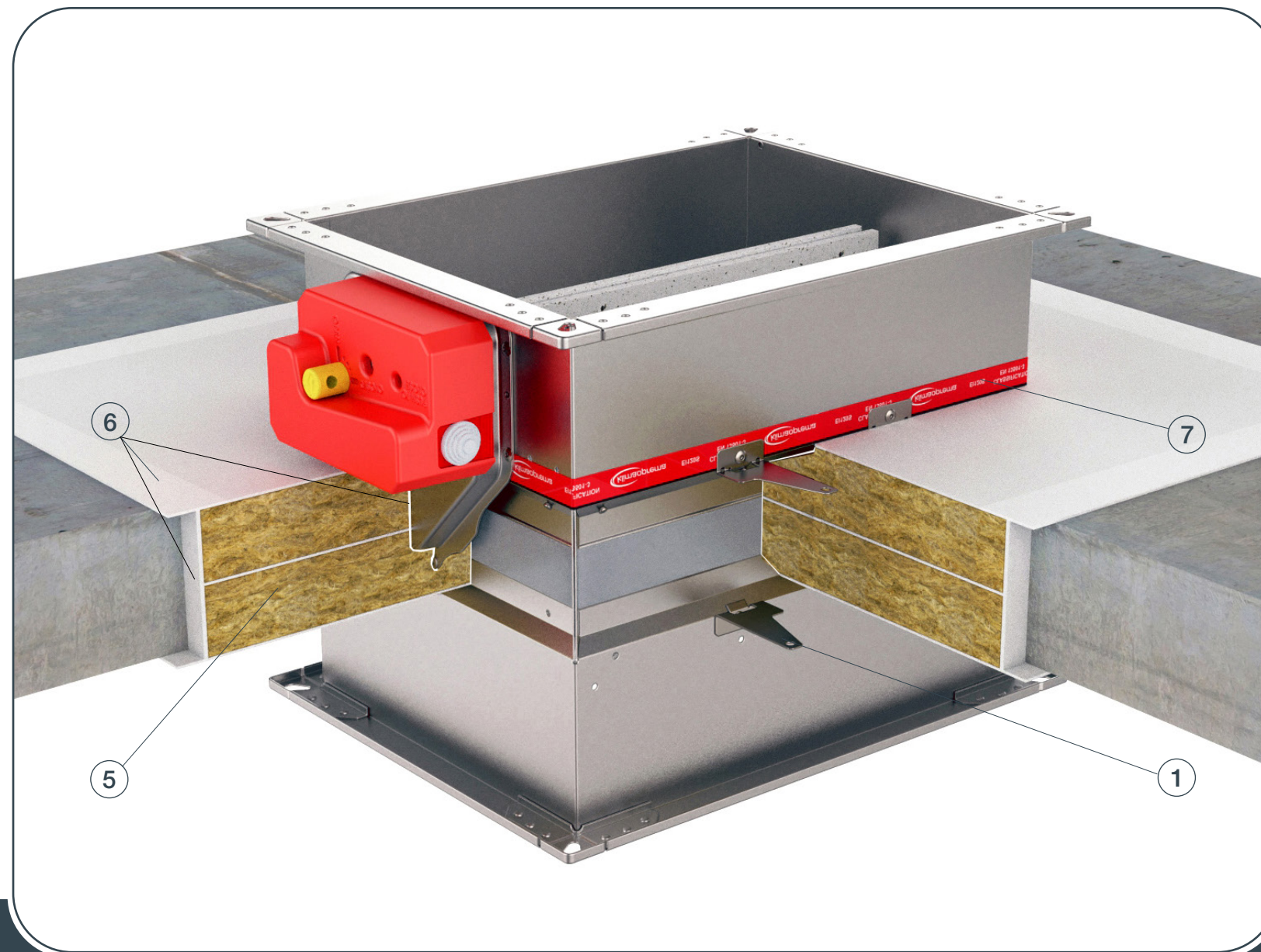


*Installation in ceiling

3*

Rigid floor/ceiling installation (Fire Batt / Weichschott)

The floor/ceiling is composed of concrete blocks (minimum density of 550 kg/m³) or reinforced concrete (minimum density of 2200 kg/m³) and with a minimum thickness of 100 mm.
Installation material: mineral wool ≥ 140 kg/m³, fire protection coating.



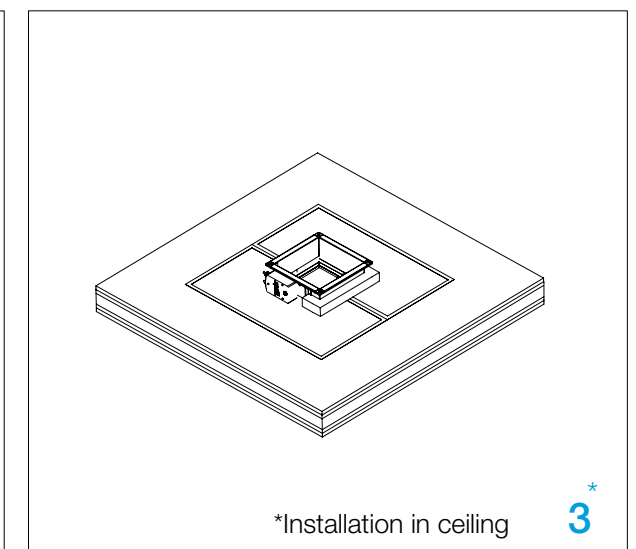
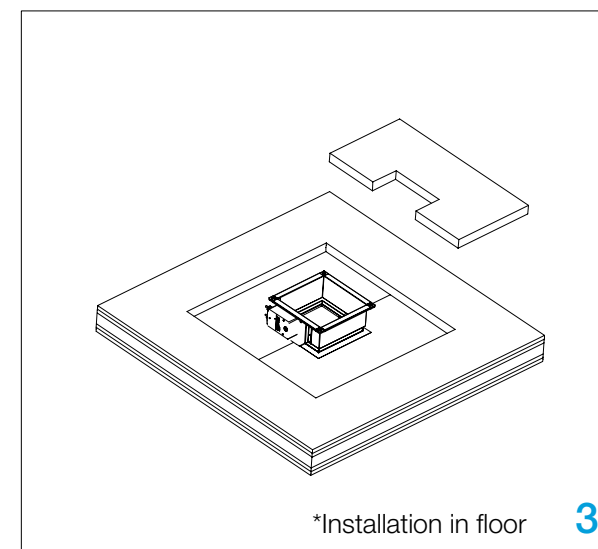
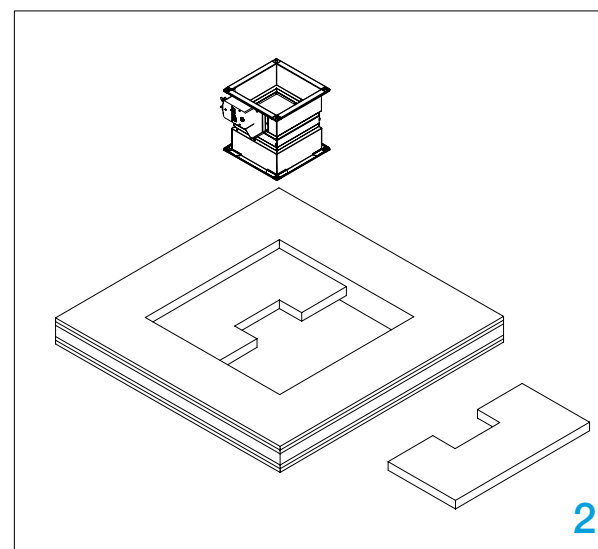
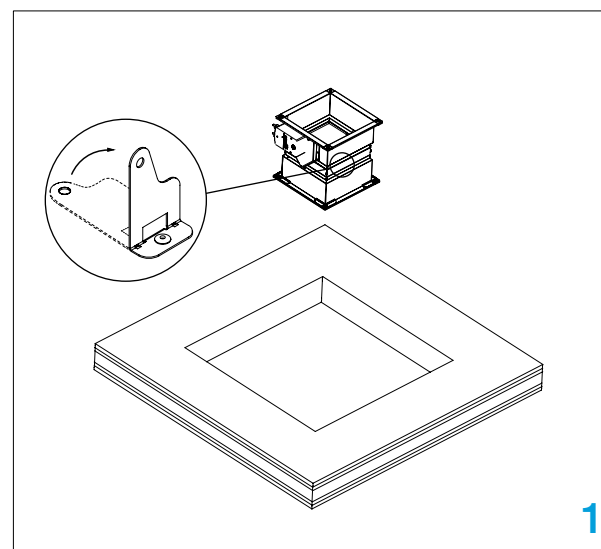
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INSTALLATION

FIRE DAMPER - FD

1. Recommended floor/ceiling opening for fire damper installation is B(H)+ 200 mm, but openings from B(H)+ 80...300 mm can also be used.
2. Insert fire damper into ceiling to the wall limit mark (7) on the damper.
Damper blade must be closed during installation!
Fill the space between casing and ceiling with two layers of mineral wool (5) (density 140 kg/m³ or more, 50 mm thick, coated on one side).
- 3/3*. Connections of mineral wool should be sealed with (6) intumescent fire resistant sealant. Mineral wool and damper casing must be coated with 2 mm thick fire protection coating. Damper casing should be coated up to profile flanges.

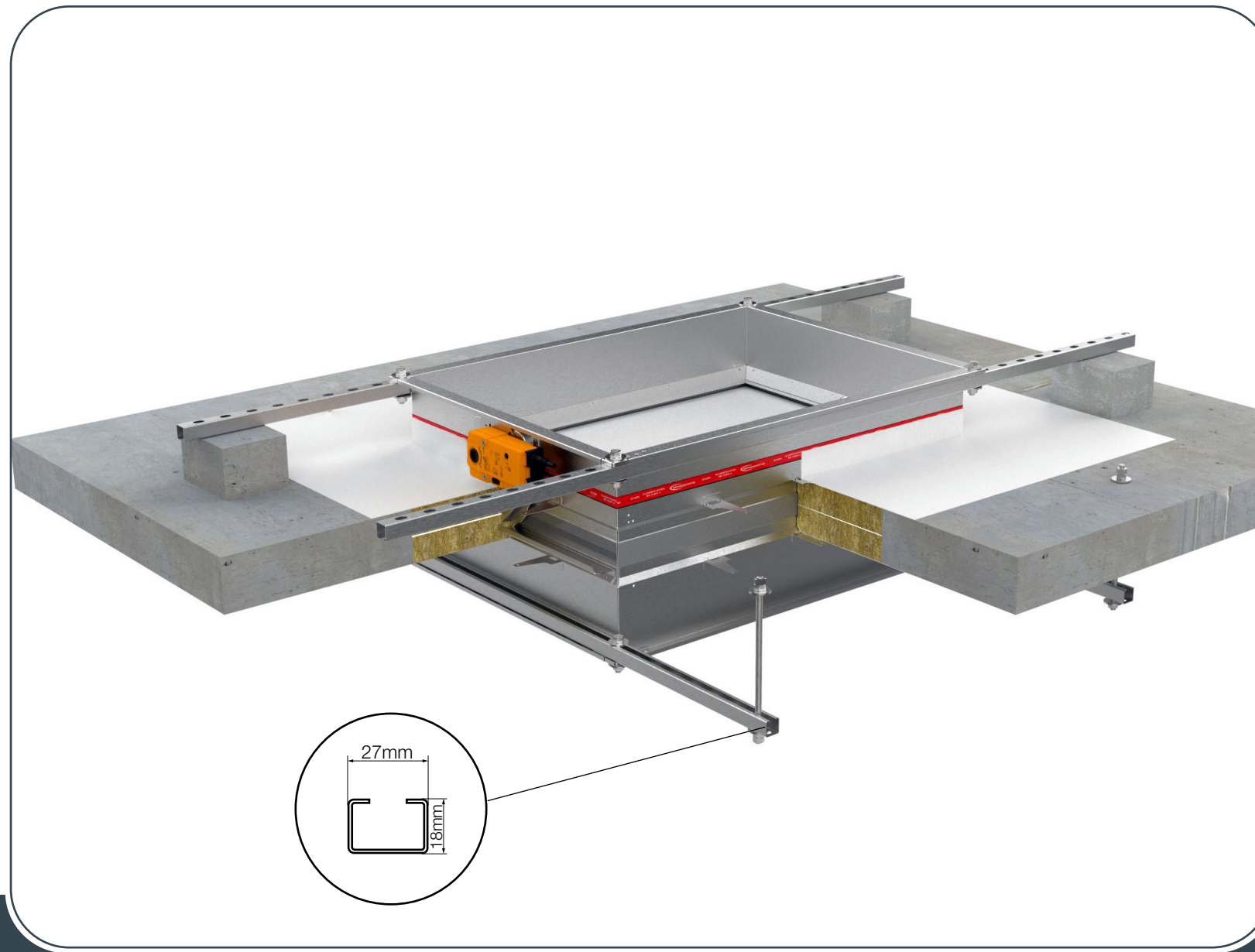
Test the operation of the damper blade!



* Fire Batt floor/ceiling installations require a suspension for the fire damper. For more details, check [page 27](#) of this manual.

Suspension for mortarless floor installation

Suspension systems are required for the dry mortarless installation of the fire damper with mineral wool in floor slabs. Fire dampers can be suspended from solid floor slabs using adequately sized threaded rods. Load the suspension system only with the weight of the fire damper. Ducts must be suspended separately.



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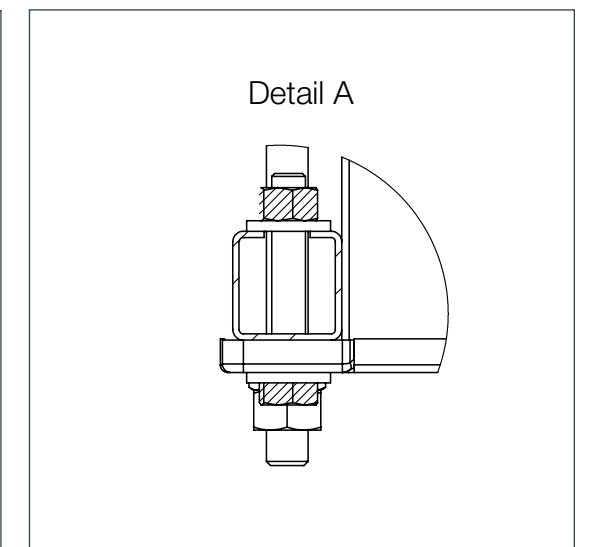
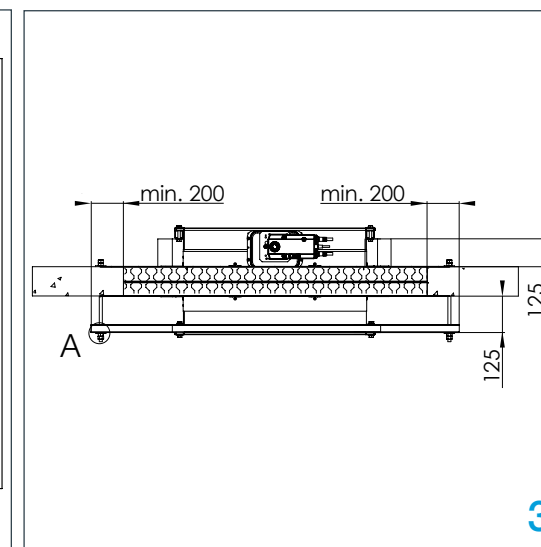
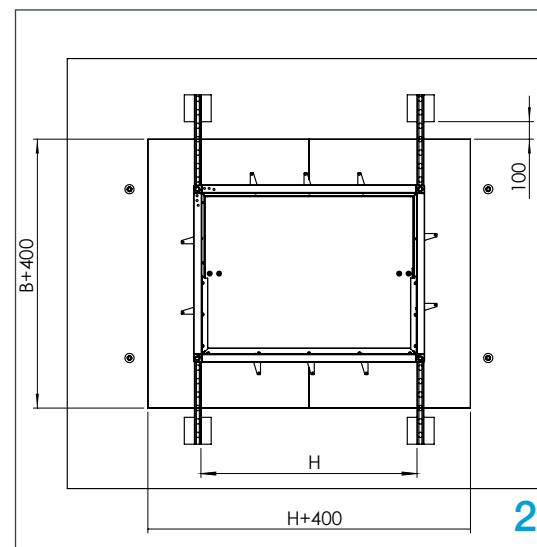
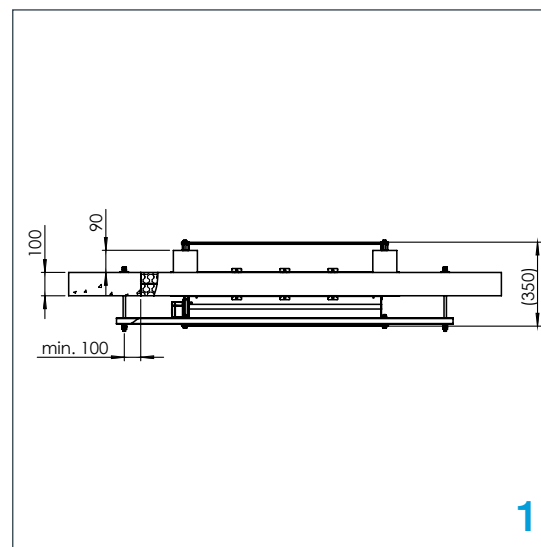
INSTALLATION

FIRE DAMPER - FD

1. Suspension strut should be connected with drop rods (8/10 mm) to the floor. It is used to support the damper and ease the installation.
2. Support steel C profiles by 90 mm high piece of aerated concrete or similar rigid material.
3. Suspend the fire damper to the steel C profiles. Close the space between casing and floor with Firestop board (Firebatt) 2x50 mm ($\geq 140 \text{ kg/m}^3$) and coat the damper casing.

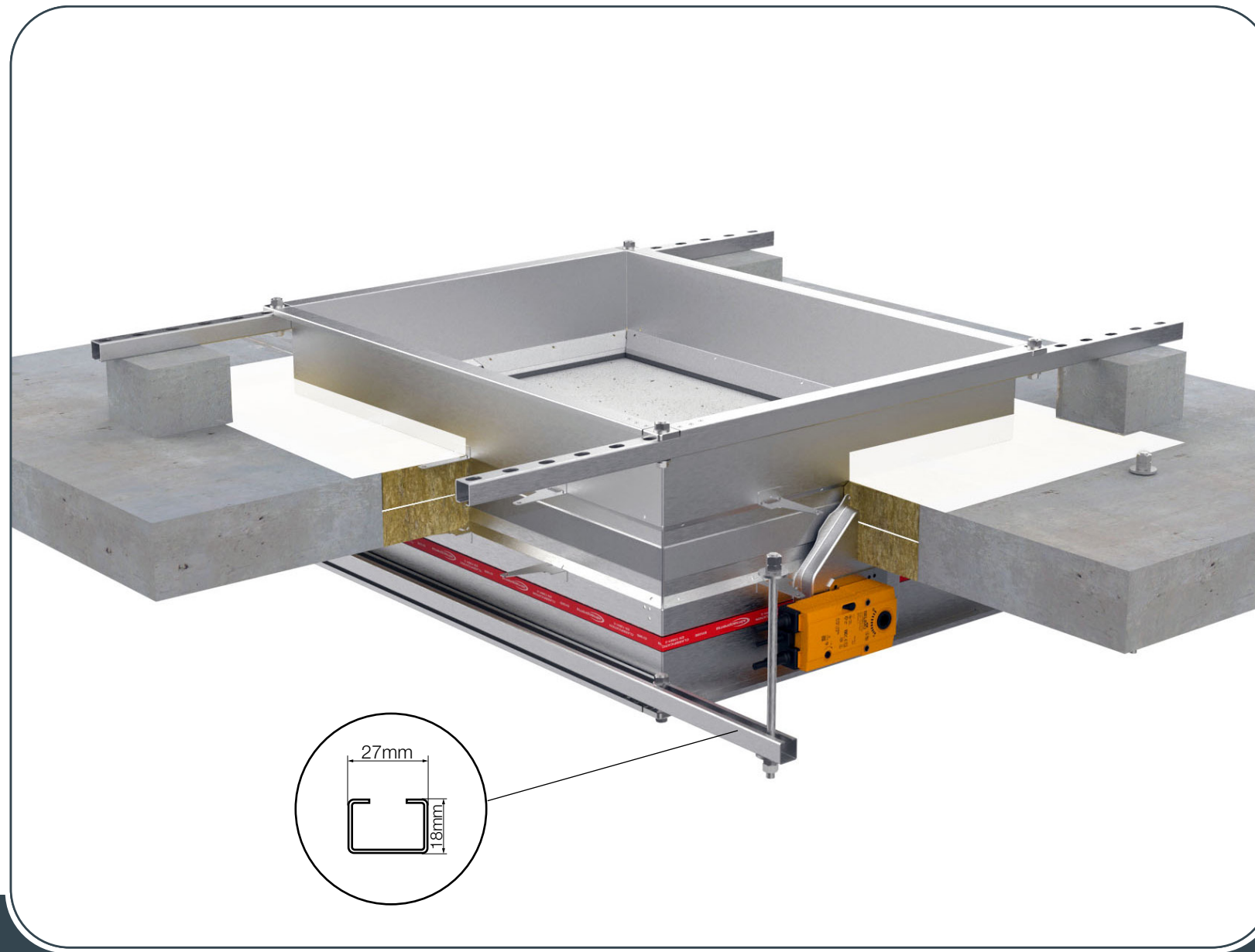
Damper blade must be closed during installation!

Test the operation of the damper blade!



Suspension for mortarless ceiling installation

Suspension systems are required for the dry mortarless installation of the fire damper with mineral wool in ceiling slabs. Fire dampers can be suspended from solid ceiling slabs using adequately sized threaded rods. Load the suspension system only with the weight of the fire damper. Ducts must be suspended separately.



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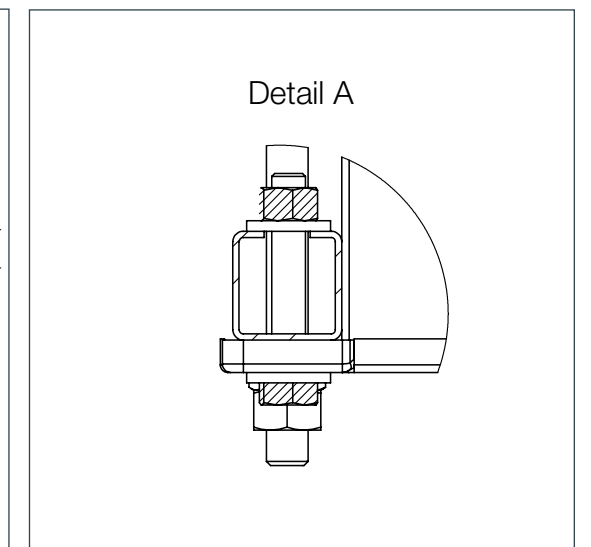
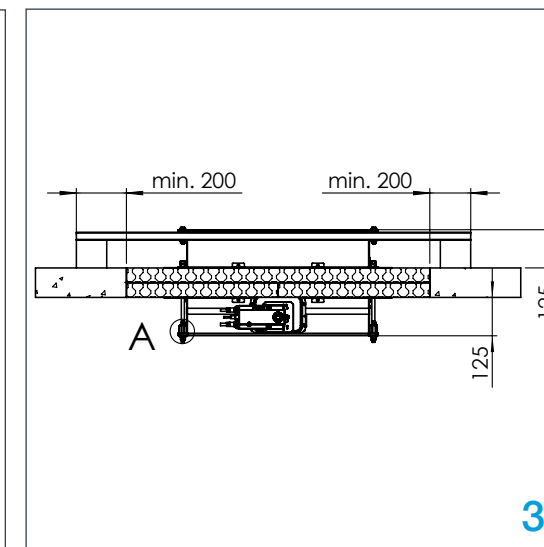
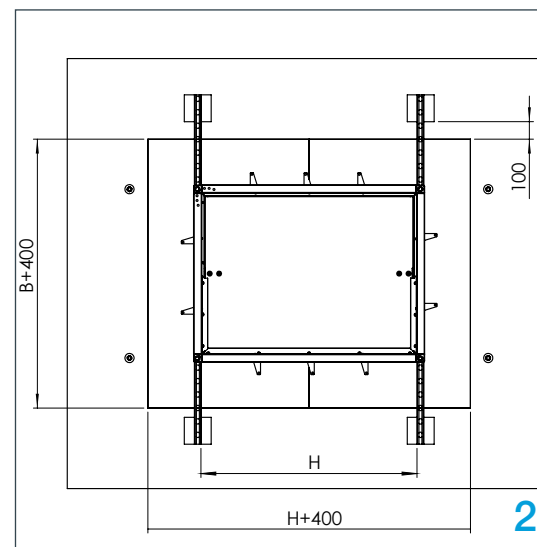
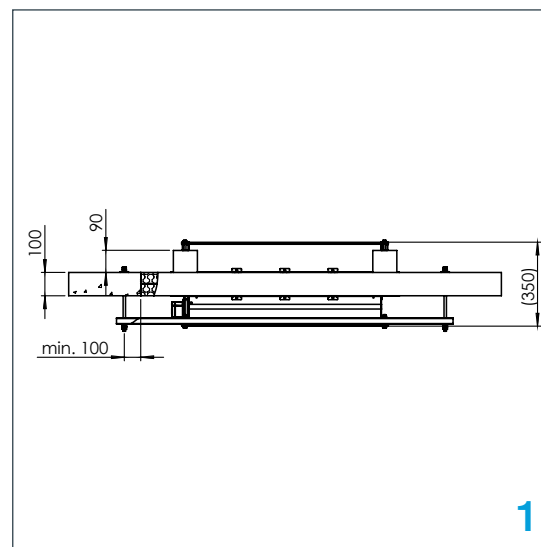
INSTALLATION

FIRE DAMPER - FD

1. Suspension strut should be connected with drop rods (8/10 mm) to the ceiling slab above. It is used to support the damper and ease the installation.
2. Support steel C profiles by 90 mm high piece of aerated concrete or similar rigid material.
3. Suspend the fire damper to the steel C profiles. Close the space between casing and floor/ceiling with Firestop board (Firebatt) 2x50 mm ($\geq 140 \text{ kg/m}^3$) and coat the damper casing.

Damper blade must be closed during installation!

Test the operation of the damper blade!



Suspension for mortarless installation close to ceiling

Suspension systems are required for the dry mortarless installation of the fire damper with mineral wool in solid walls and flexible walls. Fire dampers can be suspended from solid ceiling slabs using adequately sized threaded rods. Load the suspension system only with the weight of the fire damper. Ducts must be suspended separately.



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 INSTALLATION

FIRE DAMPER - FD

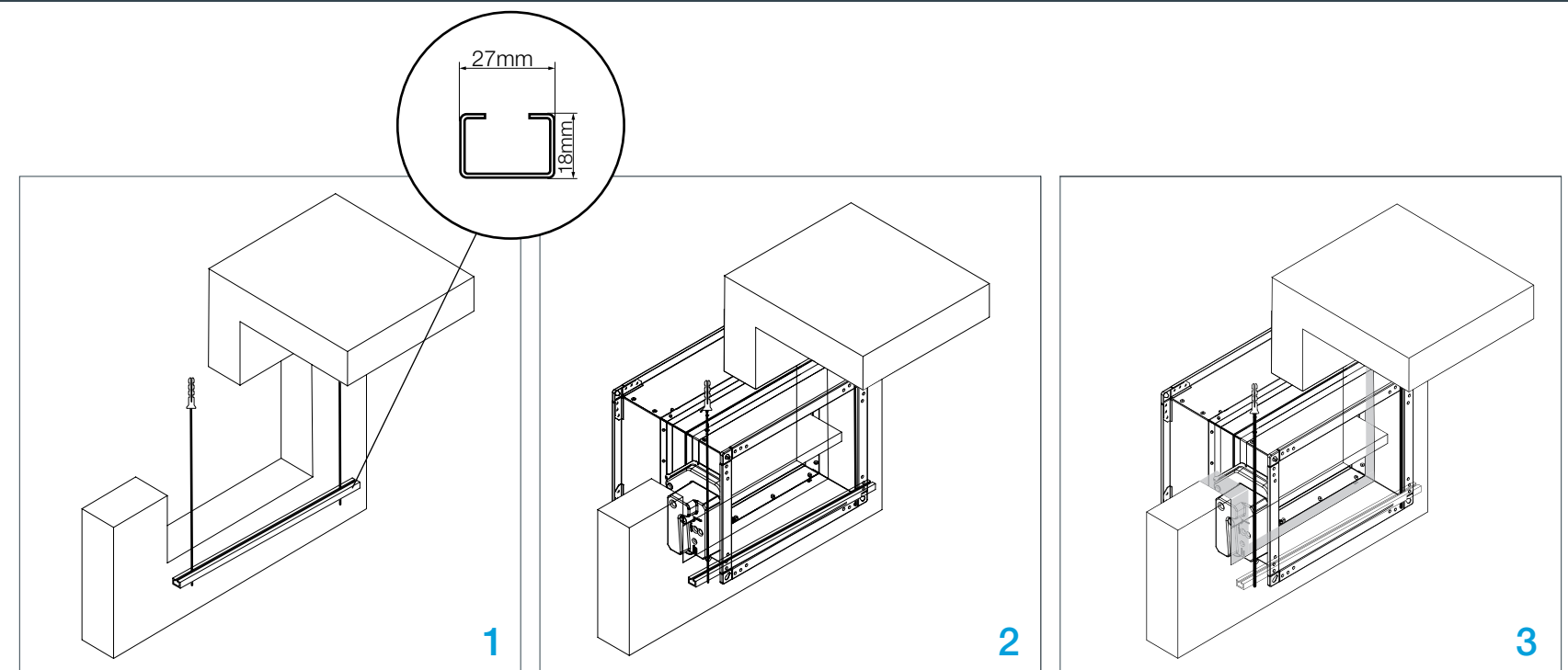
1. Prepare opening in the wall according to H + 130 mm and B + 200 mm or more and install threaded rods (8 mm) to the ceiling above.

2. Insert fire damper into wall to the wall limit mark **(7)** on the damper and bend the fixing bracket **(1)** 90°. (screw hole is 6 mm in diameter). Fix the C profile on the drop rods using M8 screws.

Damper blade must be closed during installation!

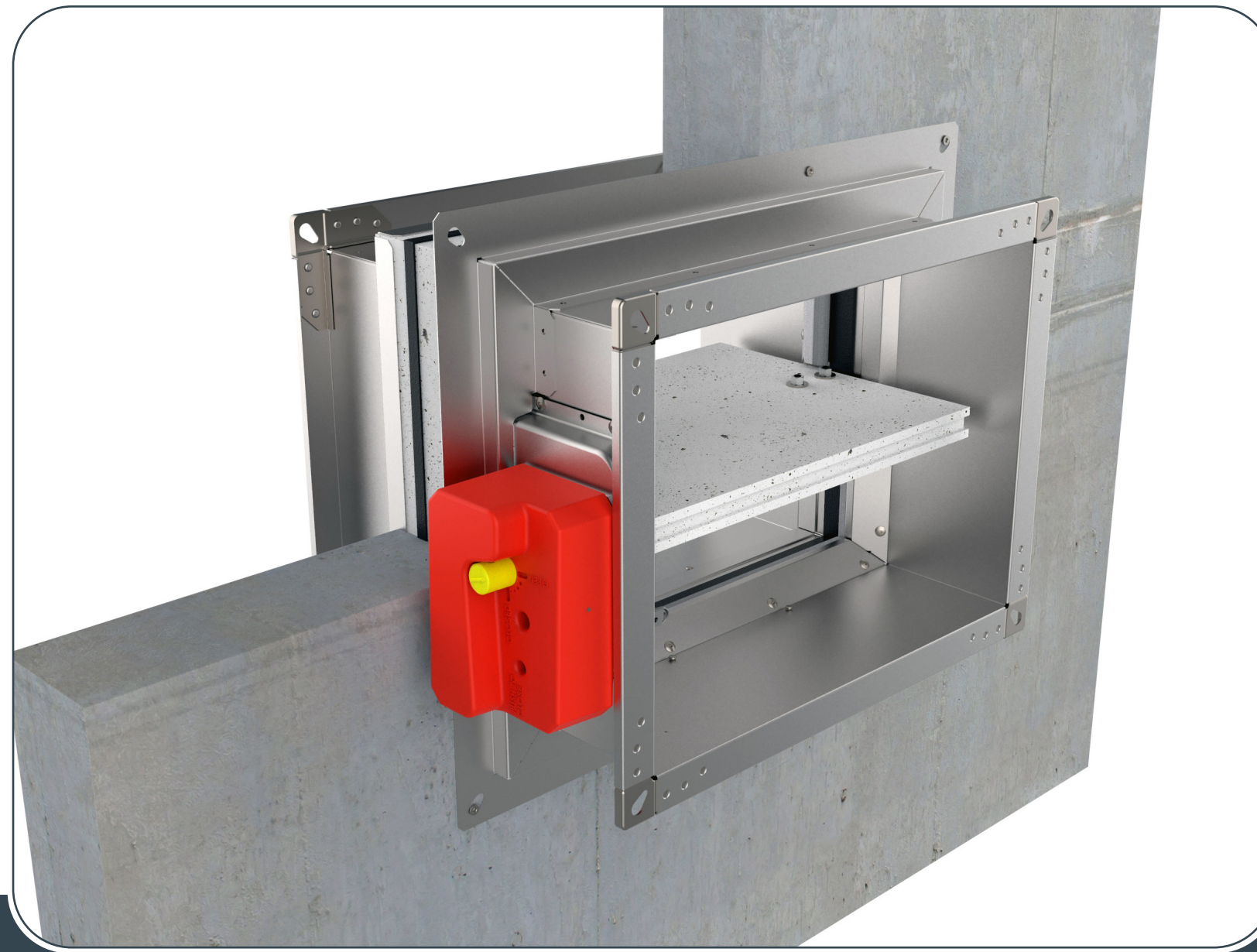
3. Close the space between casing and wall with mineral wool ($\geq 140 \text{ kg/m}^3$) **(3)**. Connections of mineral wool should be sealed with intumescent fire resistant sealant **(6)**. Mineral wool and damper casing must be coated with 2 mm.

Test the operation of the damper blade!



Rigid wall installation Applique installation frame

The wall is composed of concrete blocks (minimum density of 550 kg/m³) or reinforced concrete (minimum density of 2200 kg/m³) and with a minimum thickness of 100 mm.



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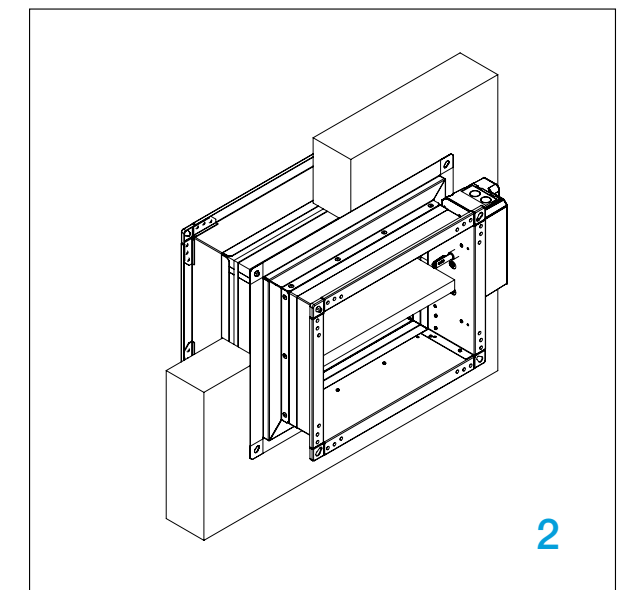
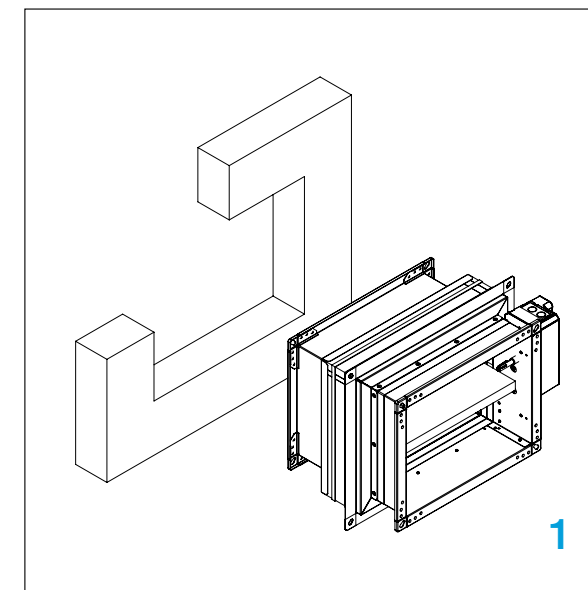
FIRE DAMPER - FD

1. Prepare opening in the wall according to B (H) + 80 mm.

Damper blade must be closed during installation!

2. Insert fire damper into wall and fasten with screws (4 pcs, 4,8x60 mm).

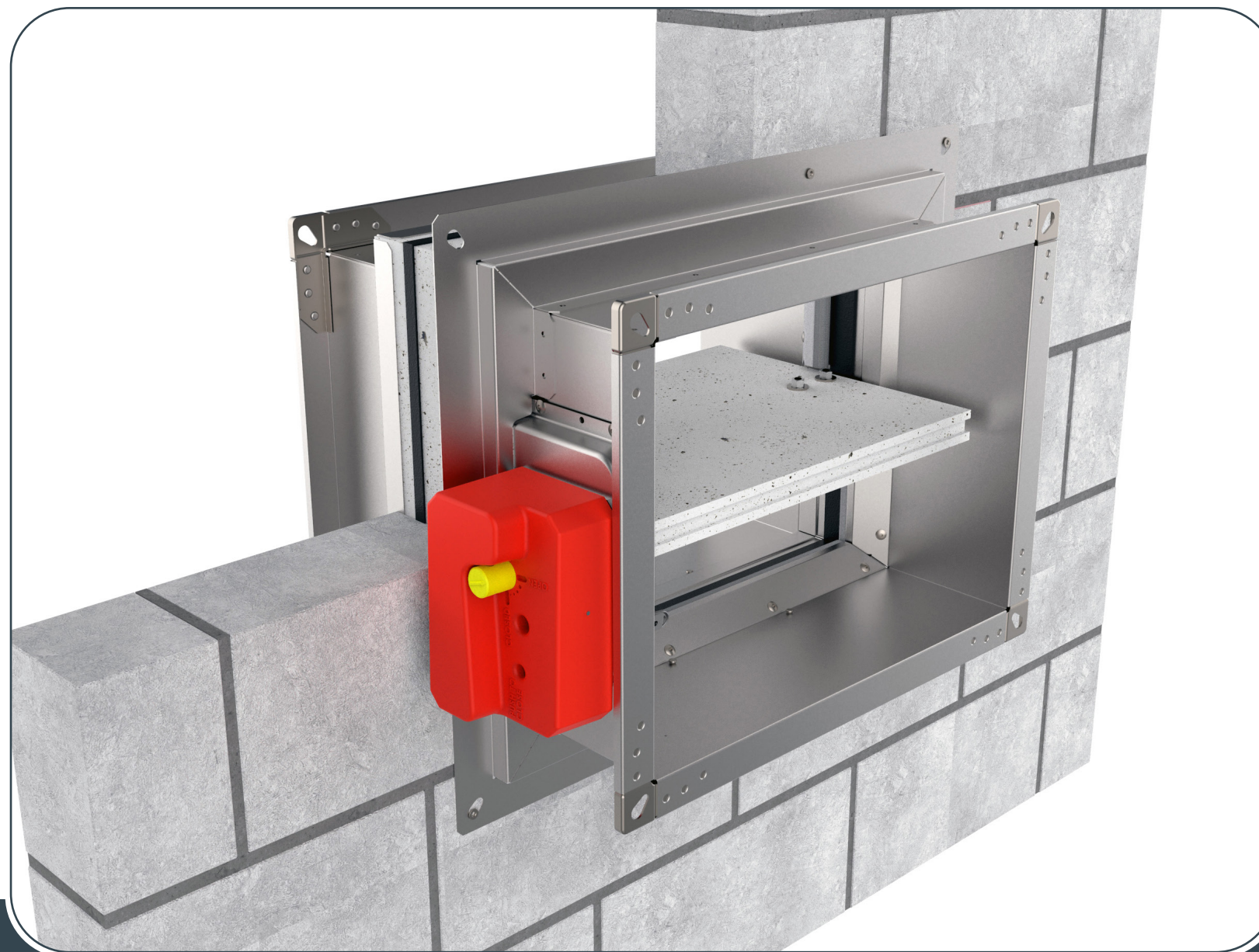
Test the operation of the damper blade!



Gypsum blocks wall installation

Applique installation frame

The wall is composed of gypsum blocks (minimum density of 995 kg/m³), and with minimum thickness of 70 mm.



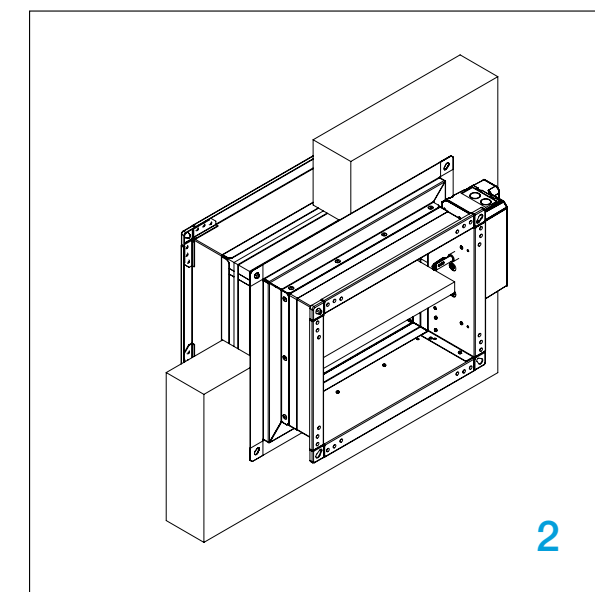
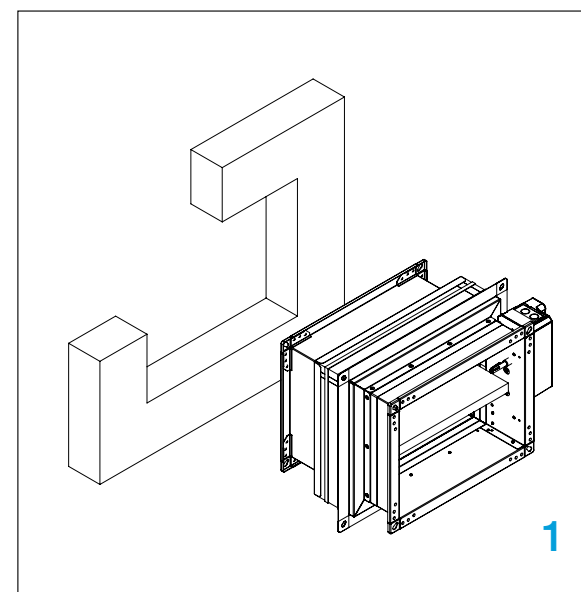
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1. Prepare opening in the wall according to B (H) + 80 mm.

Damper blade must be closed during installation!

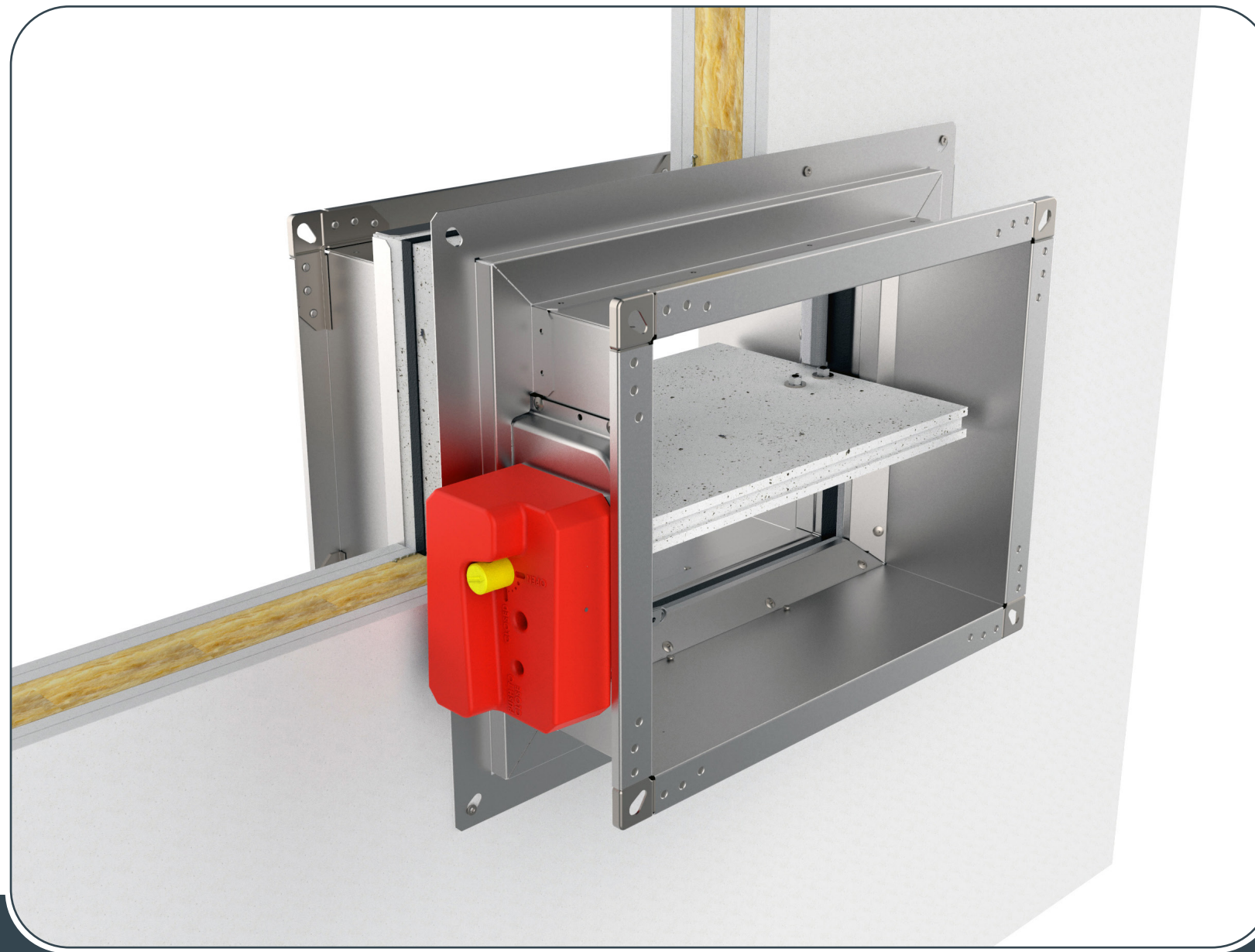
2. Insert fire damper into wall and fasten with screws (4 pcs, 4,8x60 mm).

Test the operation of the damper blade!



Flexible wall installation Applique installation frame

The wall is composed of 2x2 plasterboard boards, 12,5 mm thick, installed on a steel frame construction. The interior of the wall is filled with mineral wool ($\geq 100 \text{ kg/m}^3$). The minimum thickness of the wall is 100 mm.



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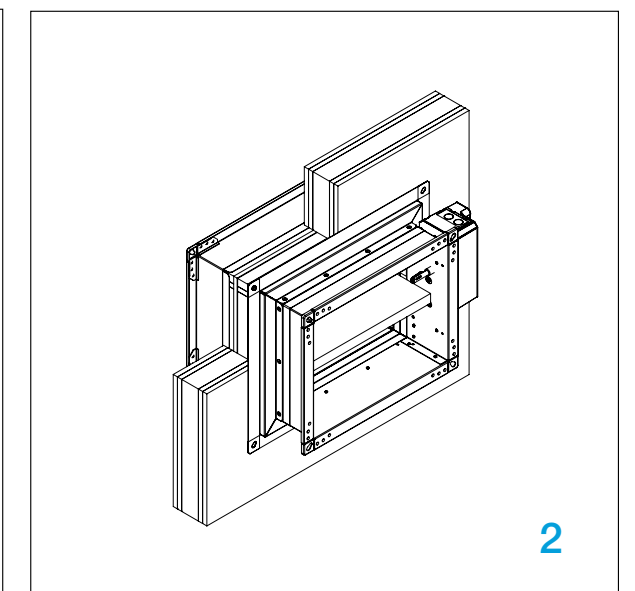
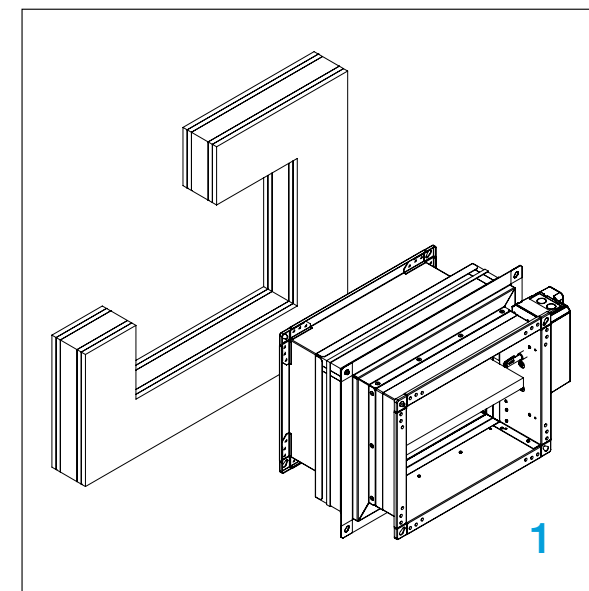
* Create an opening according to the dimension of the fire damper and build the subframe according to the drawing [see page 41](#).

1. Place the fire damper in the opening.

Damper blade must be closed during installation!

2. Fasten the fire damper with screws.
(4 pcs, 4,8x60 mm).

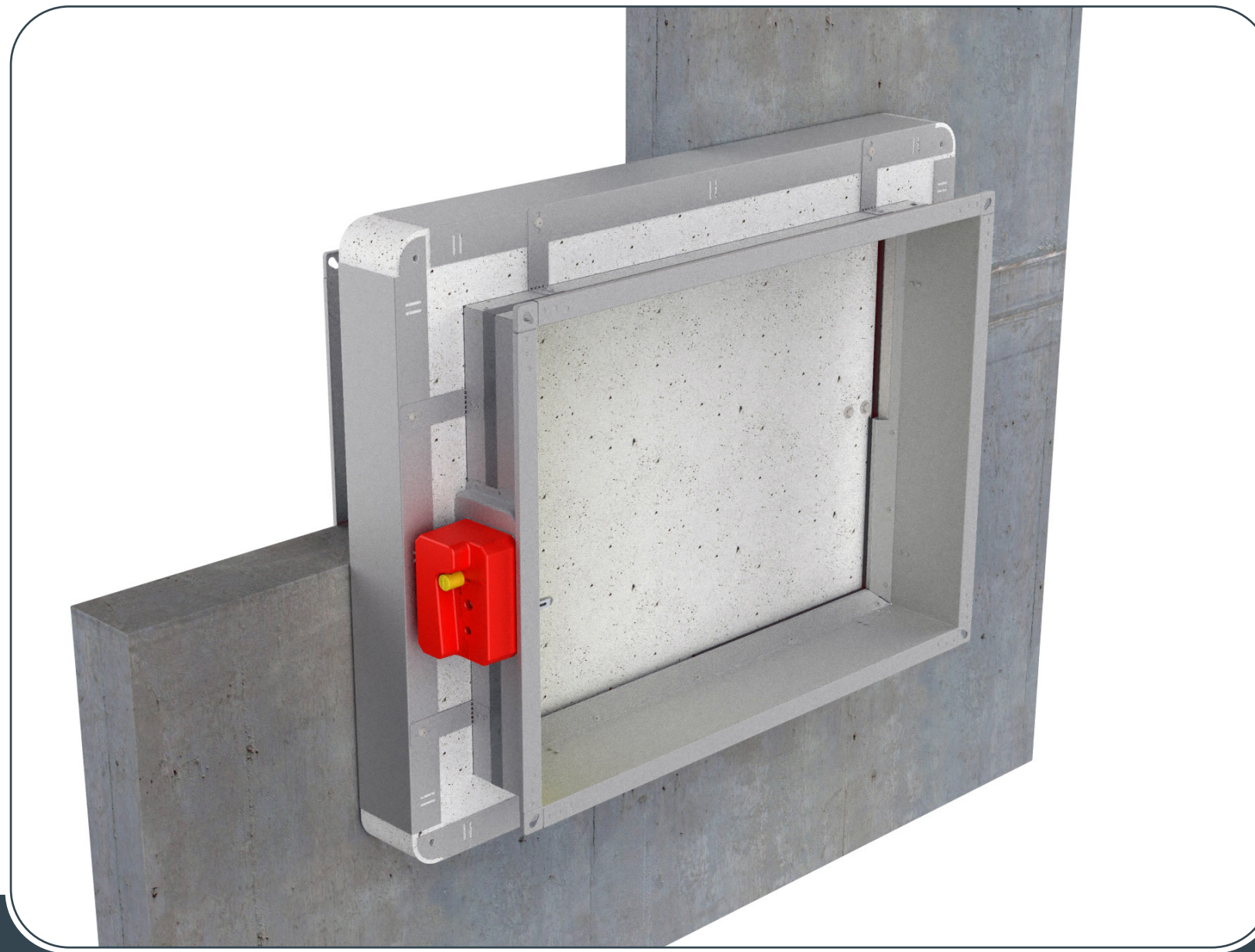
Test the operation of the damper blade!



Rigid wall installation

MF2 installation frame

The wall is composed of concrete blocks (minimum density of 550 kg/m³) or reinforced concrete (minimum density of 2200 kg/m³) and with a minimum thickness of 100 mm.



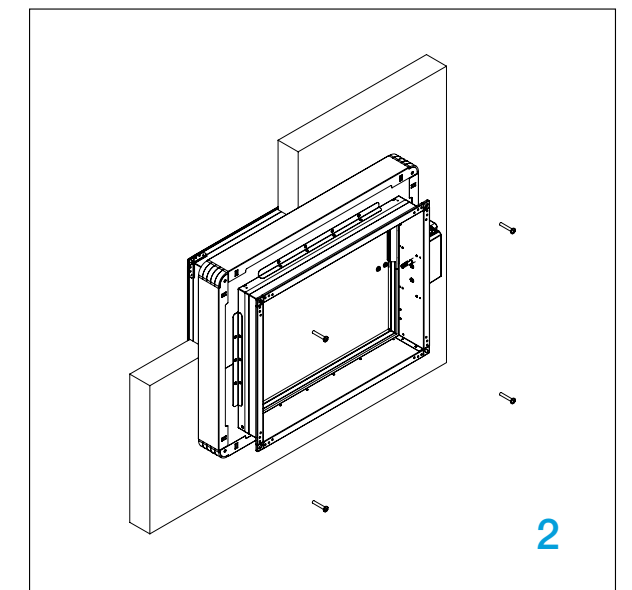
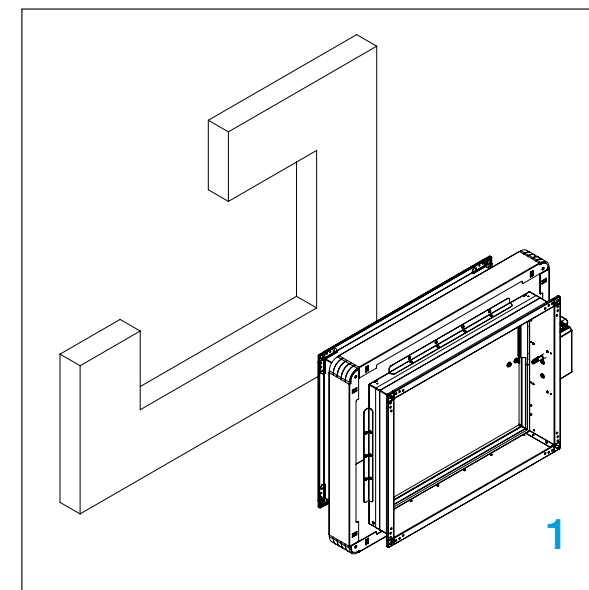
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1. Prepare opening in the wall according to B (H) + 80 mm.

Damper blade must be closed during installation!

2. Insert fire damper into wall and fasten with screws (12 pcs, 6x160 mm)

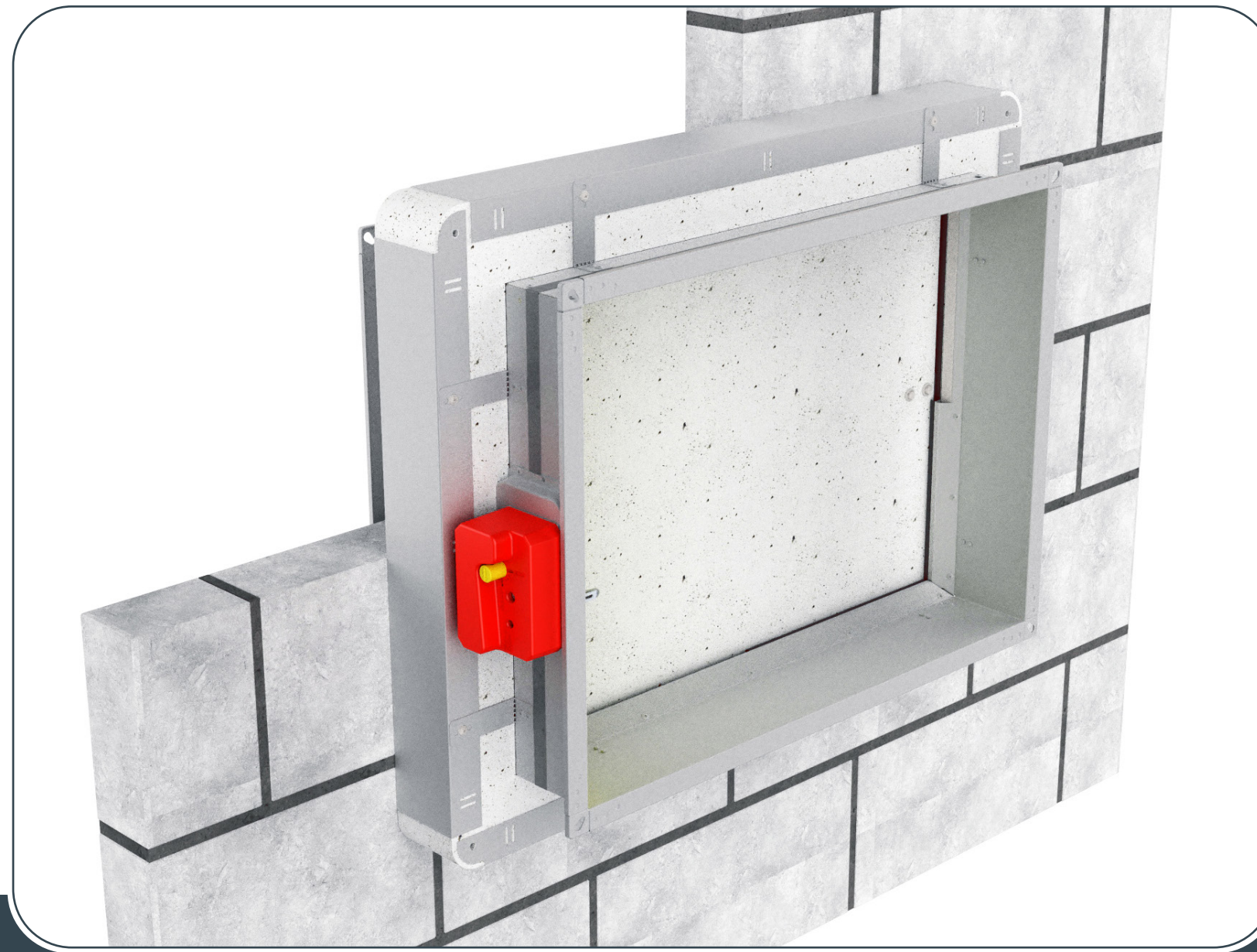
Test the operation of the damper blade!











Gypsum blocks wall installation

MF2 installation frame

The wall is composed of gypsum blocks (minimum density of 995 kg/m³), and with minimum thickness of 70 mm.



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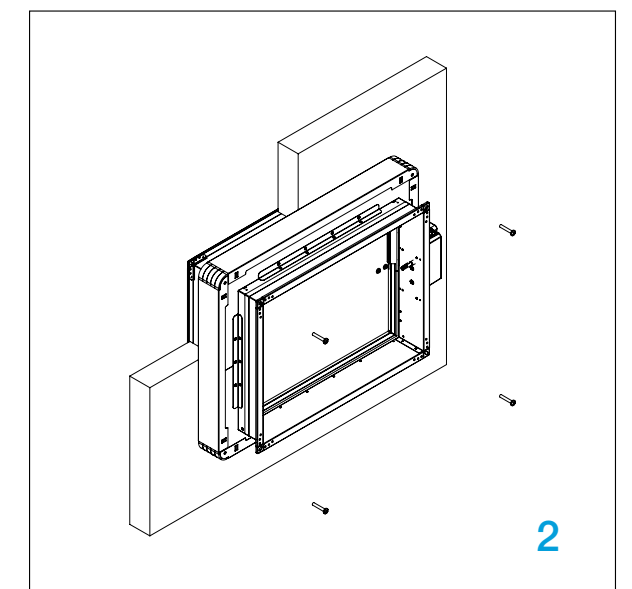
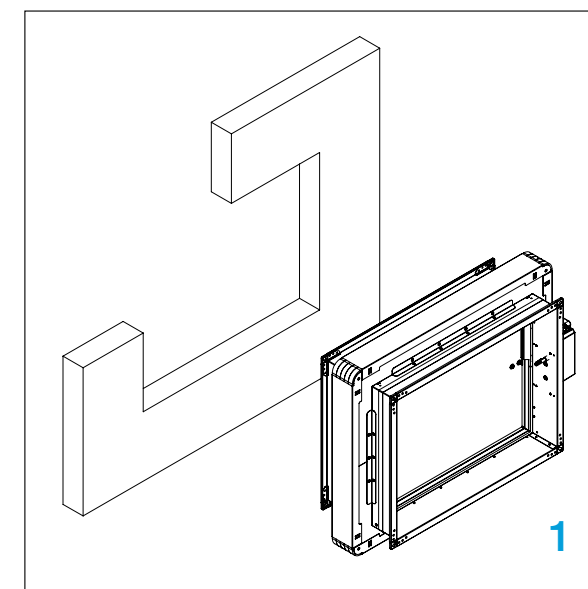
FIRE DAMPER - FD

1. Prepare opening in the wall according to B (H) + 80 mm.

Damper blade must be closed during installation!

2. Insert fire damper into wall and fasten with screws (12 pcs, 6x160 mm).

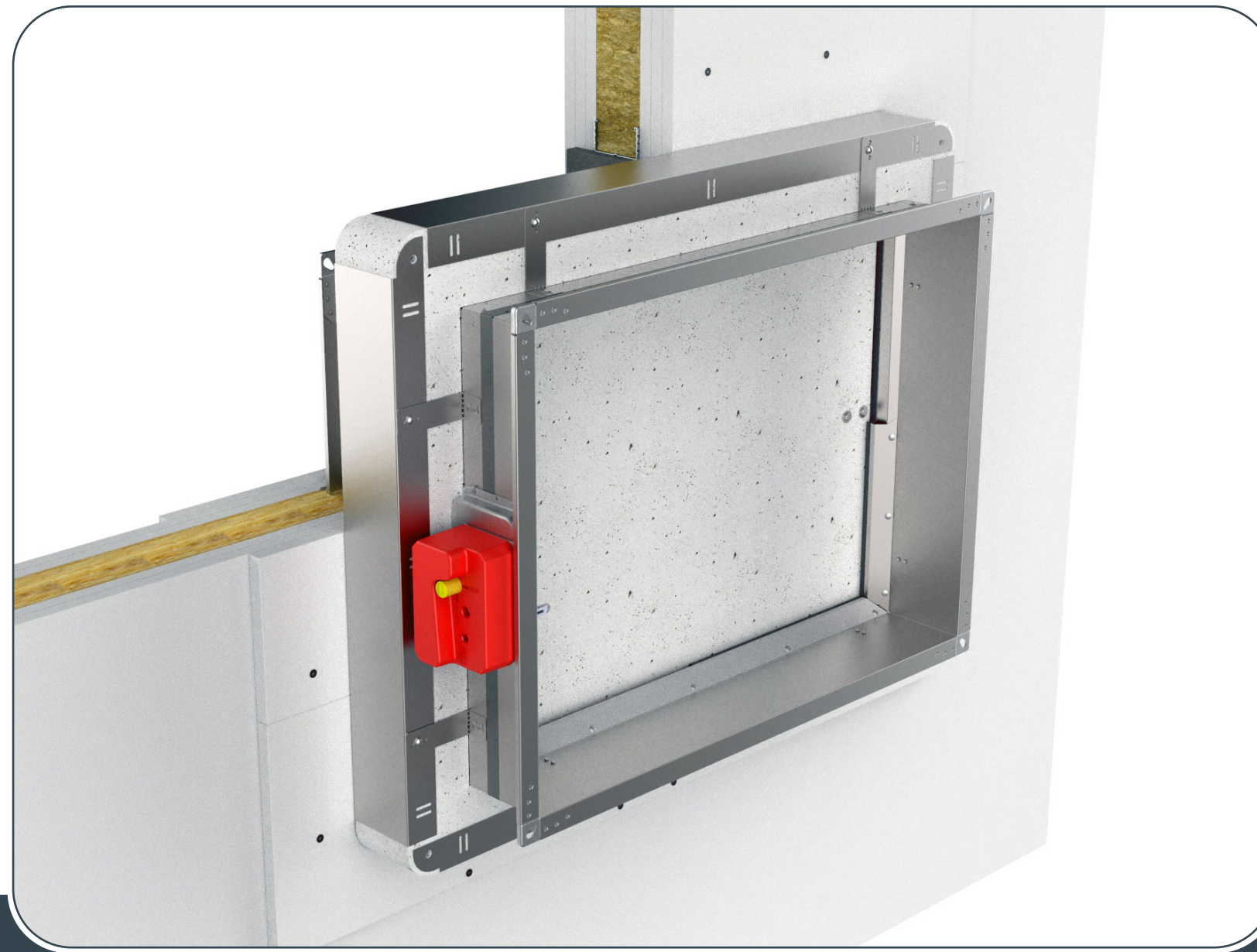
Test the operation of the damper blade!



Flexible wall installation

MF2 installation frame

The wall is composed of 2x2 plasterboard boards, 12,5 mm thick, installed on a steel frame construction. The interior of the wall is filled with mineral wool. The minimum thickness of the wall is 100 mm.



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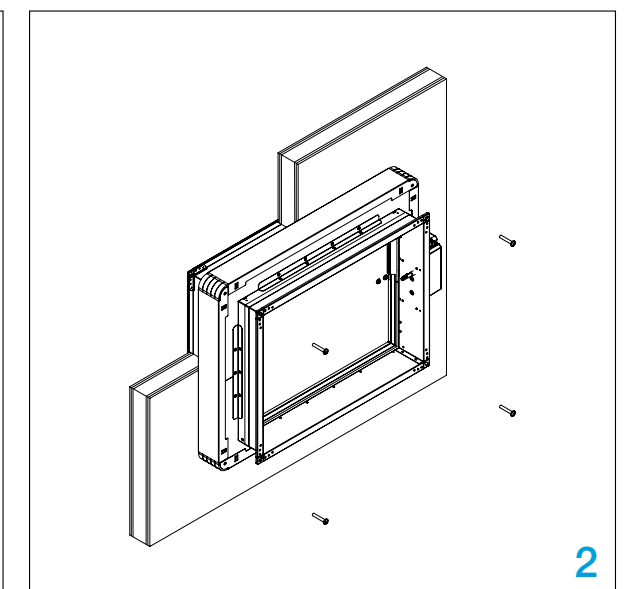
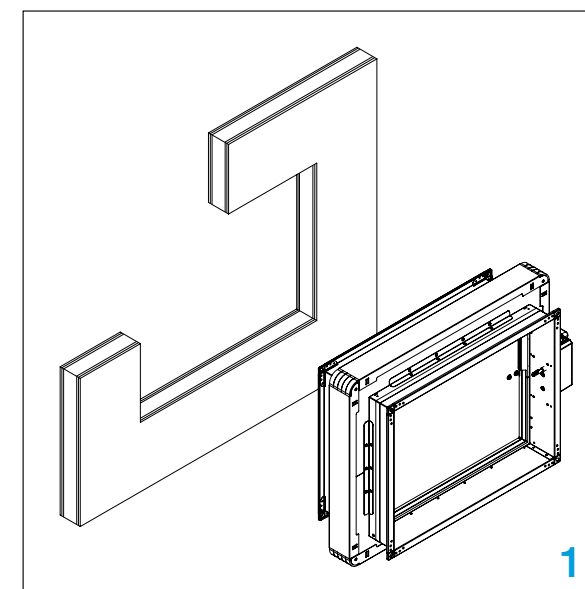
* Create an opening according to the dimension of the fire damper and build the subframe according to the drawing [see page 41](#).

1. Place the fire damper in the opening.

Damper blade must be closed during installation!

2. Fasten the fire damper with screws. (12 pcs, 6x160 mm)

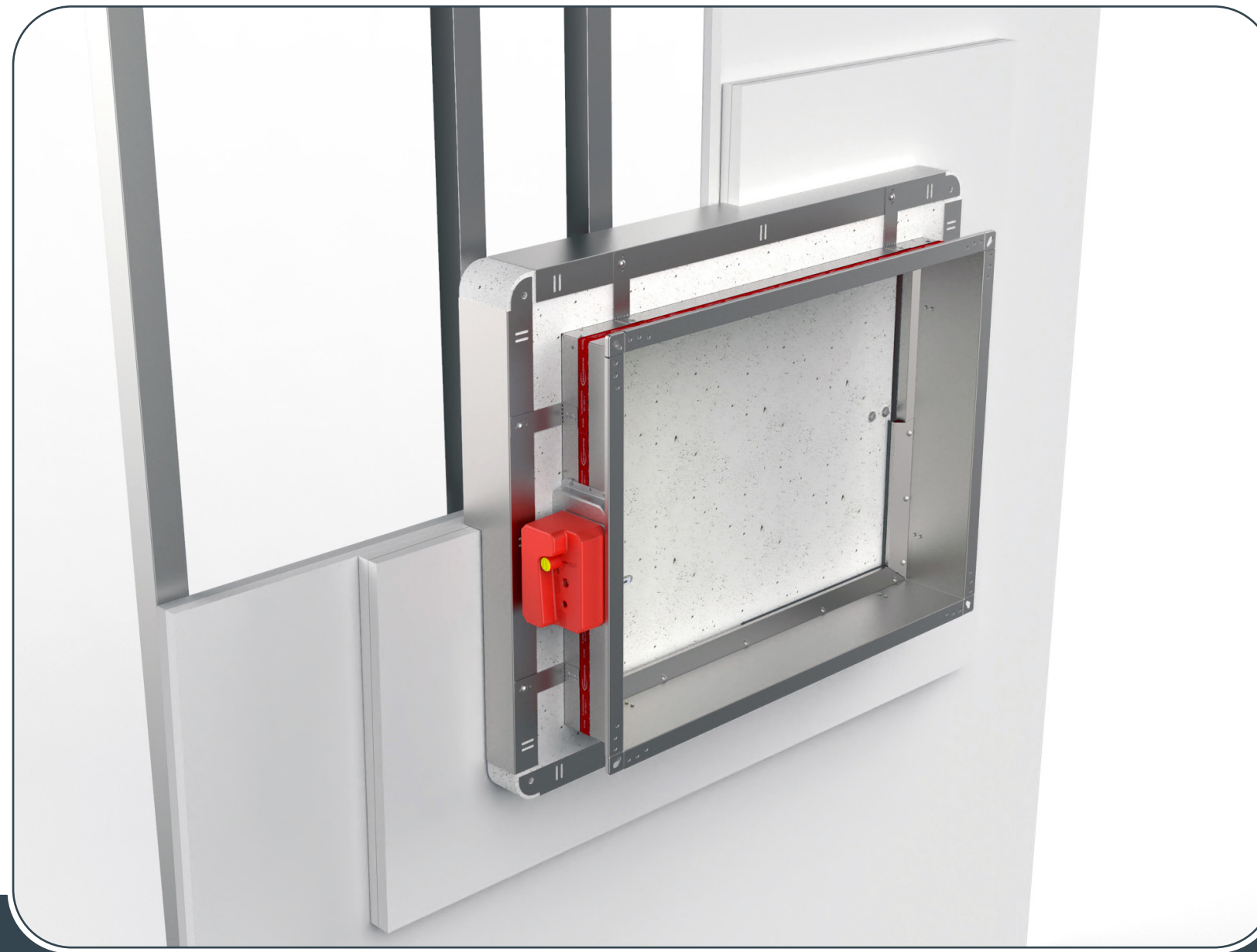
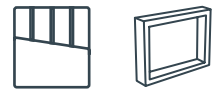
Test the operation of the damper blade!



Shaft wall installation

MF2 installation frame

The wall is composed of 1x2 plasterboard boards, 20 mm thick, installed on a steel frame construction.



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INSTALLATION

FIRE DAMPER - FD

FD-MF2 Fire damper (**B < 625 mm**) installation in 90 mm shaft wall with metal studs

FD-MF2 Fire damper (**B > 625 mm**) installation in 90 mm shaft wall with metal studs

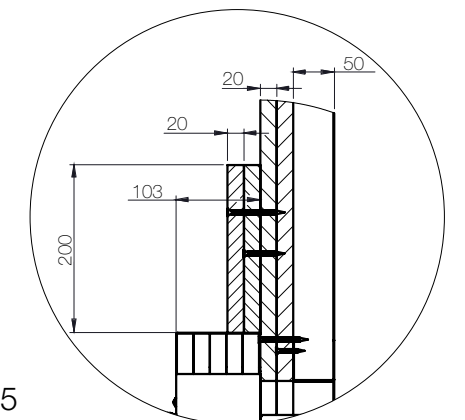
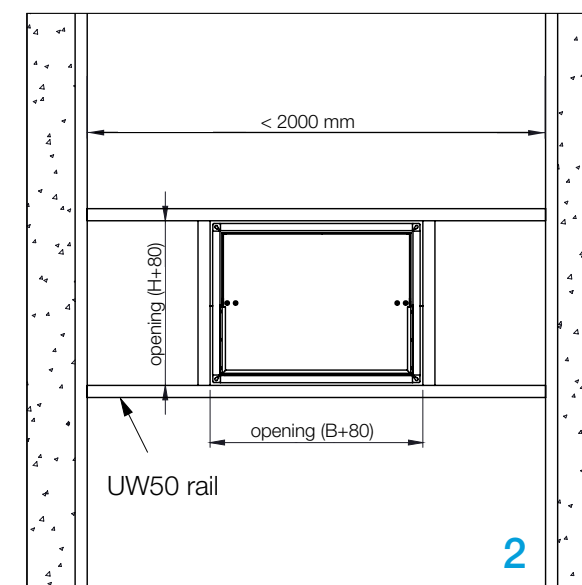
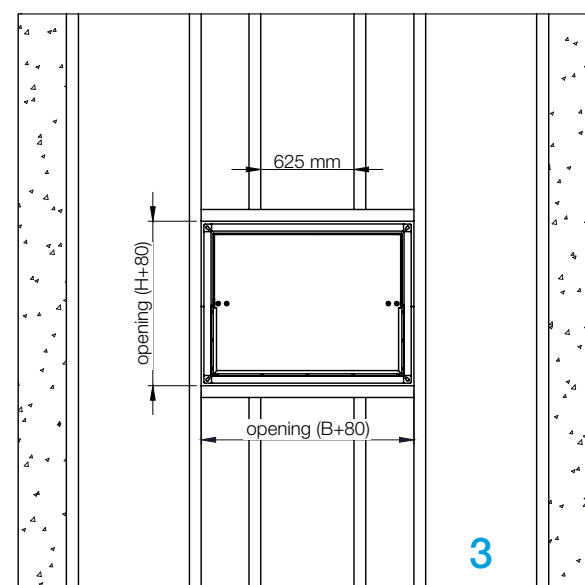
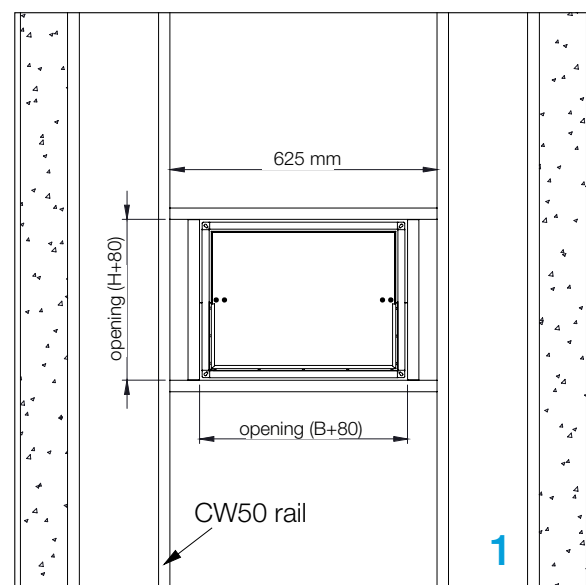
FD-MF2 Fire damper installation in 90 mm Shaft wall without metal studs (**< 2000 mm**)

1. For fire dampers **B < 625 mm**, make a steel subframe according to drawing (1). For fire dampers **B > 625 mm**, make a steel subframe according to drawing (2). For installation in shaft walls without metal studs, make a steel subframe according to drawing (3).

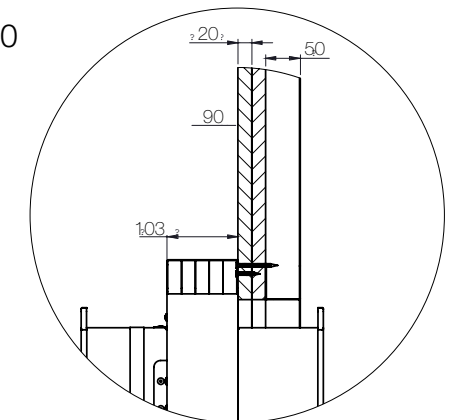
Damper blade must be closed during installation!

2. Place the fire damper in the opening.
3. Insert fire damper into wall and fasten with screws (12 pcs, 6x160 mm).

Test the operation of the damper blade!



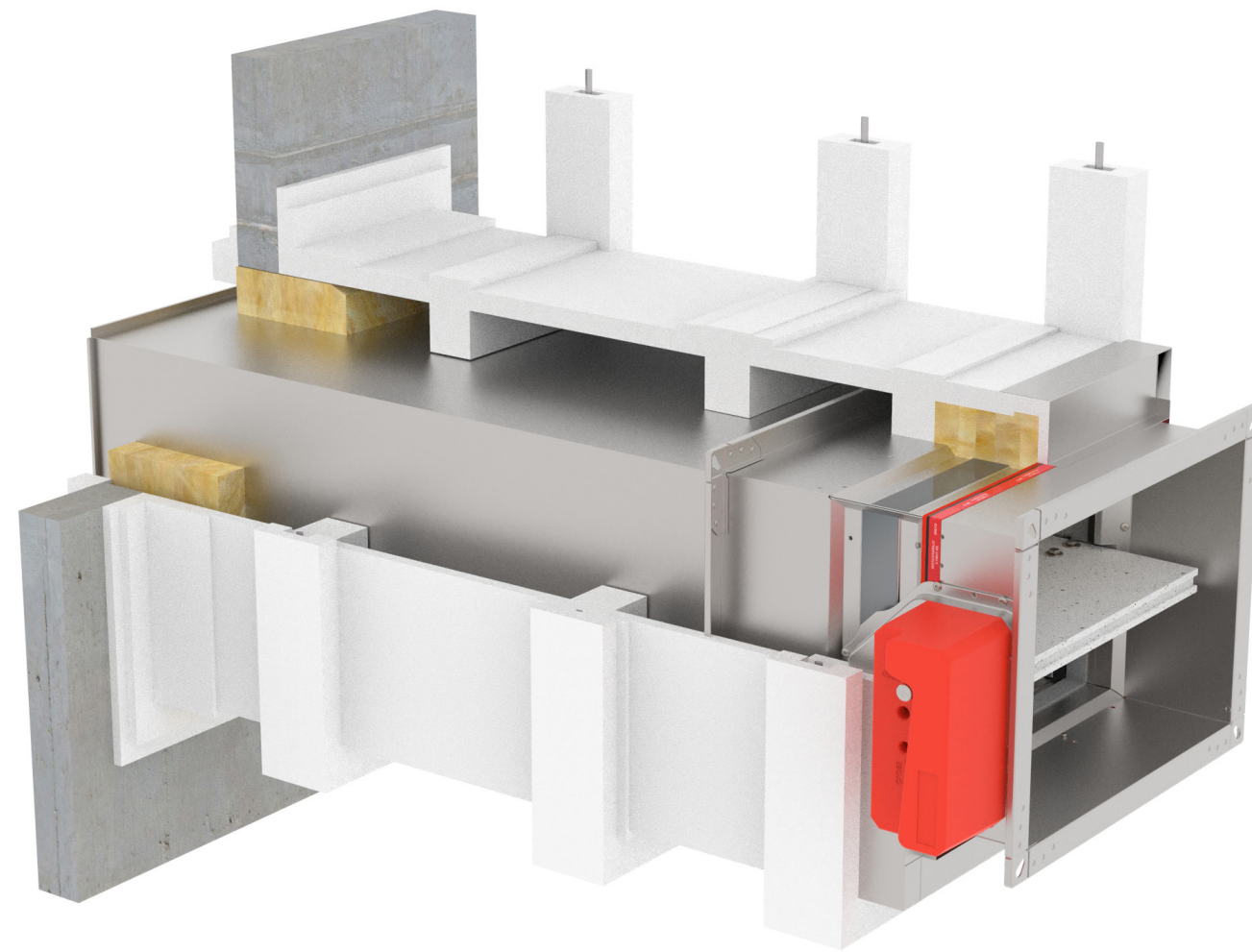
FD25



FD40

Installation remote from the rigid wall (Promat)

The wall is composed of concrete blocks (minimum density of 550 kg/m³) or reinforced concrete (minimum density of 2200 kg/m³) and with a minimum thickness of 100 mm.



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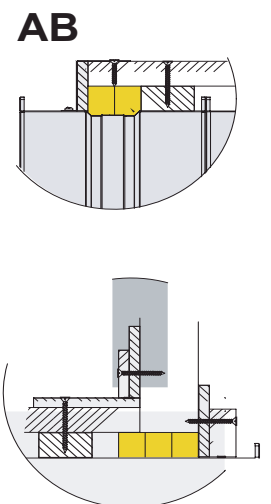
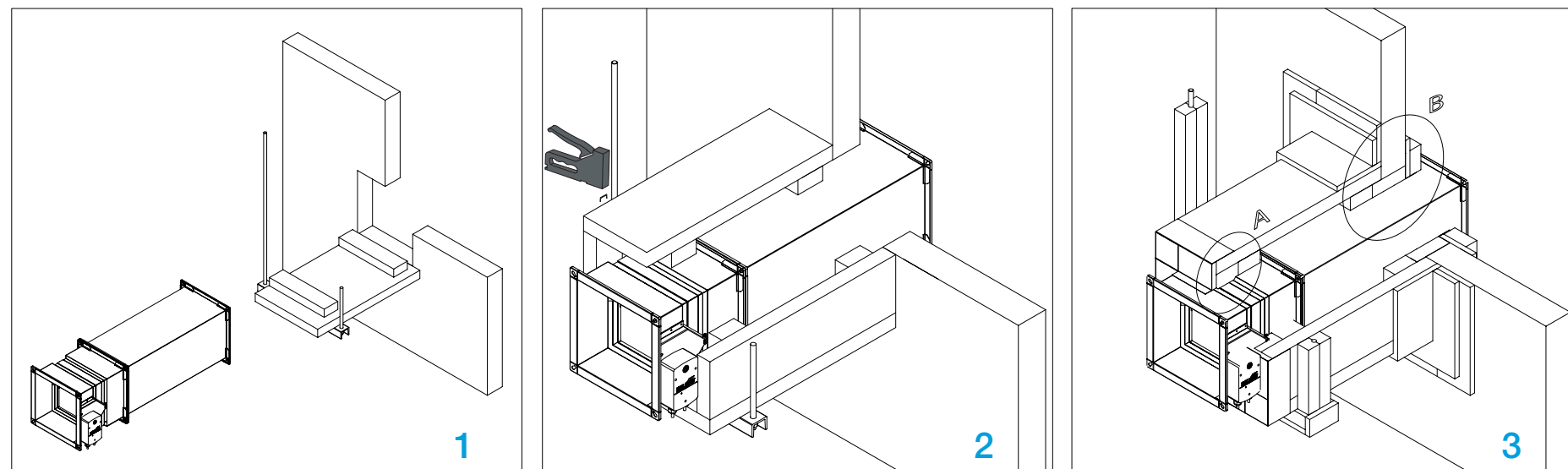
FIRE DAMPER - FD

1. Prepare wall opening $B(H) + 100$ mm. Place fire damper and duct on pre-cut calcium silicate 52 mm (Promat L500). 100 mm wide supports (max. every 1000 mm) from same material need to be used to support the duct as well as the damper.

Damper blade must be closed during installation!

2. Fit the duct and the damper through the wall, and cover them with 52 mm calcium silicate (Promat L500). Board corner joints must be glued with glue PROMAT K84 and connected with staples every 100 mm.

3. The gap between the damper and the wall must be filled with mineral wool (density 140 kg/m³ or more). Close the mineral wool with Promatect H plates 20 mm thick. Duct and damper supporting brackets have to be insulated with 52 and 20 mm calcium silicate boards (Promatect H and L500).



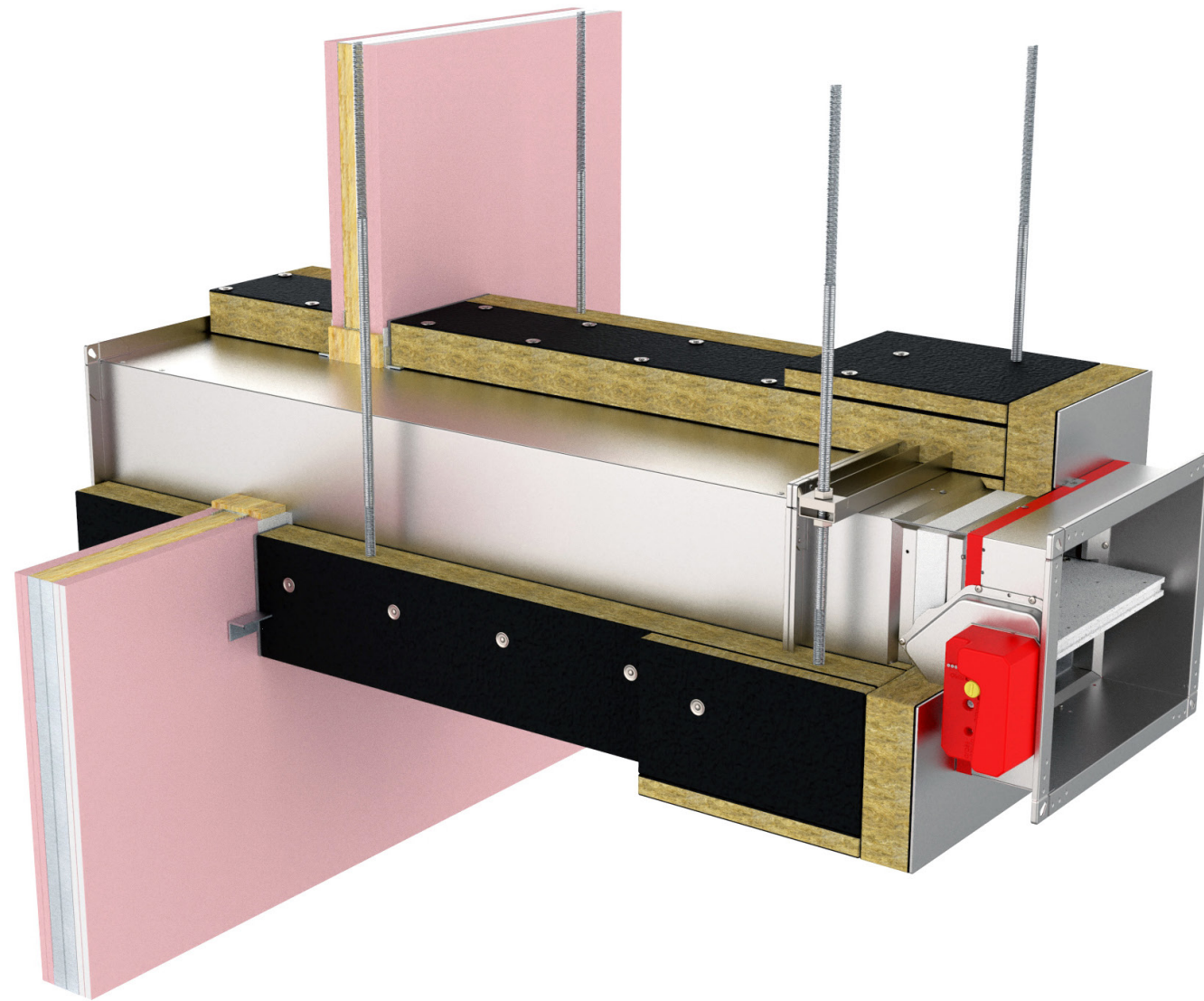
Test the operation of the damper blade!

Installation remote from flexible/rigid wall

The wall is composed of 2x2 plasterboard boards, 12.5 mm thick, installed on a steel construction. The interior of the wall is filled with mineral wool.



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FIRE DAMPER - FD

1. Place the damper in an opening according to table. Place ventilation duct trough wall. Distance between suspensions is max. 800 mm (thickness of threaded rod for suspension should be M12 or more).

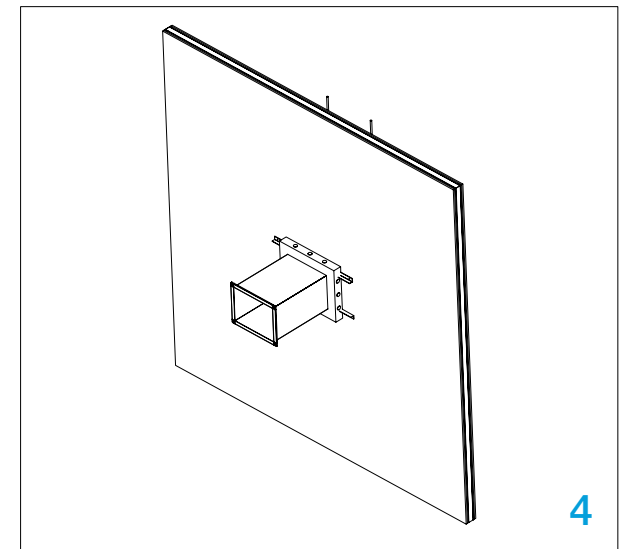
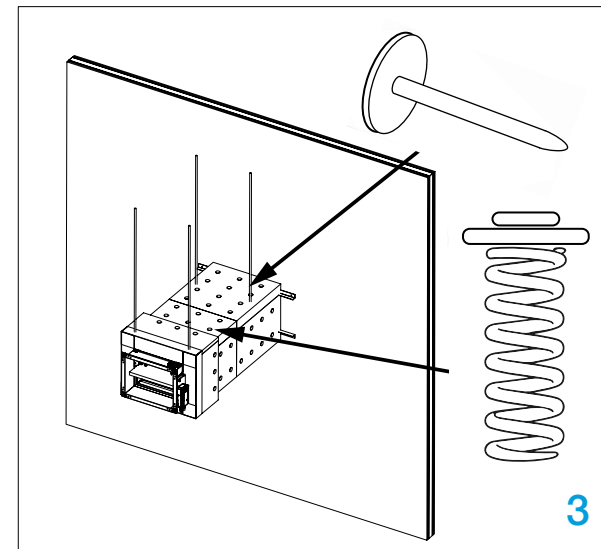
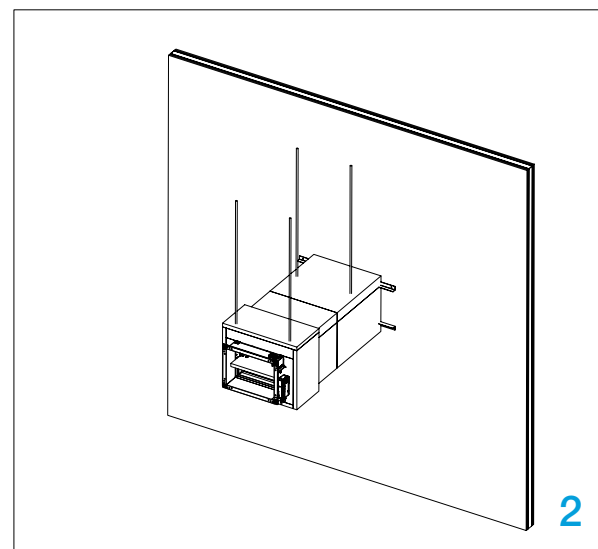
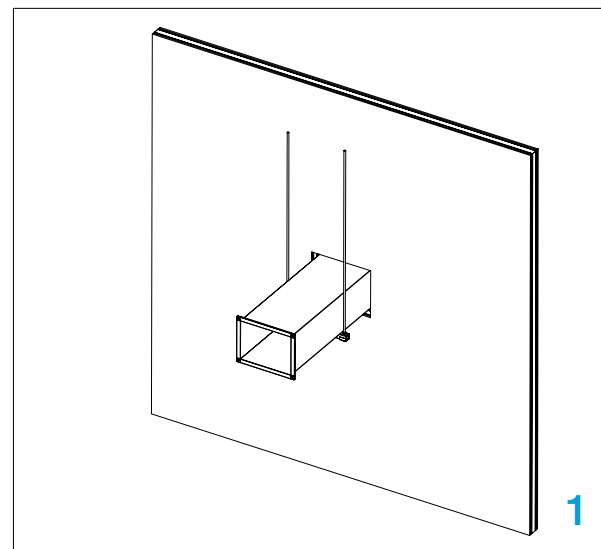
Damper blade must be closed during installation!

2. Install fire damper and secure it to ventilation duct. Fill space between duct and wall with mineral wool (Isover U protect). Additionally, paint wool with Isover BSF in thickness of 1 mm.

3. Close installation with L profiles 30x30x3 mm. Additionally fix profiles to duct with self-tapping screws, and screw them to wall with 4,5x50 screws with 200 mm distance between them. On connection wool-wall apply glue Isover BSK in thickness of 2 mm. Repeat the same procedure on the other side.

4. Secure the wool with welding nails. Nails are placed 60 mm from the end of the plate and 150 mm between each other. Isover Fire Protect Screw screws are additionally used on the corner on every 150 mm. Additionally place steel protection on place where insulation on damper ends. Place the wool on ventilation duct in length of 80 mm and secure it with welding nails.

Test the operation of the damper blade!

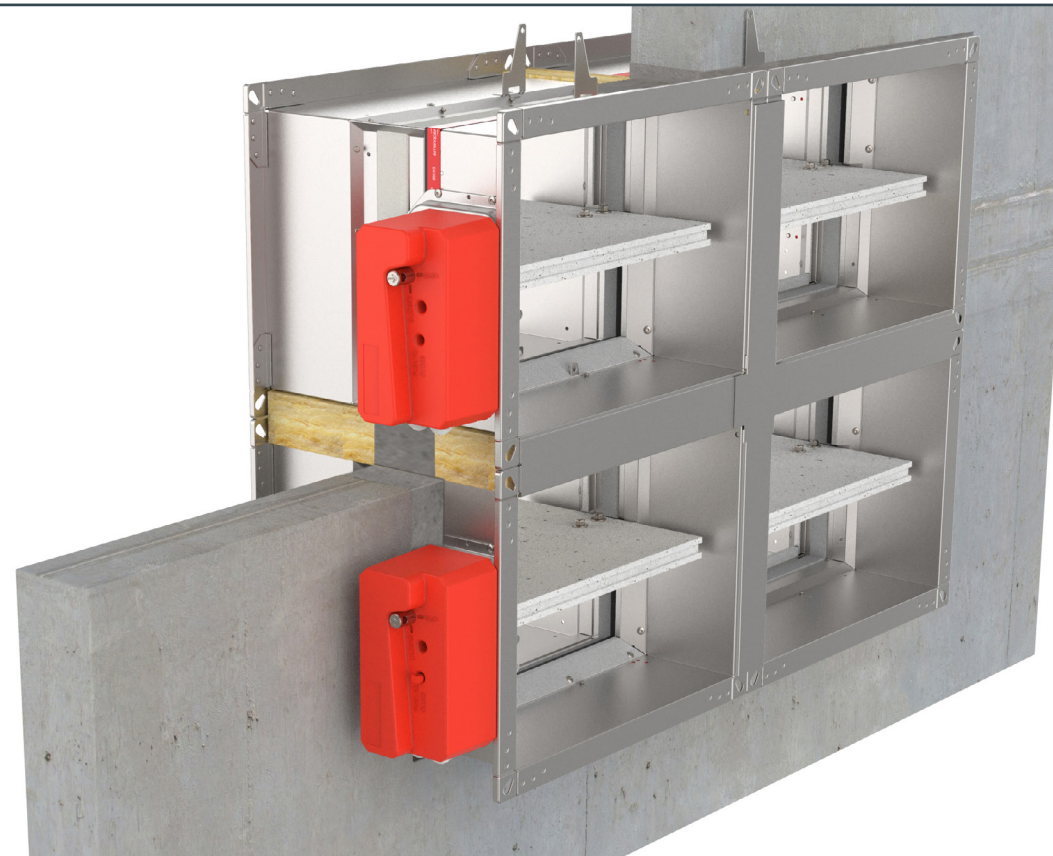


Battery assembly installation 2x2

The wall is composed of concrete blocks (minimum density of 550 kg/m³) or reinforced concrete (minimum density of 2200 kg/m³) and with a minimum thickness of 100 mm.

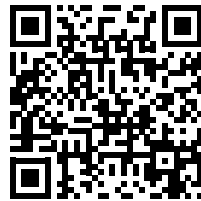
Maximum dimension of fire dampers:
2X2 grid: 1200x800 mm

*For battery installation 2x2 use 8x connecting frames and 2x connecting plate.



(1) Accessories	(2) Type	(3) Length
FD-A	- CF60	- 800

(1) Fire damper accessories FD-A	(3) Connecting frame length 200 ... 1200 [mm]
(2) Type CF60 - Connecting frame 60 mm CF100 - Connecting frame 100 mm CP60 - Connecting plate 60 mm CP100 - Connecting plate 100 mm	



[Video instructions](#)



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FIRE DAMPER - FD

1. Prepare a hole of dimensions 2B + 140 mm and 2H + 140 mm fill the bottom with mortar/gypsum in 50 mm height.

2. Place two lower dampers in the opening, and fix dampers to the wall using screws (only 2 sides facing aerated concrete). Place the vertical part from the installation kit to the dampers on both sides, and attach it using the self-tapping screws.

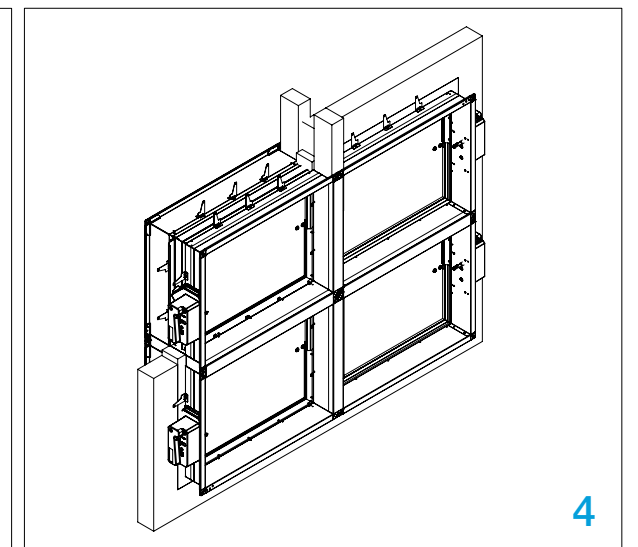
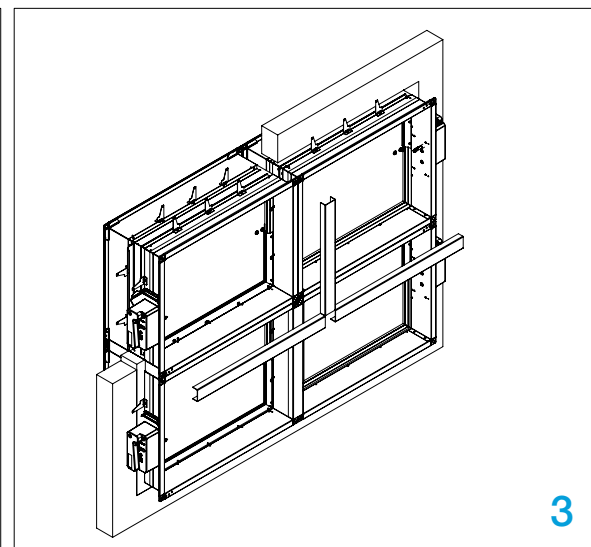
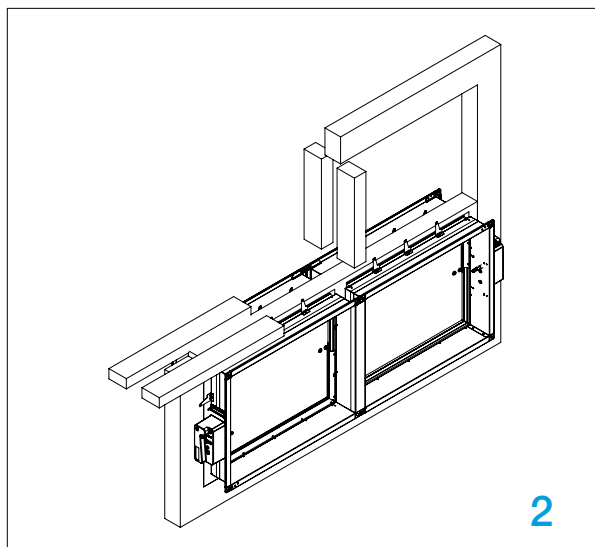
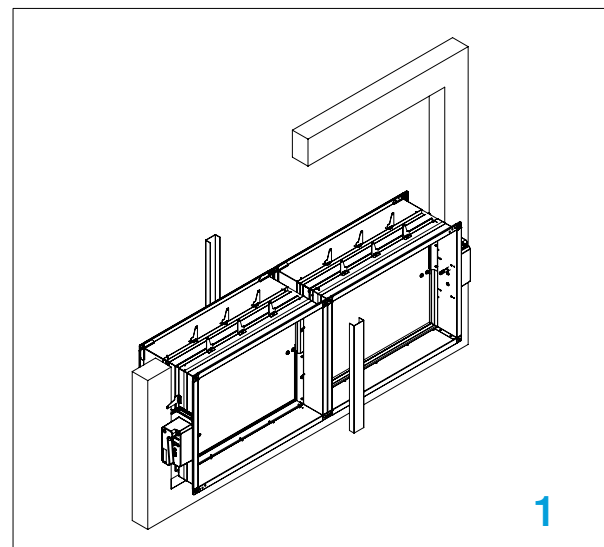
Damper blade must be closed during installation!

3. Fill the space between the dampers and the wall with mortar/gypsum, and fill the space between the dampers with mineral wool (100 kg/m³ of density or higher). Place two upper dampers and fix the dampers to the wall using the screws. (only 2 sides facing aerated concrete).

4. Place the vertical part and two horizontal parts from the installation kit to the dampers on both sides, and attach it using

the self-tapping screws every 150 mm. Fill the gap between dampers and wall on upper side with mortar/gypsum and the installation is complete.

Test the operation of the damper blade!



Battery assembly installation (floor/ceiling) 2x2

The floor/ceiling is composed of concrete blocks (minimum density of 550 kg/m³) or reinforced concrete (minimum density of 2200 kg/m³) and with a minimum thickness of 100 mm.

Maximum dimension of fire dampers:
2X2 grid: 1200x800 mm

*For battery installation 2x2 use 8x connecting frame and 2x connecting plate.



(1) Accessories	(2) Type	(3) Length
FD-A	CF60	800

(1) Fire damper accessories FD-A	(3) Connecting frame length 200 ... 1200 [mm]
(2) Type CF60 - Connecting frame 60 mm CF100 - Connecting frame 100 mm CP60 - Connecting plate 60 mm CP100 - Connecting plate 100 mm	

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INSTALLATION

FIRE DAMPER - FD

1. Prepare a hole of dimensions 2B + 140 mm and 2H + 140 mm and set all U profiles to a height of 118 mm (use blocks of aerated concrete to keep distance between ceiling and profiles).

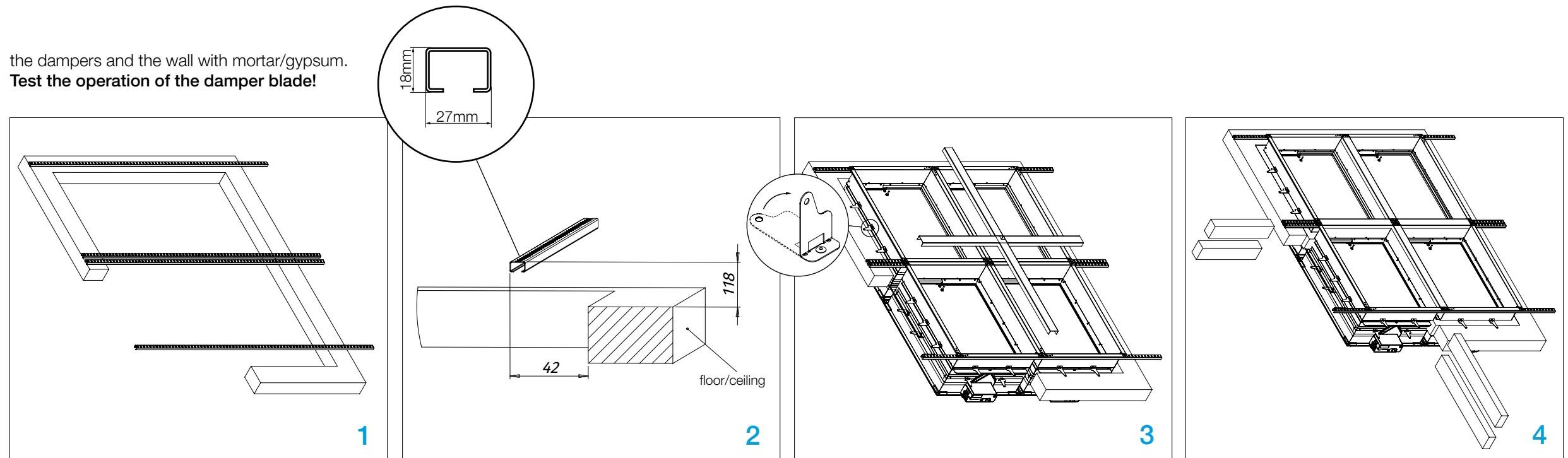
2. Arrangement of steel C profiles (27x18 mm).

3. Place the dampers in the openings to the wall limit mark (7) and bend the fixing bracket 90° (1). Put them on U profiles and fix using the self-tapping screws every 150 mm. Fix the dampers and profiles to the ceiling using the screws for concrete. Place four connection profiles from the installation kit to the dampers on both sides and attach it using the self-tapping screws.

Damper blade must be closed during installation!

4. Fill the space between the dampers with mineral wool (100 kg/m³ of density or higher) and then fill the space between

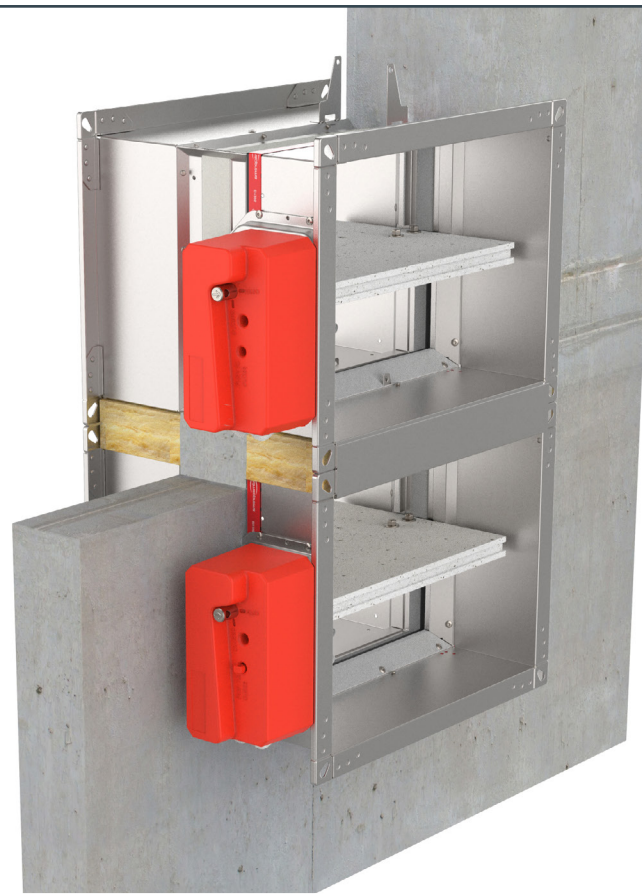
the dampers and the wall with mortar/gypsum.
Test the operation of the damper blade!



Battery assembly installation 1x2

The wall is composed of blocks of aerated concrete (minimum density 550 kg/m³) and with a minimum thickness of 100 mm.

*For battery installation 1x2 use 2x connecting frame.



(1) Accessories	(2) Type	(3) Length
FD-A	- CF60	- 800

(1) Fire damper accessories FD-A	(3) Connecting frame length 200 ... 1200 [mm]
(2) Type CF60 - Connecting frame 60mm CF100 - Connecting frame 100mm	

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INSTALLATION

FIRE DAMPER - FD

1. Prepare a hole of dimensions B + 80mm and 2H + 140 mm. Fix the dampers to the wall using the screws and fill the space between the dampers and the wall with mortar.

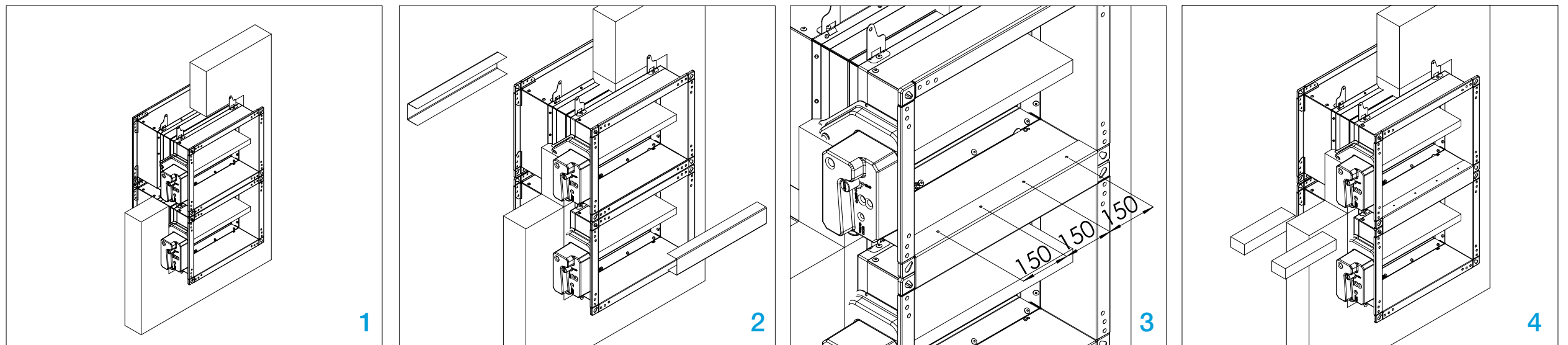
2. Place the installation kit to the dampers.

Damper blade must be closed during installation!

3. Attach the installation kit to the dampers using the self-tapping screws every 150 mm.

4. Fill the space between the dampers with mineral wool (100 kg/m³ of density).

Test the operation of the damper blade!

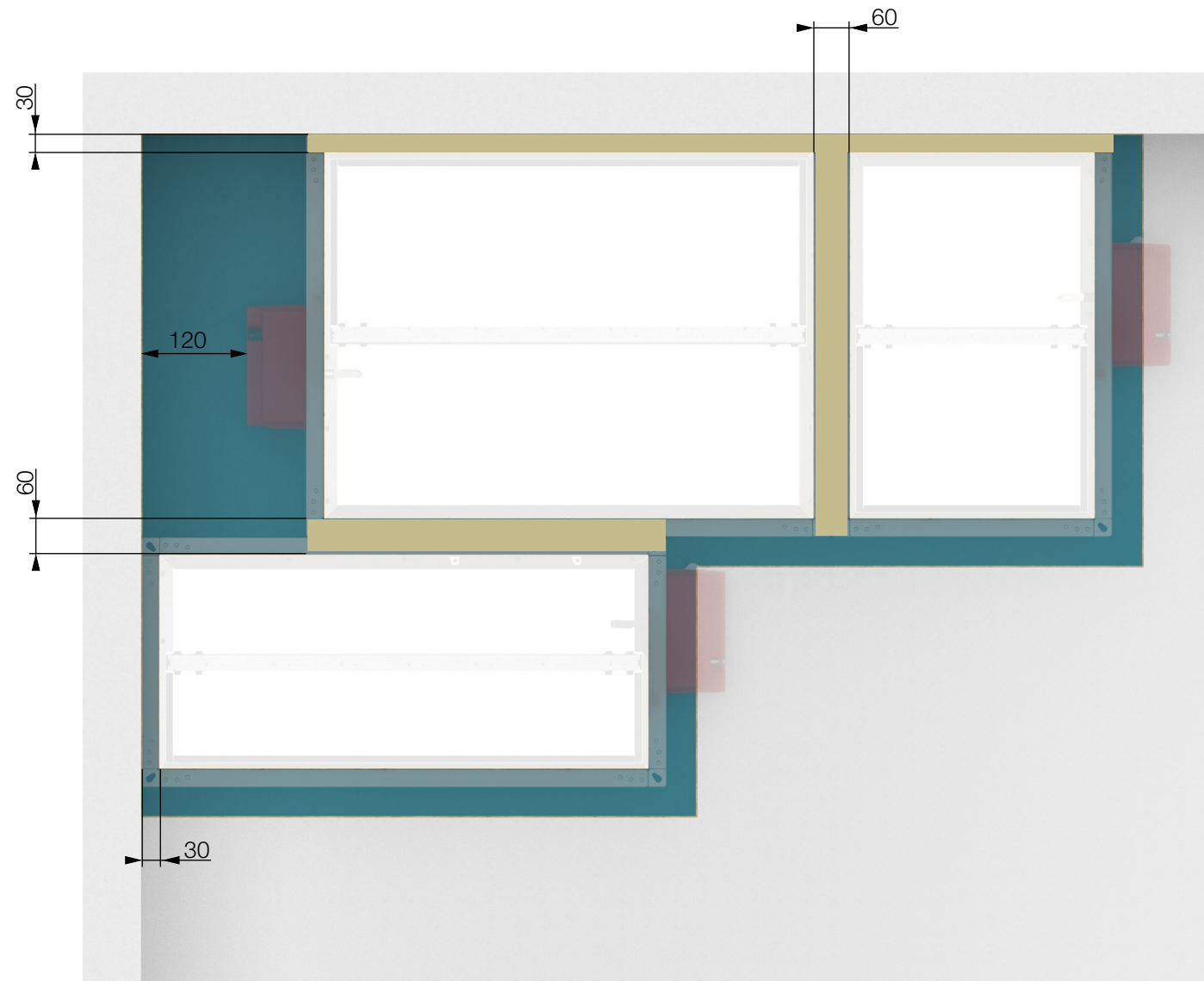


Multiple fire dampers installation

- Material compliant with the classification from [DOP](#)
- Mineral wool 350mm wide (140 kg/m³)

Damper blade must be closed during installation!

1. Prepare opening in the wall according to B (H) + 80 mm or more (Weichschott/Firebatt installation- build the subframe according to the drawing [see page 41](#)). Fire damper can be installed with minimal distance of 30 mm between wall/ceiling and 60mm from other dampers.
2. Insert the fire dampers into the wall and fill the space between the casings with mineral wool (140kg/m³) up to flanges. Fill the space between the wall/ceiling with mineral wool (140kg/m³) up to flanges.
3. Fill the rest of the wall openings according to the type of installation in the DOP.
4. Complete the installation according to the DOP.

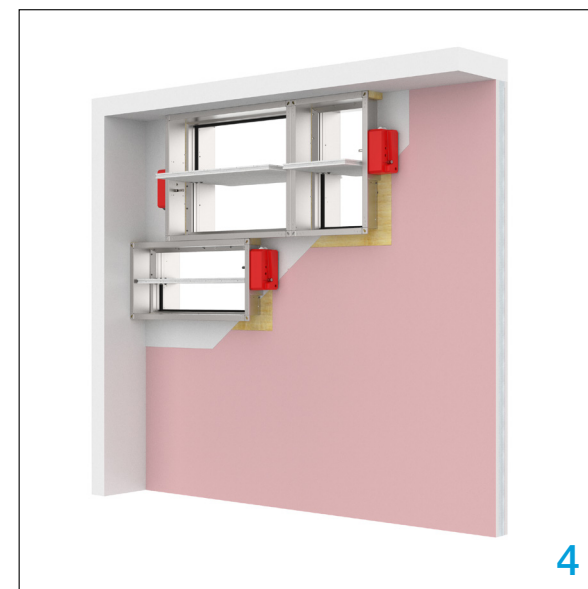
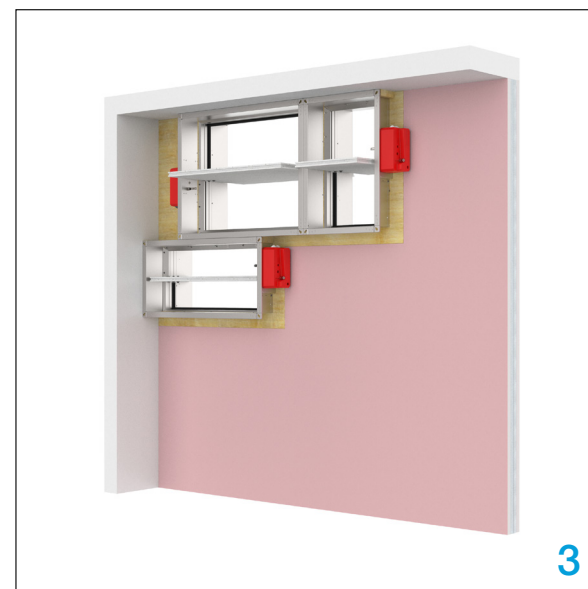
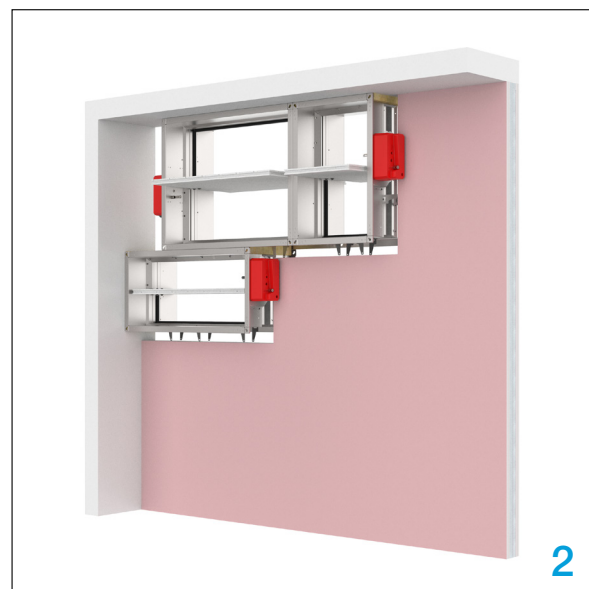
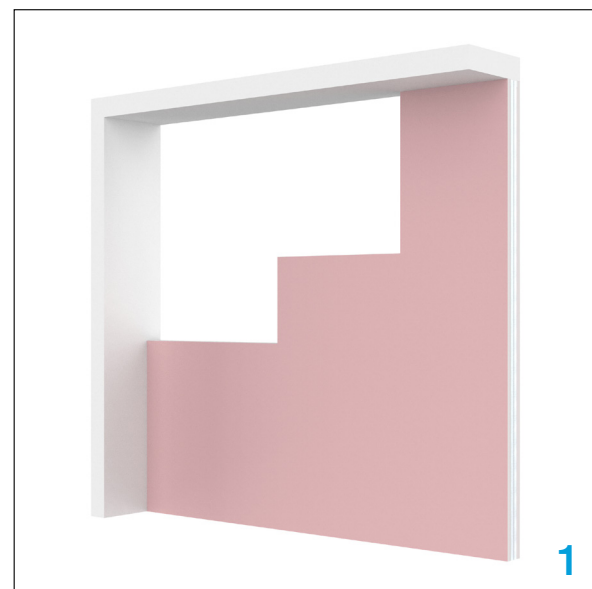


* Minimal distances from another damper or wall/ceiling.

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FIRE DAMPER - FD

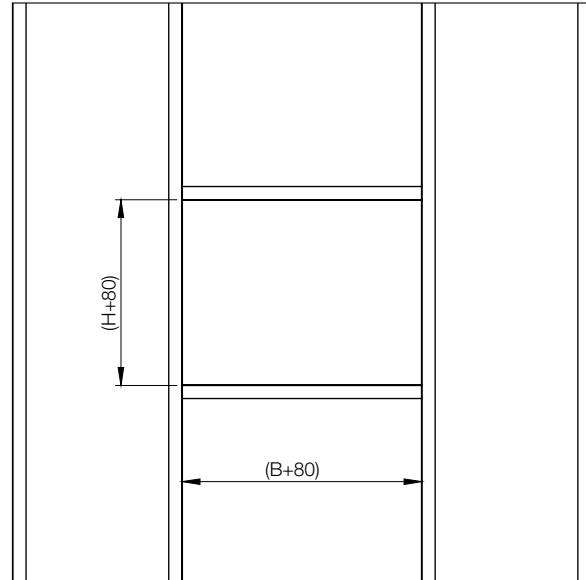


*Examples for Weichschott/Firebatt installation

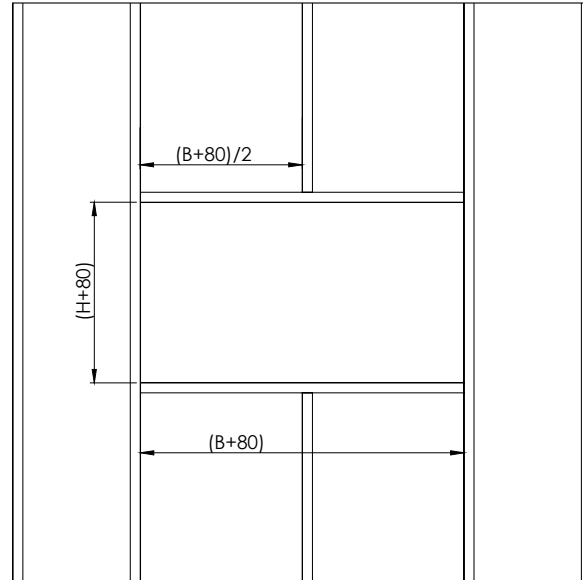
Flexible wall subframe

When installing the fire dampers in the flexible walls it is necessary to make a metal subframe onto which the damper will be fixed with screws. Subframe should be prepared according to the drawings below.

FD25



FD40



Support for installation with mortar

In fire damper installations with mortar, it may be necessary to use wooden supports to prevent the casing from deforming while mortar is getting

hardened. Before filling the gap between wall and fire damper, close the damper blade and install the wooden supports as seen in the drawings below. **Place the wooden support as close as possible to the fire damper blade!**



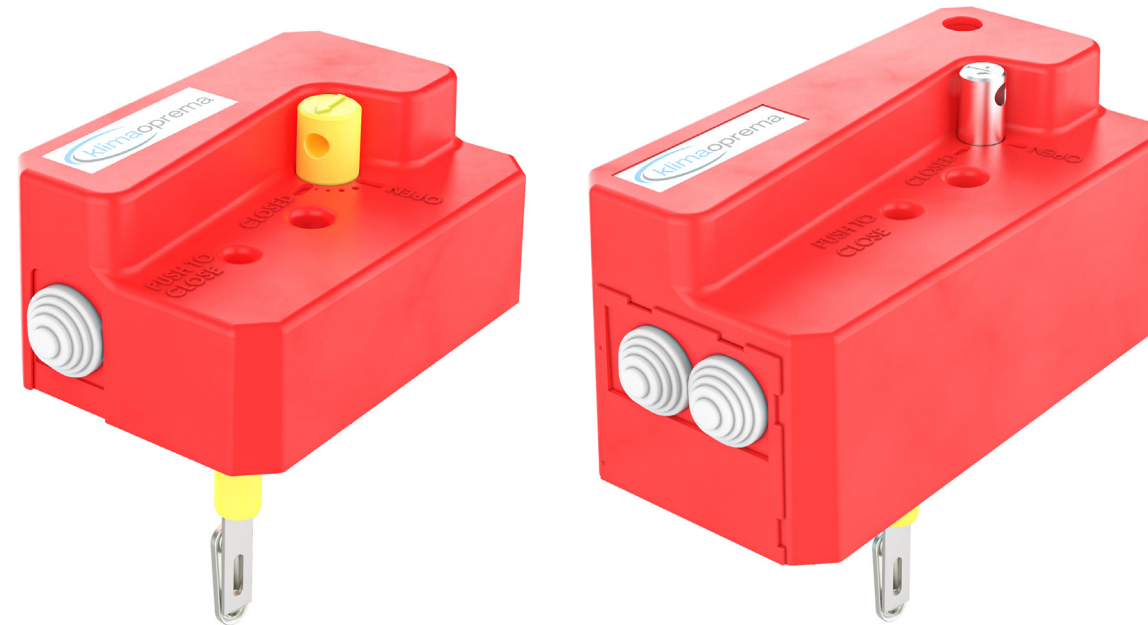
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FIRE DAMPER - FD

MANUAL ACTUATORS R, R-S

Manual operating mechanism, optionally with end switches (R-S). In case of fire, the fire damper closes automatically. Damper closing can be initiated either by thermal fuse melting, or by manual activation on the operating mechanism. Upon closure, damper blade is locked in closed position and can only be opened manually. Thermal fuse melting point is 72 °C.



R25
(up to 800x600)

R40
(800x600 up to 1500x800)

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R25

R25 manual actuator is installed on FD25 fire dampers range from 100x200 till 800x600. It is available in version with (R-S) and without (R) end switches. End switches and thermal fuse are easily replaceable and available as service parts. To upgrade to EMS, upgrade of R25 to R40 is required.

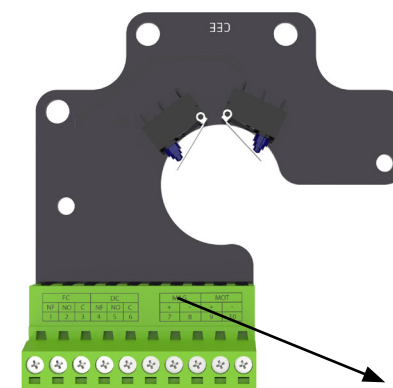
R40

R40 manual actuator is installed on FD40 fire dampers from 800x600 till 1500x800. It is available in version with (R-S) and without (R) end switches. In case remote activation is needed, R40 actuator is easily upgradeable to electromagnetic EMS-S actuator with installation of the electromagnet. End switches, thermal fuse and electromagnet are easily replaceable and available as service parts.

Technical specifications

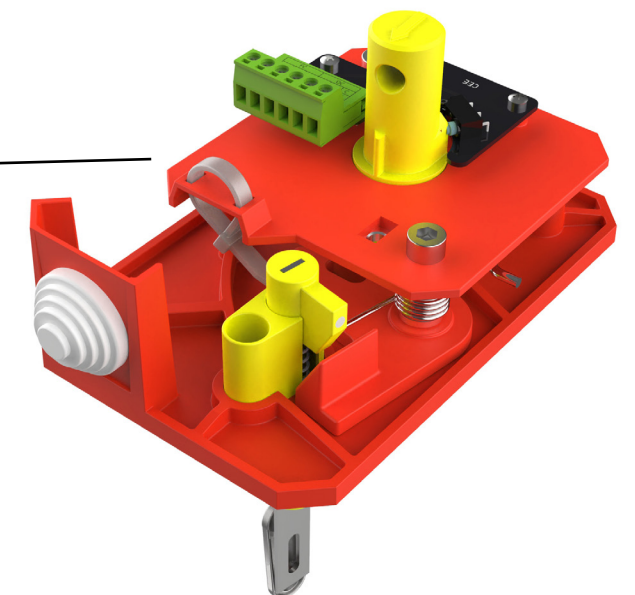
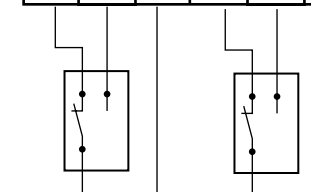
Nominal voltage	N/A
Power	N/A
Switching capacity	1mA...500mA, 5VDC...48VDC
Blade closing time	Spring: 1 sec
Blade opening time	Manual
Manual activation	Release button on the casing
Degree of protection	IP 42
Ambient temperature range	min. -30 °C, max. 50 °C
Ambient humidity	95% r.h., non-condensing
Service life	Min. 30,000 cycles
Maintenance	Maintenance-free
Weight R25/R40	0,5 kg / 1,7 kg

Wiring diagram



FC			DC		
NF	NO	C	NF	NO	C
11	12	13	14	15	16

FC = Limit switch - end
 DC = Limit switch - start
 NO = normally open
 NF = normally closed
 C = common



SOLENOID ACTUATOR EMS-S

Electromagnetic operating mechanism, comes with end switches as standard. In case of fire, the fire damper closes automatically. Damper closing can be initiated either by thermal fuse melting or remotely by triggering the electromagnet. Electromagnet is constantly under power and activates closing of the damper blade in case the power cuts out. Upon closure, damper blade is locked in closed position and can only be opened manually. Thermal fuse melting point is 72 °C. EMS-S mechanism is the same for FD25/FD40 fire dampers.



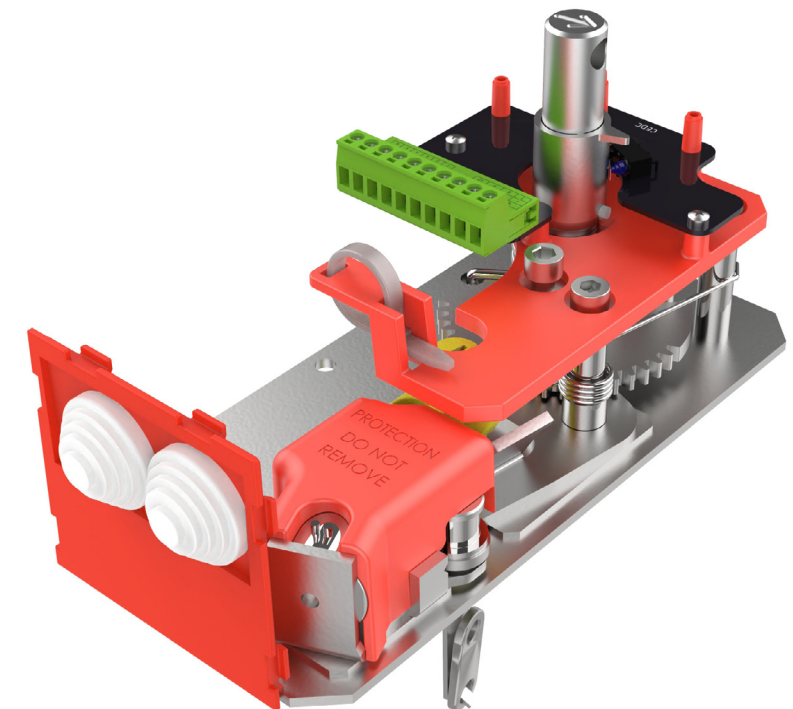
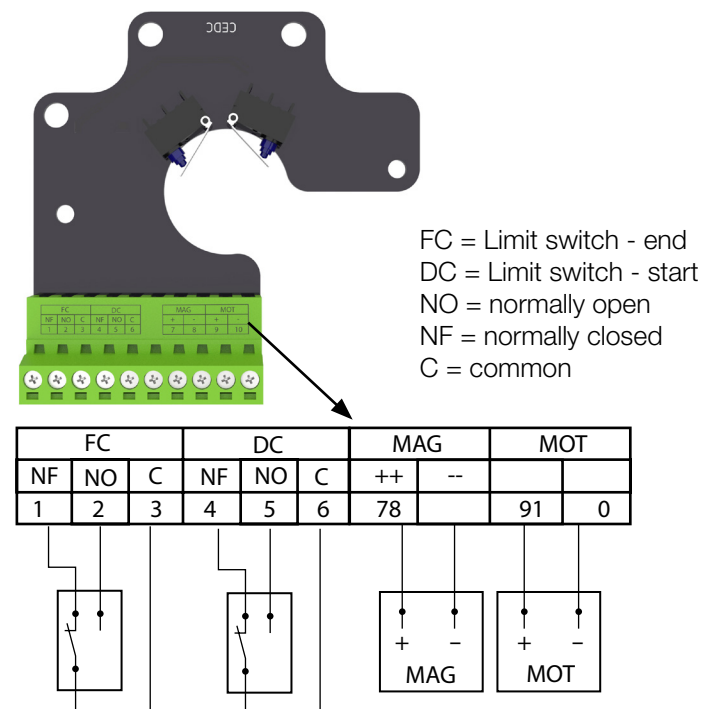
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Technical specifications

Nominal voltage	Solenoid: 24/48 VDC
Power	Dual voltage SOLENOID: Break of current: P _{nom} = 1.6W
Switching capacity	1 mA...500 mA, 5 VDC...48 VDC
Blade closing time	Spring: 1 sec
Blade opening time	Manual
Manual activation	Release button on the casing
Degree of protection	IP 42
Ambient temperature range	min. -30 °C, max. 50 °C
Ambient humidity	95% r.h., non-condensing
Service life	Min. 30,000 cycles
Maintenance	Maintenance-free
Weight	2,5 kg

Wiring diagram



ELECTRIC ACTUATOR

M24-S, M230-S, M24-S-ST

Damper is delivered in closed position. When electric actuator is connected to the power supply damper will open. When the damper reaches the end position (damper open), the electro motor will stop. Closing fire damper takes place automatically when a power failure occurs. Thermal tripping device that comes with fire damper causes power circuit break at a temperature of 72 °C, optional 95 °C (inside or outside duct). If checking is needed for proper functioning of fire damper, pushing the switch on the thermal tripping device will close damper.



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ELECTRIC ACTUATORS

FIRE DAMPER - FD

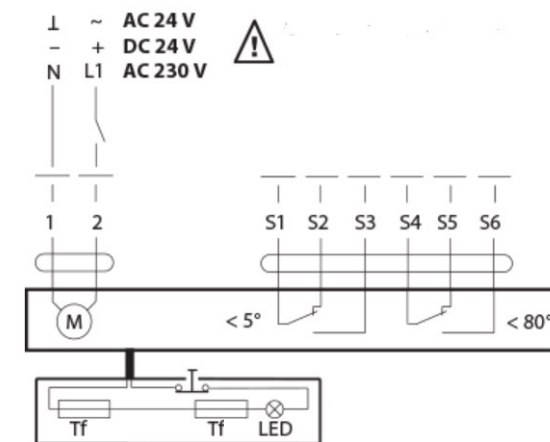
When switch on tripping device is released, the damper will open. Damper can be opened without connecting to a voltage with enclosed handle turning in the direction of the arrow on electric actuator (clockwise). Damper can be locked in the desired position by fast turning back handle a quarter of a turn (counter clockwise) for Belimo BF, and by pulling brake on Belimo BFL and BFN.

To unlock the electro motor, turn handle clockwise for a quarter of a turn for Belimo BF, or release brake for Belimo BFL and BFN. After release, damper will be closed by return spring. When damper is opened manually, electric actuator will not move the damper into closed position in case of power failure.

Technical specifications

Type of Belimo actuator	BFL24-T	BFN24-T	BFL230-T	BFN230-T	BF24-T	BF230-T
voltage	AC/DC 24 V, 50/60 Hz	AC 24 V, 50/60 Hz	AC 230 V, 50/60 Hz	AC 230 V, 50/60 Hz	AC/DC 24 V, 50/60 Hz	AC 230 V, 50/60 Hz
Nominal voltage / power	opening	2,5 W	4 W	3,5 W	5 W	7 W
	holding	0,8 W	1,4 W	1,1 W	2,1 W	2 W
	for wire sizing	4 VA	6 VA	6,5 VA	10 VA	10 VA
End switch	1 mA...3 A (0,5 A), DC 5 V... AC 250V	1 mA...3 A (0,5 A), DC 5 V... AC 250 V	1 mA...3 A (0,5 A), DC 5 V... AC 250 V	1 mA...3 A (0,5 A), DC 5 V... AC 250 V	1 mA...6 A (3 A), DC 5 V... AC 250 V	1 mA...3 A (0,5 A), DC 5 V... AC 250 V
	Running time	motor < 60 s spring return ~ 20 s	motor < 60 s spring return ~ 20 s	motor < 60 s spring return ~ 20 s	motor < 60 s spring return ~ 20 s	motor < 120 s spring return ~ 16 s
Ambient temperature range	min. -30 °C, max. 50 °C					

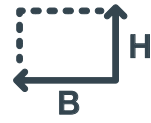
Wiring diagram



- 1 negative (direct-current) or neutral (alternating current)
- 2 positive (direct-current) or faze (alternating current)
- S1 common micro switch closed damper
- S2 normally closed micro switch closed damper
- S3 normally open micro switch closed damper
- S4 common micro switch open damper
- S5 normally closed micro switch open damper
- S6 normally open micro switch open damper
- Tf temperature sensor on the outer side of the duct (ambient temperature) max. 72 °C

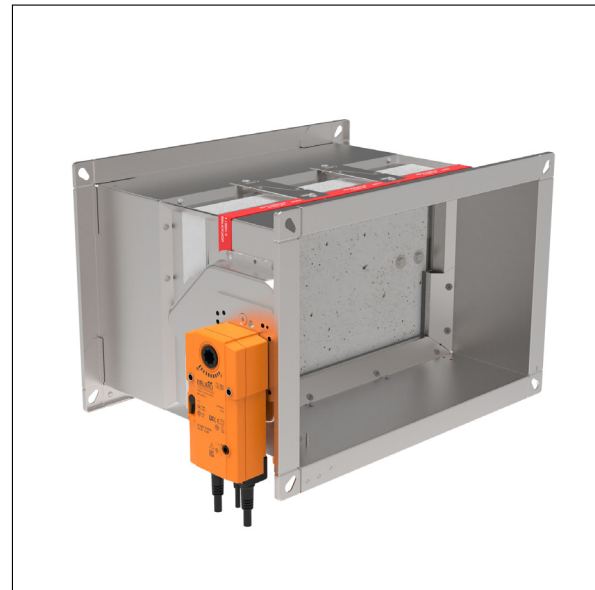
ELECTRIC ACTUATOR

Position of thermal fuse



H < 300

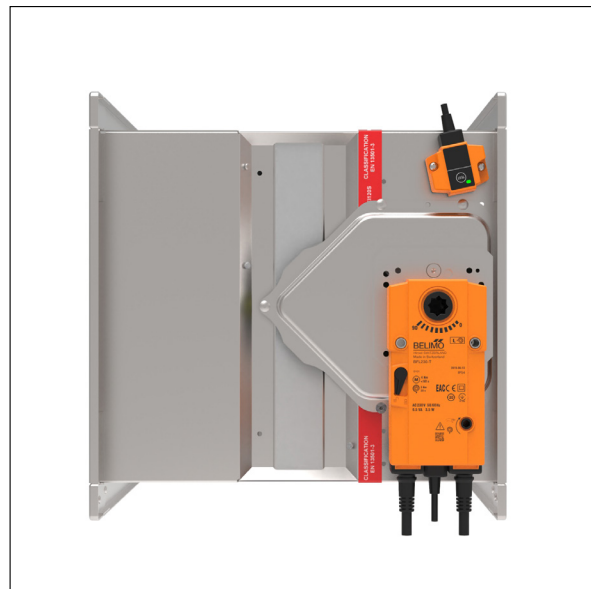
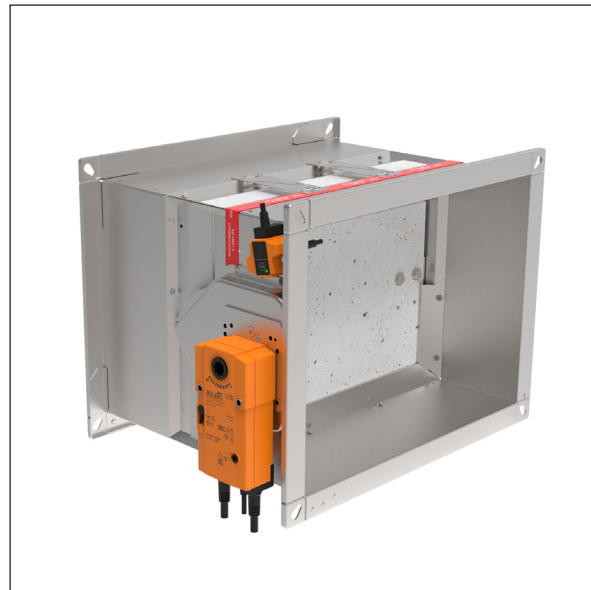
Thermal fuse is located on the underside of the fire damper.



Bottom view

300 ≤ H ≤ 450

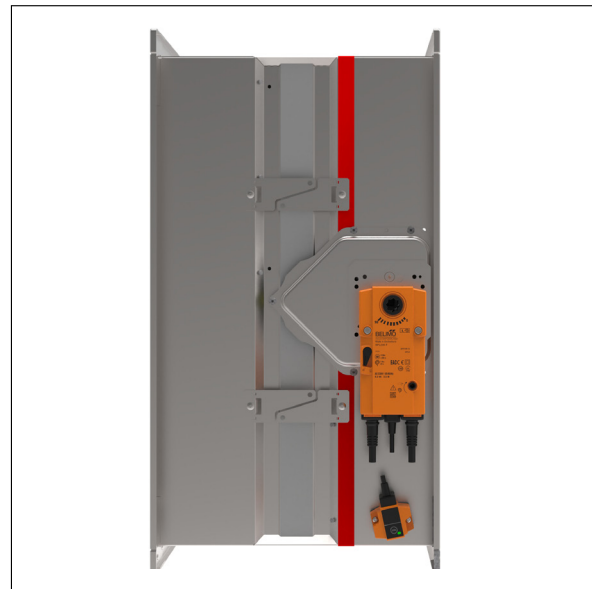
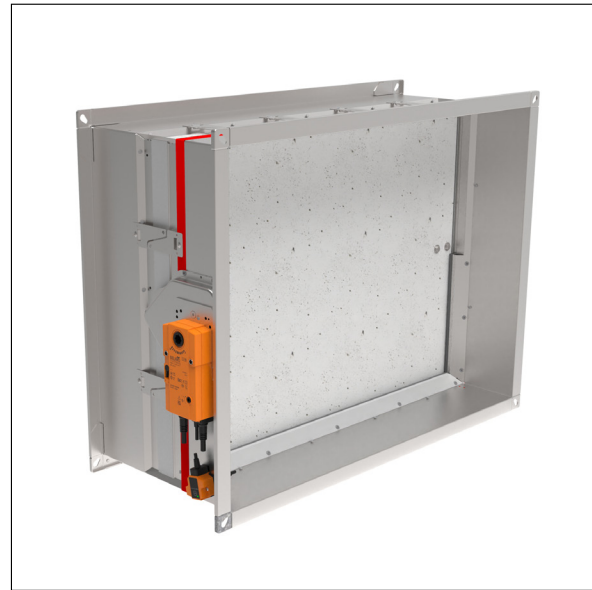
Thermal fuse is located on the same side as Belimo actuator (above).



Side view

H > 450

Thermal fuse is located on the same side as Belimo actuator (below).



Side view

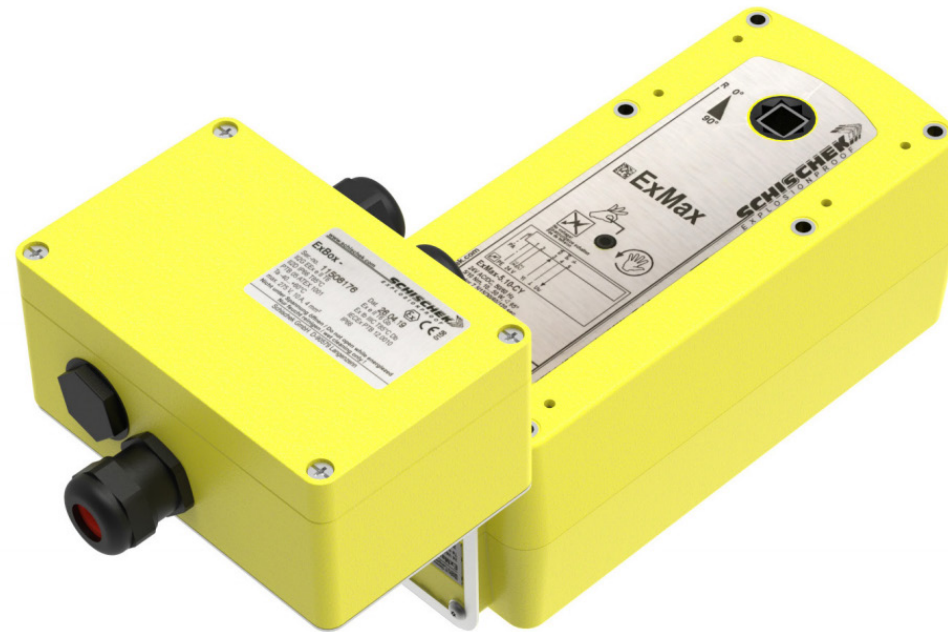
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 ELECTRIC ACTUATORS

FIRE DAMPER - FD

ELECTRIC ACTUATOR SCHISCHEK ExMax

Damper is delivered in closed position. When electric actuator is connected to the power supply damper will open. When the damper reaches the end position(damper open), in which is it blocked, the electric actuator will stop. Closing fire damper takes place automatically when a power failure occurs. Thermal tripping device that comes with fire damper causes power circuit break at a temperature of 72 °C (inside or outside duct).



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ELECTRIC ACTUATORS

FIRE DAMPER - FD

If checking is needed for proper functioning of fire damper, pushing the switch on the thermal tripping device will close damper. When switch on tripping device is released, the damper will open.

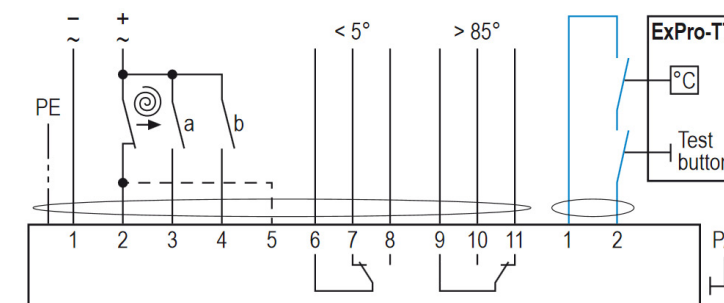
Damper can be opened without connecting to a voltage with enclosed Allen key, by turning in the direction of the arrow on electric actuator (clockwise). After release of Allen key, damper will go to closed position.

Type Examination Certificate Number: EXA 14 ATEX0064X Equipment complies with the essential health and safety requirements relating to the design and construction of equipment intended to use in potentially explosive atmospheres given in annex II of the directive 94/9/EC.

Technical specifications

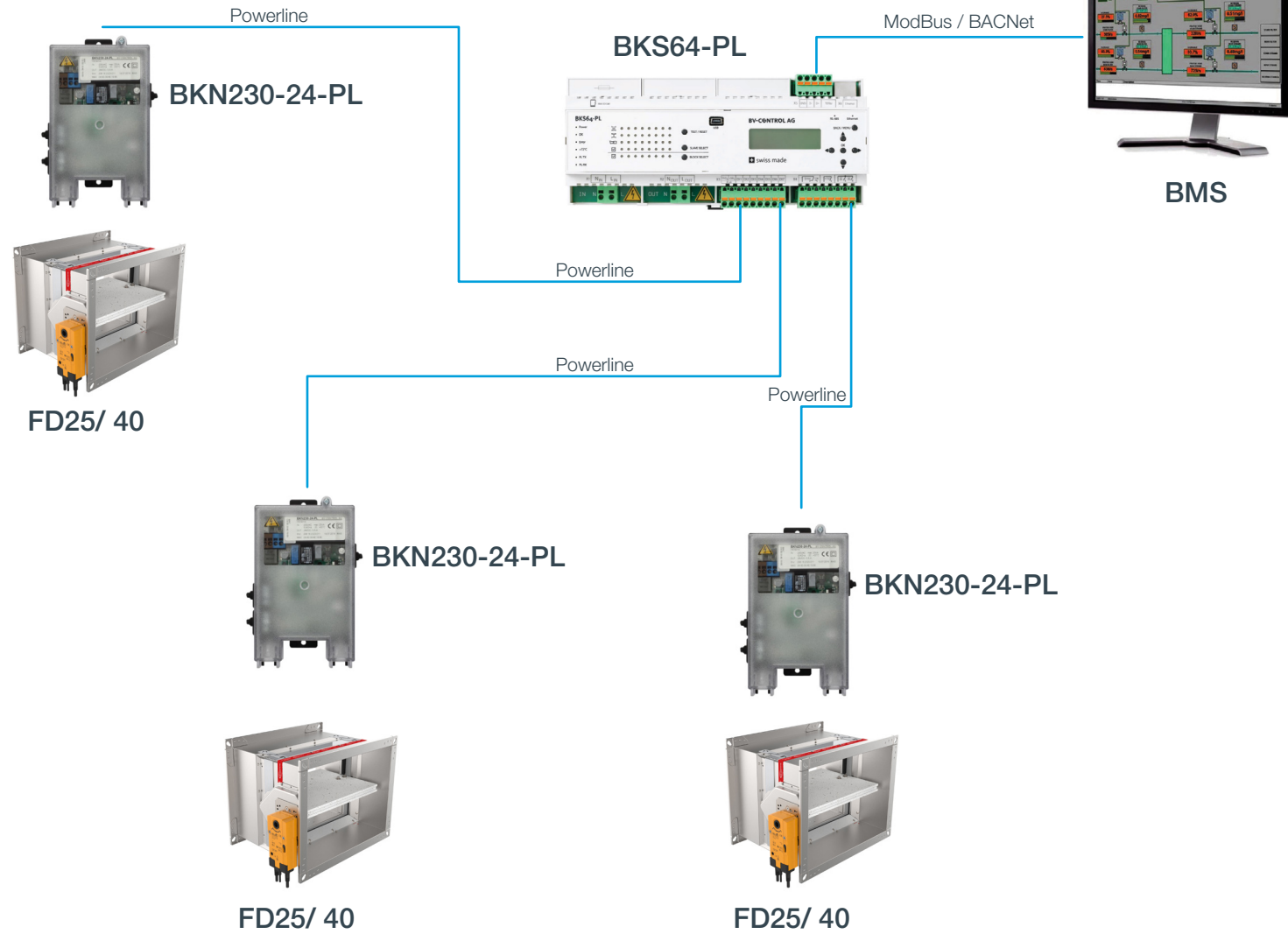
Type	ExMax -5.10-BF	ExMax -15-BF
Torque	5/10 Nm	15 Nm
Power Supply	24-230 V AC/DC	24-230 V AC/DC
Running time	3/15/30/60/120 s / 90°	3/15/30/60/120 s / 90°
Spring return	3 or 10s / 90°	3 or 10s / 90°
Control mode	On-Off, 3 position	On-Off, 3 position
Feedback	2 x aux switches + Ex. tripping device	2 x aux switches + Ex. tripping device
Ambient temperature range	min. -40 °C, max. 40 °C	min. -40 °C, max. 40 °C
Ambient humidity	0-90% r.h., non-condensing	0-90% r.h., non-condensing
Service life	Min. 10,000 cycles @ 10 s, min 1000 cycles @ 1s	Min. 10,000 cycles @ 10 s, min 1000 cycles @ 1s
Maintenance	Maintenance-free	Maintenance-free
Weight	3,5 kg	3,5 kg

Wiring diagram



COMMUNICATION MODULES POWERLINE

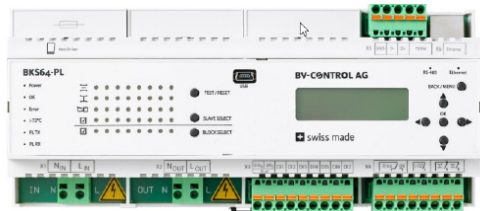
- 230VAC Powerline communication on field side
- Topology: Free
- Max. distance between master and slave: 1200 m
- Display of damper position (incl. angle**)
- Button on device for damper function check
- Relay outputs for enabling ventilation
- Optional control and monitoring via Modbus RTU (RS-485) or Modbus TCP/IP (Ethernet) BACnet MS/TP or BACnet IP
- Optional monitoring on external computer or on control cabinet touch screen (TCP/IP communication)
- USB interface and CDU software for simple configuration and diagnostics at on-site computer
- Event logging



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COMMUNICATIONS MODULES



BKS64 - PL is a master for up to 64 BKN230-24-PL devices. It is a control and display module for motorized fire protection dampers or smoke extraction dampers. It communicates with the slaves directly via the 230 VAC power cable. The Powerline slaves (BKN230-24-PL) have a unique physical MAC address and can therefore be detected automatically irrespective of pre-addressing. Automatic or selective addressing, which is primarily for spatial location, can be carried out on the slave itself before installation or later during commissioning. The damper positions and any faults are displayed directly on the device. Dampers can be selected and tested with the pushbutton. The dampers can be opened and closed via potential-free contact or +24 VAC/DC external voltage. The master can also be controlled via MODBUS (TCP/IP and RTU) or BACnet (IP or MS/TP) and therefore can be considered as a Modbus/Powerline or BACnet/Powerline Gateway.

[Technical documentation BKS](#)

BKN230-24-PL is the link between the Powerline Master (e.g. BKS64-PL) and the motorized fire damper. It supplies a conventional spring return or a Belimo Top-Line “-ST” actuator and optionally an optical smoke detector with electrical energy. Communication with the master device takes place directly via the 230 VAC supply line (POWERLINE technology). The Powerline participants (BKN230-24-PL) have a unique physical MAC address and are therefore always recognized by the master, regardless of preaddressing or automatic addressing by the master.

- 230 VAC Powerline communication with dynamic signal adjustment and zero crossing detection
- Connection for a conventional or Belimo Topline actuator (auto recognition)

[Technical documentation BKN](#)



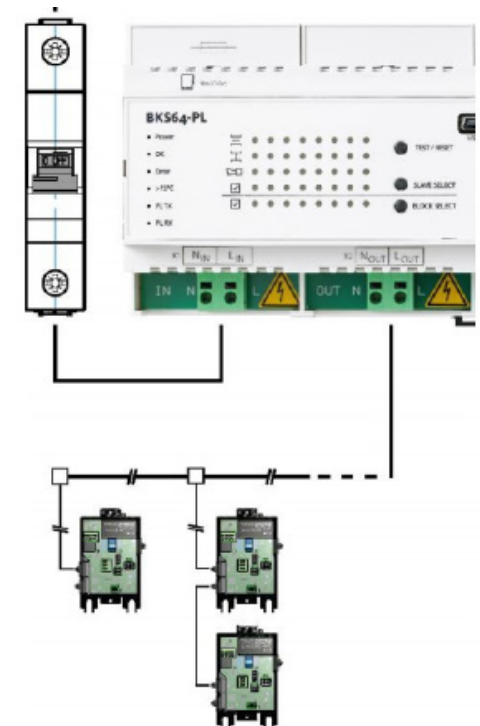
Power supply

Spring terminal for 230 VAC 2 x 2.5 mm² installation cable
 X1.1 Neutral conductor (N)
 X1.2 Phase conductor (L)
 Fuse protection:
 13 A, characteristic D if less than 32 x BKN230-24-PL
 16 A, characteristic D if 32 or more x BKN230-24-PL (slave fuse: 10A, slow-blow)

Powerline output

Spring terminal for 230 VAC installation cable
 X1.1 Neutral conductor (N)
 X1.2 Phase conductor (L)
 Cross section
 1.5 mm² if less than 32 x BKN230-24-PL
 2.5 mm² if 32 or more x BKN230-24-PL
 Connect optional shield to earth only at the master end.

FIRE DAMPER - FD



ACCESSORIES

1 **Safety grill**- Fire damper, safety grille and, if applicable, extension piece are assembled at the factory to form a unit. The free cross sectional area of the cover grille is approx. 70%.

2 **Flexible duct connections** - Flexible duct connectors are used in HVAC systems for isolation from structure-borne noise, expansion compensation and fire damper connections.

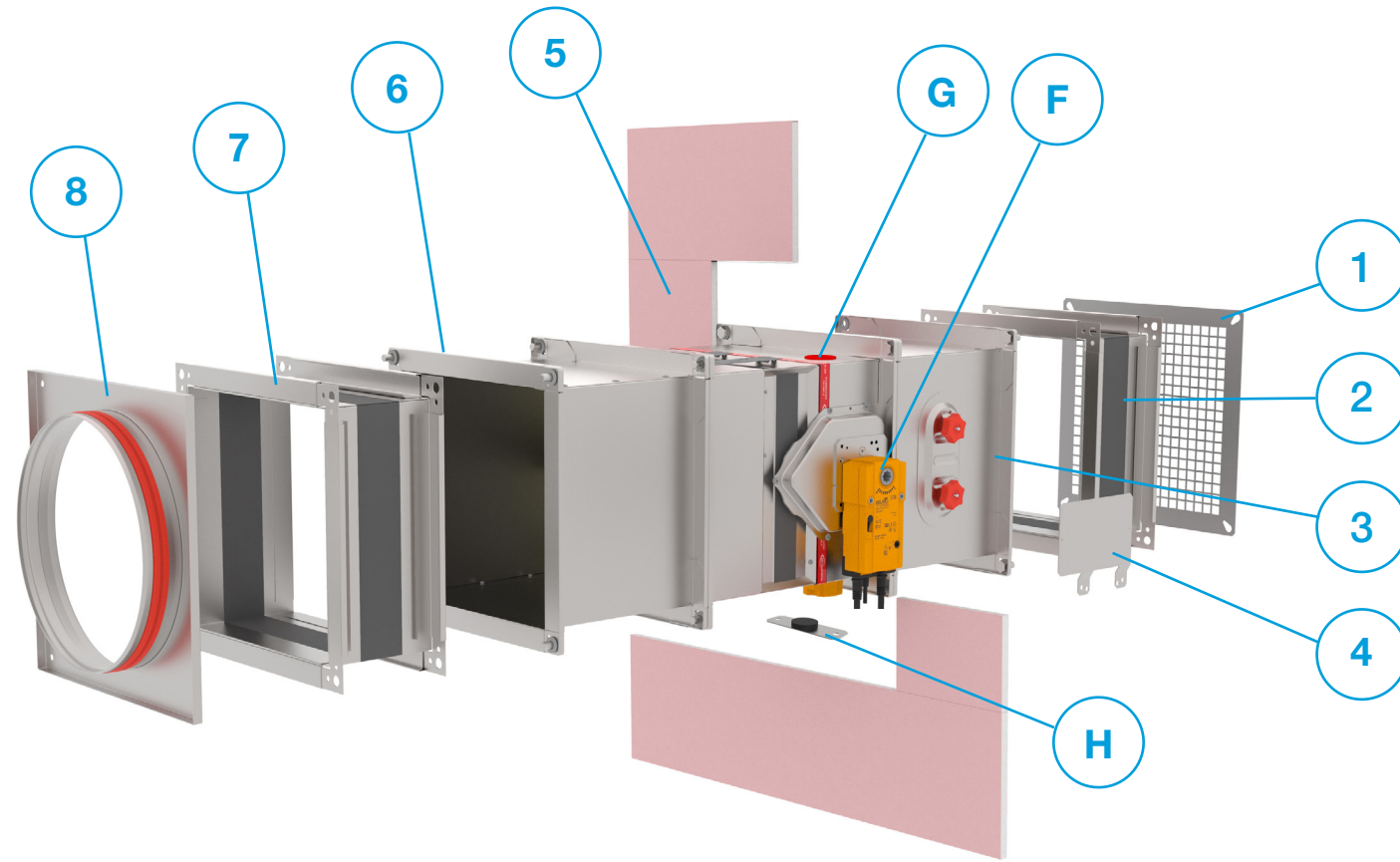
3 **Extension piece on operation side.**

4 **Communication module bracket.**

5 **GKF boards for dry installation** - Calcium silicate plates are used in dry installations as insulation cover. It keeps the insulation in place and provides for better fire penetration characteristics of the whole installation. Cover the complete perimeter around fire damper from both sides with boards in 150 mm height.

6 **Extension piece on installation side**

7 **Circular connections** - Are used to connect the circular ventilation ducts to the rectangular fire dampers.



(1) Type (2) Accessories (3) Dimension

FD-A - CSP - 800x600

(1) FD-A accessories for rectangular fire damper

(2) SG1- Safety grill on operation side
 SG2- Safety grill on installation side
 FLEX - Flexible duct connections (1pc)
 EXT1- Extension piece on operation side
 EXT2- Extension piece on installation side

CMB- Communication module bracket
 CSP - GKF boards kit (for both sides of the installation)
 CIRC- Circular connection

(3) BxH nominal size of the rectangular fire damper



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+ ACCESSORIES

FIRE DAMPER - FD

SPARE PARTS

- Spare parts are shown in the table above.
- For safety reasons, parts need to be changed by a trained personnel or the manufacturer.
- **WARNING!**
 Install the original parts only!
- On the next page more about replacing parts.

A **Fuse kit** FD-A-THERM-72

B **Double contact S kit** FD-A-R25S-KIT

B***Double contact S kit** FD-A-R40S-KIT [see page 42.](#)

C **Solenoid current b** FD-A-EMS-KIT

D **Belimo thermal fuse 72°C** FDC-A-ZBAE72

E **Belimo thermal fuse 95°C** FDC-A-ZBAE95

F **Kit C-** FD-A-KIT-C- upgrade to electric actuator

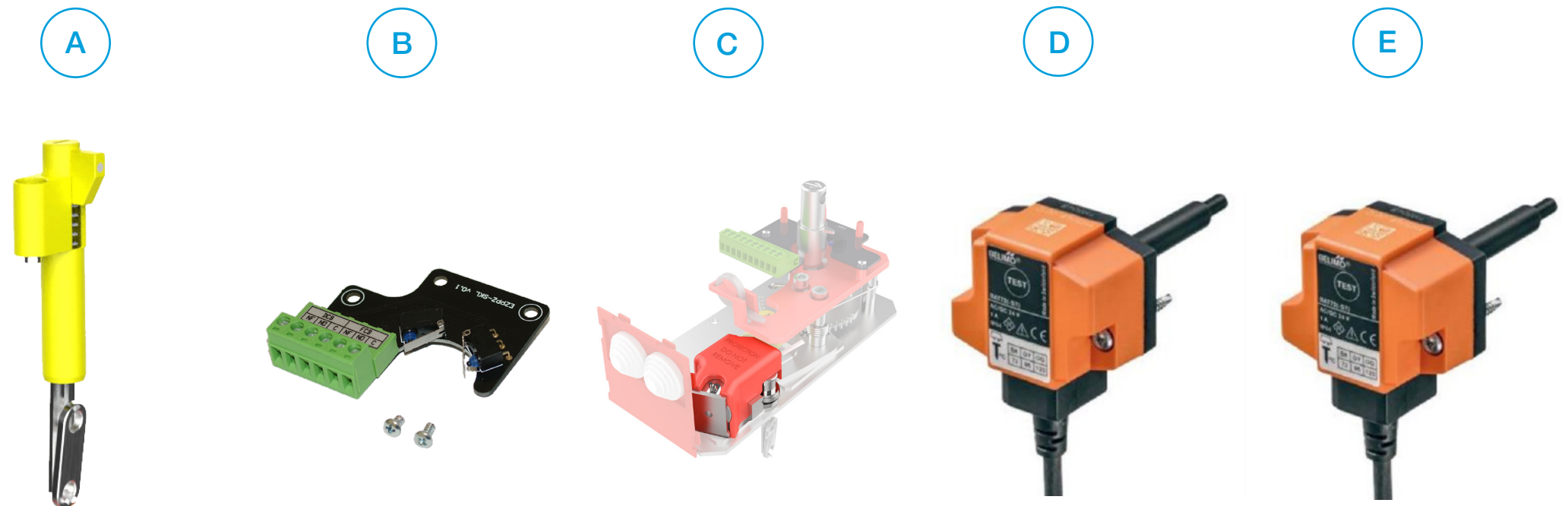
G **Inspection hatch** FD-A-IH

H **Temperture probe blanking plate** FD-BP-KIT

I **R40 manual mechanism**-FD-A-R40-[see page 41.](#)

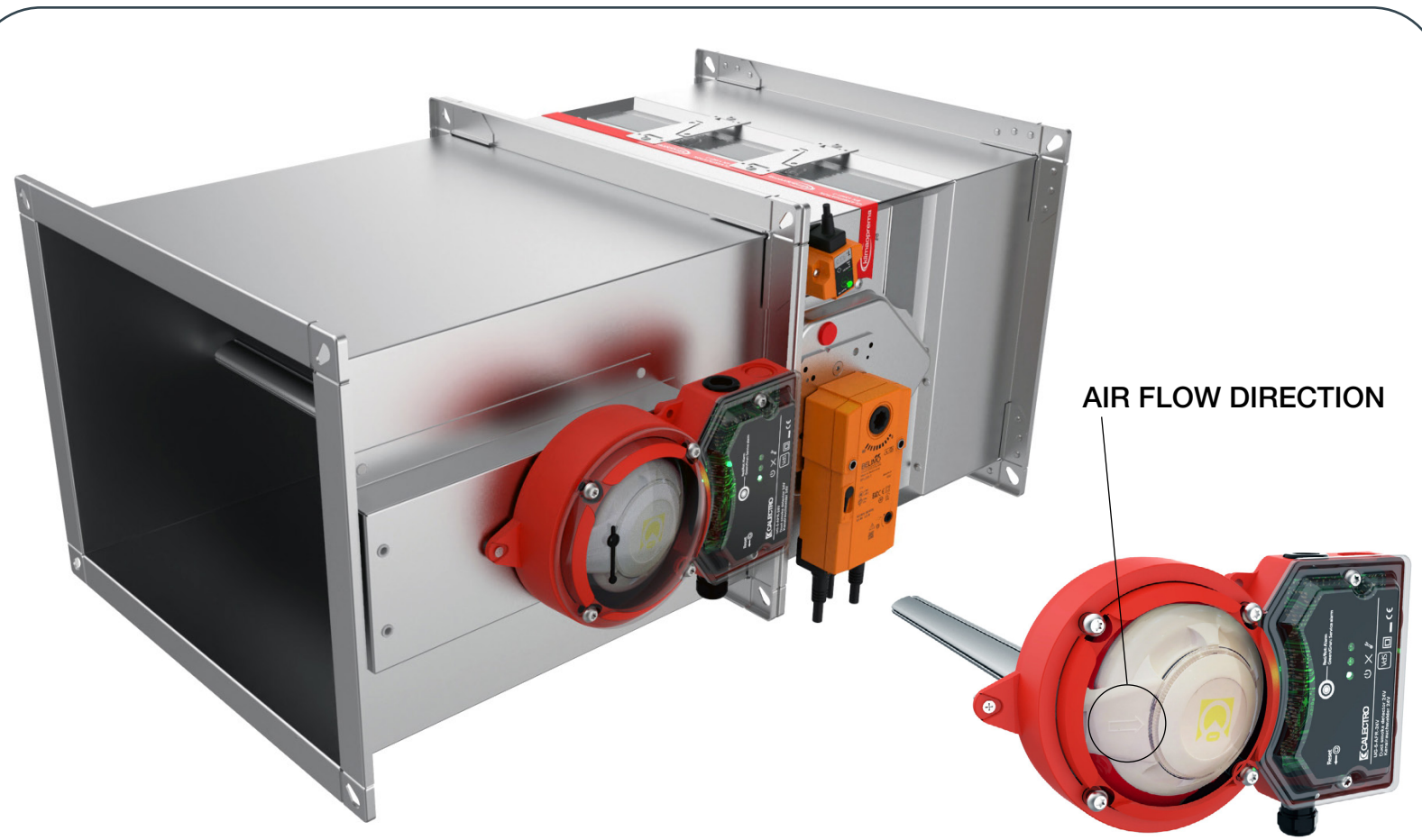
J **Electric actuator rotation kit**- FD-A-ERK-[see page 57.](#)

K **Smoke sensor spare parts**-[see page 49.](#)



SMOKE SENSOR ASSEMBLY FD-SSA

Smoke sensor assembly is developed to detect smoke in ventilation ducts and combines a smoke detector and an adaptor system where both tube and housing are specially designed for optimum airflow through the smoke detector. Smoke sensor provides the signal for the fire damper which is activated when smoke is detected. Smoke sensor assembly consists of casing, smoke sensor and specially designed venturi pipe inside the duct. The smoke sensor can be rotated in four different positions: 0°, 90°, 180° and 270°. Versions for 24 V and 230 V power supply are available. It is completely assembled in the factory.



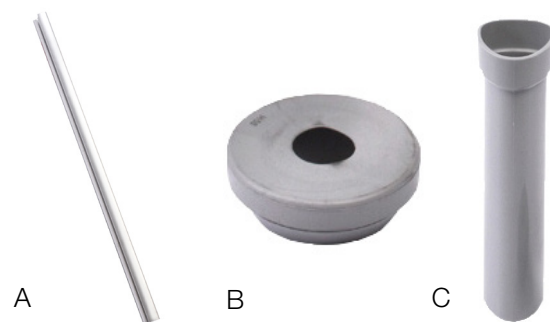
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(1) Type	(2) Accessories	(3) Dimension	(4) Voltage
FD-A	- SSA	- 400x300	- 24
(1) FD-A - Accessories for fire damper	(2) SSA- Smoke sensor assembly	(3) 200x200...1500x800 nominal diameter of the round fire damper	(4) 24- Smoke sensor 24 V 230- Smoke sensor 230 V

+ ACCESSORIES

Spare parts

- Smoke sensor FD-A-UG-5-AFR-24V
- Smoke sensor FD-A-UG-5-AFR-230V
- A Sampling tube FD-A-ST5
- B Rubber gasket FD-A-HFU204
- C Isolation extension FD-A-HFU500

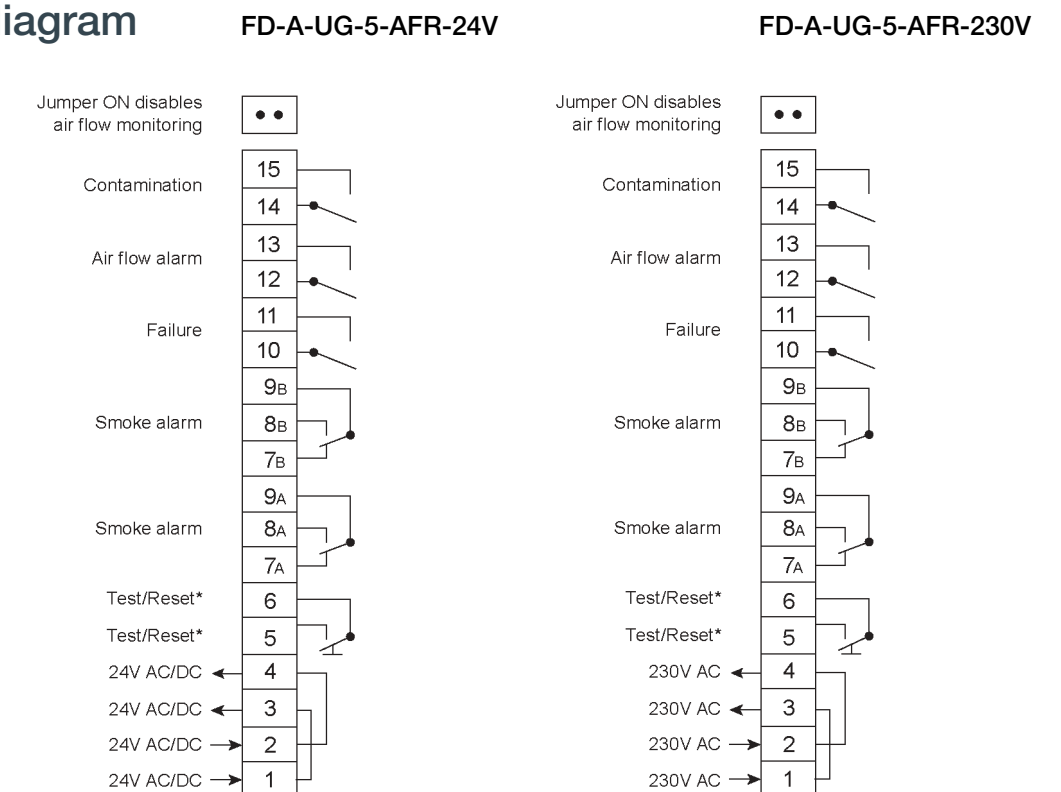


For more information, visit website: [Technical documentation Calectro](#)

Technical specifications

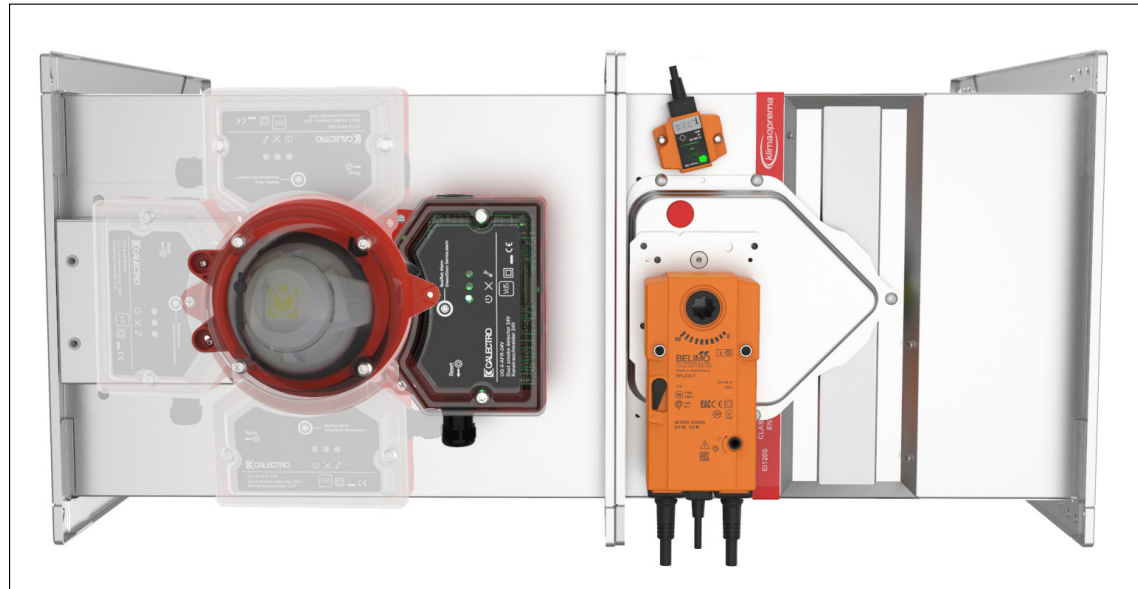
	FD-A-UG-5-AFR-24V	FD-A-UG-5-AFR-230V
Voltage Supply	24V AC/DC -15%, +10% Not polarity sensitive	230V AC -15%, +10% Not polarity sensitive
Detector type	Optical UG-5-AFR-24V	Optical UG-5-AFR-230V
Max. power consumption	220 mA	30 mA
Operating temperature	-10°C to +55°C	
Maximum humidity	99% rH	
Duct air velocity range	1 to 20 m/s	
Approvals	VdS CE, EN-54-27	
Relay output	Potential free	
Smoke alarm relays	Two changing contacts 250V, 8A	
Service alarm	One breaking contact 250V, 5A	
System error alarm	One breaking contact 250V, 5A	
Low Flow alarm:	One breaking contact 250V, 5A	
LED on smoke detector:	Green - service alarm (contamination) Red - smoke alarm	
LED on PCB:	Green - normal operation Yellow - system error Yellow - Low-Flow	

Wiring diagram



FIRE DAMPER - FD

SMOKE SENSOR CASING ROTATION



Smoke sensor casing can be rotated (90°-180°-270°) in order to provide better flexibility for wiring. To rotate smoke sensor casing, follow the below instructions.

1. Follow first step of smoke sensor rotation: locate and remove hex screws.
2. Rotate the Calectro casing (90°-180°-270°).
3. Fix the screws following the fourth step of smoke sensor rotation.

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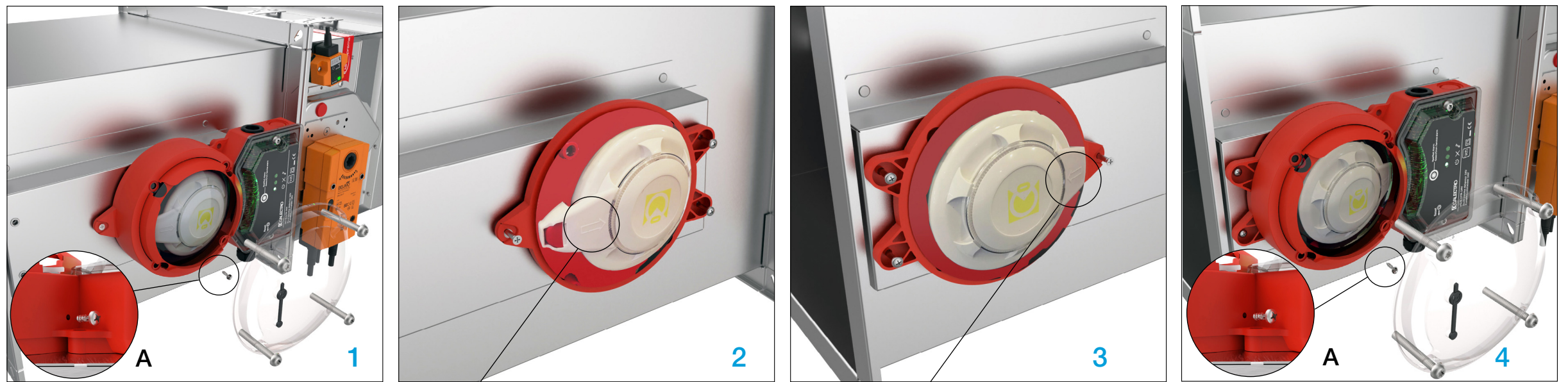
↻ REPLACEMENTS

FIRE DAMPER - FD

SMOKE SENSOR ROTATION

Smoke sensor assembly is supplied with standard right airflow direction. If the airflow direction is opposite, smoke sensor can be rotated by following below instructions.

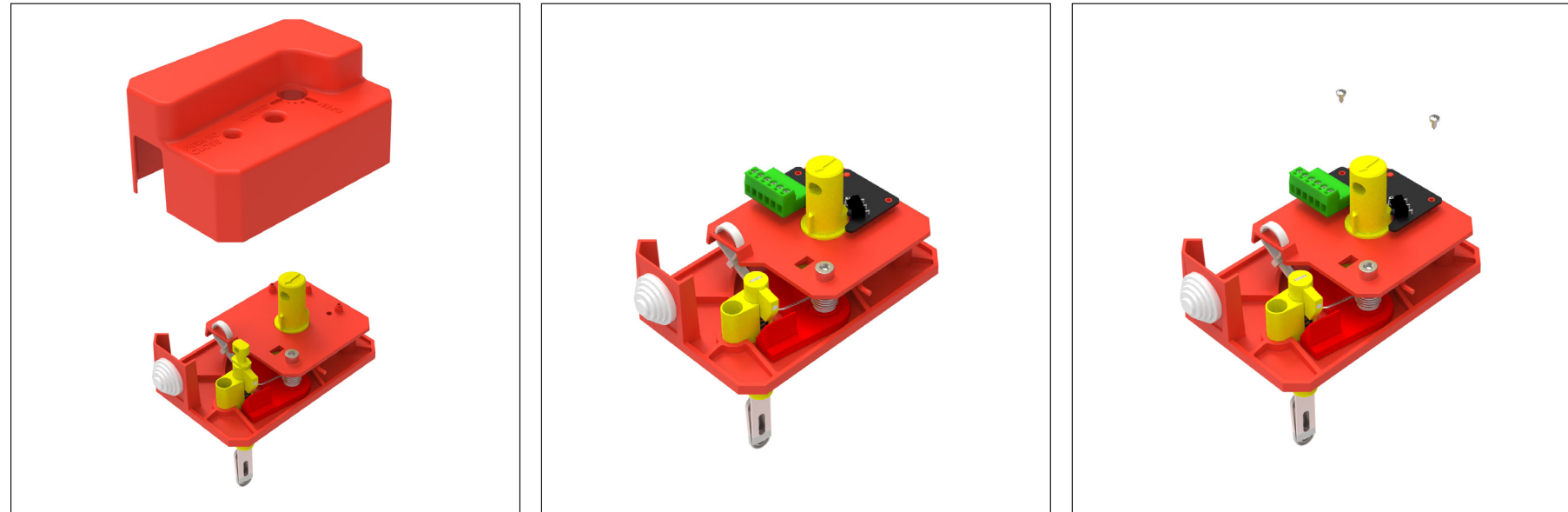
1. Locate hex screws, unscrew them and remove the cover. **Pay attention to detail A!**
2. Remove the casing, locate the screws and remove them.
3. Rotate smoke sensor (0°-180°) according to air flow direction and fix it with screws.
4. Put the casing back and install the cover. **Pay attention to detail A!**



AIR FLOW DIRECTION →

AIR FLOW DIRECTION ←

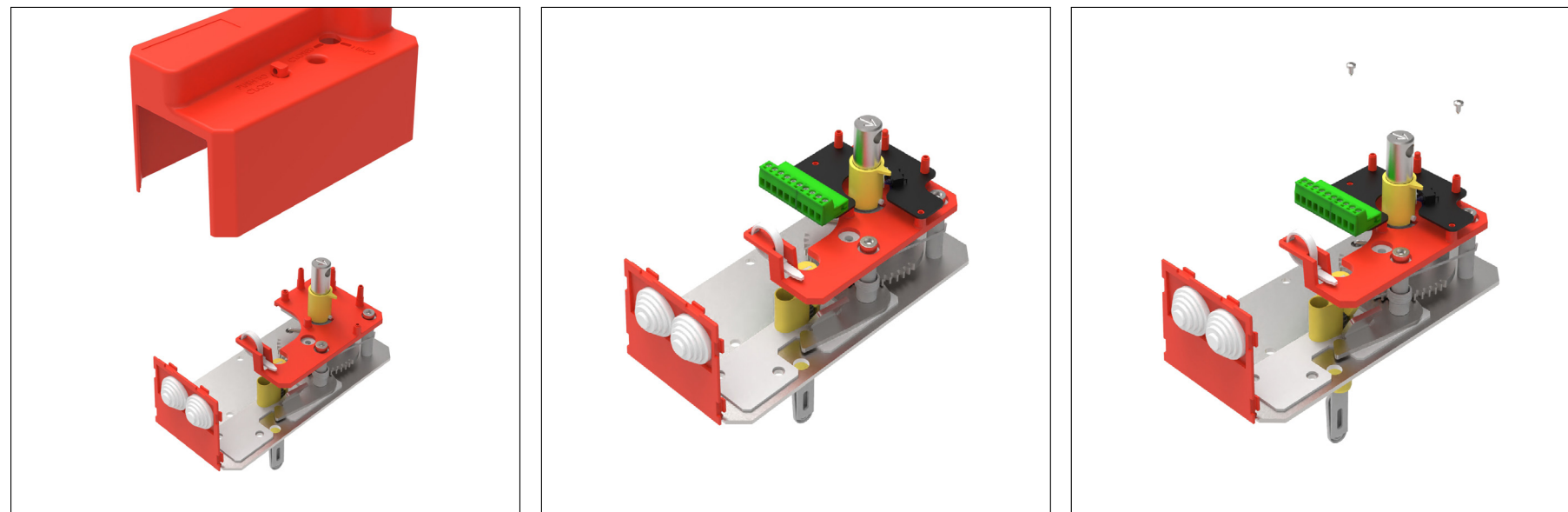
UPGRADE TO END CONTACTS (R25 → R25-S)



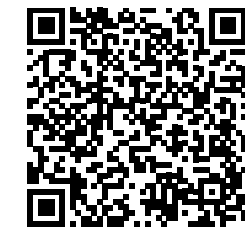
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UPGRADE TO END CONTACTS (R40 → R40-S)



FIRE DAMPER - FD



[Video instructions](#)

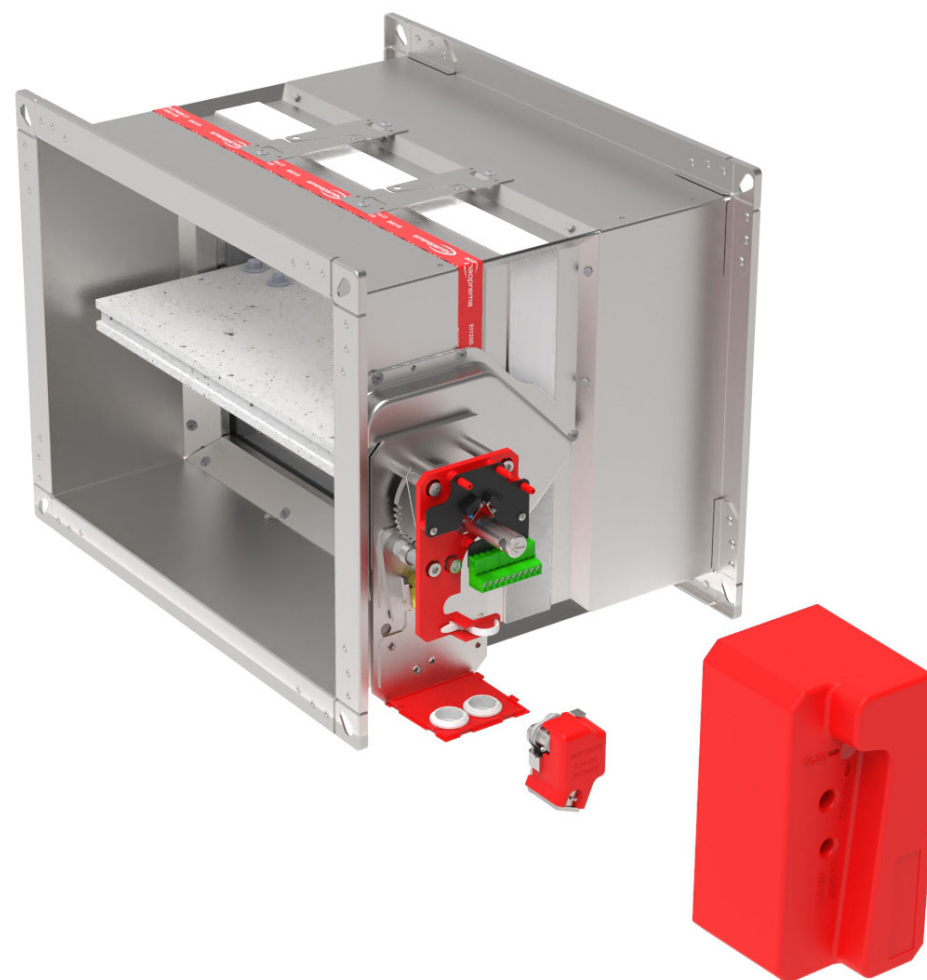
1. Locate hex screw, unscrew it and remove the cover.
2. Insert CEE (R25) / CEDC (R40) board in the appropriate place.
3. Screw the board to the plate. Put the cover back in place

UPGRADE FROM MANUAL (R40-S) TO EMS

To upgrade R40 to EMS, it is necessary to install kit for end contacts (FDC-A-R40S-KIT).
To upgrade R25/RS25-S to EMS, it is necessary to install R40 mechanism (FD-A-R40) and kit for end contacts (FDC-A-R40S-KIT).



[Video instructions](#)



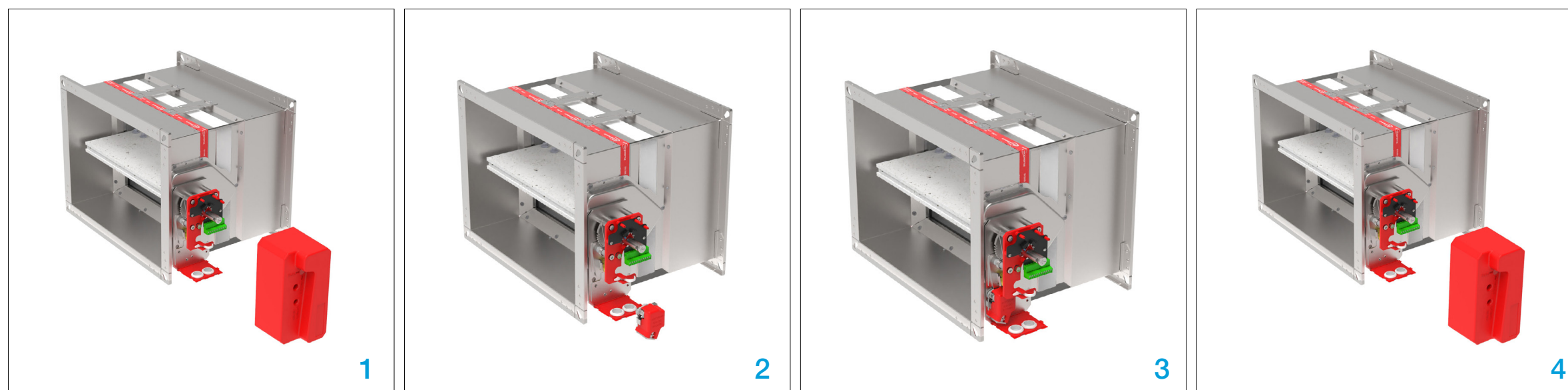
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FIRE DAMPER - FD

- 1) Locate hex screw. Unscrew it and remove the cover.
- 2) Insert the EMS on the custom plate.
- 3) Screw the EMS to the plate and connect the 2-pin connector into the appropriate socket on the CEDC board.
- 4) Put the cover back in place.

Test the operation of the damper blade!



REPLACEMENT OF THERMAL FUSE (R25)



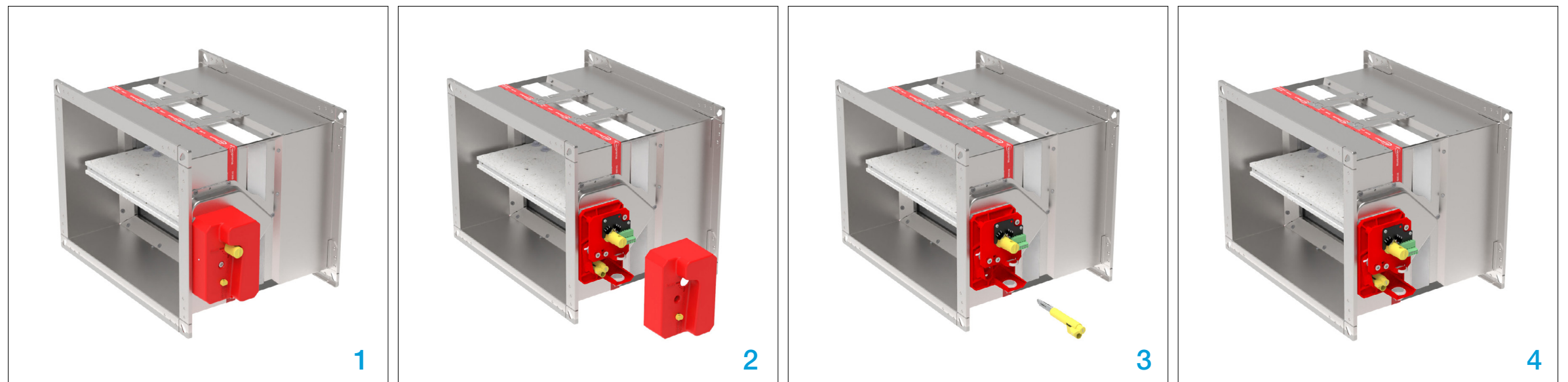
[Video instructions](#)



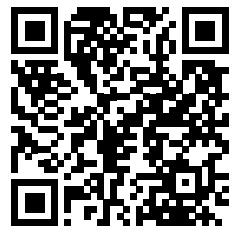
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- 1) Find the hex screw located on the cover. Unscrew and remove the screw and the cover.
- 2) Find the hex screw on the thermal fuse and unscrew it.
- 3) Remove the old thermal fuse. Insert a new thermal fuse and screw it back on.
- 4) Put the cover back in place.

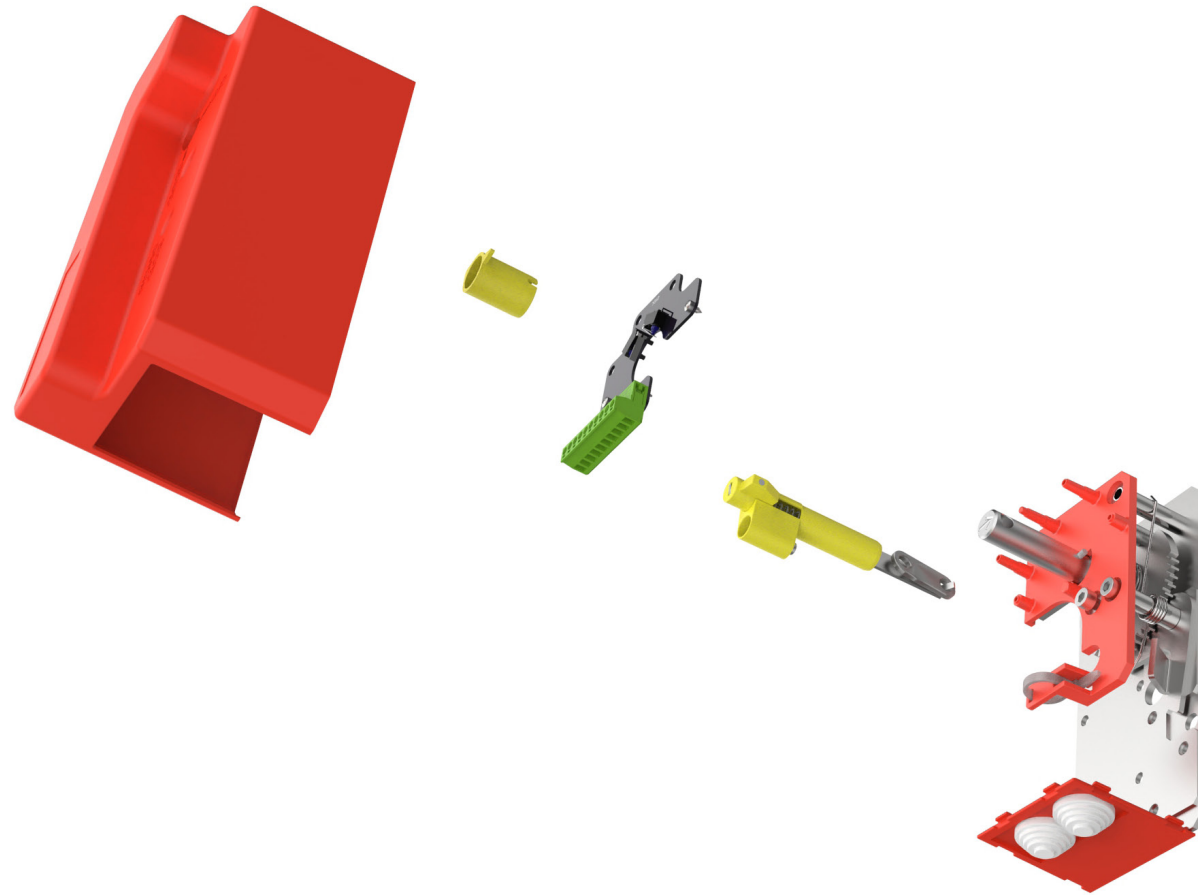
Test the operation of the damper blade!



REPLACEMENT OF THERMAL FUSE (R40)



[Video instructions](#)



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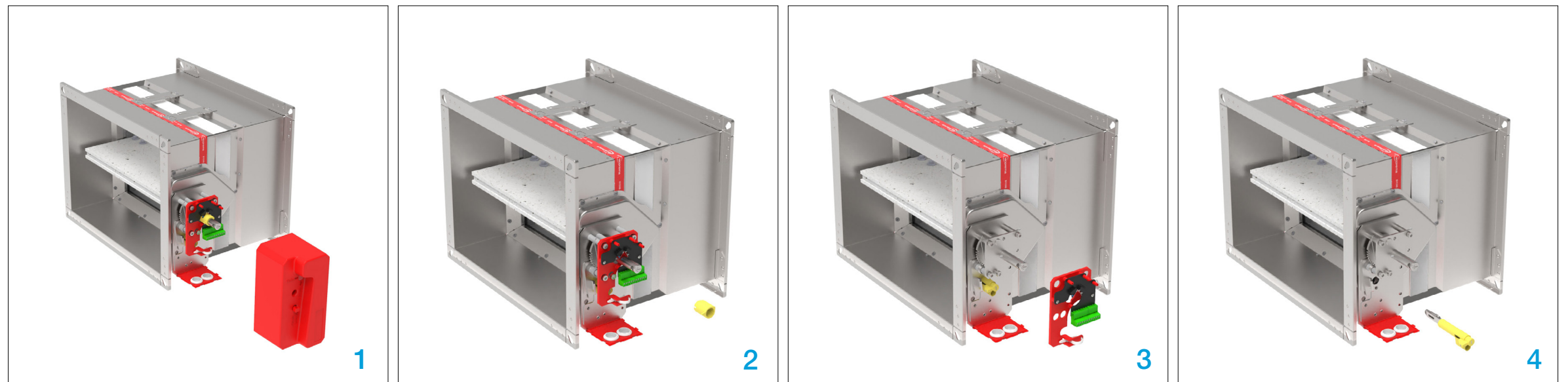
1) Find the hex screw located on the cover, unscrew and remove the screw and the cover.

2) Remove the position indicator sleeve.

3) Locate the 3 hex screws. Unscrew them. Remove the CEDC board (if applicable).

4) Locate the screw on the thermal fuse. Unscrew it. Remove the old thermal fuse. Insert a new thermal fuse. Put the CEDC board and the cover back in place.

Test the operation of the damper blade!



UPGRADE TO ELECTRIC ACTUATOR

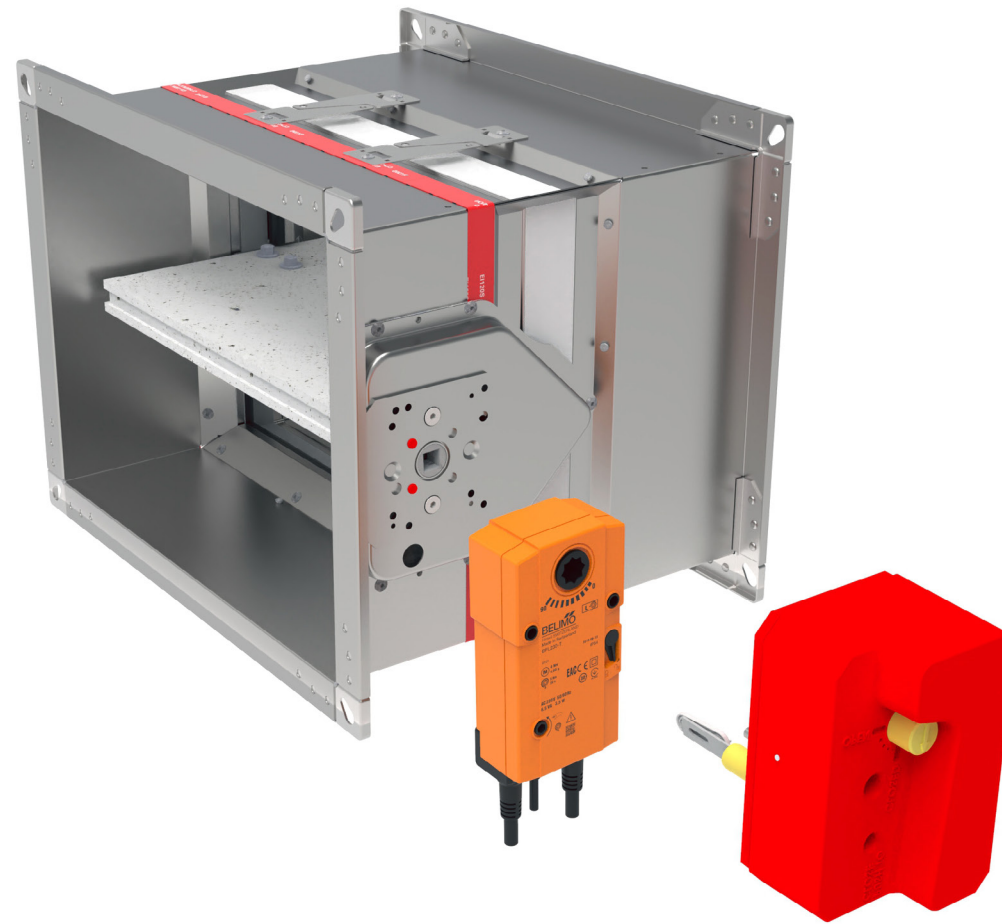
Manual R25 <-> Belimo

100x200 to 800x600

The blade must be closed before replacement the mechanism.



[Video instructions](#)



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↻ REPLACEMENTS

FIRE DAMPER - FD

NOTE: Use Kit C to upgrade to electric actuator!

* Before replacing the mechanism, the damper blade must be closed.

* Find the screw and remove the cover!

1) Find the 2 hex screws located on the board of mechanism, unscrew them and remove manual mechanism.

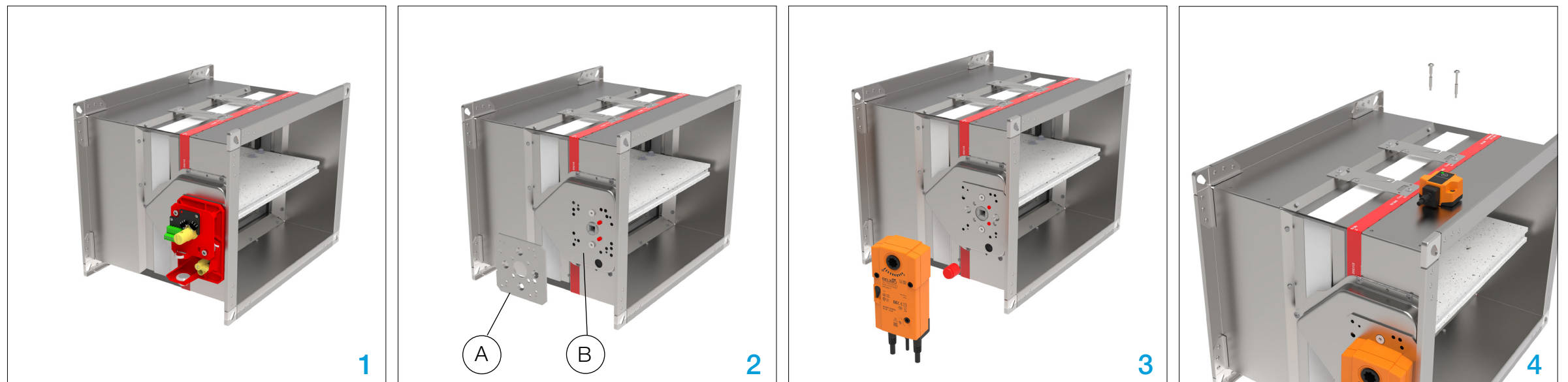
2) Find the 2 hex screws located on the (B)transition board, unscrew them and replace FA (A)transition plate with BE transition plate.

NOTE: Pay attention to the position of indication cut on the BE transition plate.

3) Insert the rubber plug into the opening for the thermal fuse. Install the Belimo actuator and fasten it with screws (2 hexagon screws M6x55).

4) Drill hole (ø16 mm) for the fuse of Belimo mechanism and fix it with self-tapping screws.

NOTE: Install the thermal fuse in a place where it will not interfere with the operation of the damper blade !



Test the operation of the damper blade!

UPGRADE TO ELECTRIC ACTUATOR

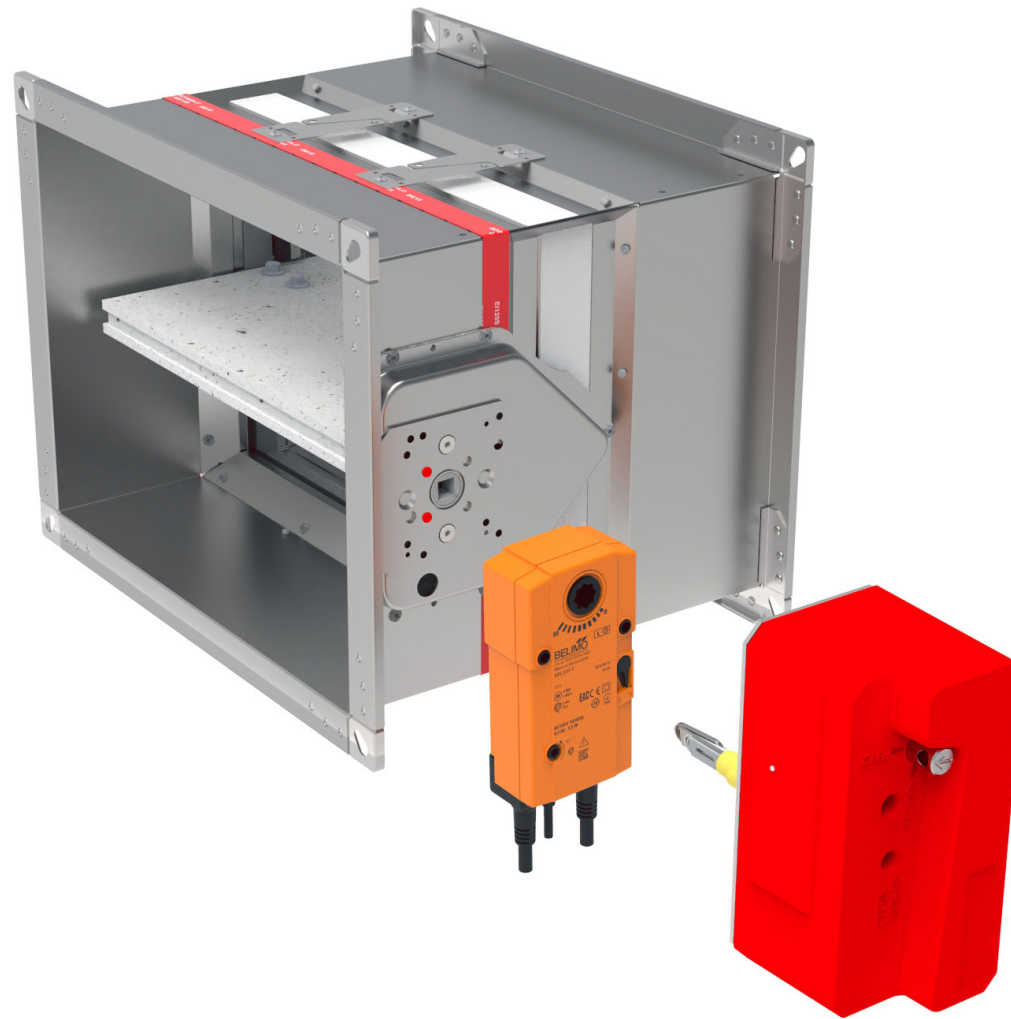
Manual R40 <-> Belimo

800x600 to 1500x800

The blade must be closed before replacement the mechanism.



[Video instructions](#)



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FIRE DAMPER - FD

NOTE: Use Kit C to upgrade to electric actuator!

*Before replacing the mechanism, the damper blade must be closed.

* Find the screw and remove the cover!

1) Find the 3 hex screws located on the board of mechanism, unscrew them and remove manual mechanism.

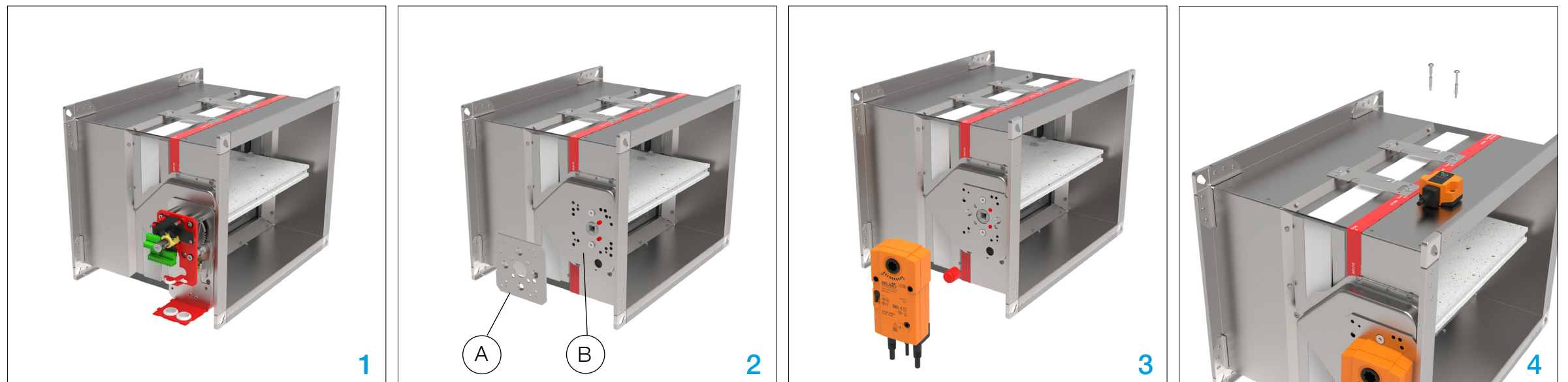
2) Find the 2 hex screws located on the (B)transition board, unscrew them and replace FA (A)transition plate with BE transition plate.

NOTE: Pay attention to the position of indication cut on the BE transition plate.

3) Insert the rubber plug into the opening for the thermal fuse. Install the Belimo actuator and fasten it with screws (2 hexagon screws M6x55).

4) Drill hole (ø16 mm) for the fuse of Belimo mechanism and fix it with self-tapping screws.

NOTE: Install the thermal fuse in a place where it will not interfere with the operation of the damper blade!



Test the operation of the damper blade!

HOW TO ROTATE ELECTRIC ACTUATOR (Belimo)

100x200 to 1500x800

The blade must be closed before replacement the mechanism.

ERK Kit (FD-A-ERK)

- transition plate
- rectangular shaft
- 2x screws M6x30



[Video instructions](#)



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FIRE DAMPER - FD

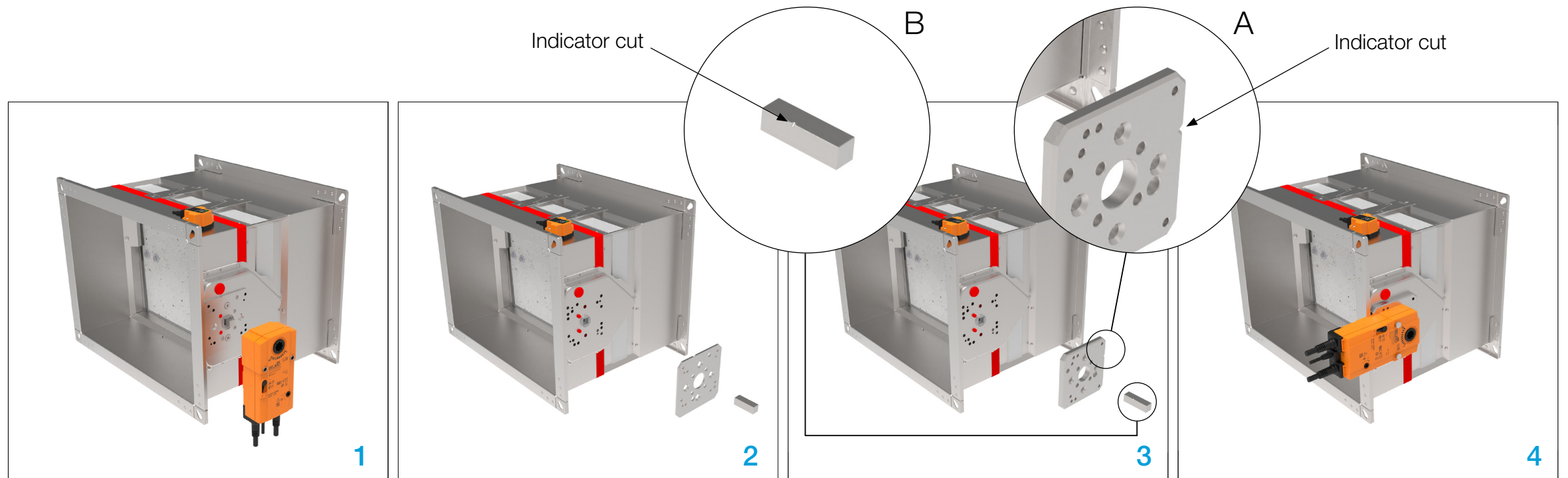
- 1) Locate the 2 hex screws, unscrew and remove actuator.
- 2) Remove FA transition plate and rectangular shaft.
- 3) Insert new transition plate and rectangular shaft from ERK kit.

NOTE

A Pay attention to the position of the indicator cut!
B Pay attention to the indicator cut, insert the ERK rectangular shaft that a smaller portion of the shaft enters ERK transition plate!

- 4) Fix the transition plate to the transition board and install the Belimo actuator.

Test the operation of the damper blade!





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TRANSPORT

After arrival, check the fire damper for transport damage and shortcomings. In case of any damage or shortcomings, immediately contact your supplier.

STORAGE

If the damper is not installed immediately:

- Remove any wrapping.
- Protect fire damper from dust and contamination.
- Do not expose the fire damper to the effects of weather - store fire damper in dry and place.
- Do not store the unit below -20 °C or above 50 °C.

Please properly dispose of packaging material.

MAINTENANCE AND OPERATION

Klimaoprema fire dampers are designed with fully enclosed drive mechanism outside of the duct and as such do not require cleaning and regular maintenance.

However, activation mechanism should be inspected for proper operation on regular basis.

- Provide at least one annual check of the damper
- After each intervention, provide a systematic cleaning of dust and especially the solenoid and its movable plate
- Check the if the electrical terminals are tightened
- Cleaning instruction: clean with a sponge, with water or a mild detergent
- Disinfection instruction: spray disinfectant (disinfectant may contain alcohol which is flammable, take precaution to avoid ignition)

It is not permitted to alter the dampers in any way nor perform any changes to their structure (except for the service procedures described in this manual) without the manufacturer's consent. Provide at least one annual check of the damper. The functional test must be carried out in compliance with the basic maintenance principles of the European norms EN 13306, EN 15423 and EN15650.

COMMISSIONING

- 1) Carefully unpack FD fire damper - be careful of sharp edges and do not use excessive force for unpacking
- 2) Inspect the fire damper - check the fire damper for damage
- 3) Installation of the fire damper - according to the installation instructions ([page 14.](#))
- 4) Before commissioning: check the fire damper functions

FUNCTIONS

- 1) Release mechanism:
Damper blade can be closed and opened manually
- 2) EMS:
Signal testing - the damper blade must close
- 3) Electric actuator:
Signal testing - the damper blade must close/open
- 4) Thermal fuse:
By a button - the damper blade must be closed by pressing the button



FIRE DAMPER - FD

Projektiranje, proizvodnja i održavanje opreme za klimatizaciju, ventilaciju i čiste prostore.
Design, production and service of Ventilation, Air-Conditioning and Cleanroom equipment.

📍 Gradna 78A, 10430 Samobor, Croatia
☎ +385 (0)1 33 62 513
✉ info@klimaoprema.com
🌐 www.klimaoprema.com