S-BA2

Smoke Control Damper - AA multi

Handbook

systemair

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Description

S-BA2 smoke control dampers operate with mechanical or natural smoke and heat extraction systems. They remove poisonous gases, smoke and fire and can also supply clean air to fire compartments.

S-BA2 dampers have an actuator without a spring. Thus, they have two safety positions: an “open” position and a “closed” one. Power is necessary for the smoke control dampers.

The “Installation Methods” section shows the types of installations that are permitted.

Special Properties

- Body length only 145 mm and no blade overhangs.
- You can install the smoke control damper into walls or on ducts.
- The S-BA2 dampers classified “multi” can also operate in compartments that are identified as "single”.
- The pressure level is 2 (-1000 Pa ... 300 Pa).
- The casing leakage class C (complient with EN 1751).

Fire Resistivity

S-BA2 smoke control dampers have a CE certification that meets the EU’s Construction Products Regulation and complies with Standard EN 12101-8:2011. EN 1366-10:2011, A1:2017, and EN 1366-2:2015 are the reference Standards for the tests. EN 13501-4:2016 is the reference Standard for the Classification. The smoke control damper and its installation counts as one unit for fire resistivity rating:

- Damper installed within a wall: **EI 90 (v_{ew} - i↔o) S1000C_{mod} AAmulti**
- Damper installed on the duct: **EI 120 (v_{ed} - h_{od} - i↔o) S1000C_{mod} AAmulti**

Types of Product

There are different types of S-BA2 connection. Thus, there are several types of grilles:

- **00** – without grille.
- **01, 02** – with grille on one side only.

- **11, 22** – with grille on both sides.

Types of Activation

- **B230** - Smoke control damper with an activation mechanism with a Belimo actuator (230V AC) and auxiliary switches.
- **B24** - Smoke control damper with an activation mechanism with a Belimo actuator (24V AC/DC) and auxiliary switches.
- **B24-W** - Smoke control damper with an activation mechanism with a Belimo actuator (24V AC/DC) and auxiliary switches, with provided cable connectors for the supply and communication unit (communication unit not part of the mechanism).
- **B24-SR** - Smoke control damper with an activation mechanism with a modulating Belimo actuator (24V AC/DC; 0(2) V...10 V DC) and auxiliary switches. Modulating actuators have the possibility to open the blade at a desired angle.
- **BST1** - Smoke control damper with an activation mechanism with a Belimo actuator (AC/DC 24 V), with supply and communication unit (SLC powered) BC24-G2 (THC).
- **BST10** - Smoke control damper with an activation mechanism with a Belimo actuator (AC/DC 24 V), with supply and communication unit (AC 230 V) BKNE230-24-PL (Powerline).

Other communication units are possible on demand.

Design

The casing of the S-BA2 is made of a galvanized sheet metal. Blades and mechanism access doors are made from calcium silicate boards. A foam seal with an intumescent seal that prevents leaks of heat or smoke. The casing has flanges on two sides with a thread to attach to sheet-metal duct flanges. Two sides of the damper have inserts with a thread to attach the grille. The damper casing and two covers on two sides give protection to the mechanism and the actuator of the S-BA2. They also give access for easy connection.

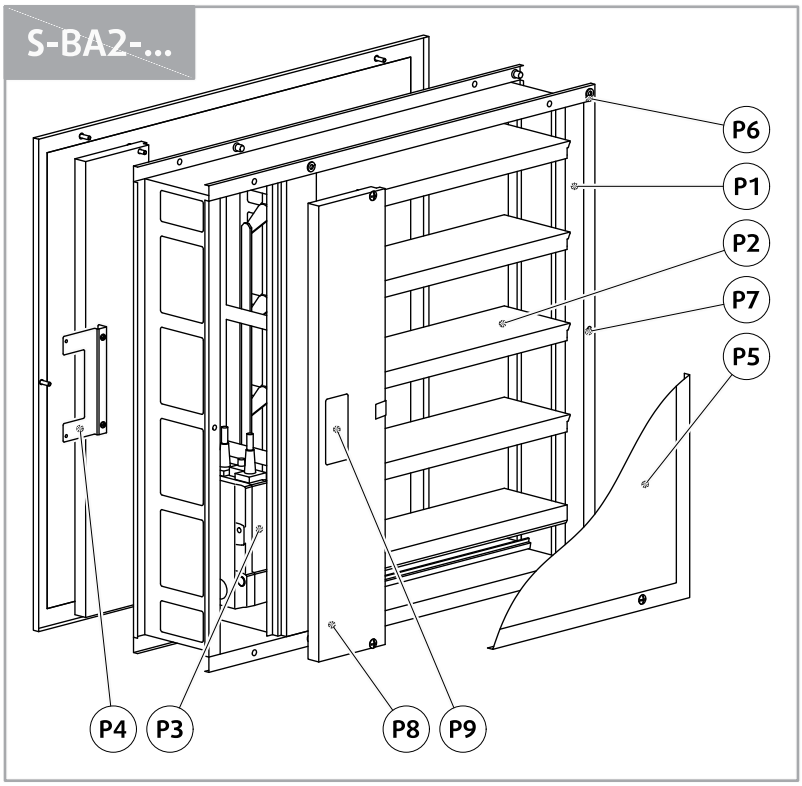
Composition of materials

The product contains these materials:

- Galvanized sheet metal
- Calcium silicate board
- Polyurethane foam
- Intumescent strips,
- PE tapes and foil,
- Galvanized steel fasteners,
- Acrylic sealant

The manufacturing processes of these materials agree with local regulations. The product does not contain dangerous materials.

Product Parts



Legend:

P1 - Damper casing
P2 - Damper blade
P3 - Actuator
P4 - Holder for communication unit (only for B24T-W activation type)
P5 - Sheet metal grille
P6 - Threaded inserts for duct connection (M6)
P7 - Threaded inserts for the grille (M5)
P8 - Mechanism cover
P9 - Product label

Technical Parameters

Durability Test	
• Test procedure with 10000 cycles and actuator control (rotation from 0° to 90°)	• No change of the necessary properties.
• Test procedure with 10000 cycles and actuator control for “mod” classification (rotation from 45° to 60°)	• No change of the necessary properties.
Tested Pressures	
Maximum underpressure	1000 Pa
Maximum overpressure	300 Pa
Safe Position	Open or closed
Possible Installations	Refer to the "Installation Methods" section
Direction of the Airflow	Both direction for supply or extract
Permitted air velocity during blade movement	12 m/s
Side with Fire Protection	Both sides: (i<->o) - symmetrical
Closing and Opening Time	Motor running time: <60 s / 90°
Closed or Open Status Indicator	Microswitches that are part of the mechanism actuator signal the closed or open status.
Environmental Conditions for Operation	
The temperatures must be:	-20 °C ... 50 °C
Relative humidity:	Less than 95% (3K5, EN 60721-3-3)
Product protected from:	Weather, rain and water from other sources
Condensation:	Cannot form on the product
Icing:	Cannot form on the product

Access for Inspection

The inspection is possible through the grille. There is an inspection door that gives access to the connection and to the actuator. If necessary, a lid for the inspection on the connected duct must be created. Not included in the damper supply.

Maintenance	Maintenance is not necessary. A dry-cleaning procedure can be mandatory in some countries.

Inspections

Obey local laws for the minimum time between inspection procedures. When not specified the maximum interval between inspections is 6 months

Tightness of the Blade	Class 2 and class 3 (dimensions above nominal sizes W=400 mm & H=500 mm) of standard EN 1751 at 500 Pa
Tightness of the Housing	Class C of standard EN 1751 at 500 Pa
EC Directives	
2006/42/EC Machinery Directive	
2014/35/EU Low Voltage Directive	
2014/30/EU Electromagnetic Compatibility Directive	
Driving Actuator Types	
Belimo BEN...	...230; ...24; ...24-ST; ...24-SR
Belimo BEE...	...230; ...24; ...24-ST; ...24-SR
Transportation and Storage	The temperature range must be: -30...50 °C

Make sure that the damper blade is in the closed position during transportation and protected from weather disruptions. The storage of the smoke control damper must be indoors.

Assessed Performance

19 **CE** 1396

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1396-CPR-0202	**S-BA2**
EN 12101-8 : 2011 Smoke control damper	
Nominal activation conditions/sensitivity	**Pass**
Response delay (response time)	Opening/closure time proven. Duration: <60 s / 90°
Operational reliability	**C_{mod}**: 20.000 cycles (modulated)
Fire resistance:	**EI 90 (v_{ew} - i↔o) S1000C_{mod} AAmulti** **EI 120 (v_{ed} - h_{od} - i↔o) S1000C_{mod} AAmulti**
Resistivity depends on installation method and situation	
• integrity	**E**
maintenance of the cross section	(under E)
mechanical stability	(under E)
• insulation	**I**
• smoke leakage	**S**
Durability of response delay	**AA** - Automatic Activation. Opening/closure time proven. Duration: <60 s / 90°
Durability of operational reliability	**C_{mod}**: 20.000 cycles. Cycle duration: <120 s

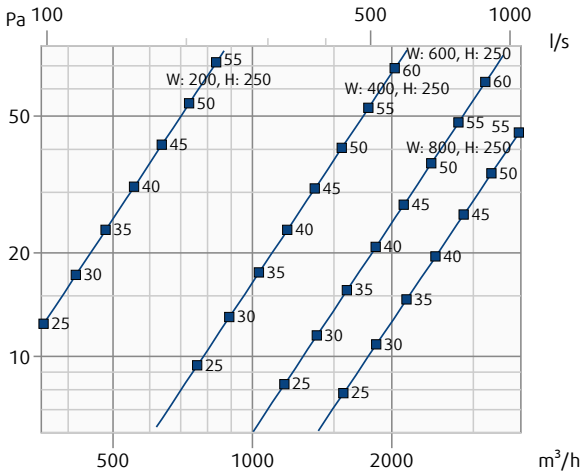
Diagrams

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

Diagrams for Extract Air, Grille Type: 00

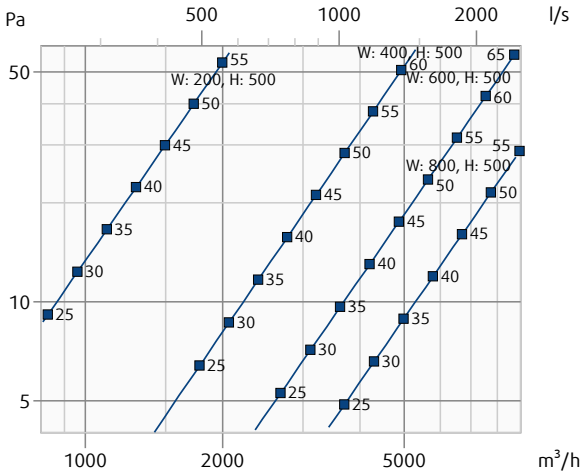
S-BA2-...-00-

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



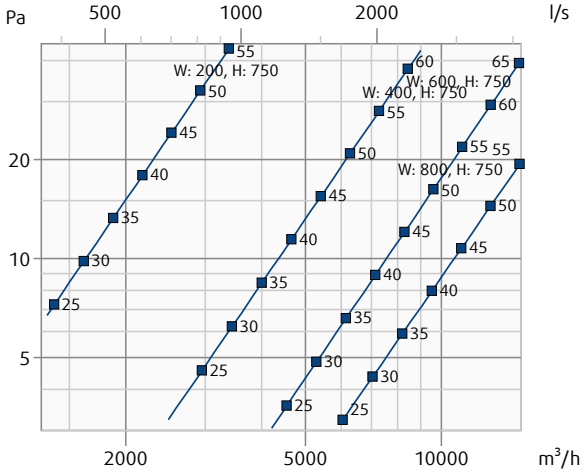
S-BA2-...-00-

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



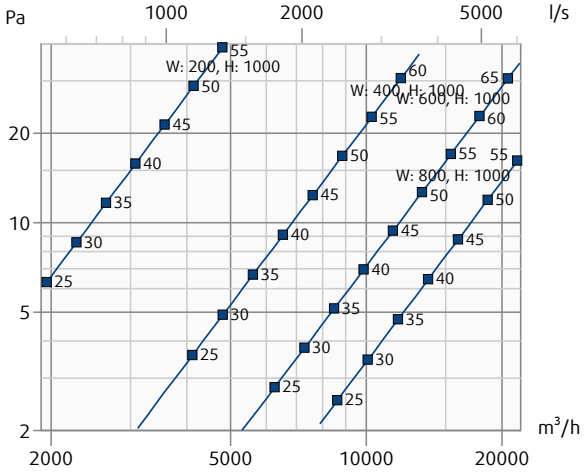
S-BA2-...-00-

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



S-BA2-...-00-

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



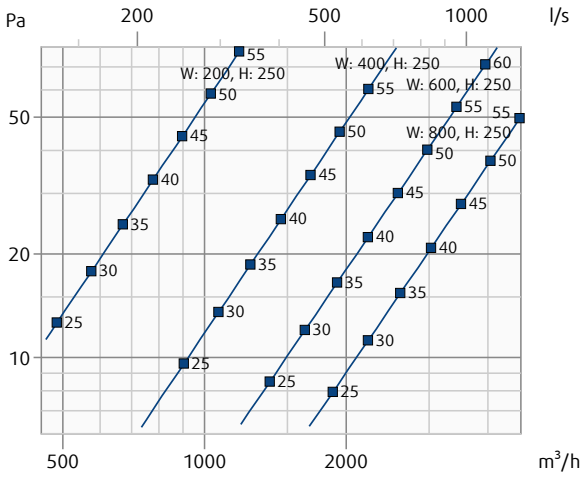
Legend:

Pa - Pressure drop (p_s)
m³/h; l/s - Airflow volume (q_v)

Diagrams for Supply Air, Grille Type: 00

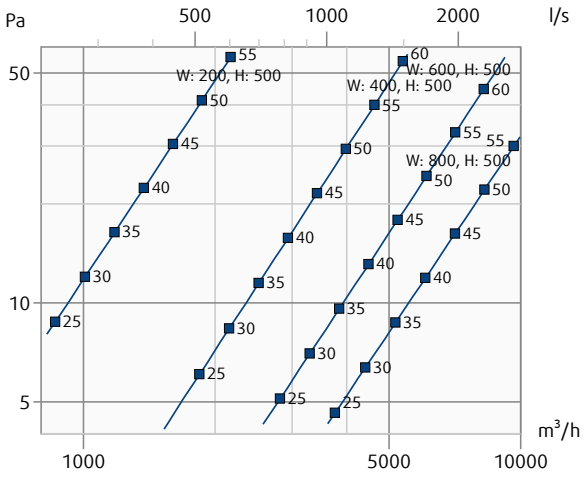
S-BA2-...-00-

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



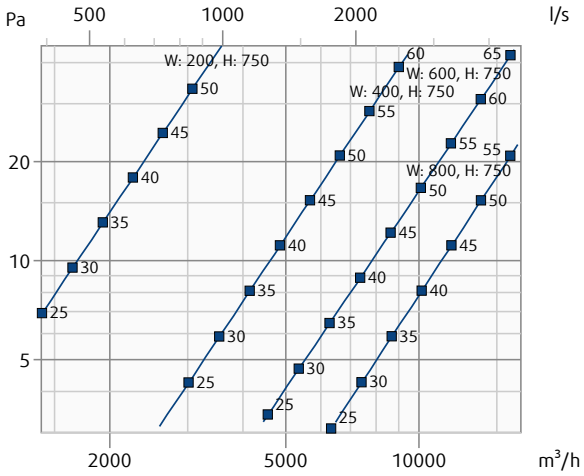
S-BA2-...-00-

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



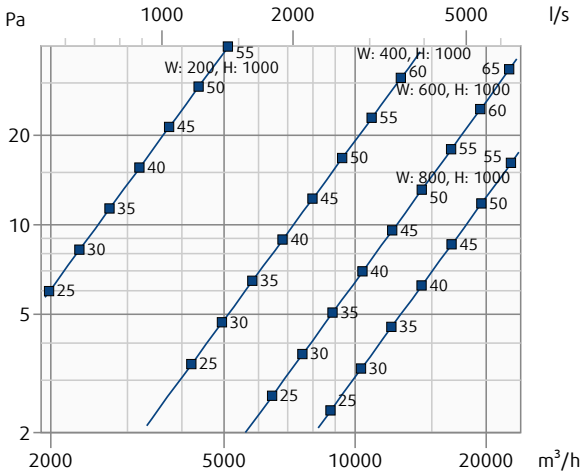
S-BA2-...-00-

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



S-BA2-...-00-

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



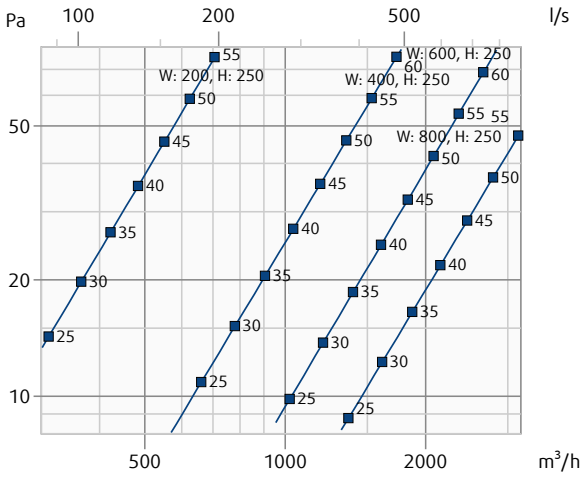
Legend:

Pa - Pressure drop (p_s)
m³/h; l/s - Airflow volume (q_v)

Diagrams for Extract Air, Grille Types: 01 & 02

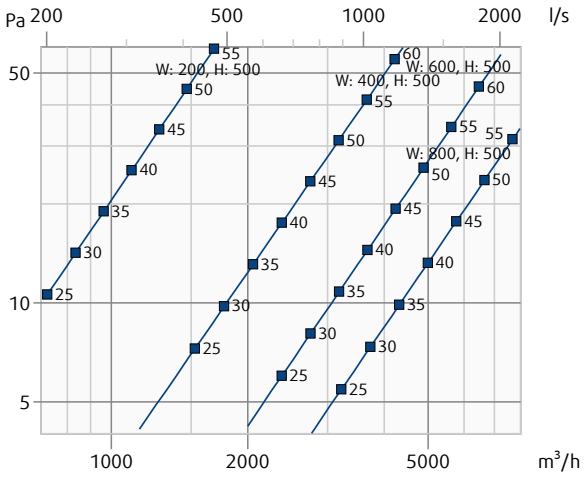
S-BA2-...-01-

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



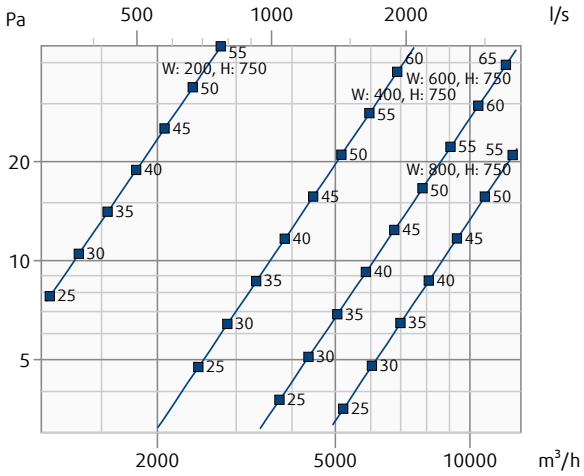
S-BA2-...-01-

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



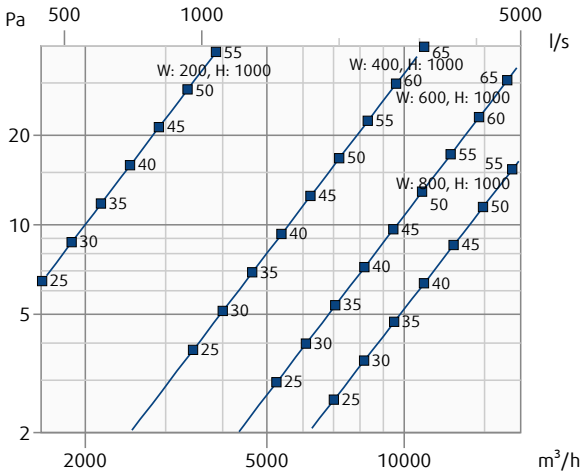
S-BA2-...-01-

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



S-BA2-...-01-

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



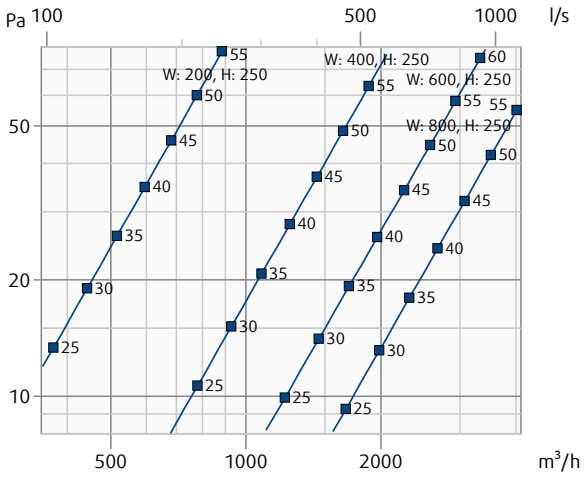
Legend:

Pa - Pressure drop (p_s)
m³/h; l/s - Airflow volume (q_v)

Diagrams for Supply Air, Grille Types: 01 & 02

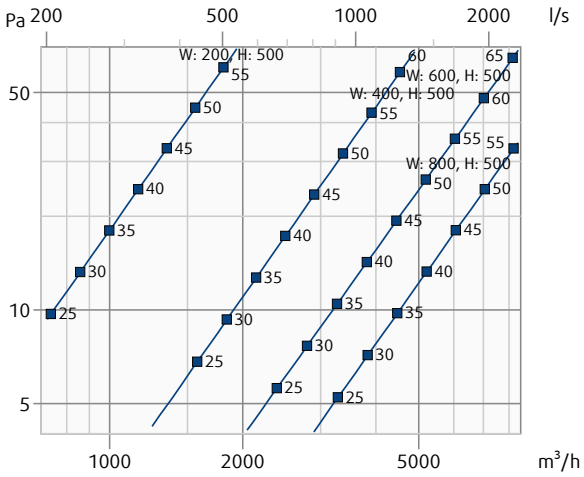
S-BA2-...-01-

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



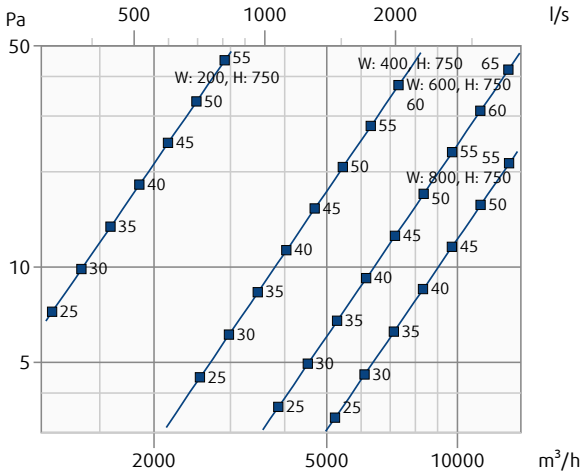
S-BA2-...-01-

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



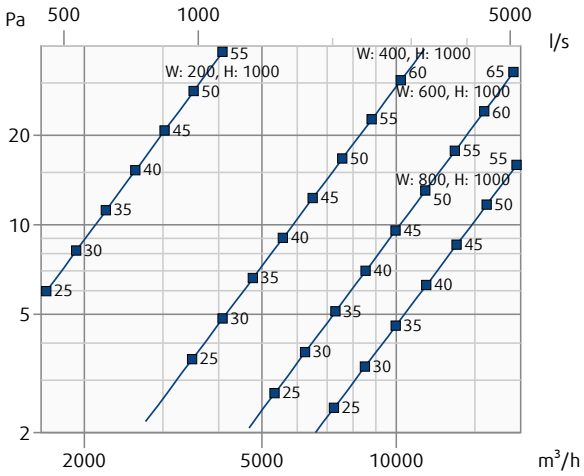
S-BA2-...-01-

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



S-BA2-...-01-

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



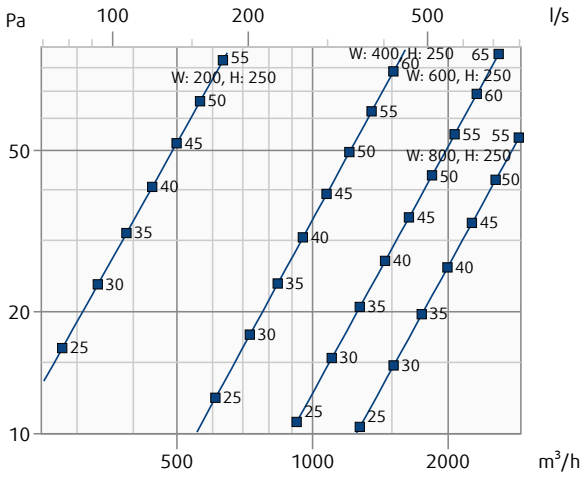
Legend:

Pa - Pressure drop (p_s)
m³/h; l/s - Airflow volume (q_v)

Diagrams for Extract and Supply Air, Grille Types: 11 & 22

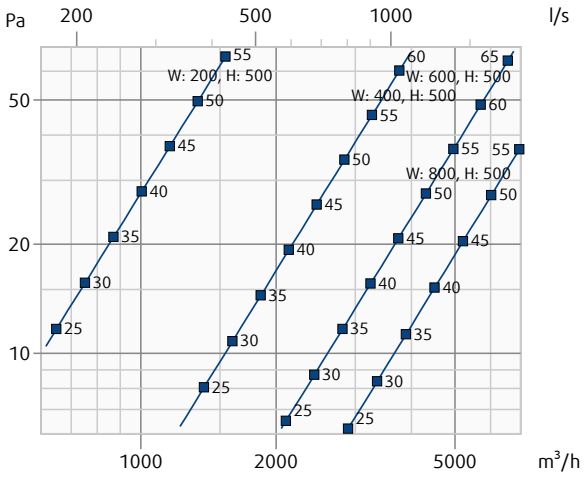
S-BA2-...-11-

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



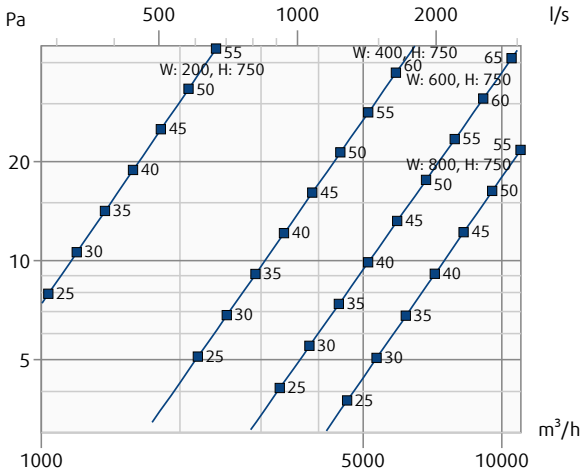
S-BA2-...-11-

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



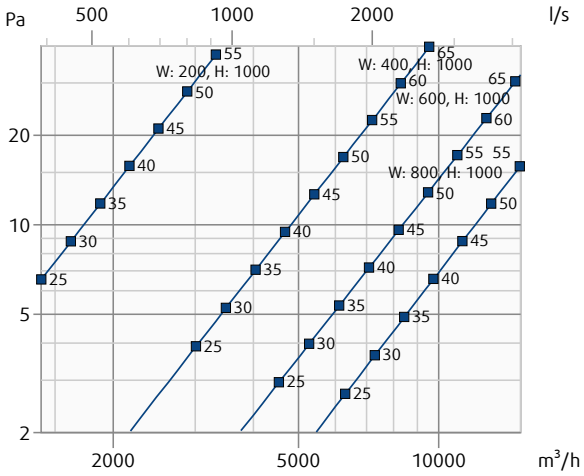
S-BA2-...-11-

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



S-BA2-...-11-

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

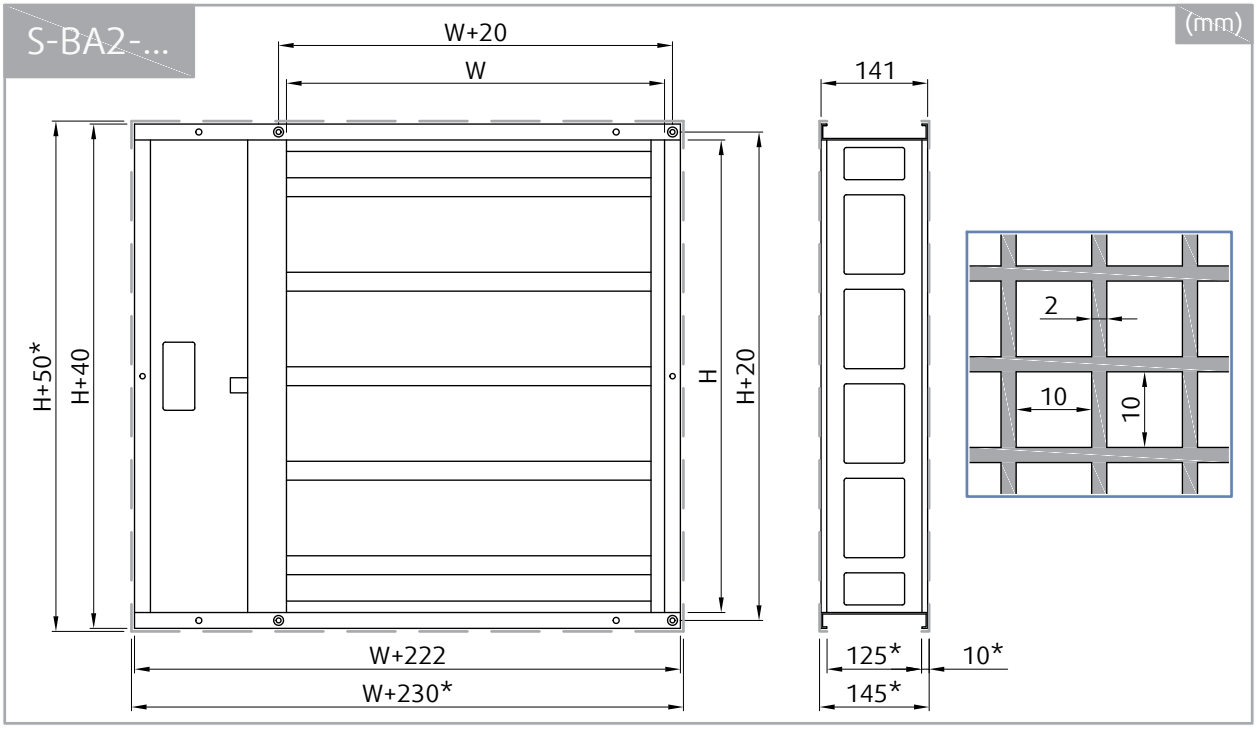


Legend:

Pa - Pressure drop (p_s)
m³/h; l/s - Airflow volume (q_v)

Dimensions & Weights

Dimensions



NOTE: *Inclusive grille

Free area of S-BA2 without grille

A_v (m²)		W (mm)																						
		150	175	200	225	250	280	300	315	350	355	400	450	500	550	560	600	630	650	700	710	750	800
H (mm)	250	0,022	0,026	0,030	0,035	0,039	0,044	0,047	0,050	0,056	0,057	0,064	0,073	0,081	0,090	0,091	0,098	0,103	0,107	0,115	0,117	0,124	0,132
	375	0,035	0,041	0,048	0,055	0,062	0,070	0,075	0,079	0,089	0,090	0,102	0,116	0,129	0,143	0,145	0,156	0,164	0,170	0,183	0,186	0,197	0,210
	500	0,047	0,057	0,066	0,075	0,084	0,095	0,103	0,108	0,121	0,123	0,140	0,158	0,177	0,195	0,199	0,214	0,225	0,232	0,251	0,255	0,269	0,288
	625	0,060	0,072	0,084	0,095	0,107	0,121	0,131	0,138	0,154	0,157	0,178	0,201	0,225	0,248	0,253	0,272	0,286	0,295	0,319	0,323	0,342	0,366
	750	0,073	0,087	0,101	0,116	0,130	0,147	0,158	0,167	0,187	0,190	0,215	0,244	0,272	0,301	0,307	0,329	0,347	0,358	0,386	0,392	0,415	0,443
	875	0,086	0,103	0,119	0,136	0,153	0,173	0,186	0,196	0,220	0,223	0,253	0,287	0,320	0,354	0,360	0,387	0,407	0,421	0,454	0,461	0,488	0,521
	1000	0,099	0,118	0,137	0,156	0,176	0,199	0,214	0,226	0,253	0,256	0,291	0,330	0,368	0,407	0,414	0,445	0,468	0,484	0,522	0,530	0,561	0,599

Free area of grille

A_v (m²)		W (mm)																						
		150	175	200	225	250	280	300	315	350	355	400	450	500	550	560	600	630	650	700	710	750	800
H (mm)	250	0,01	0,02	0,02	0,03	0,03	0,04	0,04	0,05	0,05	0,05	0,06	0,07	0,07	0,08	0,08	0,09	0,10	0,10	0,11	0,11	0,12	0,13
	375	0,02	0,03	0,03	0,04	0,04	0,05	0,05	0,06	0,06	0,06	0,07	0,08	0,09	0,10	0,10	0,11	0,12	0,12	0,13	0,13	0,14	0,15
	500	0,04	0,05	0,05	0,05	0,06	0,07	0,07	0,08	0,09	0,09	0,10	0,11	0,13	0,14	0,14	0,15	0,16	0,17	0,18	0,18	0,19	0,21
	625	0,05	0,06	0,06	0,07	0,08	0,09	0,09	0,10	0,11	0,11	0,13	0,14	0,16	0,18	0,18	0,20	0,21	0,21	0,23	0,23	0,25	0,26
	750	0,06	0,07	0,07	0,08	0,09	0,11	0,11	0,12	0,13	0,14	0,16	0,18	0,20	0,22	0,22	0,24	0,25	0,26	0,28	0,28	0,30	0,32
	875	0,08	0,09	0,09	0,10	0,11	0,12	0,13	0,14	0,16	0,16	0,18	0,21	0,23	0,25	0,26	0,28	0,29	0,30	0,33	0,33	0,35	0,38
	1000	0,09	0,10	0,10	0,11	0,13	0,14	0,15	0,16	0,18	0,18	0,21	0,24	0,27	0,29	0,30	0,32	0,34	0,35	0,38	0,38	0,40	0,43

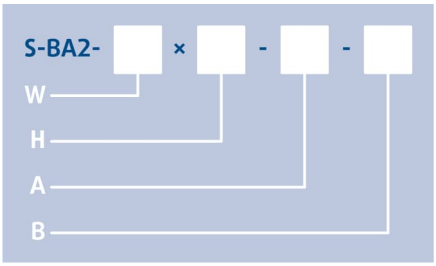
Weights of S-BA2 without grille

m (kg)	W (mm)																							
H (mm)	150	175	200	225	250	280	300	315	350	355	400	450	500	550	560	600	630	650	700	710	750	800
250	7,2	7,4	7,7	7,9	8,1	8,3	8,5	8,6	8,9	9,0	9,4	9,8	10,2	10,6	10,7	11,1	11,4	11,5	11,9	12,0	12,4	12,8
375	9,4	9,7	10,0	10,2	10,5	10,8	11,1	11,1	11,6	11,7	12,1	12,7	13,2	13,8	13,9	14,3	14,7	14,8	15,4	15,5	15,9	16,5
500	11,6	12,0	12,3	12,6	12,9	13,3	13,6	13,7	14,3	14,4	14,9	15,6	16,2	16,9	17,0	17,5	18,0	18,2	18,8	18,9	19,5	20,1
625	13,9	14,2	14,6	15,0	15,4	15,8	16,2	16,3	16,9	17,0	17,7	18,5	19,2	20,0	20,1	20,8	21,3	21,5	22,3	22,4	23,1	23,8
750	16,1	16,5	16,9	17,4	17,8	18,3	18,7	18,9	19,6	19,7	20,5	21,4	22,3	23,1	23,2	24,0	24,6	24,9	25,8	25,9	27,0	27,8
875	18,3	18,8	19,3	19,8	20,3	20,8	21,3	21,4	22,3	22,4	23,3	24,3	25,3	26,3	27,4	27,2	28,2	28,5	29,6	29,7	30,6	31,6
1000	20,5	21,0	21,6	22,1	22,7	23,3	23,8	24,0	25,0	25,1	26,1	27,2	28,6	29,7	29,8	30,8	31,6	31,9	33,0	33,1	34,2	35,3

Weights of grille

m (kg)	W (mm)																							
H (mm)	150	175	200	225	250	280	300	315	350	355	400	450	500	550	560	600	630	650	700	710	750	800
250	0,5	0,5	0,5	0,6	0,6	0,6	0,6	0,7	0,7	0,7	0,7	0,8	0,9	0,9	0,9	1,0	1,0	1,0	1,1	1,1	1,1	1,2
375	0,6	0,7	0,7	0,7	0,8	0,8	0,8	0,9	0,9	0,9	1,0	1,0	1,1	1,2	1,2	1,2	1,3	1,3	1,4	1,4	1,4	1,5
500	0,8	0,8	0,9	0,9	1,0	1,0	1,0	1,1	1,1	1,1	1,2	1,3	1,3	1,4	1,4	1,5	1,5	1,6	1,7	1,7	1,7	1,8
625	0,9	1,0	1,0	1,1	1,1	1,2	1,2	1,2	1,3	1,3	1,4	1,5	1,6	1,7	1,7	1,8	1,8	1,9	2,0	2,0	2,1	2,1
750	1,1	1,1	1,2	1,3	1,3	1,4	1,4	1,4	1,5	1,5	1,6	1,7	1,8	1,9	2,0	2,0	2,1	2,2	2,3	2,3	2,4	2,5
875	1,2	1,3	1,4	1,4	1,5	1,6	1,6	1,6	1,7	1,7	1,8	2,0	2,1	2,2	2,2	2,3	2,4	2,4	2,6	2,6	2,7	2,8
1000	1,4	1,5	1,5	1,6	1,7	1,7	1,8	1,8	1,9	1,9	2,1	2,2	2,3	2,5	2,5	2,6	2,7	2,7	2,9	2,9	3,0	3,1

Ordering Codes



W - Width Dimension

150 mm, 175 mm, 200 mm, 225 mm, 250 mm, 280 mm, 300 mm, 315 mm, 350 mm, 355 mm, 400 mm, 450 mm, 500 mm, 550 mm, 560 mm, 600 mm, 630 mm, 650 mm, 700 mm, 710 mm, 750 mm, 800 mm.

H - Height Dimensions

250 mm, 375 mm, 500 mm, 625 mm, 750 mm, 875 mm, 1000 mm.

A - Grille Type

00 - No grille, duct connectable on both sides
01 - Grille on one side (Zinc) + connection for duct available on both sides
02 - Grille on one side (RAL 9003) + connection for duct available on both sides
11 - Grille on both sides (Zinc)
22 - Grille on both sides (RAL 9003)

B - Type of Activation

B230 - 230V AC Belimo actuator
B24 - 24V AC/DC Belimo actuator
B24-W - 24V AC/DC Belimo actuator & wire connector for supply and communication unit
B24-SR - 24V AC/DC Belimo actuator, modulated (0)2 V ... 10 V
BST1 - SLC powered supply and communication unit BC24-G2 (THC) & 24V AC/DC Belimo actuator
BST10 - 230 V AC supply and communication unit BKNE230-24-PL (Powerline) & 24V AC/DC Belimo actuator
NOTE: Supply and communication units are placed outside of the damper body. When installing the damper into supporting construction the supply and communication unit must be mounted near the damper on the supporting construction.

Example of the Ordering Code

S-BA2-150×600-00-B24-SR

Multiblade smoke control damper with width of 150 mm and height of 600 mm, without a grille. Activated by a 24 V modulated Belimo actuator (0 V ... 10 V).

Product Handling

Warning

Some damper parts can have sharp edges. To prevent injuries, use gloves when you install or move the damper. If you use or operate the damper incorrectly, there is a risk of:

- electric shock.

- fire.

- other damage.

Ensure that installation is performed by a trained person. The S-BA2 is made of boards and sheet metal. Thus considered fragile. Be careful when you move the smoke control damper. Two persons are necessary to move the smaller dampers and put them in the installation opening. It is necessary to move the bigger dampers with suitable lifting equipment (forklift, crane). Please follow both textual and graphic instructions.

1. Unpacking:

- Remove the packaging
- Remove the grille (if installed).

2. Functionality check:

- Unscrew two screws from mechanism cover.
- Pull the textile eyelet.
- Remove the mechanism cover.
- Perform damper's functionality check (see "Operation Manual" section).

3. Electrical connection:

- Make a hole in the rubber crossing for the wires as needed in top or bottom.
- Push the wires through the rubber crossing.
- Insert the mechanism cover back into its place.
- Fix the mechanism cover by previously removed screws.

4. Placing the damper:

- Prepare the opening and/or duct connection surfaces as per the desired installation type.
- Carefully lift the smoke control damper with the forklift, crane or manually.
- Place the damper in the opening or on duct connection surfaces.

5. Fixing the damper:

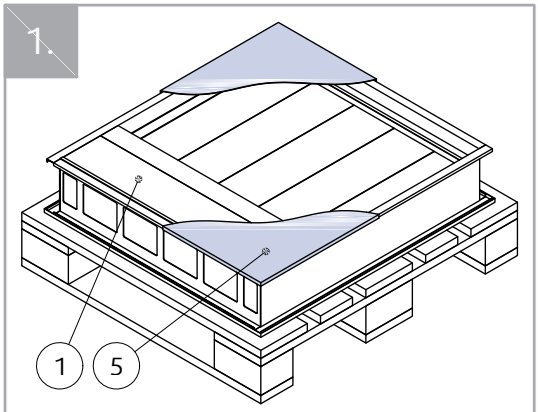
NOTE: Make sure to continually check the alignment of the damper against the supporting construction, opening or against the duct connection when performing the next steps.

- Fix the damper with supporting construction using suitable screws through the blade endstop. For duct installations fix the damper using duct flange connections.
- Verify there is no skewing of the damper body by measuring diagonal dimensions of the blade area or the nominal dimension.
- As per chosen installation add filling to the gap between the damper body and the opening. For duct installations perform insulation arround damper.

6. Finishing:

- Clean the damper from the debris and excess material from the filling or insulation.
- Perform damper's functionality check (see "Operation Manual" section).
- Connect the continuous duct or mount the removed grille.
- Create and/or fill out the Operating Journal included with the smoke control damper (Operating Journal can be also downloaded at design.systemair.com)

1.



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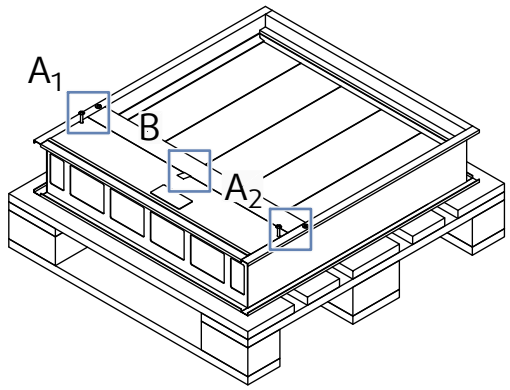

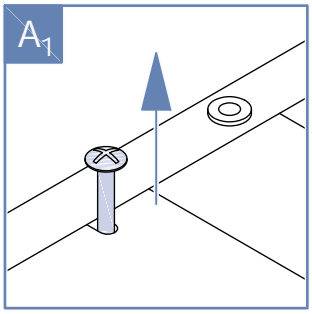

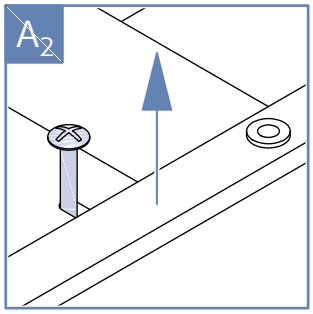

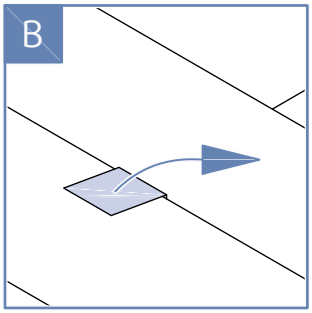

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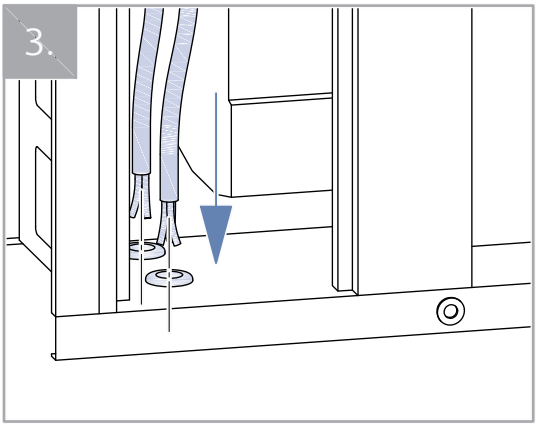
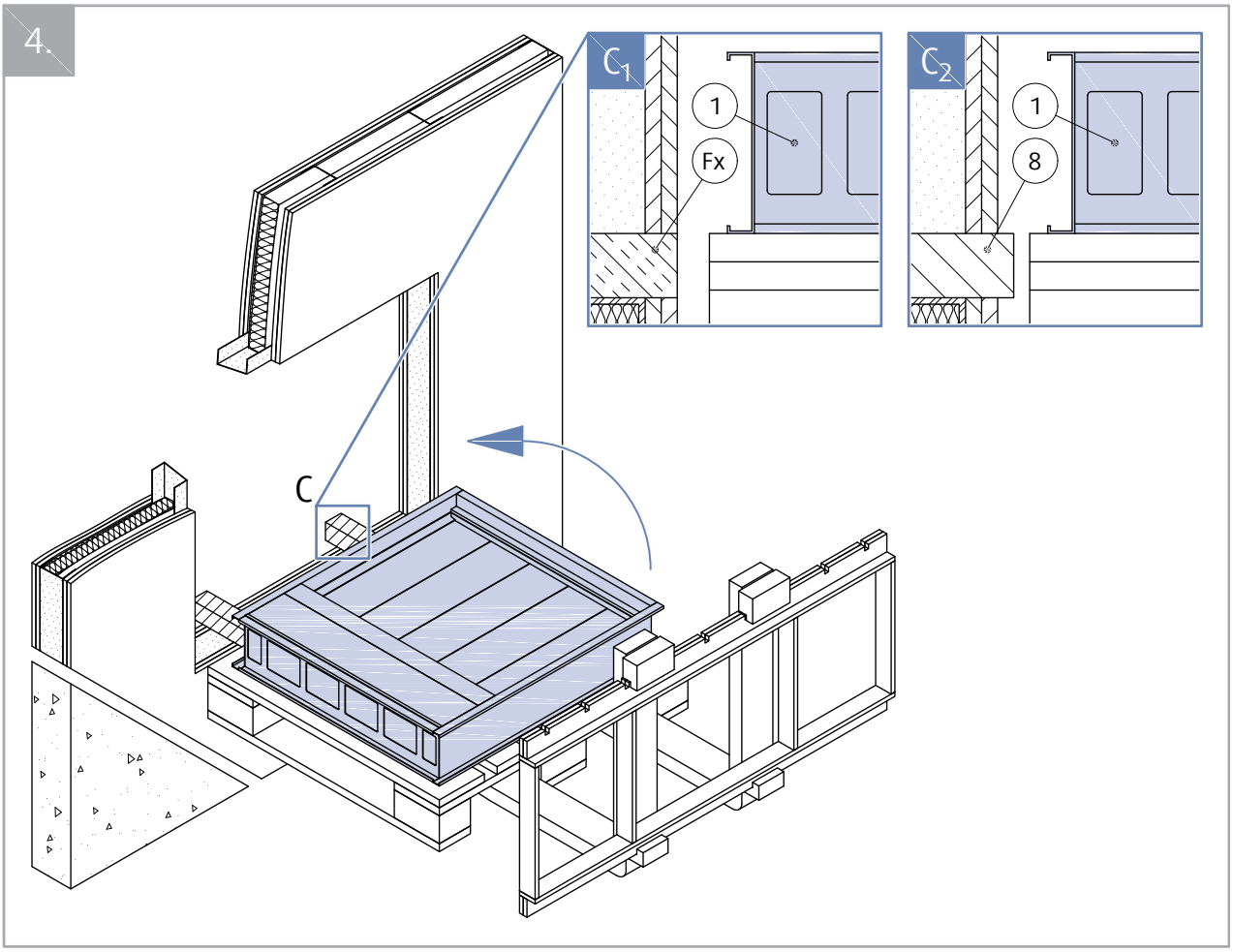
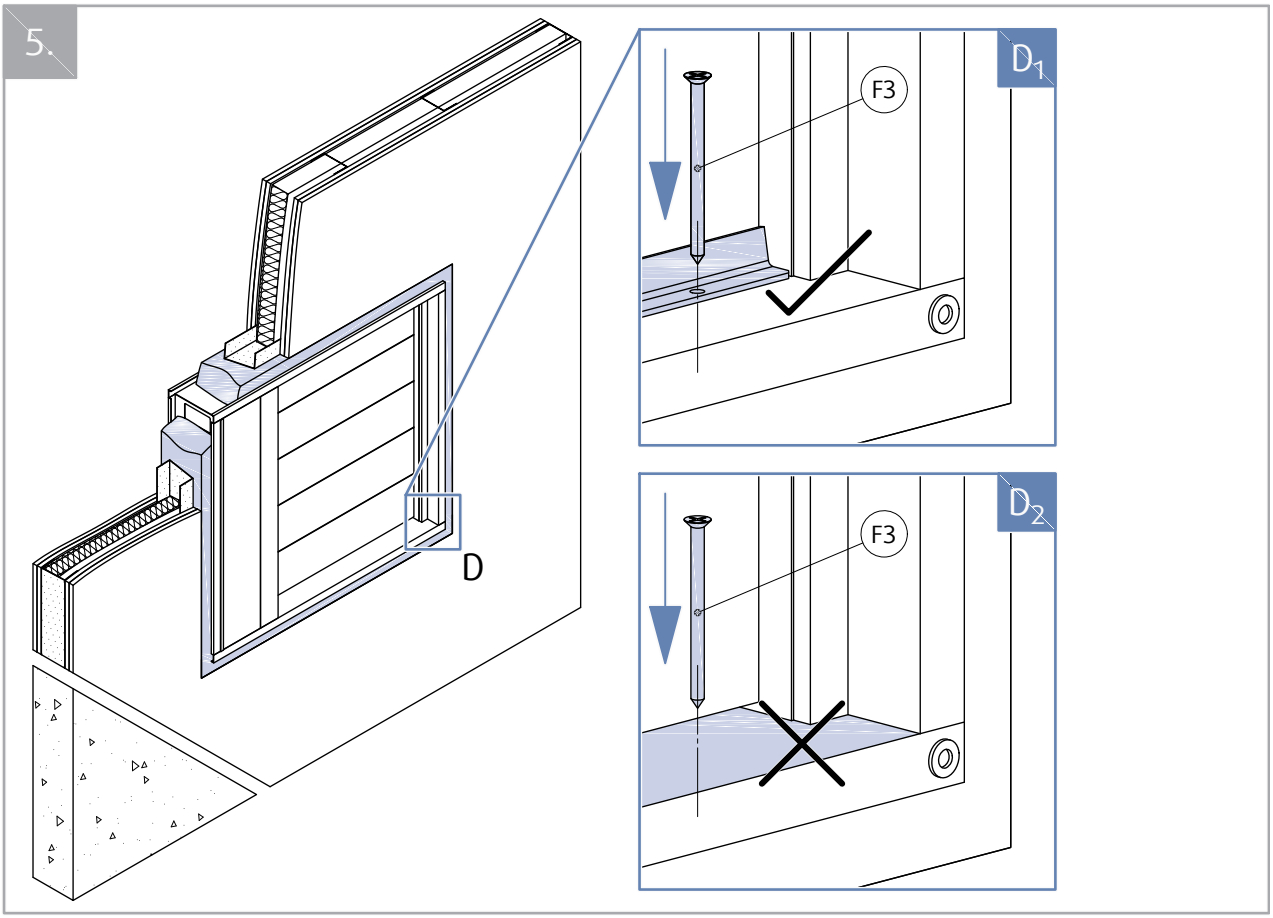
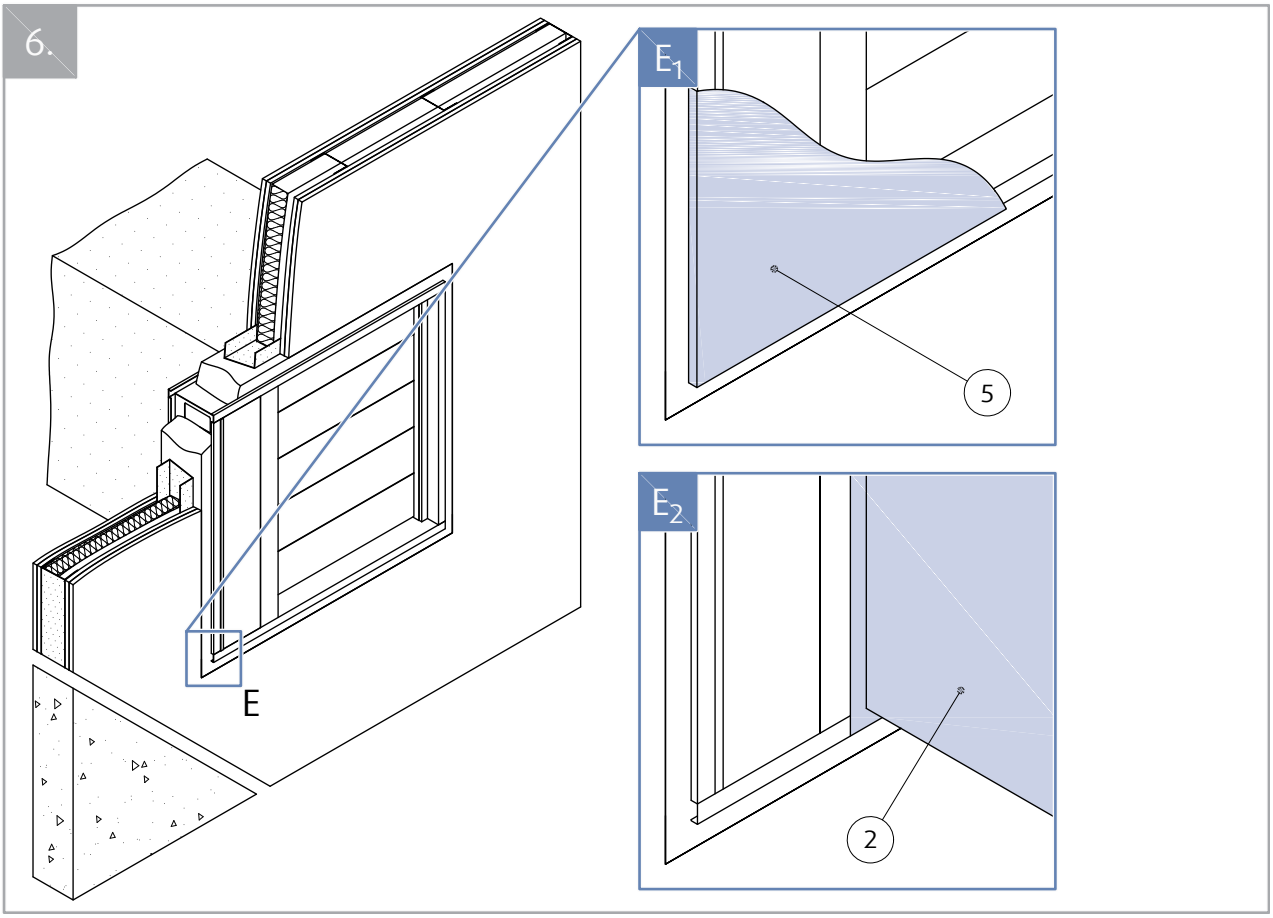



4.
C
C1
1
Fx
C2
1
8


5.
D
F3
D1
F3
D2


6.
E
E1
5
E2
2

Legend for Product Handling

1 - Smoke control damper S-BA2
2 - Connected metal ductwork
5 - Grille
8 - Support/brick, metal stud or wood stud (not part of damper)
F3 - Screw with minimum dimensions of 4,2 mm diameter and 80 mm length based on the structure type, (e.g.: DIN 7981C/DIN 7982C; Fischer ULTRACUT FBS II; or or equal and greater size metal wall plug + screw).
Fx - Filling as per chosen installation.

Installation Methods

1 Wet 3 Soft	S-BA2 150 × 250 ... ... 800 × 1000	EI 90 (v_{ew} i ↔ o) S1000 C_{MOD} AAmulti EI 90 (v_{ew} i ↔ o) S1000 C_{MOD} AAmulti	a) ≥ 125 mm	b) ≥ 125 mm	
DMH	S-BA2 150 × 250 ... ... 800 × 1000	EI 120 (h_{od} i ↔ o) S1000 C_{MOD} AAmulti	d)	EN 1366-9 EN 1366-8	
DMV		EI 120 (v_{ed} i ↔ o) S1000 C_{MOD} AAmulti	d)		
D1H, D2H		EI 120 (h_{od} i ↔ o) S1000 C_{MOD} AAmulti	d)		
D1V		EI 120 (v_{ed} i ↔ o) S1000 C_{MOD} AAmulti	d)		

NOTES:

1 Wet - Wet installation, using plaster/mortar/concrete Filling
3 Soft - Soft Installation, using mineral wool filing
DMH - In the metal duct installation, horizontally oriented damper
DMV - In the metal duct installation, vertically oriented damper
D1H, D2H - On the duct installation, horizontally oriented damper
D1V - On the duct installation, vertically oriented damper
a) - Flexible (plasterboard) wall
b) - Concrete/masonry/cellular concrete (rigid) wall
d) - Duct per EN 1366-9 or EN 1366-8
v_{ew} - Wall placement, vertically oriented damper
v_{ed} - Duct placement, vertically oriented damper
h_{od} - Duct placement, horizontally oriented damper

Installation Rules

- The duct connected to the smoke control damper must be supported or hung in such a way that the damper does not carry its weight. The damper must not support any part of the surrounding construction or wall which could cause damage and consequent damper failure.
- Easy access to mechanism and internal parts during inspection must be considered during damper placement.
- The minimum distance between the smoke control damper bodies must be 200 mm (refer to Standard EN 1366-2).
- The minimum distance between the smoke control damper and the adjacent wall or ceiling must be 75 mm.
- If you install the S-BA2 in a smoke and fire partition structure, do a check of the damper blades. Make sure that the damper blades in its closed position are in this structure.

There is a gap between the smoke control damper and the wall or ceiling opening:

- It is permitted to increase the gap size up to 1,5 times, but up to maximum of additional 30 mm. It is permitted to increase the mortar filled gap (Wet installation) up to 4 times, but up to maximum of 150 mm
- You can also decrease it to the smallest value possible that gives sufficient space to install the seal.
- If the grilles are not original, there must be a minimum clearance between the damper blade in its open position and self-standing grille. The clearance between the damper blade and these components must be 200 mm (refer to EN 1366-10).
- Lists of all permitted installation methods are provided in Handbook.

Warning

- Obey the applicable regulations and standards of the country that this product will be installed in.
- Make sure that only approved personnel performs the installation.
- Obey the written instructions and the illustrations in selected installation method.

Installation 1. Wet - Installation in the Wall

Procedure to fill with Plaster, Mortar, or Concrete

1. Prepare the opening in the Wall:

NOTE: The dimensions of the openings are the result of the nominal dimensions of the damper with added clearance. The dimensions of the opening will be W1 and H1.

a. Clean the surfaces of the opening. Make sure that the surfaces are even.

b. Make sure that the flexible wall opening is reinforced (refer to Standards for plasterboard walls).

2. Obey the procedure in the “Product Handling” section to put the damper into the middle of the opening. Make sure that the damper blade is in the wall.

CAUTION: If the width of the damper is more than 600 mm, use a duct support in the damper during the installation procedure. This will prevent damage to the housing of the damper because of the weight of the filling.

3. Fill the area between the wall and the damper with gypsum plaster or mortar or concrete filling (F1).

CAUTION: Make sure that the primary parts of the damper do not become dirty. If they become dirty, they will not operate correctly.

a. To prevent damage, cover the primary parts during filing installation.

b. To prevent leakage of the filling material, use paneling boards.

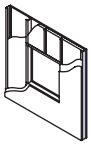
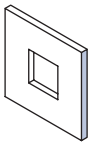
NOTE: Before you do the next steps, make sure that the plaster, mortar, or concrete filling becomes hard.

4. Remove the duct support from the damper when installed.

5. Perform damper's functionality check (see "Operation Manual" section).

Installation Distances

The minimum distance between the damper body and the wall or ceiling must be 75 mm (refer to Standard EN 1366-2). If there is more than one component that go through a fire resistive wall, the minimum distance between the two damper bodies is 200 mm. This is applicable to distances between the damper body and foreign objects that are near and that go through the fire resistive wall.

 1 Wet	S-BA2 150 × 250 ... ... 800 × 1000	EI 90 (v_{ew} i ↔ o) S1000 C_{MOD} AAmulti	a)  ≥ 125 mm	b)  ≥ 125 mm	

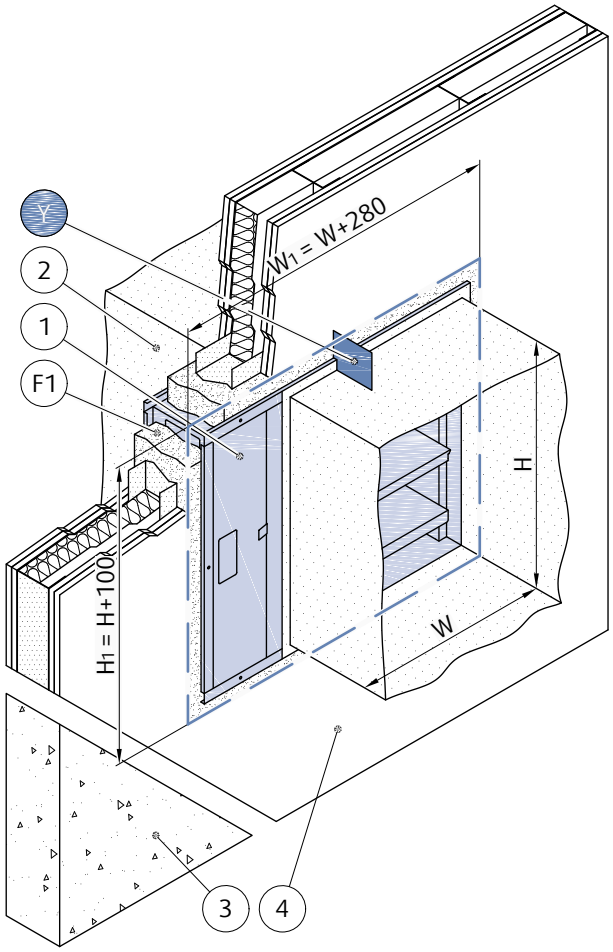
NOTES:

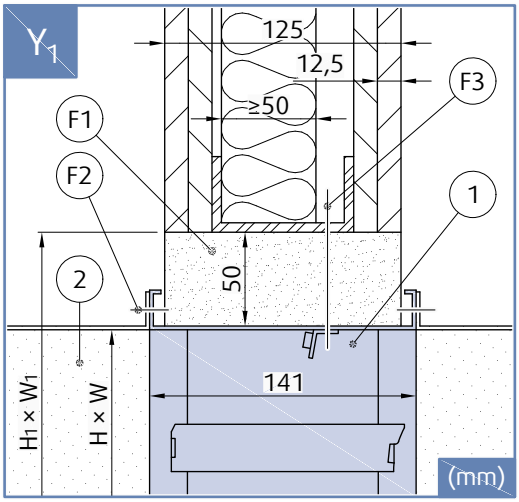
a) - Flexible (plasterboard) wall

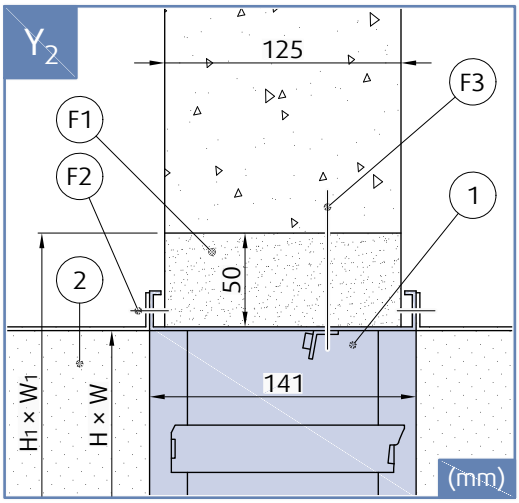
b) - Concrete/masonry/cellular concrete (rigid) wall

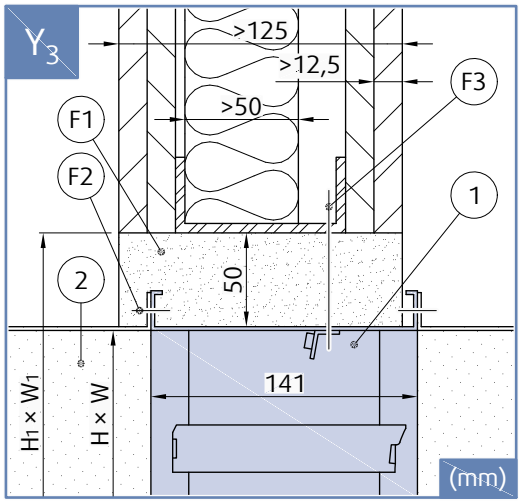
d) - Duct per EN 1366-9 or EN 1366-8

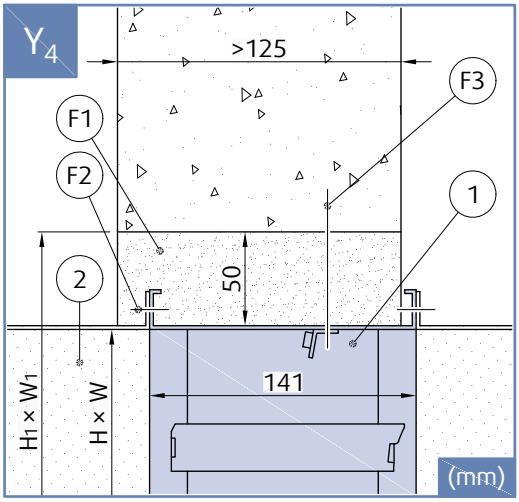
v_{ew} - Wall placement, verticaly oriented damper

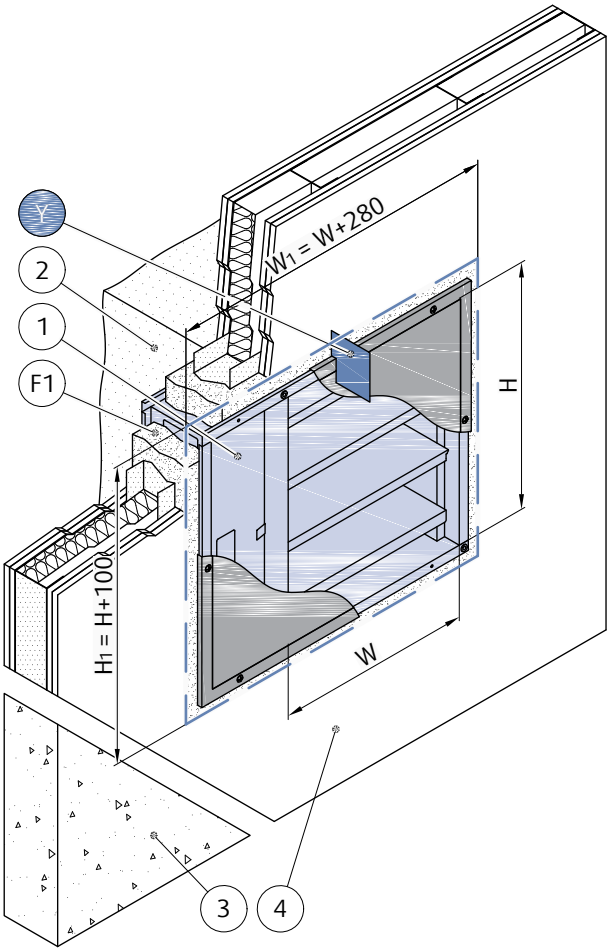

Y
2
1
F1
W1 = W+280
H1 = H+100
H
W
3
4

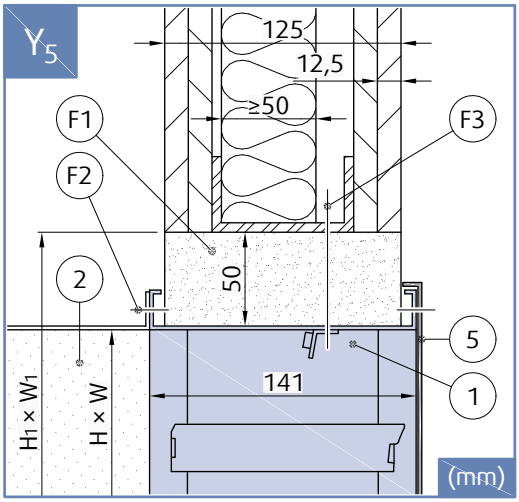

Y1
125
12,5
≥50
F3
F1
F2
1
2
50
141
H1 x W1
H x W
(mm)

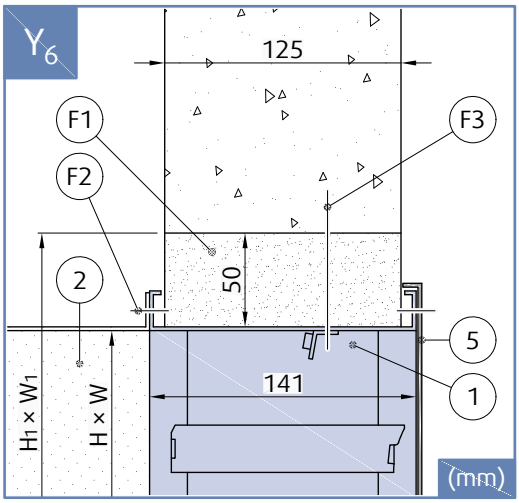

Y2
125
F3
F1
F2
1
2
50
141
H1 x W1
H x W
(mm)

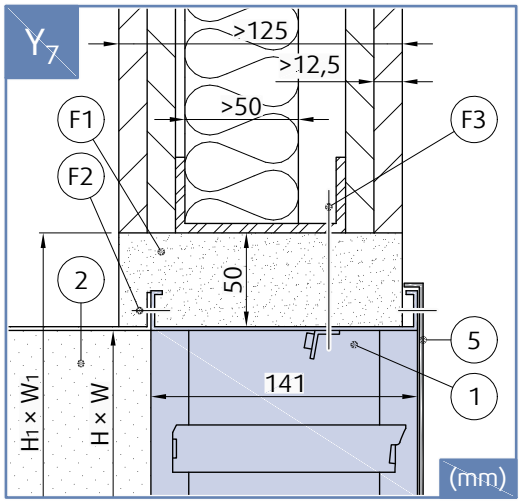

Y3
>125
>12,5
>50
F3
F1
F2
1
2
50
141
H1 x W1
H x W
(mm)


Y4
>125
F3
F1
F2
1
2
50
141
H1 x W1
H x W
(mm)


Y
2
1
F1
W1 = W+280
H
H1 = H+100
W
3
4


Y5
125
12,5
≥50
F1
F2
F3
2
50
5
1
141
H1 x W1
H x W
(mm)


Y6
125
F1
F2
F3
2
50
5
1
141
H1 x W1
H x W
(mm)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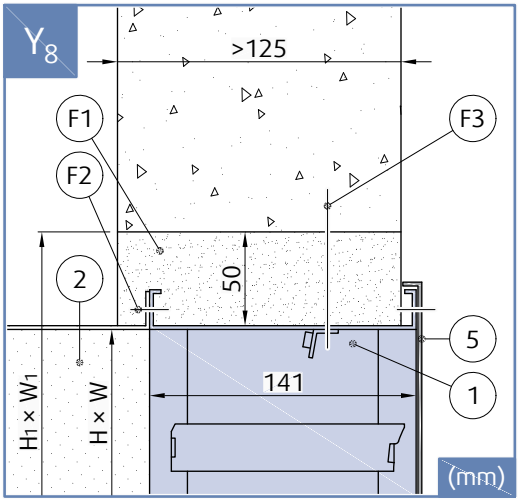
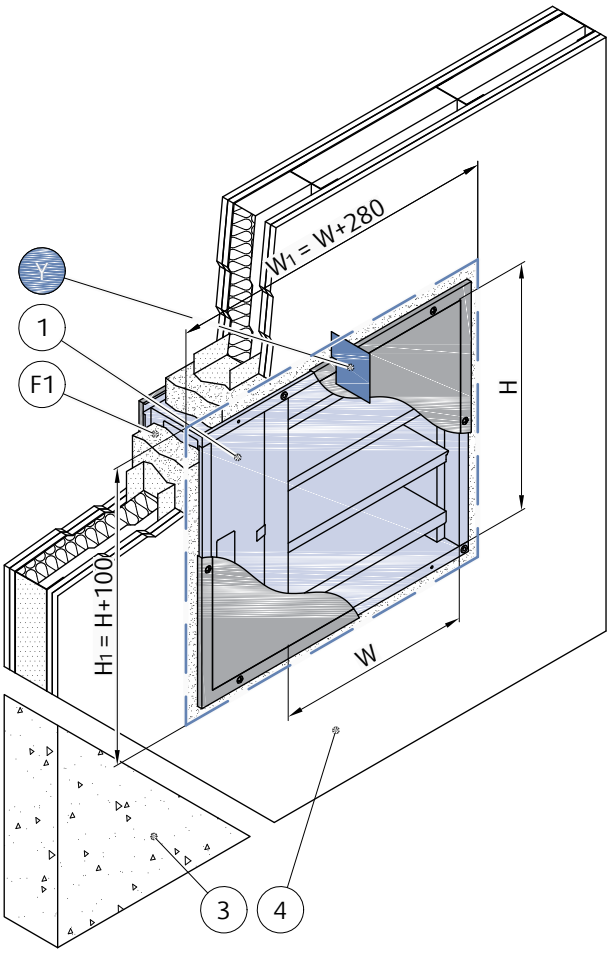
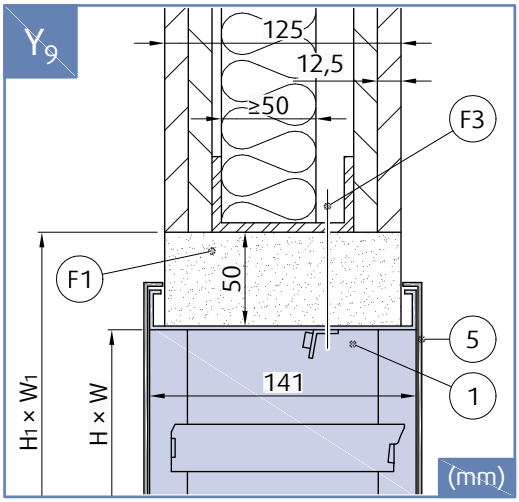
>125
>12,5
>50
F1
F2
F3
2
50
5
1
141
H1 x W1
H x W
(mm)


Y8
>125
F1
F2
F3
2
50
5
1
141
H1 x W1
H x W
(mm)


Y
1
F1
W1 = W+280
H
H1 = H+100
W
3
4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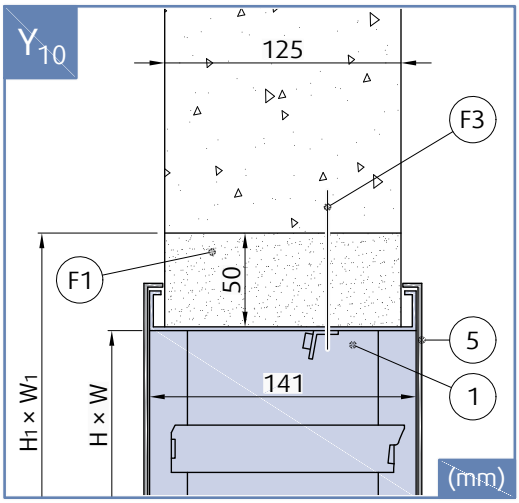
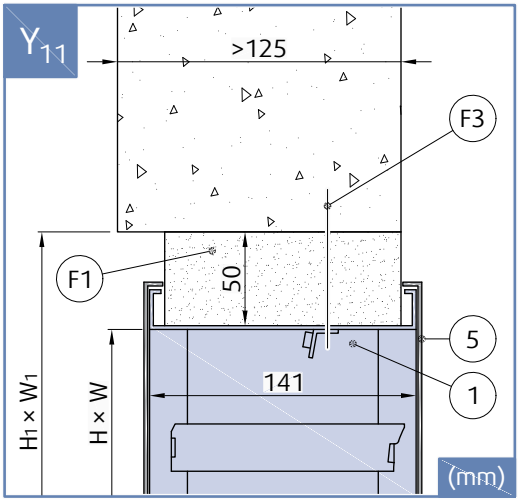
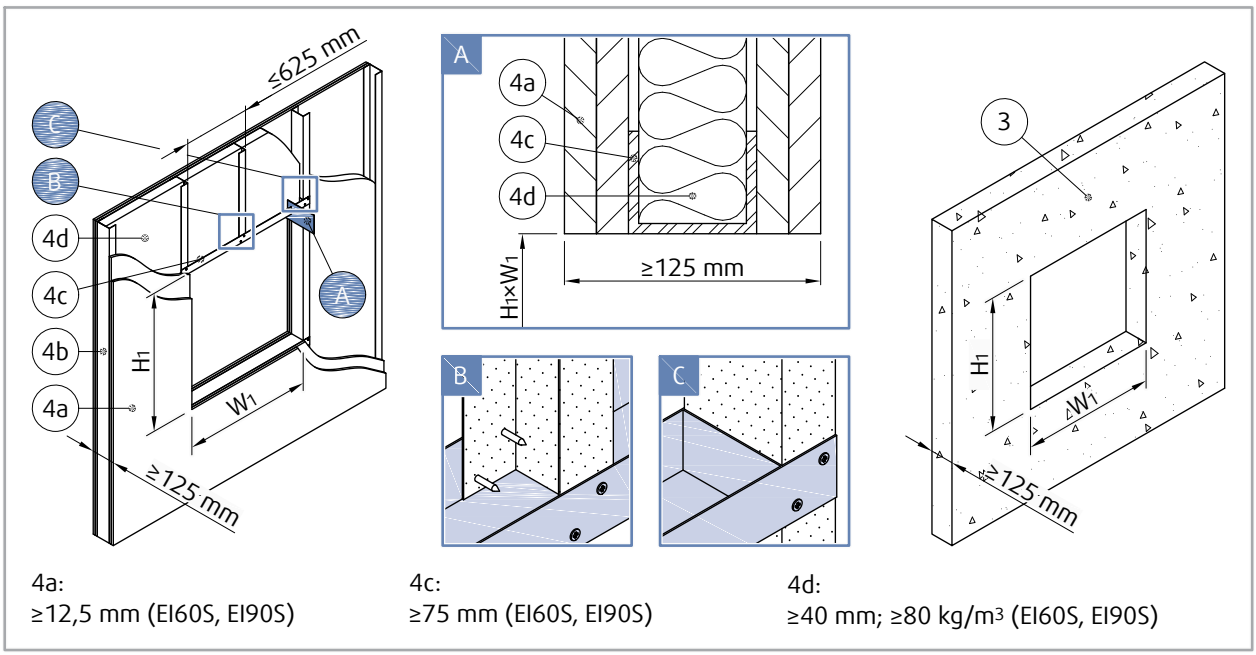
12,5
≥50
F3
F1
50
5
1
141
H1 x W1
H x W
(mm)


Y10
125
F3
F1
50
5
1
141
H1 x W1
H x W
(mm)


Y11
>125
F3
F1
50
5
1
141
H1 x W1
H x W
(mm)

Opening and Wall/Ceiling Preparation

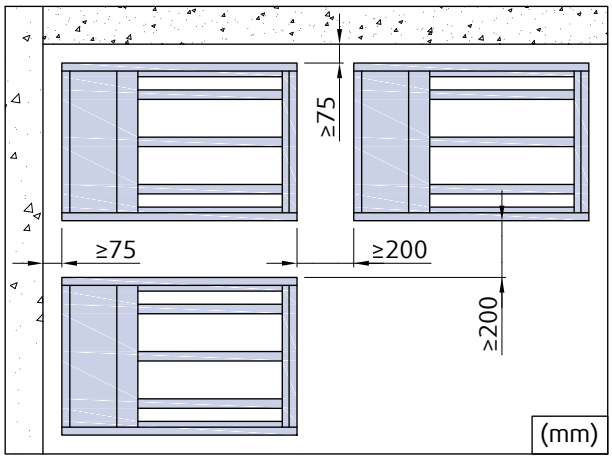


4a:
≥12,5 mm (EI60S, EI90S)

4c:
≥75 mm (EI60S, EI90S)

4d:
≥40 mm; ≥80 kg/m³ (EI60S, EI90S)

Damper Minimum Distances



Legend for Installation 1 Wet

1 - Smoke control damper S-BA2
2 - Connected metal ductwork
3 - Concrete/masonry/cellular concrete wall or ceiling
4 - Flexible (plasterboard) wall
4a - 2 layers of plasterboard fireproof plate type F, EN 520
4b - Vertical CW – profiles
4c - Horizontal CW – profiles
4d - Mineral wool; thickness/cubic density
5 - Grille
6 - Connected extension piece
7 - Façade surface (noncombustible at least 200 mm around duct/damper)
F1 - Plaster/mortar/concrete filling
F2 - Screw M6×20-25 mm, maximum fixing torque is 4,5 Nm
F3 - Screw with minimum dimensions of 4,2 mm diameter and 80 mm length based on the structure type, (e.g.: DIN 7981C/DIN 7982C; Fischer ULTRACUT FBS II; or equal and greater size metal wall plug + screw)

Installation 3. Soft - Installation in the Wall

Procedure to Fill with Mineral Wool

1. Prepare the opening in the Wall:

NOTE: The dimensions of the openings are the result of the nominal dimensions of the damper with added clearance. The dimensions of the opening will be W1 and H1.

a. Clean the surfaces of the opening. Make sure that the surfaces are even.

b. Make sure that the flexible wall opening is reinforced (refer to Standards for plasterboard walls).

2. Obey the procedure in the "Product Handling" section to put the damper into the middle of the opening. Make sure that the damper blade is in the wall.

CAUTION: If the width of the damper is more than 600 mm, use a duct support in the damper during the installation procedure. This will prevent damage to the housing of the damper because of the weight of the filling.

3. Prepare mineral wool segments (F4) with equal or higher density.
4. Use fire resistive coating (F5) on the wool segments.
5. Fill the area between the wall and the damper with mineral wool segments (F4).

CAUTION: Make sure that the filling will not cause deformation to the damper.

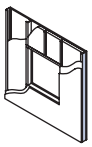
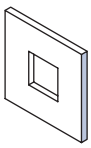
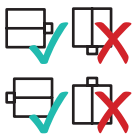
6. Use fire resistive coating (F5) on the wool segments and the wall surfaces as follows:

a. Mineral wool segments must be completely covered by the fire resistive coating.

b. All gaps between the mineral wool segments and damper casing or wall opening must be covered by the fire resistive coating

Installation Distances

The minimum distance between the damper body and the wall or ceiling must be 75 mm (refer to Standard EN 1366-2). If there is more than one component that go through a fire resistive wall, the minimum distance between the two damper bodies is 200 mm. This is applicable to distances between the damper body and foreign objects that are near and that go through the fire resistive wall.

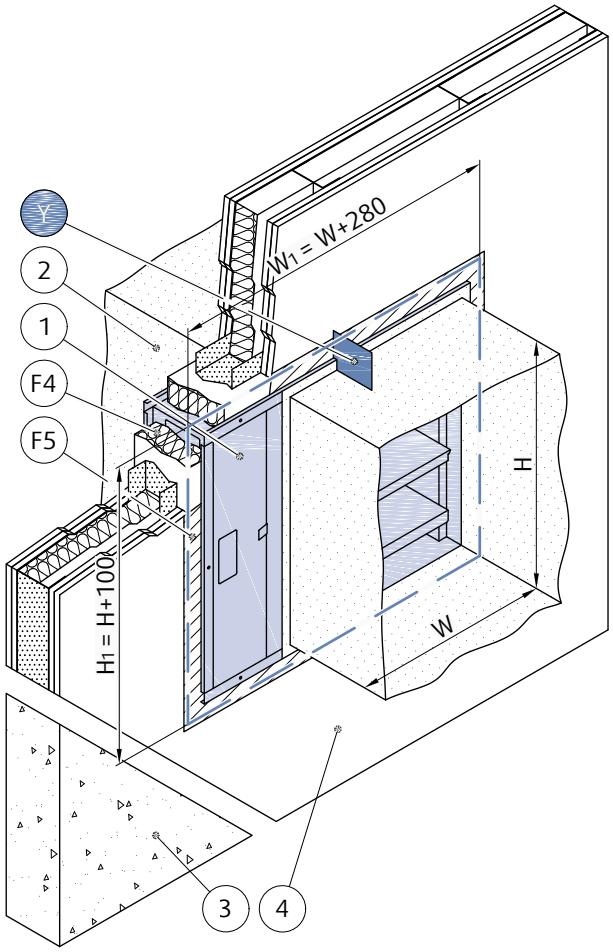
 3 Soft	S-BA2 150 × 250 ... ... 800 × 1000	EI 90 (v_{ew} i ↔ o) S1000 C_{MOD} AAmulti	a)  ≥ 125 mm	b)  ≥ 125 mm	

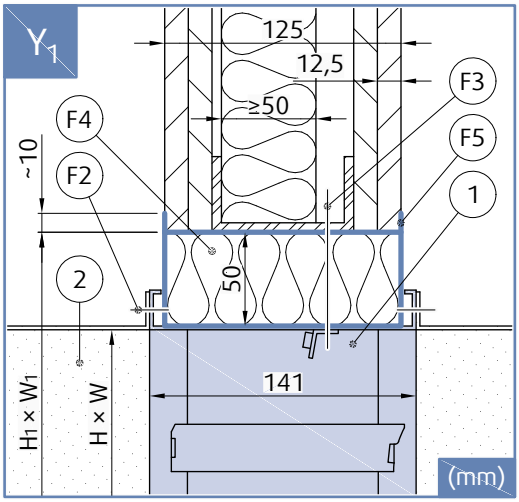
NOTES:

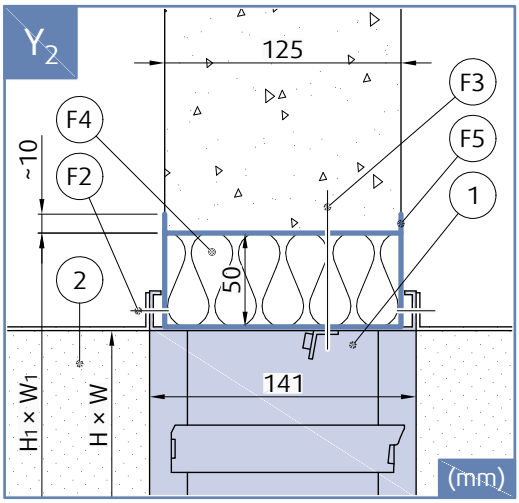
a) - Flexible (plasterboard) wall

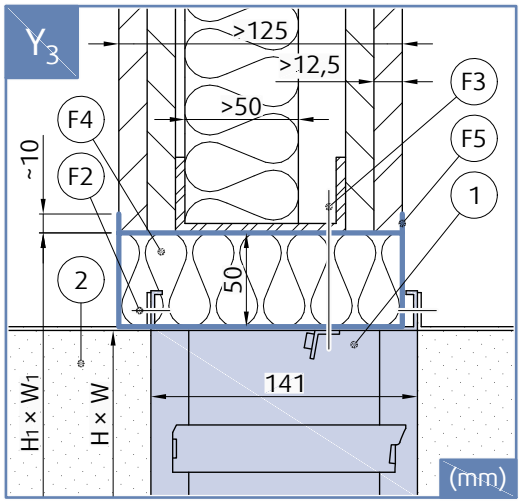
b) - Concrete/masonry/cellular concrete (rigid) wall

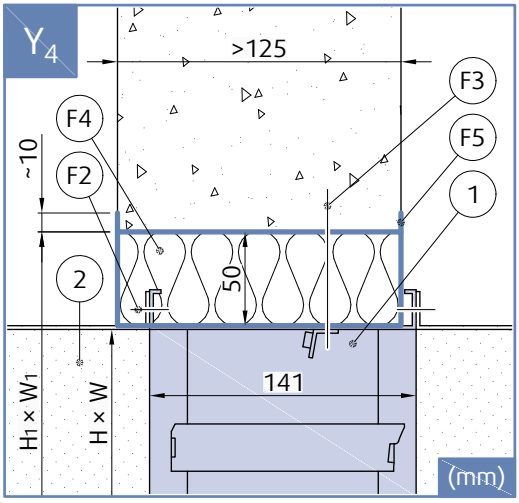
v_{ew} - Wall placement, vertically oriented damper

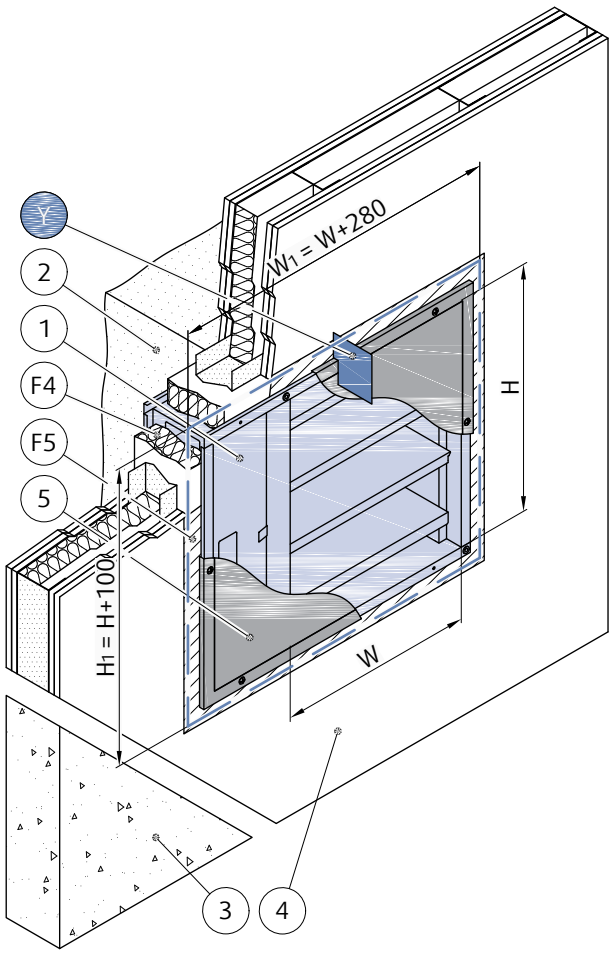

Y
2
1
F4
F5
W1 = W+280
H1 = H+100
H
W
3
4

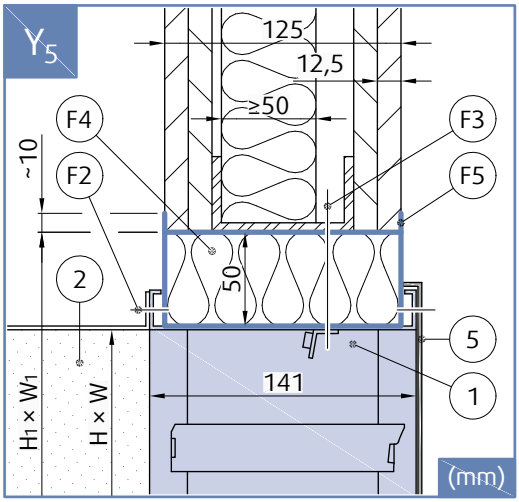

Y1
125
12,5
≥50
F3
F5
1
F4
F2
2
~10
50
141
H1 x W1
H x W
(mm)

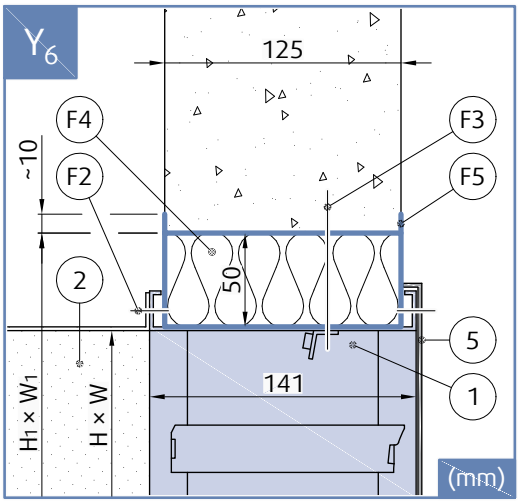

Y2
125
F3
F5
1
F4
F2
2
~10
50
141
H1 x W1
H x W
(mm)

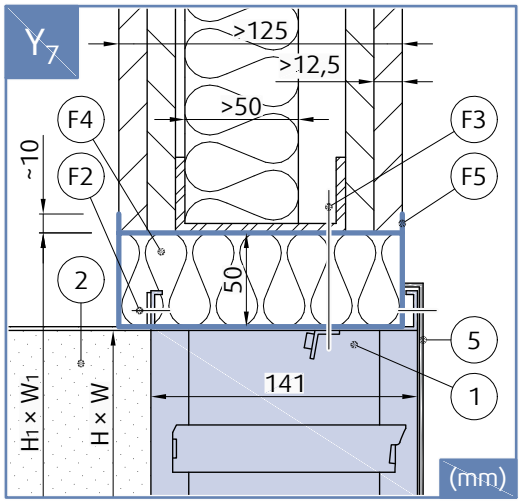

Y3
>125
>12,5
>50
F3
F5
1
F4
F2
2
~10
50
141
H1 x W1
H x W
(mm)

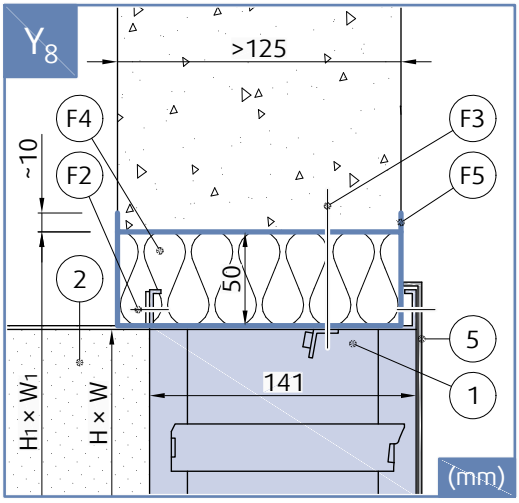

Y4
>125
F3
F5
1
F4
F2
2
~10
50
141
H1 x W1
H x W
(mm)

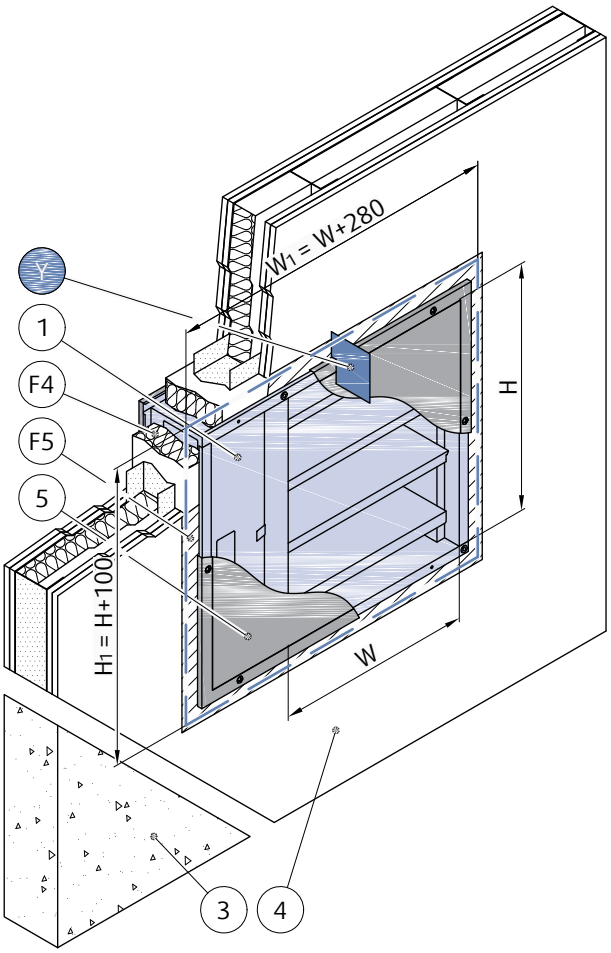

Y
2
1
F4
F5
5
W1 = W+280
H
H1 = H+100
W
3
4

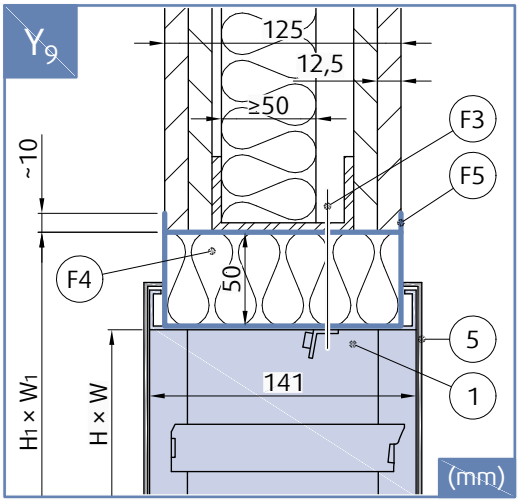

Y5
125
12,5
≥50
F4
F2
F3
F5
~10
2
50
5
1
141
H1 x W1
H x W
(mm)

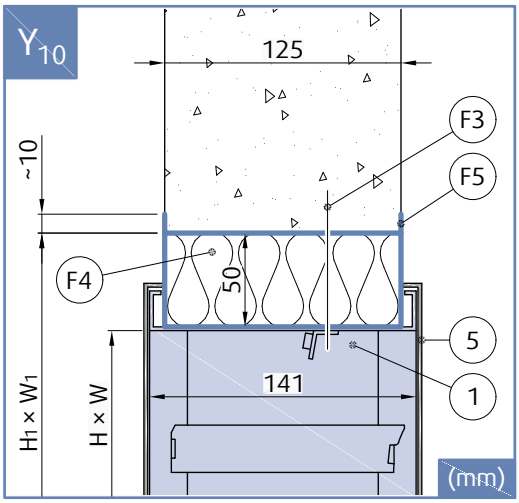

Y6
125
F4
F2
F3
F5
~10
2
50
5
1
141
H1 x W1
H x W
(mm)

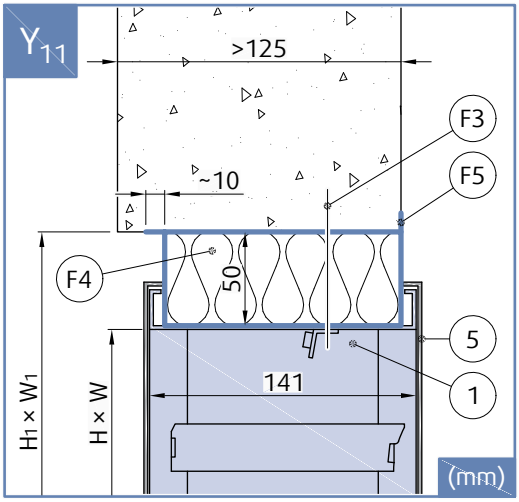

Y7
>125
>12,5
>50
F4
F2
F3
F5
~10
2
50
5
1
141
H1 x W1
H x W
(mm)

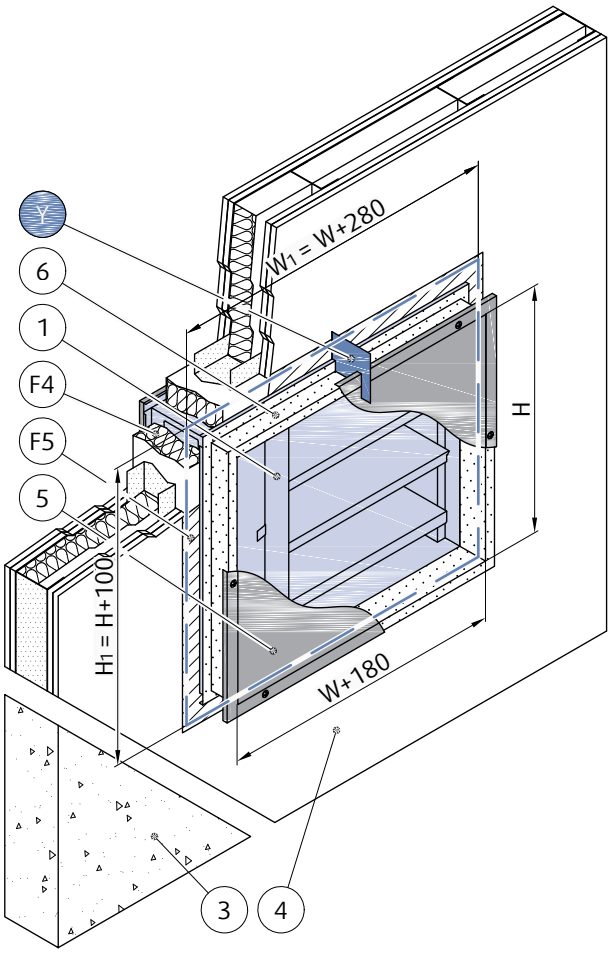

Y8
>125
F4
F2
F3
F5
~10
2
50
5
1
141
H1 x W1
H x W
(mm)

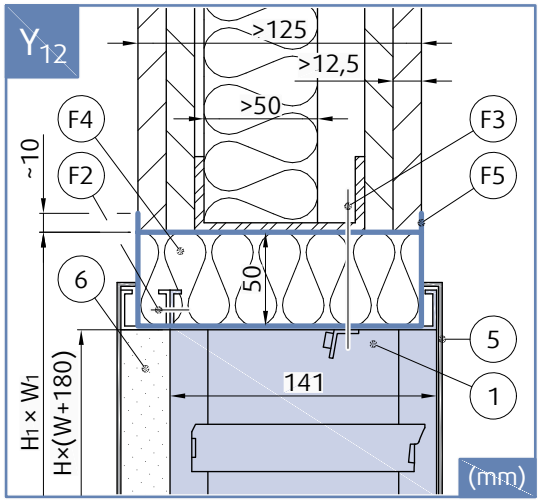

Y
1
F4
F5
5
W1 = W+280
H
H1 = H+100
W
3
4

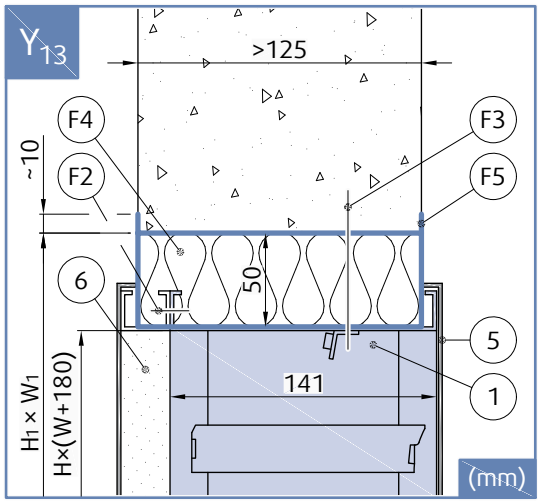

Y9
125
12,5
≥50
F3
F5
~10
F4
50
5
1
141
H1 x W1
H x W
(mm)

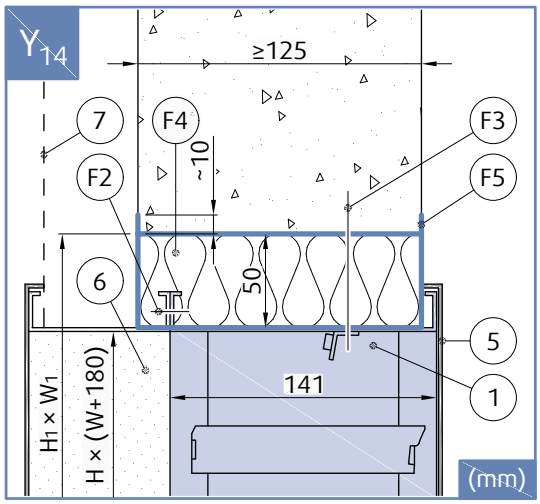

Y10
125
F3
F5
~10
F4
50
5
1
141
H1 x W1
H x W
(mm)


Y11
>125
F3
F5
~10
F4
50
5
1
141
H1 x W1
H x W
(mm)

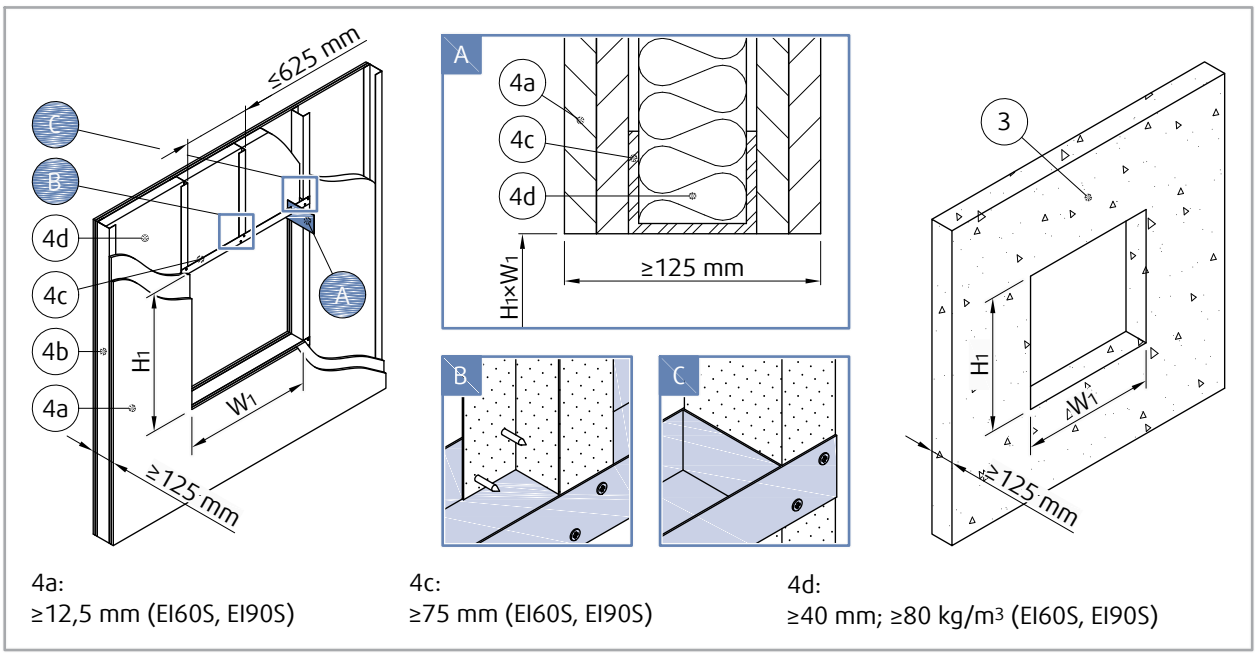

Y
6
1
F4
F5
5
W1 = W+280
H
H1 = H+100
W+180
3
4


Y12
>125
>12,5
>50
F4
F3
F2
F5
~10
6
50
5
141
1
H1 x W1
H×(W+180)
(mm)


Y13
>125
F4
F3
F2
F5
~10
6
50
5
141
1
H1 x W1
H×(W+180)
(mm)


Y14
≥125
7
F4
F3
F2
~10
F5
6
50
5
141
1
H1 x W1
H x (W+180)
(mm)

Opening and Wall/Ceiling Preparation

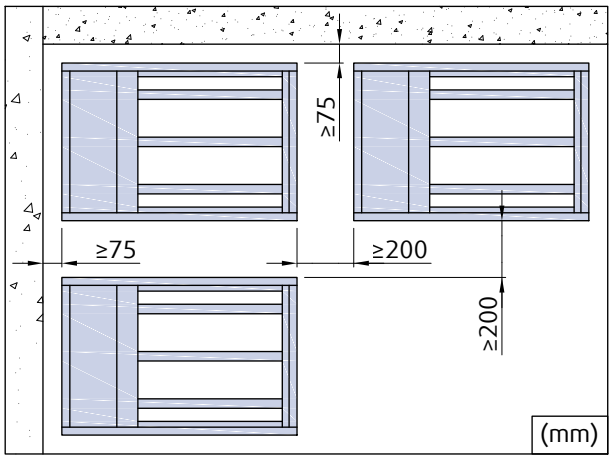


4a:
≥12,5 mm (EI60S, EI90S)

4c:
≥75 mm (EI60S, EI90S)

4d:
≥40 mm; ≥80 kg/m³ (EI60S, EI90S)

Damper Minimum Distances



Legend for Installation 3. Soft

1 - Smoke control damper S-BA2
2 - Connected metal ductwork
3 - Concrete/masonry/cellular concrete wall or ceiling
4 - Flexible (plasterboard) wall
4a - 2 layers of plasterboard fireproof plate type F, EN 520
4b - Vertical CW – profiles
4c - Horizontal CW – profiles
4d - Mineral wool; thickness/cubic density
5 - Grille
6 - Connected extension piece
7 - Façade surface (noncombustible at least 200 mm around duct/damper)
F2 - Screw M6×20-25 mm, maximum fixing torque is 4,5 Nm
F3 - Screw with minimum dimensions of 4,2 mm diameter and 80 mm length based on the structure type,
(e.g.: DIN 7981C/DIN 7982C; Fischer ULTRACUT FBS II; or equal and greater size metal wall plug + screw)
F4 - Mineral wool filling (min. 140 kg/m³)

F5 - Fire resistive coating Isover BSF (ISOVER)

Installation DMH

Horizontally Oriented Damper, in the Metal Duct

The S-BA2 smoke control damper can be installed on these types of ductwork: - “single” ductwork (the tests refer to EN 1366-9) - “multi” ductwork (the tests refer to EN 1366-8).

This section does not give information about duct hanger rules. These rules are related to the weight of the duct and they must have static approval.

Hang the smoke control dampers from solid ceiling slabs with rods that have a thread. The dimension of these rods must be sufficient for the weight of the damper.

If you use anchors in the ceiling, make sure that you use a fire- rated anchor (with the correct fire rating certificate).

1. Prepare the duct connections:

a. Clean the ductwork connection surfaces.

b. Apply sealant on the ductwork connection surfaces, following ductwork manufacturer instructions.

2. Connect the damper corners to the ductwork flange with screws (F2).
3. Screw self drilling screws (F9) through the ductwork flange and the damper flange with the distance of maximum 150 mm.
4. Insulate the duct and the damper with insulation (F6)
5. Bind the damper insulation with screws for insulation (F8)
6. Bind the damper insulation and the duct insulation with screws for insulation (F8)
7. Cover the mineral wool edges and the mineral wool connections with tape (F7).
8. Perform damper's functionality check (see "Operation Manual" section).

CAUTION:

- Make sure that the damper hanger only holds the weight of the damper.
- If the hanger system is longer than 1,5 m, fire-resistant insulation is necessary.
- The forces from thermal expansion of the duct must be avoided using flexible connections or duct bends.
- Make sure that it is always possible to access the smoke control damper internally for maintenance. If necessary, make inspection panel in the connecting duct.
- Duct with lower resistivities will decrease the fire resistivity of smoke control damper.
- The maximum fire resistance for in-duct installation is EI120 with pressure level 2 (-1000 Pa ... 300 Pa).

Installation Distances

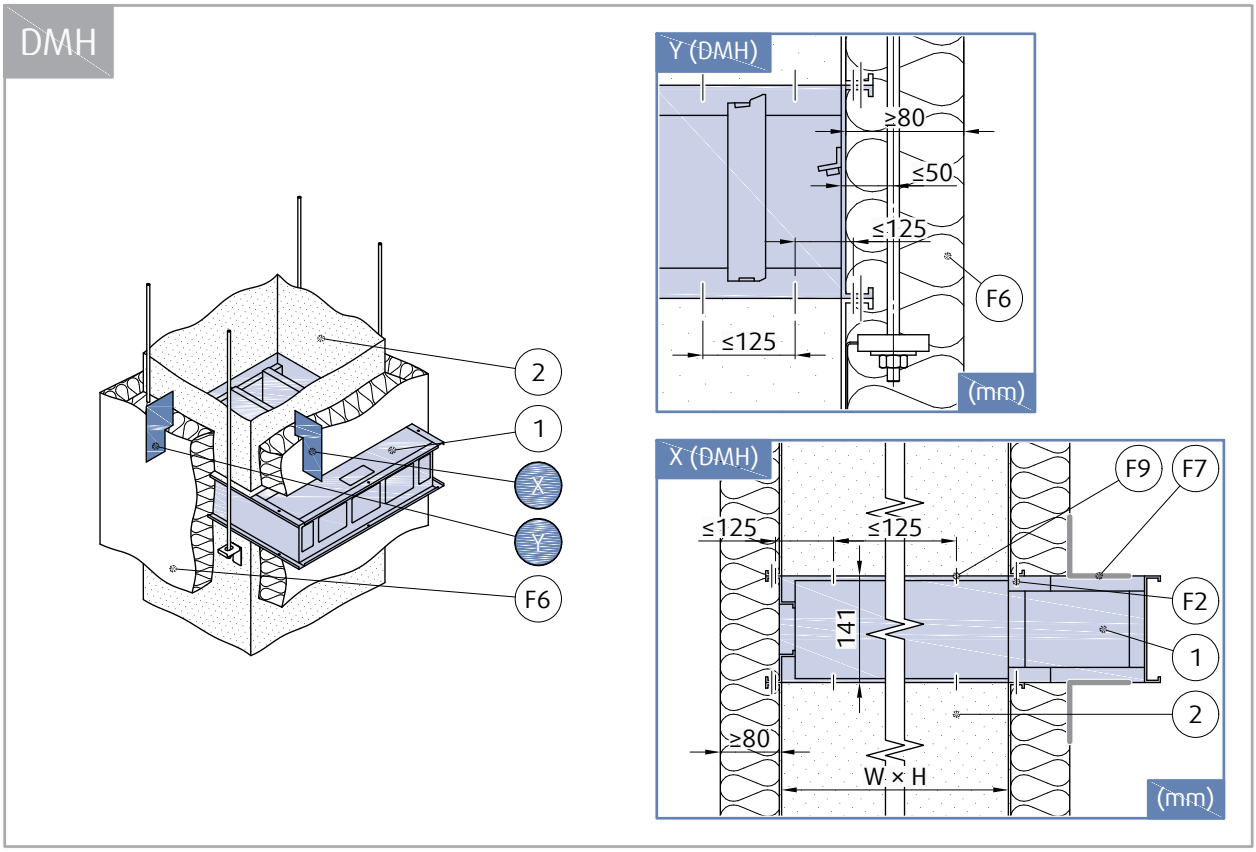
The minimum distance between the damper body and the wall or ceiling must be 75 mm (refer to Standard EN 1366-2). The minimum distance between two damper bodies is 200 mm.

DMH	S-BA2 150 × 250 ... ... 800 × 1000	EI 120 (h_{od} i ↔ o) S1000 C_{MOD} AAmulti	d) 	EN 1366-9 EN 1366-8

NOTES:

d) - Duct per EN 1366-9 or EN 1366-8

h_{od} - Duct placement, horizontaly oriented damper



Legend for installation DMH

1 - Smoke control damper S-BA2

2 - Connected metal ductwork

F2 - Screw M6×20-25 mm, maximum fixing torque is 4,5 Nm

NOTE: Following insulation system can be replaced for another smoke control duct system with equal or higher thickness and/or equal or higher bulk density.

F6 - Duct insulation ISOVER Ultimate Protect Slab 4.0 Alu1 (66 kg/m^3)

F7 - Aluminium tape

F8 - Welded pins and fireprotect screws

F9 - Self drilling screws

Installation DMV

Vertically Oriented Damper, in the Metal Duct

The S-BA2 smoke control damper can be installed on these types of ductwork: - “single” ductwork (the tests refer to EN 1366-9) - “multi” ductwork (the tests refer to EN 1366-8).

This section does not give information about duct hanger rules. These rules are related to the weight of the duct and they must have static approval.

Hang the smoke control dampers from solid ceiling slabs with rods that have a thread. The dimension of these rods must be sufficient for the weight of the damper.

If you use anchors in the ceiling, make sure that you use a fire- rated anchor (with the correct fire rating certificate).

1. Prepare the duct connections:

a. Clean the ductwork connection surfaces.

b. Apply sealant on the ductwork connection surfaces, following ductwork manufacturer instructions.

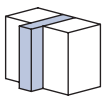
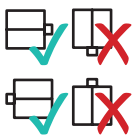
2. Connect the damper corners to the ductwork flange with screws (F2).
3. Screw self drilling screws (F9) through the ductwork flange and the damper flange with the distance of maximum 150 mm.
4. Insulate the duct and the damper with insulation (F6)
5. Bind the damper insulation with screws for insulation (F8)
6. Bind the damper insulation and the duct insulation with screws for insulation (F8)
7. Cover the mineral wool edges and the mineral wool connections with tape (F7).
8. Perform damper's functionality check (see "Operation Manual" section).

CAUTION:

- Make sure that the damper hanger only holds the weight of the damper.
- If the hanger system is longer than 1,5 m, fire-resistant insulation is necessary.
- The forces from thermal expansion of the duct must be avoided using flexible connections or duct bends.
- Make sure that it is always possible to access the smoke control damper internally for maintenance. If necessary, make inspection panel in the connecting duct.
- Duct with lower resistivities will decrease the fire resistivity of smoke control damper.
- The maximum fire resistance for in-duct installation is EI120 with pressure level 2 (-1000 Pa ... 300 Pa).

Installation Distances

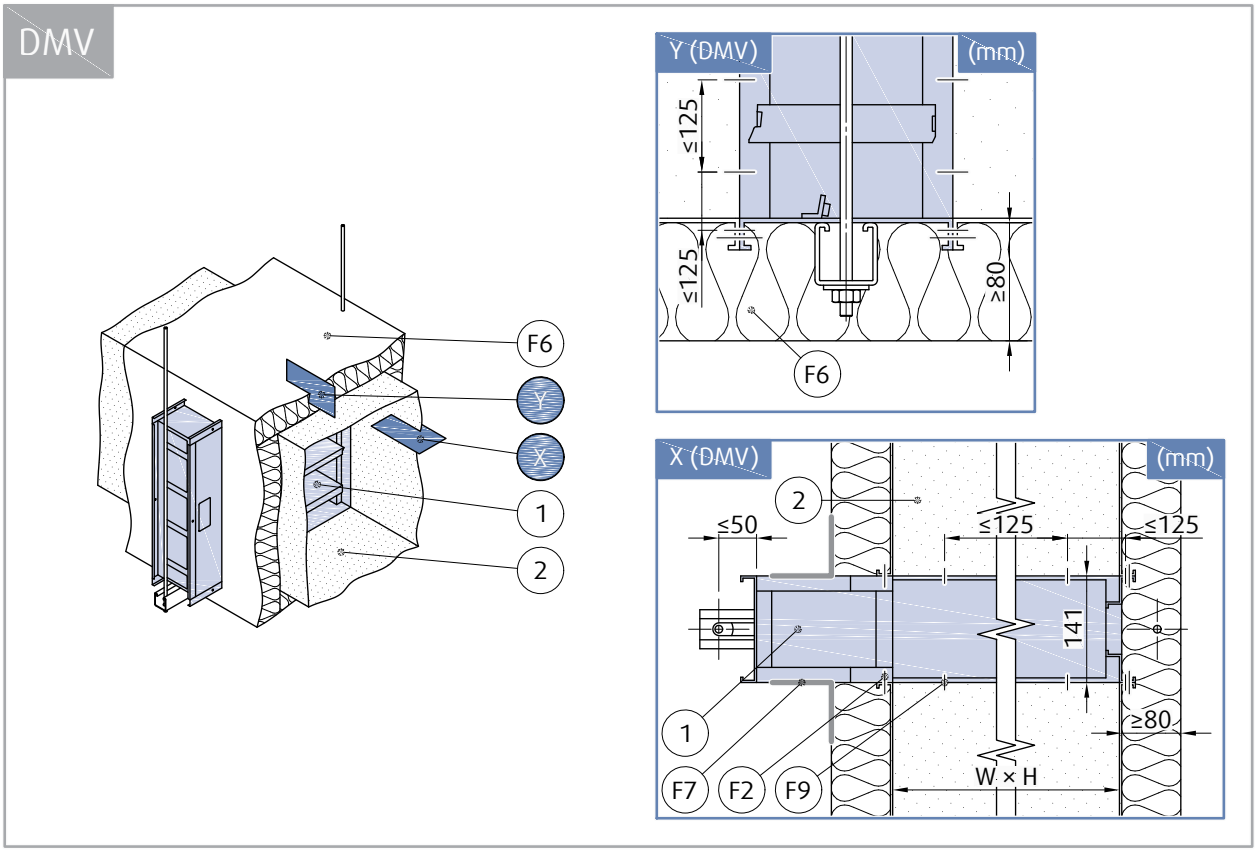
The minimum distance between the damper body and the wall or ceiling must be 75 mm (refer to Standard EN 1366-2). The minimum distance between two damper bodies is 200 mm.

DMV	S-BA2 150 × 250 ... ... 800 × 1000	EI 120 (v_{ed} i ↔ o) S1000 C_{MOD} AAmulti	d) 	EN 1366-9 EN 1366-8	

NOTES:

d) - Duct per EN 1366-9 or EN 1366-8

v_{ed} - Duct placement, vertically oriented damper



Legend for Installation DMV

1 - Smoke control damper S-BA2

2 - Connected metal ductwork

F2 - Screw M6×20-25 mm, maximum fixing torque is 4,5 Nm

NOTE: Following insulation system can be replaced for another smoke control duct system with equal or higher thickness and/or equal or higher bulk density.

F6 - Duct insulation ISOVER Ultimate Protect Slab 4.0 Alu1 (66 kg/m^3)

F7 - Aluminium tape

F8 - Welded pins and fireprotect screws

F9 - Self drilling screws

Installation D1H, D2H

Horizontally Oriented Damper, on the Duct

The S-BA2 smoke control damper can be installed on these types of ductwork: - “single” ductwork (the tests refer to EN 1366-9) - “multi” ductwork (the tests refer to EN 1366-8).

This section does not give information about duct hanger rules. These rules are related to the weight of the duct and they must have static approval.

Hang the smoke control dampers from solid ceiling slabs with rods that have a thread. The dimension of these rods must be sufficient for the weight of the damper.

If you use anchors in the ceiling, make sure that you use a fire- rated anchor (with the correct fire rating certificate).

1. Prepare the duct connections:

a. Clean the ductwork connection surfaces.

b. Apply sealant on the ductwork connection surfaces, following ductwork manufacturer instructions.

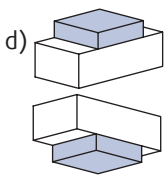
2. Connect the damper corners to the ductwork flange with screws (F2).
3. Screw self drilling screws (F9) through the ductwork flange and the damper flange with the distance of maximum 150 mm.
4. Insulate the duct and the damper with insulation (F6)
5. Bind the damper insulation with screws for insulation (F8)
6. Bind the damper insulation and the duct insulation with screws for insulation (F8)
7. Cover the mineral wool edges and the mineral wool connections with tape (F7).
8. Perform damper's functionality check (see "Operation Manual" section).

CAUTION:

- Make sure that the damper hanger only holds the weight of the damper.
- If the hanger system is longer than 1,5 m, fire-resistant insulation is necessary.
- The forces from thermal expansion of the duct must be avoided using flexible connections or duct bends.
- Make sure that it is always possible to access the smoke control damper internally for maintenance. If necessary, make inspection panel in the connecting duct.
- Duct with lower resistivities will decrease the fire resistivity of smoke control damper.
- The maximum fire resistance for in-duct installation is EI120 with pressure level 2 (-1000 Pa ... 300 Pa).

Installation Distances

The minimum distance between the damper body and the wall or ceiling must be 75 mm (refer to Standard EN 1366-2). The minimum distance between two damper bodies is 200 mm.

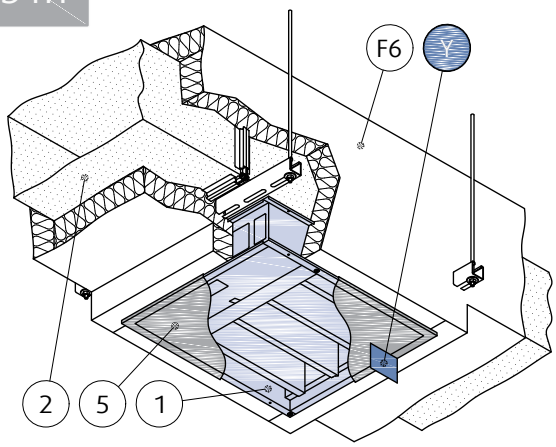
 D1H, D2H	S-BA2 150 × 250 ... ... 800 × 1000	EI 120 (h_{od} i ↔ o) S1000 C_{MOD} AAmulti	d) 	EN 1366-9 EN 1366-8

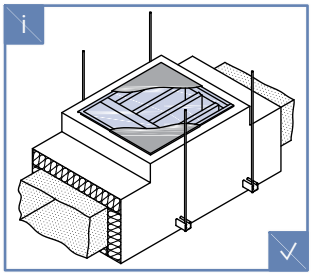
NOTES:

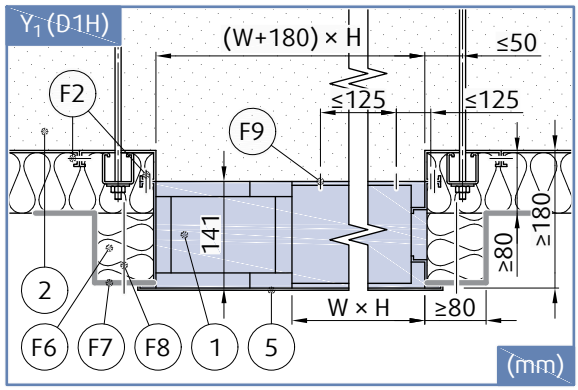
d) - Duct per EN 1366-9 or EN 1366-8

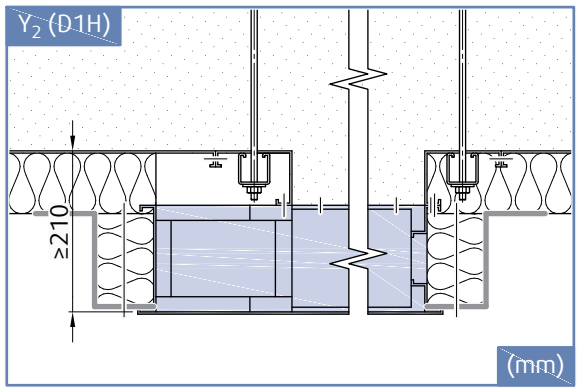
h_{od} - Duct placement, horizontally oriented damper

D1H

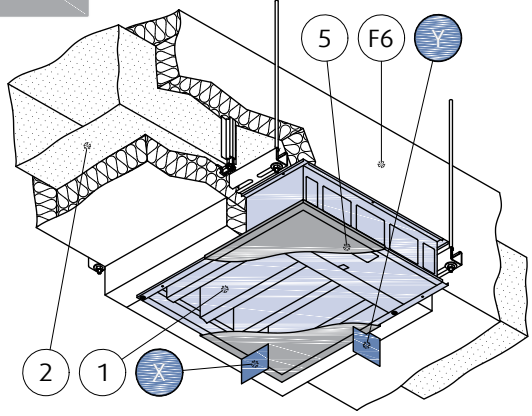

F6
Y
2
5
1

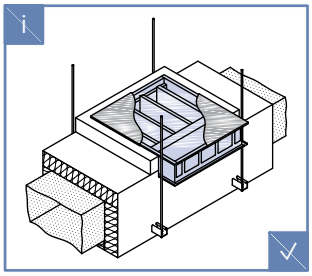

i

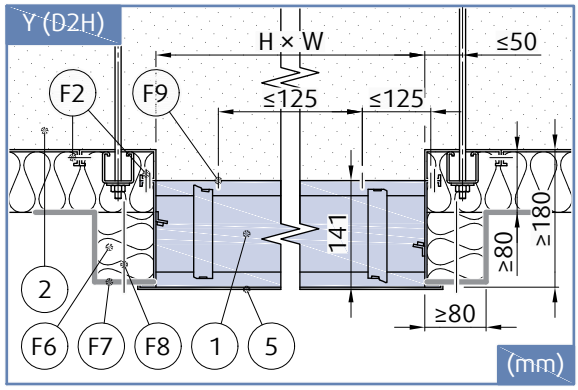

Y1 (D1H)
(W+180) × H
≤50
F2
≤125
≤125
F9
141
≥80
≥180
2
W × H
≥80
F6
F7
F8
1
5
(mm)

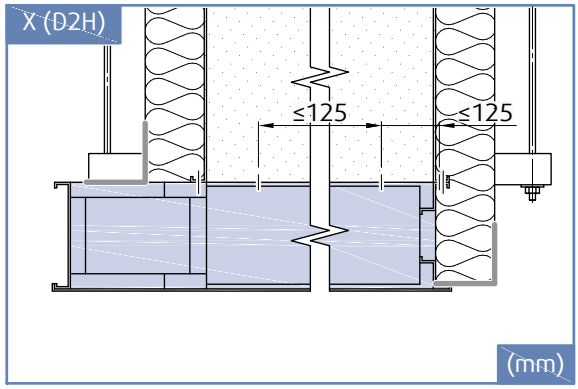

Y2 (D1H)
≥210
(mm)

D2H


5
F6
Y
2
1
X


i


Y (D2H)
H × W
≤50
F2
F9
≤125
≤125
141
≥80
≥180
2
≥80
F6
F7
F8
1
5
(mm)


X (D2H)
≤125
≤125
(mm)

Legend for Installation D1H, D2H

1 - Smoke control damper S-BA2

2 - Connected metal ductwork

5 - Grille

F2 - Screw M6×20-25 mm, maximum fixing torque is 4,5 Nm

NOTE: Following insulation system can be replaced for another smoke control duct system with equal or higher thickness and/or equal or higher bulk density.

F6 - Duct insulation ISOVER Ultimate Protect Slab 4.0 Alu1 (66 kg/m^3)

F7 - Aluminium tape

F8 - Welded pins and fireprotect screws

F9 - Self drilling screws

Installation D1V

Vertically Oriented Damper, on the Duct

The S-BA2 smoke control damper can be installed on these types of ductwork: - “single” ductwork (the tests refer to EN 1366-9) - “multi” ductwork (the tests refer to EN 1366-8).

This section does not give information about duct hanger rules. These rules are related to the weight of the duct and they must have static approval.

Hang the smoke control dampers from solid ceiling slabs with rods that have a thread. The dimension of these rods must be sufficient for the weight of the damper.

If you use anchors in the ceiling, make sure that you use a fire- rated anchor (with the correct fire rating certificate).

1. Prepare the duct connections:

a. Clean the ductwork connection surfaces.

b. Apply sealant on the ductwork connection surfaces, following ductwork manufacturer instructions.

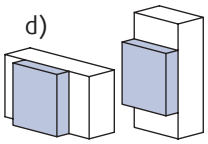
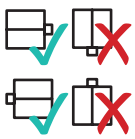
2. Connect the damper corners to the ductwork flange with screws (F2).
3. Screw self drilling screws (F9) through the ductwork flange and the damper flange with the distance of maximum 150 mm.
4. Insulate the duct and the damper with insulation (F6)
5. Bind the damper insulation with screws for insulation (F8)
6. Bind the damper insulation and the duct insulation with screws for insulation (F8)
7. Cover the mineral wool edges and the mineral wool connections with tape (F7).
8. Perform damper's functionality check (see "Operation Manual" section).

CAUTION:

- Make sure that the damper hanger only holds the weight of the damper.
- If the hanger system is longer than 1,5 m, fire-resistant insulation is necessary.
- The forces from thermal expansion of the duct must be avoided using flexible connections or duct bends.
- Make sure that it is always possible to access the smoke control damper internally for maintenance. If necessary, make inspection panel in the connecting duct.
- Duct with lower resistivities will decrease the fire resistivity of smoke control damper.
- The maximum fire resistance for in-duct installation is EI120 with pressure level 2 (-1000 Pa ... 300 Pa).

Installation Distances

The minimum distance between the damper body and the wall or ceiling must be 75 mm (refer to Standard EN 1366-2). The minimum distance between two damper bodies is 200 mm.

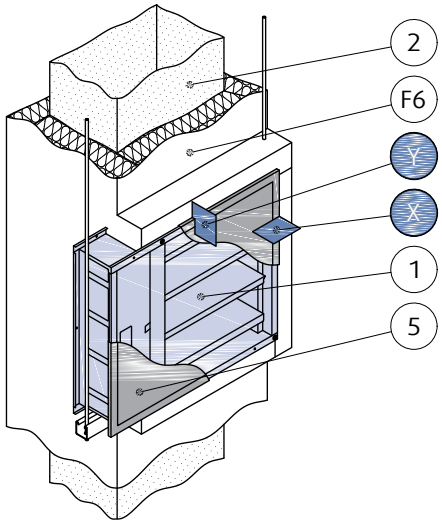
 D1V	S-BA2 150 × 250 ... ... 800 × 1000	EI 120 (v_{ed} i ↔ o) S1000 C_{MOD} AAmulti	d) 	EN 1366-9 EN 1366-8	

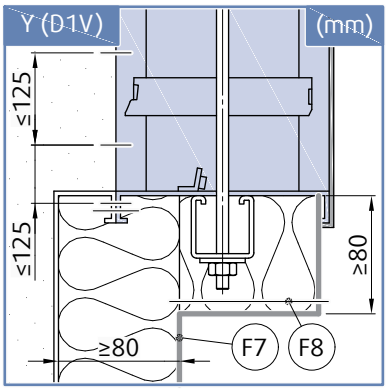
NOTES:

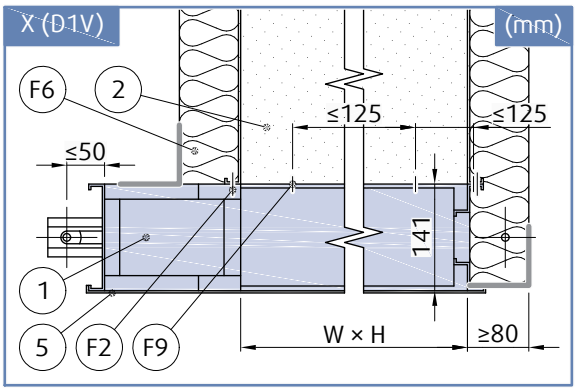
d) - Duct per EN 1366-9 or EN 1366-8

v_{ed} - Duct placement, vertically oriented damper

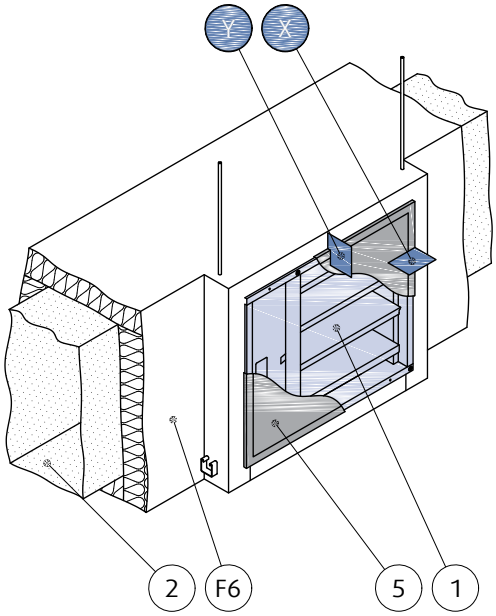
D1V

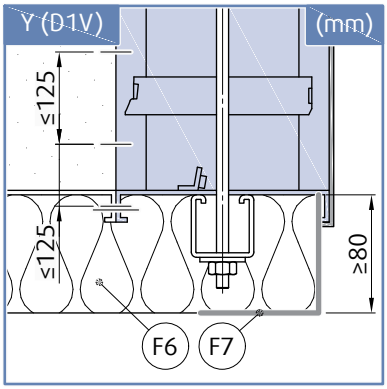

2
F6
Y
X
1
5

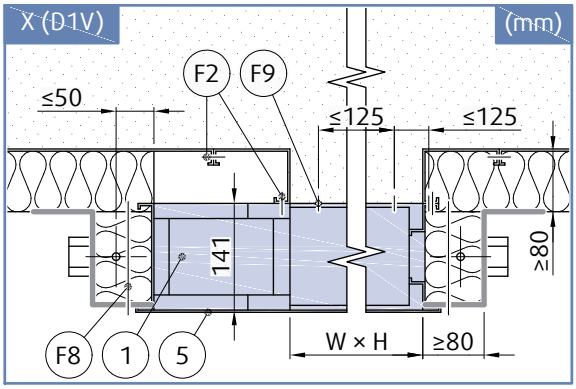

Y (D1V)
(mm)
≤125
≤125
≥80
≥80
F7
F8


X (D1V)
(mm)
F6
2
≤125
≤125
≤50
141
1
5
F2
F9
W × H
≥80

D1V


Y
X
2
F6
5
1


Y (D1V)
(mm)
≤125
≤125
≥80
F6
F7


X (D1V)
(mm)
F2
F9
≤50
≤125
≤125
141
≥80
F8
1
5
W × H
≥80

Legend for Installation D1V

1 - Smoke control damper S-BA2

2 - Connected metal ductwork

5 - Grille

F2 - Screw M6×20-25 mm, maximum fixing torque is 4,5 Nm

NOTE: Following insulation system can be replaced for another smoke control duct system with equal or higher thickness and/or equal or higher bulk density.

F6 - Duct insulation ISOVER Ultimate Protect Slab 4.0 Alu1 (66 kg/m^3).

F7 - Aluminium tape

F8 - Welded pins and fireprotect screws

F9 - Self drilling screws

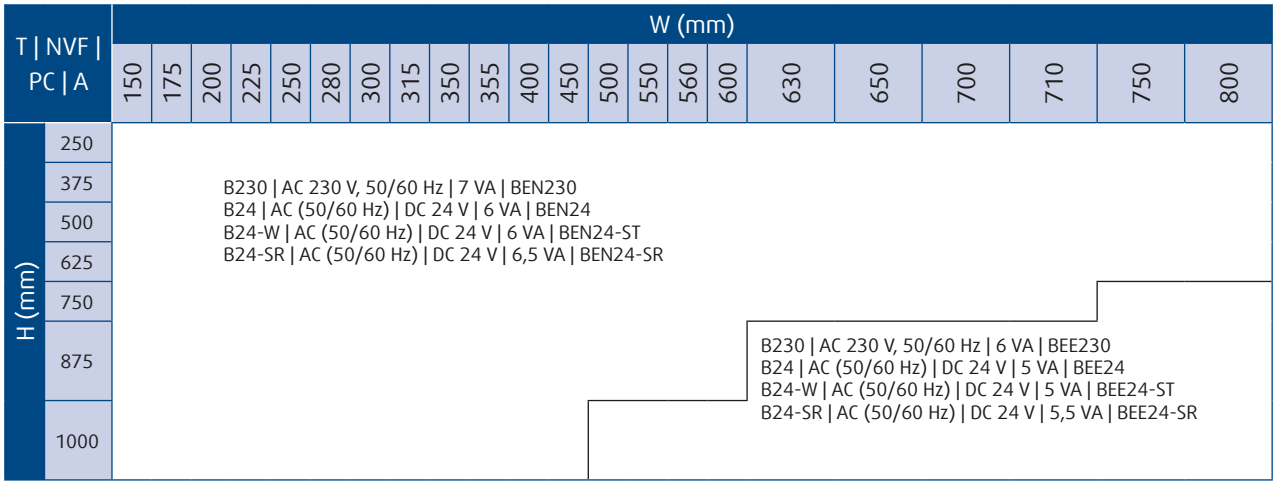
Electrical Connections

WARNING

- Risk of electric shock.
- Stop the power supply before you do work on electrical equipment.
- Only approved electricians can do work on the electrical system.

To access the electrical parts of this product follow instructions in "Product Handling" section.

Electrical Parameters for Type of Activation and Actuator

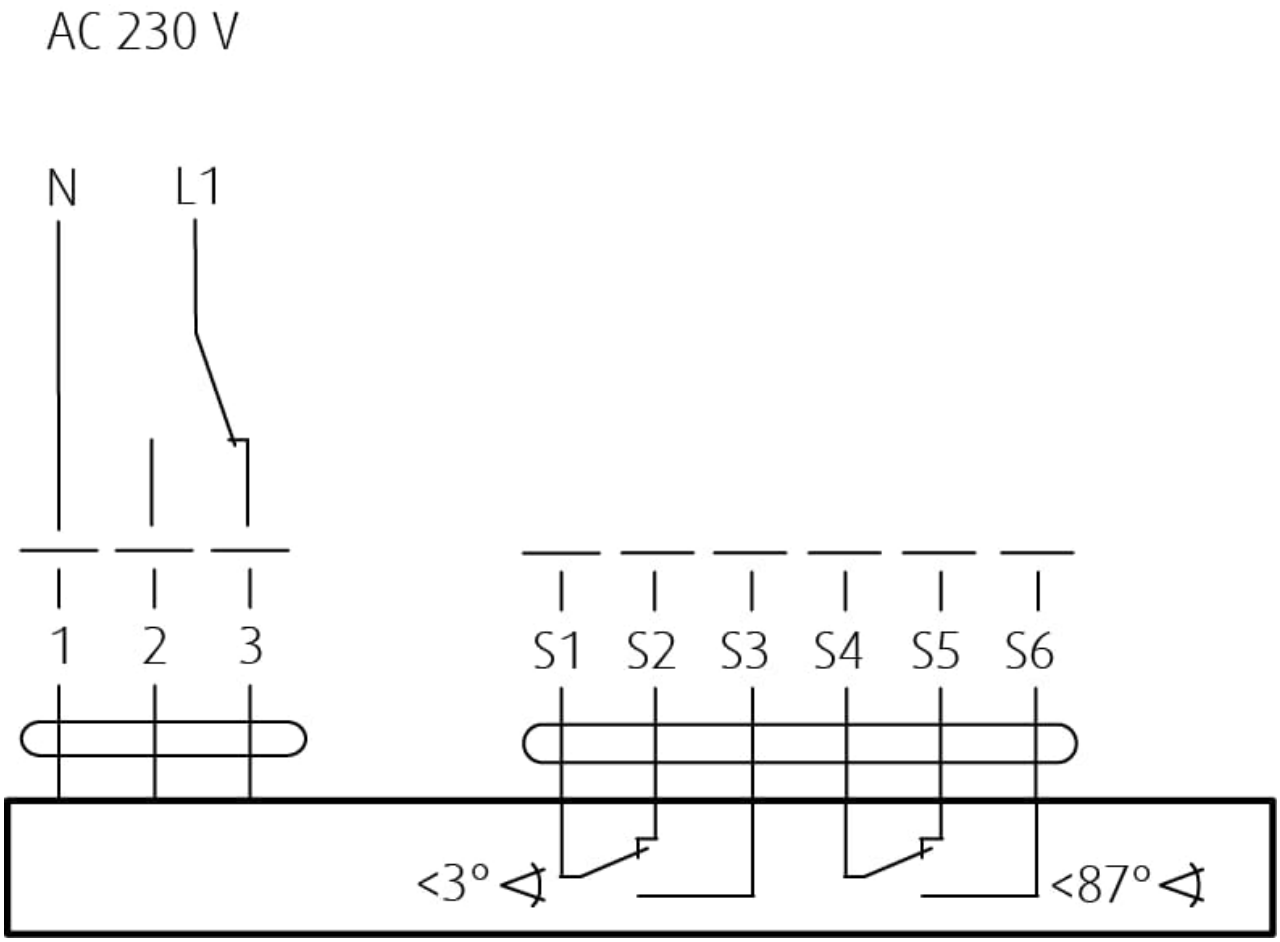


NOTE:

T | NVF | PC | A - Activation Type | Nominal Voltage and Frequency | Power Consumption for wire sizing | Actuator

Type of Activation B230

- The circuit switch between wires 2 and 3 is not part of the damper supply.
- When the power supply is connected to wires 1 and 3, the actuator moves to the OPEN position.
- When the power supply is connected to wires 1 and 2, the actuator moves to the CLOSED position.



NOTES:

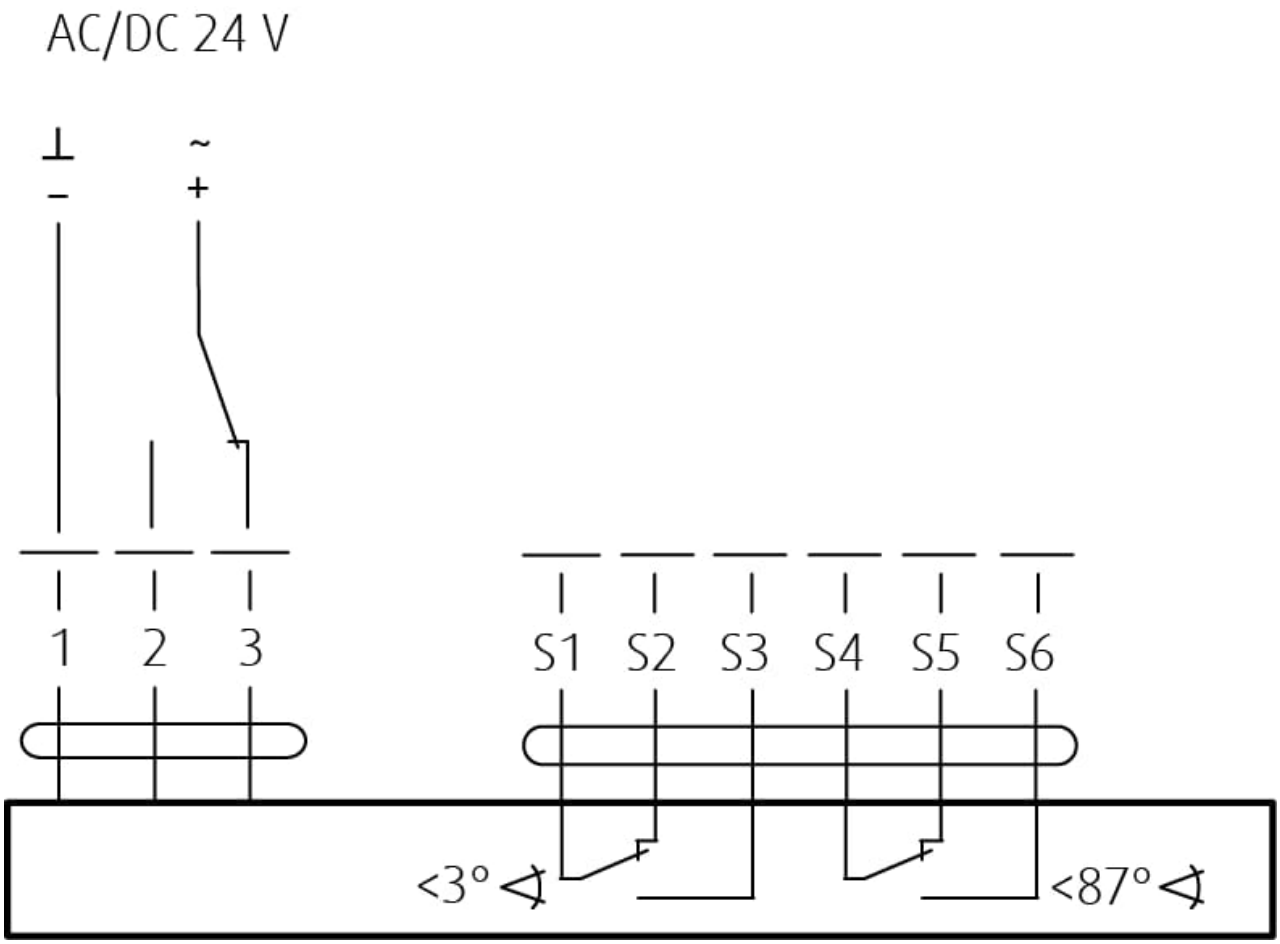
- **CAUTION:** Main power supply voltage!
- Parallel connection of more actuators possible when the power consumption and switching threshold is observed!

Legend for Activation Type B230

1 - blue
2 - brown
3 - white
S1 - violet
S2 - red
S3 - white
S4 - orange
S5 - pink
S6 - grey
The Belimo BE230 actuator has wires without colours.

Type of Activation B24

- The circuit switch between wires 2 and 3 is not part of the damper supply.
- When the power supply is connected to wires 1 and 3, the actuator moves to the OPEN position.
- When the power supply is connected to wires 1 and 2, the actuator moves to the CLOSED position.



NOTES:

- **CAUTION:** Main power supply voltage!
- Parallel connection of more actuators possible when the power consumption and switching threshold is observed!

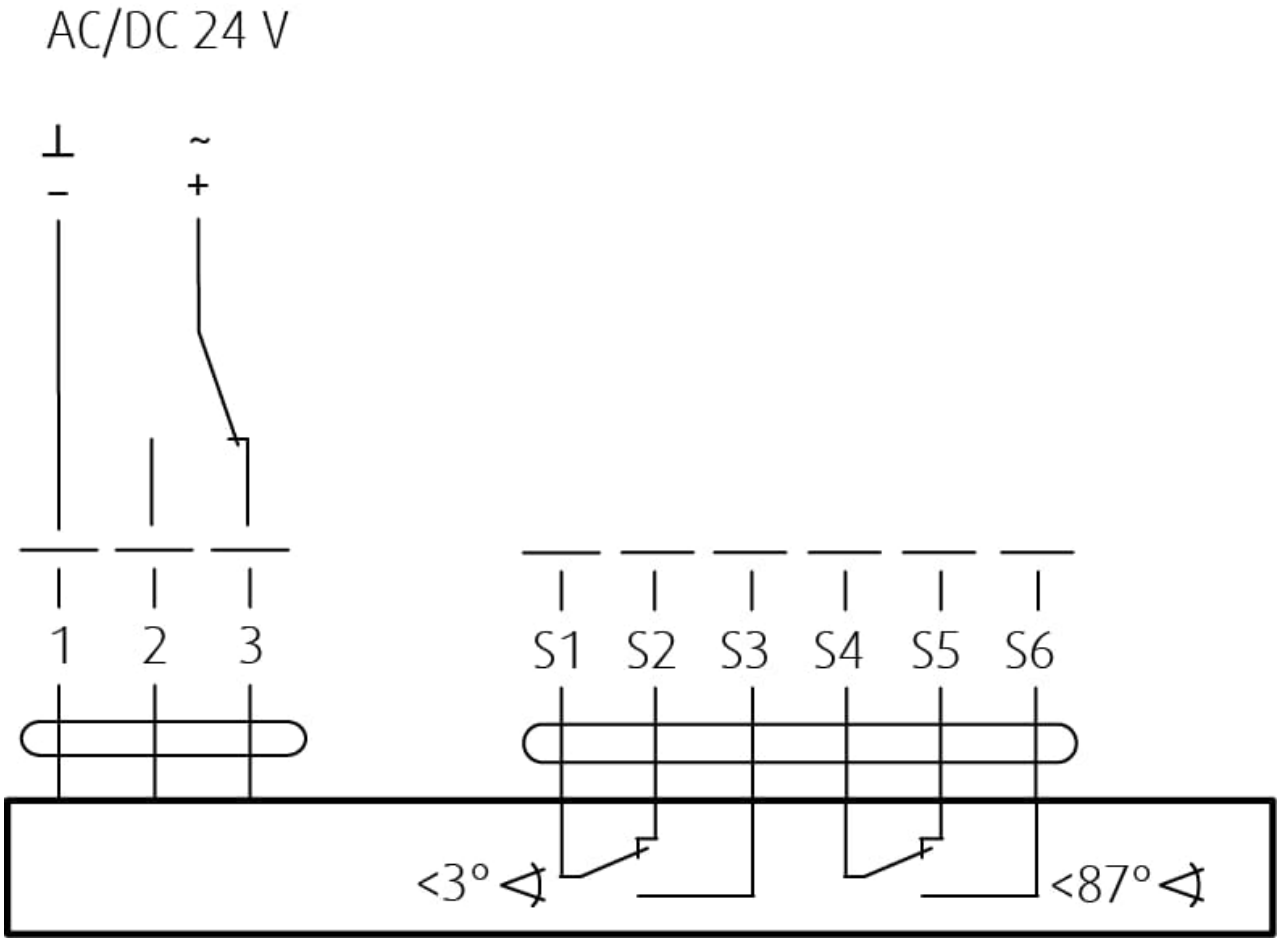
Legend for Activation Type B24

1 - black
2 - red
3 - white
S1 - violet
S2 - red
S3 - white
S4 - orange
S5 - pink
S6 - grey
The Belimo BE24 actuator has wires without colours.

Type of Activation B24-W

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

- The circuit switch between wires 2 and 3 is not part of the damper supply.
- When the power supply is connected to wires 1 and 3, the actuator moves to the OPEN position.
- When the power supply is connected to wires 1 and 2, the actuator moves to the CLOSED position.



NOTES:

- **CAUTION:** Main power supply voltage!
- Parallel connection of more actuators possible when the power consumption and switching threshold is observed!
- Combination of power supply voltage and safety extra-low voltage not permitted at the both auxiliary switches.

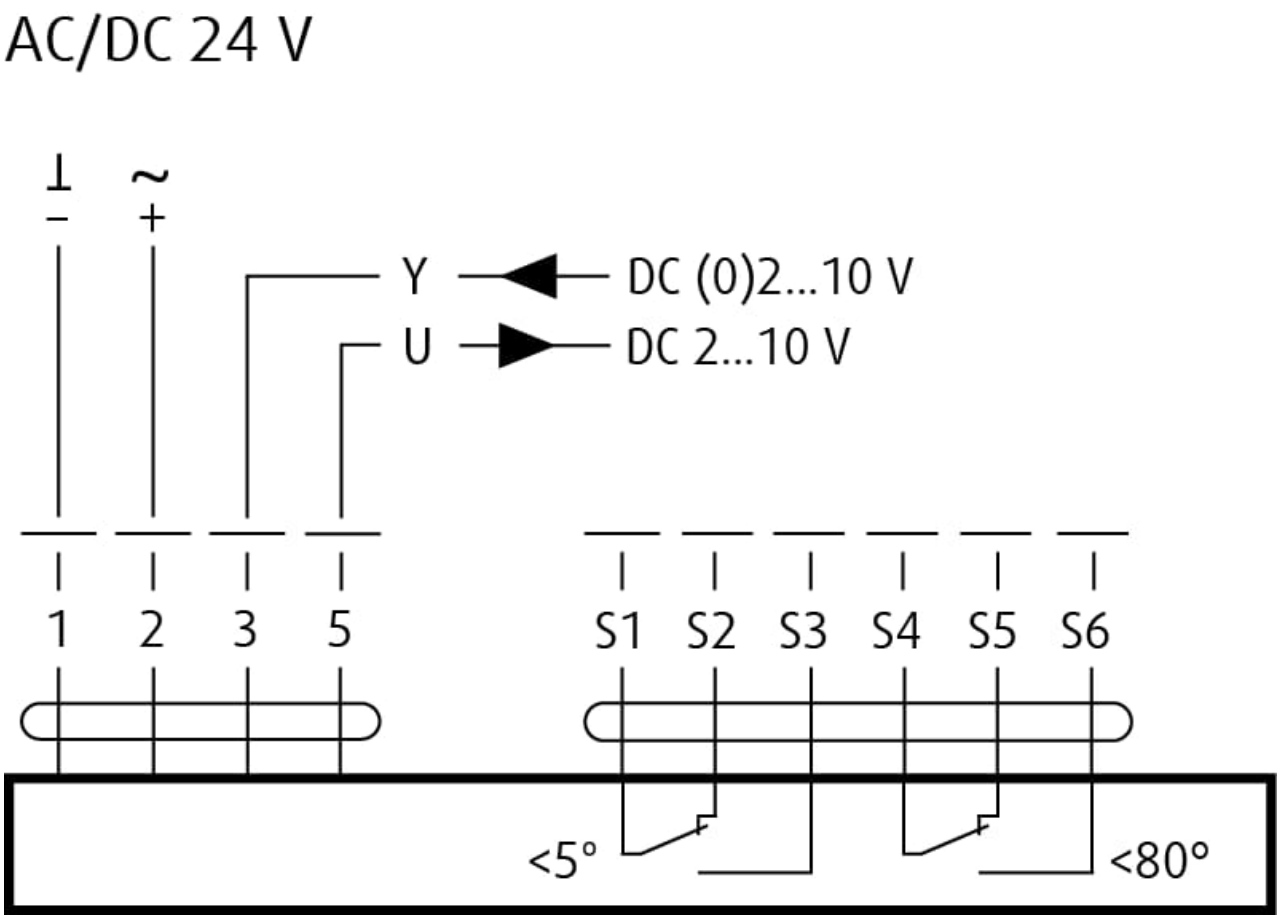
Legend for Activation Type B24-W

The actuator has connection plugs.
Supply: With a 3-pole plug that is applicable, for example, for BKNE230-24
Auxiliary switch: With a 6-pole plug that is applicable, for example, for BKNE230-24

Type of Activation B24-SR

24V AC/DC Belimo Actuator, modulated (0)2..10V

- When power supply is connected to wires 1 and 3, actuator drives to position OPEN.
- When power supply is connected to wires 1 and 2, actuator drives to position CLOSED.



NOTES:

- **CAUTION:** Main power supply voltage!
- Parallel connection of more actuators possible when the power consumption and switching threshold is observed!
- Operating range Y - **DC (0)2...10 V**
- Input Impedance - **100 kΩ**
- Position feedback U - **DC 2...10 V**
- Position feedback U note - **Max. 0.5 mA**
- Position accuracy - **±5%**

Legend for Activation Type B24-SR

1 - black
2 - red
3 - white
5 - orange
S1 - violet
S2 - red
S3 - white
S4 - orange
S5 - pink
S6 - grey

The Belimo BE24 actuator not available in SR configuration.

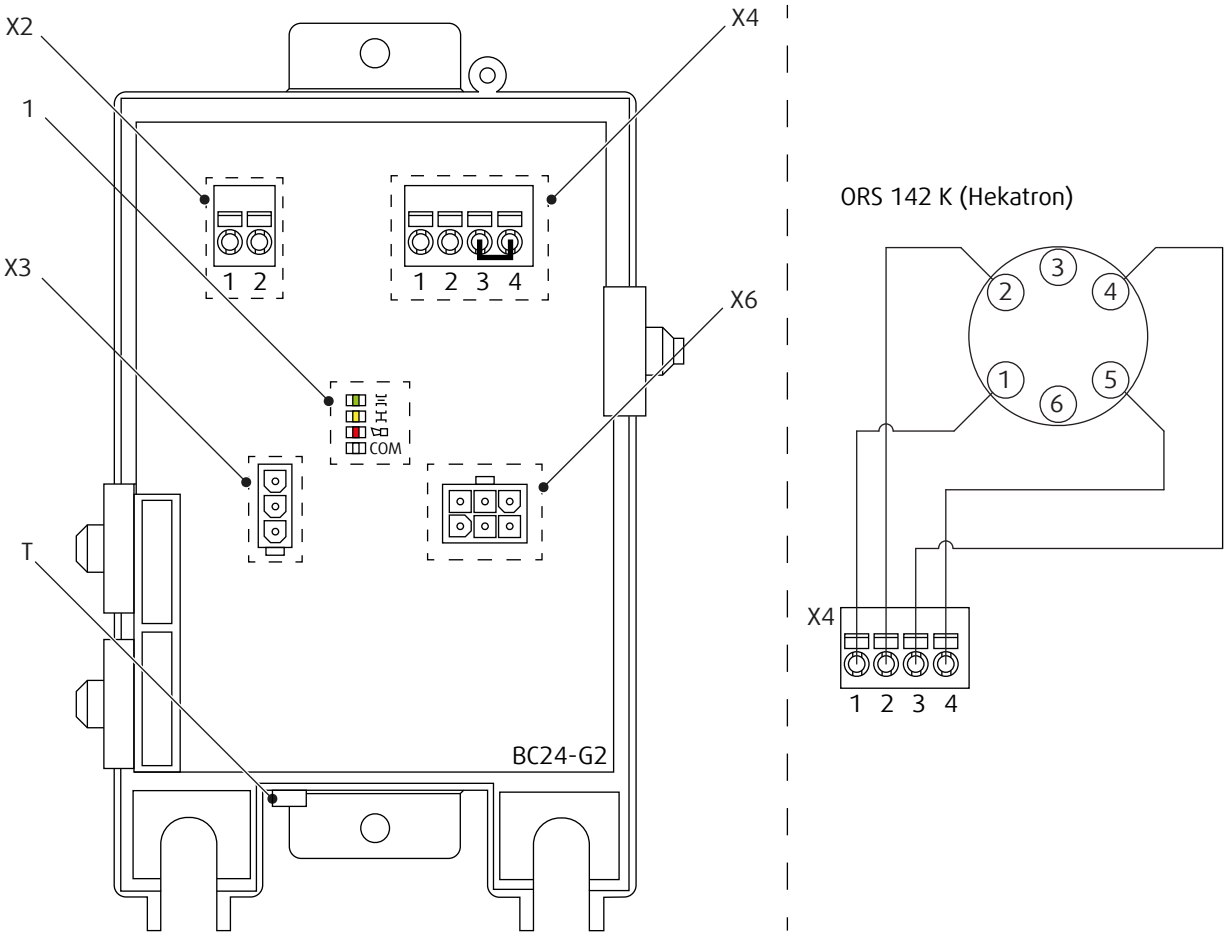
Type of Activation BST1

IMPORTANT: Danger of electric shock! Parallel circuits, i.e. a smoke detector on multiple slave devices are not allowed!
Switch off the power supply before working on any electrical equipment.
Allow only qualified electricians to work on the electrical system.
Actuator power supply via fitted communication unit: DC 24 V.
NOTES:
• Connection scheme for fitted communication and supply unit BC24-G2 (THC).

LEDs status indication (BST1)

LED colour | LED state | Status

Green | ON | Damper open
Green | Blinks | Damper is opening
Yellow | ON | Damper closed
Yellow | Blinks | Damper is closing
White | Blinks | SLC-communication ok – control command „close damper“
White | Flashes | SLC-communication ok – control command „open damper“
Red | ON | Safety element triggered (at X4)
Red | Blinks | self-test active; error: communication loss; error: actuator not connected; error: thermoelectric tripping device of actuator triggered; runtime monitoring error; mechanical error triggered



Legend for Activation Type BST1

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

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

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

- 1- (+) DC 24 V / max. 30 mA.
- 2- GND.
- 3- IN1 (external relay contact 1).
- 4- IN2 (external relay contact 2).

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

Type of Activation BST10

IMPORTANT: Danger of electric shock! The BKNE230-24-PL may only be used with a designated master (e.g. BKS64-PL).

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

Allow only qualified electricians to work on the electrical system.

Actuator power supply via fitted communication unit: DC 24 V

NOTES:

- Connection scheme for fitted communication and supply unit BKNE230-24-PL (Powerline) with example of connection with ORS 142 K from Hekatron (smoke detector not part of delivery).

LEDs status indication (BST10)

LED colour | LED state | Status

Green | ON | Damper open

Green | Blinks | Damper is opening

Yellow | ON | Damper closed

Yellow | Blinks | Damper is closing

White TX | ON | PL data sent

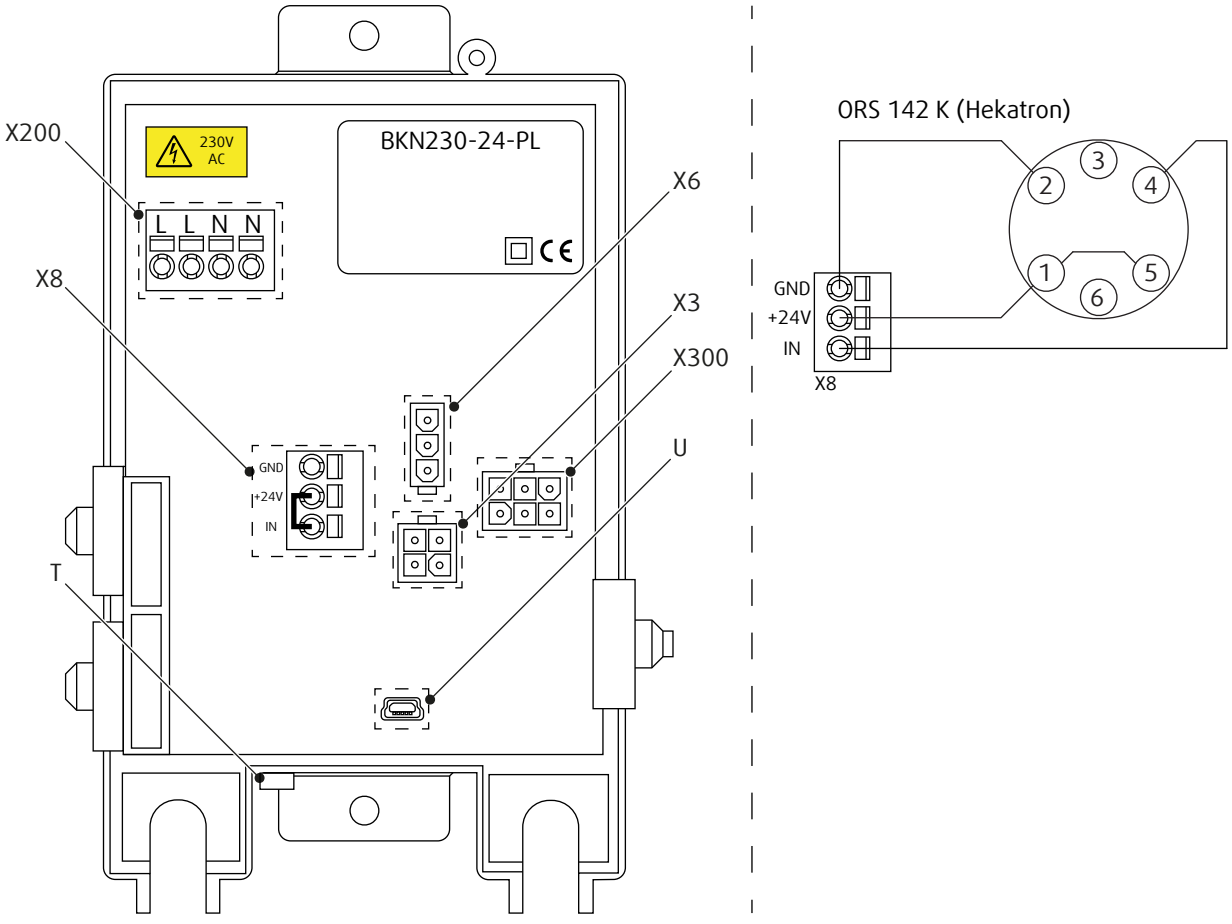
White RX | ON | PL data received

Red | ON | Error saved

Red | Blinks | Error present

Blue | ON | Device in Bootloader mode

Blue | Blinks | Identified by the master



Legend for Activation Type BST10

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

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

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

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

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

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

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

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

Operation Manual

Functionality Check

Before and after you install the damper, make sure that the dampers functionality is checked. The functionality is checked by:

1. Refer to the “Electrical connections” section to prepare the actuator connection.
2. Opening the damper:

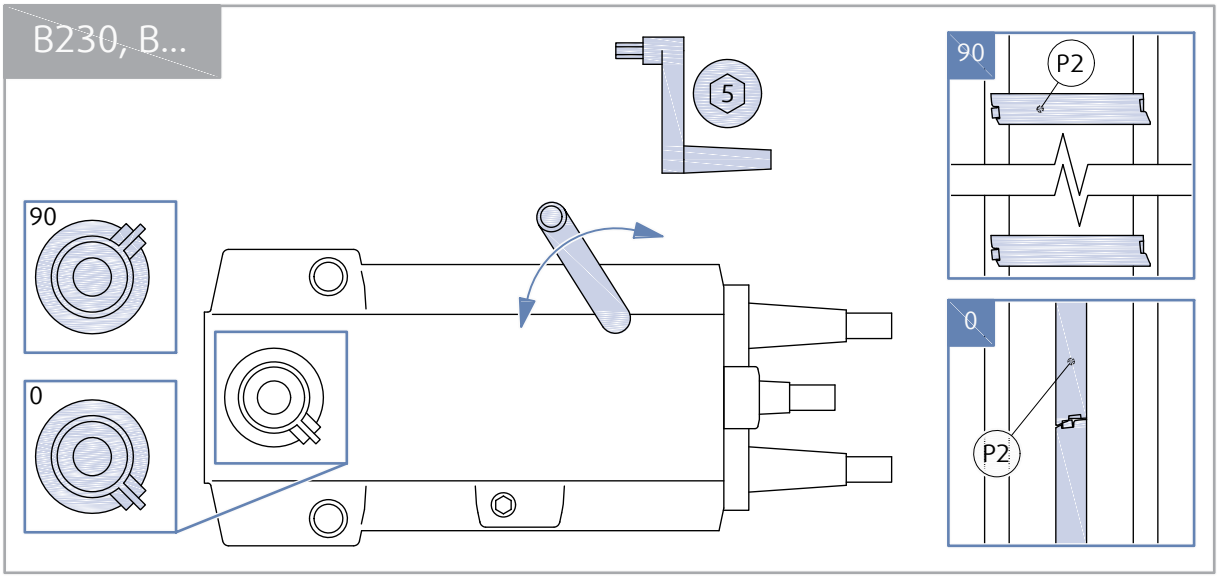
- Remove the Grille (if fitted) and remove the mechanism housing doors by unscrewing bottom and top door screws.
- Depending on the activation type the opening follows based on the correct signal from e.g. BKSE24-6, correct voltage (Y = 10 V) or by connecting supply wires 1 and 3, the actuator moves to the OPEN position.
- The blade must move to the fully open position in 60 seconds or less. Then, the blade must stay locked.
- After the blade is in its end position, the related signaling circuit sets to on. Make sure that you receive the open signal or wires S1 and S2 are connected.

NOTE: The actuator can be moved to open position with manual crank supplied with the actuator.

3. Closing the damper:

- Depending on the activation type the closing follows based on the correct signal from e.g. BKSE24-6, correct voltage (Y = 2 V) or by connecting supply wires 1 and 2, the actuator moves to the CLOSED position.
- The blade must move to the fully closed position in 60 seconds or less.
- After the blade is in closed position, the related signaling circuit sets to on. Make sure that wires S4 and S6 are connected.

4. Put the damper into its operating position - "open" or "closed" based on the use of the product.
5. After the installation close the mechanism housing doors and fasten them with screws through bottom and top holes. Mount the Grille, if previously removed.



Damper Inspection

CAUTION: Never perform inspection when there is air flowing in the duct connected to the smoke control damper.

Do not change the dampers or their structure without the approval of the manufacturer.

The actuator keeps the dampers on stand-by during their life cycle. The operator obeys the applicable regulations and standards to do regular checks of the dampers. The recommended minimum interval for the inspection checks is 6 months. The manufacturer and/or government authorities must approve the inspecting person and/or process for this inspection. Operating Journal must be kept during the lifecycle of the smoke control damper. The damper's Operating Journal includes a copy of the approval/s of the inspecting person. If the inspecting person finds differences, the operator must write these differences in the Operating Journal. Then, he must recommend action to remove these differences.

After you install and start the damper, immediately do an initial check. This check obeys the same conditions as the six-month inspections.

Do a check of these elements of the external side of the damper:

- The damper housing
- The actuator movement.

NOTE: To do a visual check of the internal parts of the damper, dismount the inspection lid or the grille. This will give you access to the internal parts. Also, if the damper has an mechanism lid, you can open the lid to access the internal parts.

Do a check of these items of the internal side of the damper:

- Make sure that there are no foreign objects or layers of contamination in the air distribution systems of the damper.
- The internal casing of the damper
- The sealings
- The foaming material
- The condition of the damper blade
- How accurately the damper blade closes when it is against the backstop in the closed position.

Recommended Procedure for the Inspection Log (refer to EN 12101)

1. Find the identification of the damper.
2. Write the date of the inspection.
3. Examine the actuator wiring for damage.
4. Examine the wiring of the end switches for damage.
5. Make sure that the damper is clean. If necessary, clean the damper.
6. Do a check of the inspection lid and of the tightness of the cover.
7. Do a check of the blade and of the sealings. If necessary, correct the defects and record the results (where applicable).
8. Do a functional test of the damper (open and close) (refer to the “Smoke Damper Functionality Check” chapter).
9. Confirm the operation of the damper with the control system:
   a. Monitor the physical performance of the damper
   b. Monitor the signals of the end positions.
   c. If necessary, correct and record the defect (where applicable).
10. The damper is part of the SHEVS (Smoke and Heat Exhaust Ventilation System). Thus, you must do a check of the full system (refer to the Operational and Maintenance Requirements).
11. Set the system to the operating position (refer to the “Operation Manual”).
12. Record the result in the “Operating Journal” with the name and the signature of the Inspection Technician.

After the inspection, the inspecting person must write the data that follows in the “Operating Journal”:

- Condition of the damper
- Date of the inspection
- Name, Surname and Signature of the employee that did the inspection (make sure that you can read this data).

Supplement

If you find differences from the terms and the technical specifications that are in this manual, speak to the manufacturer. We reserve the right to make changes to the product without notice.

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systemair