

S-BM2

Smoke Control Damper - MA multi

Handbook



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Smoke Control Damper - MA multi

Description

Smoke control dampers are designed for mechanical or natural smoke and heat extract systems. Its function is to extract toxic gases, smoke and fire or provide a supply of fresh air to fire compartments. Smoke control dampers are fitted with an actuator without a spring; therefore, they have two safety positions, "open" and "closed" and require power even in the event of fire. S-BM2 smoke control damper is designed for the installations listed in the "Installation Methods" section of its Handbook.

Highlights

- Battery installation of up to 4 dampers
- MA – manual intervention (can be used also as an AA classified smoke control damper)

The safety position can be adjusted up to first 25 minutes during smoke extraction

- Multi - usage in compartments classified as "multi"

Can be used also in compartments classified as "single"

- Pressure level 2 (-1000 Pa ... 300 Pa)
- Casing leakage according to EN 1751, class C
- Blade leakage according to EN 1751, class 3
- Exceptional free area and low pressure drop
- Installed into walls or ducts

Fire Resistivity

S-BM2 Smoke control dampers are CE certified following the Construction Products Regulation according to EN 12101-8:2011. Tested according to EN 1366-10:2011 + A1:2017, EN 1366-2:2015 and classified according to EN 13501-4:2016. The smoke control damper together with its installation form an inseparable part of the fire resistivity rating.

- Damper with horizontally oriented blades: **EI120(v_{ew} - v_{ed} - h_{od} - h_{ow} - i↔o)S1000C_{mod}HOT400/30MAmulti**
- Damper with vertically oriented blades: **EI90(v_{ew} i↔o)S1000C_{mod}MAmulti**

Product types

Depending on the S-BM2 installation assembly this damper has two main product types:

- Standalone installation - grille types 00, 01, 02, 11, 22
- Battery installation - grille types M0, M1

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.
- **BST0** - Smoke control damper with an activation mechanism with a Belimo actuator (AC/DC 24 V, supply through communication unit: AC 230 V) and with a Belimo supply and communication unit BKNE230-24 (other communication units on demand).
- **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) BKN230-24-PL (Powerline).

Other communication units are possible on demand.

Accessories

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

- K1-S-BM2: Cover boards for in-duct installation.
- H1-S-BM2: Hanger for horizontal damper mounting.

Design

S-BM2 has a casing and blades made from calcium silicate board. The closed damper is sealed by silicate wool sealing to avoid the spread of heat and smoke. Front board surfaces are fitted with threaded inserts for sheet metal duct flanges. If the damper is ordered with grille, both sides are fitted with threaded inserts for grille placement. S-BM2 has mechanism and actuator enclosed by the dampers casing and two covers on each side for easy access and connection.

Material Composition

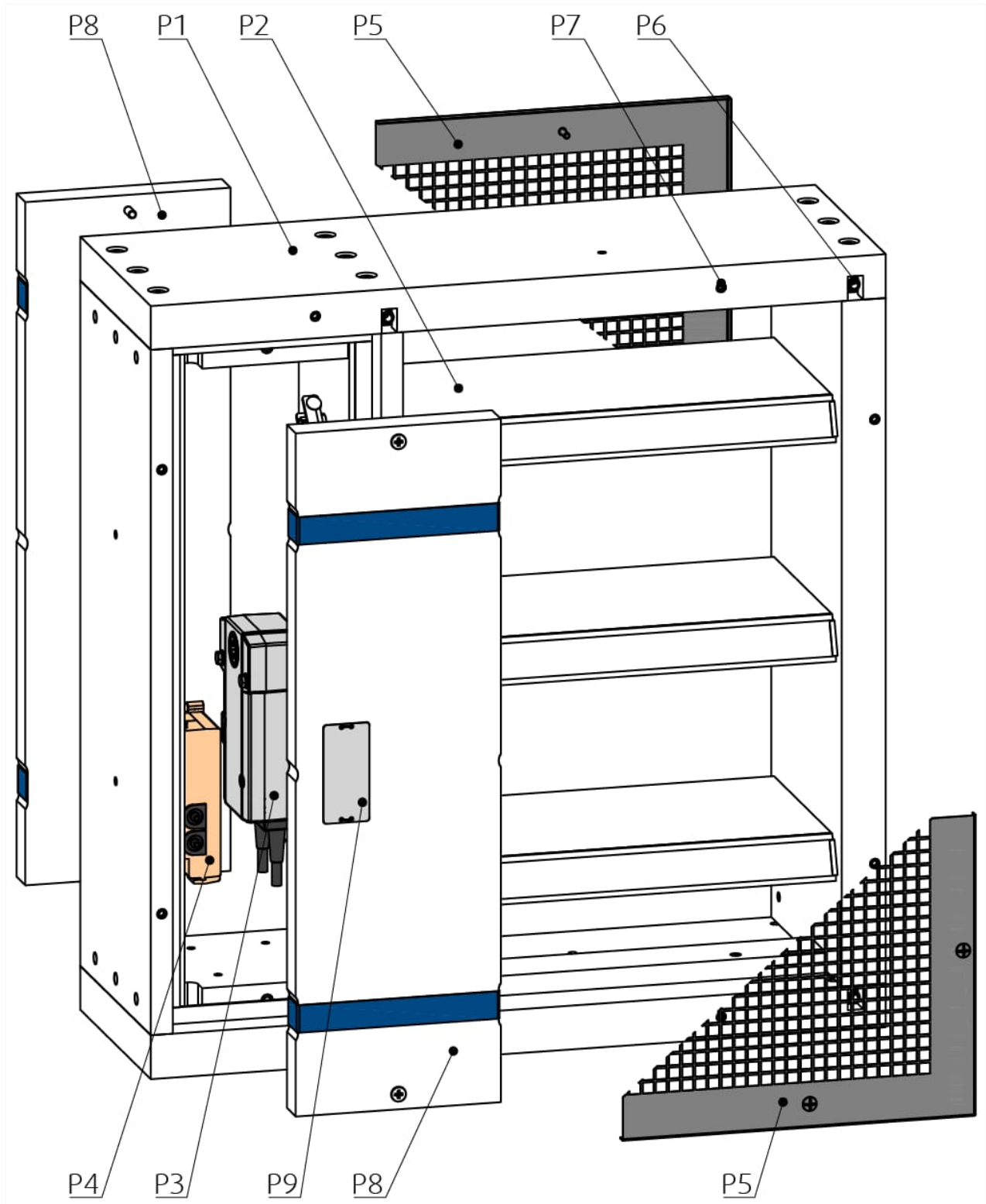
The product contains galvanized sheet metal, calcium silicate board, fireproof carbon fiberglass, polyurethane foam and alkaline earth silicate wool. These are processed in accordance with local regulations. The product contains no hazardous substances.

Tightness of the Blade and the Casing

S-BM2 smoke control damper standardly have class C casing tightness and class 3 blade tightness according to EN 1751.

Product Parts

The S-BM2 packaging for selected sizes also includes wooden manipulation jig.



Legend:

- P1** - Damper casing
- P2** - Damper blade
- P3** - Actuator

P4 - Supply and communication unit (BST)

P5 - Sheet metal Grille

P6 - Threaded inserts for duct connection

P7 - Threaded inserts for the grille

P8 - Mechanism cover

P9 - Product label

Technical Parameters

Durability Test

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

Testing Pressure

Underpressure up to 1000 Pa, overpressure up to 300 Pa

Safe Position

Open or Closed

Possible Installations

Vertically supported construction, rigid/flexible wall, wet/dry/soft-cross (see classification table on the page 6)

Airflow Direction

Both directions

Allowed Air Velocity

Max. 12 m/s

Side with Fire Protection

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

Repeated Opening

Suitable for daily check procedure in suitable environment

Closing/Opening Time

< 60 s

Indicator Closed/Open

Indication with microswitches that are part of mechanism actuator

Environment Suitability

Only indoor environment, $T > 0\text{ °C}$ and $R_{ha} < 95\%$ (3K5 according to EN 60721-3-3)

Inspection Possibility

Through grille. Inspection door for connection and actuator access.
Duct inspection opening/lid where needed is not part of damper or delivery.

Maintenance

Not required/dry cleaning if demanded by law in the country in which the dampers are installed

Revisions

Determined by law in the country in which the dampers are installed, or minimally every 6 months

Allowed Pressure

1000 Pa

Blade Tightness (EN 1751)

Class 3 as standard

Tightness of the Housing (EN 1751)

Class C as standard

Conformity with EC Directives

2006/42/ES Machinery Directive

2014/35/EU Low Voltage Directive

2014/30/EU Electromagnetic Compatibility Directive

Driving Actuator Types

Belimo BEN24, BEN230, BEN24-ST, BEN24-SR; BEE24, BEE230, BEE24-ST, BEE24-SR; BE24, BE230, BE24-ST; BLE24, BLE230, BLE24-ST

Transport and Storage

Dry indoor conditions with a temperature range of -20 °C to +50 °C. The damper blade is transported in closed position.

Assessed Performance

19 CE 1396

Systemair Production a.s.

90043 Kalinkovo 371, Slovakia

19

1396-CPR-0157

EN 12101-8:2011

Smoke control damper

Multi compartment

S-BM2

Nominal activation conditions/sensitivity

- Manual intervention - **passed**

Closure/opening during test at correct time and in allowable time

Response delay/closure time - Manual intervention - **passed**

Operational reliability

10 000 operations: 0° to 90° - **passed** and 45° to 60° - **passed**

HOT 400/30 - **passed**

Fire resistance:

- Integrity **E**
- EI120($v_{ew}-v_{ed}-h_{od}-h_{ow}-i \leftrightarrow o$)S1000C_{mod}HOT400/30MAmulti
- Damper with vertically oriented blades: EI90($v_{ew}i \leftrightarrow o$)S1000C_{mod}MAmulti
- Insulation **I**
- Smoke leakage **S**
- Mechanical stability (under E)
- Maintenance of cross section (under E)

Durability:

- of response delay - **Pass**
- of operational reliability - **Pass**

Diagrams of S-BM2 for extract air

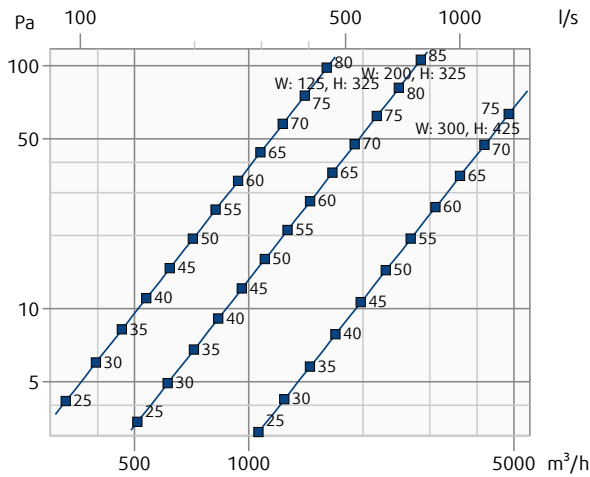
Accessories K1-S-BM2 and H1-S-BM2 do not affect the pressure drop and A-weighted total discharged sound power level.

The pressure drop and A-weighted total discharged sound power level depend on the nominal width and height of the S-BM2 and air flow volume at different duct pressures.

S-BM2 Grille Types 00, 01, 11, 22

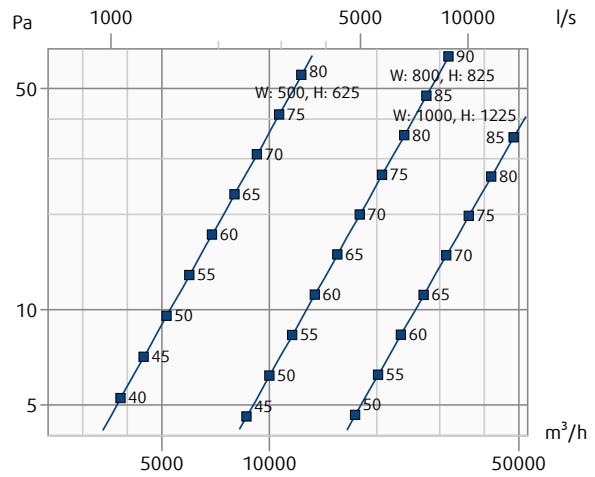
S-BM2-...-00-

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



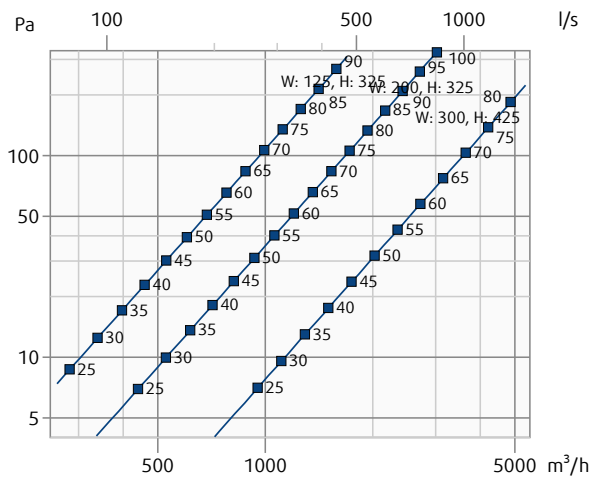
S-BM2-...-00-

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



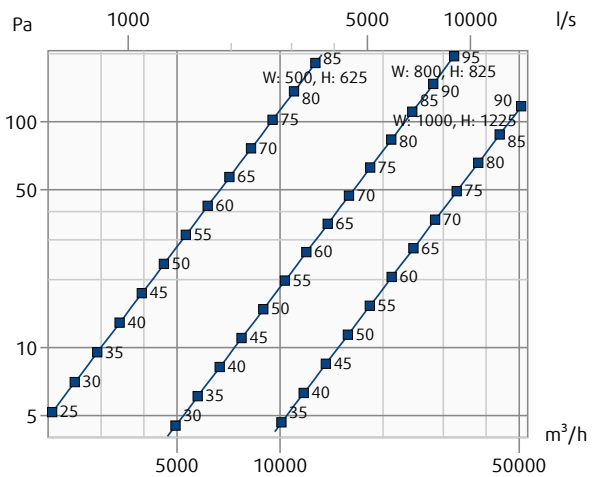
S-BM2-...-01-

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



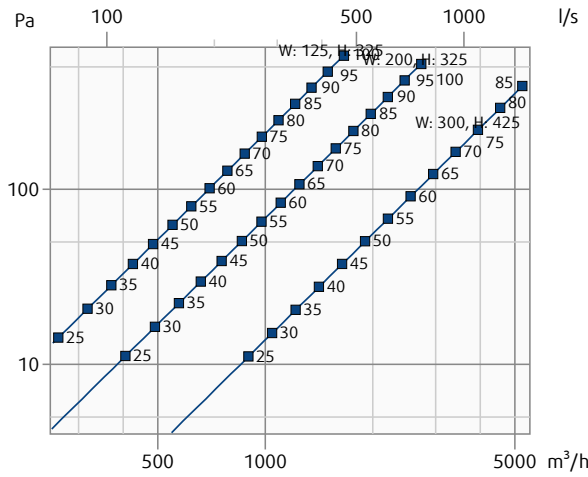
S-BM2-...-01-

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



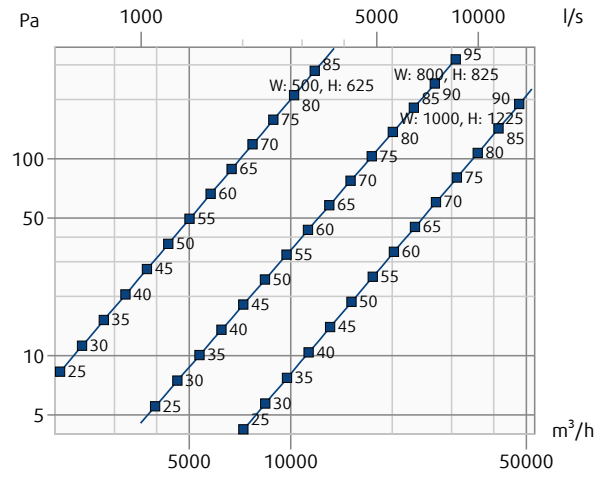
S-BM2-...-11-

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



S-BM2-...-11-

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



Legend:

p_s (Pa) - Pressure drop

q_v (m³/h), (l/s) - Air flow volume

$\pm\Delta$ (%) - Deviation from measured value

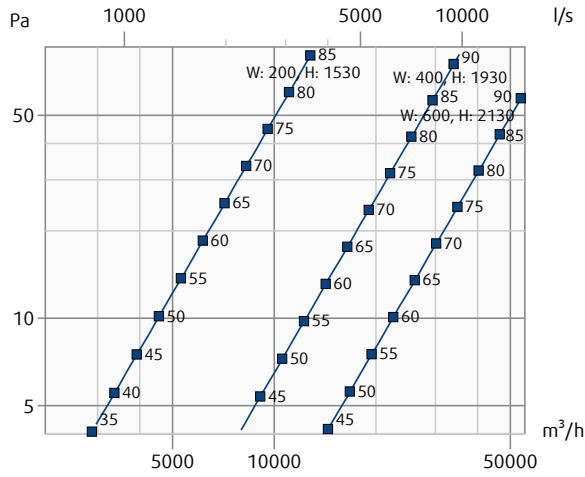
L_{wa} (dB(A)) - A-weighted total sound power level

v (m/s) - Air face velocity

S-BM2 Grille Types M0, M1 - 2 dampers vertically assembled into battery

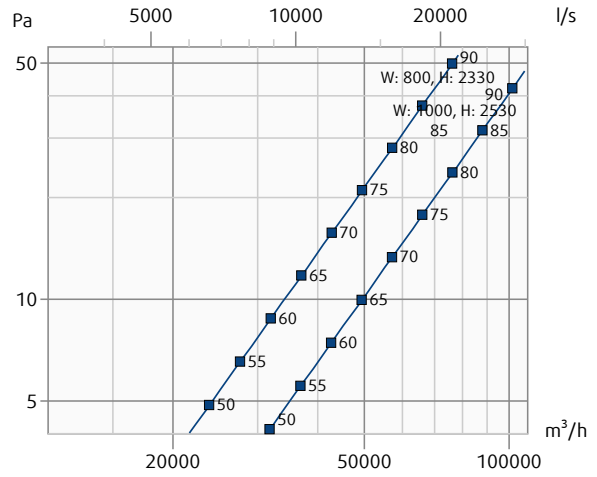
S-BM2-...-M0-

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



S-BM2-...-M0-

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



Legend:

p_s (Pa) - Pressure drop

q_v (m³/h), (l/s) - Air flow volume

$\pm\Delta$ (%) - Deviation from measured value

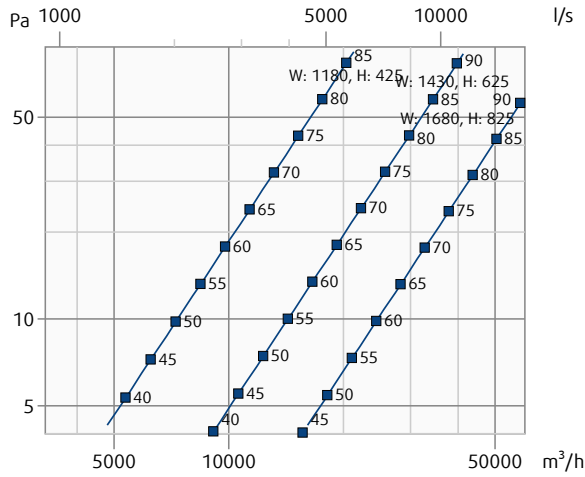
L_{wa} (dB(A)) - A-weighted total sound power level

v (m/s) - Air face velocity

S-BM2 Grille Types M0, M1 - 2 dampers horizontally assembled into battery

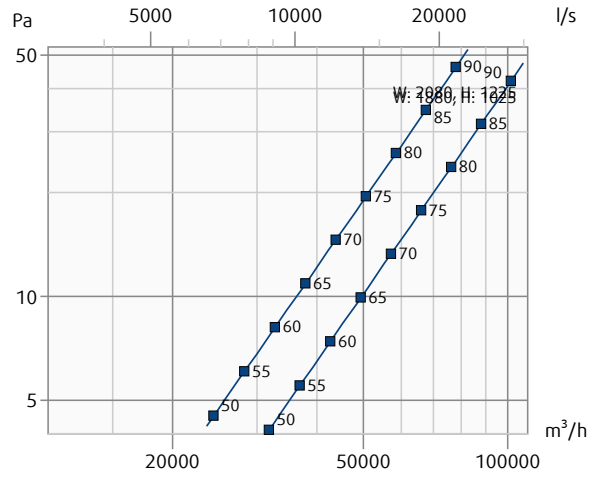
S-BM2-...-M0-

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



S-BM2-...-M0-

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



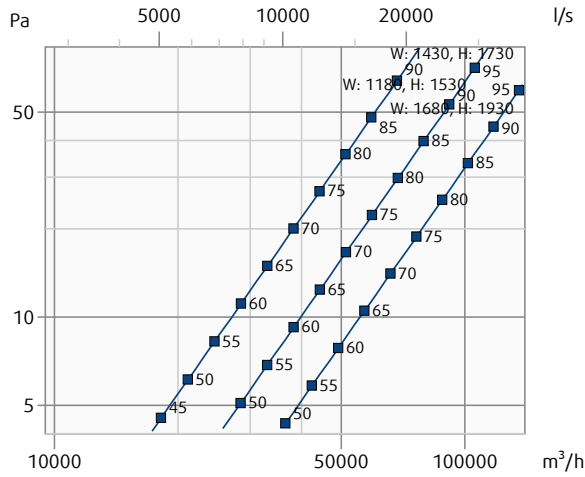
Legend:

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

S-BM2 Grille Types M0, M1 - 4 dampers assembled into battery

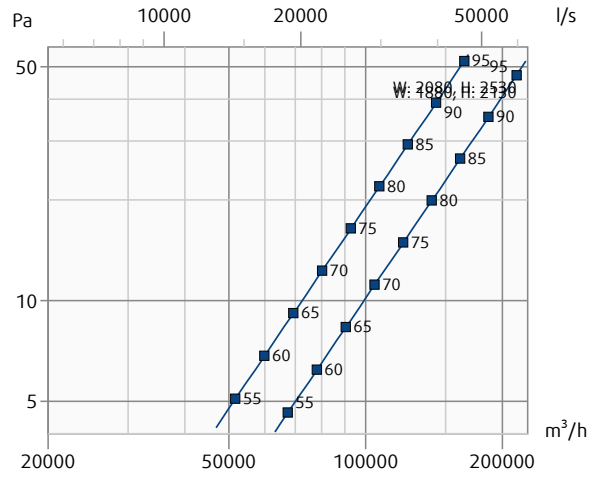
S-BM2-...-M0-

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



S-BM2-...-M0-

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

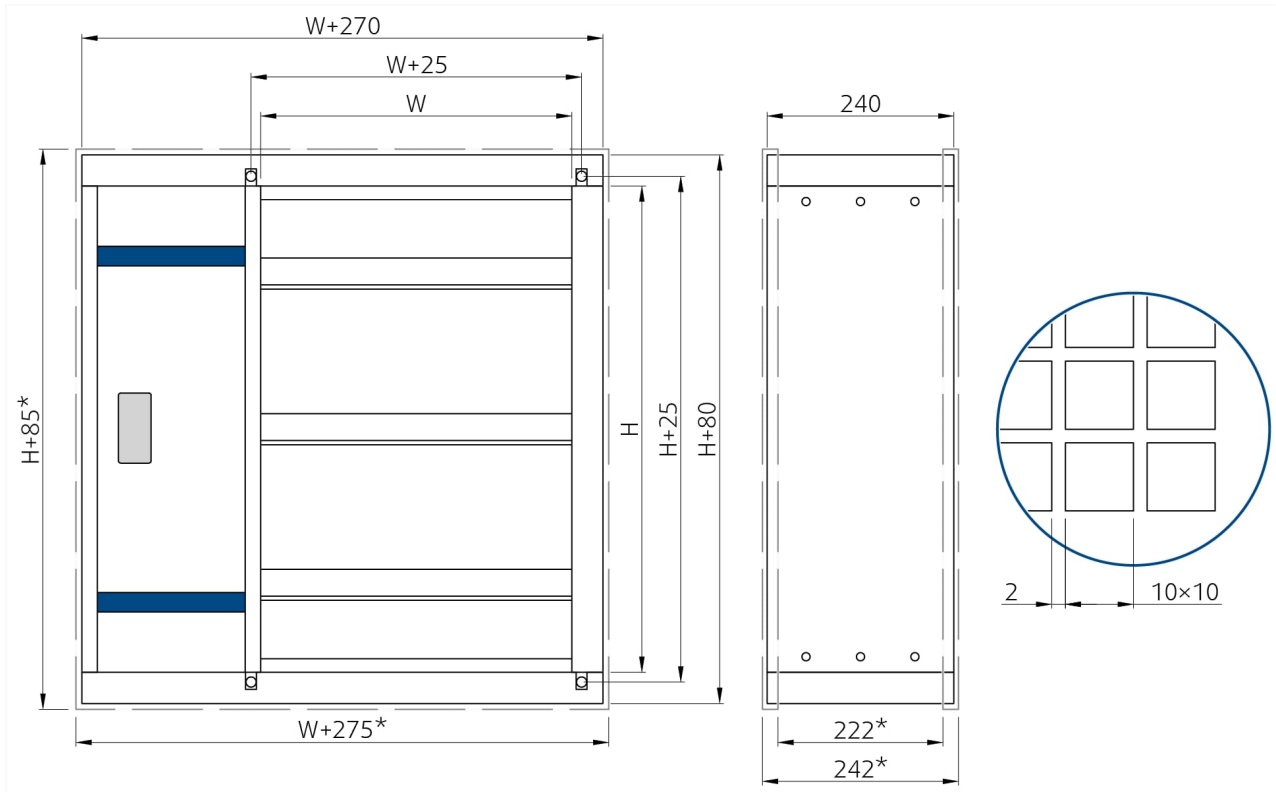


Legend:

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

Dimensions & Weights

Dimensions of grille types 00, 01, 11, 02, 22



Note: *Inclusive grille

Free area of grille types 00, 01, 11, 02, 22

A _v (m ²)	H (mm)	W (mm)																	
		125	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950
325	0,021	0,025	0,033	0,042	0,050	0,058	0,067	0,075	0,084	0,092	0,100	0,109	0,117	0,125	0,134	0,142	0,150	0,159	0,167
	0,014	0,017	0,023	0,029	0,035	0,040	0,046	0,052	0,058	0,063	0,069	0,075	0,081	0,086	0,092	0,098	0,104	0,110	0,115
425	0,041	0,049	0,065	0,082	0,098	0,114	0,131	0,147	0,164	0,180	0,196	0,213	0,229	0,245	0,262	0,278	0,294	0,311	0,327
	0,028	0,034	0,045	0,056	0,068	0,079	0,090	0,102	0,113	0,124	0,135	0,147	0,158	0,169	0,181	0,192	0,203	0,214	0,226
625	0,061	0,073	0,097	0,122	0,146	0,170	0,195	0,219	0,244	0,268	0,292	0,317	0,341	0,365	0,390	0,414	0,438	0,463	0,487
	0,042	0,050	0,067	0,084	0,101	0,118	0,134	0,151	0,168	0,185	0,202	0,218	0,235	0,252	0,269	0,286	0,302	0,319	0,336
825	0,081	0,097	0,129	0,162	0,194	0,226	0,259	0,291	0,324	0,356	0,388	0,421	0,453	0,485	0,518	0,550	0,582	0,615	0,647
	0,056	0,067	0,089	0,112	0,134	0,156	0,179	0,201	0,223	0,246	0,268	0,290	0,313	0,335	0,357	0,379	0,402	0,424	0,446
1025	0,101	0,121	0,161	0,202	0,242	0,282	0,323	0,363	0,404	0,444	0,484	0,525	0,565	0,605	0,646	0,686	0,726	0,767	0,807
	0,070	0,083	0,111	0,139	0,167	0,195	0,223	0,251	0,278	0,306	0,334	0,362	0,390	0,418	0,445	0,473	0,501	0,529	0,557
1225	0,121	0,145	0,193	0,242	0,290	0,338	0,387	0,435	0,484	0,532	0,580	0,629	0,677	0,725	0,774	0,822	0,870	0,919	0,967
	0,083	0,100	0,133	0,167	0,200	0,234	0,267	0,300	0,334	0,367	0,400	0,434	0,467	0,500	0,534	0,567	0,601	0,634	0,667

GT	00	01
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Weights of grille types 00, 01, 11, 02, 22

m (kg)	W (mm)																			
	125	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	
H (mm)	325	20,1	20,7	21,8	23,0	24,1	25,3	26,5	27,6	28,8	29,9	31,1	32,3	33,4	34,6	35,7	36,9	38,1	39,2	40,4
		20,5	21,1	22,3	23,5	24,7	25,9	27,1	28,3	29,5	30,7	31,9	33,2	34,4	35,6	36,8	38,0	39,2	40,4	41,6
		20,9	21,5	22,7	24,0	25,3	26,5	27,8	29,0	30,3	31,5	32,8	34,1	35,3	36,6	37,8	39,1	40,4	41,6	42,9
	425	24,9	25,6	26,9	28,3	29,6	31,0	32,3	33,7	35,0	36,4	37,7	39,1	40,4	41,8	43,1	44,5	45,8	47,2	48,5
		26,2	26,9	28,4	29,8	31,3	32,8	34,2	35,7	37,1	38,6	40,1	41,5	43,0	44,4	45,9	47,4	48,8	50,3	51,7
		27,5	28,3	29,9	31,4	33,0	34,6	36,1	37,7	39,3	40,9	42,4	44,0	45,6	47,1	48,7	50,3	51,9	53,4	55,0
	625	32,0	32,8	34,5	36,1	37,8	39,4	41,1	42,7	44,4	46,0	47,7	49,3	50,9	52,6	54,2	55,9	57,5	59,2	60,8
		33,7	34,6	36,4	38,1	39,9	41,7	43,5	45,3	47,1	48,9	50,6	52,4	54,2	56,0	57,8	59,6	61,3	63,1	64,9
		35,4	36,4	38,3	40,2	42,1	44,0	46,0	47,9	49,8	51,7	53,6	55,5	57,4	59,4	61,3	63,2	65,1	67,0	69,0
	825	39,1	40,1	42,1	44,0	45,9	47,9	49,8	51,8	53,7	55,7	57,6	59,6	61,5	63,5	65,4	67,3	69,3	71,2	73,2
		41,2	42,3	44,4	46,5	48,6	50,7	52,8	54,9	57,0	59,1	61,2	63,3	65,4	67,5	69,6	71,7	73,8	75,9	78,1
		43,3	44,5	46,7	49,0	51,2	53,5	55,8	58,0	60,3	62,6	64,8	67,1	69,3	71,6	73,9	76,1	78,4	80,7	82,9
	1025	47,3	48,4	50,6	52,9	55,1	57,4	59,6	61,8	64,1	66,3	68,6	70,8	73,0	75,3	77,5	79,8	83,0	85,3	87,5
		49,8	51,0	53,4	55,8	58,2	60,7	63,1	65,5	67,9	70,4	72,8	75,2	77,6	80,1	82,5	84,9	88,4	90,8	93,2
		52,2	53,5	56,1	58,7	61,3	64,0	66,6	69,2	71,8	74,4	77,0	79,6	82,2	84,9	87,5	90,1	93,7	96,3	98,9
	1225	54,4	55,7	58,2	60,8	63,3	65,9	68,4	70,9	73,5	76,0	78,6	81,1	83,6	87,2	89,7	92,3	94,8	97,4	99,9
		57,3	58,7	61,4	64,1	66,9	69,7	72,4	75,1	77,9	80,7	83,4	86,2	88,9	92,7	95,4	98,2	100,9	103,7	106,4
		60,2	61,6	64,6	67,5	70,5	73,5	76,4	79,4	82,3	85,3	88,3	91,2	94,1	98,1	101,1	104,1	107,0	110,0	112,9

GT	00	01, 02	11, 22
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Legend:

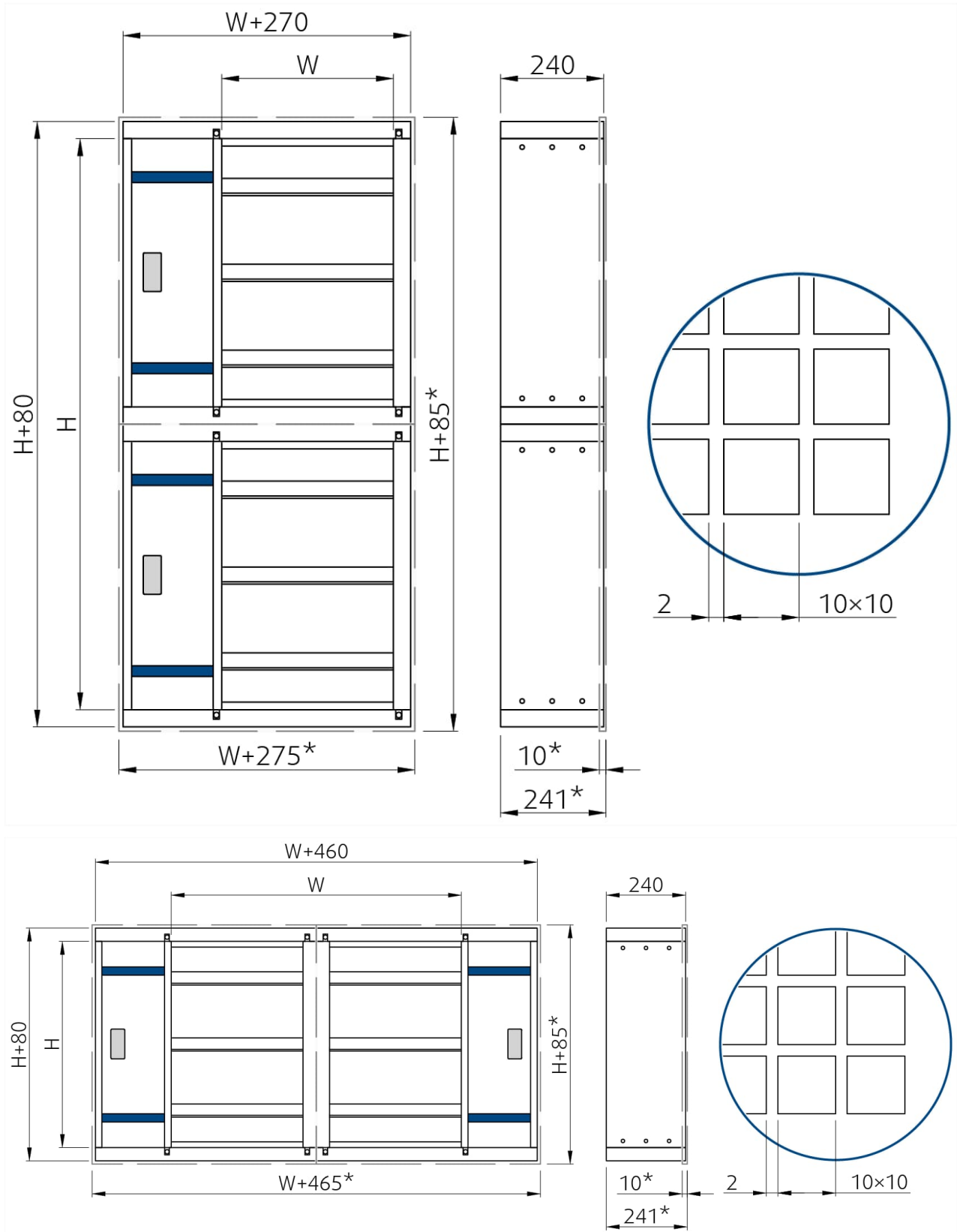
GT - Grille type

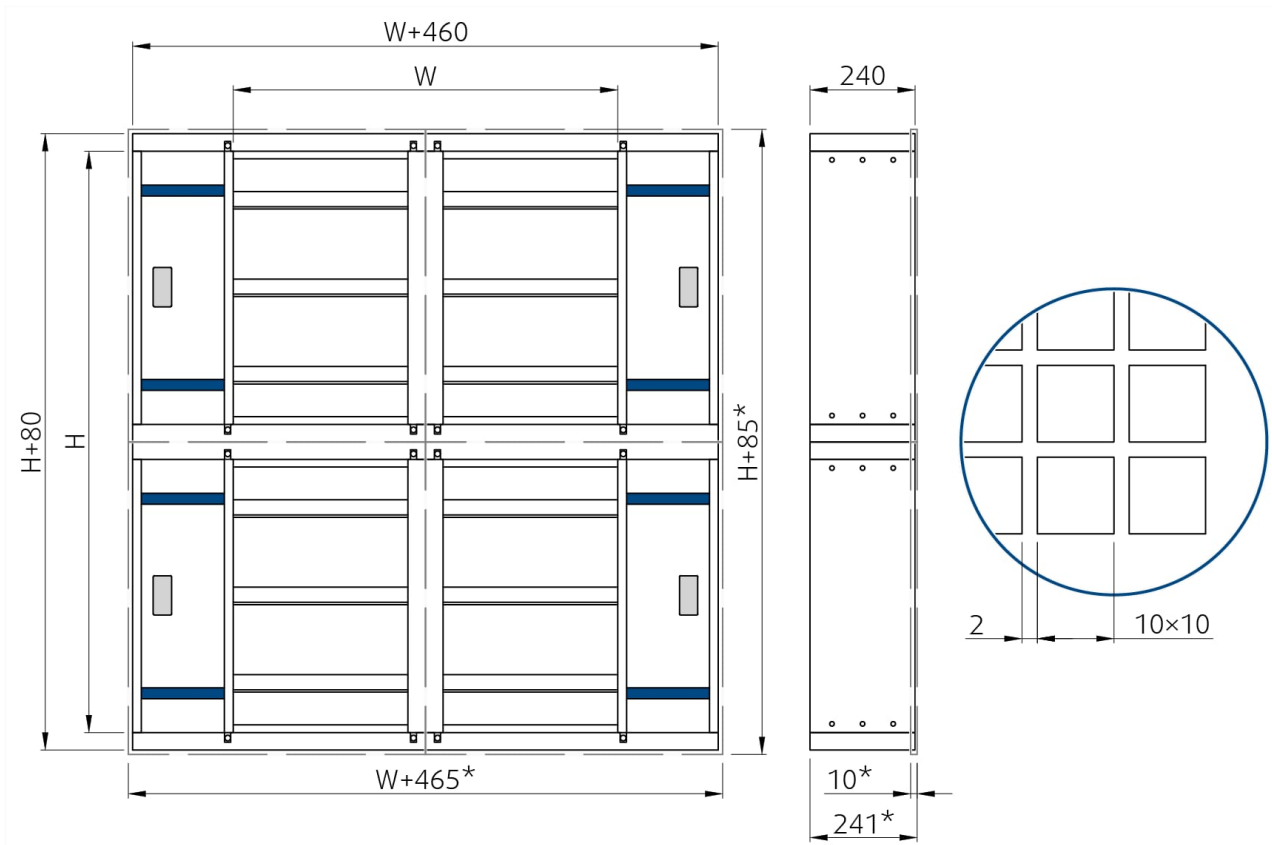
00 - S-BM2 without grille

01, 02 - S-BM2 with one grille

11, 22 - S-BM2 with two grilles

Dimensions of grille type M0, M1 in battery type assembly






Note: *Inclusive grille


Free area of grille type M0, M1 in battery type assembly

A _v (m ²)	H (mm)	W (mm)																
		200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
1530	1730	0,23	0,28	0,34	0,40	0,45	0,51	0,57	0,62	0,68	0,74	0,79	0,85	0,91	0,96	1,02	1,08	1,13
		0,16	0,20	0,23	0,27	0,31	0,35	0,39	0,43	0,47	0,51	0,55	0,59	0,63	0,67	0,70	0,74	0,78
1930	2130	0,26	0,32	0,39	0,45	0,52	0,58	0,65	0,71	0,78	0,84	0,91	0,97	1,04	1,10	1,16	1,23	1,29
		0,18	0,22	0,27	0,31	0,36	0,40	0,45	0,49	0,54	0,58	0,63	0,67	0,71	0,76	0,80	0,85	0,89
2330	2530	0,29	0,36	0,44	0,51	0,58	0,65	0,73	0,80	0,87	0,95	1,02	1,09	1,16	1,24	1,31	1,38	1,45
		0,20	0,25	0,30	0,35	0,40	0,45	0,50	0,55	0,60	0,65	0,70	0,75	0,80	0,85	0,90	0,95	1,00
		0,32	0,40	0,48	0,56	0,65	0,73	0,81	0,89	0,97	1,05	1,13	1,21	1,29	1,37	1,45	1,53	1,61
		0,22	0,28	0,33	0,39	0,45	0,50	0,56	0,61	0,67	0,72	0,78	0,84	0,89	0,95	1,00	1,06	1,11
		0,35	0,44	0,53	0,62	0,71	0,80	0,89	0,98	1,06	1,15	1,24	1,33	1,42	1,51	1,60	1,69	1,77
		0,24	0,31	0,37	0,43	0,49	0,55	0,61	0,67	0,73	0,80	0,86	0,92	0,98	1,04	1,10	1,16	1,22
		0,39	0,48	0,58	0,68	0,77	0,87	0,97	1,06	1,16	1,26	1,35	1,45	1,55	1,64	1,74	1,84	1,93
		0,27	0,33	0,40	0,47	0,53	0,60	0,67	0,73	0,80	0,87	0,93	1,00	1,07	1,13	1,20	1,27	1,33

GT	M0	M1
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A _v (m ²) 		W (mm)																		
		1180	1230	1280	1330	1380	1430	1480	1530	1580	1630	1680	1730	1780	1830	1880	1930	1980	2030	2080
H (mm)	425	0,36	0,38	0,39	0,41	0,43	0,44	0,46	0,47	0,49	0,51	0,52	0,54	0,56	0,57	0,59	0,60	0,62	0,64	0,65
		0,25	0,26	0,27	0,28	0,29	0,30	0,32	0,33	0,34	0,35	0,36	0,37	0,38	0,39	0,41	0,42	0,43	0,44	0,45
	625	0,54	0,56	0,58	0,61	0,63	0,66	0,68	0,71	0,73	0,75	0,78	0,80	0,83	0,85	0,88	0,90	0,93	0,95	0,97
		0,37	0,39	0,40	0,42	0,44	0,45	0,47	0,49	0,50	0,52	0,54	0,55	0,57	0,59	0,60	0,62	0,64	0,66	0,67
	825	0,71	0,74	0,78	0,81	0,84	0,87	0,91	0,94	0,97	1,00	1,04	1,07	1,10	1,13	1,16	1,20	1,23	1,26	1,29
		0,49	0,51	0,54	0,56	0,58	0,60	0,63	0,65	0,67	0,69	0,71	0,74	0,76	0,78	0,80	0,83	0,85	0,87	0,89
	1025	0,89	0,93	0,97	1,01	1,05	1,09	1,13	1,17	1,21	1,25	1,29	1,33	1,37	1,41	1,45	1,49	1,53	1,57	1,61
		0,61	0,64	0,67	0,70	0,72	0,75	0,78	0,81	0,84	0,86	0,89	0,92	0,95	0,97	1,00	1,03	1,06	1,09	1,11
	1225	1,06	1,11	1,16	1,21	1,26	1,31	1,35	1,40	1,45	1,50	1,55	1,60	1,64	1,69	1,74	1,79	1,84	1,89	1,93
		0,73	0,77	0,80	0,83	0,87	0,90	0,93	0,97	1,00	1,03	1,07	1,10	1,13	1,17	1,20	1,23	1,27	1,30	1,33

GT	M0	M1
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A _v (m ²) 		W (mm)																		
		1180	1230	1280	1330	1380	1430	1480	1530	1580	1630	1680	1730	1780	1830	1880	1930	1980	2030	2080
H (mm)	1530	1,25	1,30	1,36	1,42	1,47	1,53	1,59	1,64	1,70	1,76	1,81	1,87	1,93	1,98	2,04	2,10	2,15	2,21	2,27
		0,86	0,90	0,94	0,98	1,02	1,06	1,10	1,13	1,17	1,21	1,25	1,29	1,33	1,37	1,41	1,45	1,49	1,53	1,56
	1730	1,42	1,49	1,55	1,62	1,68	1,75	1,81	1,88	1,94	2,01	2,07	2,14	2,20	2,26	2,33	2,39	2,46	2,52	2,59
		0,98	1,03	1,07	1,12	1,16	1,21	1,25	1,29	1,34	1,38	1,43	1,47	1,52	1,56	1,61	1,65	1,70	1,74	1,79
	1930	1,60	1,67	1,74	1,82	1,89	1,96	2,04	2,11	2,18	2,25	2,33	2,40	2,47	2,54	2,62	2,69	2,76	2,84	2,91
		1,10	1,15	1,20	1,25	1,30	1,35	1,40	1,45	1,50	1,56	1,61	1,66	1,71	1,76	1,81	1,86	1,91	1,96	2,01
	2130	1,78	1,86	1,94	2,02	2,10	2,18	2,26	2,34	2,42	2,50	2,58	2,66	2,74	2,82	2,91	2,99	3,07	3,15	3,23
		1,23	1,28	1,34	1,39	1,45	1,50	1,56	1,61	1,67	1,73	1,78	1,84	1,89	1,95	2,00	2,06	2,12	2,17	2,23
	2330	1,95	2,04	2,13	2,22	2,31	2,39	2,48	2,57	2,66	2,75	2,84	2,93	3,02	3,10	3,19	3,28	3,37	3,46	3,55
		1,35	1,41	1,47	1,53	1,59	1,65	1,71	1,77	1,84	1,90	1,96	2,02	2,08	2,14	2,20	2,26	2,33	2,39	2,45
	2530	2,13	2,22	2,32	2,42	2,51	2,61	2,71	2,80	2,90	3,00	3,09	3,19	3,29	3,38	3,48	3,58	3,67	3,77	3,87
		1,47	1,53	1,60	1,67	1,73	1,80	1,87	1,93	2,00	2,07	2,14	2,20	2,27	2,34	2,40	2,47	2,54	2,60	2,67

GT	M0	M1
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Weights of grille type M0, M1 in battery type assembly

m (kg) 		W (mm)																
		200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
H (mm)	1530	76,6	80,1	83,7	87,3	90,9	94,5	98,1	101,7	105,3	108,9	112,4	116,1	119,6	123,2	126,8	130,4	134,0
		80,8	84,6	88,5	92,4	96,3	100,2	104,1	108,0	111,9	115,8	119,6	123,5	127,4	131,3	135,2	139,1	143,0
	1730	84,1	88,0	91,9	95,8	99,7	103,5	107,5	111,4	115,2	119,2	123,0	126,9	130,8	134,7	138,6	142,5	146,4
		88,8	92,9	97,2	101,4	105,6	109,8	114,0	118,2	122,4	126,7	130,8	135,1	139,3	143,5	147,7	151,9	156,1
	1930	92,7	96,8	101,1	105,2	109,5	113,6	117,8	122,0	126,2	130,4	134,5	138,8	142,9	147,1	152,3	156,5	160,7
		97,8	102,3	106,8	111,4	115,9	120,4	124,9	129,5	134,0	138,6	143,1	147,6	152,1	156,7	162,2	166,7	171,3
	2130	101,3	105,7	110,2	114,7	119,2	123,7	128,2	132,7	137,2	141,7	146,1	150,6	155,1	159,6	166,1	170,6	175,1
		106,8	111,6	116,5	121,3	126,2	131,0	135,9	140,7	145,6	150,5	155,3	160,1	165,0	169,9	176,7	181,6	186,4
	2330	108,9	113,6	118,4	123,2	128,0	132,7	137,5	142,3	147,1	151,9	156,7	162,5	167,3	172,1	177,8	182,6	187,4
		114,8	119,9	125,1	130,3	135,5	140,6	145,8	151,0	156,2	161,4	166,5	172,7	177,9	183,1	189,2	194,5	199,6
	2530	116,5	121,5	126,6	131,7	136,8	141,8	146,9	152,0	157,1	162,2	167,2	174,4	179,5	184,6	189,6	194,7	199,8
		122,8	128,3	133,8	139,3	144,8	150,3	155,8	161,3	166,8	172,3	177,8	185,3	190,8	196,4	201,8	207,3	212,8

GT	M0	M1
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m (kg) 		W (mm)																		
		1180	1230	1280	1330	1380	1430	1480	1530	1580	1630	1680	1730	1780	1830	1880	1930	1980	2030	2080
H (mm)	425	72,7	74,1	75,4	76,8	78,1	79,5	80,8	82,2	83,5	84,9	86,2	87,6	88,9	90,3	91,6	93,0	94,3	95,7	97,0
		77,2	78,7	80,1	81,6	83,1	84,5	86,0	87,4	88,9	90,4	91,8	93,3	94,7	96,2	97,7	99,1	100,6	102,0	103,5
	625	92,0	93,7	95,3	97,0	98,6	100,3	101,9	103,5	105,2	106,8	108,5	110,1	111,8	113,4	115,1	116,7	118,4	120,0	121,7
		97,7	99,5	101,3	103,1	104,9	106,6	108,4	110,2	112,0	113,7	115,5	117,3	119,1	120,9	122,7	124,4	126,2	128,0	129,8
	825	111,4	113,3	115,2	117,2	119,2	121,1	123,0	125,0	126,9	128,9	130,8	132,7	134,7	136,6	138,6	140,5	142,5	144,4	146,4
		118,2	120,3	122,4	124,6	126,7	128,8	130,8	133,0	135,1	137,2	139,3	141,4	143,5	145,6	147,7	149,8	151,9	154,0	156,1
	1025	132,7	134,9	137,2	139,4	141,7	143,9	146,1	148,3	150,6	152,8	155,1	157,3	159,6	162,8	166,1	168,3	170,6	172,8	175,1
		140,7	143,2	145,6	148,0	150,5	152,9	155,3	157,7	160,1	162,6	165,0	167,4	169,9	173,3	176,7	179,2	181,6	184,0	186,4
	1225	152,0	154,6	157,1	159,7	162,2	164,7	167,2	170,8	174,4	176,9	179,5	182,0	184,6	187,1	189,6	192,1	194,7	197,2	199,8
		161,3	164,1	166,8	169,6	172,3	175,0	177,8	181,5	185,3	188,1	190,8	193,6	196,4	199,1	201,8	204,5	207,3	210,1	212,8

GT	M0	M1
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m (kg)		W (mm)																		
		1180	1230	1280	1330	1380	1430	1480	1530	1580	1630	1680	1730	1780	1830	1880	1930	1980	2030	2080
H (mm)	1530	203,4	207,0	210,5	214,2	217,8	221,3	224,9	228,5	232,1	235,7	239,3	242,9	246,5	250,1	253,6	257,2	260,8	264,4	268,0
		216,0	219,8	223,7	227,6	231,5	235,4	239,2	243,1	247,0	250,9	254,8	258,7	262,6	266,5	270,3	274,2	278,1	282,0	285,9
	1730	222,7	226,6	230,5	234,4	238,3	242,1	246,0	249,9	253,8	257,7	261,6	265,5	269,4	273,2	277,1	281,0	284,9	288,8	292,7
		236,5	240,7	244,9	249,1	253,4	257,5	261,7	265,9	270,2	274,4	278,5	282,8	287,0	291,2	295,3	299,6	303,8	308,0	312,2
	1930	244,0	248,2	252,4	256,6	260,8	264,9	269,1	273,3	277,5	281,7	285,9	290,1	294,3	299,4	304,6	308,8	313,0	317,2	321,4
		259,0	263,5	268,0	272,6	277,1	281,6	286,1	290,7	295,2	299,7	304,3	308,8	313,4	318,9	324,4	328,9	333,5	338,0	342,6
	2130	265,3	269,8	274,3	278,8	283,3	287,8	292,2	296,7	301,2	305,7	310,2	314,7	319,2	325,7	332,1	336,6	341,2	345,6	350,1
		281,5	286,3	291,2	296,1	300,9	305,8	310,6	315,4	320,3	325,1	330,0	334,9	339,8	346,6	353,4	358,3	363,2	368,0	372,9
	2330	284,7	289,5	294,3	299,1	303,9	308,6	313,3	319,2	325,0	329,8	334,5	339,4	344,2	349,9	355,6	360,5	365,3	370,1	374,8
		302,1	307,2	312,4	317,6	322,8	327,9	333,0	339,3	345,5	350,6	355,8	361,0	366,2	372,4	378,5	383,7	388,9	394,1	399,3
	2530	304,1	309,2	314,2	319,3	324,4	329,5	334,5	341,6	348,8	353,8	358,9	364,0	369,2	374,2	379,2	384,3	389,4	394,5	399,6
		322,6	328,1	333,6	339,1	344,7	350,1	355,5	363,1	370,7	376,1	381,6	387,2	392,7	398,1	403,5	409,1	414,6	420,1	425,6

GT	M0	M1
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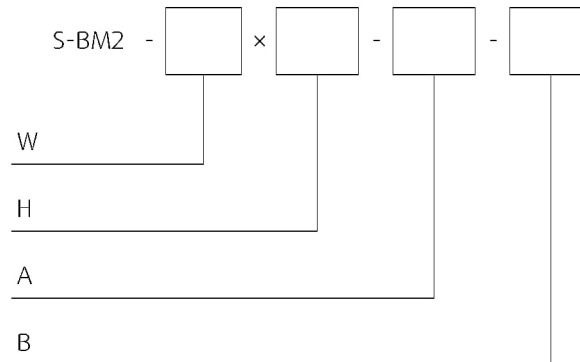
Legend:

GT - Grille type

M0 - S-BM2 without grille

M1 - S-BM2 with one grille

Ordering Codes



W - Width Dimension

200 mm to 1000 mm and battery dimensions 1180 mm to 2080 mm. In step of 50 mm

H - Height Dimensions

425 mm, 625 mm, 825 mm, 1025 mm, 1000 mm and battery dimensions 1530 mm, 1730 mm, 1930 mm, 2130 mm, 2330 mm, 2530 mm.

A - Grille Type

- 00** - No Grille, duct connectable on both sides
- 01** - Grille on one side /Zinc/ + connection for duct available on either side
- 02** - Grille on one side /RAL 9003/ + connection for duct available on either side
- 11** - Grille on both sides /Zinc/
- 22** - Grille on both sides /RAL 9003/
- M0** - Battery dimensions without Grille
- M1** - Battery dimensions with Grille on one side /Zinc/ + connection for duct available on either side

B - Type of Activation



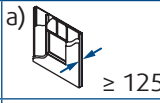
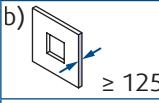


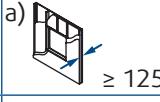
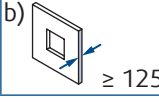




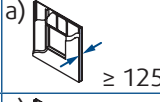
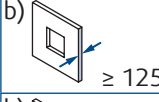


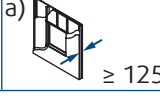
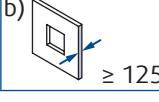




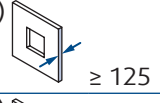


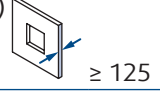



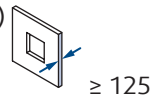



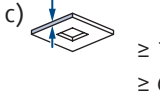


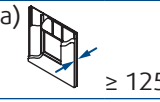


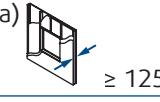


- B230** - 230V AC Belimo actuator
- B24** - 24V AC/DC Belimo actuator
- B24-W** - 24V AC/DC Belimo actuator & wire connector for supply and communication unit
- B24-SR** - 24V AC/DC Belimo actuator, modulated (0)2 V ... 10 V
- BST0** - 230V AC supply and communication unit BKNE230-24 (2-wire to BKSE...) & 24V AC/DC Belimo actuator
- BST1** - SLC powered supply and communication unit BC24-G2 (THC) & 24V AC/DC Belimo actuator
- BST10** - 230 V AC supply and communication unit BKN230-24-PL (Powerline) & 24V AC/DC Belimo actuator














Example of the S-BM2 Smoke Control Damper Ordering Code

S-BM2-850×2530-M0-B24-SR

Two Multiblade Smoke control dampers with width of 850 mm and height of 2530 mm, without a grille to be mounted in battery on top of each other. Activated by a 24 V Modulated Belimo actuator (0..10V).

Installation Methods

 1 Wet	 S-BM2 125 × 325 ... 1000 × 1225	EI 120 ($v_{ew} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAmulti	a)  ≥ 125 b)  ≥ 125	 
		EI 90 ($v_{ew} - i \leftrightarrow o$) S1000C _{mod} MAmulti	a)  ≥ 125 b)  ≥ 125	 
 2 Dry	 S-BM2 125 × 325 ... 1000 × 1225	EI 120 ($v_{ew} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAmulti	a)  ≥ 125 b)  ≥ 125	 
		EI 90 ($v_{ew} - i \leftrightarrow o$) S1000C _{mod} MAmulti	a)  ≥ 125 b)  ≥ 125	 
 3 Soft	 S-BM2 125 × 325 ... 1000 × 1225	EI 90 ($v_{ew} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAmulti	b)  ≥ 125	 
		EI 90 ($v_{ew} - i \leftrightarrow o$) S1000C _{mod} MAmulti	b)  ≥ 125	 
	 S-BM2 W > 1000, H > 1225 ... 2080 × 2530	EI 90 ($v_{ew} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAmulti	b)  ≥ 125	 
	 S-BM2 125 × 325 ... 1000 × 1225	EI 120 ($h_{ow} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAmulti	c)  ≥ 125 ≥ 620 (kg/m ³)	
 3F Fit	 S-BM2 125 × 325 ... 1000 × 1225	EI 120 ($v_{ew} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAmulti	a)  ≥ 125	 
		EI 90 ($v_{ew} - i \leftrightarrow o$) S1000C _{mod} MAmulti	a)  ≥ 125	 

 DBH DBV	S-BM2	EI 120 ($v_{ed} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAmulti	d) 	EN 1366-9 EN 1366-8	
	125 × 325 ... 1000 × 1225	EI 120 ($h_{od} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAmulti	d) 		
 DMH DMV	S-BM2	EI 120 ($v_{ed} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAmulti	d) 	EN 1366-9 EN 1366-8	
	125 × 325 ... 1000 × 1225	EI 120 ($h_{od} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAmulti	d) 		
 D1H, D2H	S-BM2	EI 120 ($h_{od} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAmulti	d) 	EN 1366-9 EN 1366-8	
	125 × 325 ... 1000 × 1225				
 D1V D2V	S-BM2	EI 120 ($v_{ed} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAmulti	d) 	EN 1366-9 EN 1366-8	
125 × 325 ... 1000 × 1225					

Notes:

- 1.Wet** - Wet Installation, Using Plaster/Mortar/Concrete Filling
- 2.Dry** - Dry Installation, Using Mineral Wool and Cover Boards
- 3.Soft** - Soft Installation, Using Mineral Wool filing
- 3F.Fit** - Fit Installation, Wall build around the damper, filled with mineral wool
- DBH, DBV** - In the Board duct installation
- DMH, DMV** - In the Metal duct installation
- D1H, D2H** - Horizontally Oriented Damper, On the Duct
- D1V, D2V** - Vertically Oriented Damper, On the Duct
- a)** - Flexible (plasterboard) wall
- b)** - Concrete/masonry/cellular concrete (rigid) wall
- c)** - Concrete/cellular concrete (rigid) floor/ceiling
- d)** - Duct per EN 1366-9 or EN 1366-8
- v_{ew}** - Wall placement, vertically oriented damper
- h_{ow}** - Ceiling/floor placement, horizontally 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.
- According to the standard EN 1366-2, the distance between the smoke control damper bodies must be at least 200 mm.

- The distance between smoke control damper and the adjacent wall/ceiling and the smoke control damper must be at least 75 mm.
- When the S-BM2 smoke control damper is installed into a smoke and fire partition structure, it must be placed so that the damper blades in its closed position are located inside this structure.
- The gap in the installation opening between the smoke control damper and the wall/ceiling can be increased by up to 50% of the gap area or decreased to the smallest amount possible that still provides sufficient space for the installation of the seal.
- When using non-original grilles, the gap between the damper blade in open position and the self-standing grill, mesh, louvre must be at least 200 mm according to EN 1366-10.
- The smoke control damper must be earthed after being installed into or onto the duct.
- Lists of all permitted installation methods are provided in Handbook.

Installation, Maintenance & Operation

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

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

Information about installation, maintenance and operation is available in the "HandBook_S-BM2" document or more can be found at design.systemair.com.

Installation 1. WET - in the Wall

Using Plaster/Mortar/Concrete Filling

1. The supporting construction opening must be prepared as shown on picture. Opening surfaces must be even and cleaned off. The flexible wall opening must be reinforced as per the standards for plasterboard walls. The opening dimensions are driven by the nominal dimensions of the damper with added clearance. The opening will be with the dimensions of W1 and H1.

2. Insert the damper as per the "Manipulation of S-BM2" section into the middle of the opening so that the damper blade is in the wall. For damper widths greater than 600 mm, it is recommended to use a duct support inside the damper during installation to avoid any damage caused to the damper housing by the weight of the filling.

For battery assembly:

- Add the first layer of filling at the bottom of the opening (can be a thin layer)
- Place the damper(s) on top while fixing them to the sides with screws (F11).
- Stack the individual dampers on top of each other with caulk (F5) between them and fix together with screws (F12) and to the wall with screws (F11) as depicted in fixing layout.

3. Fill in the area between the wall and the damper with gypsum plaster or mortar or concrete filling (F1) while paying attention to prevent the fouling of the damper's functional parts, which could limit its correct functionality. The best way is to cover the functional parts during installation. To prevent seepage of the filling material, use of boards is recommended. First, let the plaster or mortar or concrete filling harden and then perform the next steps.

4. After the filling hardens, remove the duct support from inside of the damper.



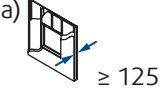
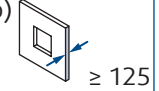

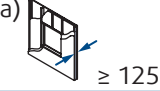
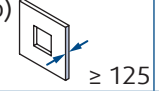

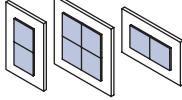
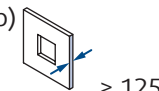

5. If needed, uncover and clean the damper after installation.

6. Damper connections to duct and connection with overlap boards must be filled with coating (F5)

7. Check the functionality of the damper.

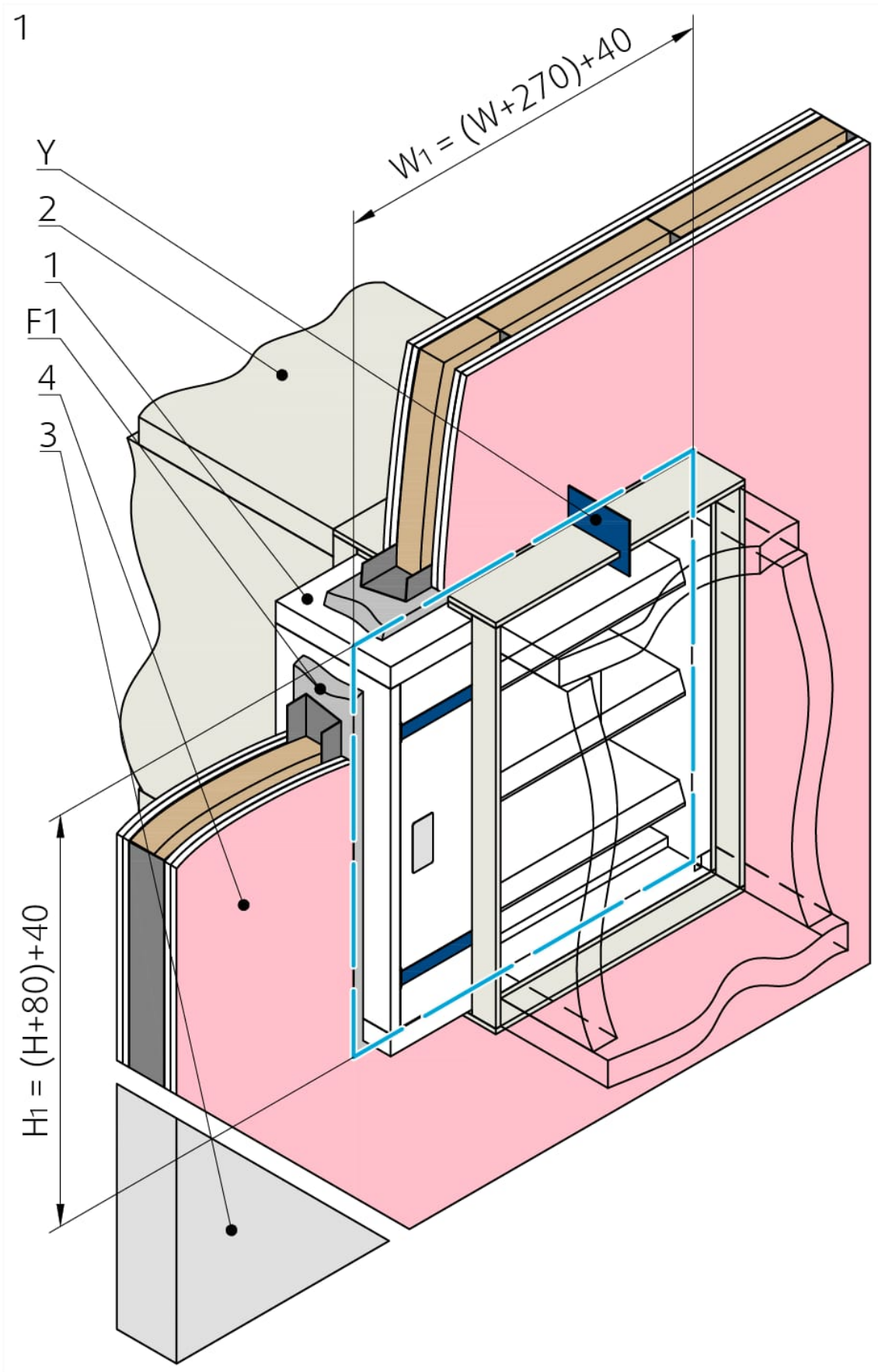
Installation Distances

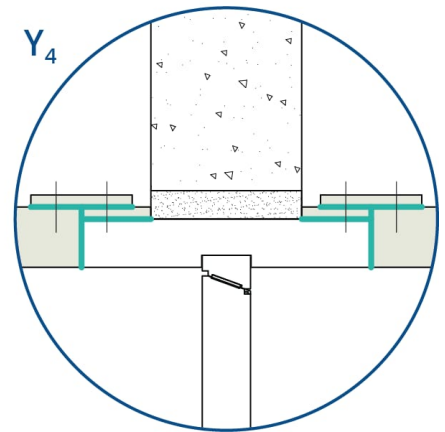
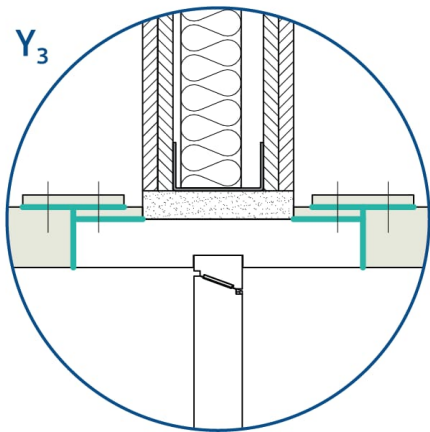
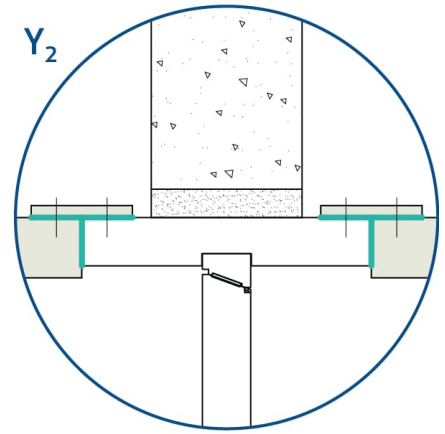
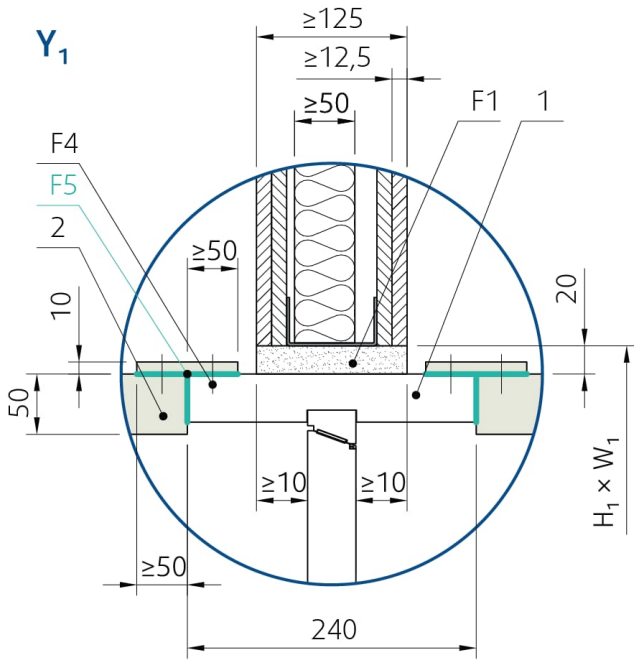
According to the EN 1366-2 standard, the minimum distance from the wall or ceiling to the damper body is 75 mm. For multiple crossings through a fire resistive wall, the minimum distance between two damper bodies is 200 mm. This applies for distances between the damper body and a nearby foreign object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

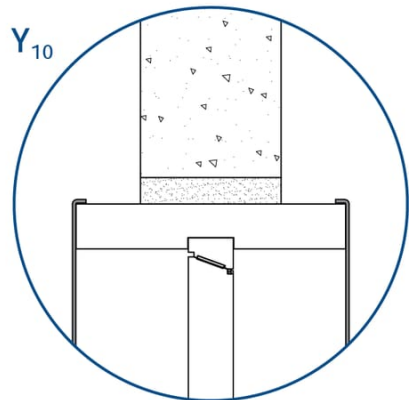
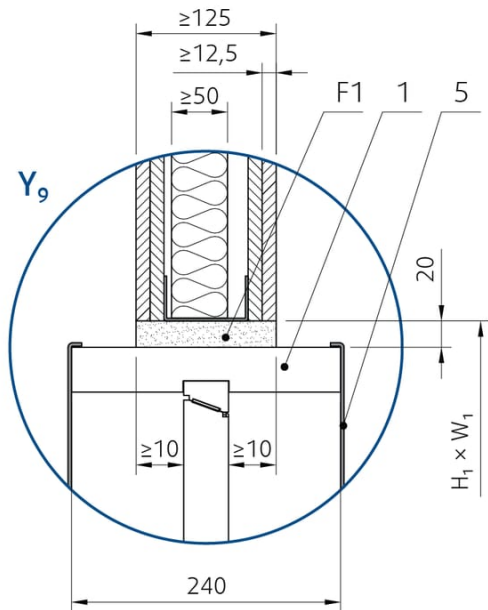
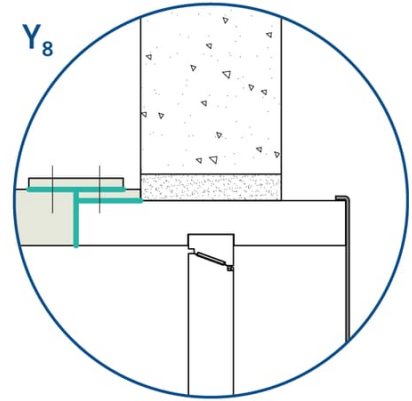
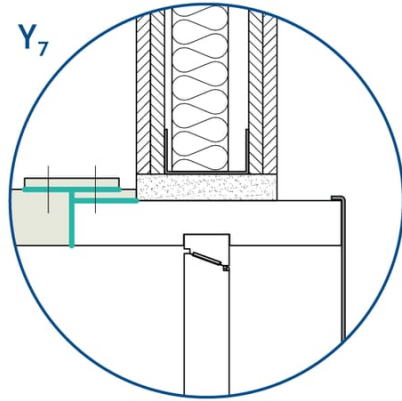
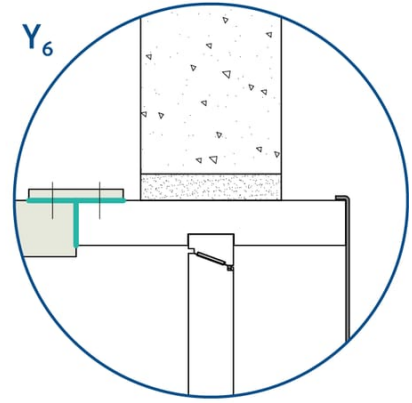
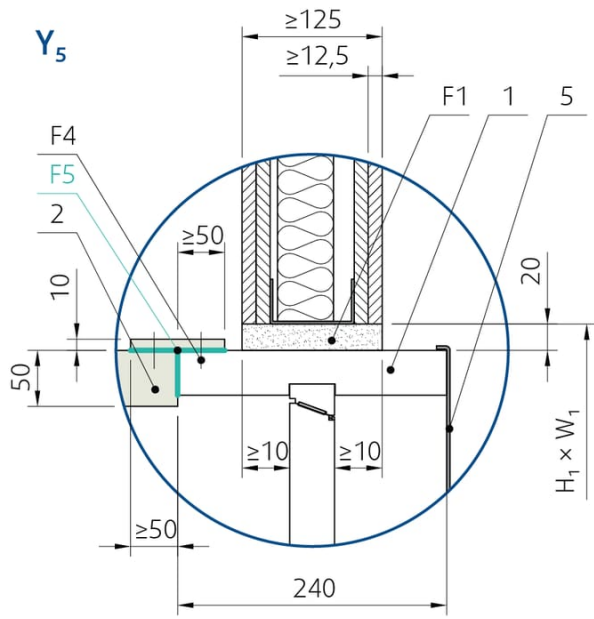
 1 Wet	S-BM2  125 × 325 ... 1000 × 1225	EI 120 ($v_{ew} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAMulti	a)  ≥ 125	b)  ≥ 125	
		EI 90 ($v_{ew} - i \leftrightarrow o$) S1000C _{mod} MAMulti	a)  ≥ 125	b)  ≥ 125	
	S-BM2  W > 1000, H > 1225 ... 2080 × 2530	EI 90 ($v_{ew} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAMulti	b)  ≥ 125		

Notes:

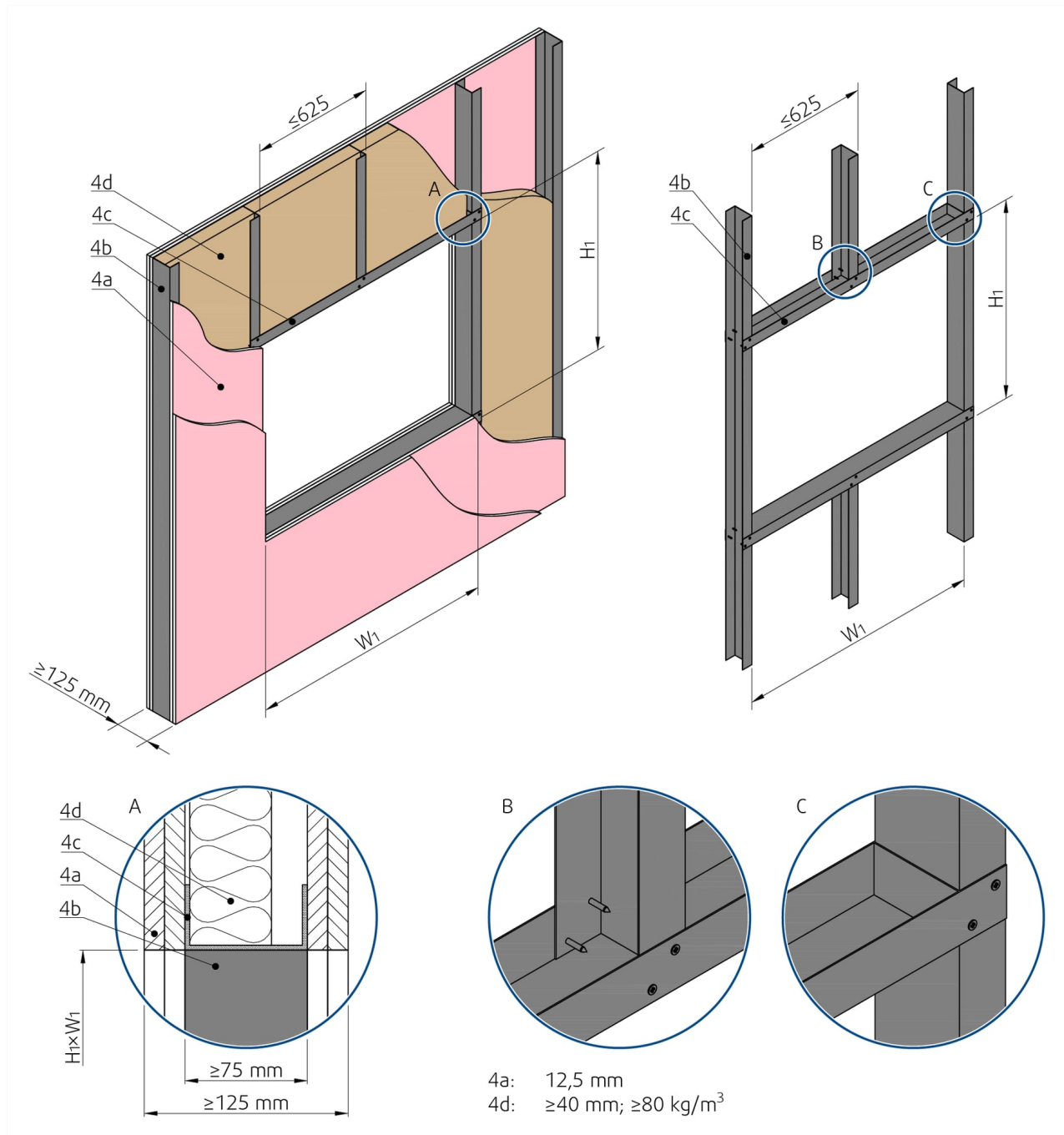
- a) - Flexible (plasterboard) wall
- b) - Concrete/masonry/cellular concrete (rigid) wall
- v_{ew} - Vertical wall placement

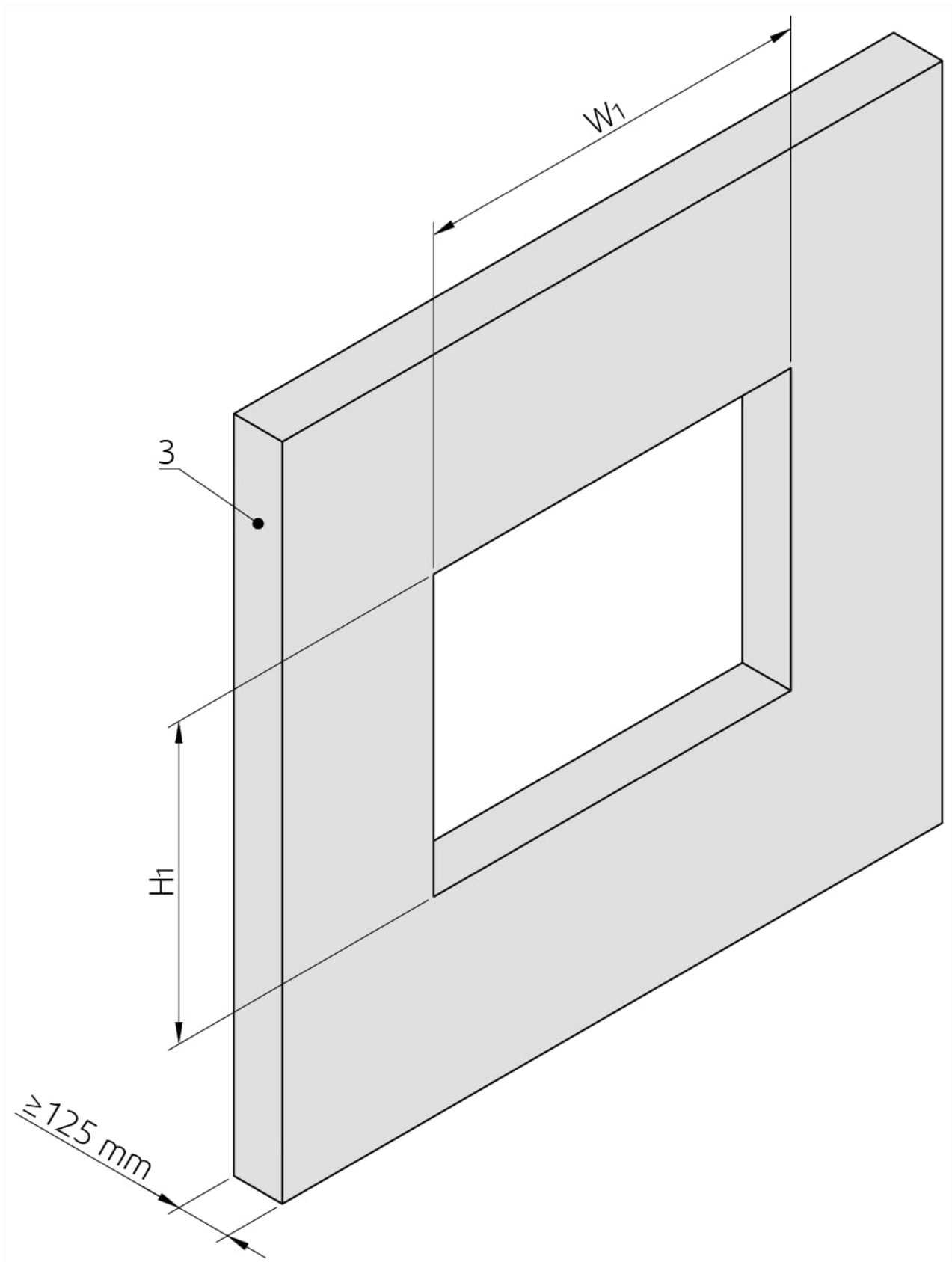




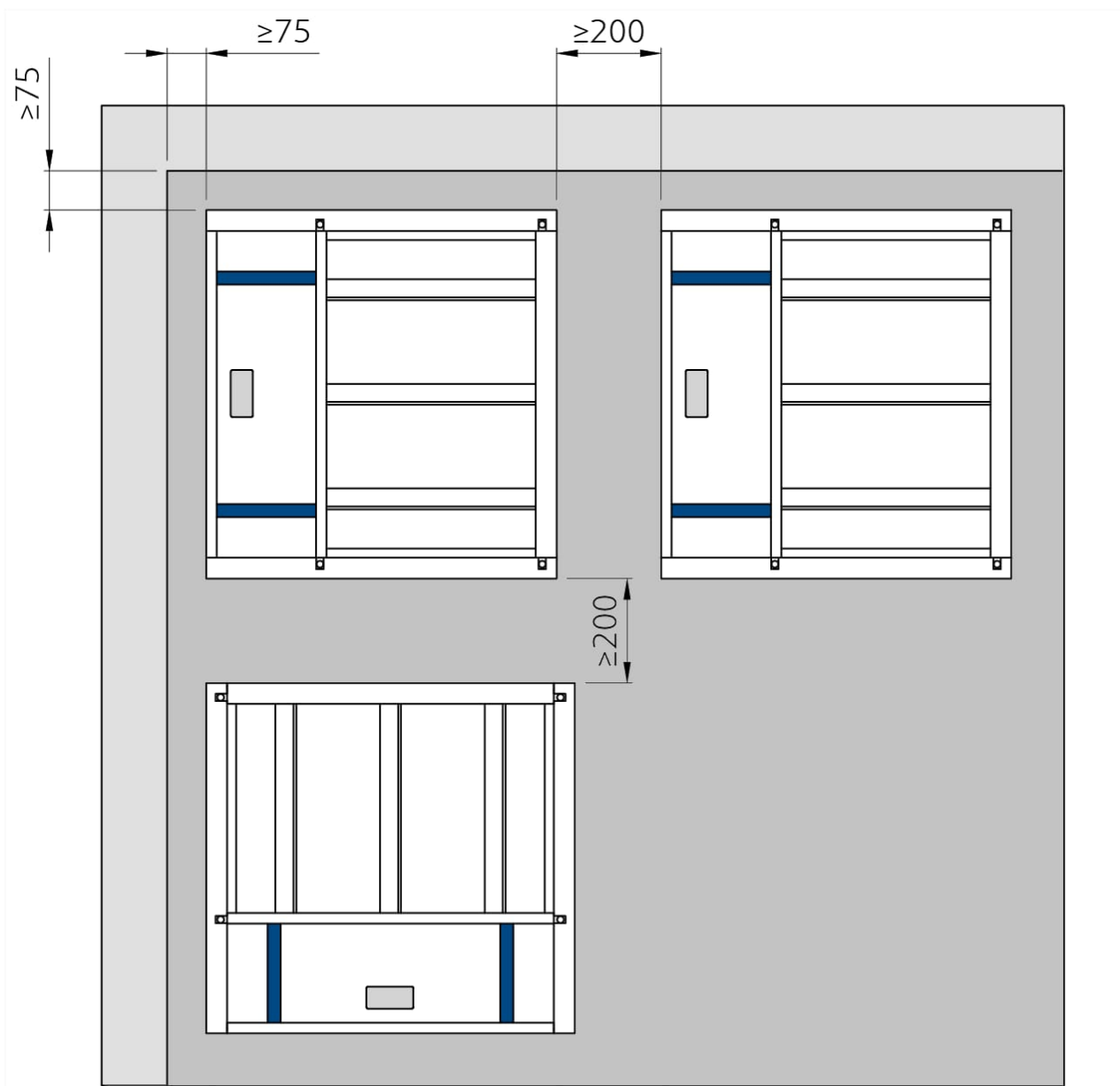


Opening and wall/ceiling preparations





Damper minimum distances



Legend for installation 1. WET - in the Wall

- 1** - Smoke control damper S-BM2
- 2** - Connected ductwork made of Promatect-L500 boards (min. 500 kg/m³, Promat)
- 3** - Concrete/masonry/cellular concrete wall or ceiling
- 4** - Flexible (plasterboard) wall
- 4a** - 2 layers of plasterboard fireproof plate type F, EN 520
- 4b** - Vertical CW – profiles
- 4c** - Horizontal UW – profiles
- 4d** - Mineral wool; thickness/cubic density see picture.
- 5** - Grille
- 7** - Connected sheet metal ductwork tested according to EN 1366-8 or EN 1366-9
- F1** - Plaster/mortar/concrete filling
- F4** - Nails or pins per ductwork manufacturer instructions
- F5** - Fire resistive coating Promat K84 (Promat)
- F8** - Screw M8×35, maximum fixing torque is 8 Nm ...12 Nm

F11 - Screw M5 × ≥100 mm to concrete/Screw M4,5 × ≥120 mm to cellular concrete

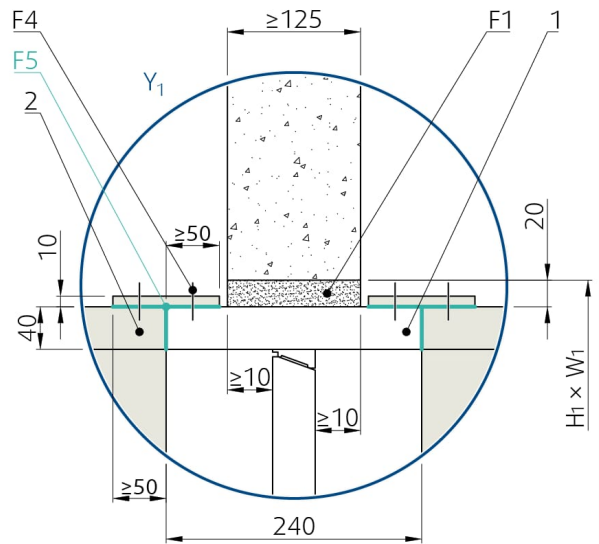
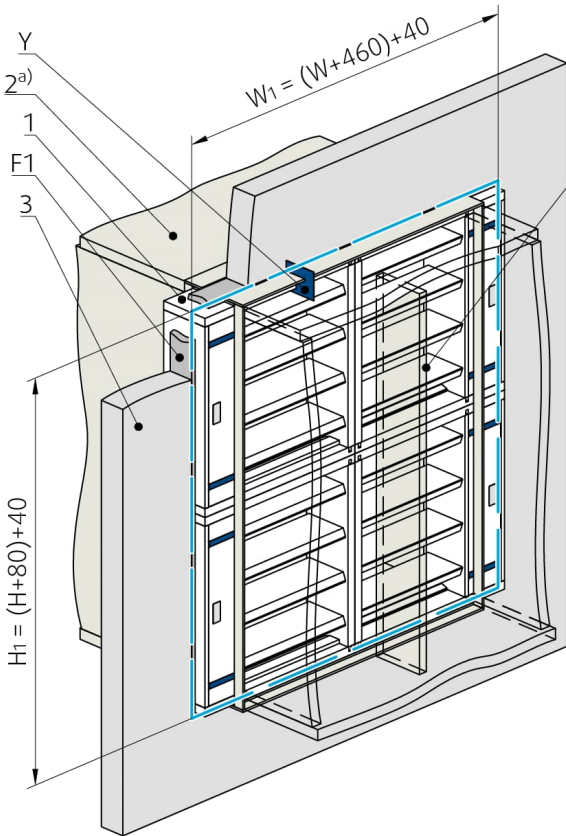
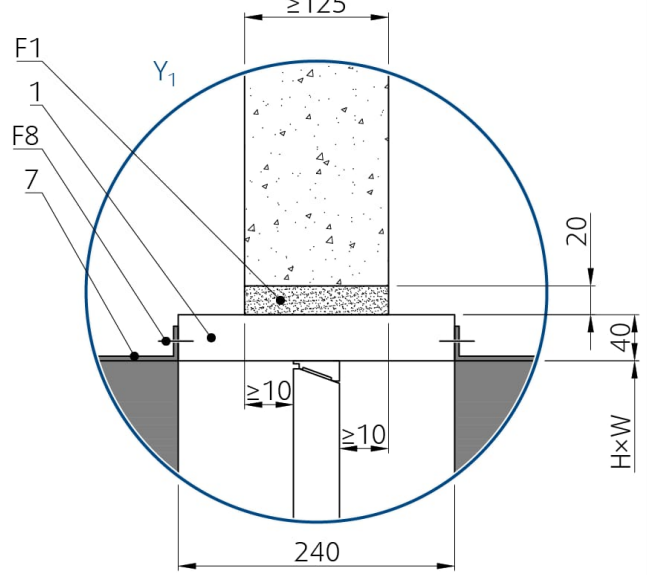
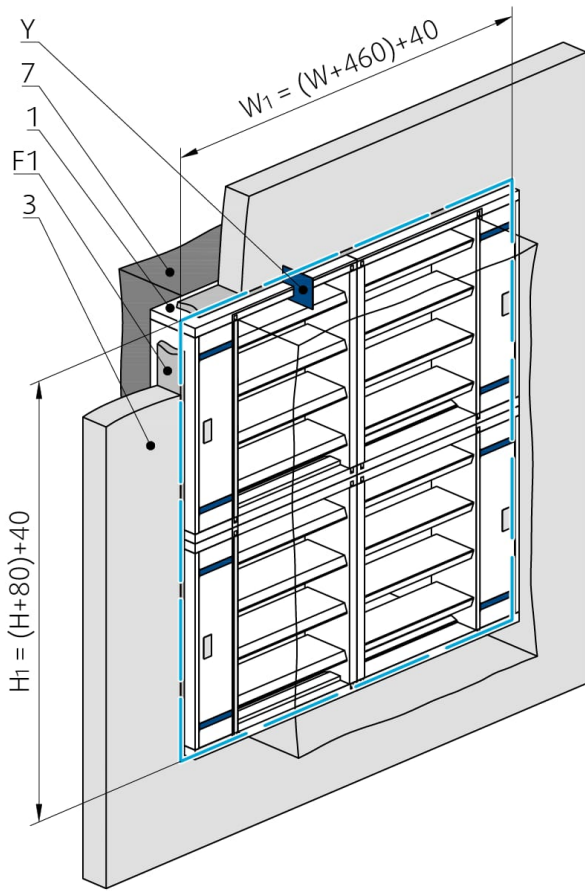
F12 - Screw M5 × 60-70 mm (e.g. DIN 7982)

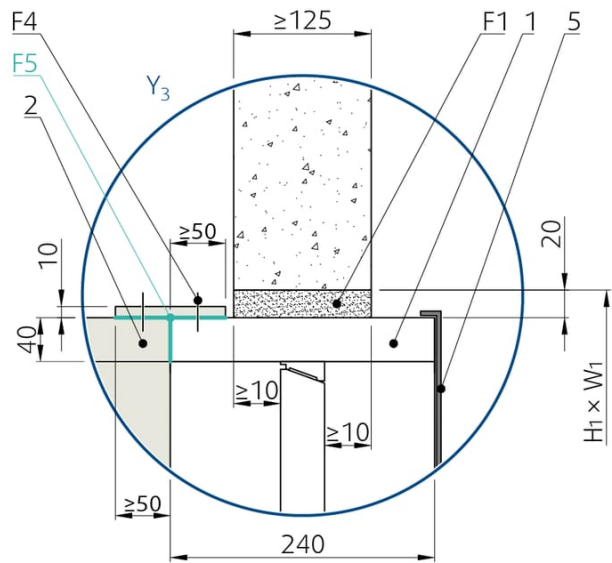
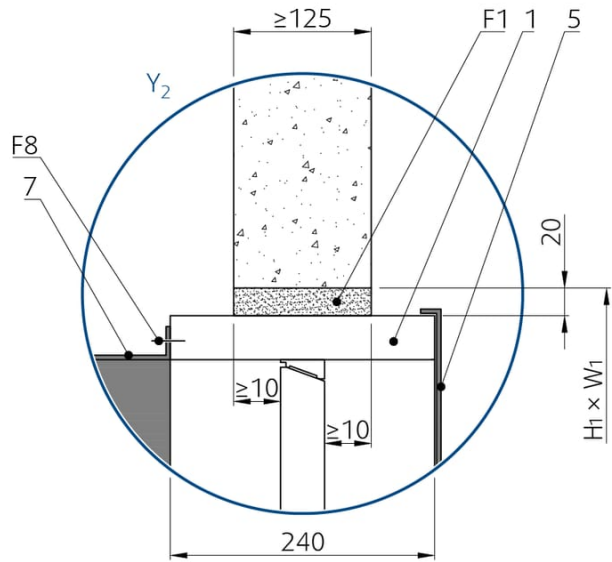
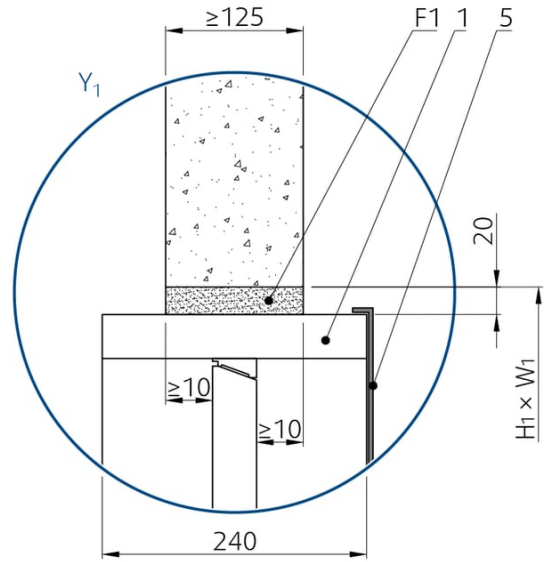
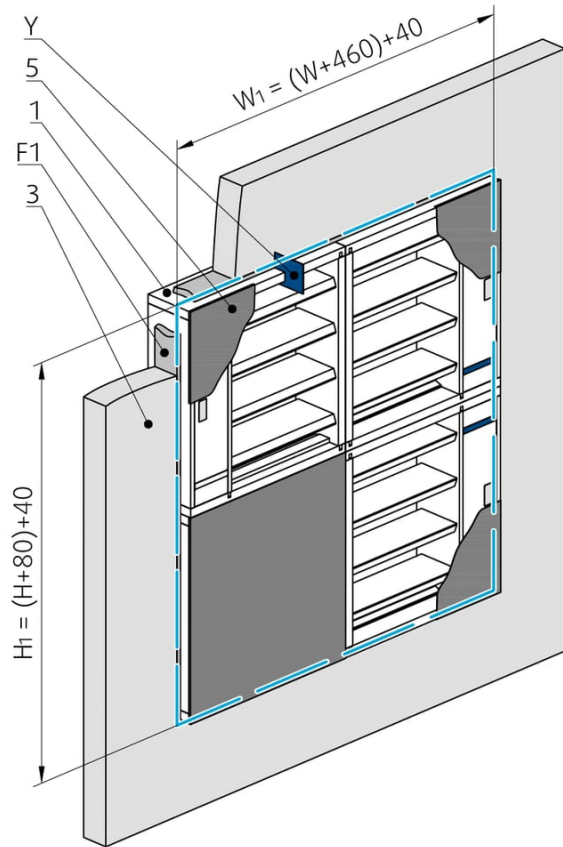
a) - If connected to a duct, please follow the instructions duct manufacturer (maximum duct size width × height)

b) - Internal stiffener is driven by the duct manufacturer instructions (Make sure to add where needed)

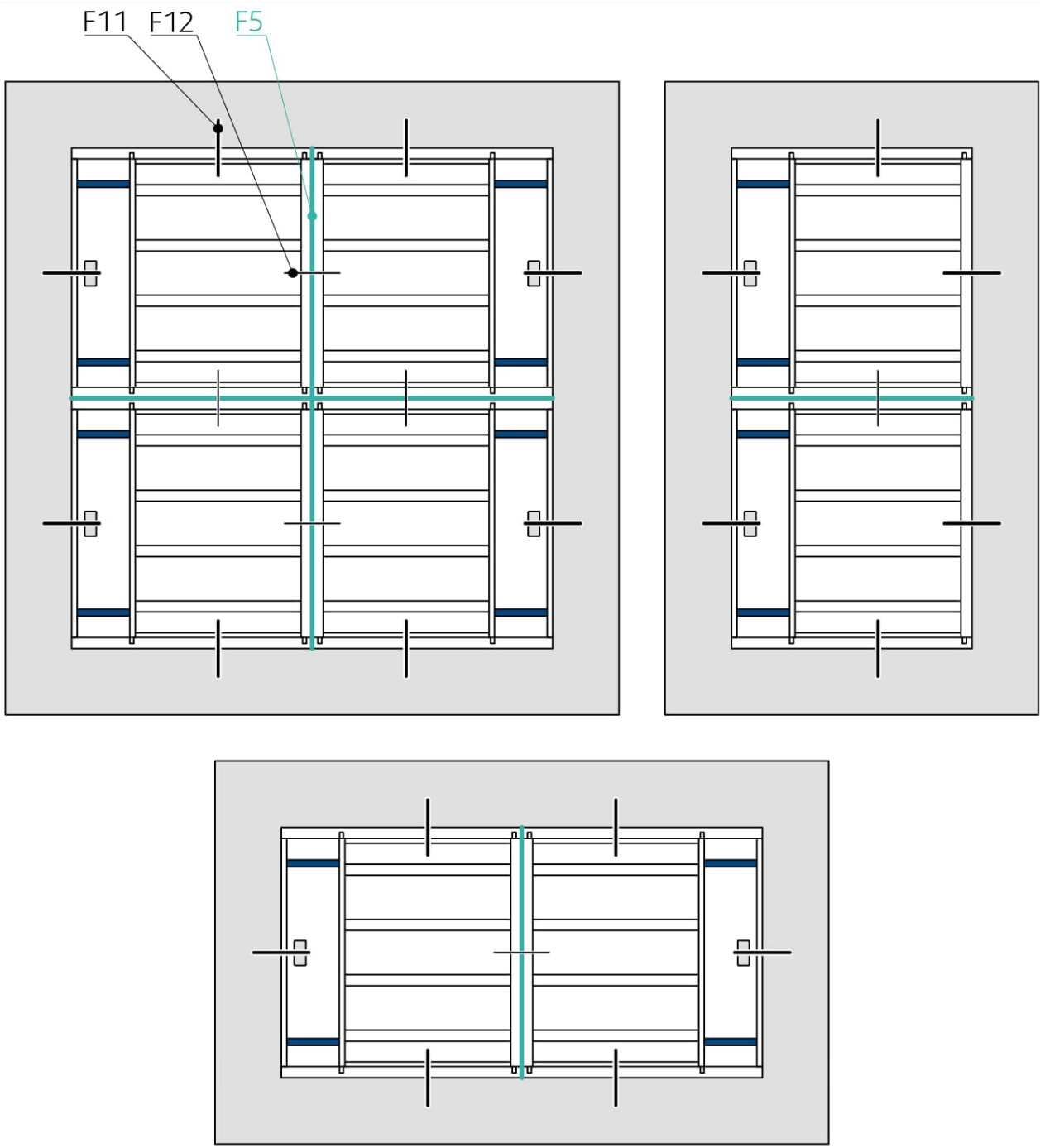
Y - Cutting plane

Battery Installation, Grille type M0, M1

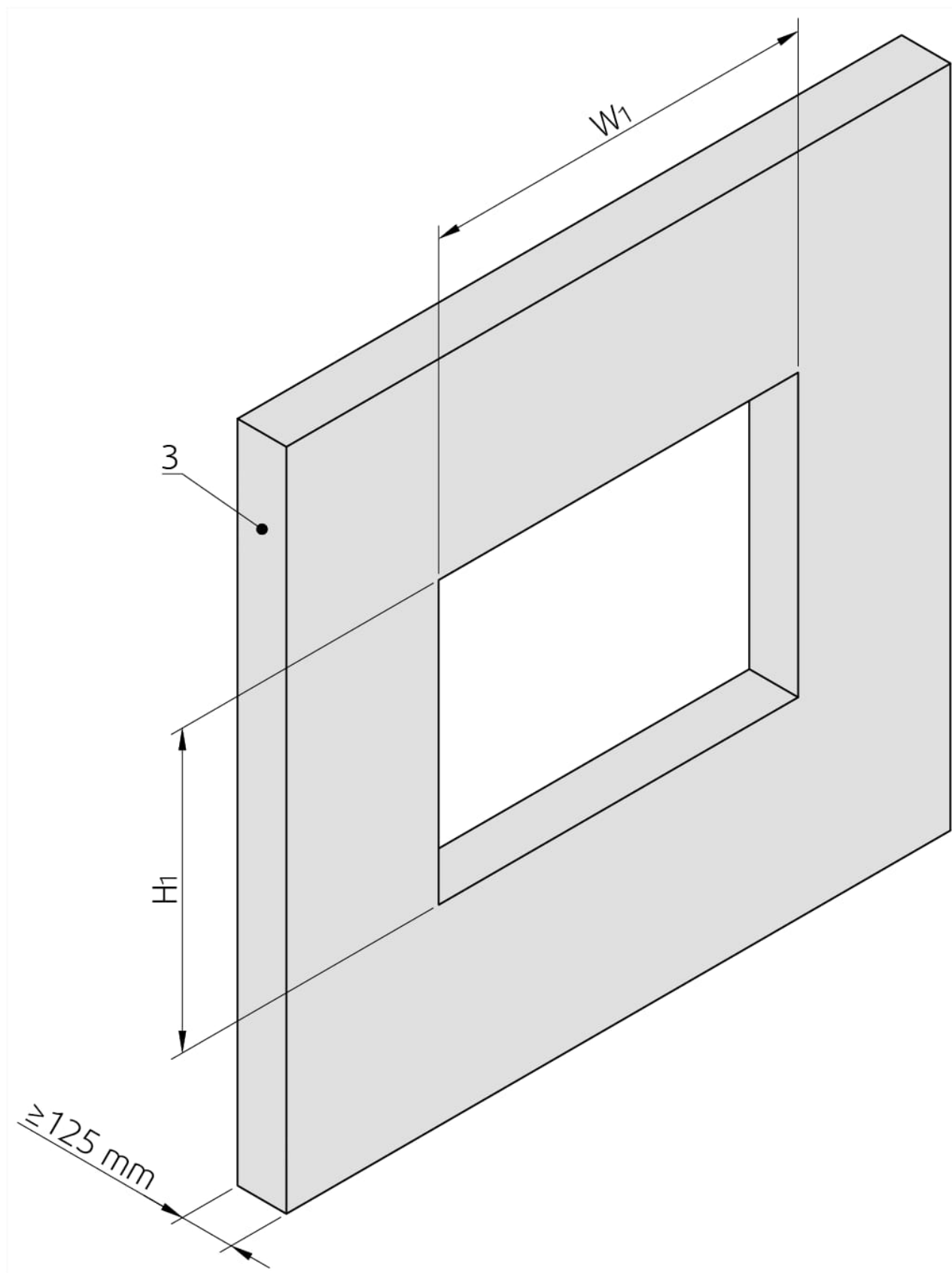




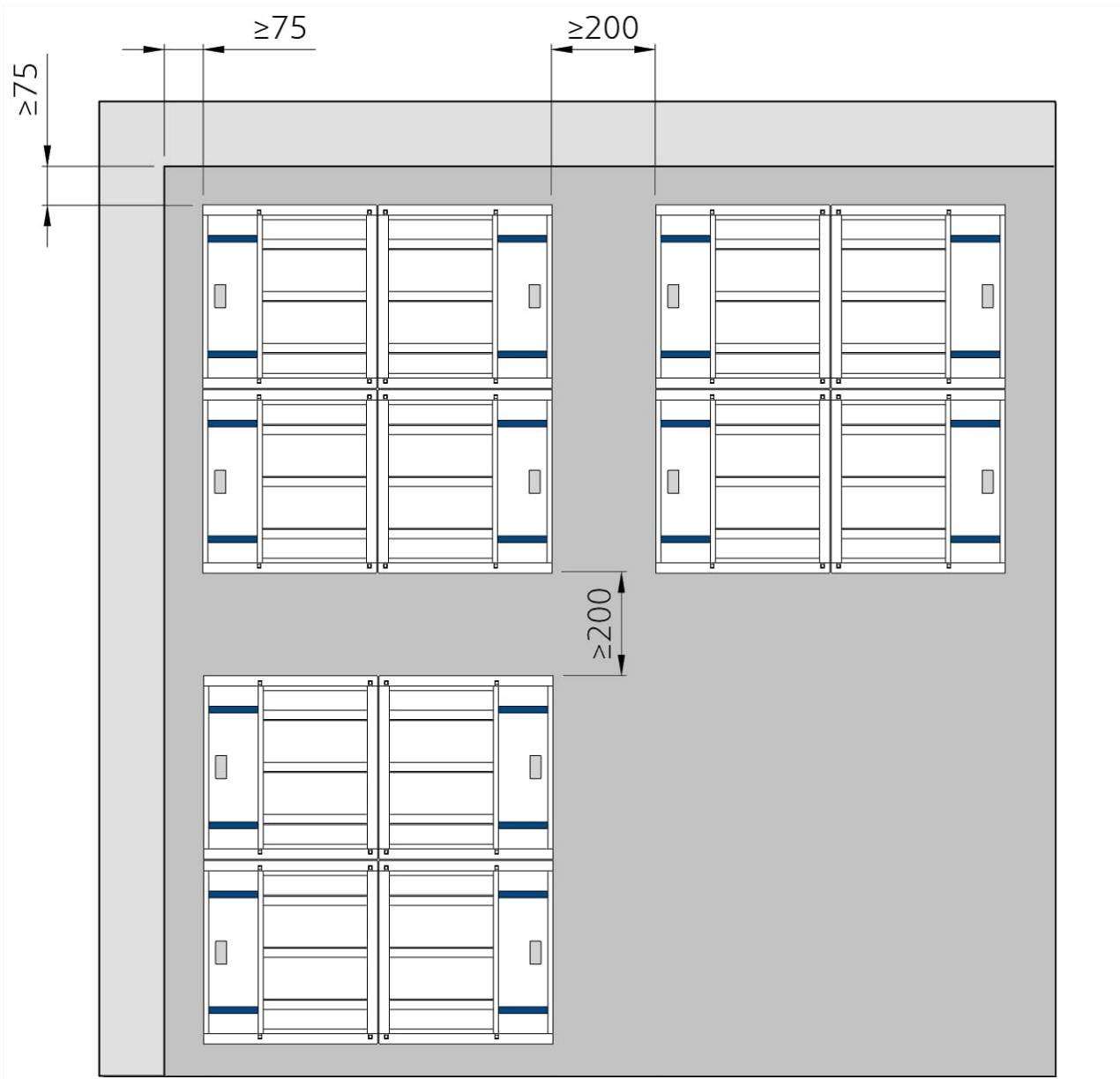
Fixing layout for battery installations



Opening and wall/ceiling preparations



Damper minimum distances



Legend for installation 1. WET - in the Wall assembled in battery

- 1** - Smoke control damper S-BM2
- 2** - Connected ductwork made of Promatect-L500 boards (min. 500 kg/m³, Promat)
- 3** - Concrete/masonry/cellular concrete wall or ceiling
- 5** - Grille
- 7** - Connected sheet metal ductwork tested according to EN 1366-8 or EN 1366-9
- F1** - Plaster/mortar/concrete filling
- F4** - Nails or pins per ductwork manufacturer instructions
- F5** - Fire resistive coating Promat K84 (Promat)
- F8** - Screw M8×35, maximum fixing torque is 8 Nm ...12 Nm
- F11** - Screw M5 × ≥100 mm to concrete/Screw M4,5 × ≥120 mm to cellular concrete
- F12** - Screw M5 × 60-70 mm (e.g. DIN 7982)
- a)** - If connected to a duct, please follow the instructions duct manufacturer (maximum duct size width × height)
- b)** - Internal stiffener is driven by the duct manufacturer instructions (Make sure to add where needed)
- Y** - Cutting plane



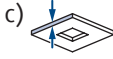
Installation 1. WET - in the Ceiling

Using Plaster/Mortar/Concrete Filling

1. The supporting construction opening must be prepared as shown on picture. Opening surfaces must be even and cleaned off. The opening dimensions are driven by the nominal dimensions of the damper with added clearance. The opening will be with the dimensions of W1 and H1.
2. Mount the hanger plates (A2) on the damper body only on the side which will be flush with the upper ceiling surface.
3. Insert the damper into the middle of the opening so that the damper blade is in the ceiling on the previously mounted hanger plates or on the prepared connecting duct.
4. Place the hanger plates (A2) flush with the damper body and the supporting construction from below.
5. From both sides of the supporting construction, fix the hanger plates to the damper and the supporting construction with at least 6 screws per each hanger.
6. Fill in the area between the ceiling and the damper with gypsum plaster or mortar or concrete filling (F1) while paying attention to prevent the fouling of the damper's functional parts, which could limit its correct functionality. The best way is to cover the functional parts during installation. To prevent seepage of the filling material, use of boards is recommended.
7. First, let the plaster or mortar or concrete filling harden before removing the supporting fixtures.
8. If needed, uncover and clean the damper after installation.
9. Damper connections to duct and connection with overlap boards must be filled with coating (F5).
10. Check the functionality of the damper.

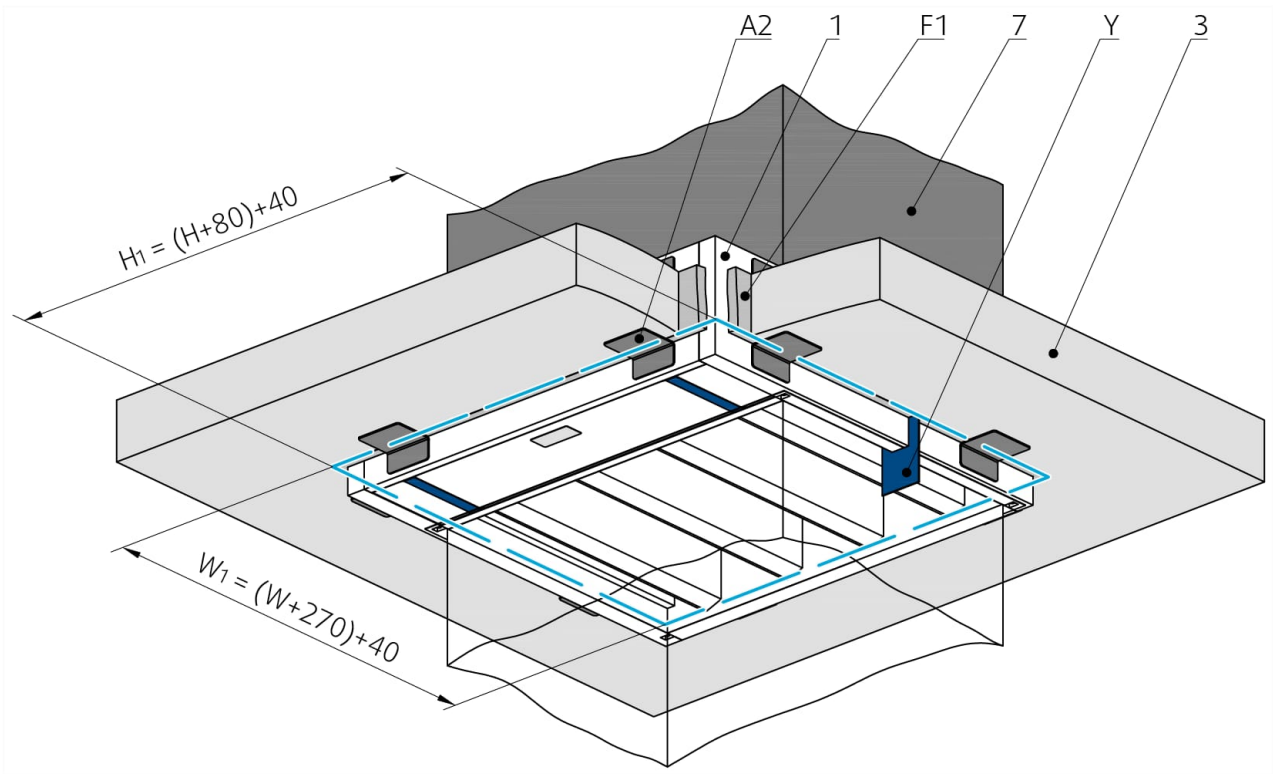
Installation Distances

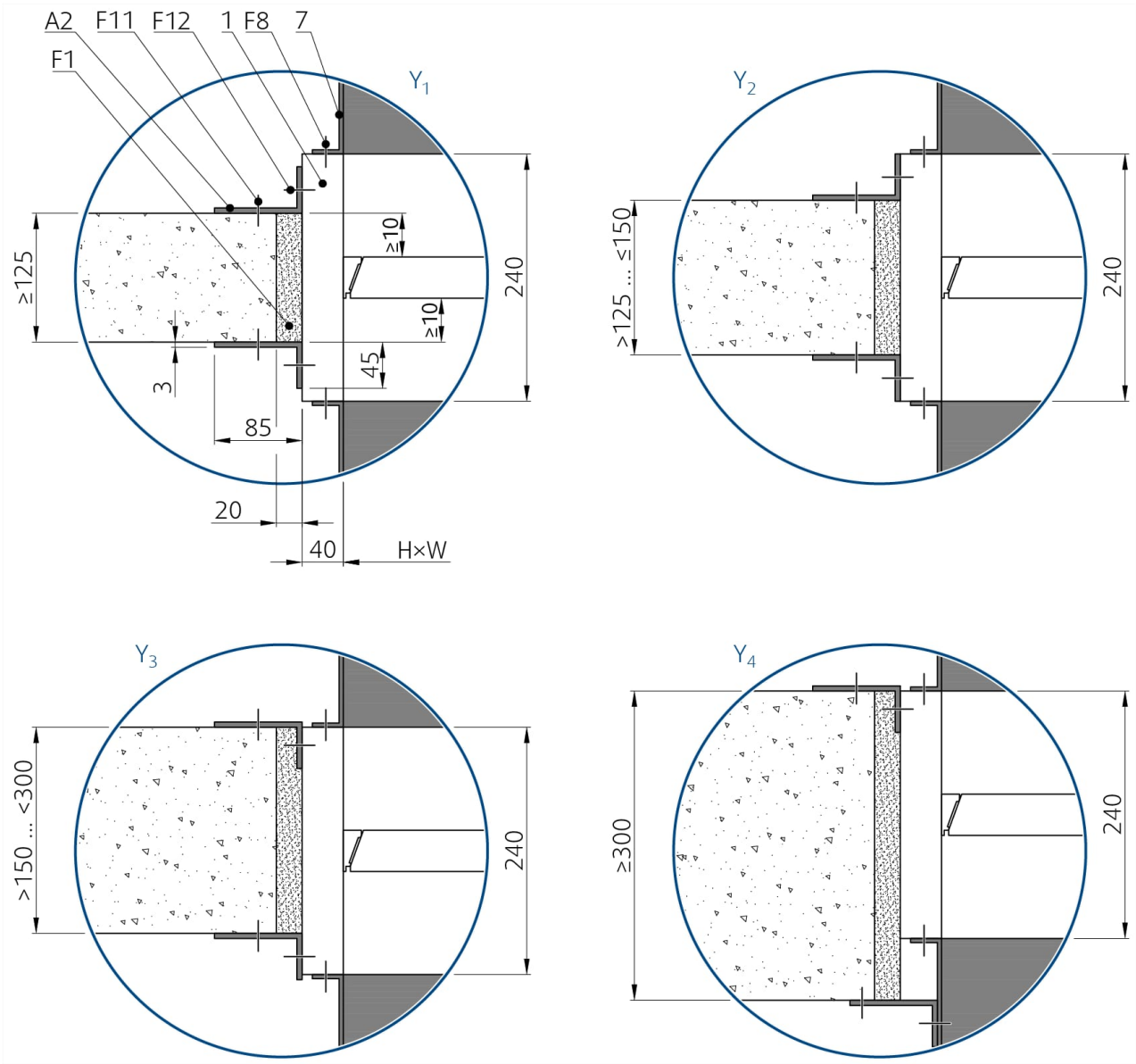
According to the EN 1366-2 standard, the minimum distance from the wall or ceiling to the damper body is 75 mm. For multiple crossings through a fire resistive wall, the minimum distance between two damper bodies is 200 mm. This applies for distances between the damper body and a nearby foreign object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

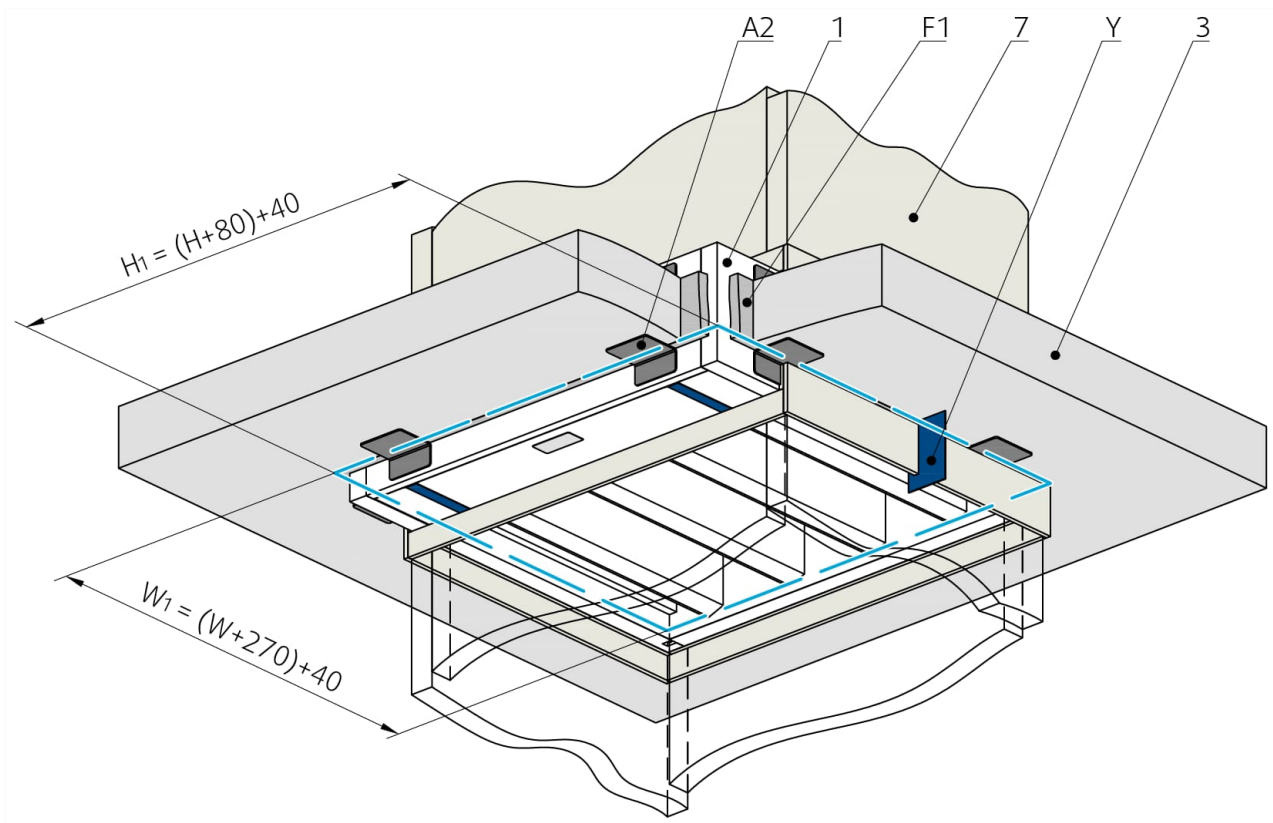
 1 Wet	S-BM2  125 × 325 ... 1000 × 1225	EI 120 ($h_{ow} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAMulti	 ≥ 125 $\geq 620 \text{ (kg/m}^3\text{)}$
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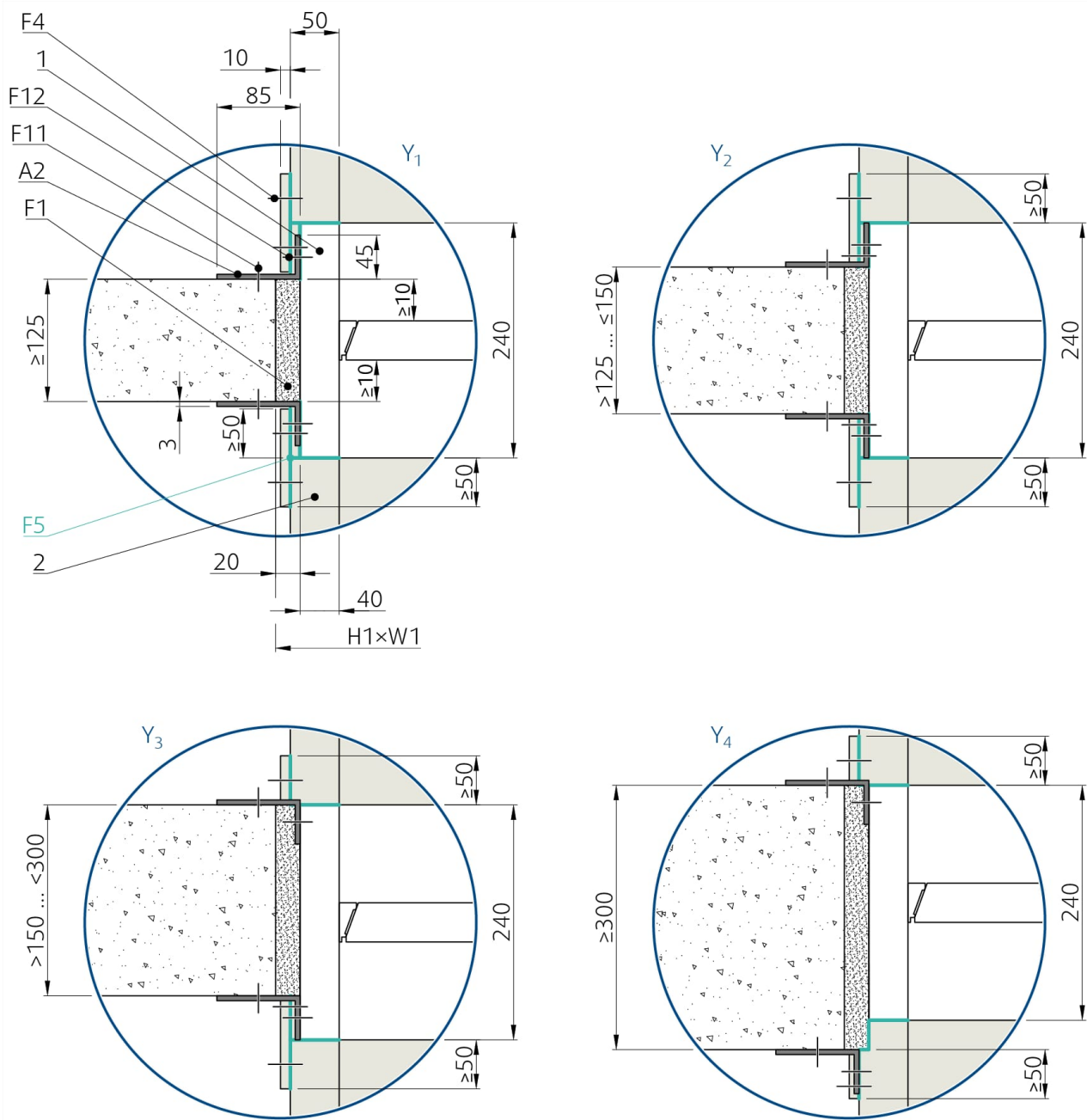
Notes:

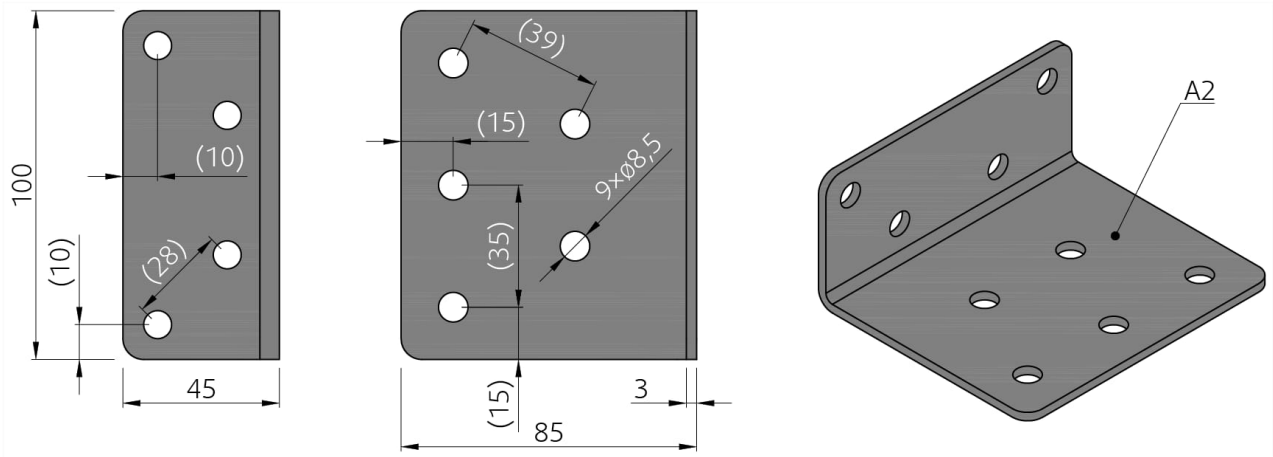
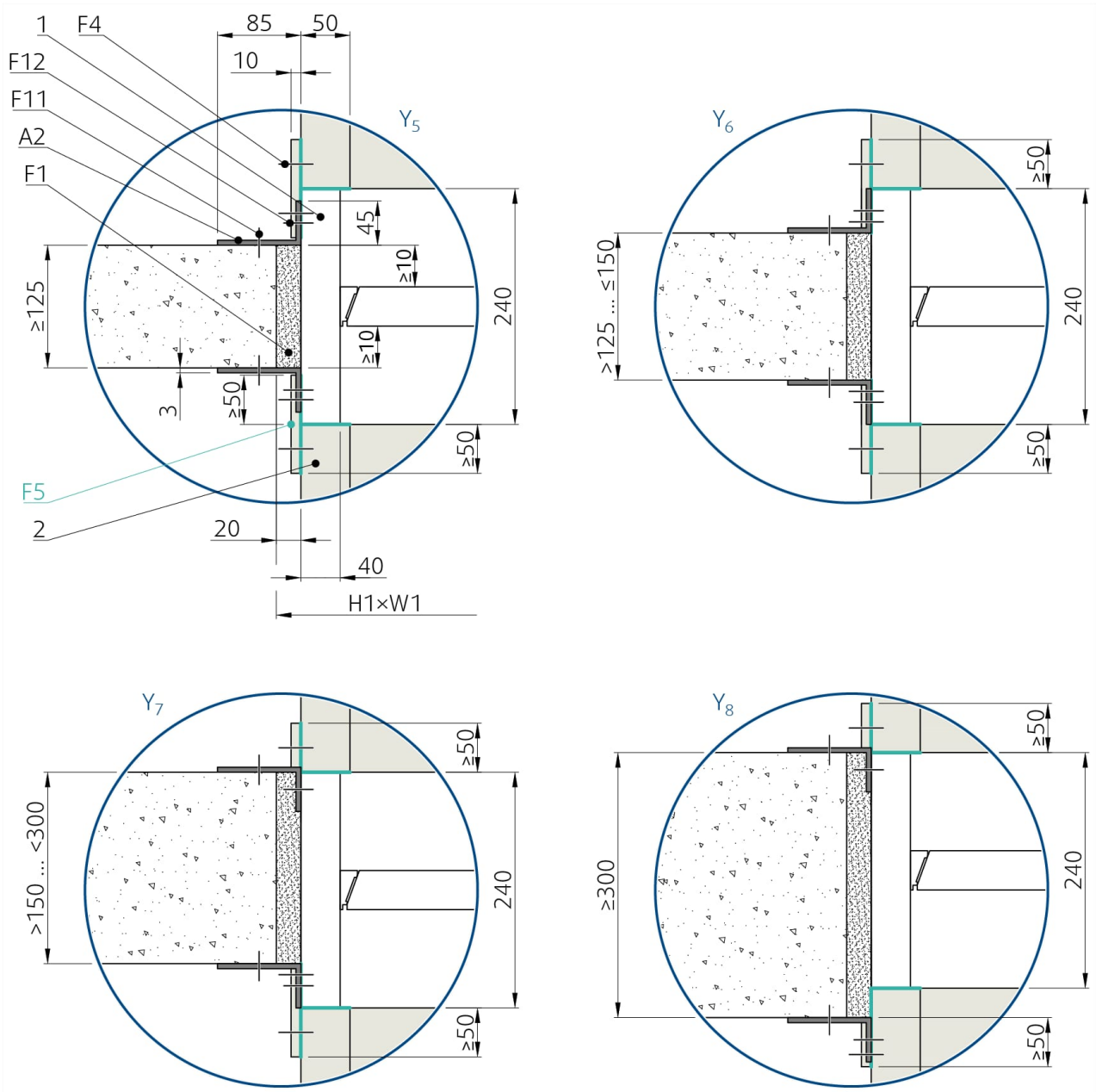
- c) - Concrete/cellular concrete (rigid) floor/ceiling
- h_{ow} - Horizontal floor/ceiling placement



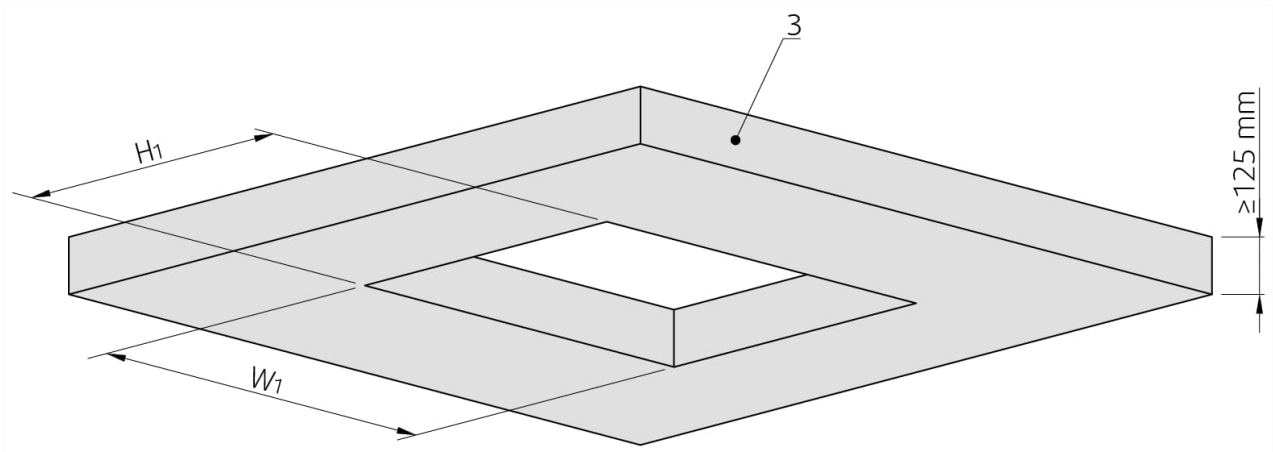




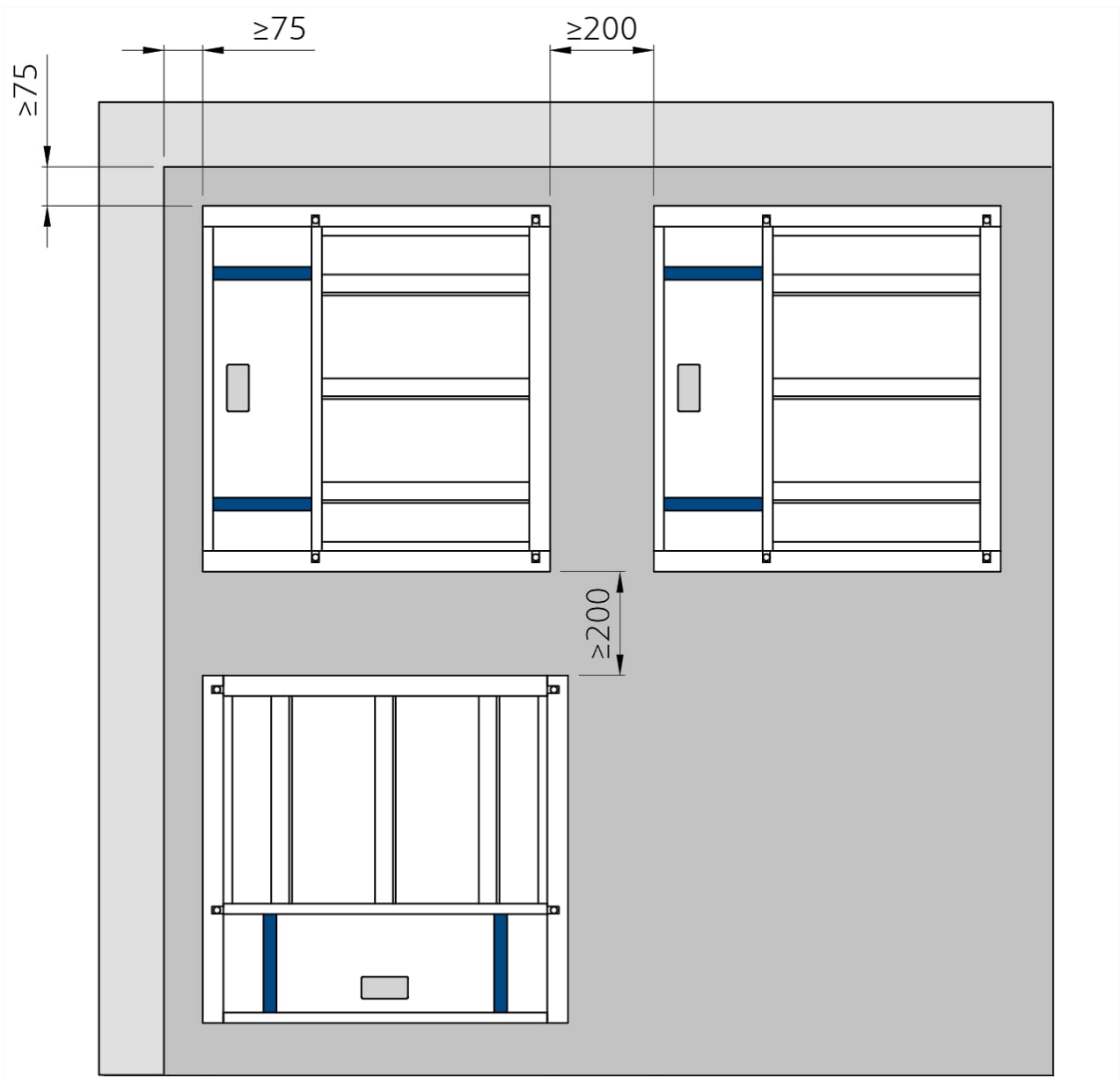




Opening and wall/ceiling preparations



Damper minimum distances



Legend for installation 1. WET - in the Ceiling

- 1** - Smoke control damper S-BM2
- 2** - Connected ductwork made of Promatect-L500 boards (min. 500 kg/m³, Promat)
- 3** - Concrete/masonry/cellular concrete wall or ceiling
- 4** - Flexible (plasterboard) wall
- 4a** - 2 layers of plasterboard fireproof plate type F, EN 520
- 4b** - Vertical CW – profiles
- 4c** - Horizontal UW – profiles
- 4d** - Mineral wool; thickness/cubic density see picture.
- 5** - Grille
- 7** - Connected sheet metal ductwork tested according to EN 1366-8 or EN 1366-9
- A2** - Hanger accessory H1-S-BM2 - can be made on site using 3 mm sheet metal plate.
 - For sizes W<550 & H<425 use 1 piece on each damper edge. Total 4 pcs for each side of wall.
 - For sizes bigger than W=550 & H=425 use 2 piece on each damper edge. Total 8 pcs for each side of wall.
- F1** - Plaster/mortar/concrete filling
- F4** - Nails or pins per ductwork manufacturer instructions
- F5** - Fire resistive coating Promat K84 (Promat)
- F8** - Screw M8×35, maximum fixing torque is 8 Nm ...12 Nm
- F11** - Screw M5 × ≥100 mm to concrete/Screw M4,5 × ≥120 mm to cellular concrete
- F12** - Screw M5 × 60-70 mm (e.g. DIN 7982)
- a)** - If connected to a duct, please follow the instructions duct manufacturer (maximum duct size width × height)
- b)** - Internal stiffener is driven by the duct manufacturer instructions (Make sure to add where needed)
- Y** - Cutting plane








Installation 2. DRY

Using Mineral Wool and Cover Boards

1. The supporting construction opening must be prepared as shown on picture. Opening surfaces must be even and cleaned off. The flexible wall opening must be reinforced as per the standards for plasterboard walls. The opening dimensions are driven by the nominal dimensions of the damper with added clearance. The opening will be with the dimensions of W1 and H1.
2. Insert the damper as per the "Manipulation of S-BM2" section into the middle of the opening so that the damper blade is in the wall. For damper widths greater than 600 mm, it is recommended to use a duct support inside the damper during installation to avoid any damage caused to the damper housing by the weight of the filling.
3. Fill in the area between the wall and the damper with mineral wool (F2) with a density of at least 100 kg/m³ thoroughly but in such a way that will not deform the duct/damper.
4. Cover the gap/filling between the damper and the mounting opening with gypsum boards (6) with applied coating (F7) and fix them with screws (F6) to the wall.
5. Damper connections to duct and connection with overlap boards must be filled with coating (F5).
6. Check the functionality of the damper.

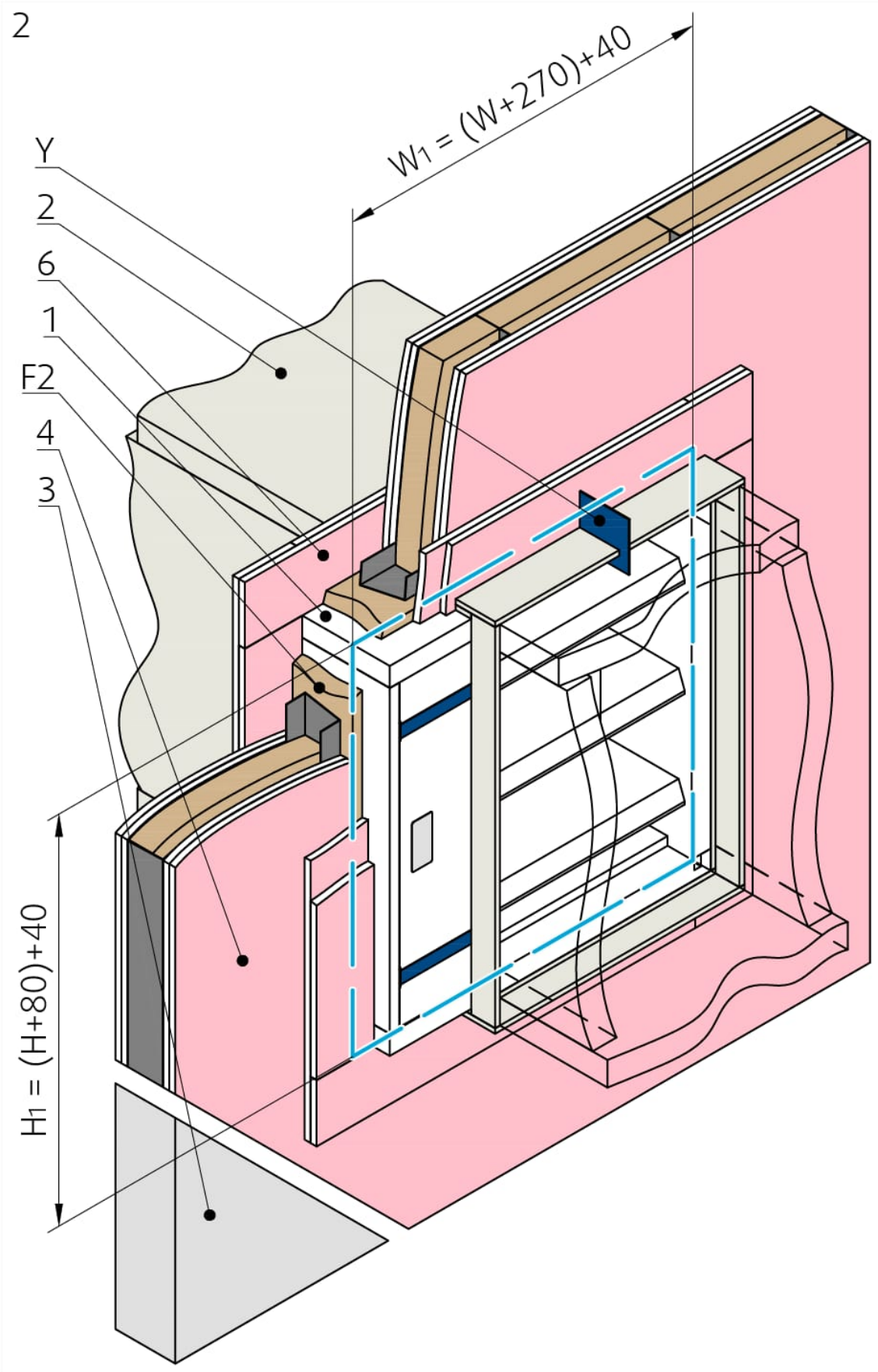
Installation Distances

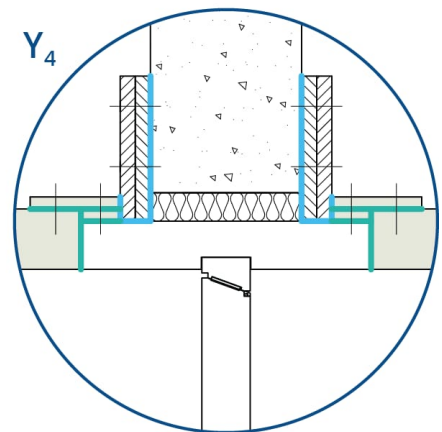
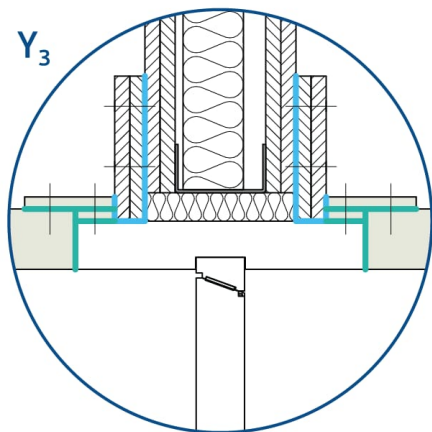
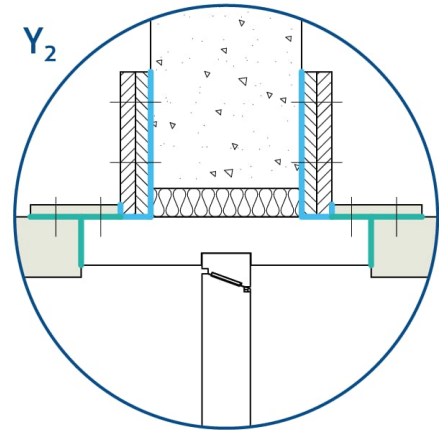
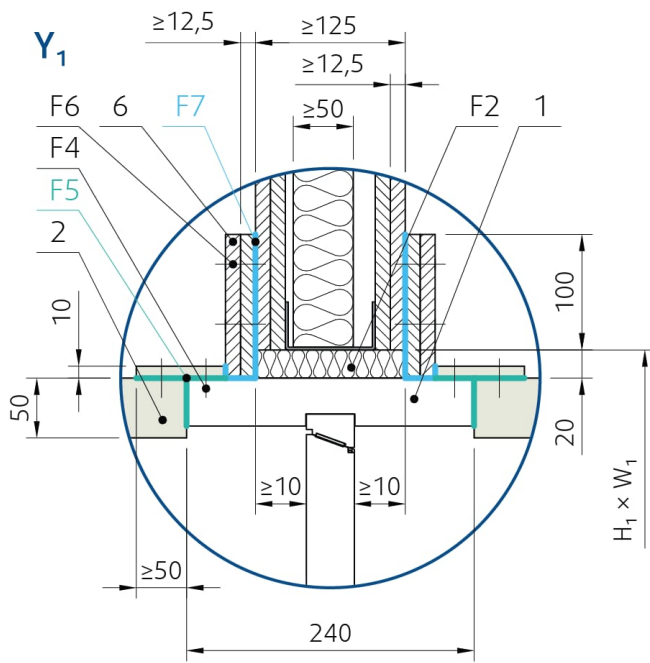
According to the EN 1366-2 standard, the minimum distance from the wall or ceiling to the damper body is 75 mm. For multiple crossings through a fire resistive wall, the minimum distance between two damper bodies is 200 mm. This applies for distances between the damper body and a nearby foreign object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

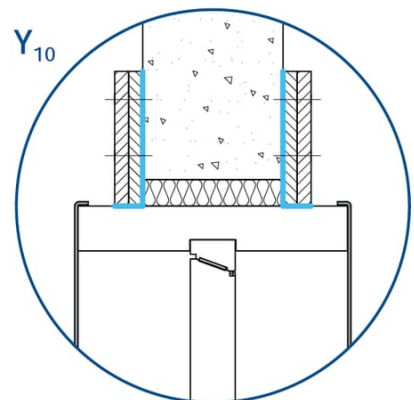
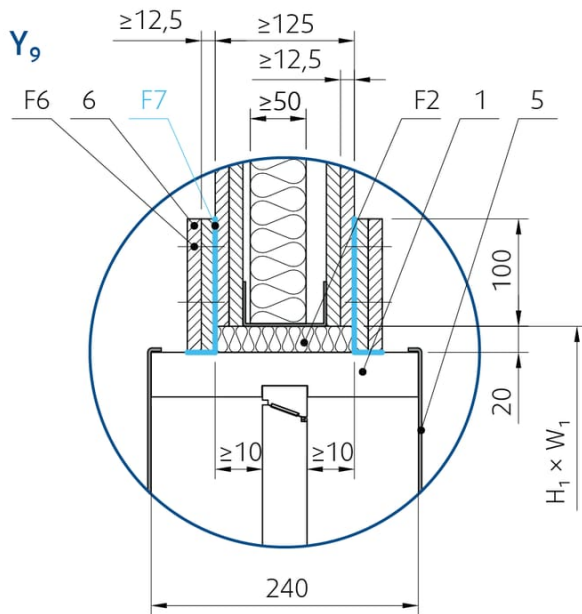
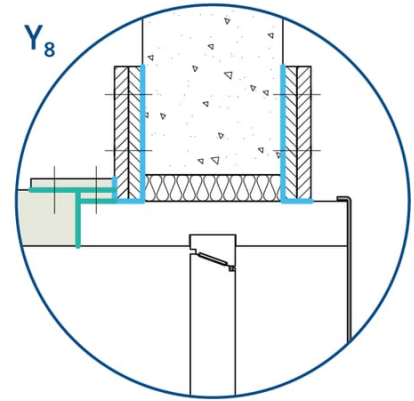
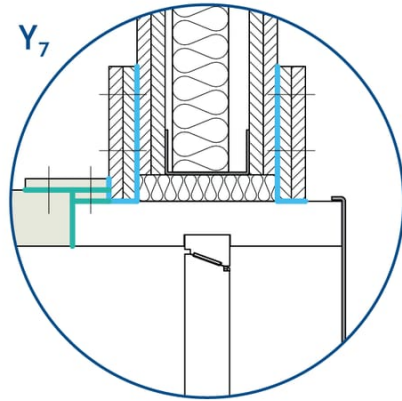
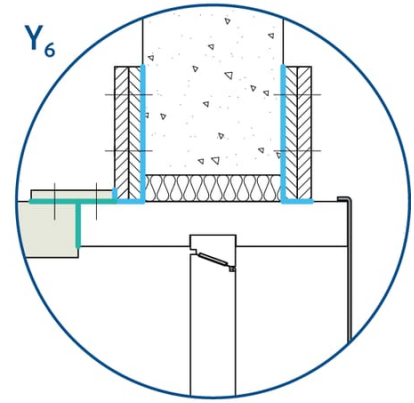
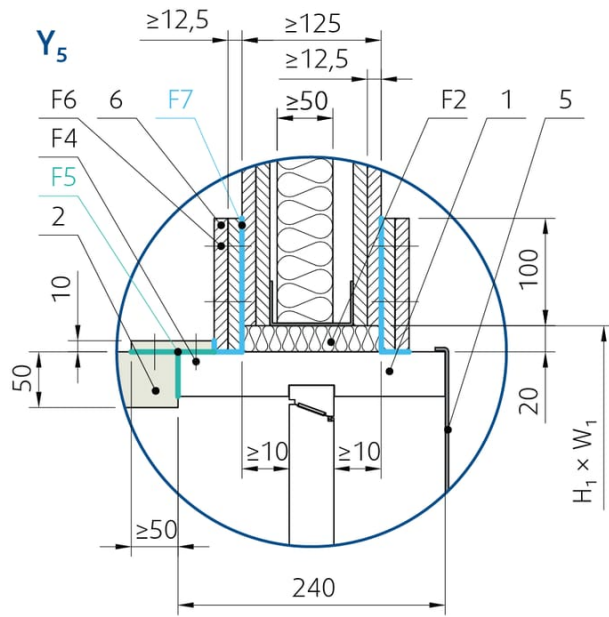
 S-BM2 125 × 325 ... 1000 × 1225 2 Dry	EI 120 ($v_{ew} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAMulti	a)  ≥ 125	b)  ≥ 125	
	EI 90 ($v_{ew} - i \leftrightarrow o$) S1000C _{mod} MAMulti	a)  ≥ 125	b)  ≥ 125	

Notes:

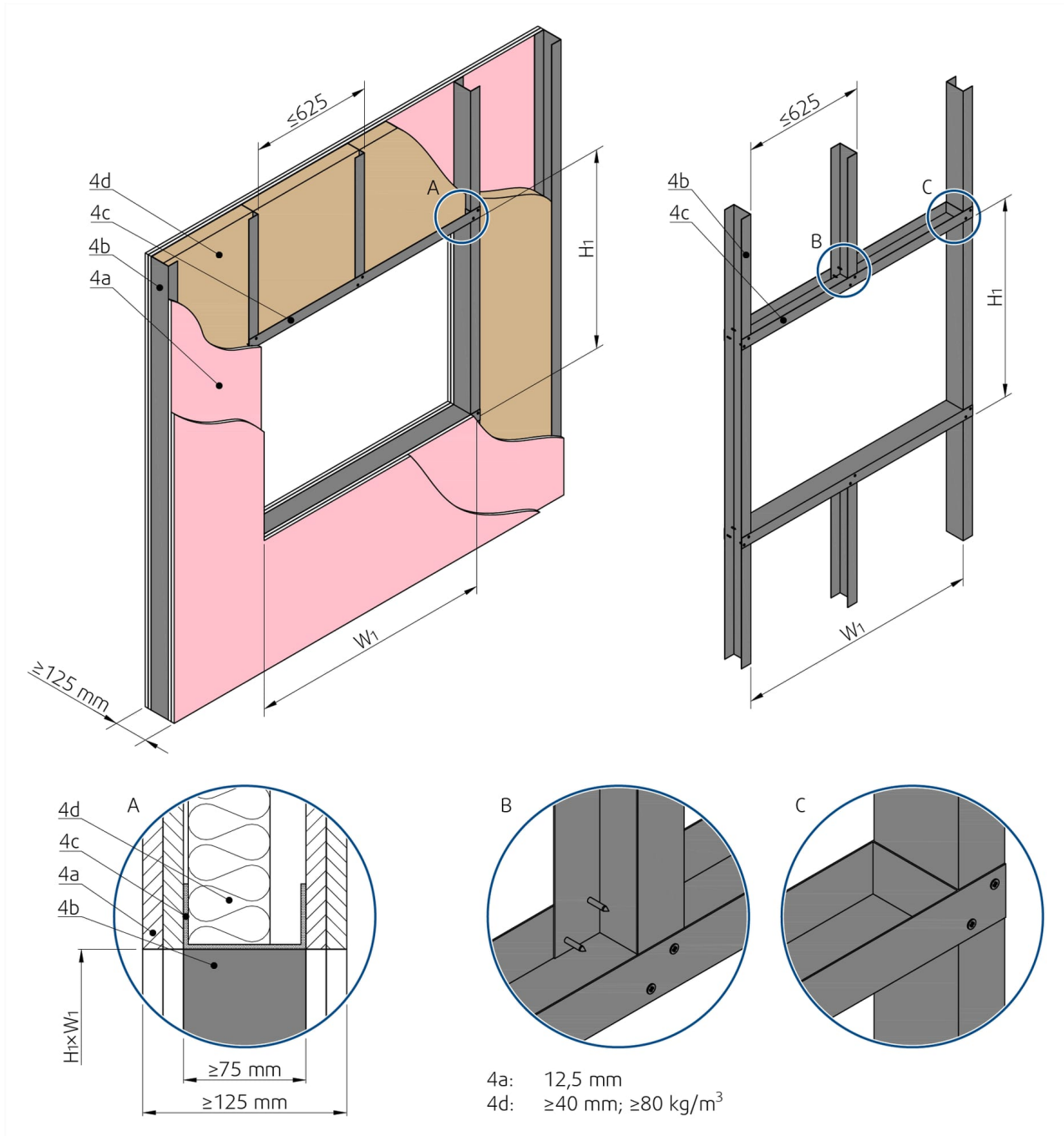
- a) - Flexible (plasterboard) wall
- b) - Concrete/masonry/cellular concrete (rigid) wall
- v_{ew} - Vertical wall placement

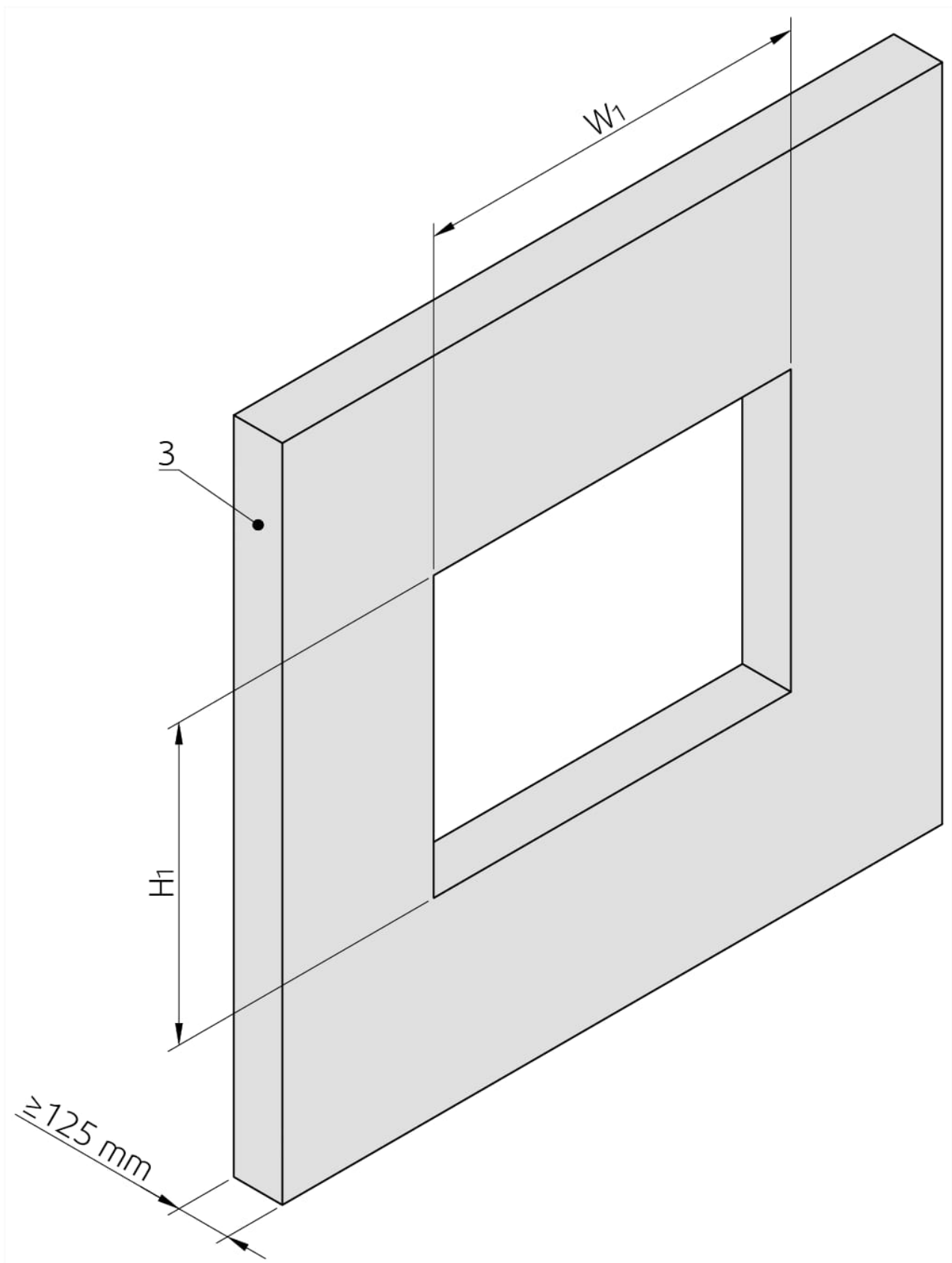




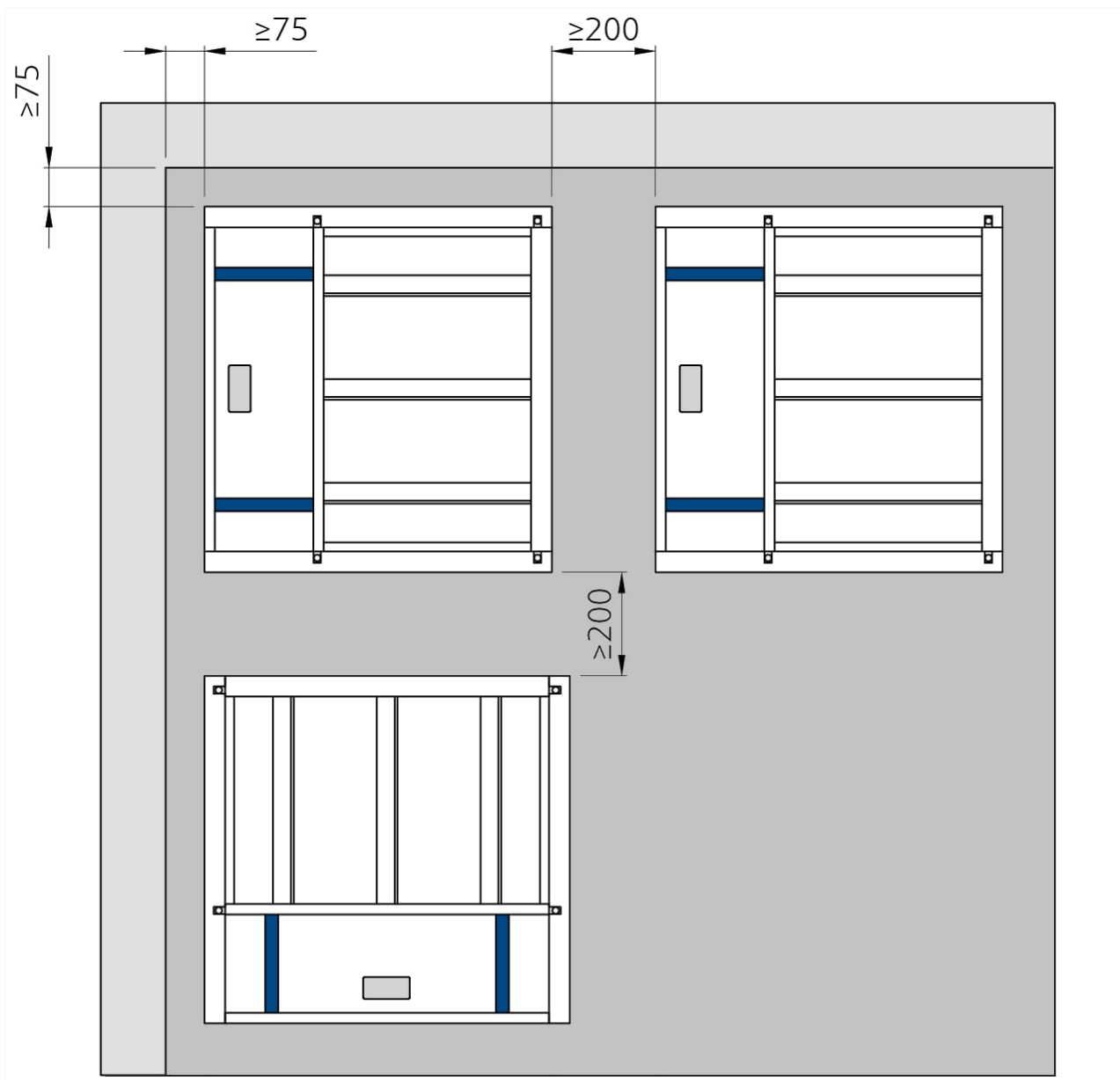


Opening and wall/ceiling preparations





Damper minimum distances



Legend for Installation 2. DRY

- 1** - Smoke control damper S-BM2
- 2** - Connected ductwork made of Promatect-L500 boards (min. 500 kg/m³, Promat)
- 3** - Concrete/masonry/cellular concrete wall or ceiling
- 4** - Flexible (plasterboard) wall
- 4a** - 2 layers of plasterboard fireproof plate type F, EN 520
- 4b** - Vertical CW – profiles
- 4c** - Horizontal UW – profiles
- 4d** - Mineral wool; thickness/cubic density see picture.
- 5** - Grille
- 6** - Gypsum boards
- F2** - Mineral wool filling (min. 100 kg/m³)
- F4** - Nails or pins per ductwork manufacturer instructions
- F5** - Fire resistive coating Promat K84 (Promat)
- F6** - Screws for fixing gypsum boards to: flexible wall (TN 3,5×35)/rigid wall (HUS-CR 8×65)
- F7** - Putty for gypsum boards, e.g. Rigips Super
- Y** - Cutting plane

Installation 3. SOFT - in the Wall

Using Mineral Wool filing

1. The supporting construction opening must be prepared as shown on picture. Opening surfaces must be even and cleaned off. The flexible wall opening must be reinforced as per the standards for plasterboard walls. The opening dimensions are driven by the nominal dimensions of the damper with added clearance. The opening will be with the dimensions of W1 and H1.

2. Insert the damper as per the "Manipulation of S-BM2" section into the middle of the opening so that the damper blade is in the wall. For damper widths greater than 600 mm, it is recommended to use a duct support inside the damper during installation to avoid any damage caused to the damper housing by the weight of the filling.

For battery assembly:

- Add the first layer of filling at the bottom of the opening - can be very thin.
- Place the damper(s) on top while fixing them to the sides with screws (F11).
- Stack the individual dampers on top of each other with caulk (F5) between them and fix together with screws (F12) and to the wall with screws (F11) as depicted in fixing layout.

3. Fill in the area between the wall and the damper with mineral wool (F2) with a density of at least 100 kg/m³ thoroughly but in such a way that will not deform the duct/damper.













4. All the gaps around the filling and ceiling surface area at least 40 mm from the damper body must be covered by fire resistive coating (F10).

5. Damper connections to duct and connection with overlap boards must be filled with coating (F5).

6. Check the functionality of the damper.

Installation Distances

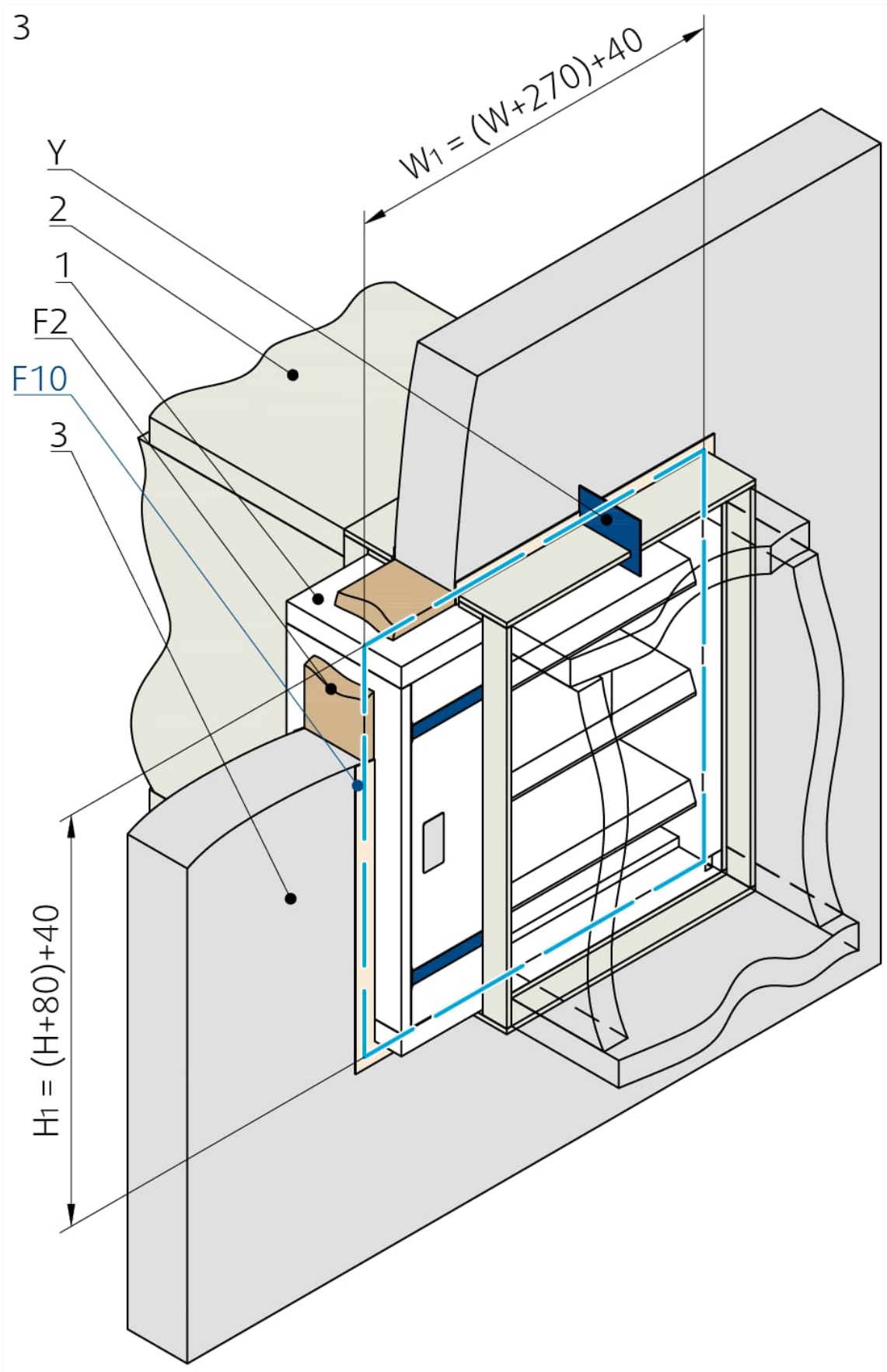
According to the EN 1366-2 standard, the minimum distance from the wall or ceiling to the damper body is 75 mm. For multiple crossings through a fire resistive wall, the minimum distance between two damper bodies is 200 mm. This applies for distances between the damper body and a nearby foreign object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

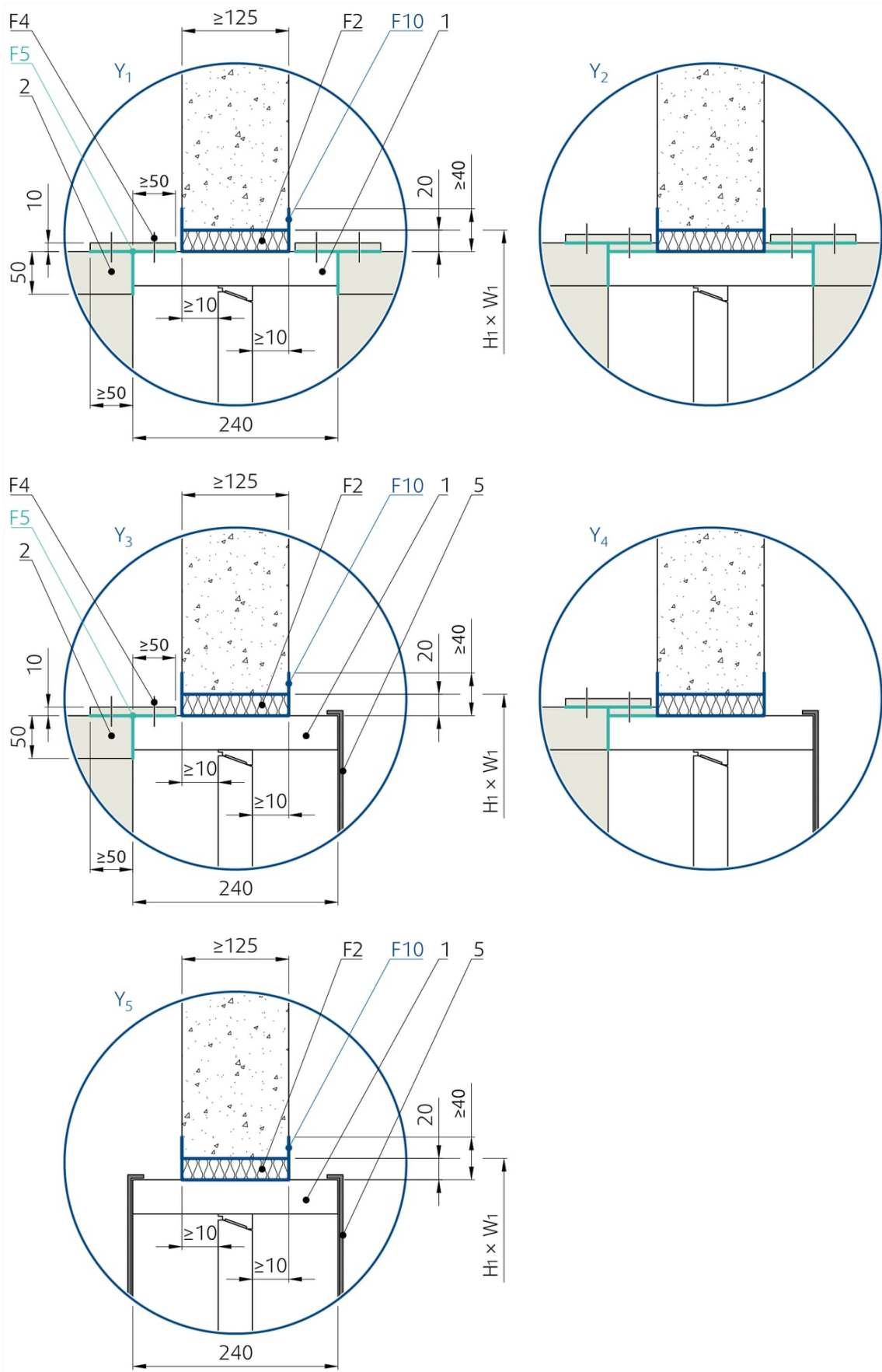
 3 Soft	 S-BM2 125 × 325 ... 1000 × 1225	EI 90 ($v_{ew} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAmulti	b)  ≥ 125	 
		EI 90 ($v_{ew} - i \leftrightarrow o$) S1000C _{mod} MAmulti	b)  ≥ 125	 
	 S-BM2 W > 1000, H > 1225 ... 2080 × 2530	EI 90 ($v_{ew} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAmulti	b)  ≥ 125	 

Notes:

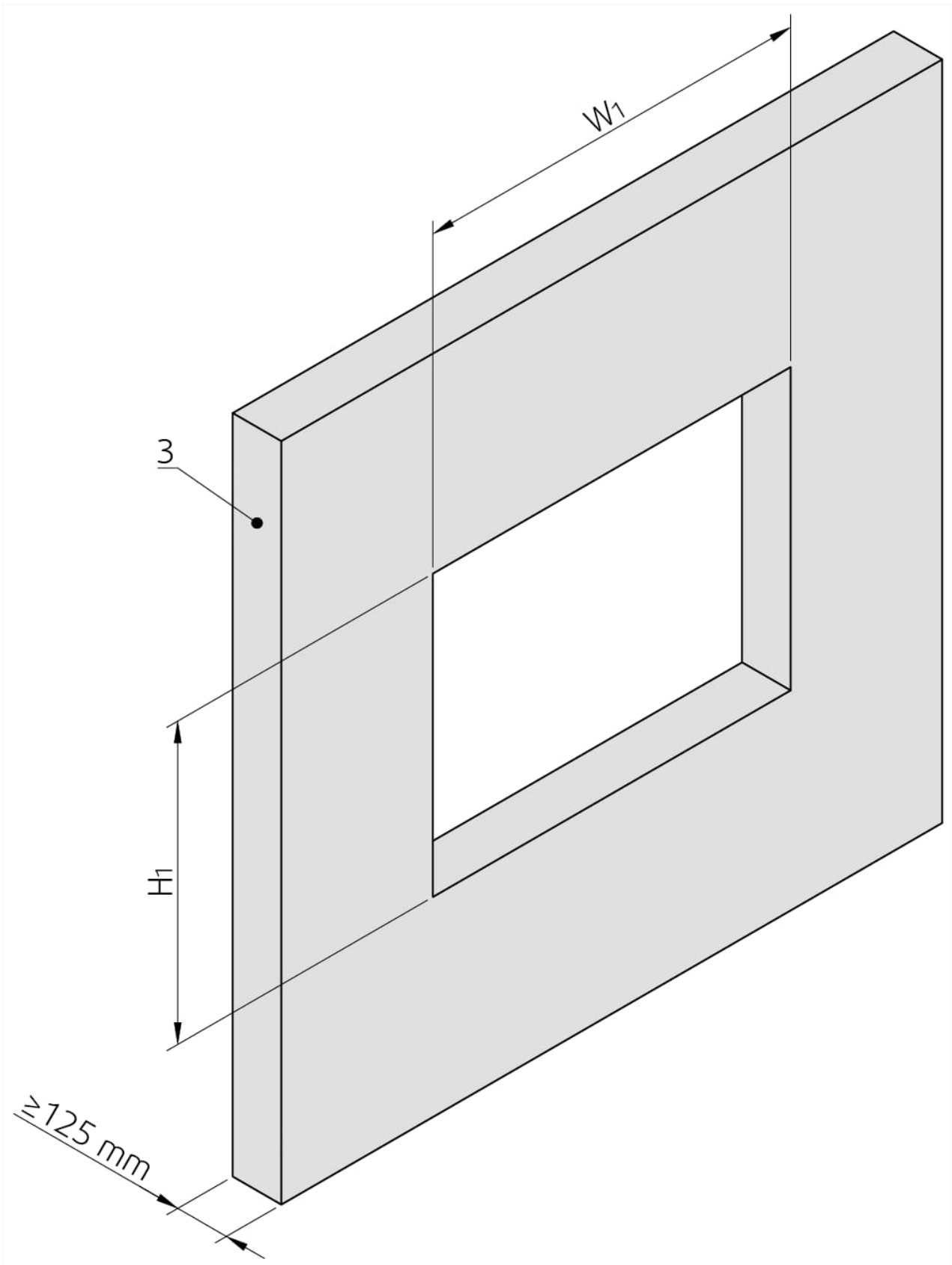
b) - Concrete/masonry/cellular concrete (rigid) wall

v_{ew} - Vertical wall placement

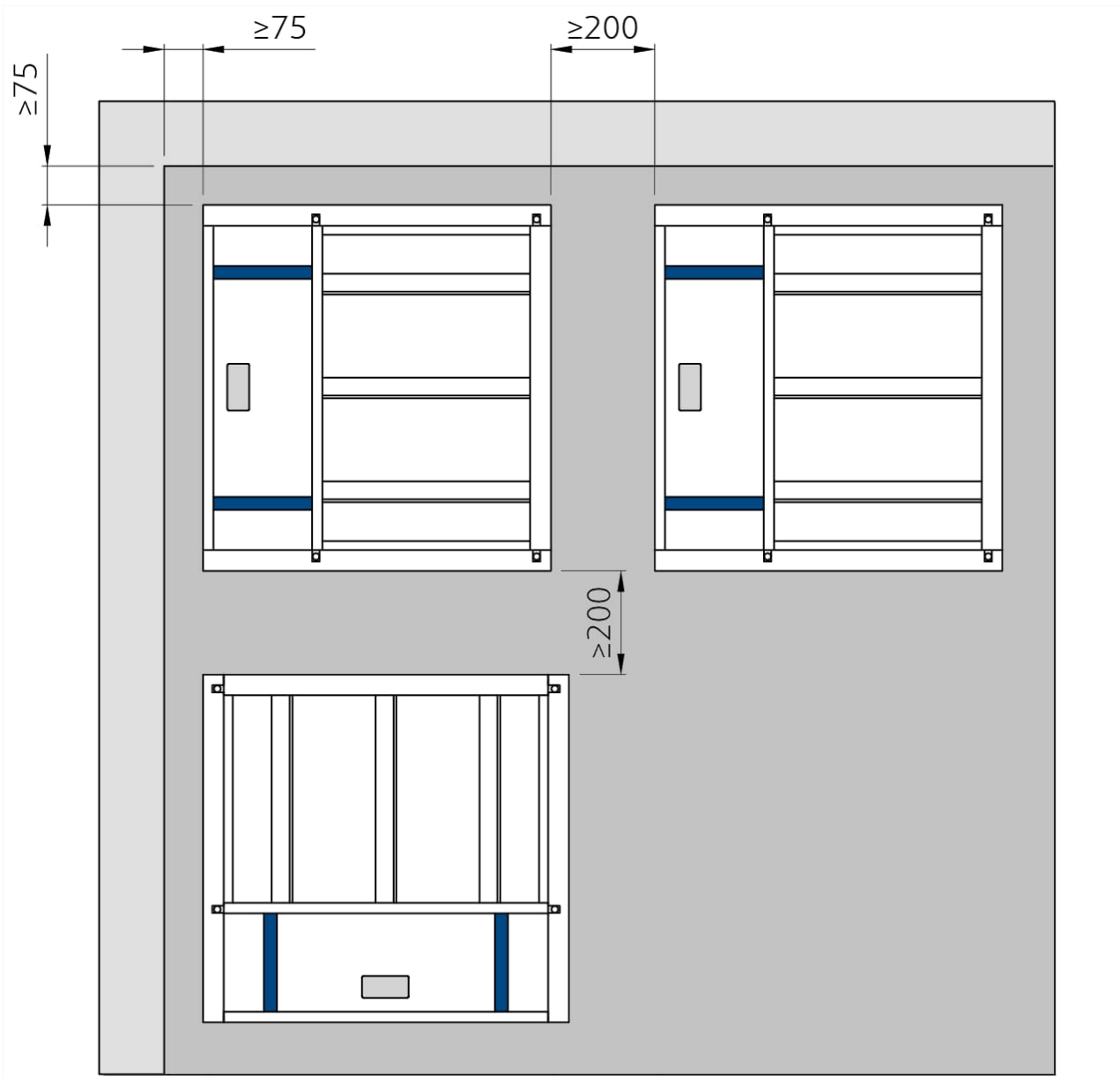




Opening and wall/ceiling preparations



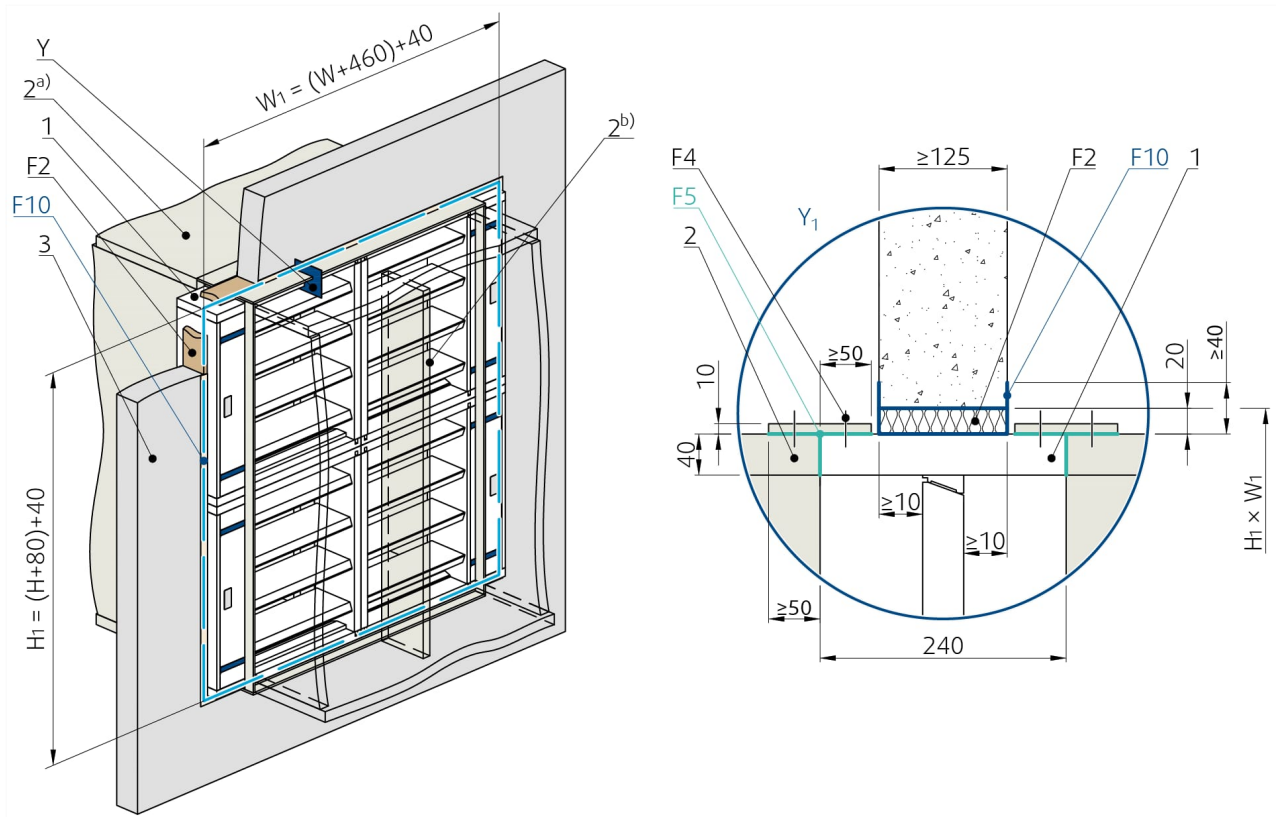
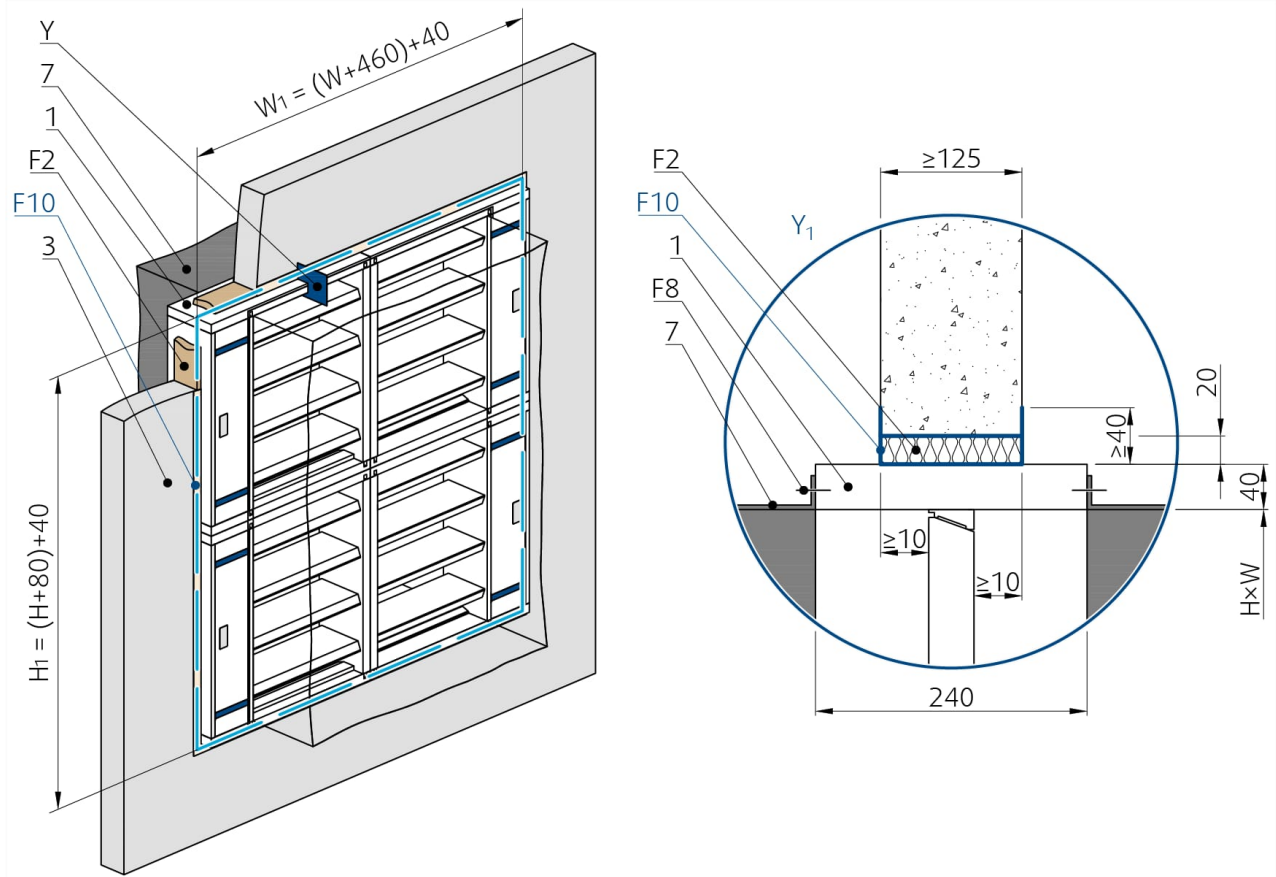
Damper minimum distances

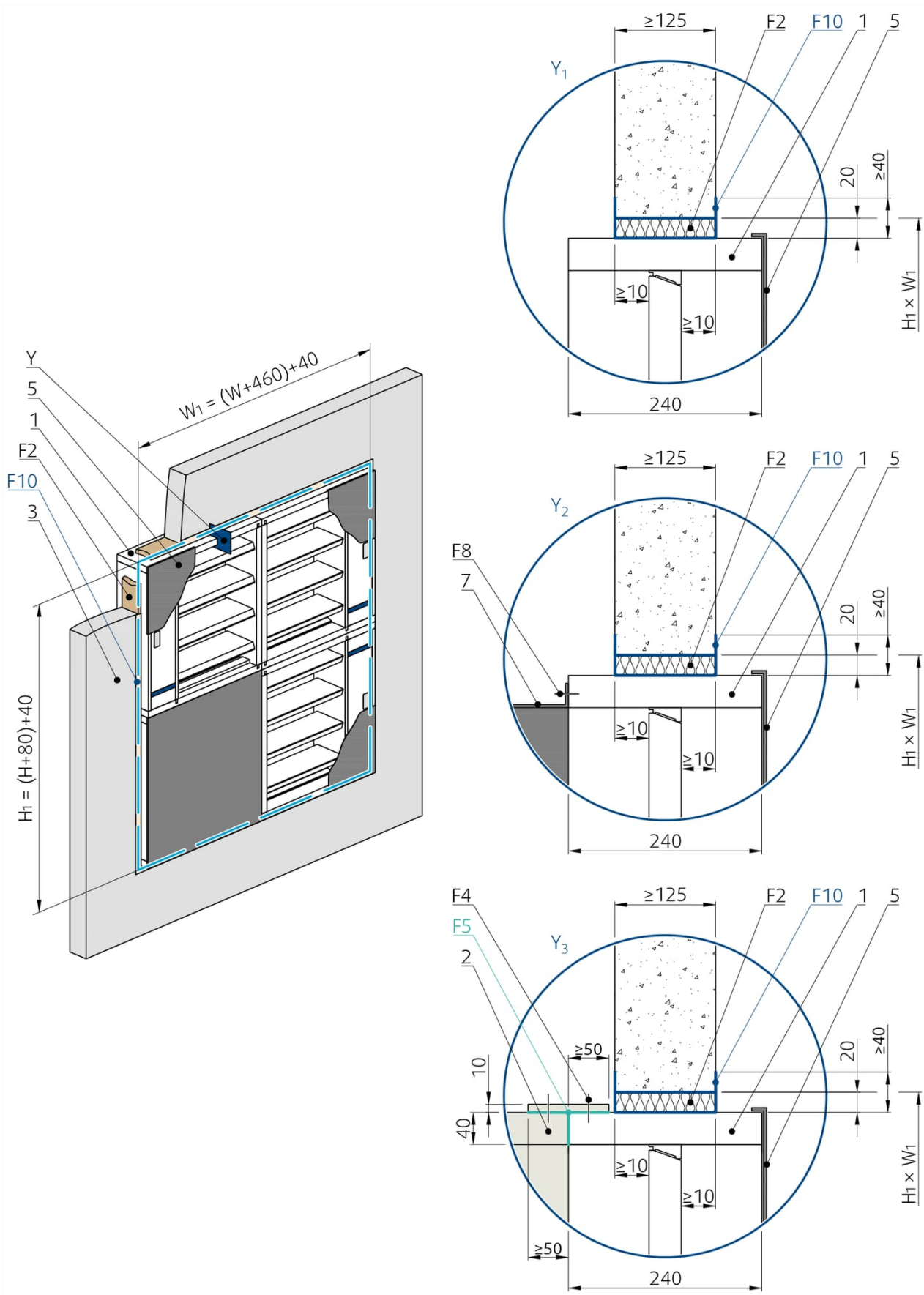


Legend for installation 3. SOFT - in the Wall

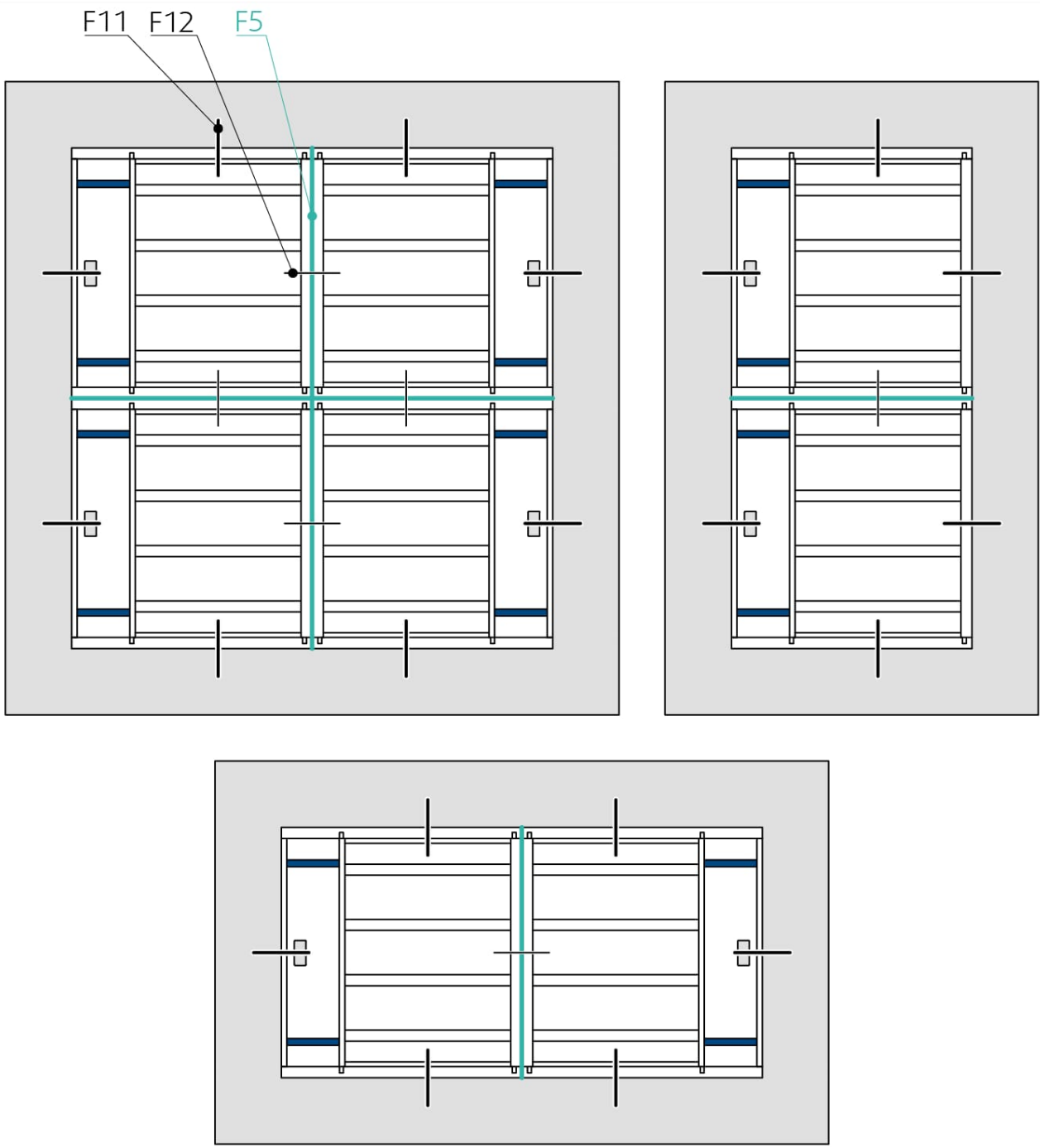
- 1** - Smoke control damper S-BM2
- 2** - Connected ductwork made of Promatect-L500 boards (min. 500 kg/m³, Promat)
- 3** - Concrete/masonry/cellular concrete wall or ceiling
- 4** - Flexible (plasterboard) wall
- 4a** - 2 layers of plasterboard fireproof plate type F, EN 520
- 4b** - Vertical CW – profiles
- 4c** - Horizontal UW – profiles
- 4d** - Mineral wool; thickness/cubic density see picture.
- 5** - Grille
- 7** - Connected sheet metal ductwork tested according to EN 1366-8 or EN 1366-9
- F2** - Mineral wool filling (min. 100 kg/m³)
- F4** - Nails or pins per ductwork manufacturer instructions
- F5** - Fire resistive coating Promat K84 (Promat)
- F8** - Screw M8×35, maximum fixing torque is 8 Nm ...12 Nm
- F10** - Fireproof coating HILTI CSF-CT min. 2 mm
- F11** - Screw M5 × ≥100 mm to concrete/Screw M4,5 × ≥120 mm to cellular concrete
- F12** - Screw M5 × 60-70 mm (e.g. DIN 7982)
- a)** - If connected to a duct, please follow the instructions duct manufacturer (maximum duct size width × height)
- b)** - Internal stiffener is driven by the duct manufacturer instructions (Make sure to add where needed)
- Y** - Cutting plane

Battery Installation, Grille type M0, M1

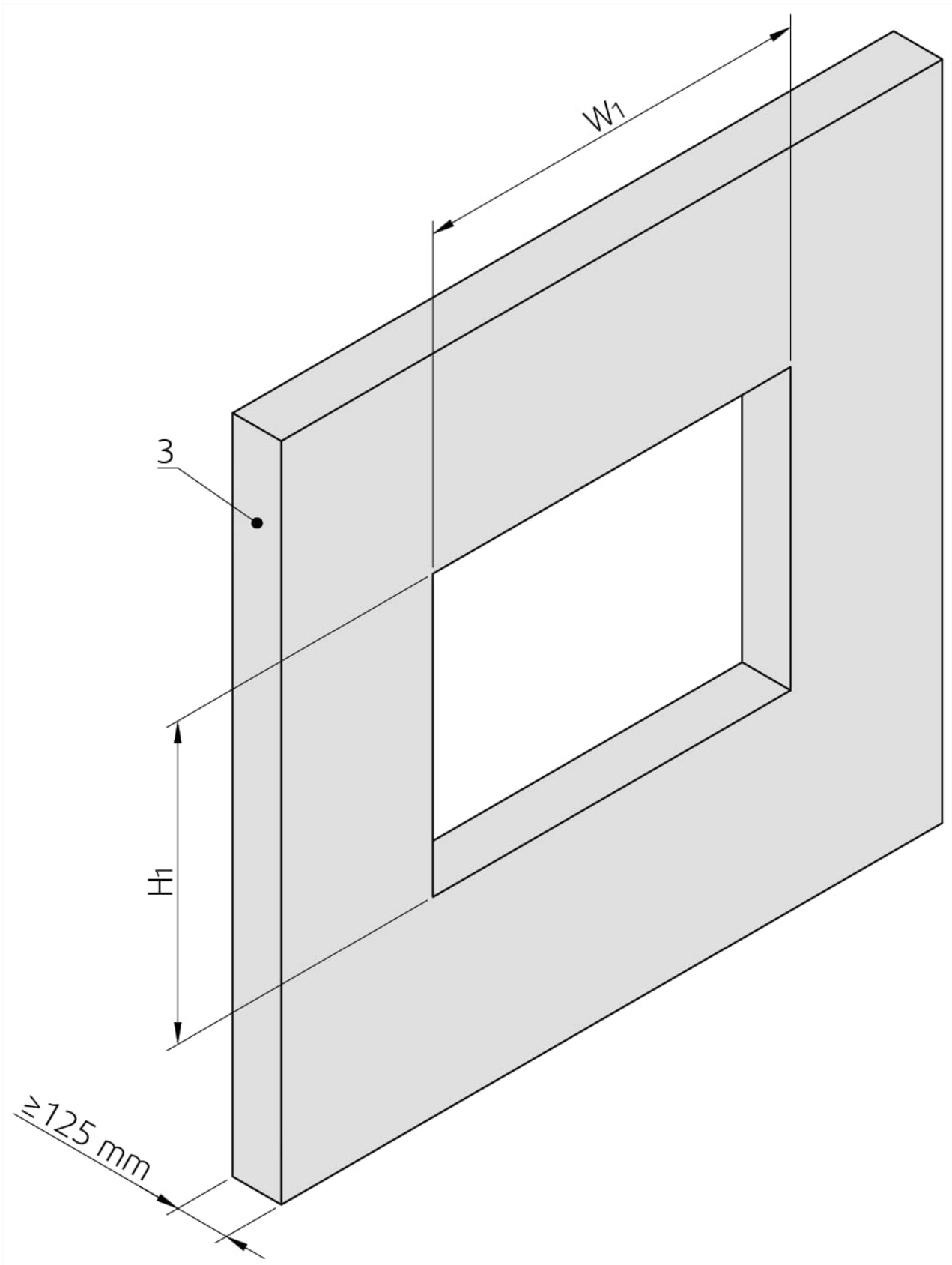




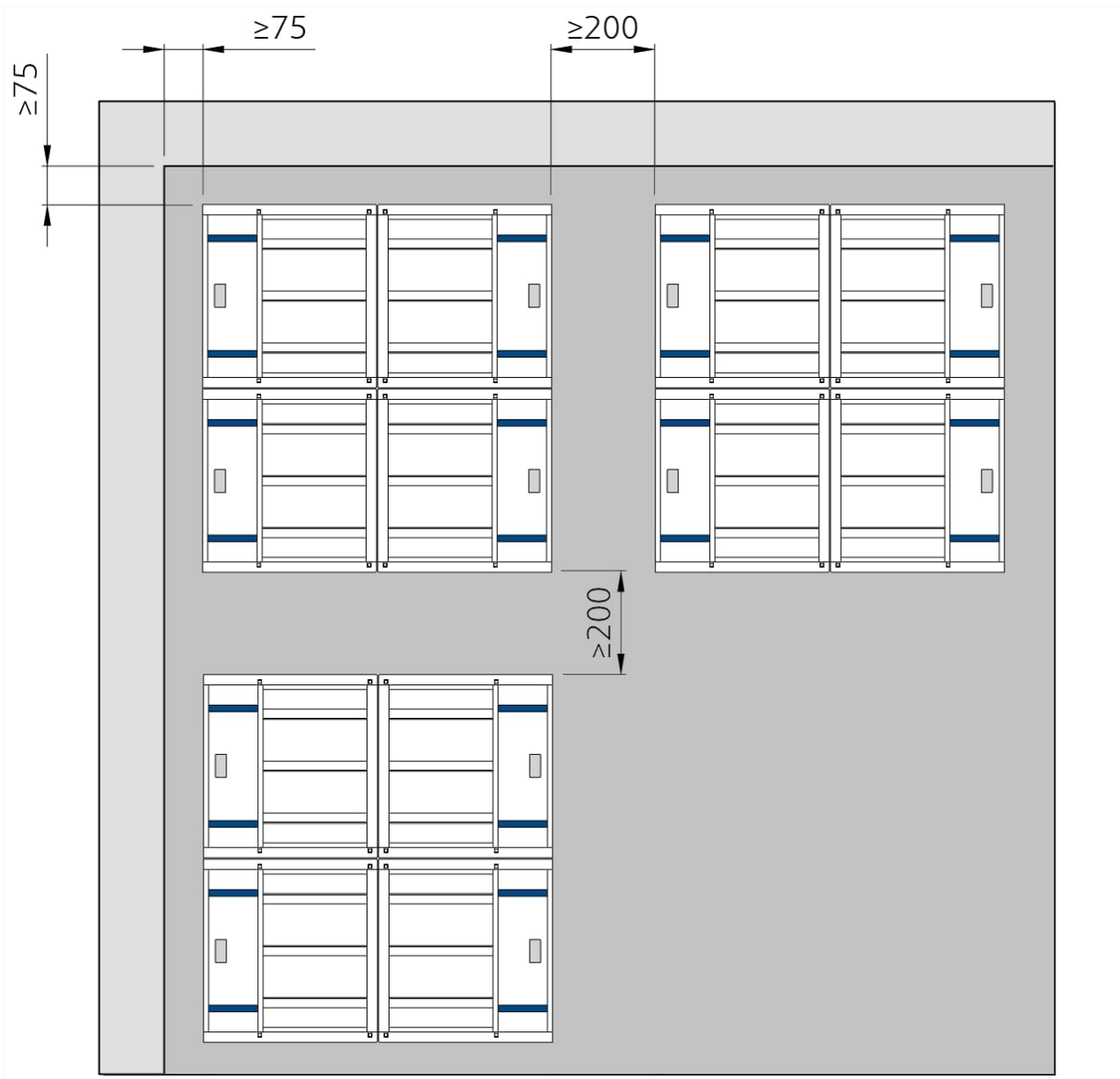
Fixing layout for battery installations



Opening and wall/ceiling preparations



Damper minimum distances



Legend for installation 3. SOFT - in the Wall assembled in battery

- 1** - Smoke control damper S-BM2
- 2** - Connected ductwork made of Promatect-L500 boards (min. 500 kg/m³, Promat)
- 3** - Concrete/masonry/cellular concrete wall or ceiling
- 4** - Flexible (plasterboard) wall
- 4a** - 2 layers of plasterboard fireproof plate type F, EN 520
- 4b** - Vertical CW – profiles
- 4c** - Horizontal UW – profiles
- 4d** - Mineral wool; thickness/cubic density see picture.
- 5** - Grille
- 7** - Connected sheet metal ductwork tested according to EN 1366-8 or EN 1366-9
- F2** - Mineral wool filling (min. 100 kg/m³)
- F4** - Nails or pins per ductwork manufacturer instructions
- F5** - Fire resistive coating Promat K84 (Promat)
- F8** - Screw M8×35, maximum fixing torque is 8 Nm ...12 Nm
- F10** - Fireproof coating HILTI CSF-CT min. 2 mm
- F11** - Screw M5 × ≥100 mm to concrete/Screw M4,5 × ≥120 mm to cellular concrete
- F12** - Screw M5 × 60-70 mm (e.g. DIN 7982)
- a)** - If connected to a duct, please follow the instructions duct manufacturer (maximum duct size width × height)
- b)** - Internal stiffener is driven by the duct manufacturer instructions (Make sure to add where needed)
- Y** - Cutting plane



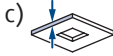
Installation 3. SOFT - in the Ceiling

Using Mineral Wool filing

1. The supporting construction opening must be prepared as shown on picture. Opening surfaces must be even and cleaned off. The opening dimensions are driven by the nominal dimensions of the damper with added clearance. The opening will be with the dimensions of W1 and H1.
2. Mount the hanger plates (A2) on the damper body only on the side which will be flush with the upper ceiling surface.
3. Insert the damper into the middle of the opening so that the damper blade is in the ceiling. On the previously mounted hanger plates and if there on the prepared connecting duct.
4. Place the hanger plates (A2) flush with the damper body and the supporting construction from below.
5. From both sides of the supporting construction, fix the hanger plates the supporting construction and to the damper with at least 6 screws per each hanger.
6. Fill in the area between the ceiling and the damper with mineral wool (F2) with a density of at least 100 kg/m³ thoroughly but in such a way that will not deform the body of the damper.
7. All the gaps around the filling and ceiling surface area at least 100 mm from the damper body must be covered by fire resistive coating (F10).
8. Damper connections to duct and connection with overlap boards must be filled with coating (F5).
9. Check the functionality of the damper.

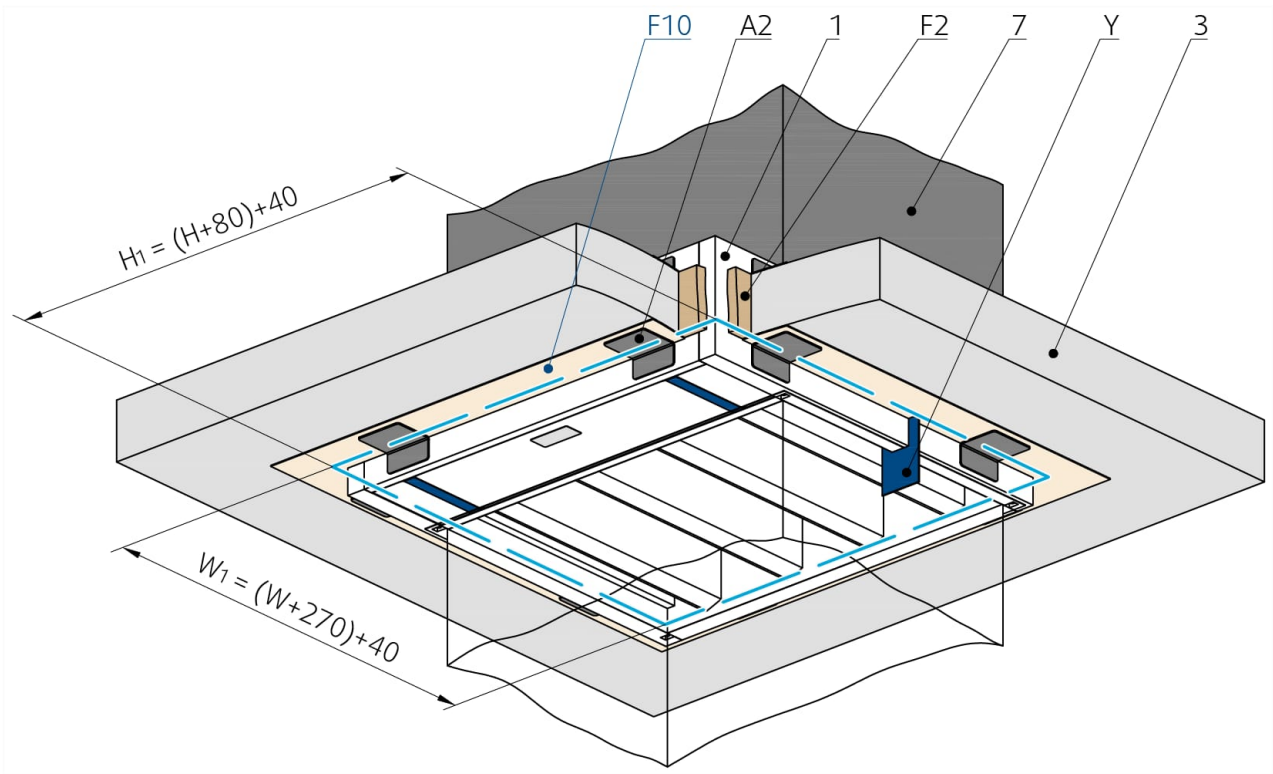
Installation Distances

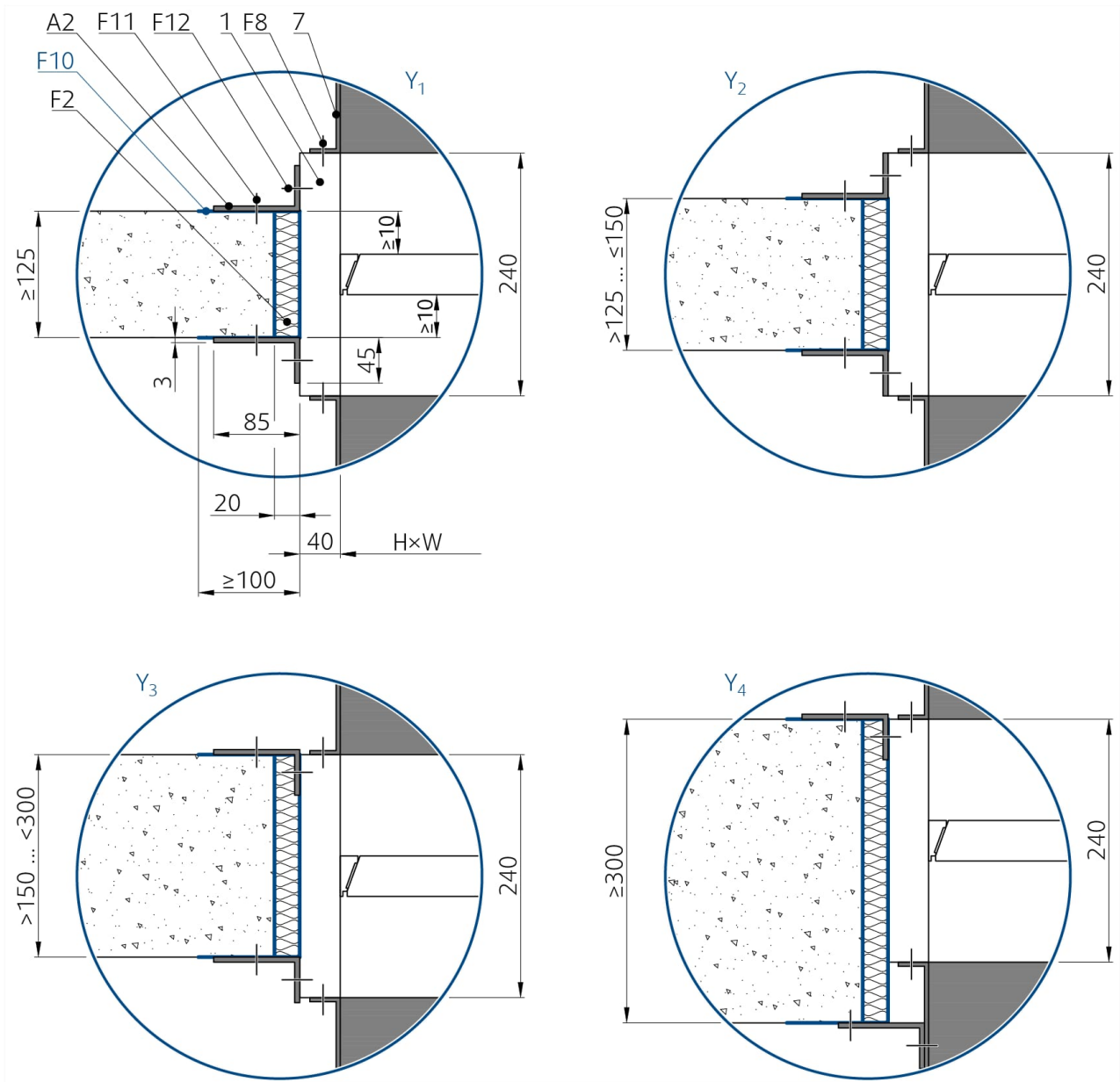
According to the EN 1366-2 standard, the minimum distance from the wall or ceiling to the damper body is 75 mm. For multiple crossings through a fire resistive wall, the minimum distance between two damper bodies is 200 mm. This applies for distances between the damper body and a nearby foreign object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

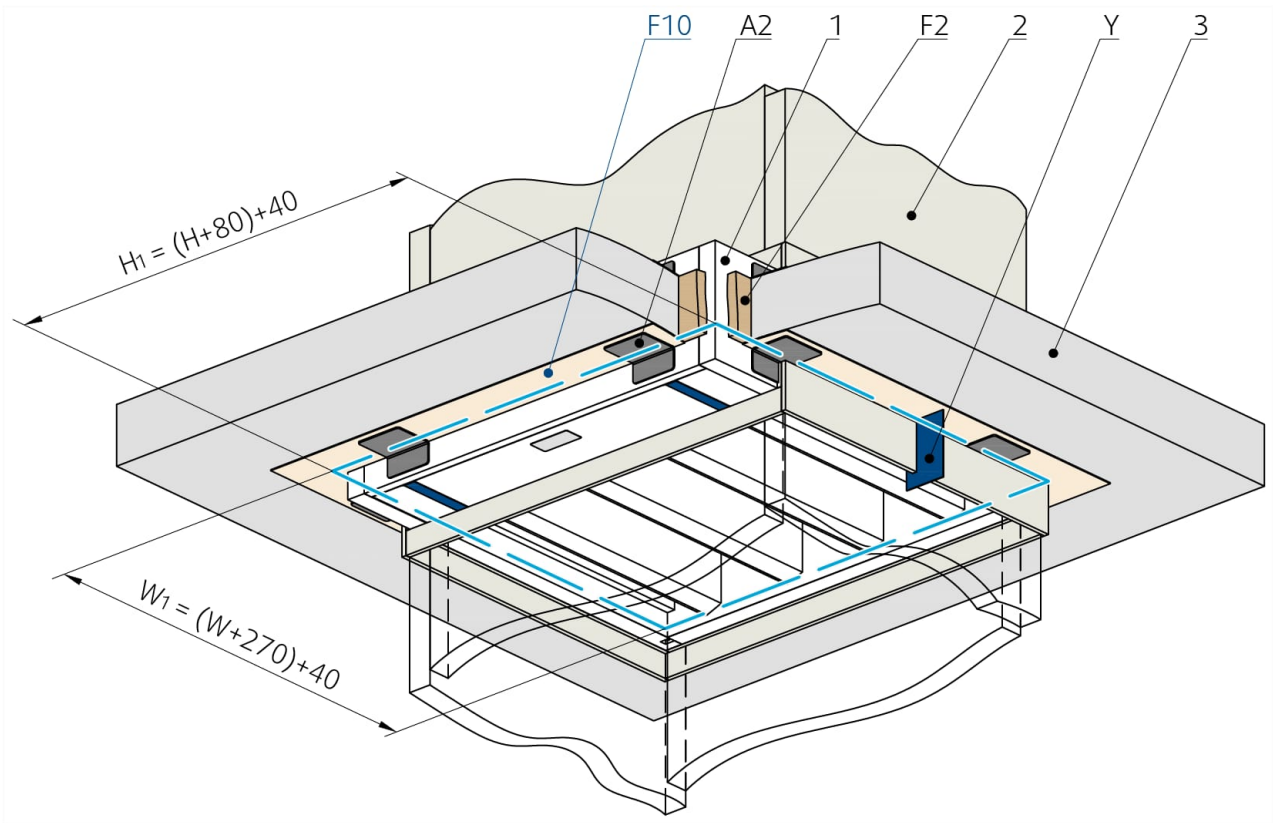
 3 Soft	S-BM2  125 × 325 ... 1000 × 1225	EI 120 ($h_{ow} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAMulti	 ≥ 125 $\geq 620 \text{ (kg/m}^3\text{)}$
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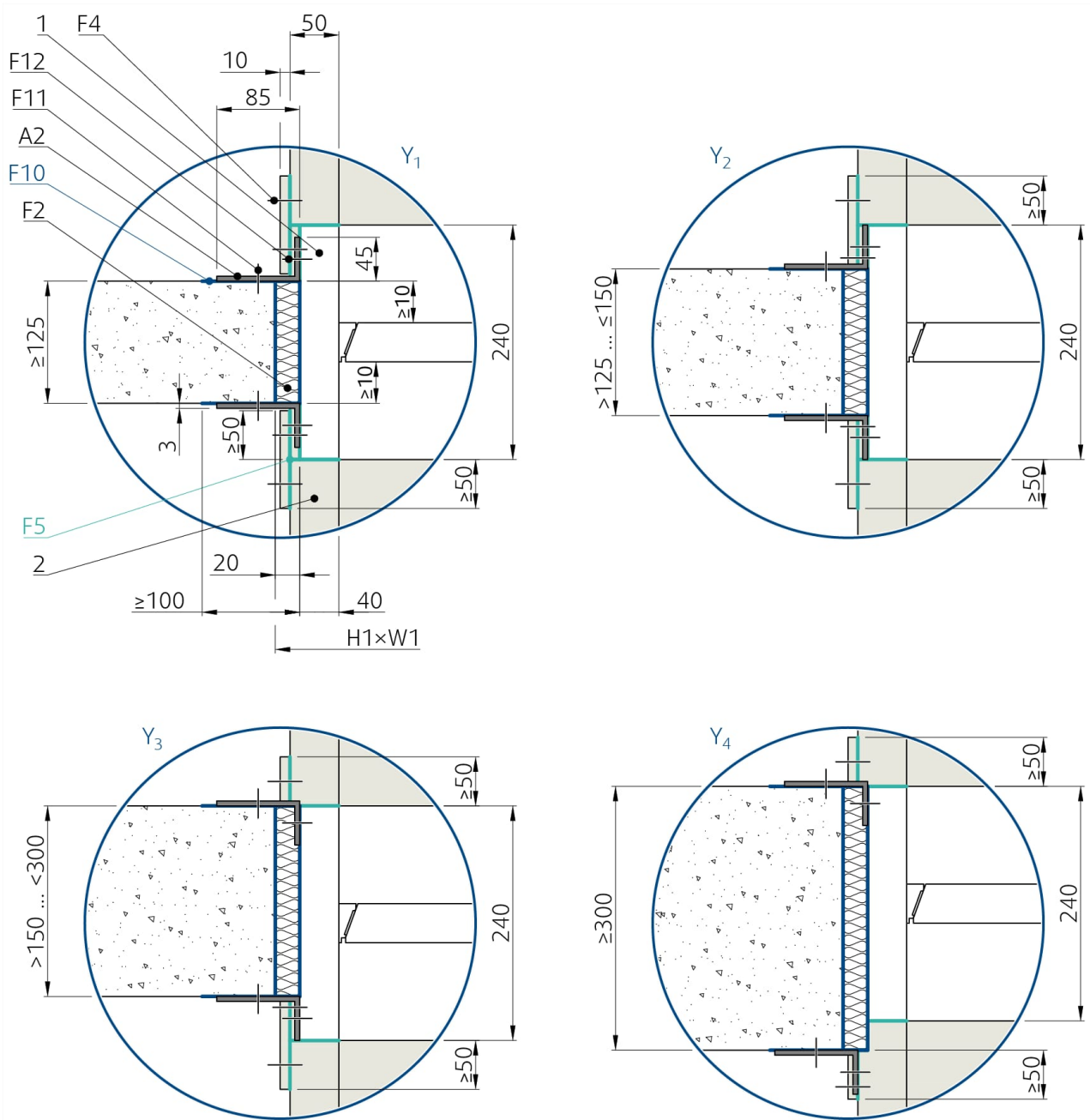
Notes:

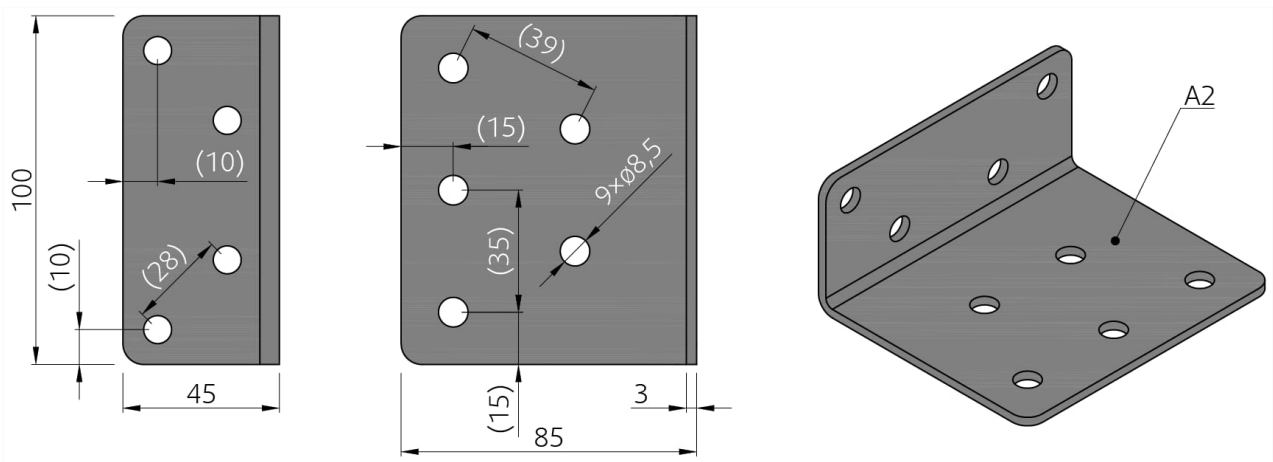
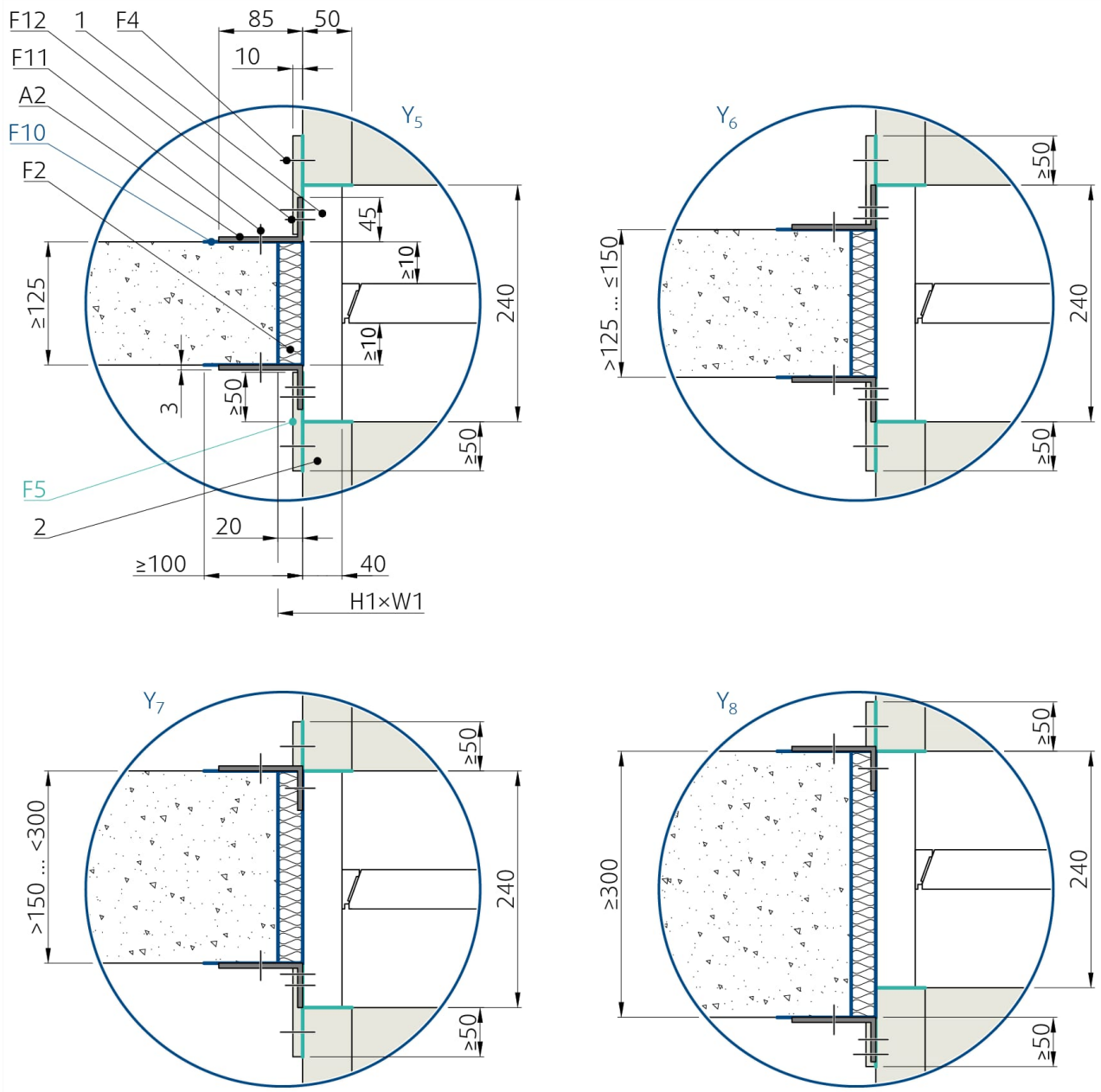
- c) - Concrete/cellular concrete (rigid) floor/ceiling
- h_{ow} - Horizontal floor/ceiling placement



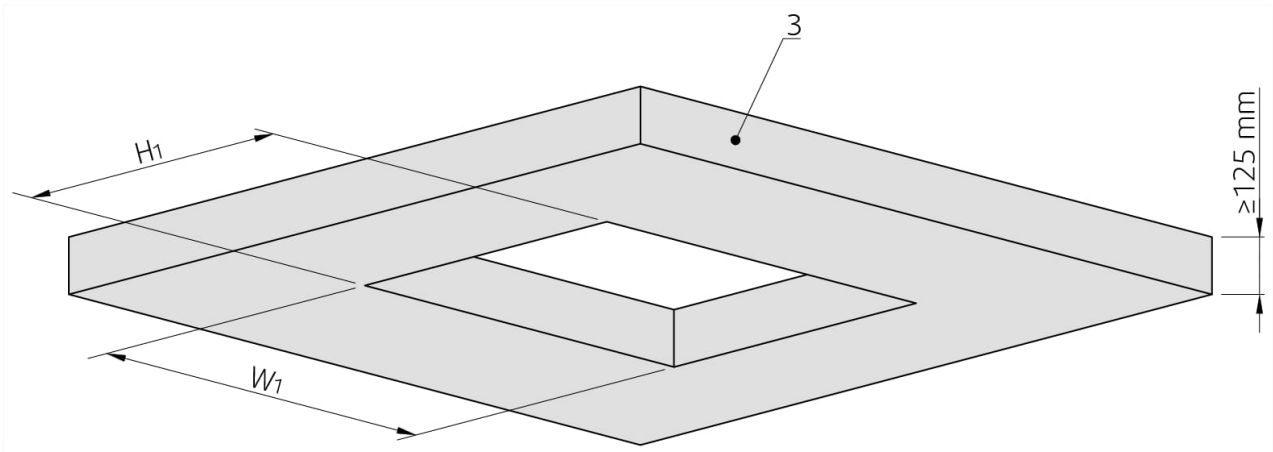




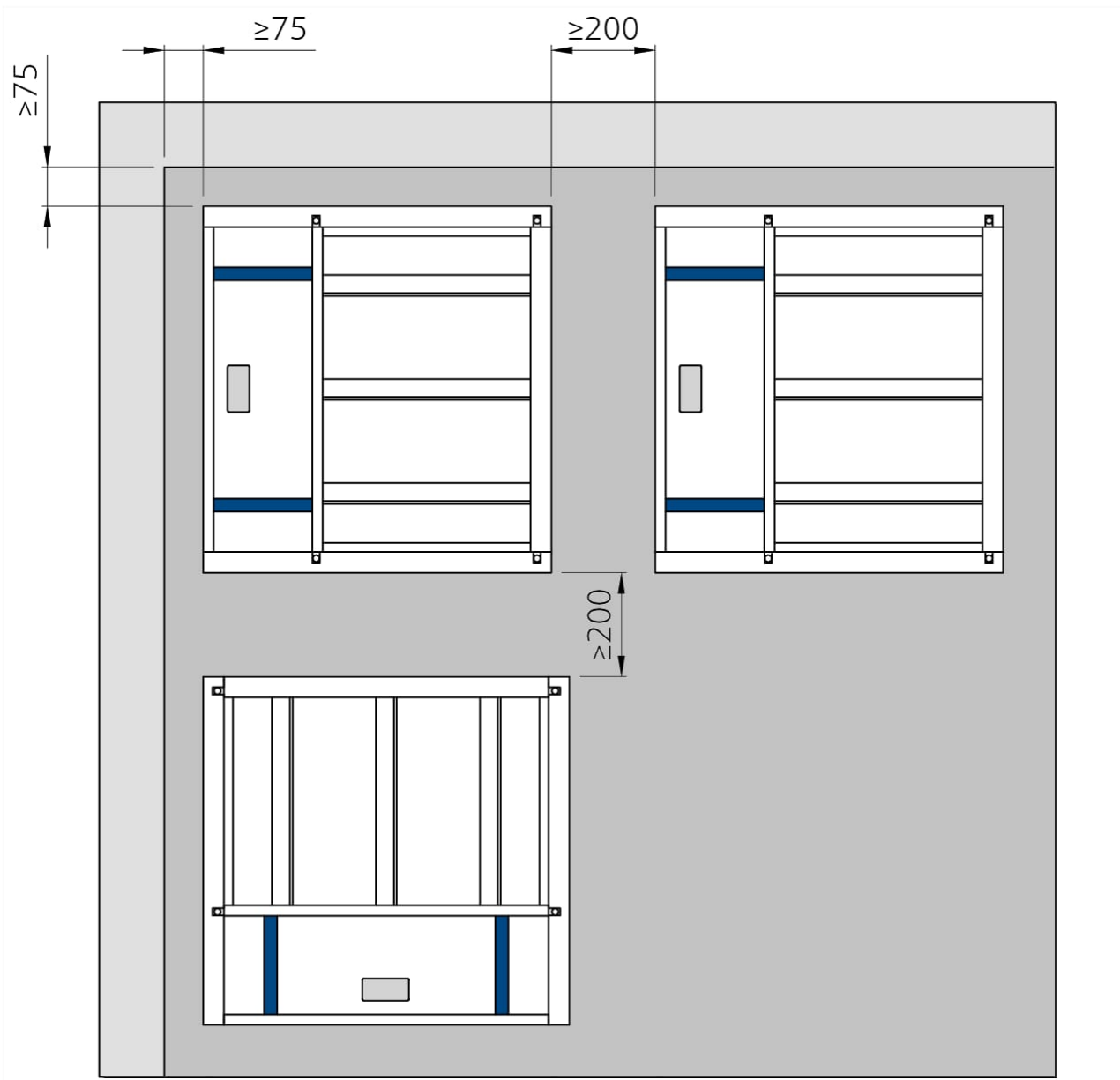




Opening and wall/ceiling preparations



Damper minimum distances



Legend for installation 3. SOFT - in the Ceiling

- 1** - Smoke control damper S-BM2
- 2** - Connected ductwork made of Promatect-L500 boards (min. 500 kg/m³, Promat)
- 3** - Concrete/masonry/cellular concrete wall or ceiling
- 4** - Flexible (plasterboard) wall
- 4a** - 2 layers of plasterboard fireproof plate type F, EN 520
- 4b** - Vertical CW – profiles
- 4c** - Horizontal UW – profiles
- 4d** - Mineral wool; thickness/cubic density see picture.
- 5** - Grille
- 7** - Connected sheet metal ductwork tested according to EN 1366-8 or EN 1366-9
- A2** - Hanger accessory H1-S-BM2 - can be made on site using 3 mm sheet metal plate.
 - For sizes W<550 & H<425 use 1 piece on each damper edge. Total 4 pcs for each side of wall.
 - For sizes bigger than W=550 & H=425 use 2 pieces on each damper edge. Total 8 pcs for each side of wall.
- F2** - Mineral wool filling (min. 100 kg/m³)
- F4** - Nails or pins per ductwork manufacturer instructions
- F5** - Fire resistive coating Promat K84 (Promat)
- F8** - Screw M8×35, maximum fixing torque is 8 Nm ...12 Nm
- F10** - Fireproof coating HILTI CSF-CT min. 2 mm
- F11** - Screw M5 × ≥100 mm to concrete/Screw M4,5 × ≥120 mm to cellular concrete
- F12** - Screw M5 × 60-70 mm (e.g. DIN 7982)
 - a)** - If connected to a duct, please follow the instructions duct manufacturer (maximum duct size width × height)
 - b)** - Internal stiffener is driven by the duct manufacturer instructions (Make sure to add where needed)
- Y** - Cutting plane

Installation 3F. Fit

Wall build around the damper, filled with mineral wool

With this installation the wall is closed off by gypsum board layers around the damper after the insertion of the damper.

1. The opening dimensions are driven by the nominal dimensions of the damper with added clearance. The opening will be with the dimensions of W1 and H1.

2. Mount the bottom horizontal metal profile (4c) 20 mm below the destined bottom damper edge.

3. Place mineral wool segment (F2) with height 20 mm on one vertical profile and the bottom profile.

4. Place the damper as per the "Manipulation of S-BM2" section onto the sides gently pressing the mineral wool segments.

Make sure the damper blades in closed position will be situated above the horizontal metal profile.

5. Fix the damper with screws (F9) through the metal sides fitted with mineral wool segments.

6. Fill in the area between the metal profile (4b) on the remaining side with mineral wool segment (F2).

7. Place a mineral wool segment (F2) on top of the damper and cover it with horizontal metal profile (4c).

8. Fix the profile with screws (F9) through the mineral wool segment to the damper and then on both sides to the wall vertical profiles.

9. Cover both sides with 2 layers of gypsum boards (4a) on each side without a gap between the damper and the boards.

10. Damper connections to duct and connection with overlap boards must be filled with coating (F5).







11. Check the functionality of the damper.

Installation Distances

According to the EN 1366-2 standard, the minimum distance from the wall or ceiling to the damper body is 75 mm.

For multiple crossings through a fire resistive wall, the minimum distance between two damper bodies is 200 mm.

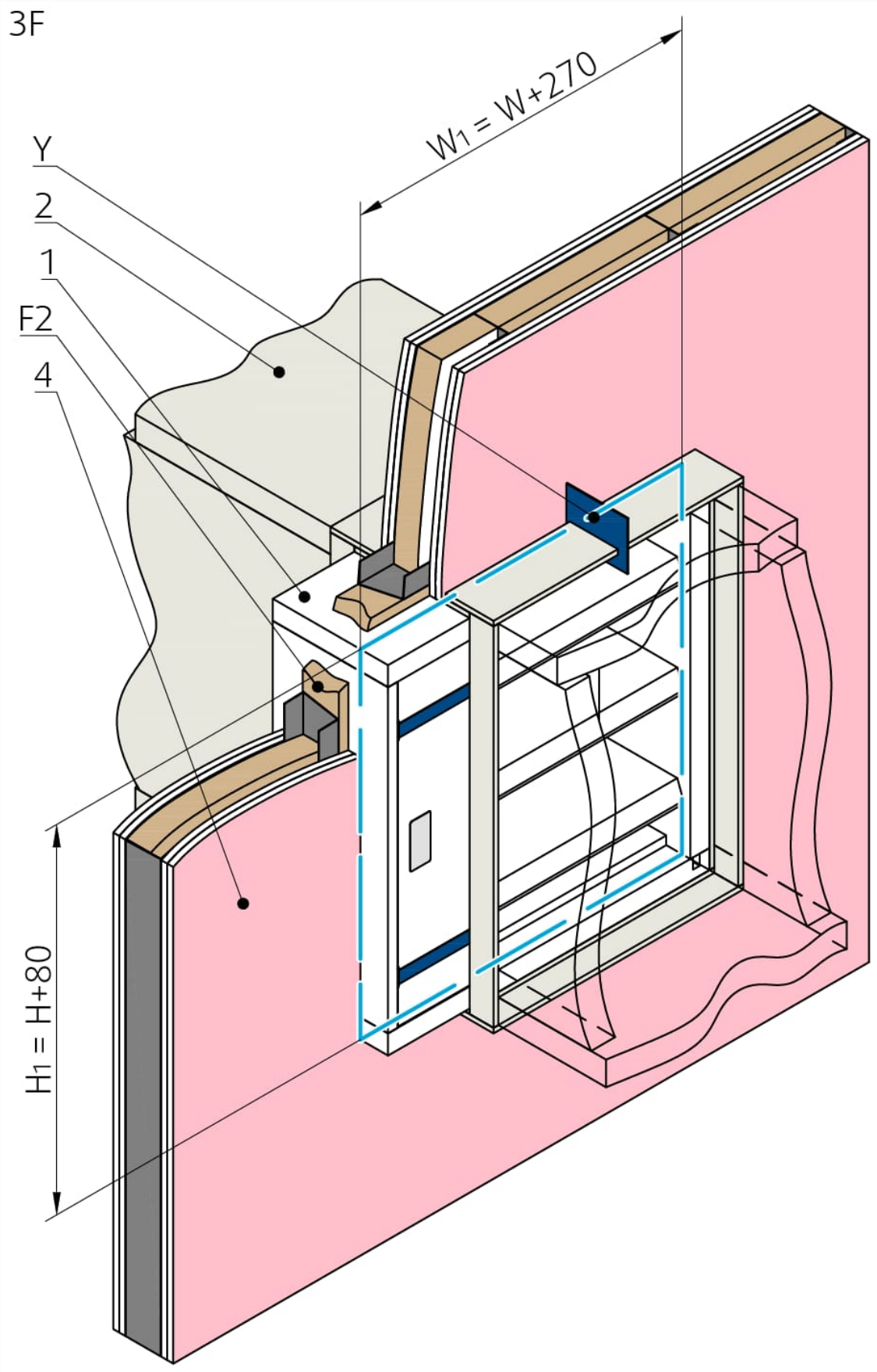
This applies for distances between the damper body and a nearby foreign object crossing the fire resistive wall.

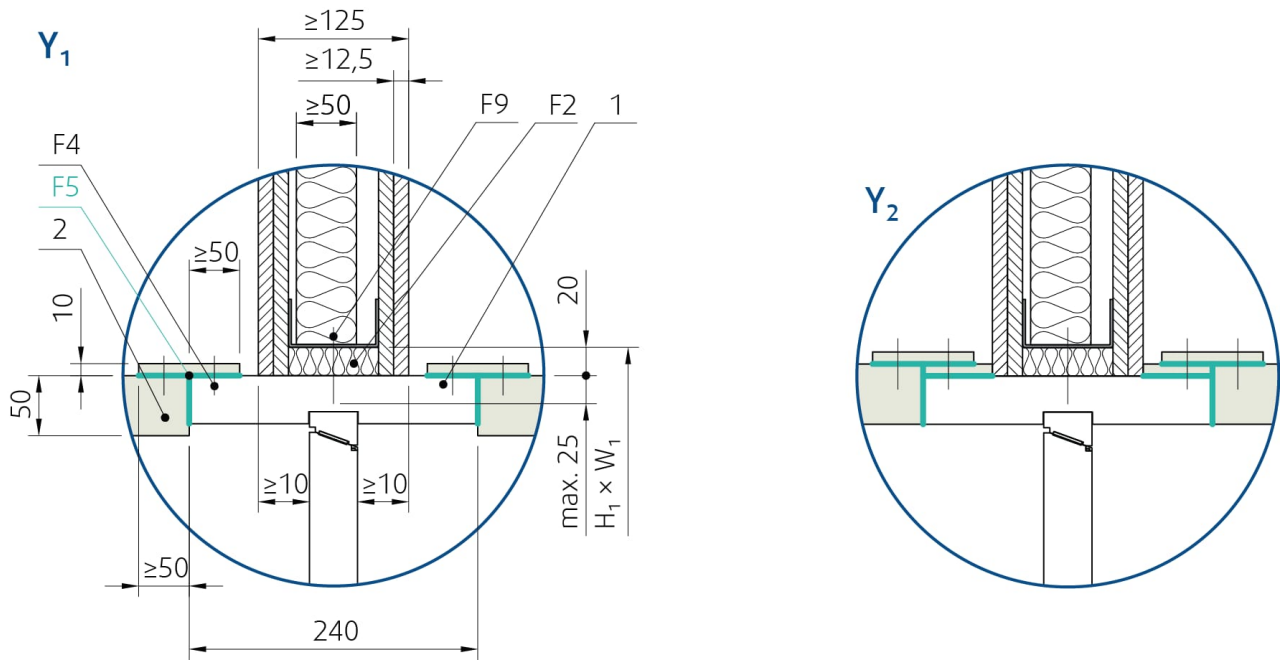
 S-BM2  125 × 325 ... 1000 × 1225 3F Fit	EI 120 (v_{ew} - i ↔ o) S1000C _{mod} HOT400/30 MAMulti	a)  ≥ 125	
	EI 90 (v_{ew} - i ↔ o) S1000C _{mod} MAMulti	a)  ≥ 125	

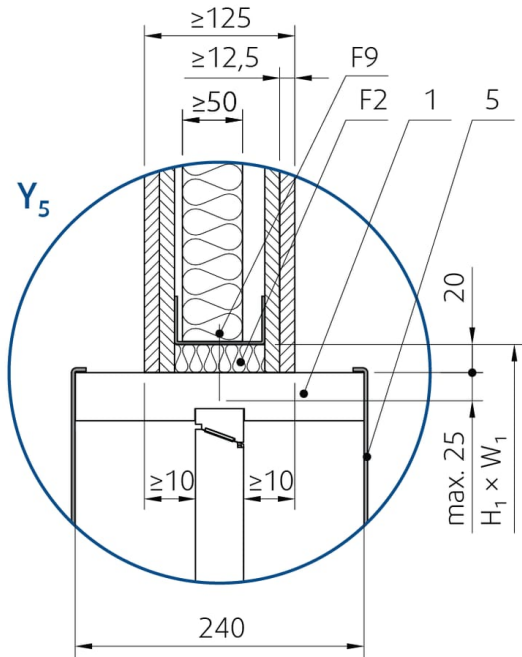
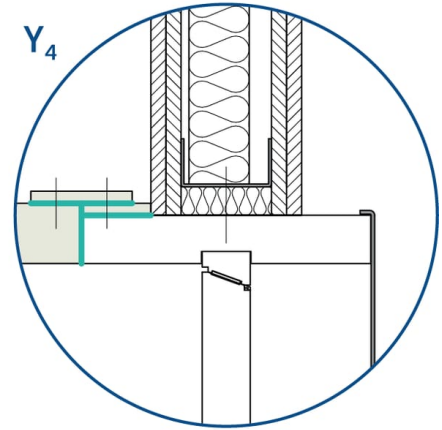
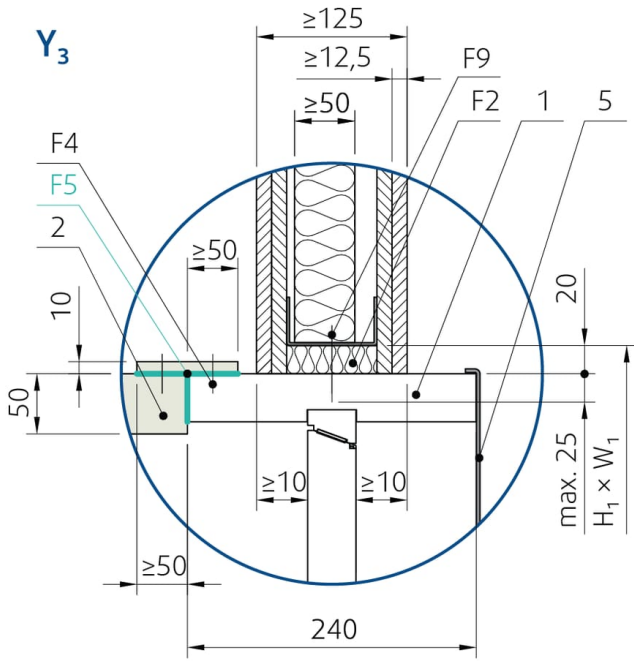
Notes:

a) - Flexible (plasterboard) wall

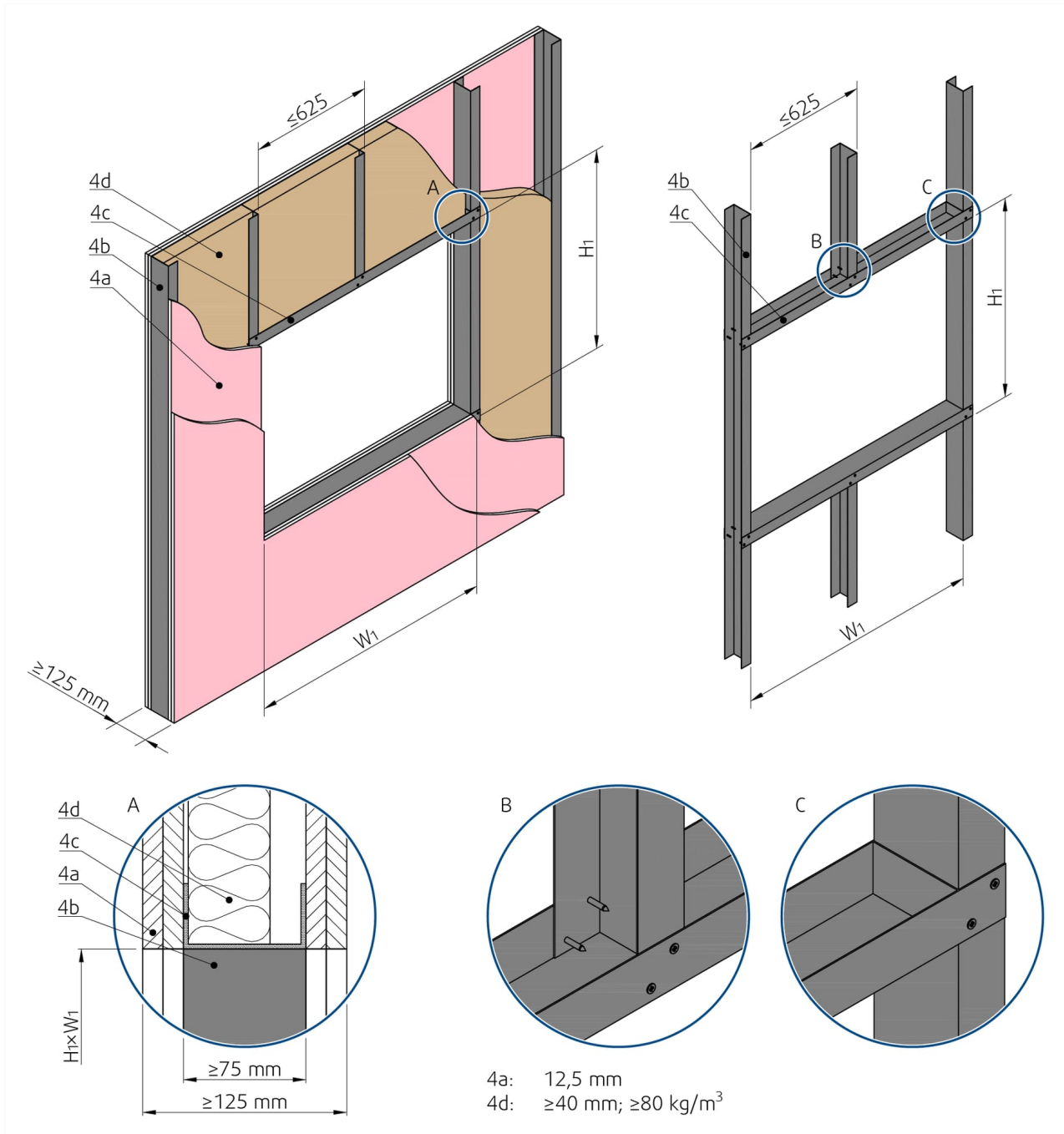
v_{ew} - Vertical wall placement



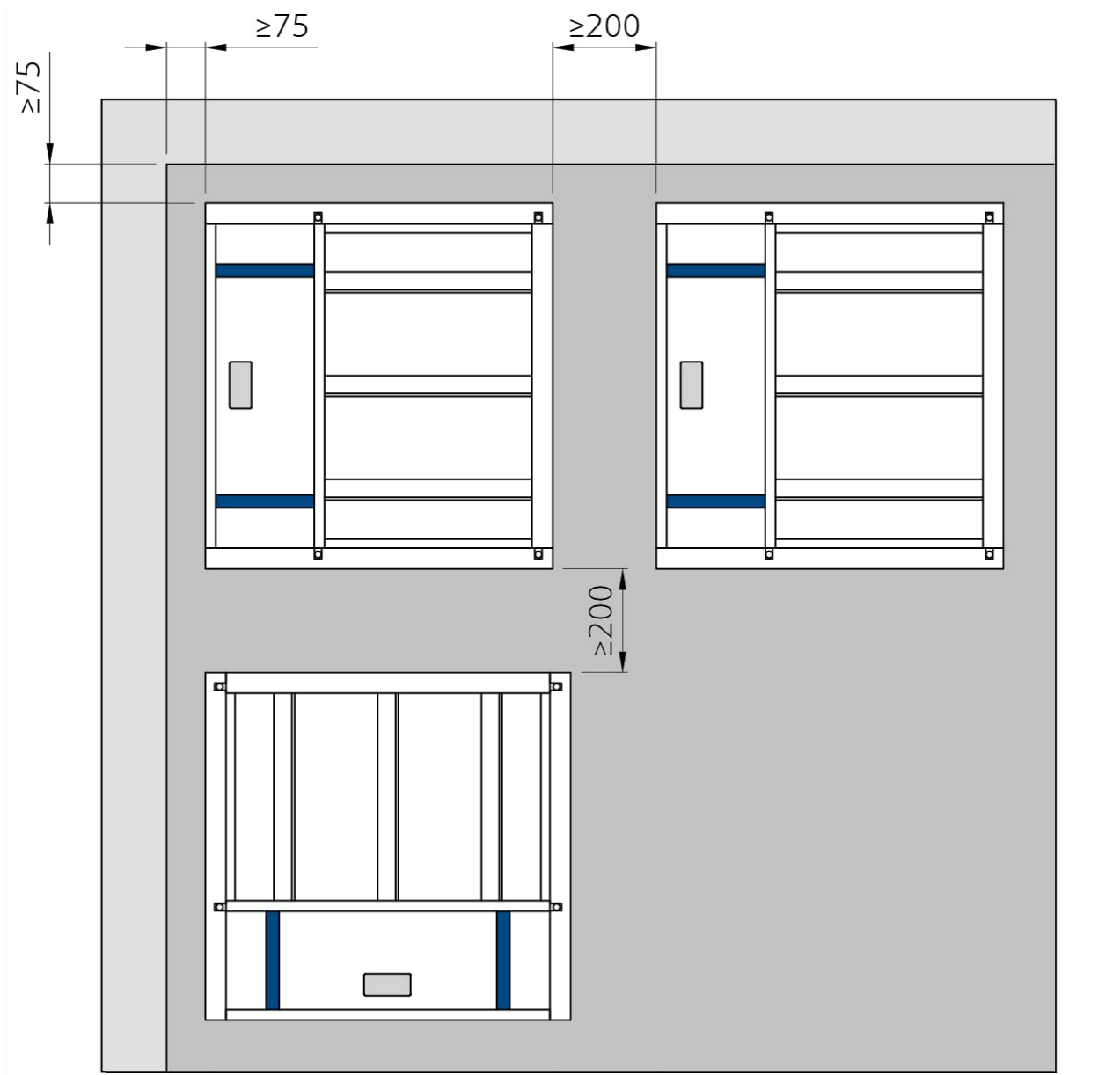




Opening and wall/ceiling preparations



Damper minimum distances



Legend for installation 3F. Fit

- 1** - Smoke control damper S-BM2
- 2** - Connected ductwork made of Promatect-L500 boards (min. 500 kg/m³, Promat)
- 3** - Concrete/masonry/cellular concrete wall or ceiling
- 4** - Flexible (plasterboard) wall
- 4a** - 2 layers of plasterboard fireproof plate type F, EN 520
- 4b** - Vertical CW – profiles
- 4c** - Horizontal UW – profiles
- 4d** - Mineral wool; thickness/cubic density see picture.
- 5** - Grille
- F2** - Mineral wool filling (min. 100 kg/m³)
- F4** - Nails or pins per ductwork manufacturer instructions
- F5** - Fire resistive coating Promat K84 (Promat)
- F9** - Self-tapping screw size 4, length 45 mm (e.g. DIN 7981 C-H)
- Y** - Cutting plane

Installation DBH, DBV - in the Board Duct

S-BM2 smoke control damper can be installed on "single" (tested according to EN 1366-9) or "multi" (tested according to EN 1366-8) ductwork. This section does not depict duct hanger rules as those are dependent on the weight of the duct itself and must be statically approved. Smoke control dampers must be suspended from solid ceiling slabs using adequately sized threaded rods. When using anchors in the ceiling, use fire rated anchor (with suitable fire rating certificate).

1.Prepare the duct connection or opening, clean and flatten the connecting surface.

2.Apply fire resistive coat (F5) on the connection surfaces.

3.Place the damper against the ductwork connection surfaces.

For vertical duct orientation: a. Fix the hangers (A2) to the damper body or on the accessory (A1) or cover boards (8).

b. If the duct is not yet installed place the damper with the hangers (A2) onto the load bearing hanger profile.

4.From boards (8) create collars and overlap the connection.

5.Fix the collar covering to the damper and ductwork with nails or pins as per duct system manufacturer instructions.

IMPORTANT






- The suspension of the damper must be loaded only with the weight of the damper.
- Suspension systems longer than 1,5 m require fire-resistant insulation.
- The interior of the S-BM2 smoke control damper must remain accessible for maintenance, it may be necessary to create additional inspection panels in the connecting ducts.
- The fire resistivity of S-BM2 smoke control damper must be decreased to the duct performance.
- The maximum resistivity for in duct installation is EI120S with pressure level 2 (-1000 Pa ... 300 Pa)

Installation Distances

According to the EN 1366-2 standard, the minimum distance from the wall or ceiling to the damper body is 75 mm.

For multiple crossings through a fire resistive wall, the minimum distance between two damper bodies is 200 mm.

This applies for distances between the damper body and a nearby foreign object crossing the fire resistive wall/duct.

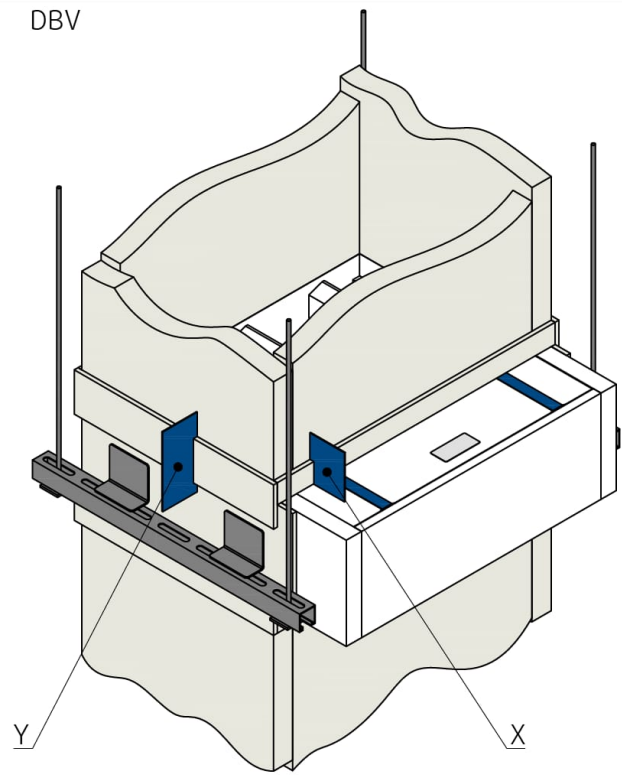
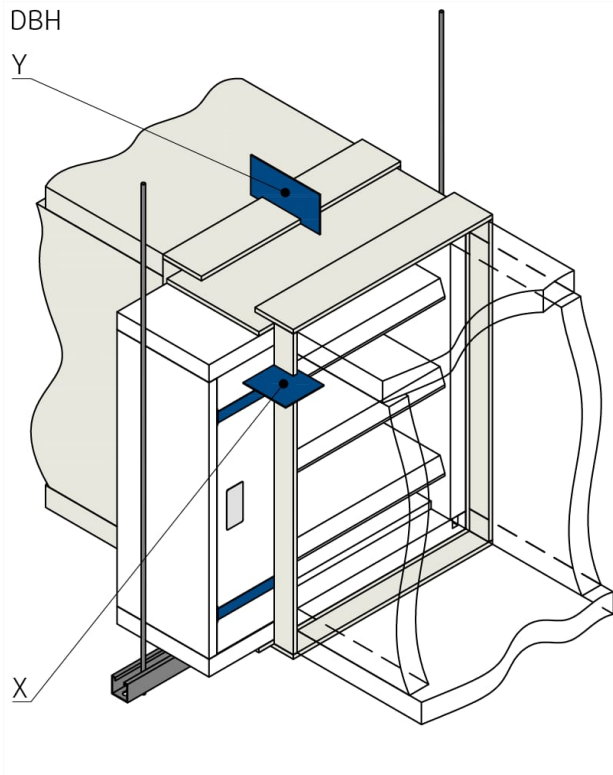
 S-BM2 DBH DBV	125 × 325 ... 1000 × 1225	EI 120 ($v_{ed} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAMulti	d) 	EN 1366-9	 
		EI 120 ($h_{od} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAMulti	d) 	EN 1366-8	

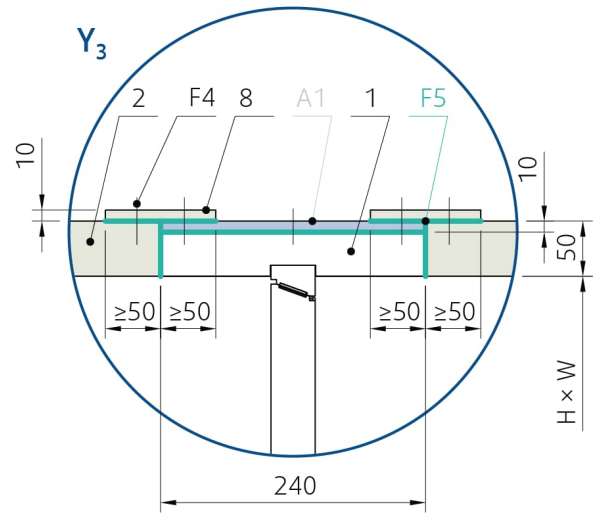
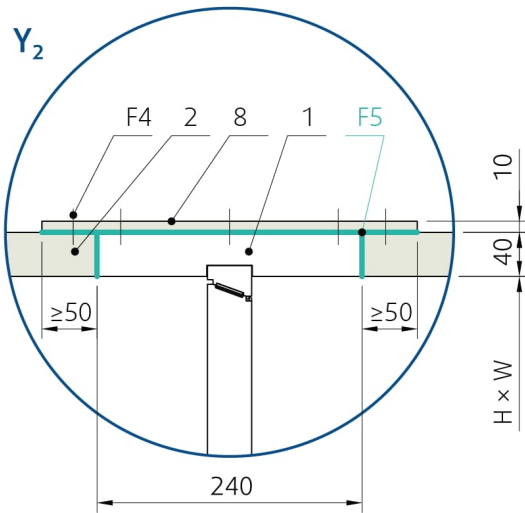
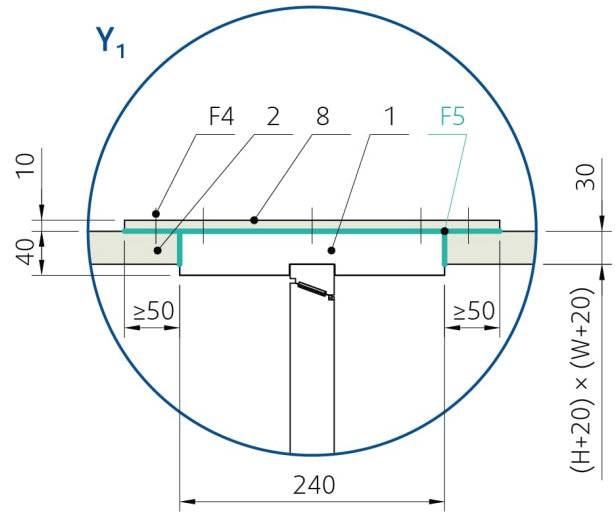
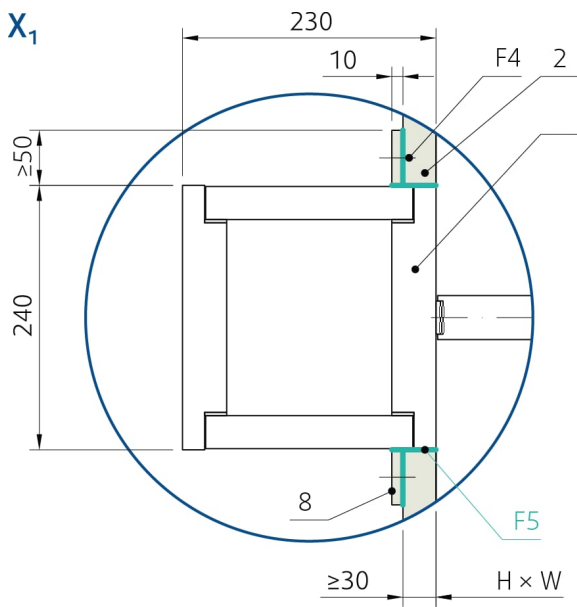
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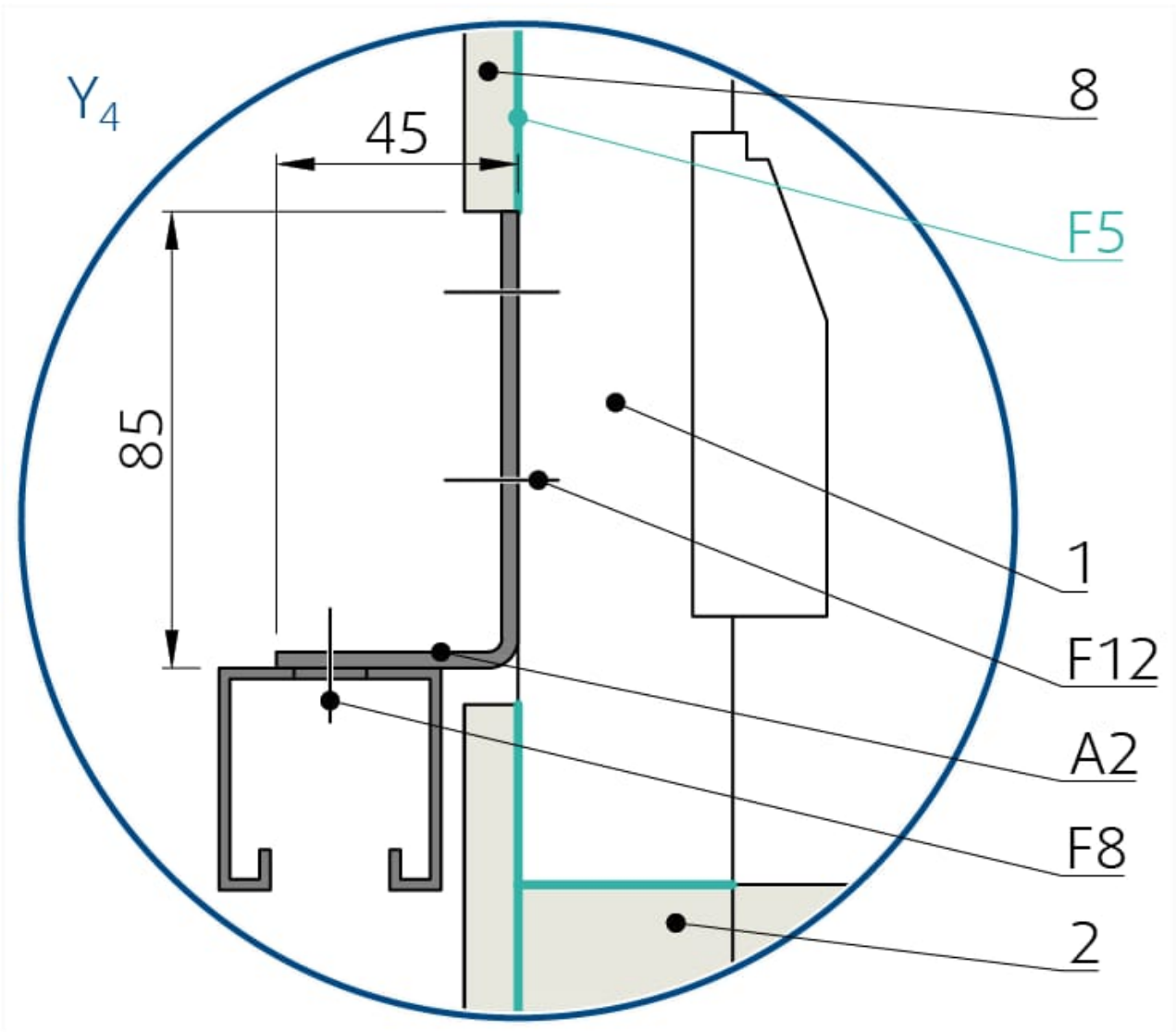
d) - Duct per EN 1366-9 or EN 1366-8

v_{ed} - Horizontal duct, (Vertical wall crossing)

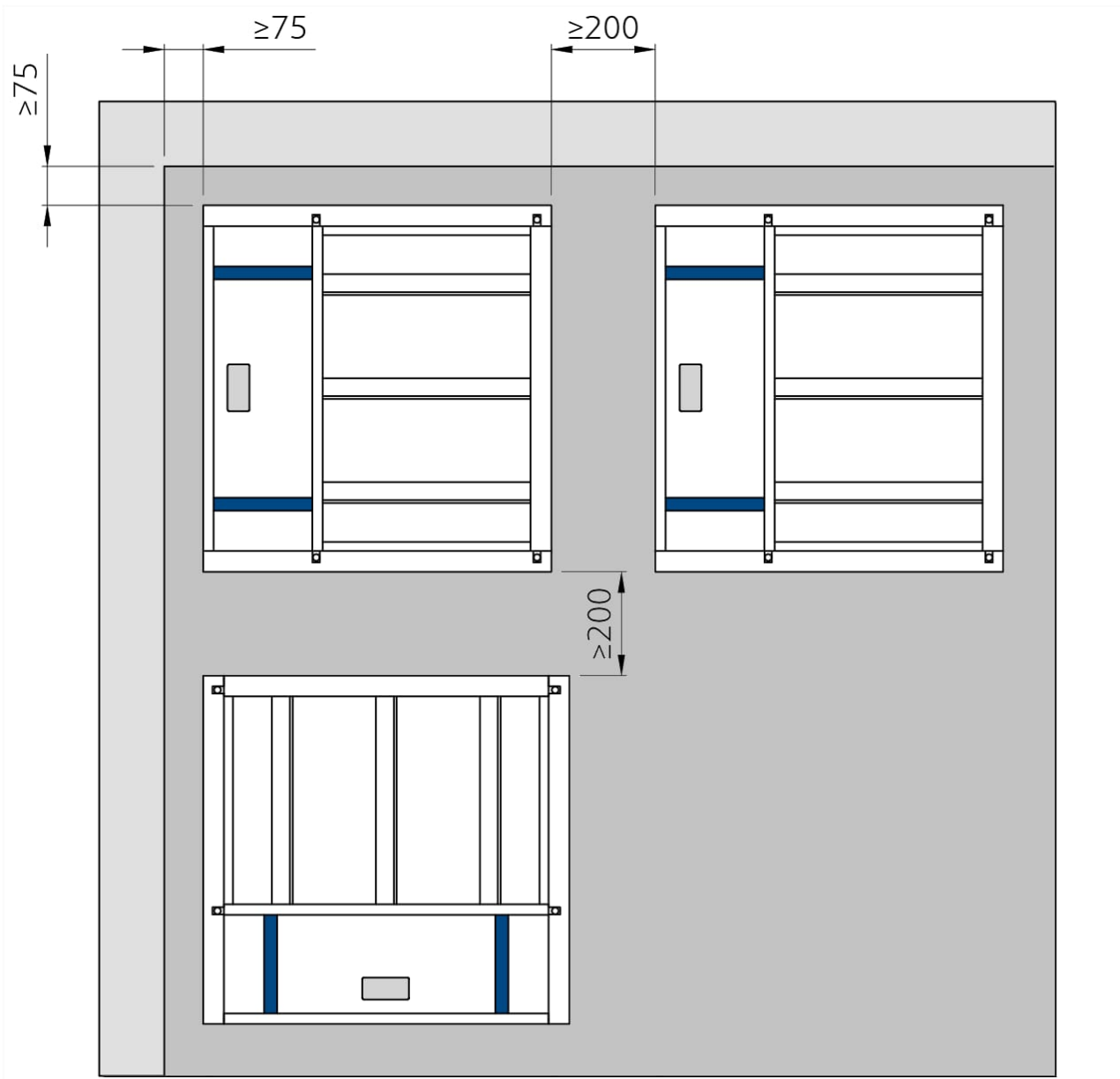
h_{od} - Vertical duct, (Horizontal floor/ceiling crossing)







Damper minimum distances



Legend for installation DBH, DBV - in the Board Duct

- 1** - Smoke control damper S-BM2
- 2** - Connected ductwork made of Promatect-L500 boards (min. 500 kg/m³, Promat)
- 8** - Cover plate made of Promatect (min. 500 kg/m³, Promat)
- F4** - Nails or pins per ductwork manufacturer instructions
- F5** - Fire resistive coating Promat K84 (Promat)
- A1** - Accessory K1-S-BM2-W×H (size of damper: W = nominal width; H = nominal height)
- A2** - Hanger accessory H1-S-BM2 - can be made on site using 3 mm sheet metal plate.
 - For sizes W<550 or H<425 use 2 pieces on two damper edge. Total 4 pcs.
 - For sizes bigger than W=550 or H=425 use 3 pieces on each damper edge. Total 6 pcs.
- X, Y** - Cutting planes

Installation DMH, DMV - in the Metal Duct

S-BM2 smoke control damper can be installed on “single” (tested according to EN 1366-9) or “multi” (tested according to EN 1366-8) ductwork. This section does not depict duct hanger rules as those are dependent on the weight of the duct itself and must be statically approved. Smoke control dampers must be suspended from solid ceiling slabs using adequately sized threaded rods. When using anchors in the ceiling, use fire rated anchor (with suitable fire rating certificate).





1. Prepare the duct connection or opening, clean the connecting surface.
2. Apply fire resistive coating on the connection surface and flange.
3. Connect the damper to ductwork with screws (F8).
4. From boards (8) create collars, apply coating (F5) on the connection surfaces and overlap the damper and connection.
5. Fix the collar covering to the damper with nails or pins (F4).

IMPORTANT

- The suspension of the damper must be loaded only with the weight of the damper.
- Suspension systems longer than 1,5 m require fire-resistant insulation.
- The forces from thermal expansion of the duct must be avoided using flexible connections or duct bends.
- The interior of the S-BM2 smoke control damper must remain accessible for maintenance, it may be necessary to create additional inspection panels in the connecting ducts.
- The fire resistivity of S-BM2 smoke control damper must be decreased to the duct performance.
- The maximum resistivity for in duct installation is EI120S with pressure level 2 (-1000 Pa ... 300 Pa)

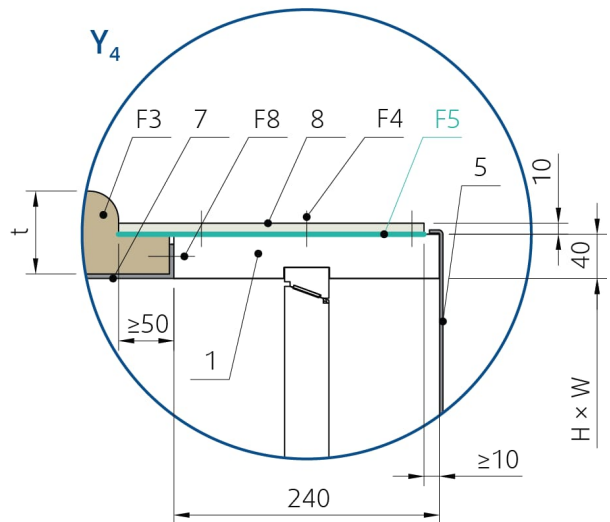
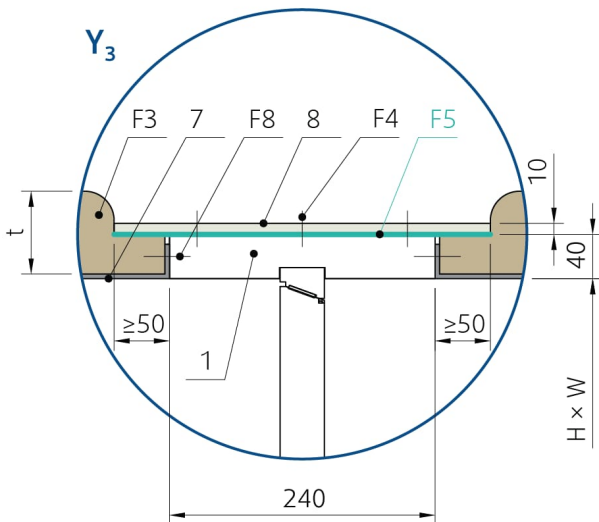
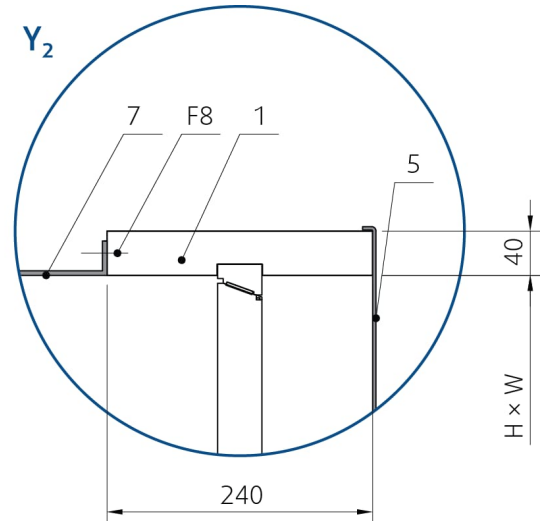
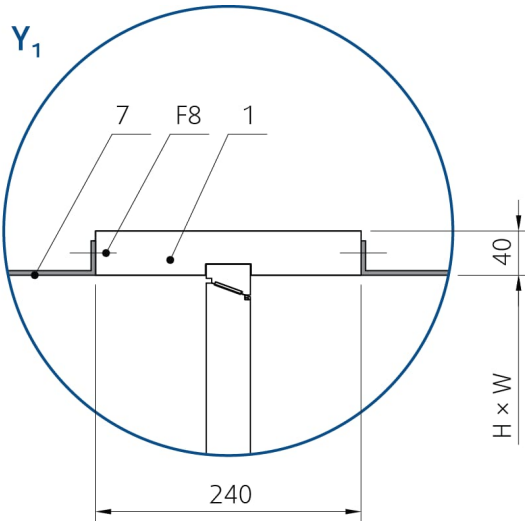
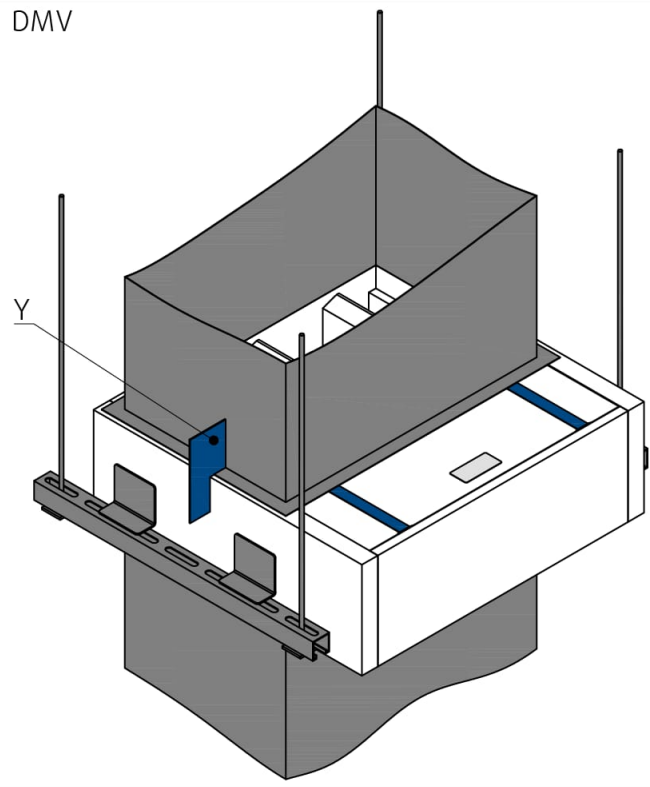
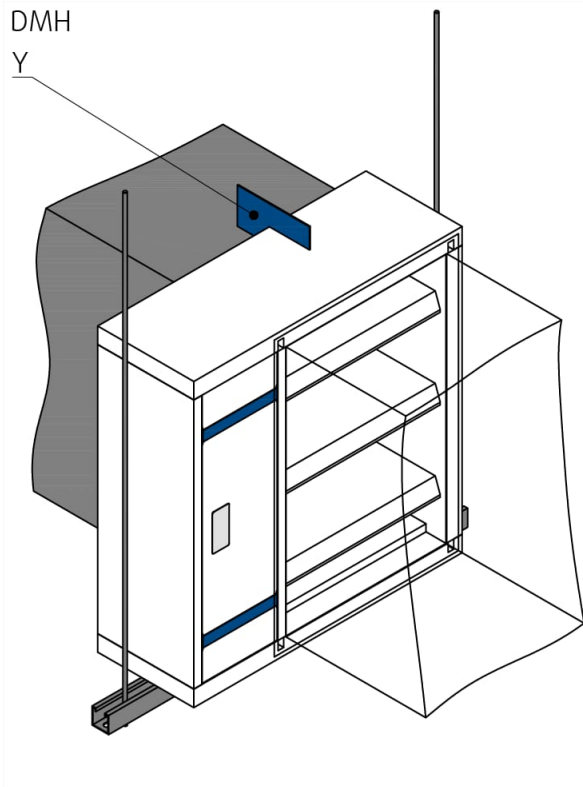
Installation Distances

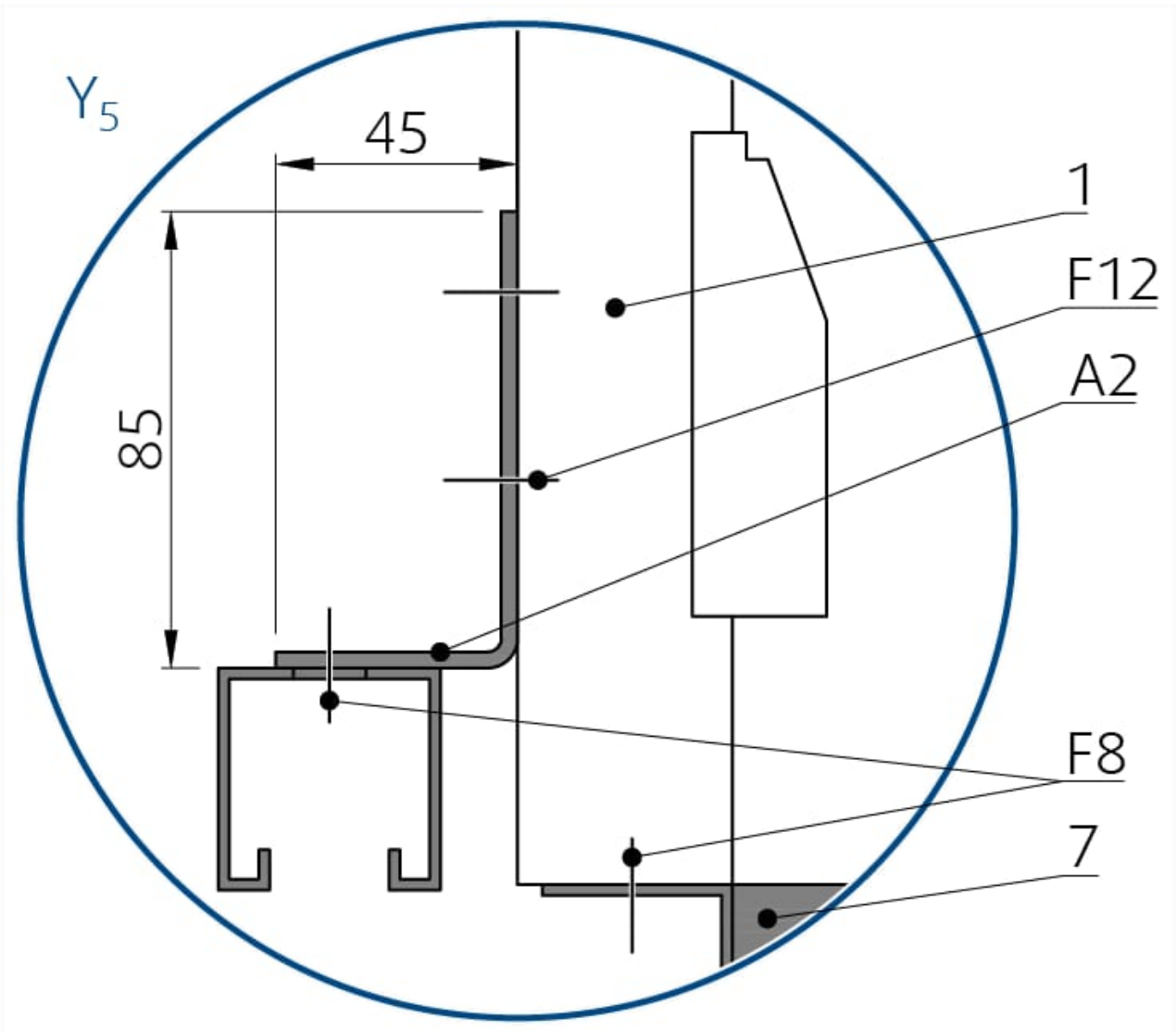
According to the EN 1366-2 standard, the minimum distance from the wall or ceiling to the damper body is 75 mm. For multiple crossings through a fire resistive wall, the minimum distance between two damper bodies is 200 mm. This applies for distances between the damper body and a nearby foreign object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

 S-BM2 DMH DMV	125 × 325 ... 1000 × 1225	EI 120 (v_{ed} - i ↔ o) S1000C _{mod} HOT400/30 MAmulti	d) 	EN 1366-9	
		EI 120 (h_{od} - i ↔ o) S1000C _{mod} HOT400/30 MAmulti	d) 	EN 1366-8	

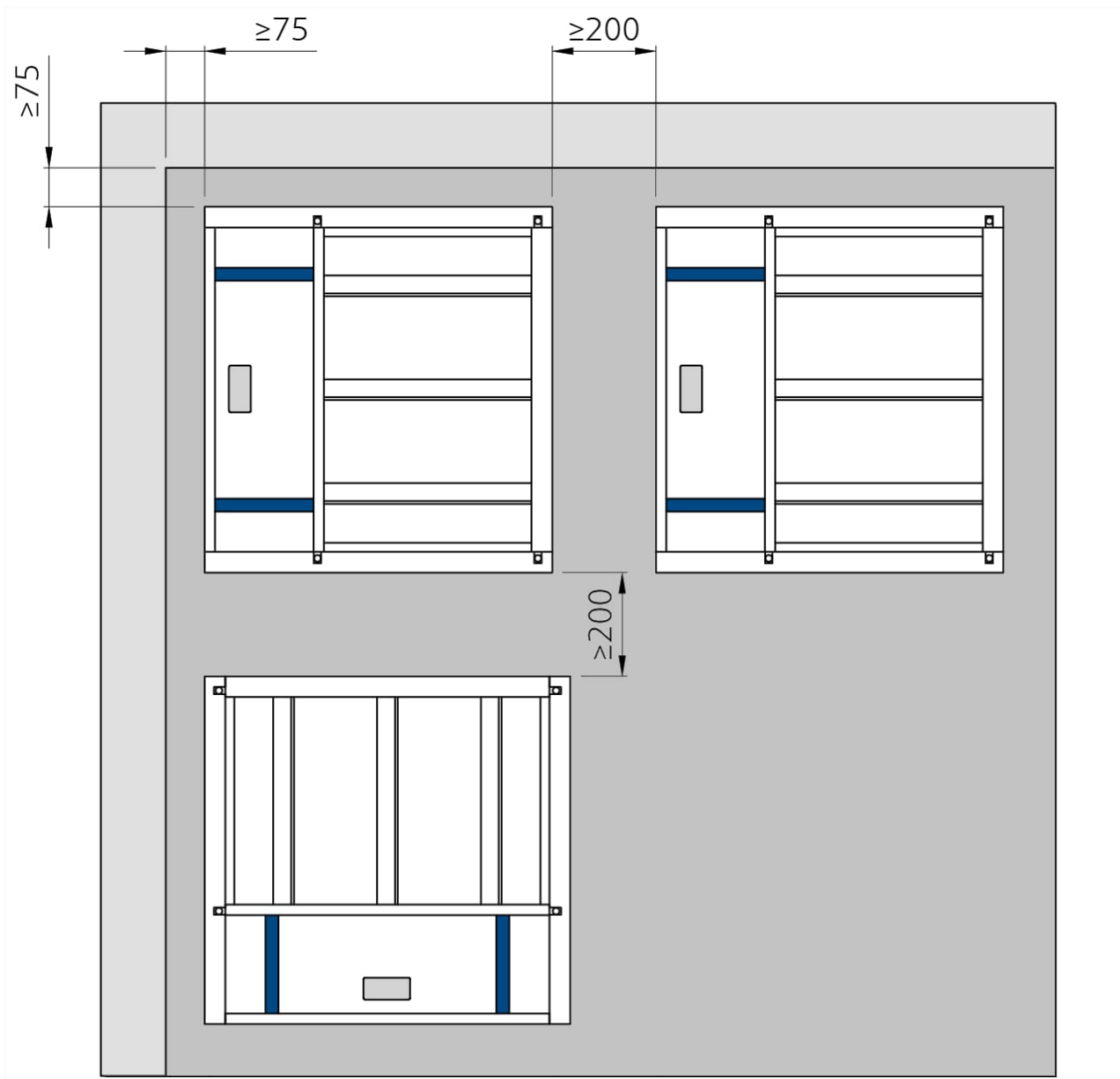
Notes:

- d)** - Duct per EN 1366-9 or EN 1366-8
 v_{ed} - Horizontal duct, (Vertical wall crossing)
 h_{od} - Vertical duct, (Horizontal floor/ceiling crossing)





Damper minimum distances



Legend for installation DMH, DMV - in the Metal Duct

1 - Smoke control damper S-BM2

5 - Grille

7 - Connected sheet metal ductwork tested according to EN 1366-8 or EN 1366-9

8 - Cover plate made of Promatect (min. 500 kg/m³, Promat)

A2 - Hanger accessory H1-S-BM2 - can be made on site using 3 mm sheet metal plate.

• For sizes $W < 550$ or $H < 425$ use 2 pieces on two damper edge. Total 4 pcs.

• For sizes bigger than $W = 550$ or $H = 425$ use 3 pieces on each damper edge. Total 6 pcs.

F3 - Mineral wool filling; thickness of mineral wool (t) depends on the desired fire resistivity

F4 - Nails or pins per ductwork manufacturer instructions

F5 - Fire resistive coating Promat K84 (Promat)

F8 - Screw M8×35, maximum fixing torque is 8 Nm ...12 Nm

Y - Cutting plane

Installation D1H, D2H - Horizontally Oriented Damper, On the Duct

S-BM2 smoke control damper can be installed on "single" (tested according to EN 1366-9) or "multi" (tested according to EN 1366-8) ductwork. If mounted on a duct classified with lower fire resistivity, the fire resistivity of S-BM2 smoke control damper will be decreased to the duct level. This section does not depict duct hanger rules as those are dependent on the weight of the duct itself and must be statically approved. Smoke control dampers must be suspended from solid ceiling slabs using adequately sized threaded rods. When using anchors in the ceiling, use fire rated anchor (with suitable fire rating certificate). Suspension systems longer than 1,5 m require fire-resistant insulation.

1. Prepare the duct connection or opening - clean and flatten the connecting surface.

For under the duct orientation:



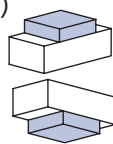
- a. Fix the hangers (A2) to the damper body or on the accessory (A1) or cover boards (8).
 - b. Place the damper with the hangers (A2) onto the load bearing hanger profile.
2. Apply fire resistive coat (F5) on the connection surfaces.
 3. Place the damper on the profile hanger.
 4. Connect the damper to ductwork with boards (8) create collars and overlap the connection.
 5. Fix the collar covering to the damper and ductwork with nails or pins (F4) as per duct system manufacturer instructions.

IMPORTANT

- The suspension of the damper must be loaded only with the weight of the damper.
- Dimension of opening must be created according to details of each type and thickness of connected duct.
- The fire resistivity of S-BM2 smoke control damper must be decreased to the duct performance.
- The maximum resistivity for in duct installation is EI120S with pressure level 2 (-1000 Pa ... 300 Pa)

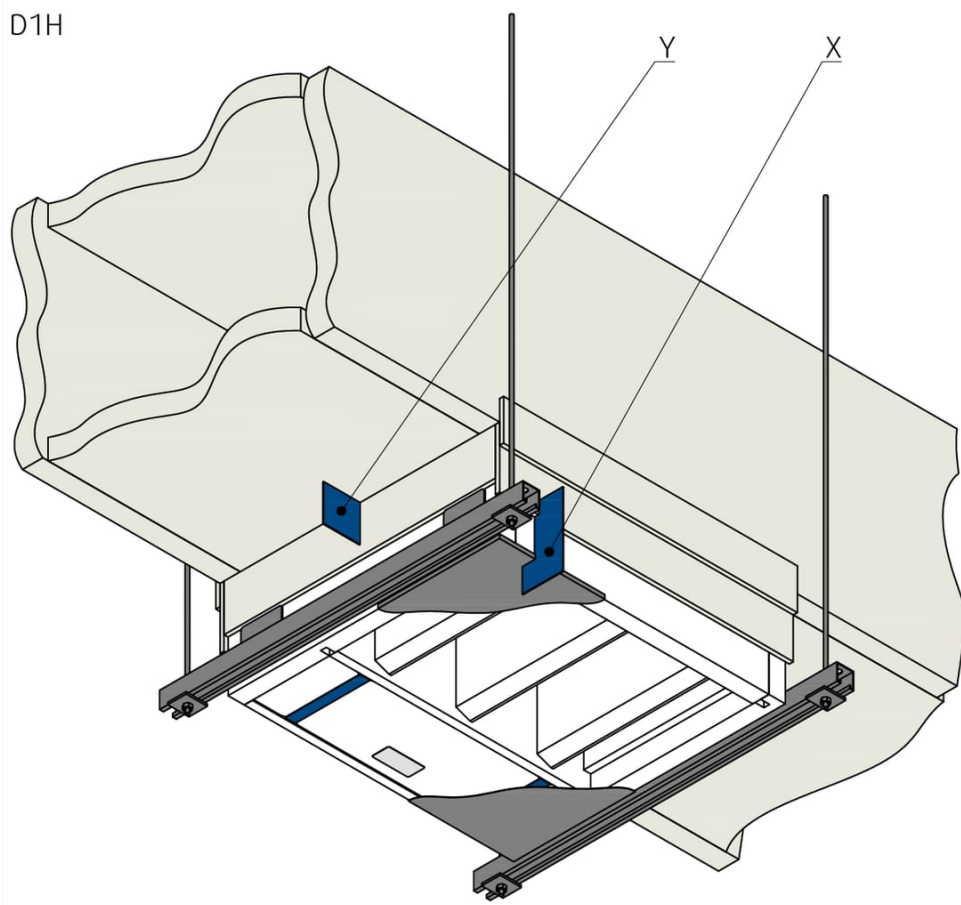
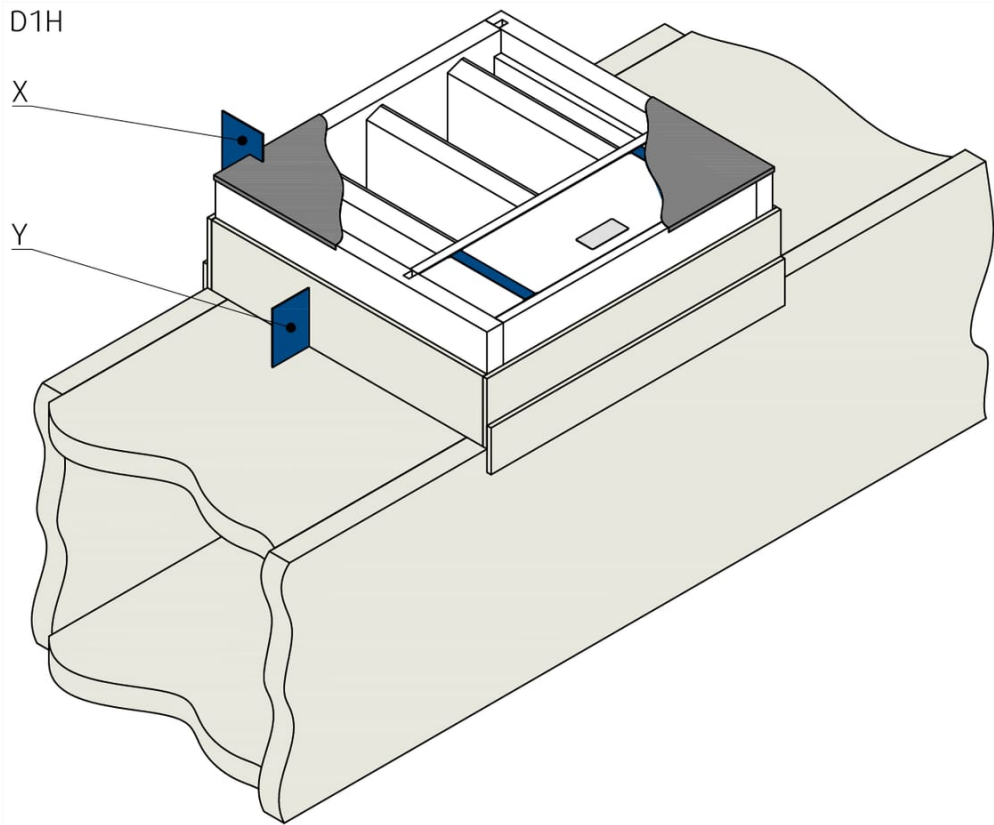
Installation Distances

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

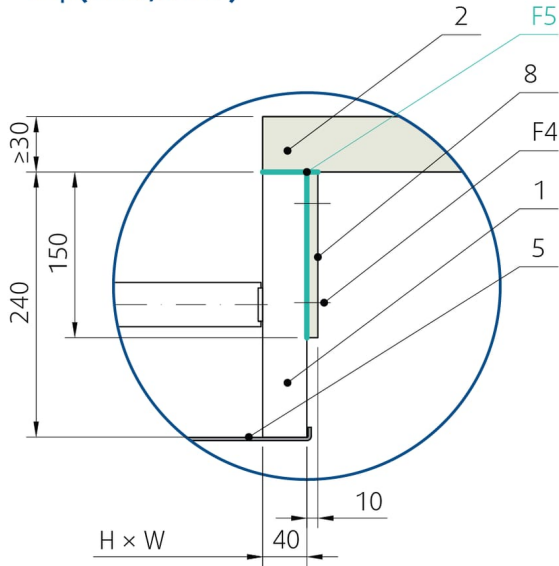
  D1H, D2H	S-BM2 125 × 325 ... 1000 × 1225	EI 120 ($h_{od} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAmulti	d) 	EN 1366-9 EN 1366-8
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Notes:

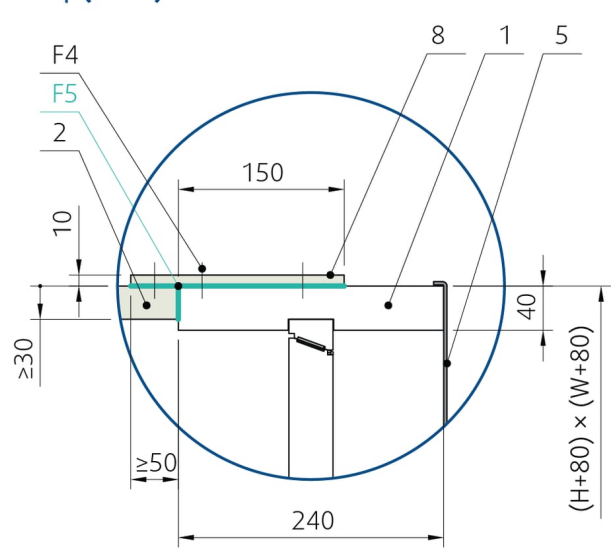
- d)** - Duct per EN 1366-9 or EN 1366-8
v_{ed} - Horizontal duct, (Vertical wall crossing)



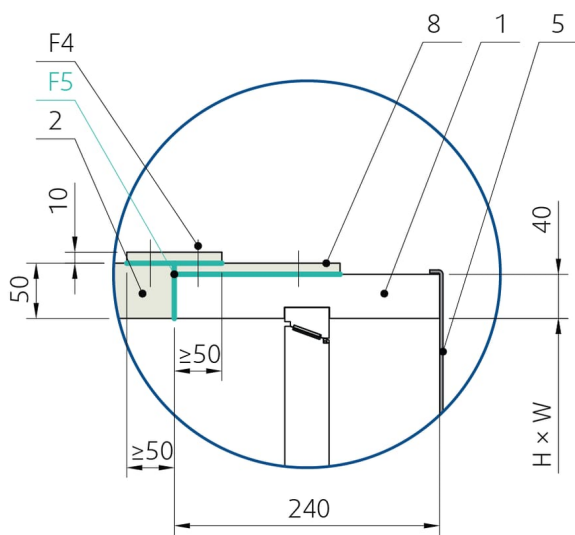
X₁ (D1H, D2H)



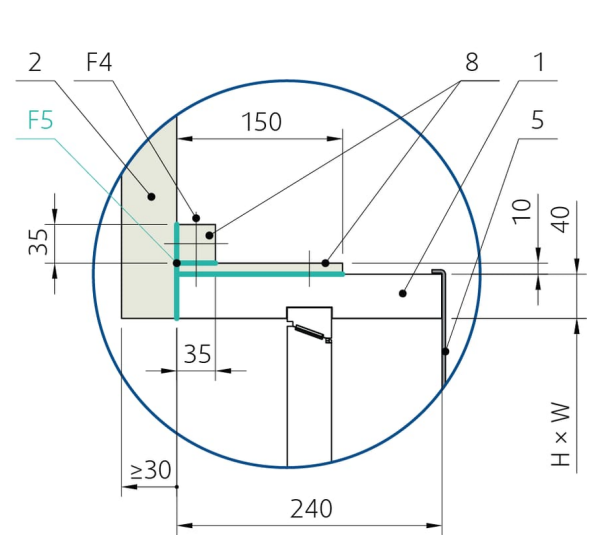
Y₁ (D1H)

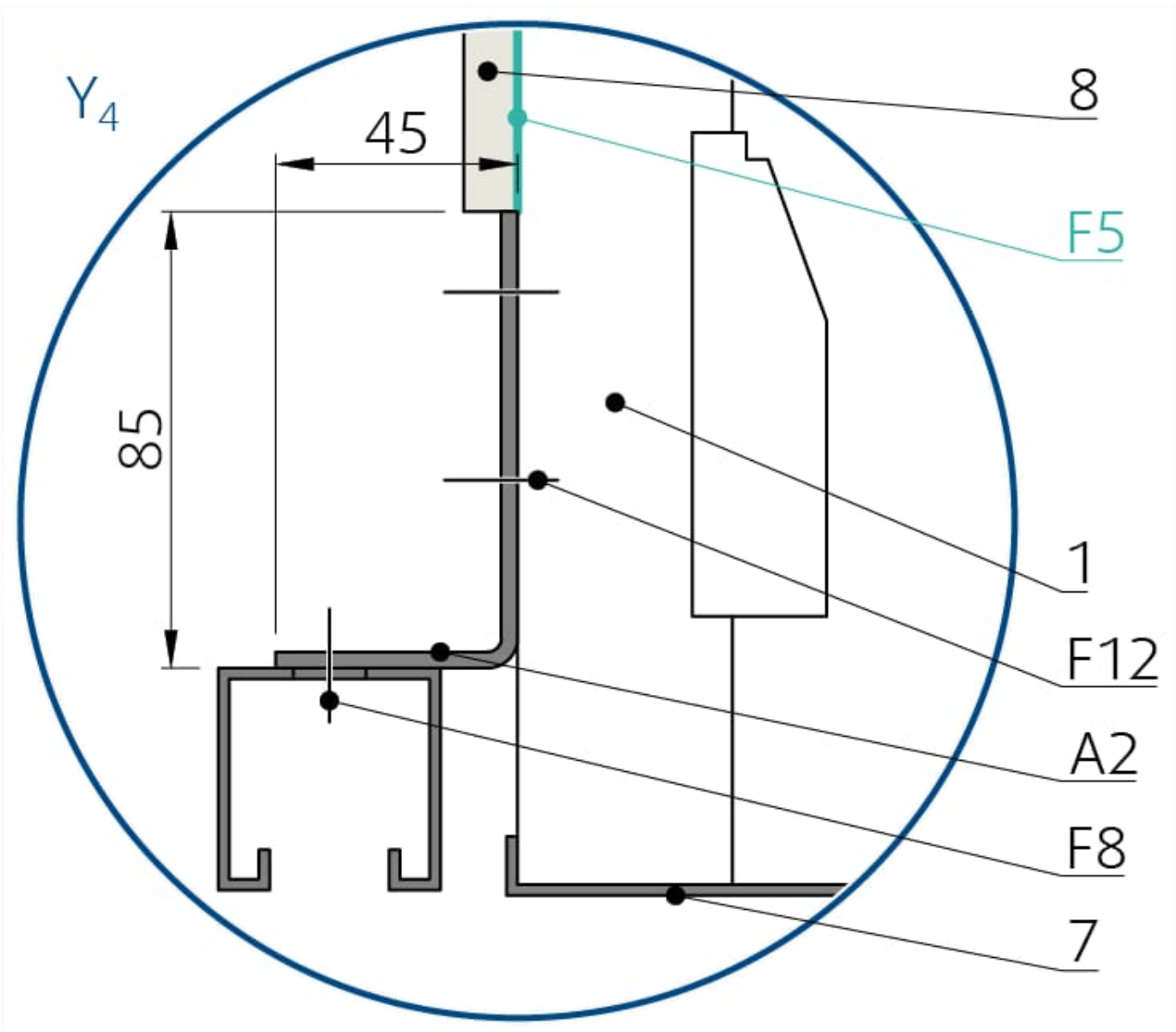


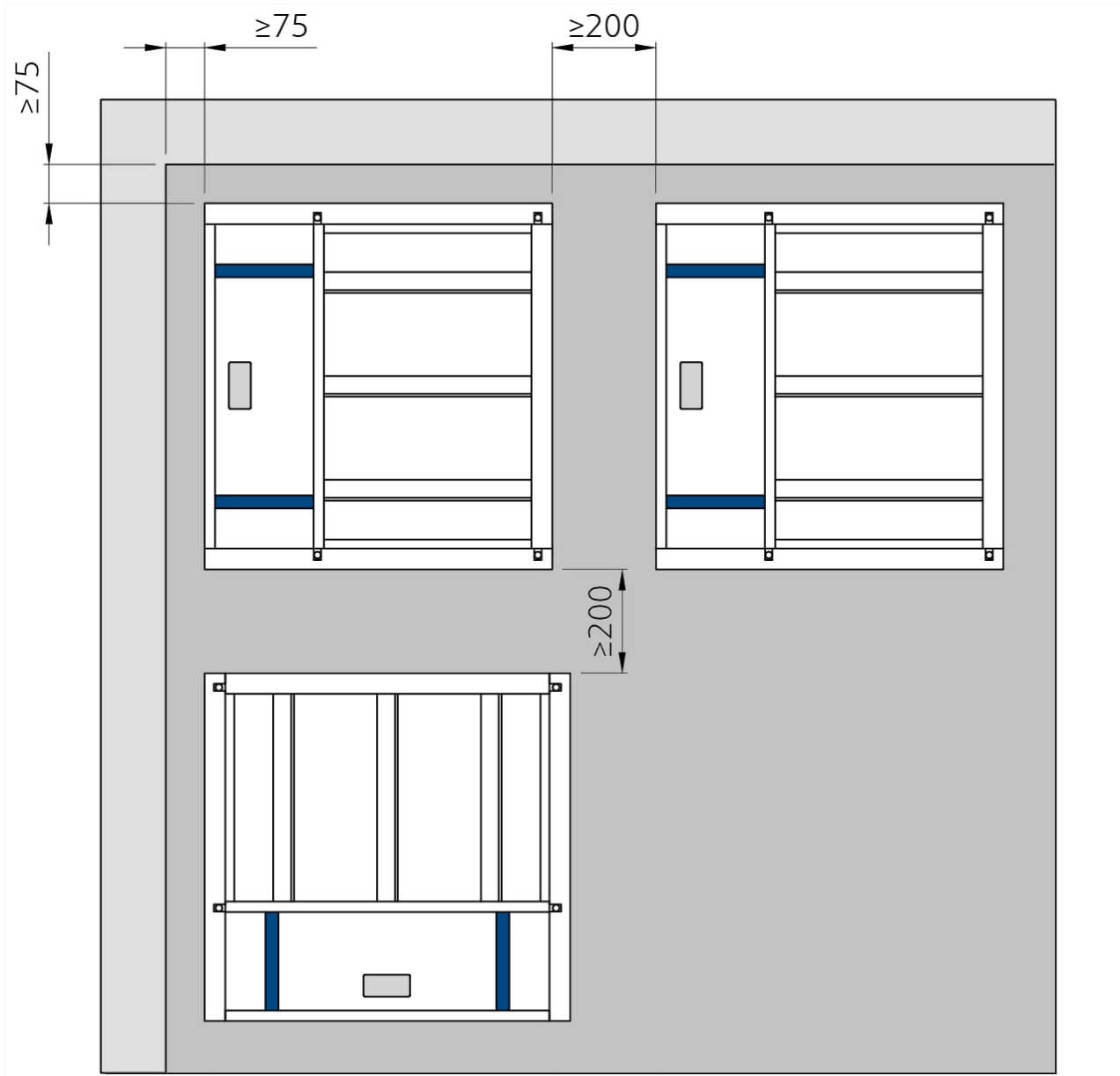
Y₂ (D1H)



Y₃ (D2H)





Damper minimum distances**Legend for installation D1H, D2H - Horizontally Oriented Damper, On the Duct**

- 1** - Smoke control damper S-BM2
- 2** - Connected ductwork made of Promatex-L500 boards (min. 500 kg/m³, Promat)
- 5** - Grille
- 8** - Cover plate made of Promatex (min. 500 kg/m³, Promat)
- A2** - Hanger accessory H1-S-BM2 - can be made on site using 3 mm sheet metal plate.
 - For sizes W<550 or H<425 use 2 pieces on two damper edge. Total 4 pcs.
 - For sizes bigger than W=550 or H=425 use 3 pieces on each damper edge. Total 6 pcs.
- F4** - Nails or pins per ductwork manufacturer instructions
- F5** - Fire resistive coating Promat K84 (Promat)
- X, Y** - Cutting planes

Installation D1V, D2V - Vertically Oriented Damper, On the Duct

S-BM2 smoke control damper can be installed on “single” (tested according to EN 1366-9) or “multi” (tested according to EN 1366-8) ductwork. If mounted on a duct classified with lower fire resistivity, the fire resistivity of S-BM2 smoke control damper will be decreased to the duct level. This section does not depict duct hanger rules as those are dependent on the weight of the duct itself and must be statically approved. Smoke control dampers must be suspended from solid ceiling slabs using adequately sized threaded rods. When using anchors in the ceiling, use fire rated anchor (with suitable fire rating certificate). Suspension systems longer than 1,5 m require fire-resistant insulation.


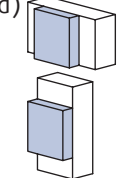

1. Prepare the duct connection or opening - clean and flatten the connecting surface.
2. Apply fire resistive coat (F5) on the connection surfaces.
3. Place the damper on the profile hanger.
4. Connect the damper to ductwork with boards (8) create collars and overlap the connection.
5. Fix the collar covering to the damper and ductwork with nails or pins (F4) as per duct system manufacturer instructions.

IMPORTANT

- The suspension of the damper must be loaded only with the weight of the damper.
- Dimension of opening must be created according to details of each type and thickness of connected duct.
- The fire resistivity of S-BM2 smoke control damper must be decreased to the duct performance.
- The maximum resistivity for in duct installation is EI120S with pressure level 2 (-1000 Pa ... 300 Pa)

Installation Distances

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

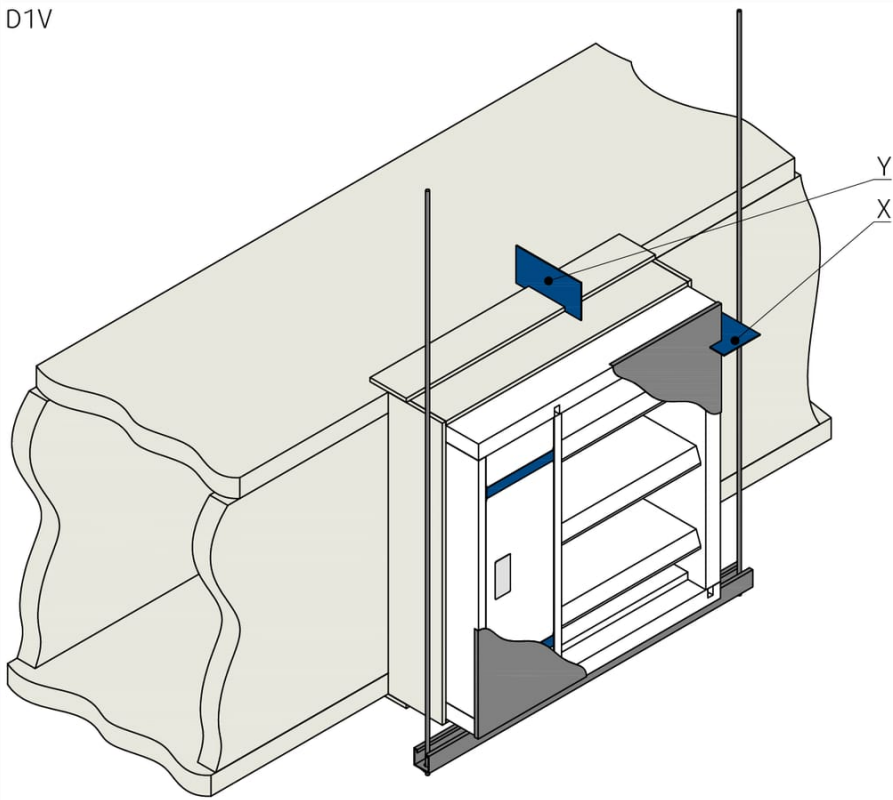
 D1V D2V	S-BM2 125 × 325 ... 1000 × 1225	EI 120 ($v_{ed} - i \leftrightarrow o$) S1000C _{mod} HOT400/30 MAmulti	d) 	EN 1366-9 EN 1366-8	
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Notes:

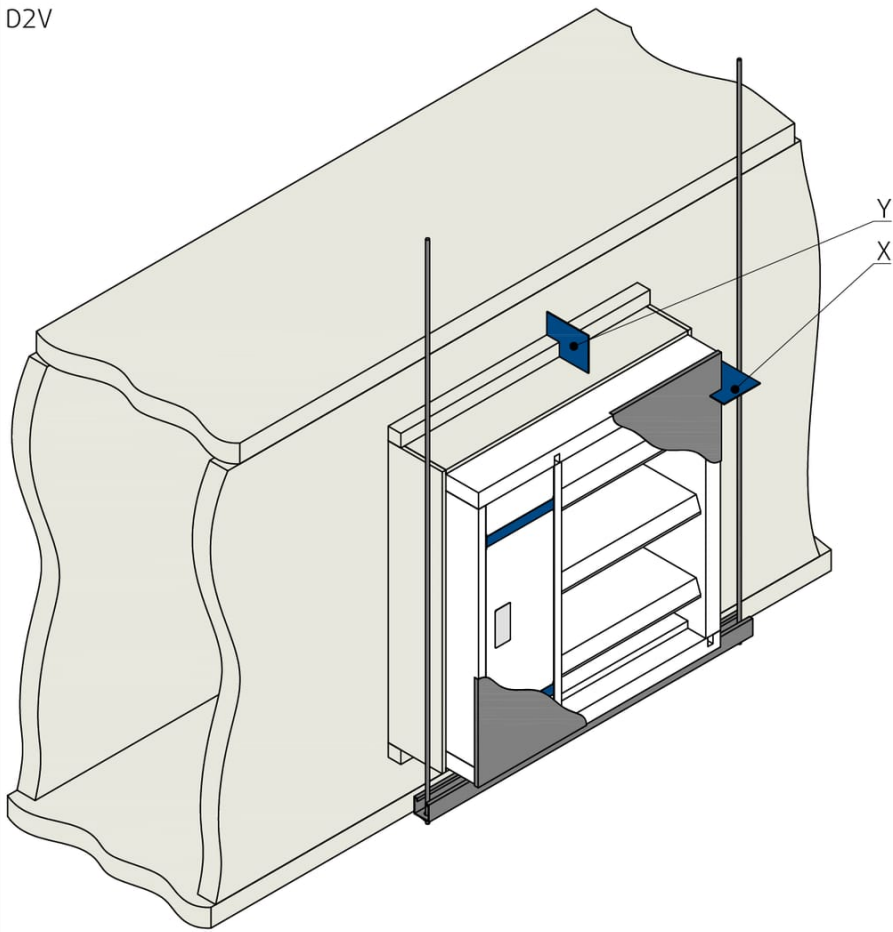
d) - Duct per EN 1366-9 or EN 1366-8

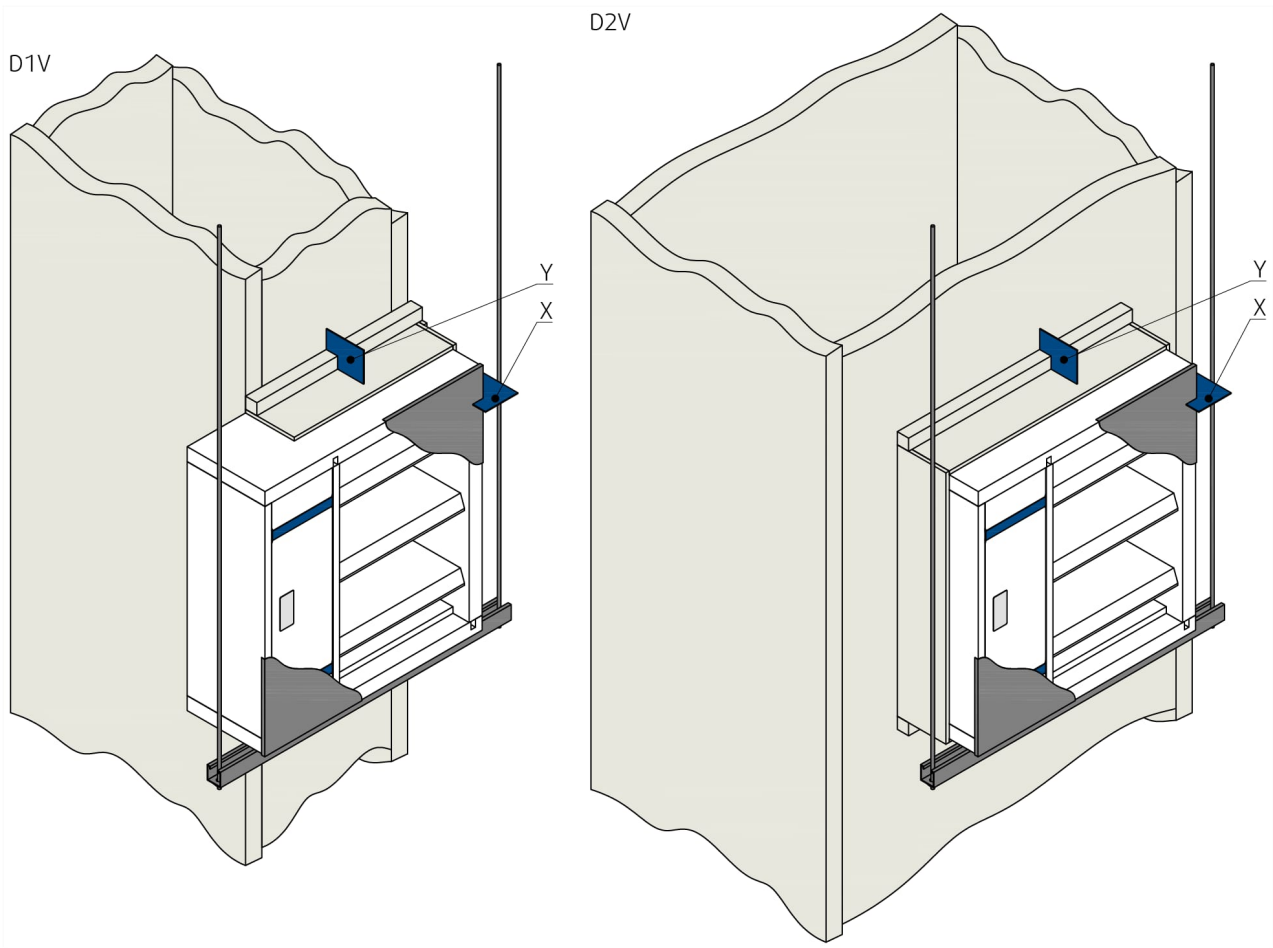
h_{od} - Vertical duct, (Horizontal floor/ceiling crossing)

D1V

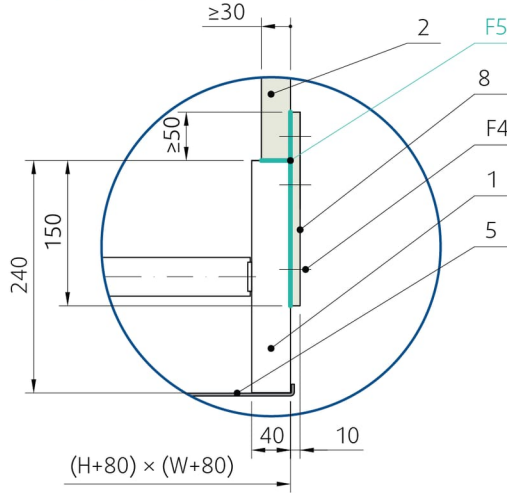


D2V

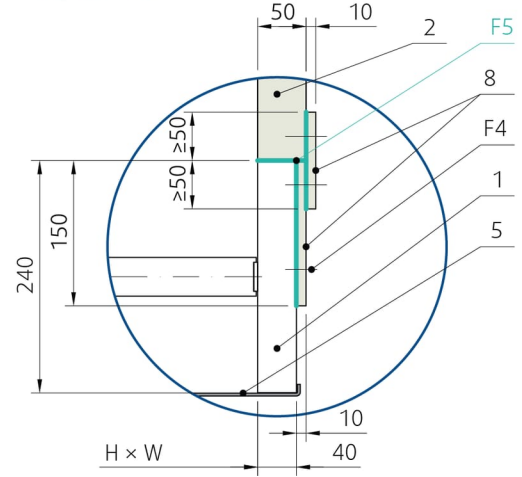




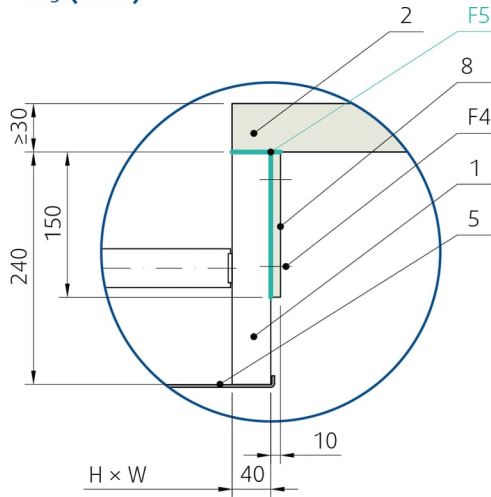
X₁ (D1V)



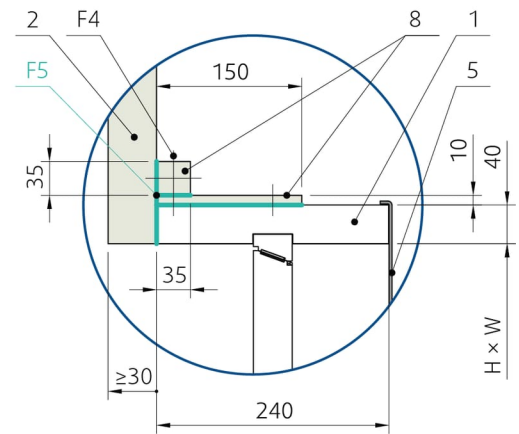
X₂ (D1V)

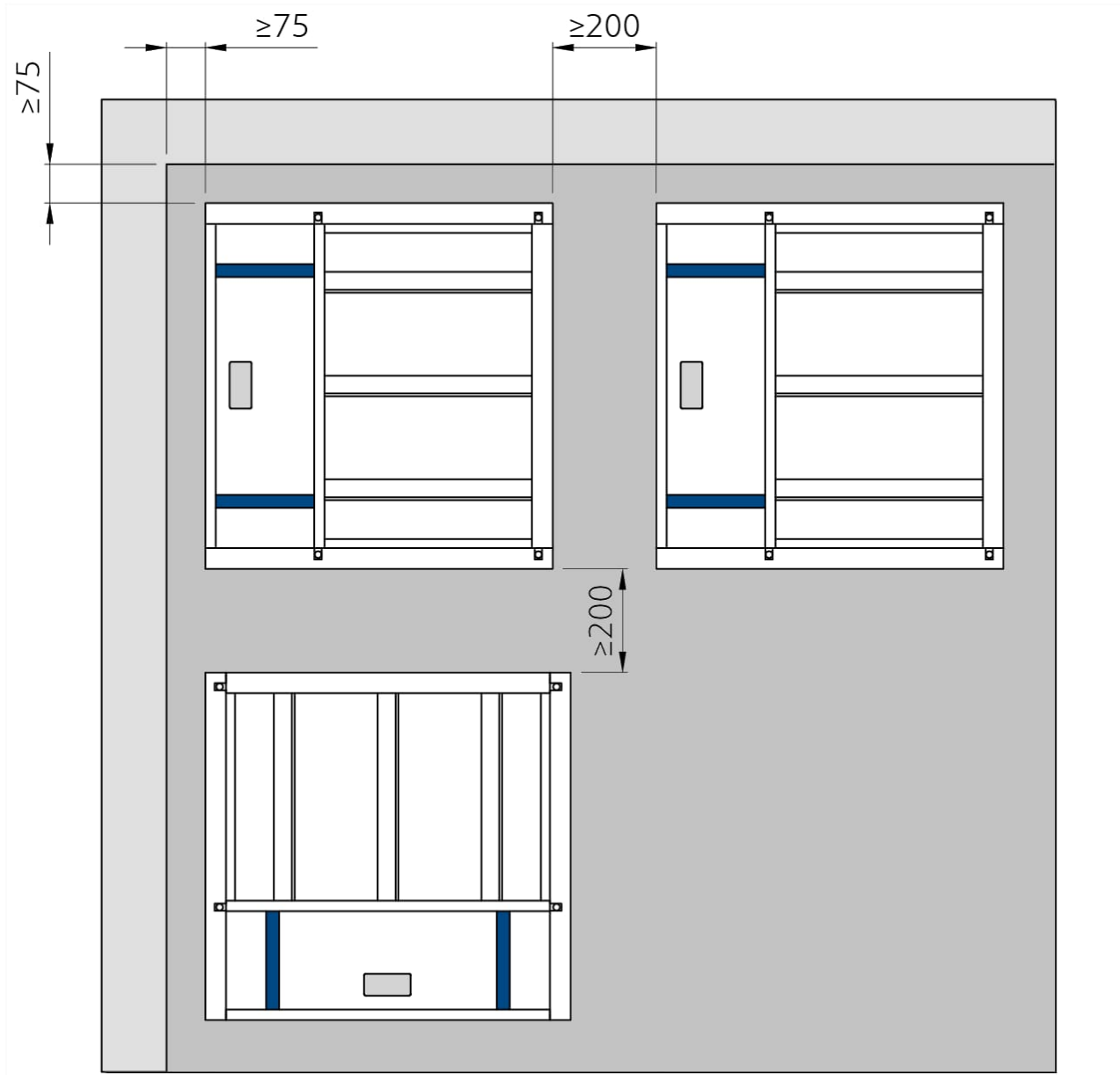


X₃ (D2V)



Y₁ (D1V, D2V)



Damper minimum distances**Legend for installation D1V, D2V - Vertically Oriented Damper, On the Duct**

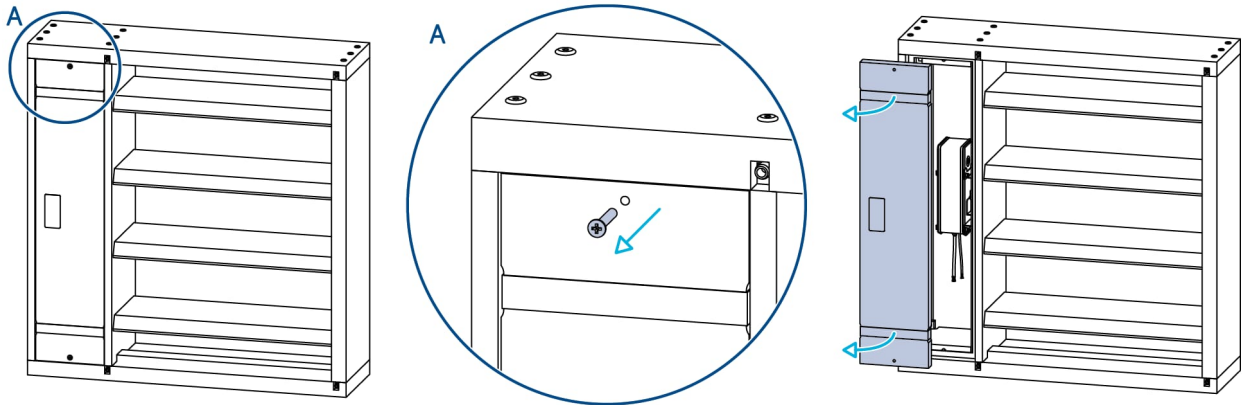
- 1** - Smoke control damper S-BM2
- 2** - Connected ductwork made of Promatect-L500 boards (min. 500 kg/m³, Promat)
- 5** - Grille
- 8** - Cover plates made of Promatect (min. 500 kg/m³, Promat)
- A2** - Hanger accessory H1-S-BM2 - can be made on site using 3 mm sheet metal plate.
 - For sizes W<550 or H<425 use 2 pieces on two damper edge. Total 4 pcs.
 - For sizes bigger than W=550 or H=425 use 3 pieces on each damper edge. Total 6 pcs.
- F4** - Nails or pins per ductwork manufacturer instructions
- F5** - Fire resistive coating Promat K84 (Promat)
- X, Y** - Cutting planes

Electrical Connections

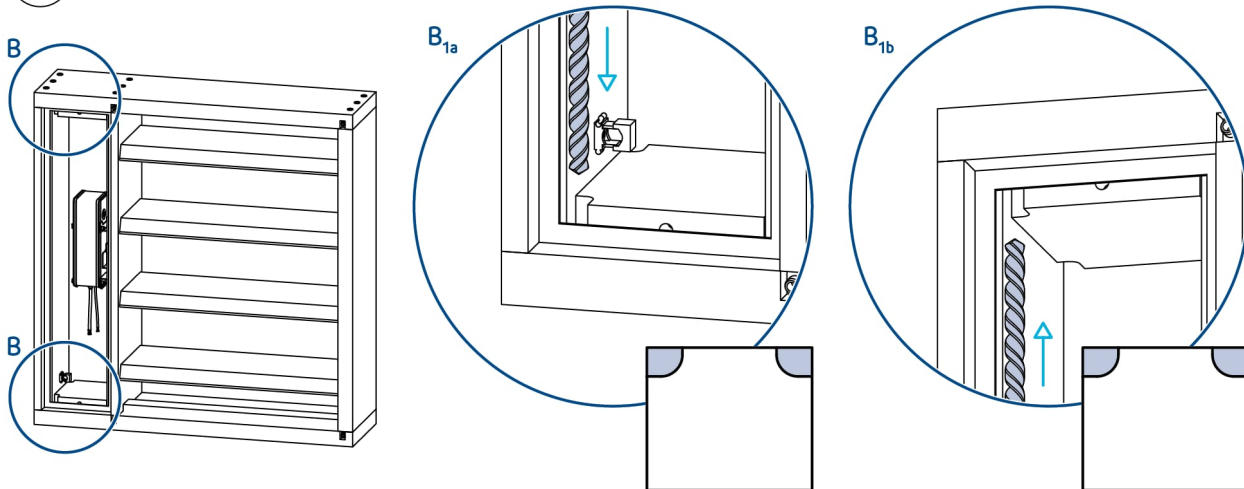
IMPORTANT

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

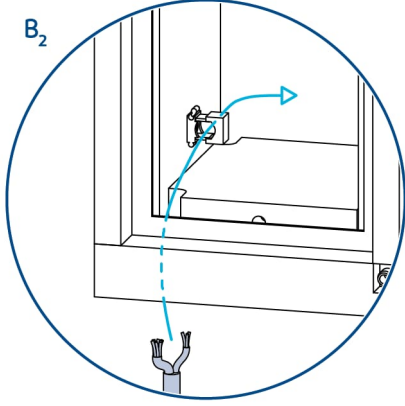
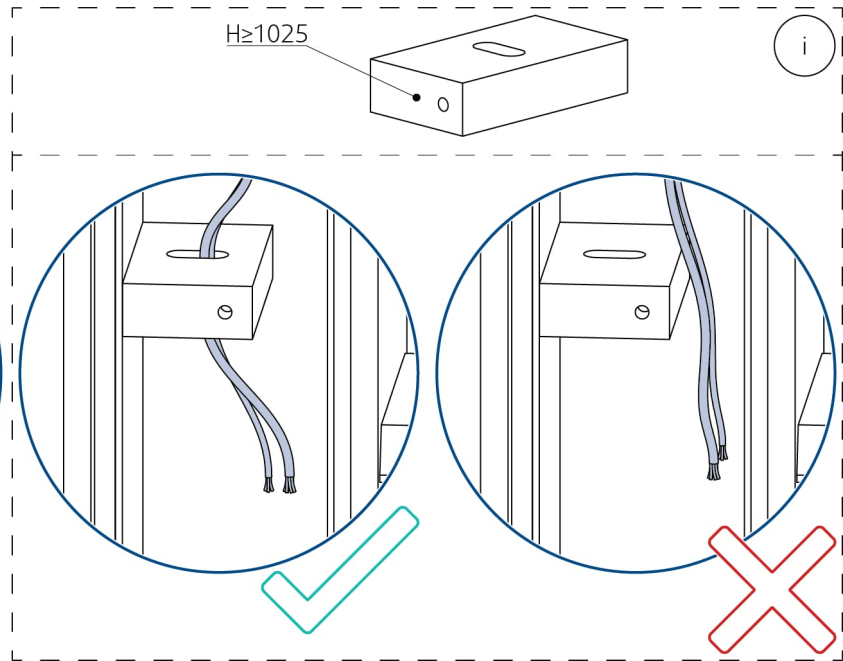
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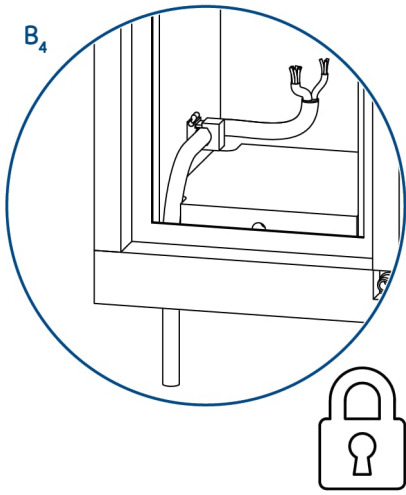
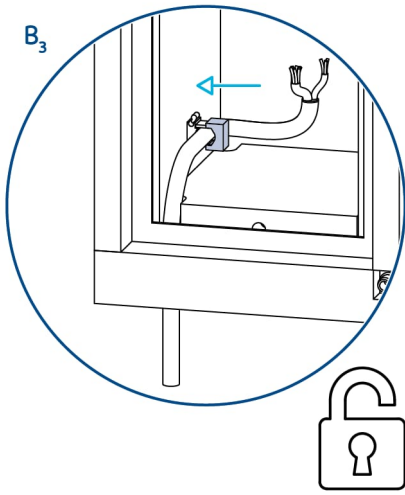
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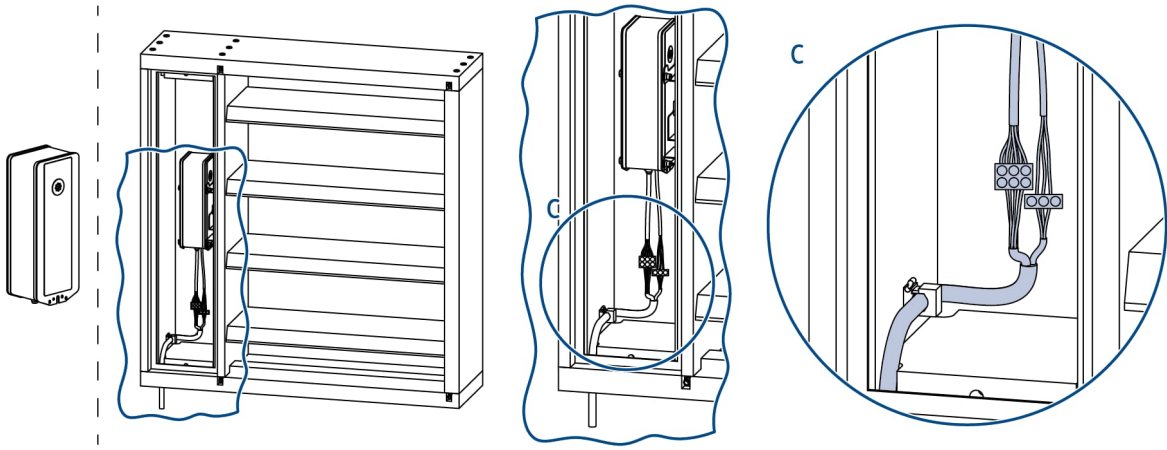
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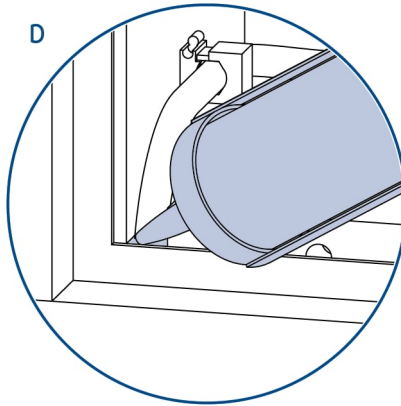
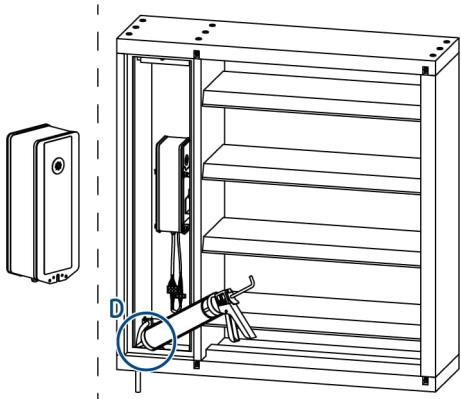
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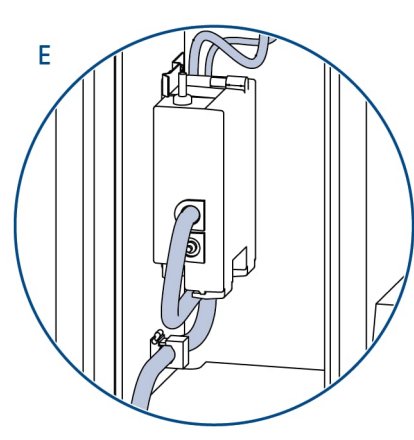
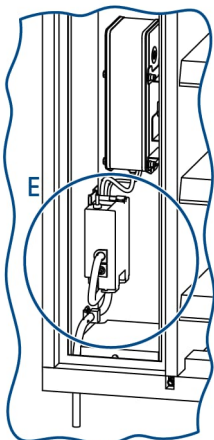
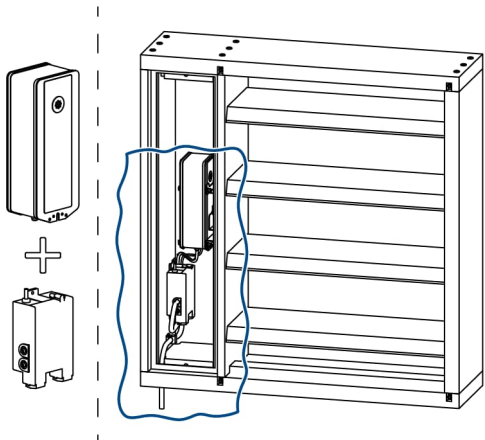
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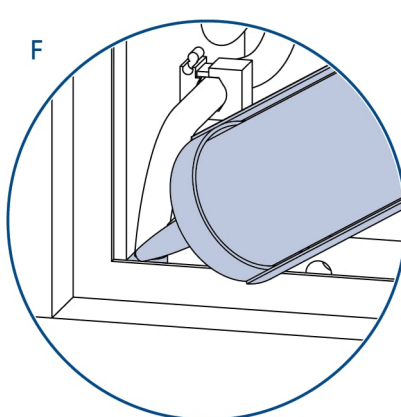
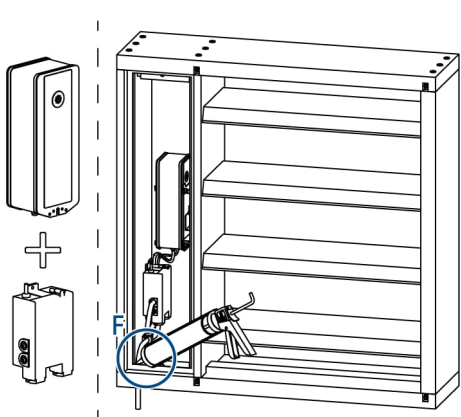
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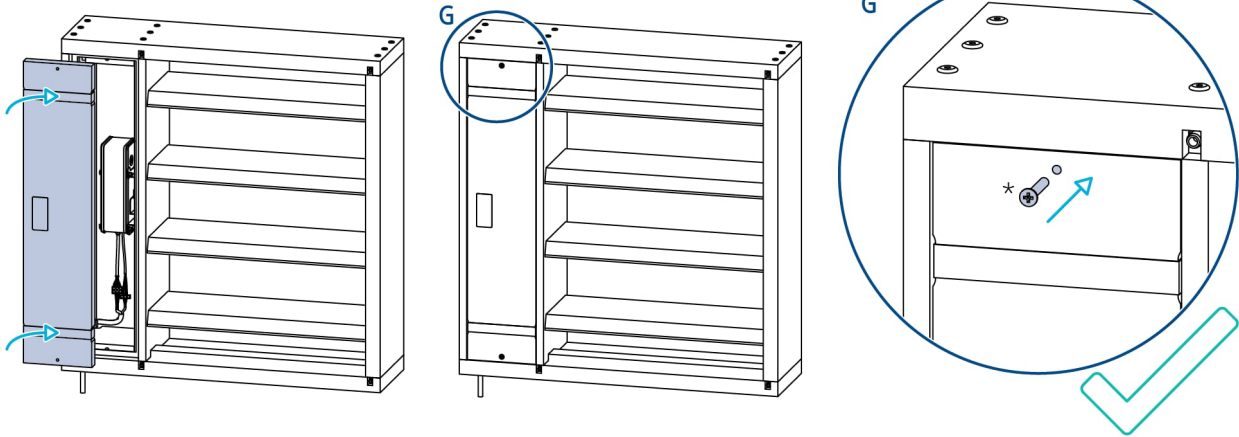
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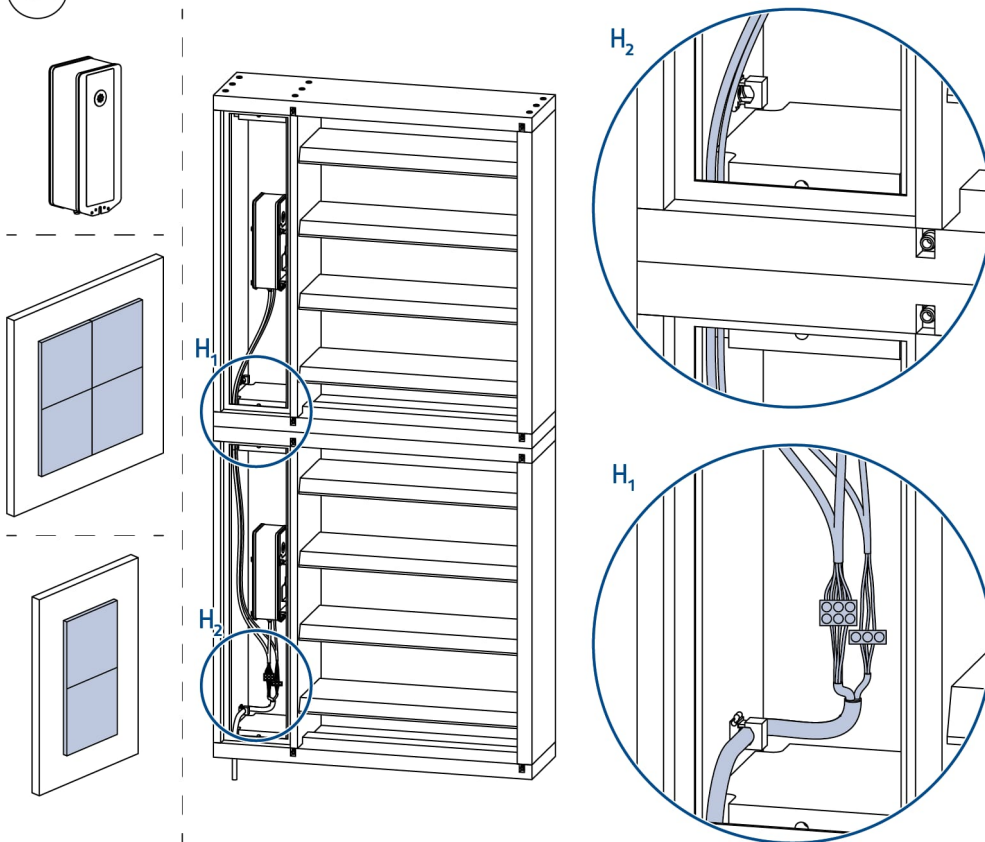
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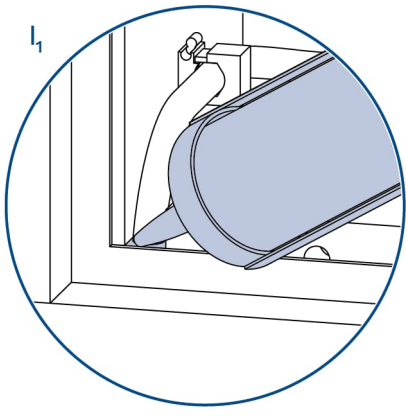
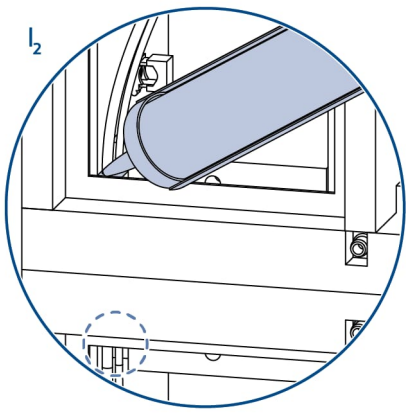
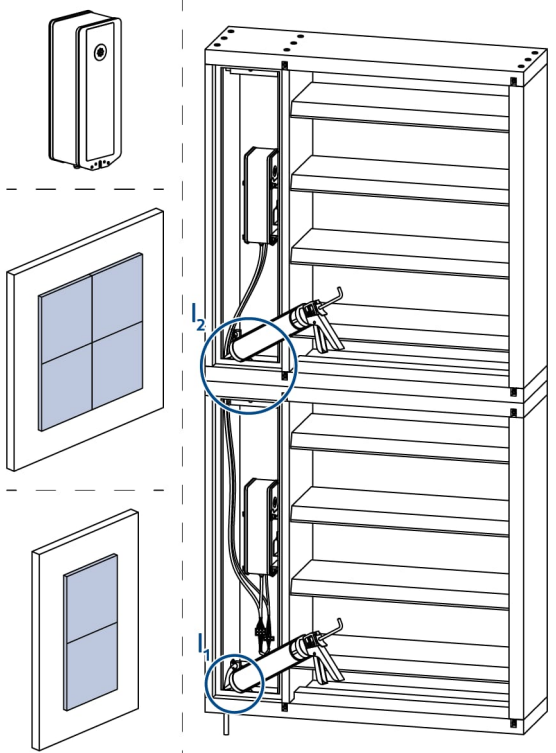
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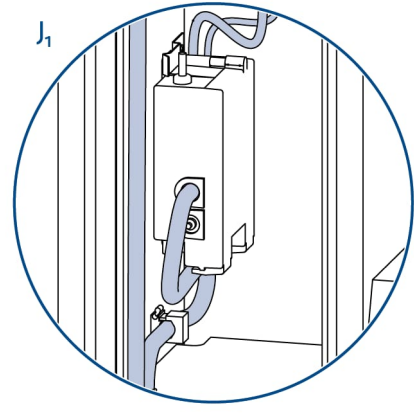
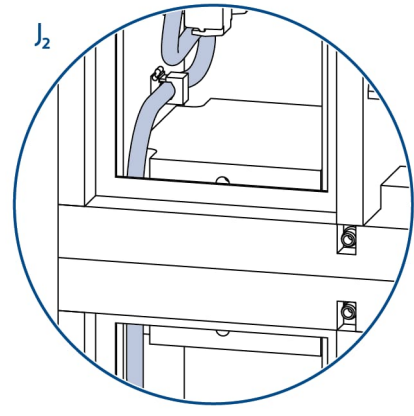
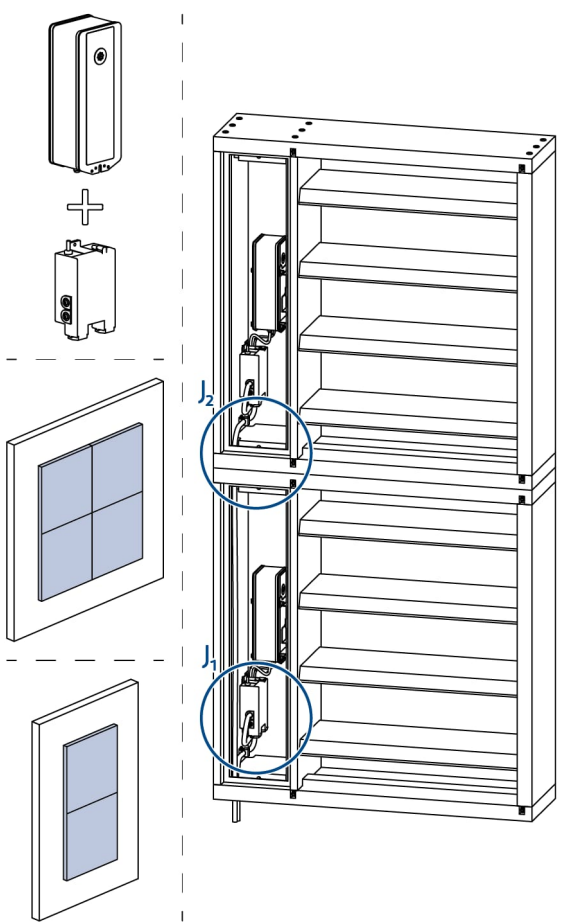
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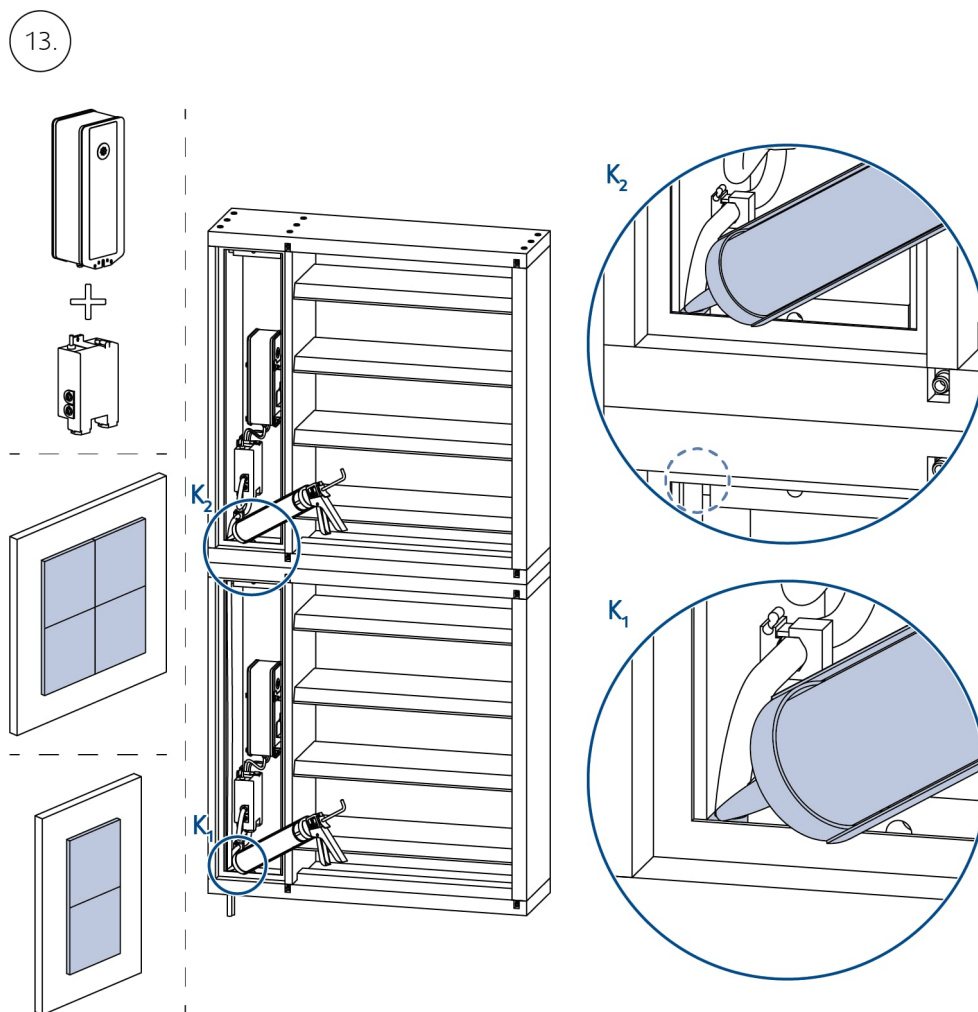


11.



12.





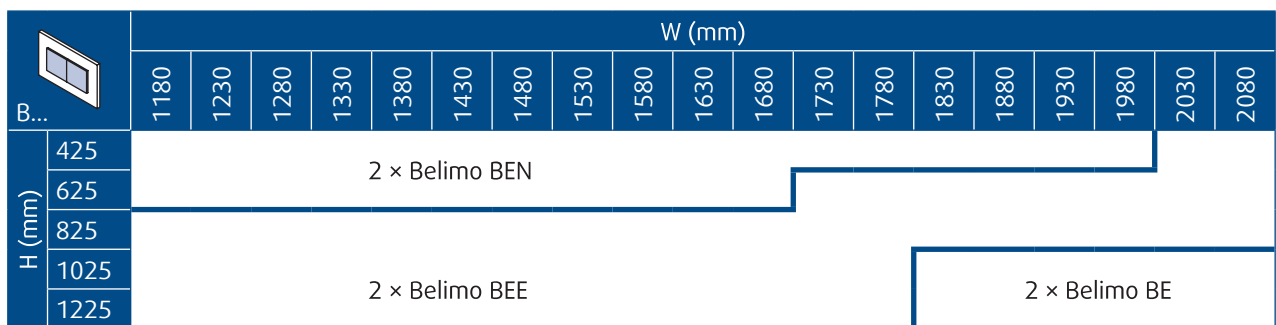
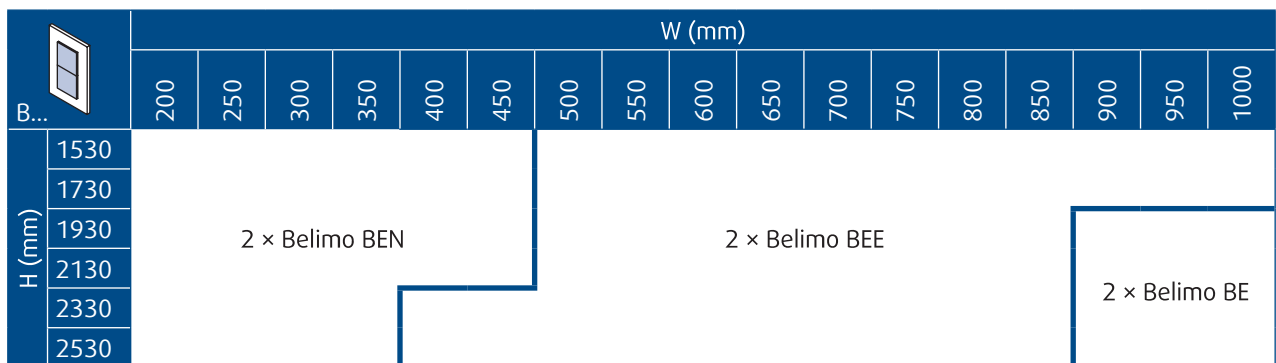
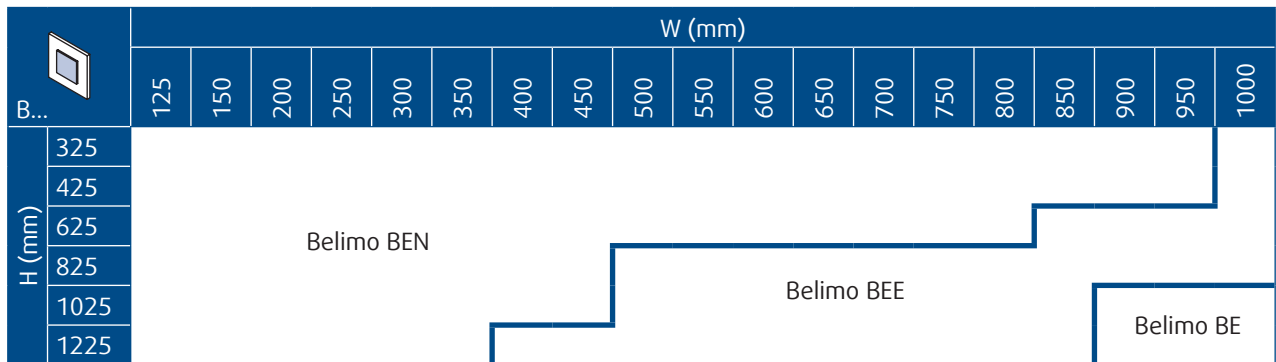
Legend


- 1 - Remove the screws and remove the mechanism lid using the 2 straps.
- 2 - Drill holes in the predefined cut-outs or on the mechanism side of the damper body.
- 3 - Slide the power and communication wires through the drilled holes.
- 4 - Fix the wire to avoid any damage from pulling from the outside.
- 5, 10 - Connect the wires to the actuator or to the supply and communication unit.
- 6, 8, 11, 13 - Caulk all wire crossings properly using Promaseal A (Promat).
- 7, 12 - Route the wires inside the mechanism so that there will be no damage to them from the moving mechanism.
- 9 - Close the mechanism lid and fix with screws.

Electrical parameters per activation and actuator type

AT	B...	T (Nm)	NV (V)	F (Hz)	CO (W)	CR (W)	WS (VA)	WN
B230	BEN230	15	AC 230	50/60	4	0,4	7	I _{max} 4 A @ 5 ms
	BEE230	25	AC 230	50/60	3,5	0,4	6	I _{max} 4 A @ 5 ms
	BE230	40	AC 230	50/60	8	0,5	15	I _{max} 7,9 A @ 5 ms
B24, B24-W	BEN24, BEN24-ST	15	AC/DC 24	50/60	3	0,1	6	I _{max} 8,2 A @ 5 ms
	BEE24, BEE24-ST	25	AC/DC 24	50/60	2,5	0,1	5	I _{max} 8,2 A @ 5 ms
	BE24, BE24-ST	40	AC/DC 24	50/60	12	0,5	18	I _{max} 8,2 A @ 5 ms
B24-SR	BEN24-SR	15	AC/DC 24	50/60	3	0,3	6,5	I _{max} 8,2 A @ 5 ms
	BEE24-SR	25	AC/DC 24	50/60	3	0,3	5,5	I _{max} 8,2 A @ 5 ms
	-	-	-	-	-	-	-	-
BST	BEN24-ST & BKNE230-24	15	AC 230	50/60	10	0,1	19	I _{max} 8,2 A @ 5 ms
	BEE24-ST & BKNE230-24	25	AC 230	50/60	10	0,1	19	I _{max} 8,2 A @ 5 ms
	BE24-ST & BKNE230-24	40	AC 230	50/60	12	0,5	18	I _{max} 8,2 A @ 5 ms

Actuator size map of S-BM2

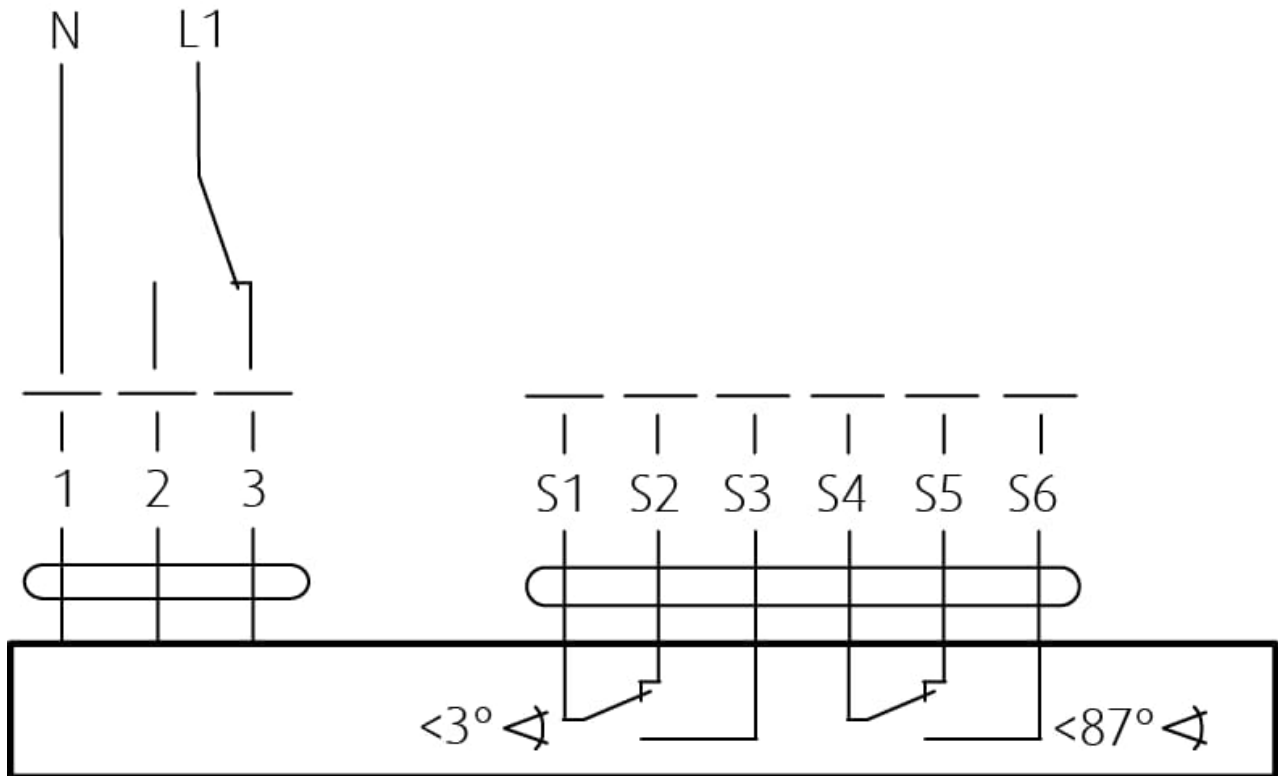


 B...		W (mm)																	
		1180	1230	1280	1330	1380	1430	1480	1530	1580	1630	1680	1730	1780	1830	1880	1930	1980	2030
H (mm)	1530	<div style="display: flex; justify-content: space-between; align-items: center; padding: 10px;"> <div style="text-align: center; width: 45%;">4 × Belimo BEE</div> <div style="border: 1px solid black; padding: 10px; width: 45%; text-align: center;">4 × Belimo BE</div> </div>																	
	1730																		
	1930																		
	2130																		
	2330																		
	2530																		

Type of activation B230

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

AC 230 V

**Notes:**

- Caution! Main power supply voltage!
- Parallel connection of several actuators possible.
- Power consumption and switching thresholds must be observed!

Legend for activation type B230

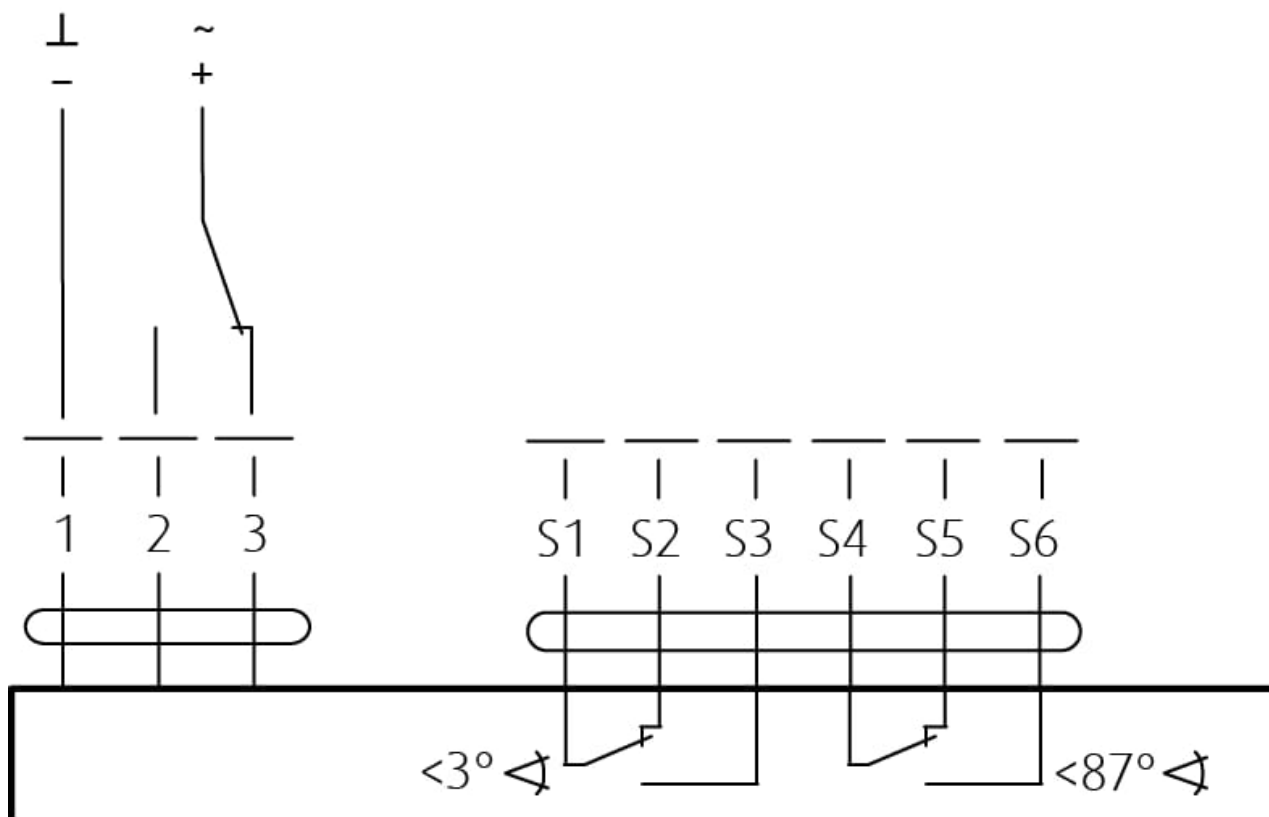
- 1** - blue
- 2** - brown
- 3** - white
- S1** - violet
- S2** - red
- S3** - white
- S4** - orange
- S5** - pink
- S6** - grey

Belimo BE230 actuator has wires without colors.

Type of activation B24

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

AC/DC 24 V



Notes:

- Caution! Main power supply voltage!
- Parallel connection of several actuators possible.
- Power consumption and switching thresholds must be observed!

Legend for activation type B24

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

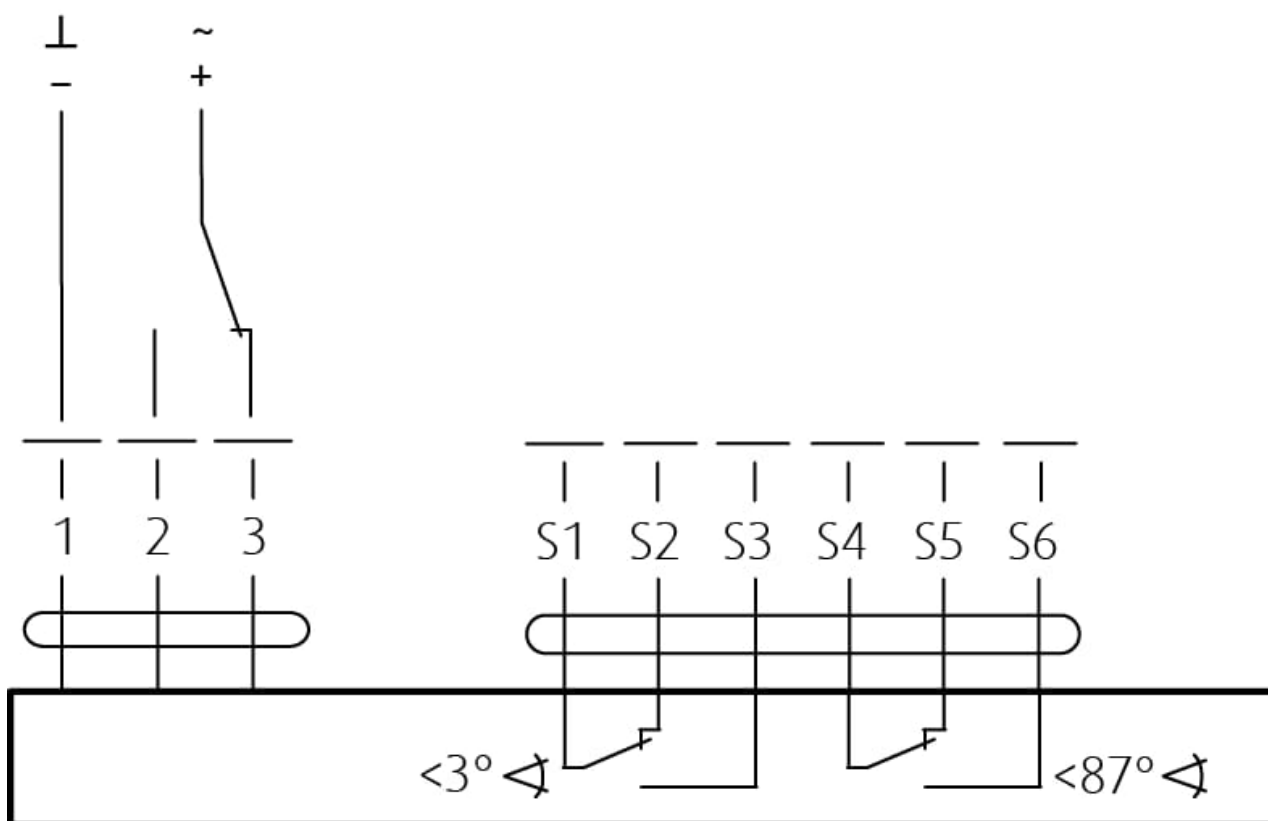
Belimo BE24 actuator has wires without colors.

Type of activation B24-W

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

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

AC/DC 24 V



Legend for activation type B24-W

The actuator is fitted with connection plugs.

Supply: With 3-pole plug, suitable for e.g. BKNE230-24

Auxiliary switch: 6-pole plug, suitable for e.g. BKNE230-24

Notes:

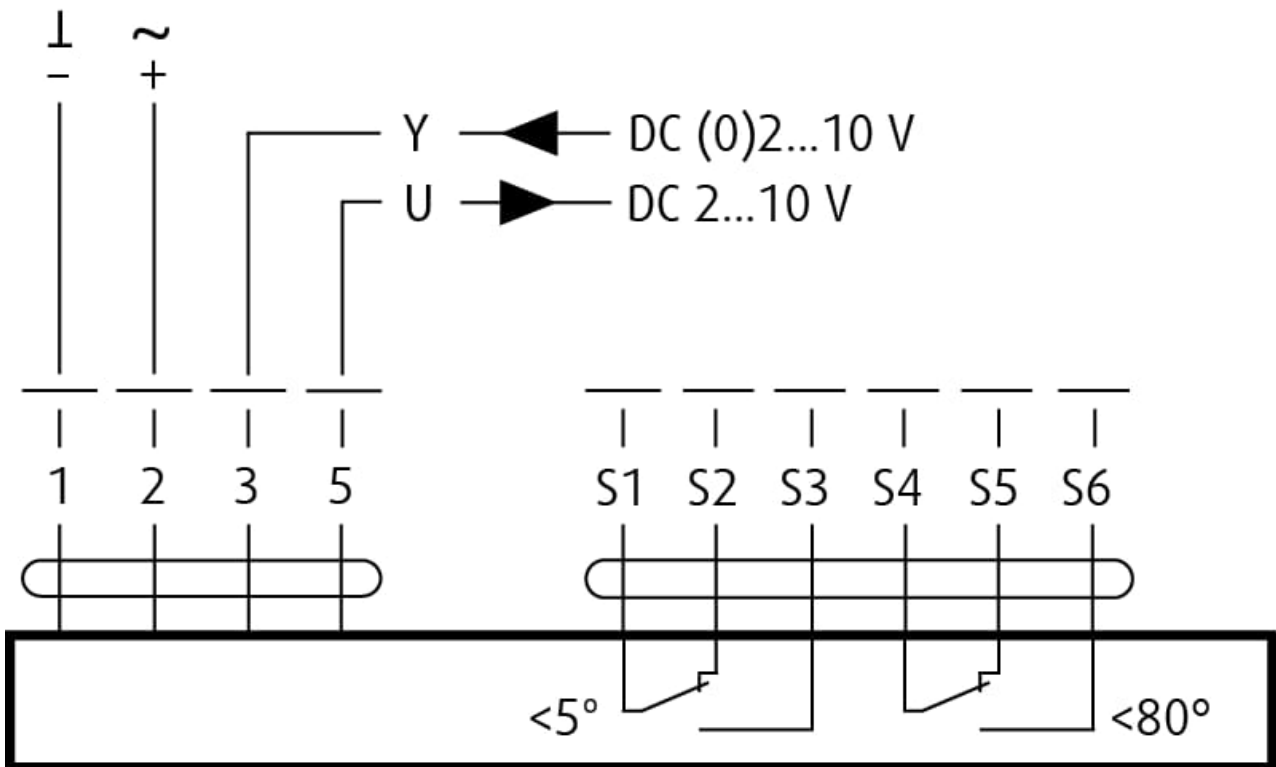
- Caution! Main power supply voltage!
- Parallel connection of several actuators possible.
- Power consumption and switching thresholds must be observed!
- Combination of power supply voltage and safety extra-low voltage not permitted at the both auxiliary switches.

Type of activation B24-SR

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

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

AC/DC 24 V



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

Belimo BE24 actuator not available in SR configuration.

Notes:

- Caution! Main power supply voltage!
- Parallel connection of several actuators possible.
- Power consumption and switching thresholds must be observed!
- Operating range Y - **DC (0)2...10 V**

- Input Impedance - **100 k Ω**
- Position feedback U - **DC 2...10 V**
- Position feedback U note - **Max. 0.5 mA**
- Position accuracy - **$\pm 5\%$**

Type of activation BSTO

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 BKNE230-24 (SBS/MP).

LEDs status indication (BSTO)

LED colour | LED state | Status

Yellow | ON | Damper open

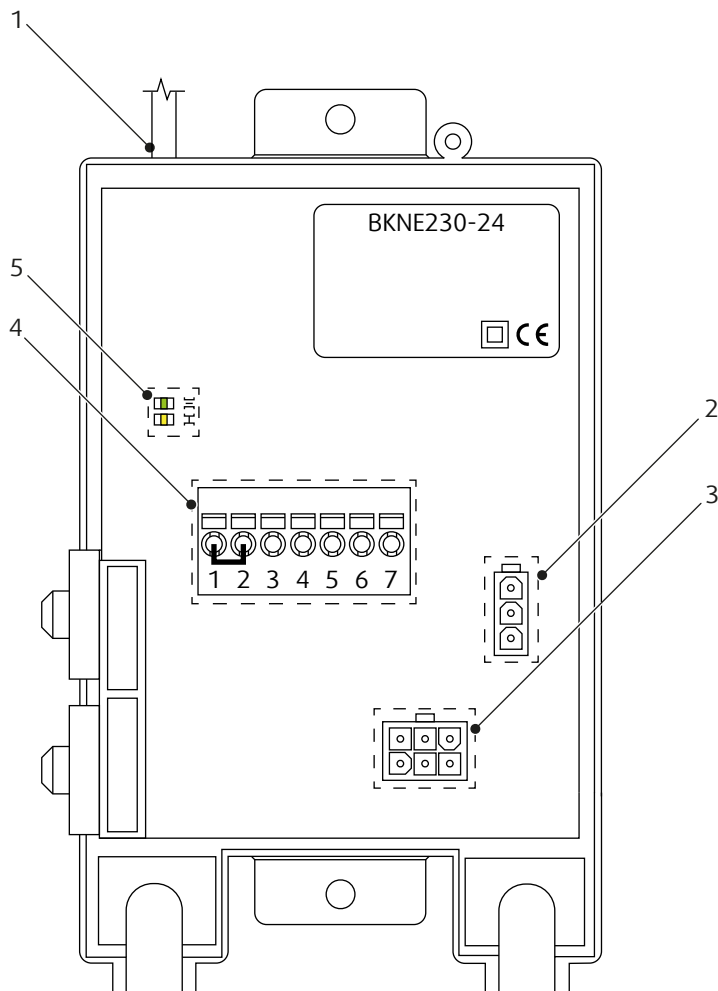
Yellow | Blinks | Damper is opening

Green | ON | Damper closed

Green | Blinks | Damper is closing

Yellow or green | Blinks at double frequency | Error

Yellow and green | OFF | Power failure



Legend for activation type BST0

- 1** - Power supply: cable and plug, AC 230 V.
- 2** - 3-pin connector: damper actuator (DC 24 V).
- 3** - 6-pin connector: damper actuator (position limit switches).
- 4** - 7-pin spring terminal: for 2-wire cable to the BKSE24-6 (2 x 1.5 mm² wire).
 - 1 up to 5 not to be assigned.
 - 6 <-a-> terminal to BKSE24-6.
 - 7 <-b-> terminal to BKSE24-6.
- 5** - cable bushing for 2 wire cable to BKSE24-6.
- 6** - Green LED: damper closed.
- 7** - Yellow LED: damper open.

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

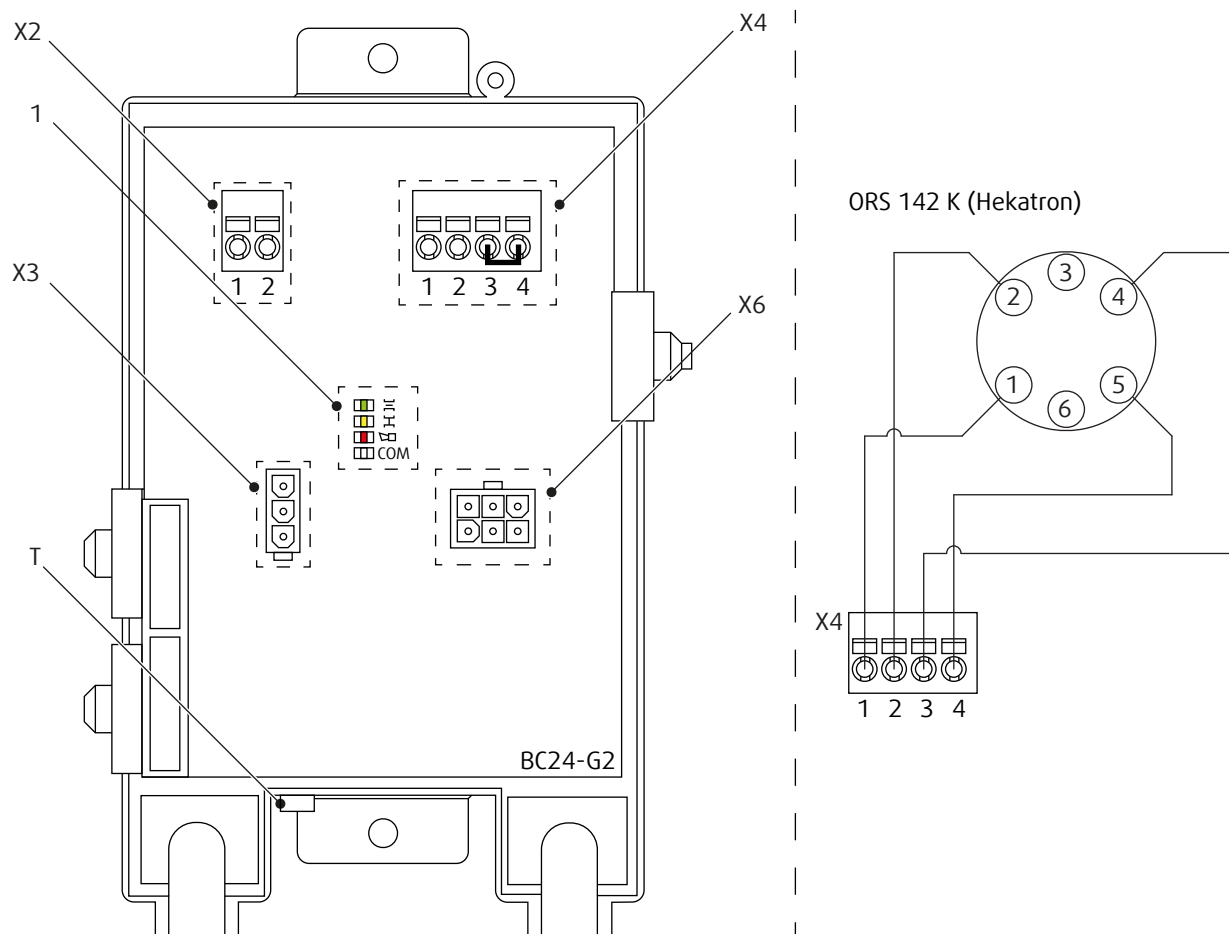
Yellow | Blinks | Damper is closing

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

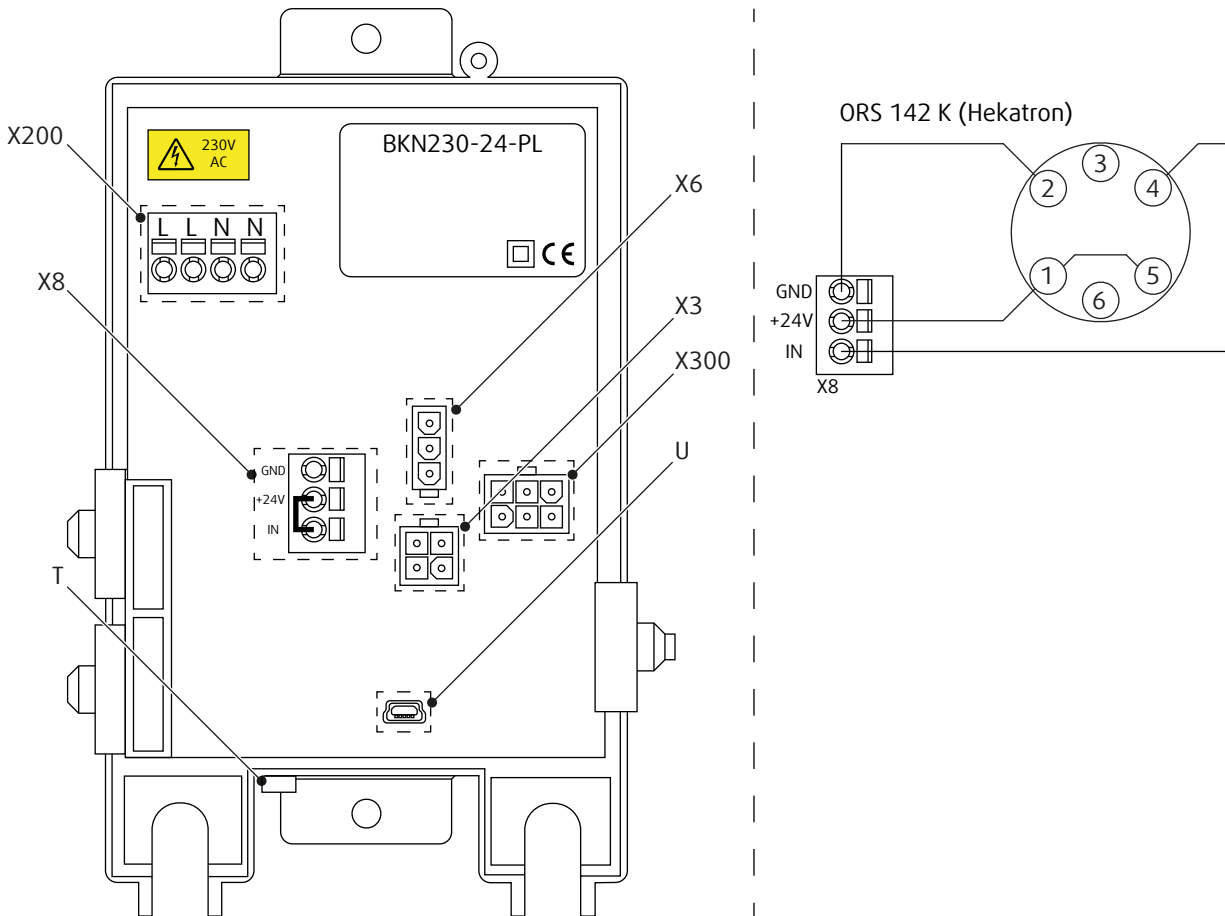
White RX | ON | PL data received

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)

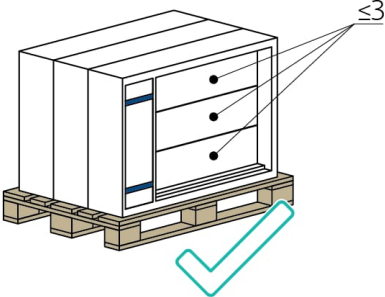
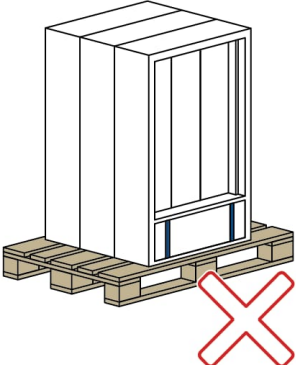
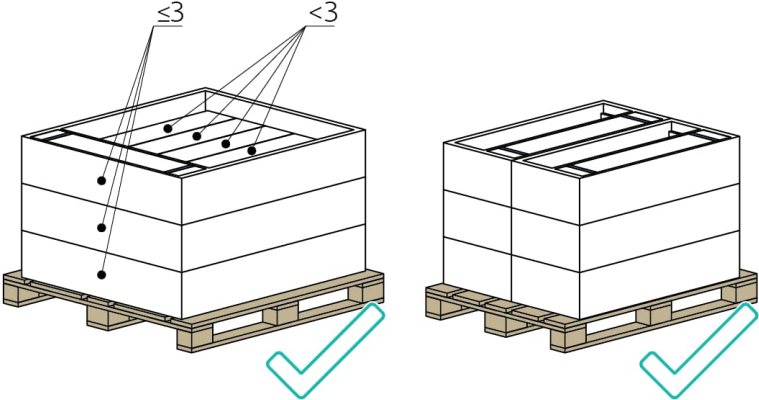
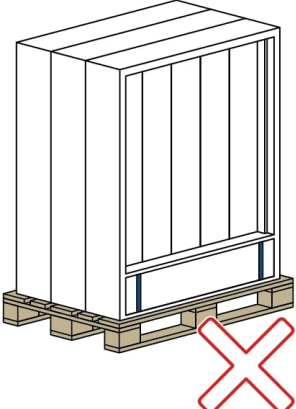
- 1- GND
- 2- (+) DC 24 V
- 3- IN

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

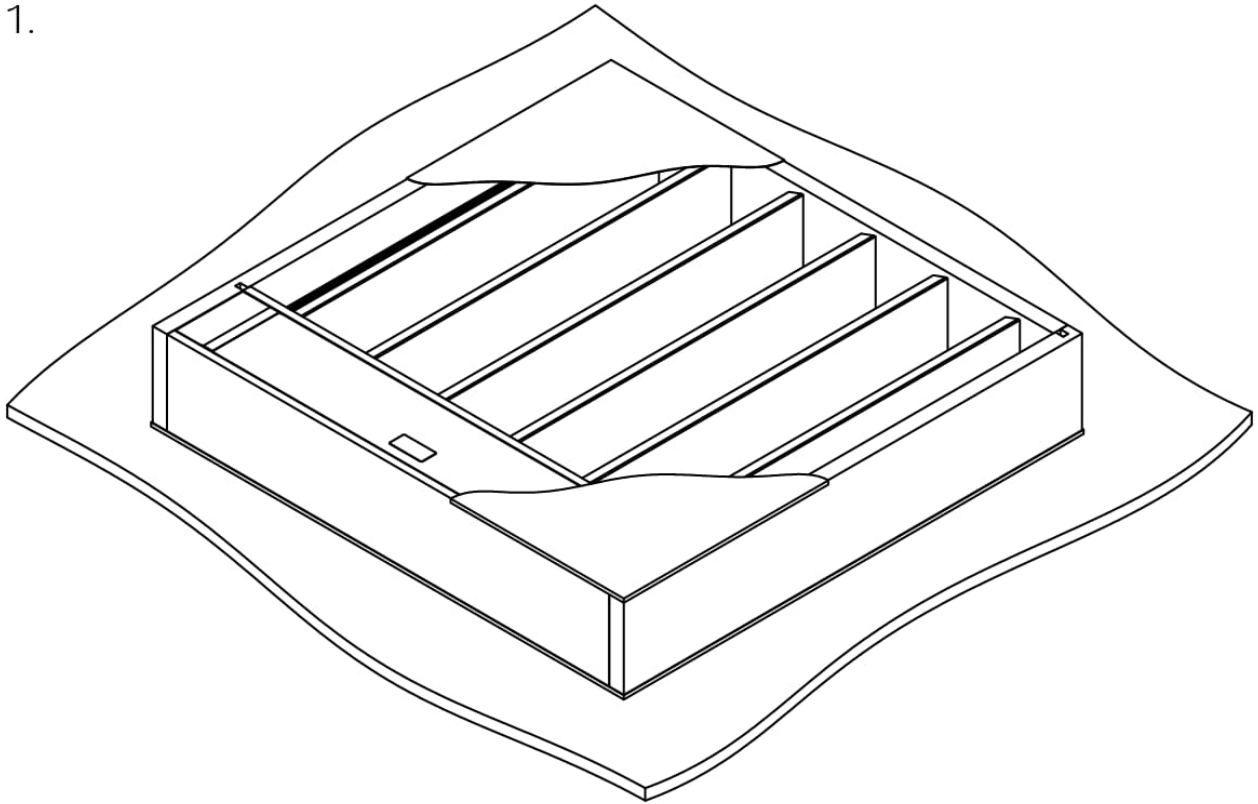
S-BM2 Handling & Manipulation

The S-BM2 is made of boards and can thus be considered fragile. Handling and manipulation must be done with care. Smaller dimensions can be manipulated and placed in the installation opening by two persons. Bigger dimensions are supplied with wooden blocks, those serve as support for suitable lifting equipment (forklift, crane). Please follow both textual and graphic instructions:

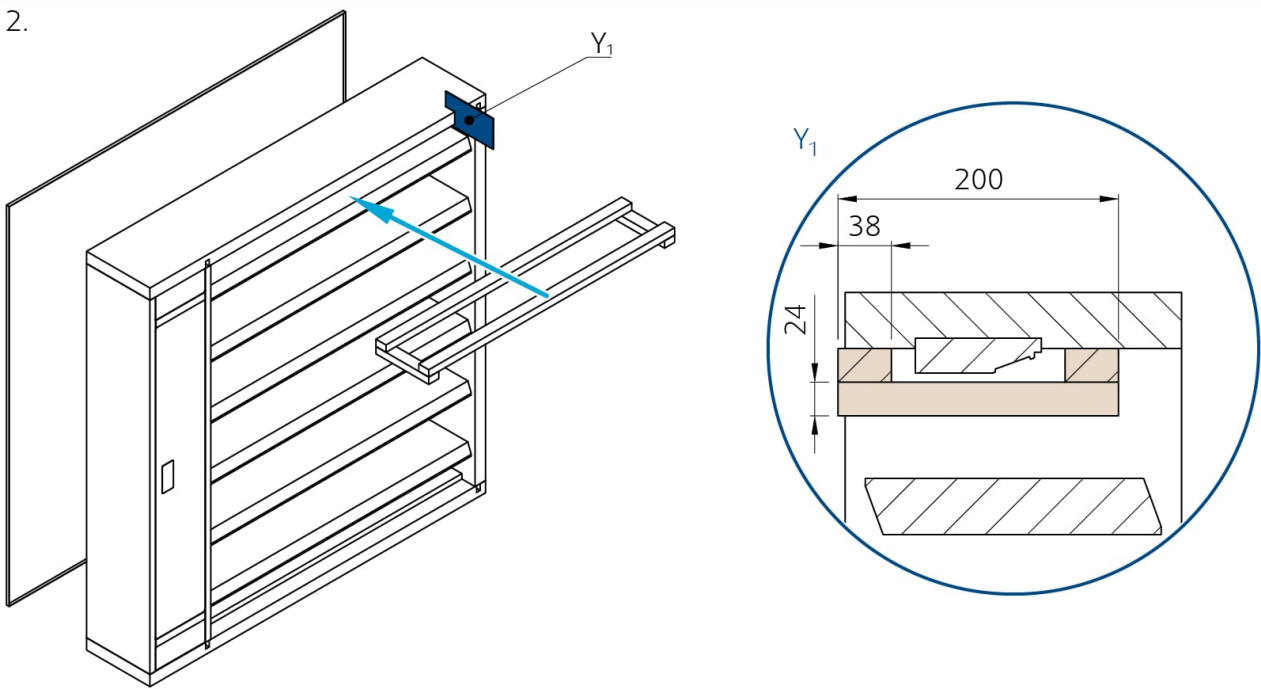
1. Unpack the damper and place it in vertical position.
2. Remove grille and place the holder between the upper-most blade and the frame.
3. Carefully lift the smoke control damper with the forklift, crane.
4. Prepare the opening, damper hanger, connection surfaces and/or filling as per the desired installation type.
5. Place the smoke control damper in the opening (wall installation) or on the opening (duct installation).
6. Once the smoke control damper has been placed fix the damper to ductwork:
 - a) For wall installation - insert the filling as per desired installation.
 - b) For duct installation - fix the hangers so that the weight of the damper is supported.
7. Carefully remove the fork.
8. Remove the wooden support.
9. If the ductwork ends with the damper - install a grille or grilles.

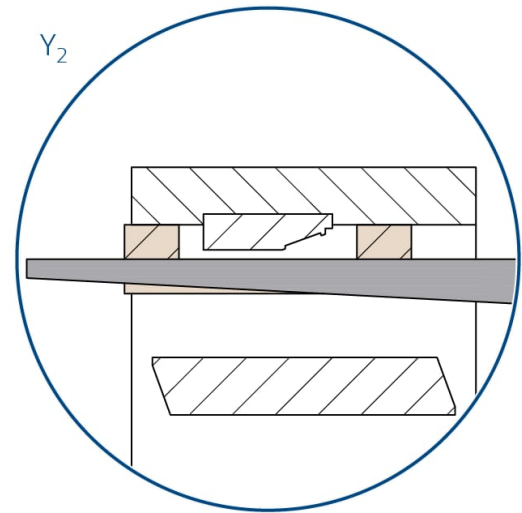
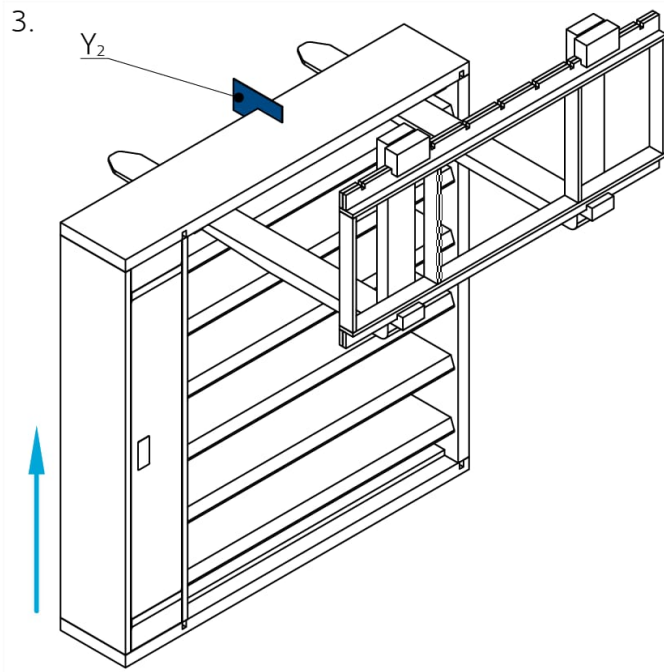
<p>H\geq425 ... H$<$825</p>		
<p>H\geq825 ... H\leq1225</p>		

1.

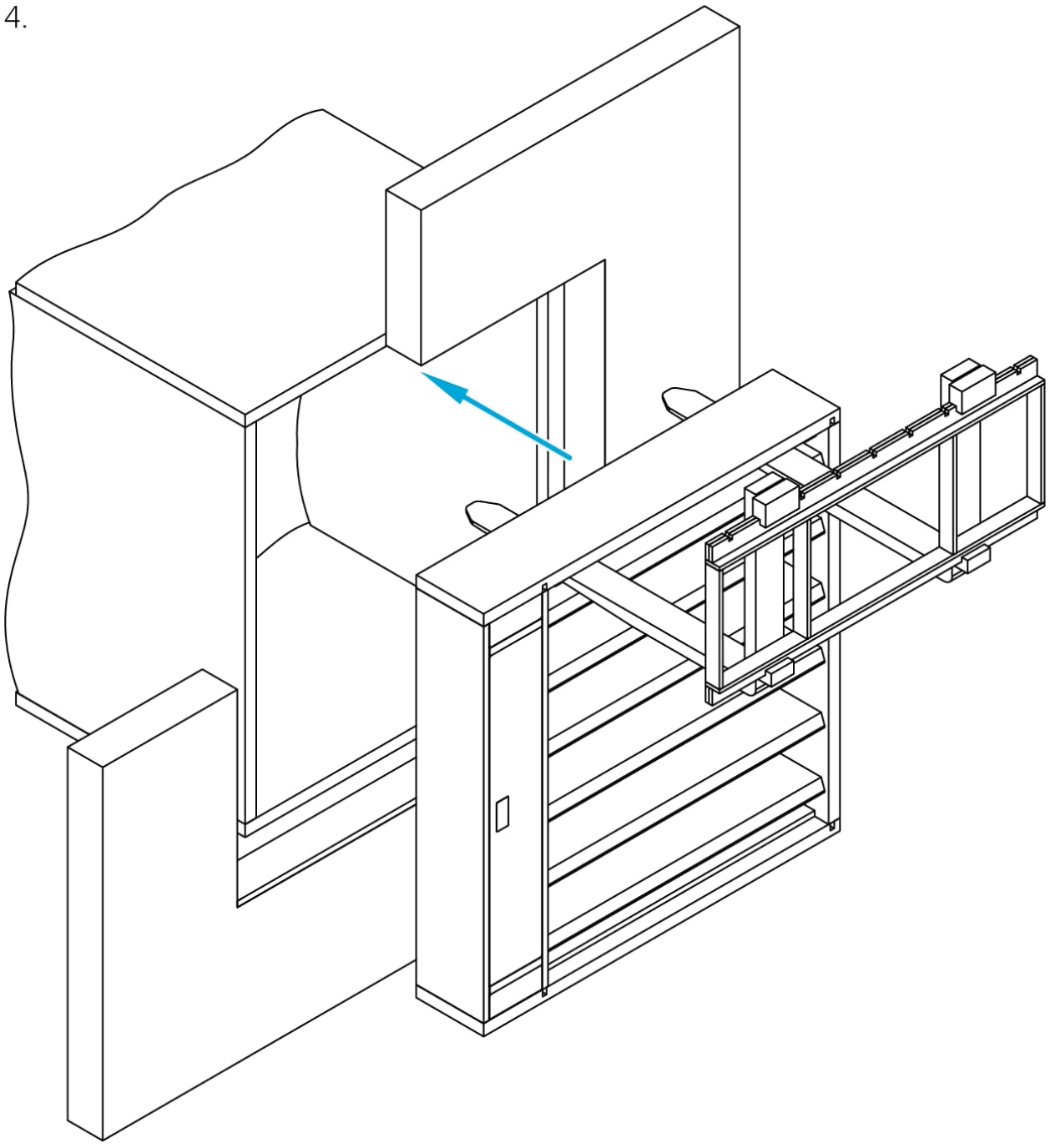


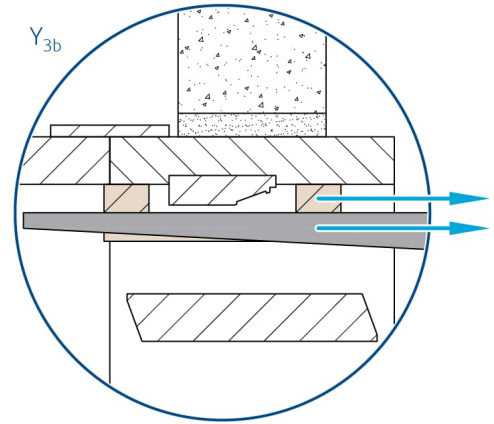
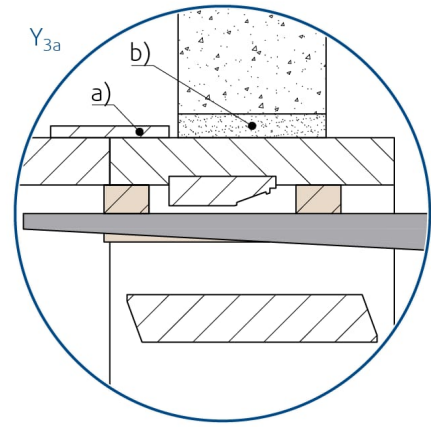
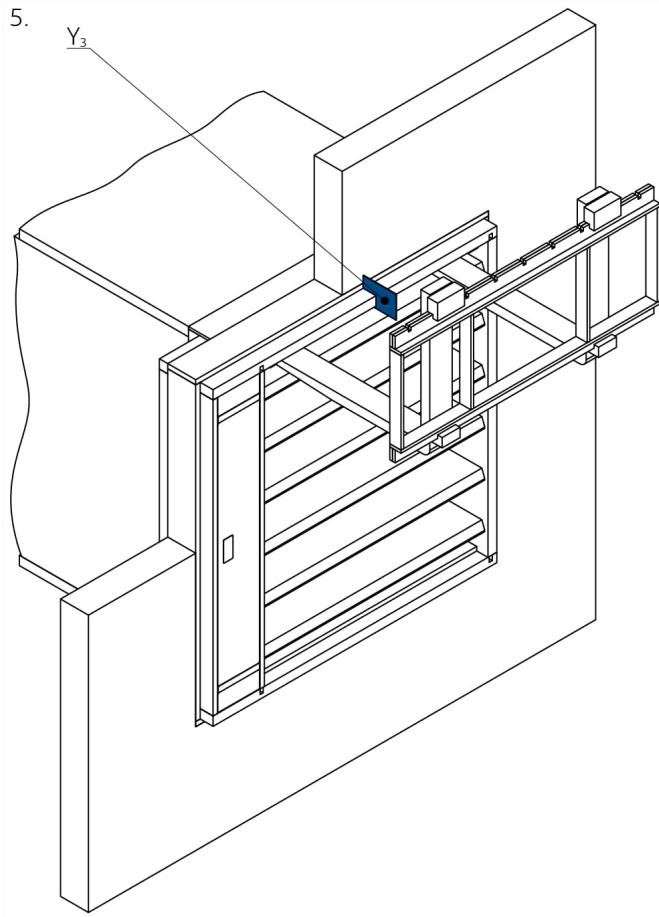
2.



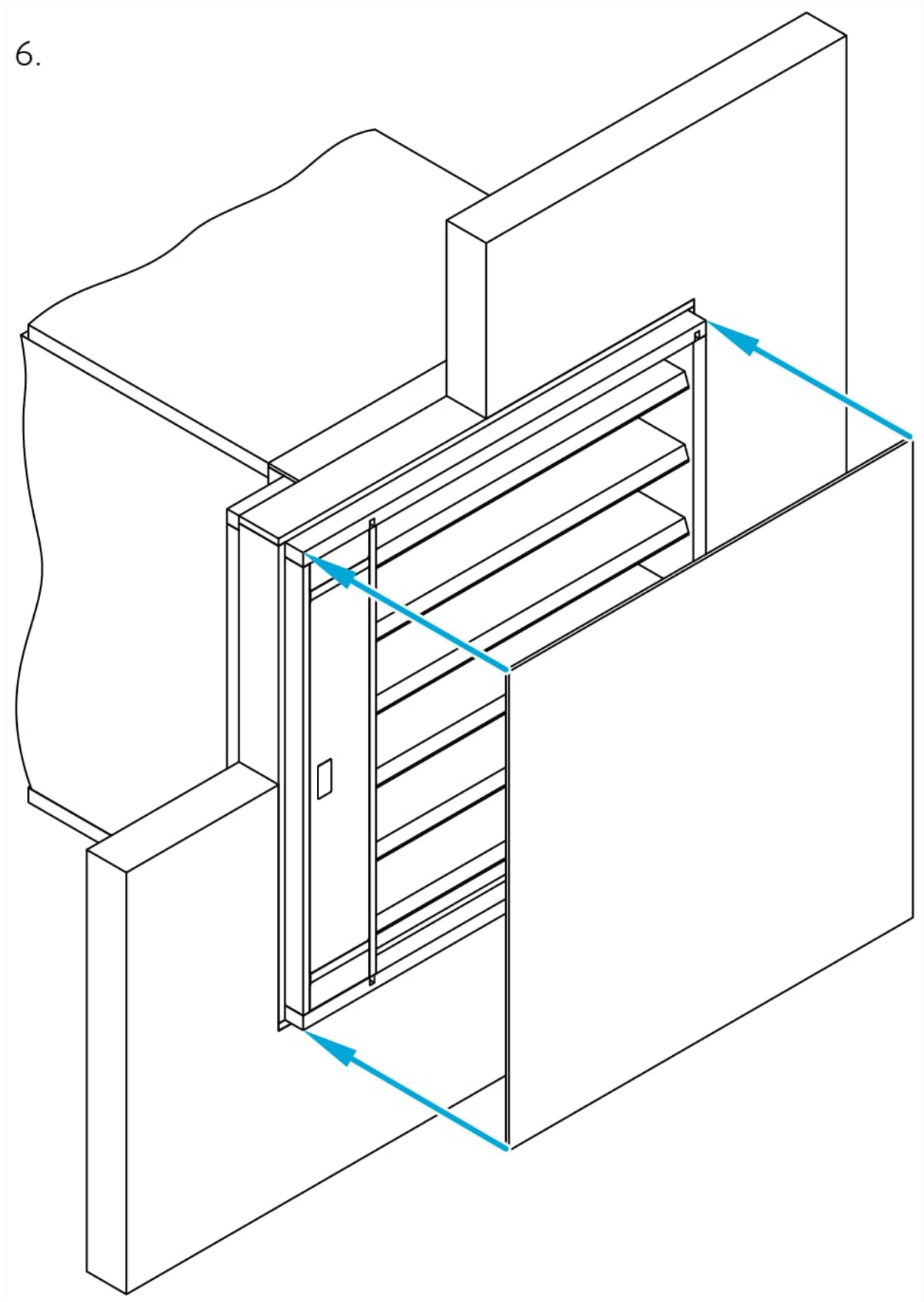


4.





6.



Legend

Y1, Y2, Y3, Y4 - Cutting plane

a) - For wall installation - insert the filling as per desired installation.

b) - For duct installation – fix the hangers so that the weight of the damper is supported.

Operation Manual

After installation, it is necessary to adjust the damper into its operating position “closed”. In case, that the damper is used for extraction of pollutants, adjust the damper into its operating position “open”. Connect the actuator to the relevant electric power supply as per Electrical connections section. The actuator is activated and adjusts the damper into its operating position.

Warning

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

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

Functionality Check

Switching the damper to the “open” position:

- The blade must come to the fully open position within 60 seconds and must remain locked.
- After reaching the end position of the blade, the appropriate signaling circuit must switch on – wires S1 and S2 must be connected.

Switching damper to the “closed” position:

- The blade must come up to the fully closed position within 60 seconds and must remain locked.
- After reaching the end position of the blade, the appropriate signaling circuit must switch on – wires S4 and S6 must be connected.

Damper Inspection

The actuator keeps the dampers on stand-by during their entire life cycle in accordance with this manual issued by the manufacturer. It is not permitted to alter the dampers in any way or to perform any changes to their structure without the manufacturer’s consent. The operator performs regular checks of the dampers as per established regulations and standards. Recommendation is at least once every 6 months.

The check needs to be performed by an employee who has been specifically trained for this purpose by the manufacturer. The current damper condition evaluated during the inspection must be entered into the “Operating Journal” along with the date of the inspection, the legible name, surname and signature of the employee who performed the inspection. The Operating Journal includes a copy of the employee’s authorization. If any discrepancies are discovered, these need to be entered in the Operating Journal along with a proposal for their removal.

Immediately after the installation and activation of the damper, it must be checked under the identical conditions as apply to the above mentioned six-month inspections. On its external side, the damper housing and the actuator movement are checked. Due to the need to perform a visual check of the damper's internal parts, it is possible to dismount the body extension fitted with the grille, which will enable access inside the damper or open the inspection lid if the damper is equipped with one. The damper's internal casing, sealings, foaming substance, the damper blade condition and accuracy of its closure during its leaning against the backstop in the closed position must all be checked. There must not be any strange objects or a layer of impurities from the air distribution systems inside the damper.

NEVER OPEN THE INSPECTION LID WHEN THERE IS AIR FLOWING IN THE DUCT CONNECTED TO THE SMOKE DAMPER.

Recommended Course of Action and Inspection Log as per EN 12 101

1. Identification of damper
2. Date of inspection
3. Check actuator wiring for damage
4. Check the wiring of the end switches for damage
5. Check the damper cleanliness and clean where necessary
6. Check the inspection lid, cover tightness
7. Check the blade and sealings, and correct and record where necessary (where applicable)
8. Check the damper functionality (open and close) as per the "Smoke Damper Functionality Check" chapter and confirm operation by using the control system, tracking the physical behavior of the damper and signalization of the end positions, and correct and record where necessary (where applicable).
9. The damper is part of the SHEVS. Therefore, the complete system must be checked as specified in its operational and maintenance requirements.
10. Set into the operating position – as per the "Operation Manual".
11. Record the result into the "Operating Journal" with the name and signature of the Inspection Technician.

Supplement

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

