



NORDfire FDML Fire Damper

Square dampers from 200×300 mm to 1000×1000 mm

CE certified according to EN 15650

Fire resistance EIS 90, EI 120

Cycling tests in class C₁₀₀₀ according to EN 15650

Leakage according to EN 1751, through the casing class B and through the damper blades class 3

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General

1. Description

Fire dampers are shutters in ducts of air-conditioning devices that prevent the spread of fire and combustion products from one fire segment to the other one. FDML multi blade fire dampers are in motorised design only with actuator and they have two main applications.

For use as a fire shutter without following air duct with cover grilles for closing ventilation openings in fire separating walls, constructions, elevator and other shafts, cable and other ducts, preventing the spread of heat and combustion products.

For use as a multi blade fire damper with following air duct on both sides (without cover grilles) or with duct on one side (with one cover grille), preventing the spread of heat and combustion products through this duct system.

Damper blades automatically closes air duct using a spring return actuator. The return spring of the actuator is actuated when a thermoelectric activation device BAT is activated, when a test button on BAT is pressed or when power supply of the actuator is interrupted.

After closing blades, the damper is sealed with silicon against smoke penetration. On request by customer, the damper can be supplied silicon-free. In the closed position, the damper is also sealed with material which increases its volume due to increasing temperature and air proofs the air duct.

1.1 Damper characteristics

- CE certified acc. to EN 15650
- Tested in accordance with EN 1366-2
- Classified acc. to EN 13501-3+A1
- Fire resistance EI 90 S, E 120 S
- Leakage acc. to EN 1751, through the casing class B and through the damper blades class 3
- Cycling tests in class C10000 acc. to EN 15650
- Corrosion resistant acc. to EN 15650
- Certificate of constancy of performance No. 1391-CPR-2020/0130/01
- Declaration of Performance No. PM/FDML/01/23/1
- Hygienic assessment of fire dampers - Report No. 1.6/pos/19/19b

1.2 Working conditions

Exact damper function is provided under the following conditions:

- maximum air velocity 12 m/s,
- maximum pressure difference 1500 Pa.
- Even distribution of air flow in complete damper cross section area.

Damper operating characteristics are independent on airflow direction through the damper. The damper can be installed with blade axis vertically or horizontally, temperature sensor (BAT) must always be in damper upper part.

Dampers are suitable for systems without abrasive, chemical and adhesive particles.

Dampers are designed for macroclimatic areas with mild climate according to EN IEC 60 721-3-3 ed.2., class 3K22. (Environment 3K22 is typically protected place with regulated temperature).

Temperature in the place of installation is permitted to range from -30°C to +50°C.

If the damper is used for self-ventilation it must be equipped with cover grilles from both sides.

2. Design

2.1 Design with manual control

Design .40 and .50

Fire dampers are equipped with Belimo spring return actuators with thermoelectric activation device BAT. The spring return actuator types are BFL, BFN or BF depending on the damper size. (Further mentioned as „actuator“). After being connected to power supply 230V or AC/DC 24V, the actuator rotates the damper blades to the operating position “OPEN” and at the same time prestretches its return spring. When the actuator is power supplied, the damper blades are in the position “OPEN” and the return spring is prestretched. Time needed for full opening of the damper blades from the position “CLOSED” to the position “OPEN” is maximum 120 sec.

If the actuator power supply is interrupted (due to loss of supply voltage, or pressing a test button on the thermoelectric activation device BAT), the actuator rotates the damper blades to the breakdown position “CLOSED”. The time of closing the damper blades from the position “OPEN” to the position “CLOSED” takes maximum 20 sec.

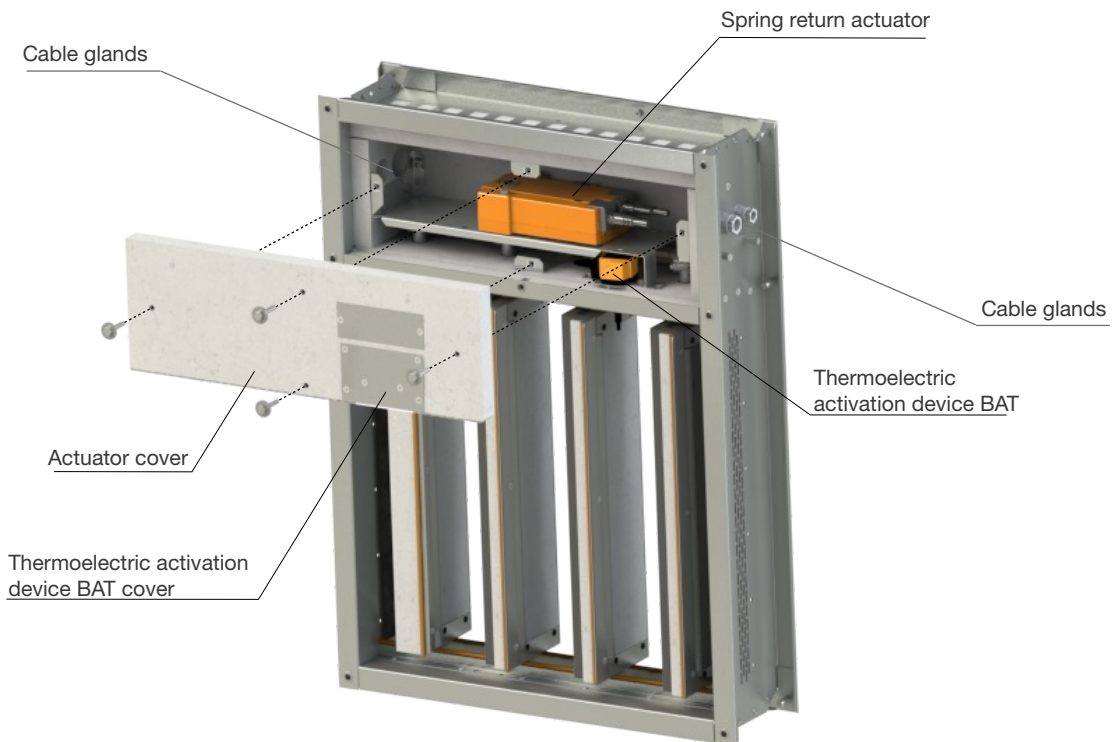
In case that the power supply is restored again (the blades can be in any position), the actuator starts to rotate the damper blades back to the position “OPEN”.

A thermoelectric activation device BAT, which contains two thermal fuses Tf1 and Tf2, is an integral part of the actuator.

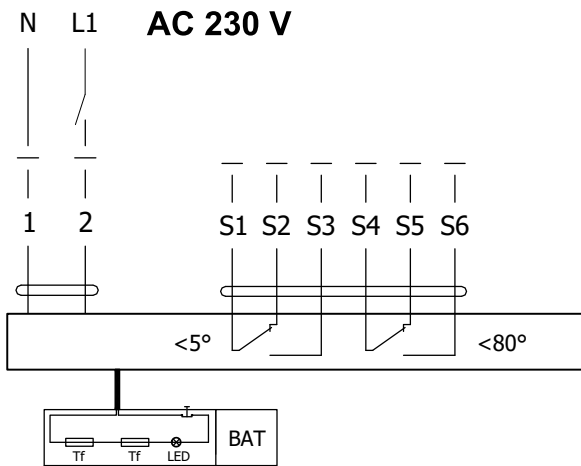
These fuses are activated when temperature +72°C has been reached (the fuse Tf1 due to temperature outside the duct and the fuse Tf2 due to temperature inside the duct). The thermoelectric activation device can also be equipped with a Tf2 thermal fuse type ZBAT 95/120/140 (must be specified in the order). In this case, the activation temperature inside the duct is +95°C, +120°C or +140°C (depending on the type).

After the thermal fuse Tf1 or Tf2 has been activated, the power supply is permanently and irreversibly interrupted and the actuator, by means of the pre-stretched spring, rotate the damper blades into the breakdown position “CLOSED”.

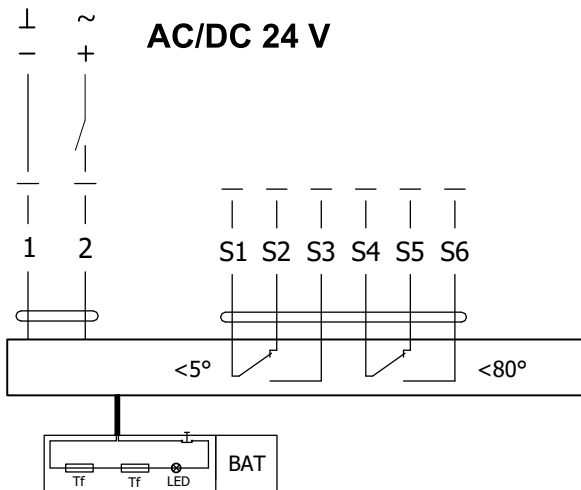
Signalisation of damper blades position “OPEN” and “CLOSE” is provided by two microswitches.



Actuator BELIMO BFL 230-T(-ST)



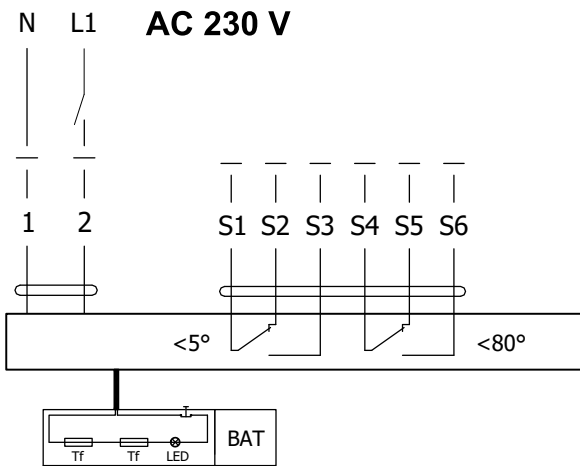
Actuator BELIMO BFL 24-T(-ST)



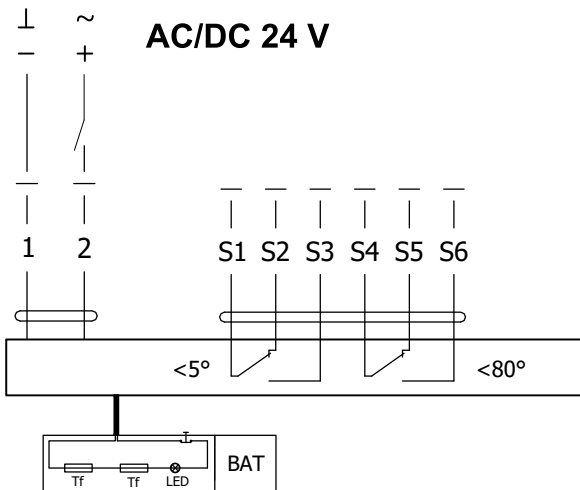
Tab. 1. Actuator BELIMO BFL 230-T(-ST), BFL 24-T(-ST)

Actuator BELIMO - 4 Nm / 3 Nm Spring	BFL 230-T(-ST)	BFL 24-T(-ST)
Power voltage	AC 230 V 50/60Hz	AC/DC 24 V 50/60Hz
Power consumption - in operation	3,5 W	2,5 W
- in rest position	1,1 W	0,8 W
Dimensioning	6,5 VA (I _{max} 4 A @ 5 ms)	4 VA (I _{max} 8,3 A @ 5 ms)
Protection class	II	III
Degree of protection		IP 54
Running time - motor		< 60 s
- spring return		~ 20 s
Ambient temperature		
- normal duty		-30°C ... +55°C
- safety duty		The safe position will be attained up to max. +75°C
- non-operating temperature		-40°C ... +55°C
Connection - supply/control	cable 1 m, 2 x 0,75 mm ² (BFL 2xx-T-ST) with 3-pin plug-in connectors	
- auxiliary switch	cable 1 m, 6 x 0,75 mm ² (BFL 2xx-T-ST) with 6-pin plug-in connectors	
Response temperature thermal fuse	duct outside temperature +72°C duct inside temperature +72°C	

Actuator BELIMO BFN 230-T(-ST)



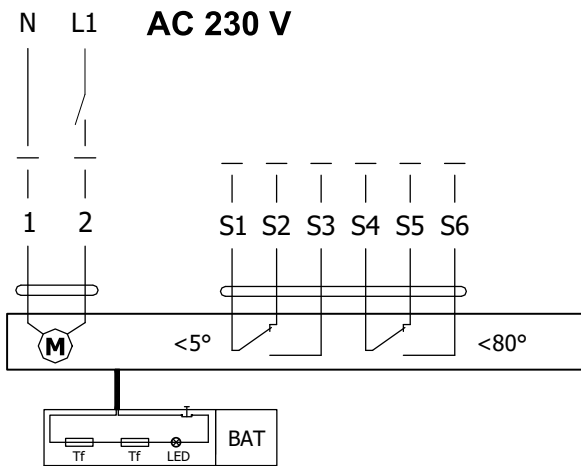
Actuator BELIMO BFN 24-T(-ST)



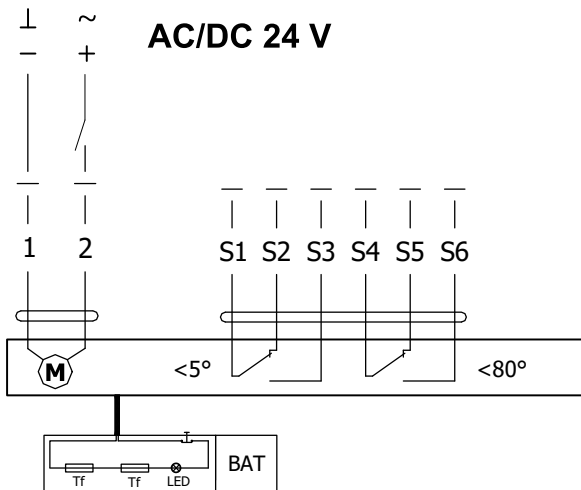
Tab. 2. Actuator BELIMO BFN 230-T(-ST), BFN 24-T(-ST)

Actuator BELIMO - 9 Nm / 7 Nm Spring	BFN 230-T(-ST)	BFN 24-T(-ST)
Power voltage	AC 230 V 50/60Hz	AC/DC 24 V 50/60Hz
Power consumption - in operation	5 W	4 W
- in rest position	2,1 W	1,4 W
Dimensioning	10 VA (I _{max} 4 A @ 5 ms)	6 VA (I _{max} 8,3 A @ 5 ms)
Protection class	II	III
Degree of protection		IP 54
Running time - motor		< 60 s
- spring return		~ 20 s
Ambient temperature		
- normal duty		-30°C ... +55°C
- safety duty		The safe position will be attained up to max. +75°C
- non-operating temperature		-40°C ... +55°C
Connection - supply/control	cable 1 m, 2 x 0,75 mm ² (BFN 2xx-T-ST) with 3-pin plug-in connectors	
- auxiliary switch	cable 1 m, 6 x 0,75 mm ² (BFN 2xx-T-ST) with 6-pin plug-in connectors	
Response temperature thermal fuse	duct outside temperature +72°C duct inside temperature +72°C	

Actuator BELIMO BF 230-T(-ST)



Actuator BELIMO BF 24-T(-ST)



Tab. 3. Actuator BELIMO BF 230-T(-ST), BF 24-T(-ST)

Actuator BELIMO - 18 Nm / 12 Nm Spring	BF 230-T(-ST)	BF 24-T(-ST)
Power voltage	AC 230 V 50/60Hz	AC/DC 24 V 50/60Hz
Power consumption - in operation	8,5 W	7 W
- in rest position	3 W	2 W
Dimensioning	11 VA (I _{max} 8,3 A @ 5 ms)	10 VA (I _{max} 8,3 A @ 5 ms)
Protection class	II	III
Degree of protection		IP 54
Running time - motor		120 s
- spring return		~ 16 s
Ambient temperature		
- normal duty		-30°C ... +55°C
- safety duty		The safe position will be attained up to max. +75°C
- non-operating temperature		-40°C ... +55°C
Connection - supply/control	cable 1 m, 2 x 0,75 mm ² (BF 2xx-TN-ST) with 3-pin plug-in connectors	
- auxiliary switch	cable 1 m, 6 x 0,75 mm ² (BF 2xx-TN-ST) with 6-pin plug-in connectors	
Response temperature thermal fuse	duct outside temperature +72°C duct inside temperature +72°C	

2.2 Thermoelectric activation device BAT

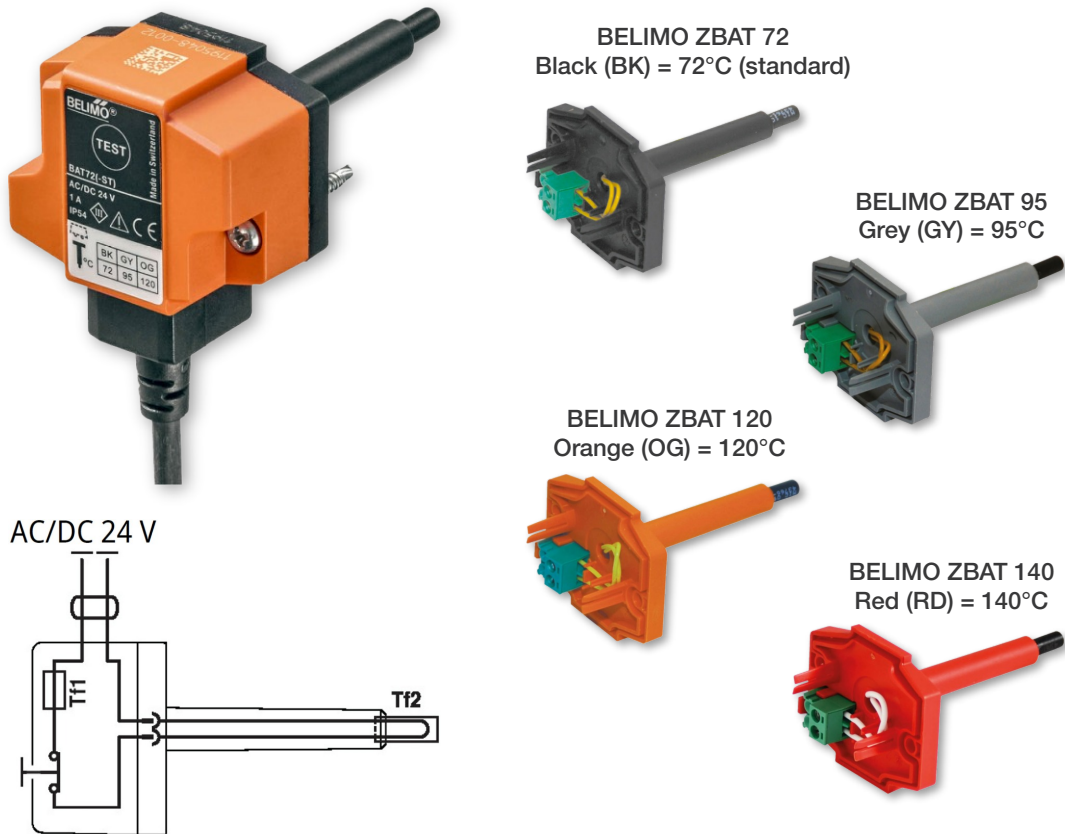
If the thermal fuse Tf1 is interrupted (due to temperature outside the duct), it is necessary to replace the spring return actuator. Thermoelectric activation device BAT is integral part of the actuator.

If the thermal fuse Tf2 is interrupted (due to temperature inside the duct), only the spare part ZBAT 72 (95/120/140) needs to be replaced (acc.to the activation temperature).

When one of the thermal fuses responds, the supply voltage is interrupted permanently and irreversibly.

The function (interruption of the supply voltage) can be checked by pressing the test button.

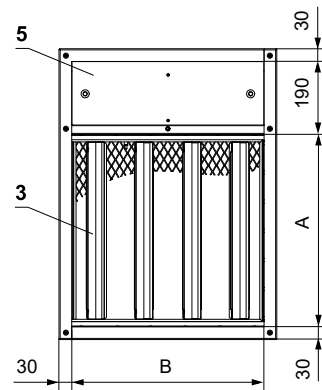
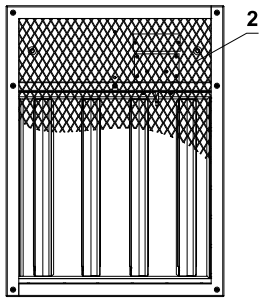
Installation is carried out with the pre-assembled, selftapping screws.



Tab. 4. Thermoelectric activation device BAT 72 (95/120/140)

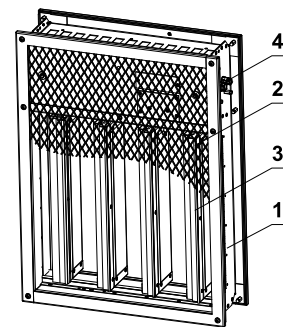
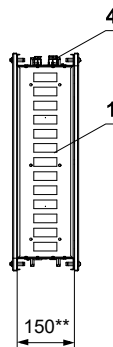
Thermoelectric activation device BAT 72 (95/120/140)	
Power voltage	AC/DC 24 V 50/60Hz
Rated current	1 A
AC/DC throughput resistance	<1 Ω
Protection class	III
Degree of protection	IP 54
Probe length	65 mm
Ambient temperature	-30°C ... +50°C
Storage temperature	-40°C ... +50°C
Ambient humidity	Max. 95% RH, non-condensing
Connection supply	Cable 1 m, 2 x 0.5 mm ² , Betaflam cable heatresistant up to 145°C
Response temperature thermal fuse	Duct inside temperature +72 (95/120/140)°C Duct outside temperature +72 (95/120/140)°C

3. Dimensions

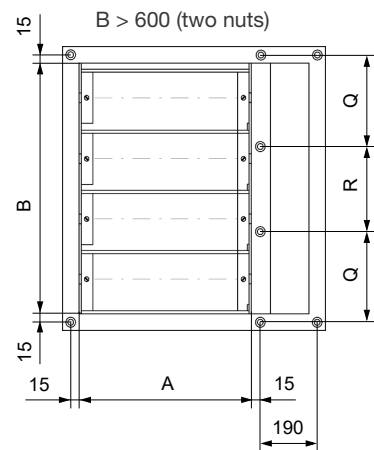
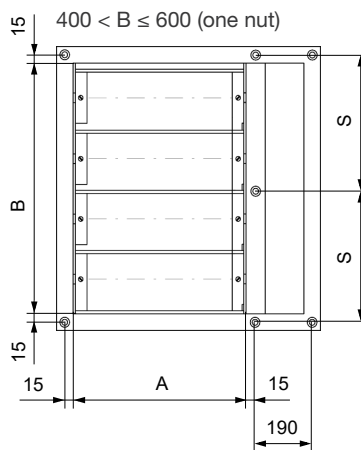
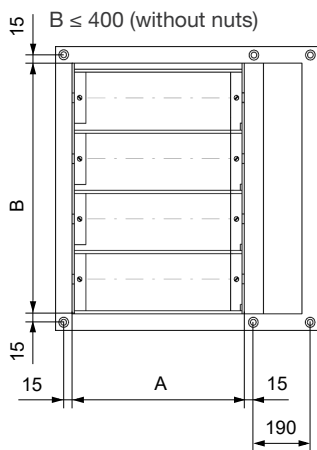


- 1 – Damper casing
- 2 – Cover grille
- 3 – Damper blade
- 4 – Cable glands
- 5 – Actuator cover

* Depth with cover grilles
 ** Depth of a damper casing



Connecting dimensions of nuts M6



B (mm)	R (mm)	Q (mm)	S (mm)	B (mm)	R (mm)	Q (mm)	S (mm)
300	/	/	/	650	220	230	/
315	/	/	/	700	240	245	/
355	/	/	/	710	240	250	/
400	/	/	/	750	250	265	/
450	/	/	240	800	270	280	/
500	/	/	265	850	290	295	/
560	/	/	295	900	300	315	/
600	/	/	315	950	320	330	/
630	270	225	/	1000	340	345	/

3.1 Technical parameters

AxB (mm)	No. of blades	Weight (kg)		Eff. area Sef (m ²)	Actua.	AxB (mm)	No. of blades	Weight (kg)		Eff. area Sef (m ²)	Actua.
		FDML*	1 KMM					FDML*	1 KMM		
200x300	2	15,3	1,0	0,0276	BFL	×700	6	32,9	2,4	0,1069	BFN
×315	2	15,9	1,1	0,0284	BFL	×710	6	33,4	2,4	0,1093	BFN
×355	3	17,1	1,1	0,0349	BFL	×750	6	35,2	2,5	0,1191	BFN
×400	3	18,8	1,2	0,0423	BFL	×800	6	37,2	2,7	0,1240	BFN
×450	4	20,8	1,3	0,0440	BFL	×850	7	38,8	2,8	0,1337	BFN
×500	4	22,8	1,4	0,0522	BFL	×900	7	40,9	2,9	0,1459	BFN
×560	4	25,0	1,5	0,0554	BFL	×950	8	42,8	3,0	0,1484	BFN
×600	5	26,1	1,6	0,0620	BFL	×1000	8	44,9	3,1	0,1606	BFN
×630	5	27,4	1,7	0,0669	BFL	300x300	2	17,2	1,2	0,0444	BFL
×650	5	28,0	1,7	0,0702	BFL	×315	2	17,9	1,2	0,0457	BFL
×700	6	29,7	1,8	0,0718	BFL	×355	3	19,2	1,3	0,0562	BFL
×710	6	30,3	1,8	0,0735	BFL	×400	3	21,1	1,4	0,0681	BFL
×750	6	31,9	1,9	0,0800	BFL	×450	4	23,3	1,5	0,0708	BFL
×800	6	33,6	2,4	0,0833	BFL	×500	4	25,5	1,6	0,0840	BFL
×850	7	35,2	2,5	0,0899	BFL	×560	4	28,1	1,8	0,0892	BFL
×900	7	37,4	2,6	0,0981	BFN	×600	5	29,3	1,9	0,0998	BFL
×950	8	38,8	2,7	0,0997	BFN	×630	5	30,6	2,3	0,1077	BFL
×1000	8	41,0	2,9	0,1079	BFN	×650	5	31,3	2,4	0,1130	BFL
250x300	2	16,3	1,1	0,0360	BFL	×700	6	33,6	2,5	0,1156	BFN
×315	2	16,9	1,2	0,0370	BFL	×710	6	34,2	2,5	0,1183	BFN
×355	3	18,1	1,2	0,0456	BFL	×750	6	35,9	2,6	0,1288	BFN
×400	3	19,9	1,3	0,0552	BFL	×800	6	38,0	2,7	0,1341	BFN
×450	4	22,0	1,4	0,0574	BFL	×850	7	39,7	2,8	0,1447	BFN
×500	4	24,2	1,5	0,0681	BFL	×900	7	41,8	3,0	0,1579	BFN
×560	4	26,5	1,7	0,0723	BFL	×950	8	43,7	3,1	0,1605	BFN
×600	5	27,7	1,7	0,0809	BFL	×1000	8	45,9	3,2	0,1737	BFN
×630	5	29,0	1,8	0,0873	BFL	315x300	2	17,5	1,2	0,0469	BFL
×650	5	29,7	1,8	0,0916	BFL	×315	2	18,2	1,3	0,0483	BFL
×700	6	31,8	2,3	0,0937	BFN	×355	3	19,5	1,4	0,0594	BFL
×710	6	32,3	2,4	0,0959	BFN	×400	3	21,4	1,5	0,0720	BFL
×750	6	34,0	2,4	0,1044	BFN	×450	4	23,7	1,6	0,0748	BFL
×800	6	36,0	2,6	0,1087	BFN	×500	4	25,9	1,7	0,0887	BFL
×850	7	37,6	2,7	0,1173	BFN	×560	4	28,5	1,8	0,0943	BFL
×900	7	39,6	2,8	0,1280	BFN	×600	5	29,7	2,3	0,1055	BFL
×950	8	41,4	2,9	0,1301	BFN	×630	5	31,1	2,3	0,1138	BFL
×1000	8	43,4	3,0	0,1408	BFN	×650	5	31,8	2,4	0,1194	BFL
280x300	2	16,8	1,2	0,0410	BFL	×700	6	34,1	2,5	0,1222	BFN
×315	2	17,5	1,2	0,0422	BFL	×710	6	34,7	2,5	0,1250	BFN
×355	3	18,7	1,3	0,0520	BFL	×750	6	36,5	2,6	0,1362	BFN
×400	3	20,6	1,4	0,0630	BFL	×800	6	38,6	2,8	0,1417	BFN
×450	4	22,8	1,5	0,0654	BFL	×850	7	40,3	2,9	0,1529	BFN
×500	4	25,0	1,6	0,0776	BFL	×900	7	42,4	3,0	0,1668	BFN
×560	4	27,5	1,7	0,0825	BFL	×950	8	44,4	3,2	0,1696	BFN
×600	5	28,6	1,8	0,0922	BFL	×1000	8	46,6	3,3	0,1836	BFN
×630	5	30,0	1,9	0,0996	BFL	355x300	2	18,3	1,3	0,0536	BFL
×650	5	30,7	2,3	0,1044	BFL	×315	2	19,0	1,3	0,0552	BFL

AxB (mm)	No. of blades	Weight (kg)		Eff. area Sef (m ²)	Actua.
		FDML*	1 KMM		
×355	3	20,3	1,4	0,0679	BFL
×400	3	22,3	1,5	0,0823	BFL
×450	4	24,7	1,6	0,0855	BFL
×500	4	27,0	1,8	0,1014	BFL
×560	4	29,8	2,3	0,1078	BFL
×600	5	31,3	2,4	0,1206	BFN
×630	5	32,7	2,5	0,1302	BFN
×650	5	33,5	2,5	0,1365	BFN
×700	6	35,6	2,6	0,1397	BFN
×710	6	36,1	2,7	0,1429	BFN
×750	6	38,0	2,8	0,1557	BFN
×800	6	40,2	2,9	0,1621	BFN
×850	7	42,0	3,0	0,1748	BFN
×900	7	44,2	3,2	0,1908	BFN
×950	8	46,3	3,3	0,1940	BFN
×1000	8	48,5	3,4	0,2099	BFN
400×300	2	19,1	1,4	0,0612	BFL
×315	2	19,9	1,4	0,0630	BFL
×355	3	21,2	1,5	0,0775	BFL
×400	3	23,3	1,6	0,0939	BFL
×450	4	25,8	1,7	0,0976	BFL
×500	4	28,2	1,9	0,1158	BFL
×560	4	31,1	2,4	0,1230	BFL
×600	5	32,7	2,5	0,1376	BFN
×630	5	34,2	2,6	0,1485	BFN
×650	5	35,0	2,6	0,1558	BFN
×700	6	37,2	2,8	0,1594	BFN
×710	6	37,8	2,8	0,1631	BFN
×750	6	39,7	2,9	0,1776	BFN
×800	6	42,1	3,0	0,1849	BFN
×850	7	43,9	3,2	0,1995	BFN
×900	7	46,2	3,3	0,2177	BFN
×950	8	48,4	3,5	0,2213	BFN
×1000	8	50,7	3,6	0,2395	BFN
450×300	2	20,1	1,5	0,0696	BFL
×315	2	20,9	1,5	0,0716	BFL
×355	3	22,2	1,6	0,0882	BFL
×400	3	24,7	1,7	0,1068	BFN
×450	4	27,3	1,8	0,1110	BFN
×500	4	29,8	2,4	0,1317	BFN
×560	4	33,0	2,5	0,1399	BFN
×600	5	34,2	2,6	0,1565	BFN
×630	5	35,8	2,7	0,1689	BFN
×650	5	36,6	2,8	0,1772	BFN
×700	6	39,0	2,9	0,1813	BFN
×710	6	39,6	3,0	0,1855	BFN

AxB (mm)	No. of blades	Weight (kg)		Eff. area Sef (m ²)	Actua.
		FDML*	1 KMM		
×750	6	41,6	3,1	0,2020	BFN
×800	6	44,1	3,2	0,2103	BFN
×850	7	46,0	3,3	0,2269	BFN
×900	7	48,4	3,5	0,2476	BFN
×950	8	50,7	3,6	0,2517	BFN
×1000	8	53,2	3,8	0,2724	BFN
500×300	2	21,0	1,6	0,0780	BFL
×315	2	21,9	1,6	0,0803	BFL
×355	3	23,3	1,7	0,0988	BFL
×400	3	25,9	1,8	0,1197	BFN
×450	4	28,5	2,3	0,1244	BFN
×500	4	31,2	2,5	0,1476	BFN
×560	4	34,5	2,7	0,1568	BFN
×600	5	35,8	2,8	0,1754	BFN
×630	5	37,4	2,9	0,1893	BFN
×650	5	38,3	2,9	0,1986	BFN
×700	6	40,7	3,1	0,2032	BFN
×710	6	41,4	3,1	0,2079	BFN
×750	6	43,5	3,2	0,2264	BFN
×800	6	46,2	3,4	0,2357	BFN
×850	7	48,1	3,5	0,2543	BFN
×900	7	50,6	3,7	0,2775	BFN
×950	8	54,7	3,8	0,2821	BFN
×1000	8	57,2	4,0	0,3053	BFN
560×300	2	22,2	1,7	0,0880	BFL
×315	2	23,1	1,7	0,0907	BFL
×355	3	24,8	1,8	0,1116	BFN
×400	3	27,2	2,3	0,1352	BFN
×450	4	30,0	2,5	0,1404	BFN
×500	4	32,8	2,6	0,1666	BFN
×560	4	36,3	2,8	0,1771	BFN
×600	5	37,7	2,9	0,1981	BFN
×630	5	39,4	3,0	0,2138	BFN
×650	5	40,3	3,1	0,2243	BFN
×700	6	42,9	3,3	0,2295	BFN
×710	6	43,5	3,3	0,2348	BFN
×750	6	45,7	3,4	0,2557	BFN
×800	6	48,6	3,6	0,2662	BFN
×850	7	52,3	3,7	0,2872	BF
×900	7	54,9	3,9	0,3134	BF
×950	8	57,5	4,0	0,3186	BF
×1000	8	60,1	4,2	0,3448	BF
600×300	2	22,9	1,7	0,0948	BFL
×315	2	23,9	1,8	0,0976	BFL
×355	3	25,6	1,9	0,1201	BFN
×400	3	28,1	2,4	0,1455	BFN

AxB (mm)	No. of blades	Weight (kg)		Eff. area Sef (m ²)	Actua.
		FDML*	1 KMM		
×450	4	31,0	2,6	0,1512	BFN
×500	4	33,8	2,7	0,1794	BFN
×560	4	37,6	2,9	0,1906	BFN
×600	5	38,9	3,1	0,2132	BFN
×630	5	40,7	3,1	0,2301	BFN
×650	5	41,6	3,2	0,2414	BFN
×700	6	44,3	3,4	0,2470	BFN
×710	6	45,0	3,4	0,2527	BFN
×750	6	47,2	3,5	0,2752	BFN
×800	6	50,2	3,7	0,2865	BFN
×850	7	53,9	3,8	0,3091	BF
×900	7	56,6	4,0	0,3373	BF
×950	8	59,3	4,2	0,3429	BF
×1000	8	62,1	4,3	0,3711	BF
630×300	2	23,5	1,8	0,0998	BFL
×315	2	24,5	1,8	0,1028	BFL
×355	3	26,2	1,9	0,1265	BFN
×400	3	28,7	2,5	0,1533	BFN
×450	4	31,8	2,6	0,1592	BFN
×500	4	34,6	2,8	0,1889	BFN
×560	4	38,5	3,0	0,2008	BFN
×600	5	39,9	3,1	0,2245	BFN
×630	5	41,6	3,2	0,2424	BFN
×650	5	42,6	3,3	0,2542	BFN
×700	6	45,4	3,5	0,2602	BFN
×710	6	46,1	3,5	0,2661	BFN
×750	6	48,4	3,6	0,2899	BFN
×800	6	51,5	3,8	0,3018	BFN
×850	7	55,2	3,9	0,3255	BF
×900	7	58,0	4,1	0,3552	BF
×950	8	60,7	4,3	0,3612	BF
×1000	8	63,5	4,4	0,3909	BF
650×300	2	23,9	1,8	0,1032	BFL
×315	2	24,9	1,9	0,1062	BFL
×355	3	26,6	2,0	0,1308	BFN
×400	3	29,2	2,5	0,1584	BFN
×450	4	32,3	2,7	0,1646	BFN
×500	4	35,2	2,9	0,1953	BFN
×560	4	39,1	3,1	0,2075	BFN
×600	5	40,5	3,2	0,2321	BFN
×630	5	42,3	3,3	0,2505	BFN
×650	5	43,3	3,4	0,2628	BFN
×700	6	47,7	3,5	0,2689	BF
×710	6	48,4	3,6	0,2751	BF
×750	6	50,7	3,7	0,2996	BF
×800	6	53,9	3,8	0,3119	BF

AxB (mm)	No. of blades	Weight (kg)		Eff. area Sef (m ²)	Actua.
		FDML*	1 KMM		
×850	7	56,1	4,0	0,3365	BF
×900	7	58,9	4,2	0,3672	BF
×950	8	61,7	4,3	0,3733	BF
×1000	8	64,5	4,5	0,4040	BF
700×300	2	24,8	1,9	0,1116	BFL
×315	2	25,9	1,9	0,1149	BFL
×355	3	27,7	2,5	0,1414	BFN
×400	3	30,3	2,6	0,1713	BFN
×450	4	33,5	2,8	0,1780	BFN
×500	4	36,5	3,0	0,2112	BFN
×560	4	40,6	3,2	0,2244	BFN
×600	5	42,0	3,3	0,2510	BFN
×630	5	43,9	3,4	0,2709	BFN
×650	5	44,9	3,5	0,2842	BFN
×700	6	49,5	3,7	0,2908	BF
×710	6	50,2	3,7	0,2975	BF
×750	6	52,6	3,8	0,3240	BF
×800	6	56,0	4,0	0,3373	BF
×850	7	58,2	4,2	0,3639	BF
×900	7	61,1	4,4	0,3971	BF
×950	8	64,0	4,5	0,4037	BF
×1000	8	66,9	4,7	0,4369	BF
710×300	2	25,0	1,9	0,1132	BFL
×315	2	26,1	2,0	0,1166	BFL
×355	3	27,9	2,5	0,1436	BFN
×400	3	30,5	2,7	0,1739	BFN
×450	4	33,8	2,8	0,1806	BFN
×500	4	36,8	3,0	0,2143	BFN
×560	4	40,9	3,2	0,2278	BFN
×600	5	42,4	3,4	0,2548	BFN
×630	5	44,2	3,5	0,2750	BFN
×650	5	45,3	3,5	0,2885	BFN
×700	6	49,9	3,7	0,2952	BF
×710	6	50,6	3,7	0,3020	BF
×750	6	53,0	3,9	0,3289	BF
×800	6	56,4	4,0	0,3424	BF
×850	7	58,6	4,2	0,3694	BF
×900	7	61,5	4,4	0,4031	BF
×950	8	64,5	4,6	0,4098	BF
×1000	8	67,4	4,7	0,4435	BF
750×300	2	25,8	2,0	0,1200	BFL
×315	2	26,9	2,0	0,1235	BFL
×355	3	28,7	2,6	0,1521	BFN
×400	3	31,4	2,8	0,1842	BFN
×450	4	34,8	2,9	0,1914	BFN
×500	4	37,9	3,1	0,2271	BFN

AxB (mm)	No. of blades	Weight (kg)		Eff. area Sef (m ²)	Actua.
		FDML*	1 KMM		
×560	4	42,2	3,3	0,2413	BFN
×600	5	43,6	3,5	0,2699	BFN
×630	5	45,5	3,6	0,2913	BFN
×650	5	46,6	3,6	0,3056	BFN
×700	6	51,3	3,8	0,3127	BF
×710	6	52,0	3,9	0,3199	BF
×750	6	54,5	4,0	0,3484	BF
×800	6	58,0	4,2	0,3627	BF
×850	7	60,3	4,3	0,3913	BF
×900	7	63,3	4,5	0,4270	BF
×950	8	66,3	4,7	0,4341	BF
×1000	8	69,3	4,9	0,4698	BF
800×300	2	26,8	2,1	0,1284	BFL
×315	2	27,9	2,6	0,1322	BFL
×355	3	29,7	2,7	0,1627	BFN
×400	3	32,6	2,8	0,1971	BFN
×450	4	36,0	3,0	0,2048	BFN
×500	4	39,2	3,2	0,2430	BFN
×560	4	43,7	3,5	0,2582	BFN
×600	5	46,8	3,6	0,2888	BF
×630	5	48,8	3,7	0,3117	BF
×650	5	49,9	3,8	0,3270	BF
×700	6	53,1	4,0	0,3346	BF
×710	6	53,8	4,0	0,3423	BF
×750	6	56,4	4,1	0,3728	BF
×800	6	60,0	4,3	0,3881	BF
×850	7	62,4	4,5	0,4187	BF
×900	7	65,5	4,7	0,4569	BF
×950	8	68,6	4,9	0,4645	BF
×1000	8	71,8	5,1	0,5027	BF
850×300	2	28,0	2,6	0,1368	BFN
×315	2	29,2	2,7	0,1408	BFN
×355	3	30,8	2,8	0,1734	BFN
×400	3	33,7	3,0	0,2100	BFN
×450	4	37,2	3,2	0,2182	BFN
×500	4	40,6	3,4	0,2589	BFN
×560	4	45,2	3,6	0,2751	BFN
×600	5	48,4	3,7	0,3077	BFN
×630	5	50,4	3,8	0,3321	BF
×650	5	51,6	3,9	0,3484	BF
×700	6	54,9	4,1	0,3565	BF
×710	6	55,6	4,1	0,3647	BF
×750	6	58,3	4,3	0,3972	BF
×800	6	62,1	4,5	0,4135	BF
×850	7	64,5	4,7	0,4461	BF
×900	7	67,7	4,9	0,4868	BF

AxB (mm)	No. of blades	Weight (kg)		Eff. area Sef (m ²)	Actua.
		FDML*	1 KMM		
×950	8	71,0	5,1	0,4949	BF
×1000	8	74,2	5,2	0,5356	BF
900×300	2	28,9	2,7	0,1452	BFN
×315	2	30,2	2,8	0,1495	BFN
×355	3	31,8	2,9	0,1840	BFN
×400	3	34,8	3,1	0,2229	BFN
×450	4	38,5	3,3	0,2316	BFN
×500	4	41,9	3,5	0,2748	BFN
×560	4	46,8	3,7	0,2920	BFN
×600	5	49,9	3,9	0,3266	BFN
×630	5	52,0	4,0	0,3525	BF
×650	5	53,2	4,1	0,3698	BF
×700	6	56,7	4,3	0,3784	BF
×710	6	57,4	4,3	0,3871	BF
×750	6	60,2	4,5	0,4216	BF
×800	6	64,1	4,6	0,4389	BF
×850	7	66,6	4,8	0,4735	BF
×900	7	69,9	5,0	0,5167	BF
×950	8	73,3	5,2	0,5253	BF
×1000	8	76,6	5,4	0,5685	BF
950×300	2	29,9	2,8	0,1536	BFN
×315	2	31,2	2,9	0,1581	BFN
×355	3	32,8	3,0	0,1947	BFN
×400	3	35,9	3,2	0,2358	BFN
×450	4	39,7	3,4	0,2450	BFN
×500	4	43,2	3,6	0,2907	BFN
×560	4	48,3	3,8	0,3089	BFN
×600	5	51,5	4,0	0,3455	BF
×630	5	53,6	4,1	0,3729	BF
×650	5	54,9	4,2	0,3912	BF
×700	6	58,4	4,4	0,4003	BF
×710	6	59,3	4,4	0,4095	BF
×750	6	62,0	4,6	0,4460	BF
×800	6	66,2	4,8	0,4643	BF
×850	7	68,7	5,0	0,5009	BF
×900	7	72,1	5,2	0,5466	BF
×950	8	75,6	5,4	0,5557	BF
×1000	8	79,1	5,6	0,6014	BF
1000×300	2	30,8	2,9	0,1620	BFN
315	2	32,2	3,0	0,1668	BFN
355	3	33,8	3,1	0,2053	BFN
400	3	37,1	3,3	0,2487	BFN
450	4	42,6	3,5	0,2584	BF
500	4	46,2	3,7	0,3066	BF
560	4	51,5	4,0	0,3258	BF
600	5	53,1	4,1	0,3644	BF

AxB (mm)	No. of blades	Weight (kg)		Eff. area Sef (m²)	Actua.
		FDML*	1 KMM		
630	5	55,3	4,3	0,3933	BF
650	5	56,6	4,4	0,4126	BF
700	6	60,2	4,6	0,4222	BF
710	6	61,1	4,6	0,4319	BF
750	6	63,9	4,8	0,4704	BF
800	6	68,2	5,0	0,4897	BF
850	7	70,8	5,2	0,5283	BF
900	7	74,3	5,4	0,5765	BF
950	8	78,0	5,6	0,5861	BF
1000	8	81,5	5,8	0,6343	BF

* For design with ZNP-10-24 power supply, a weight of 0,4 kg must be added.

4. Material, finishing

Damper casings are made from galvanized sheet metal without further surface treatment.

Cover grilles are made of sheet metal and coated with RAL 9010 burning varnish. Requests for other colours must be discussed in advance with the manufacturer.

Damper blades are made from fire resistant asbestos free boards made of mineral fibres.

The cover housing for the actuator is covered with fire resistant asbestos free boards made of mineral fibres.

Closing mechanism and fasteners are galvanized.

Damper blades are made from boards of homogeneous material Promatect-H.

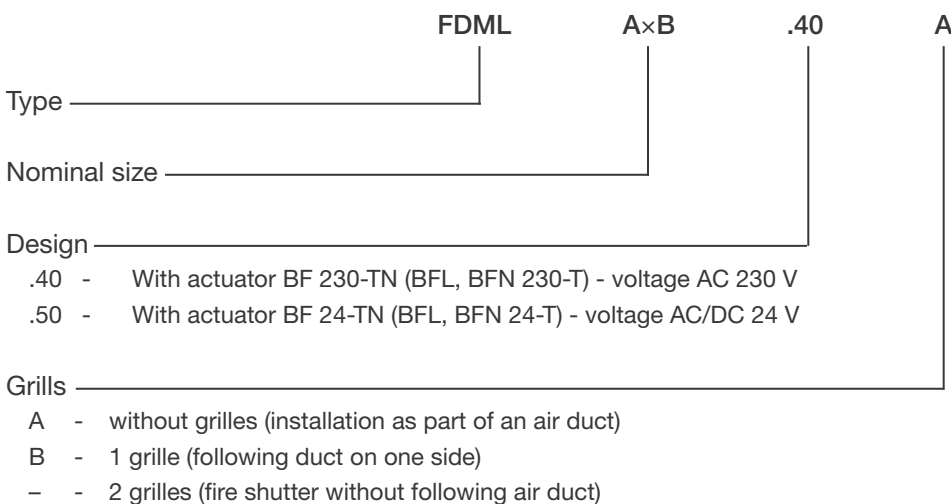
Plastic, rubber and silicon components, sealants, foaming tapes, glass-ceramic seals, housings, brass bearings of the blades, actuators, and end switches are identical for all material variants of the dampers.

Cover grilles are always made of common steel sheet metal with a burning varnish.

The damper blades in the variant for chemical environments (Class A4) are always treated with a coating of chemically resistant Promat SR.

Any other requirements for the design will be considered atypical and will be addressed on an individual basis.


5. Product marking



Example: FDML 800x400 .40 A

5.1 Data label

Data label is placed on the damper casing (example).

MANDÍK ®		MANDÍK, a.s. Dobříšská 550, 267 24 Hostomice, Czech Republic	
FIRE DAMPER - XXXX		 MANUAL	
DIMENSION:			
SERIAL.NO.:		WEIGHT (kg):	
CLASSIFICATION:			
TPM XXX/XX	Cert. No.: 1391-CPR-XXXX/XXXX, DoP: PM/XXXX/XX/XX/X	EN 15650:2010	CE

6. Installation

6.1 Placement and installation

The damper can be installed with blade axis vertically or horizontally, temperature sensor (BAT) must always be in damper upper part. The damper installation procedures must be done so that all load transfer from the fire separating constructions to the damper is absolutely excluded. Following air-conditioning duct must be suspended or supported so that all load transfer from the following duct to the fire damper is absolutely excluded. The gap between the installed damper and the fire separating construction must be perfectly filled with approved material.

During the installation and plastering process, the actuating mechanism must be protected (covered) against damage and pollution. The damper casing should not be deformed during bricking in. Once the damper is built in, the damper blades should not grind against the damper casing during opening or closing.

The distance between the fire damper and the construction (wall, ceiling) must be 75 mm at the minimum, according to EN 1366-2. If two or more dampers are to be installed in one fire separating construction, the distance between adjacent dampers must be 200 mm at the minimum, according to EN 1366-2.

Fire dampers can be installed without following duct on one or both sides. In the case of this installation, the fire dampers must be equipped with cover grilles.

For designs with an optical smoke detector, the best conditions for detecting smoke and combustion products must be ensured, i.e. the smoke detector must be located at the upper part of the room.

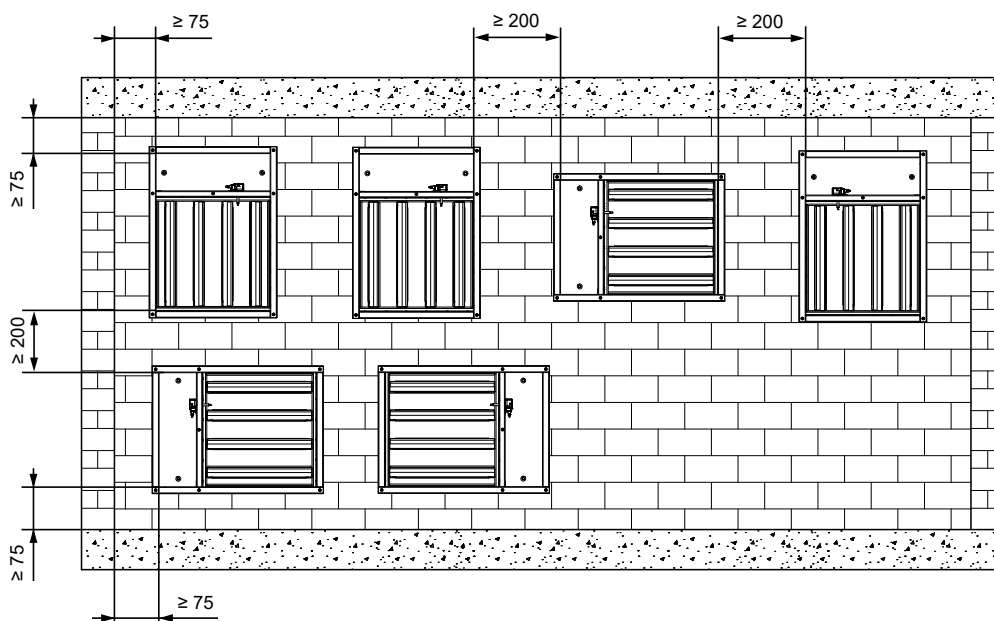
It is recommended to install the dampers according to the local disposition in such a way that the side of the damper with the thermoelectric activation device is in line with the wall and the opening on the other side of the wall is permanently covered by a second cover grille fixed e.g. in the frame. The minimum thickness of the standard wall construction is 100 mm. In the case of an installation where one side of the damper is in line with the surface of the construction and the other side extends more than 25 mm from the construction, the extending part must be covered with fire-resistant boards. In the case of installation in a gypsum wall, the opening must be lined with reinforcement profiles.

Dampers are not equipped with inspection openings. If these dampers are used as dampers for simple maintenance and revision they must be completed with connecting inspection part installed just behind the damper.

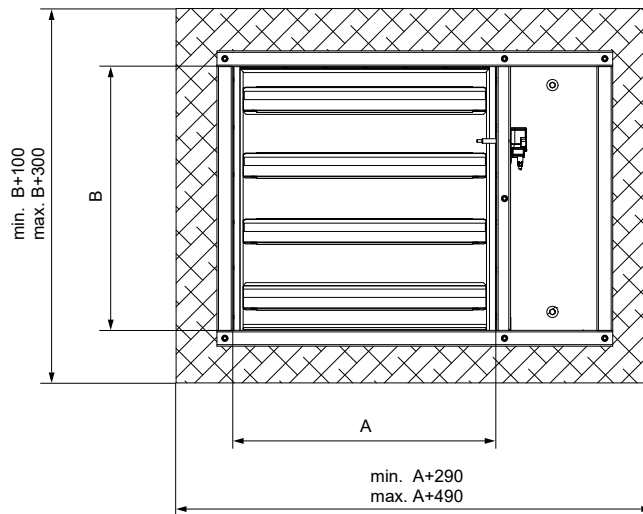
The dampers must be installed so that the actuator cover can be easily removed from at least one side. It is recommended that the cover be accessible from the side where the thermoelectric activation device cover is located for easy access.

Minimum distance between the fire dampers and the construction

- minimum distance 200 mm between dampers, according to EN 1366-2
- minimum distance 75 mm between damper and construction (wall/ceiling), according to EN 1366-2

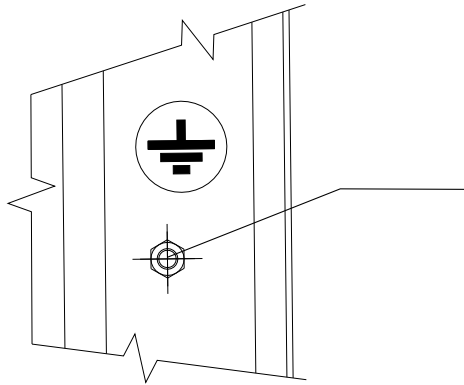


Dimensions of an installation opening



Grounding of the damper

It is necessary to ground the damper casing before installation.



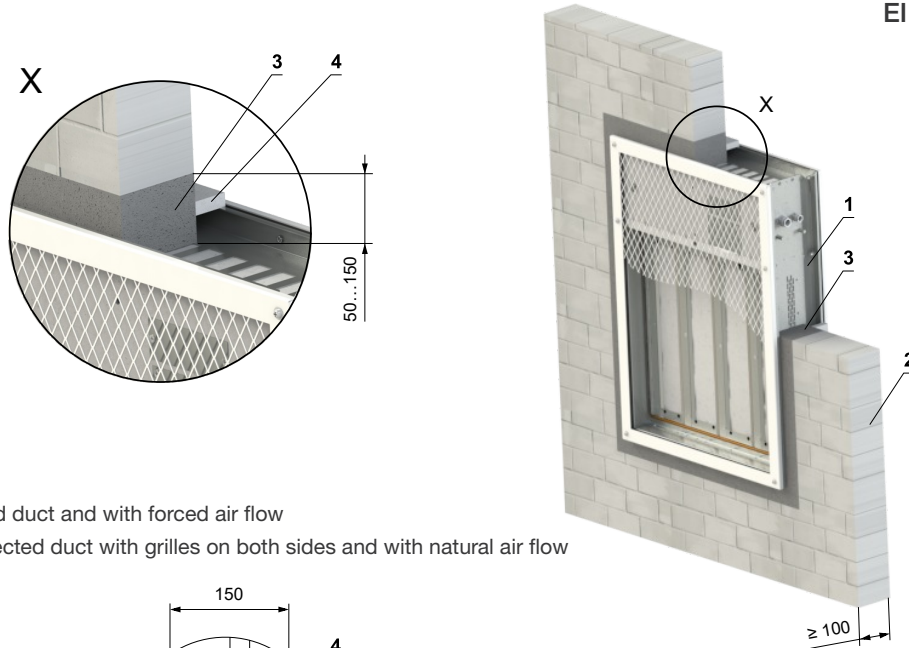
6.2 Statement of installations

Placement	Wall/ceiling min. thickness (mm)	Method of installation	Fire resistance	Page
In solid wall construction	100	Mortar or gypsum	EI 90 (v _e i o) S	18
		Weichschott system		19
In gypsum wall construction		Mortar or gypsum		20
		Weichschott system		21
In solid ceiling construction	150	Mortar or gypsum	EI 90 (h _o i o) S	22

6.3 In solid wall construction

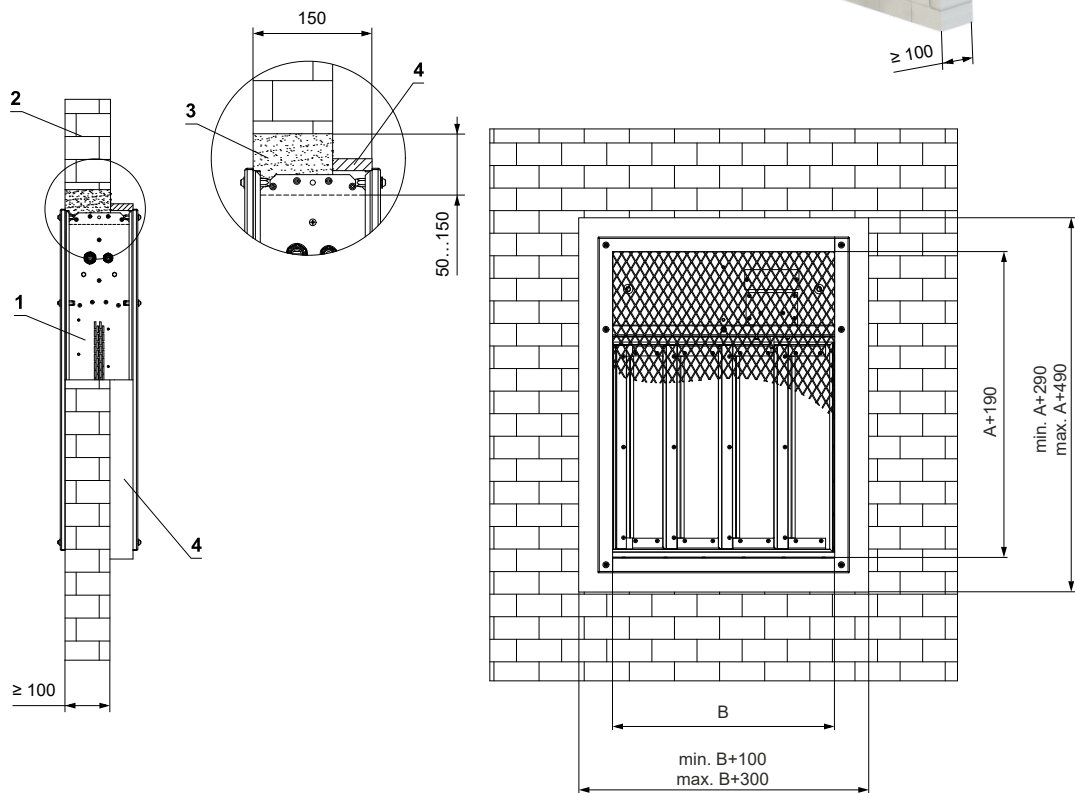
Fig. 1. In solid wall construction - mortar and gypsum

EIS 90*
EI 120**



* In case with connected duct and with forced air flow

** In case without connected duct with grilles on both sides and with natural air flow



1 – FDML

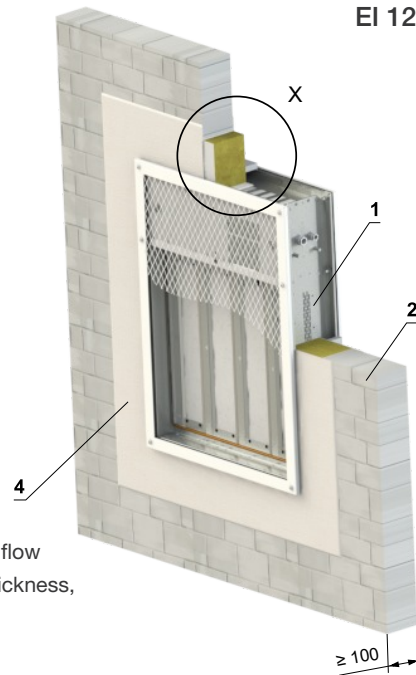
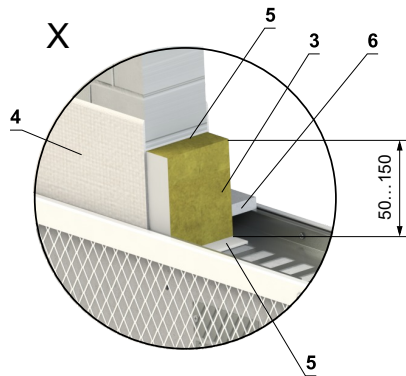
2 – Solid wall construction

3 – Mortar or gypsum

4 – Fire-resistant cover boards - only if one side of the damper is in line with the surface of the construction and the other side extends more than 25 mm from the construction - (Promatect-H...) min. thickness 15 mm - connect the boards together with screws

Fig. 2. In solid wall construction - Weichschott system

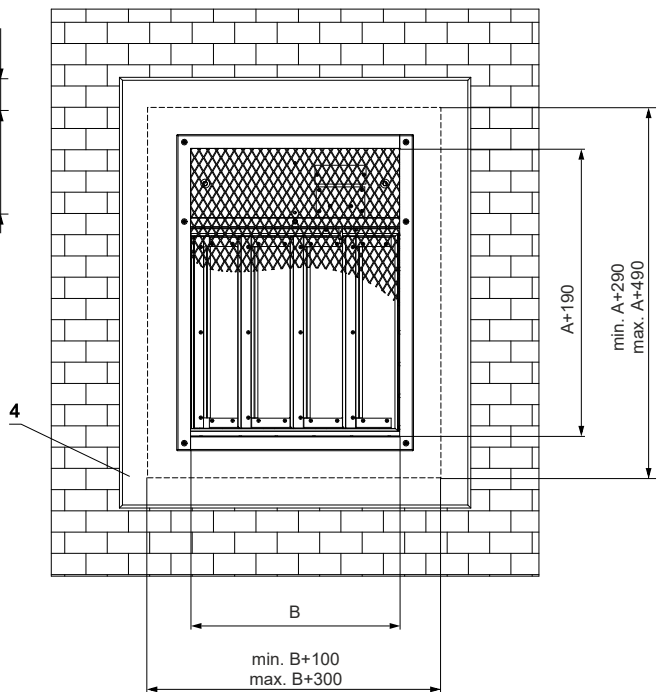
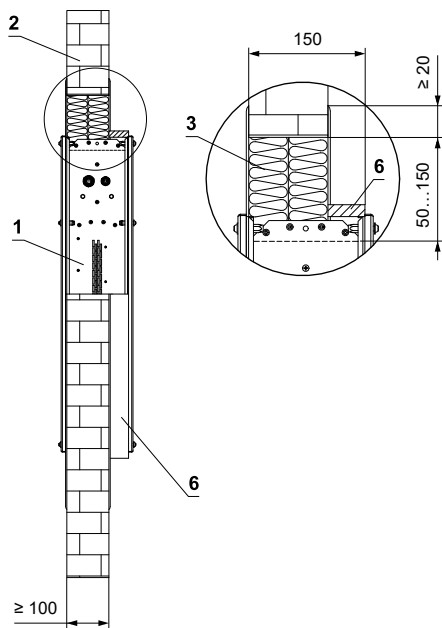
EIS 90*
EI 120**



* In case with connected duct and with forced air flow

** In case without connected duct with grilles on both sides and with natural air flow

*** HILTI system can be replaced by a similar system with the same or higher thickness, density, fire reaction class, tested according to EN 1366-3.

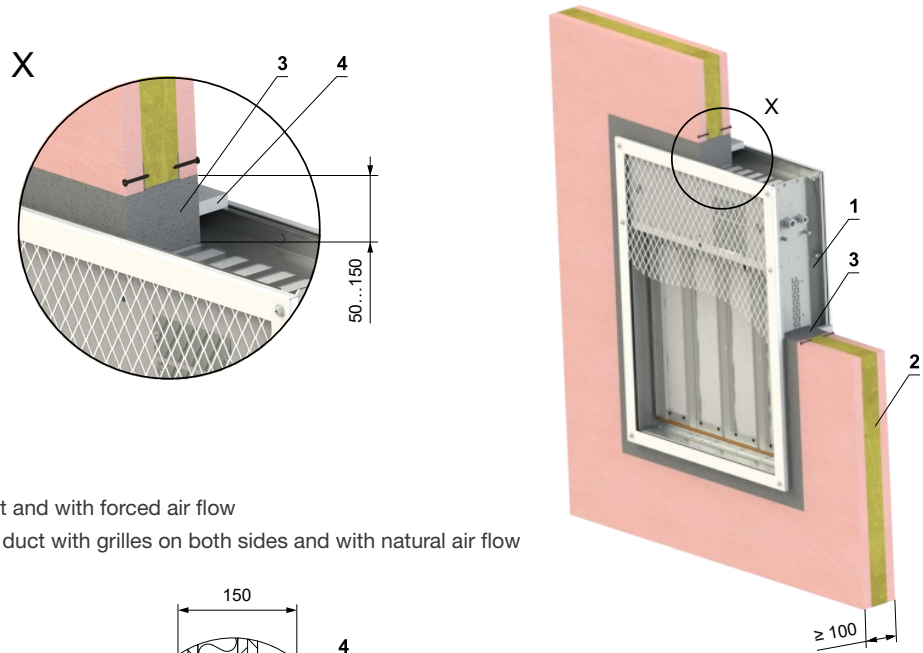


- 1 - FDML
- 2 - Solid wall construction
Weichschott system HILTI***
- 3 - Mineral wool board - min. density 140 kg/m³ (HILTI CFS-CT B 1S 140/50...)
- 4 - Fire stop coating - th. 1 mm (HILTI CFS-CT...) - coating is overcoated on the support construction and on the damper casing/duct
- 5 - Fire-resistant mastic - (HILTI CFS-S ACR...) fill the gap from both sides of the fire separation construction and around the perimeter of penetration and damper casing
- 6 - Fire-resistant cover boards - only if one side of the damper is in line with the surface of the construction and the other side extends more than 25 mm from the construction - (Promatect-H...) min. thickness 15 mm - connect the boards together with screws

6.4 In gypsum wall construction

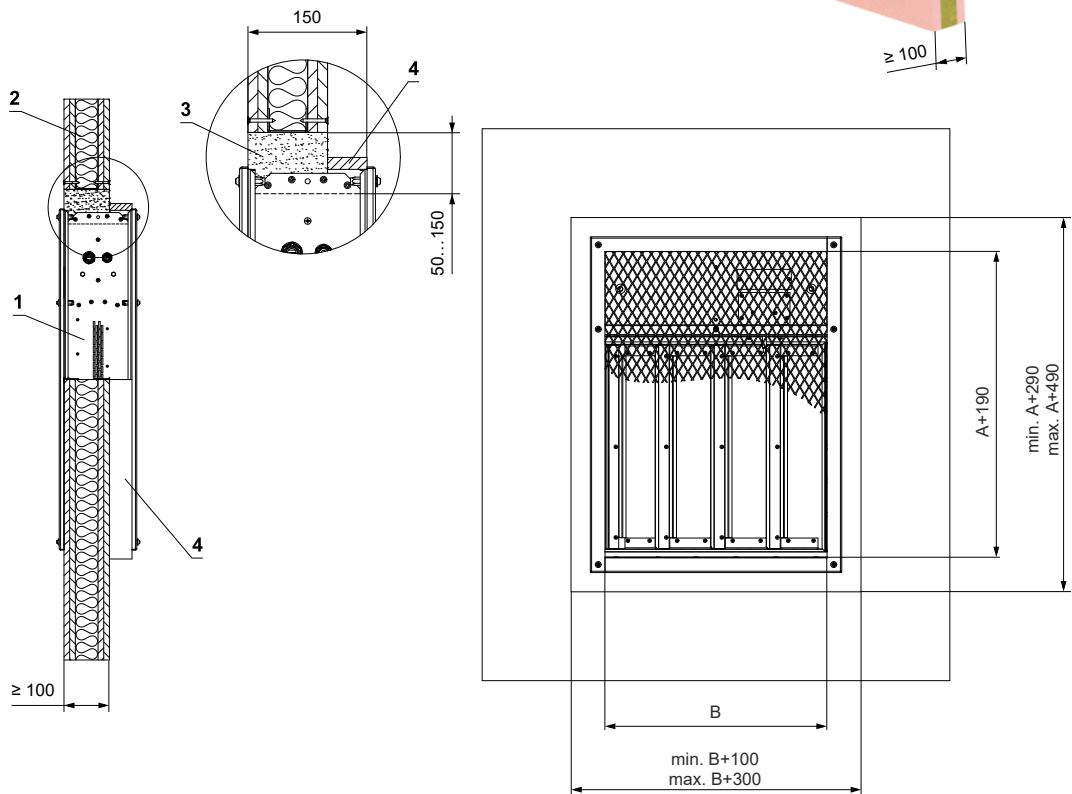
Fig. 3. In gypsum wall construction - mortar or gypsum

EIS 90*
EI 120**



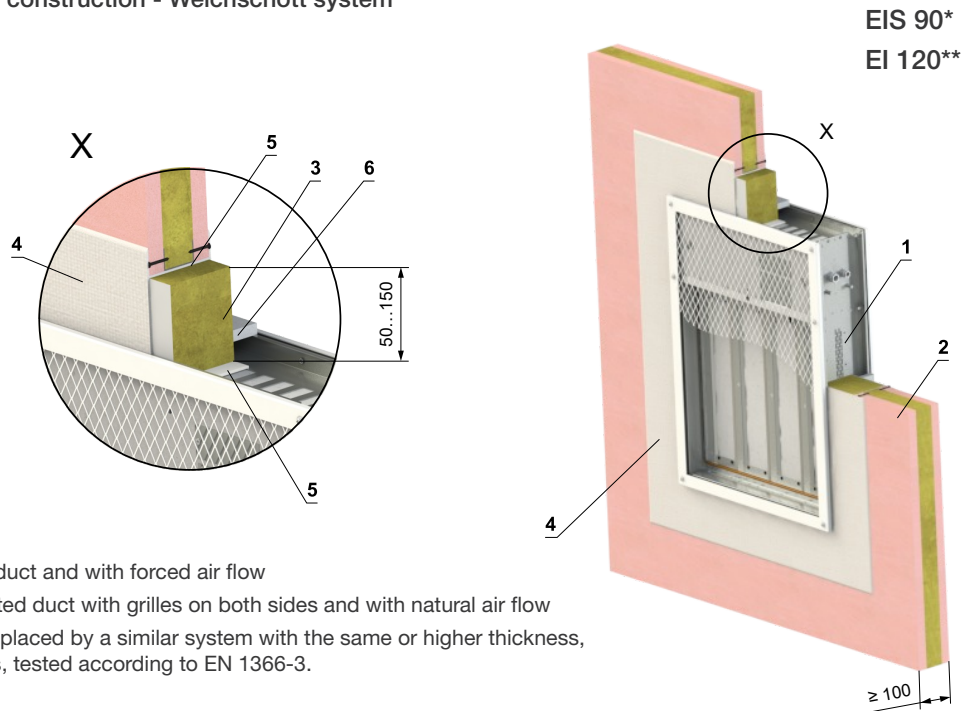
* In case with connected duct and with forced air flow

** In case without connected duct with grilles on both sides and with natural air flow



- 1 - FDML
- 2 - Gypsum wall construction
- 3 - Mortar or gypsum
- 4 - Fire-resistant cover boards - only if one side of the damper is in line with the surface of the construction and the other side extends more than 25 mm from the construction - (Promatect-H...) min. thickness 15 mm - connect the boards together with screws

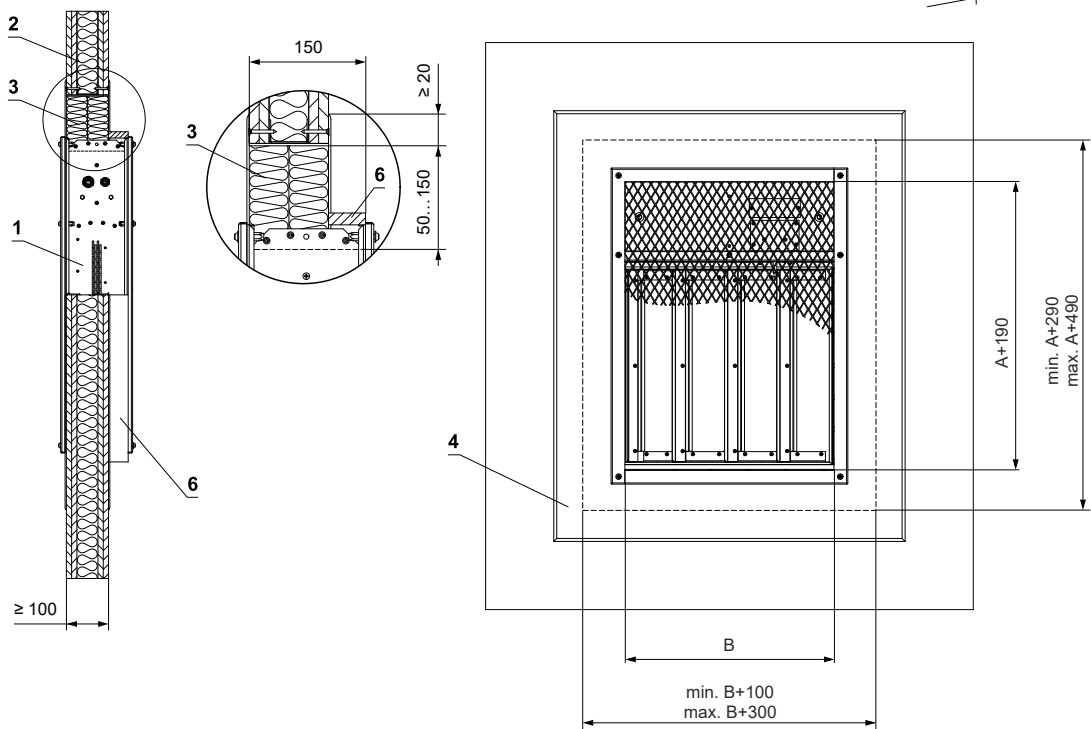
Fig. 4. In gypsum wall construction - Weichschott system



* In case with connected duct and with forced air flow

** In case without connected duct with grilles on both sides and with natural air flow

*** HILTI system can be replaced by a similar system with the same or higher thickness, density, fire reaction class, tested according to EN 1366-3.

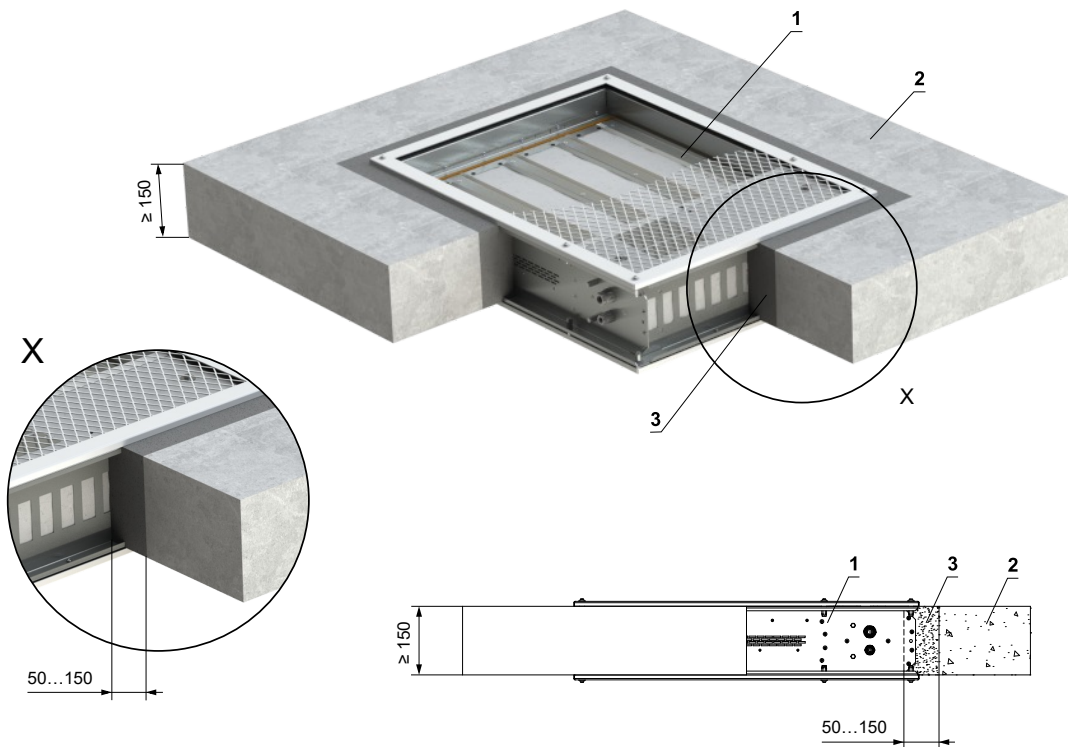


- 1 - FDML
- 2 - Gypsum wall construction Weichschott system HILTI***
- 3 - Mineral wool board - min. density 140 kg/m³ (HILTI CFS-CT B 1S 140/50...)
- 4 - Fire stop coating - th. 1 mm (HILTI CFS-CT...) - coating is overcoated on the support construction and on the damper casing/duct
- 5 - Fire-resistant mastic - (HILTI CFS-S ACR...) fill the gap from both sides of the fire separation construction and around the perimeter of penetration and damper casing
- 6 - Fire-resistant cover boards - only if one side of the damper is in line with the surface of the construction and the other side extends more than 25 mm from the construction - (Promatect-H...) min. thickness 15 mm - connect the boards together with screws

6.5 In solid ceiling construction

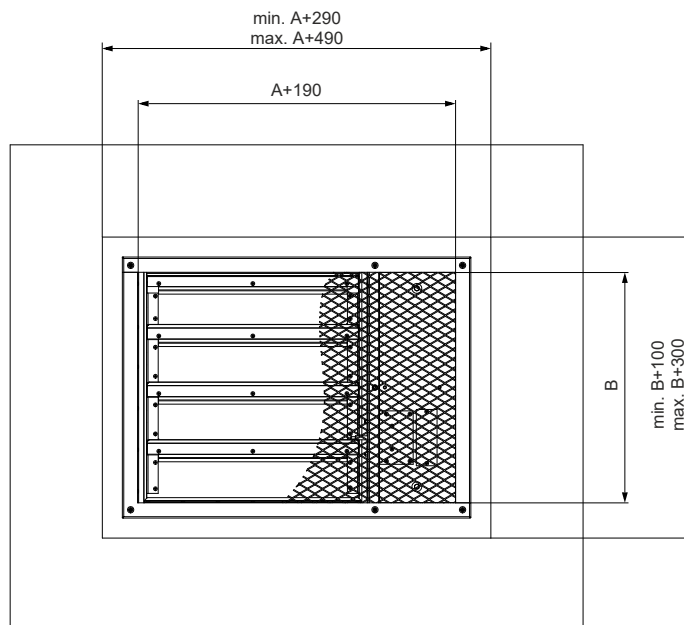
Fig. 5. In solid ceiling construction - mortar or gypsum

EIS 90*
EI 120**



* In case with connected duct and with forced air flow

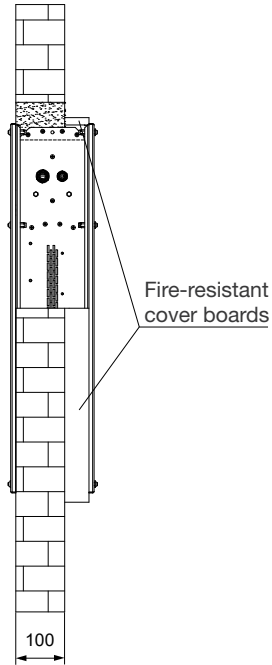
** In case without connected duct with grilles on both sides and with natural air flow



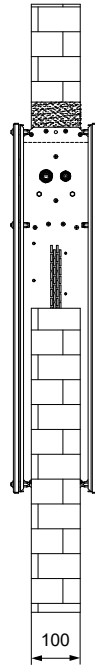
- 1 - FDML
- 2 - Solid ceiling construction
- 3 - Mortar or gypsum

6.6 Examples of installation situations

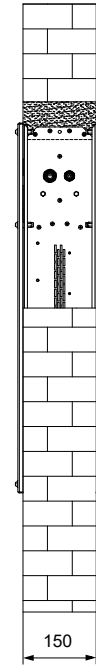
Damper in line with the wall
(fire-resistant cover boards
required)



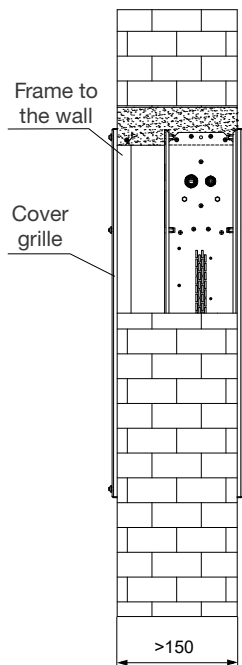
Damper in the centre of the wall
(fire-resistant cover boards
not required)



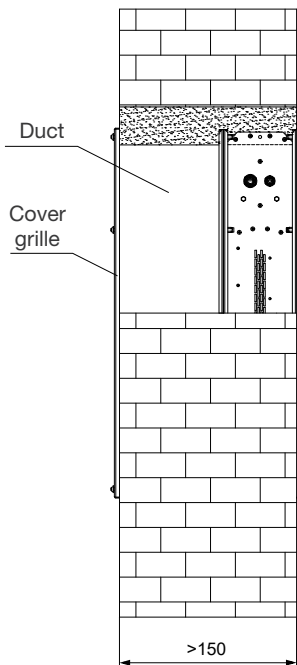
Damper in the wall 150 mm



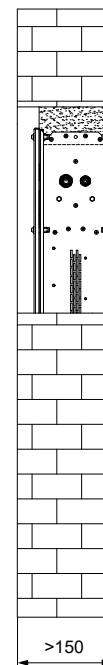
Damper with grille
on the wall



Damper with duct
and grille on the wall



Damper with grille
inside the wall



6.7 Examples of fixing FDML

Fig. 6. In solid wall construction - mortar or gypsum/Weichschott system

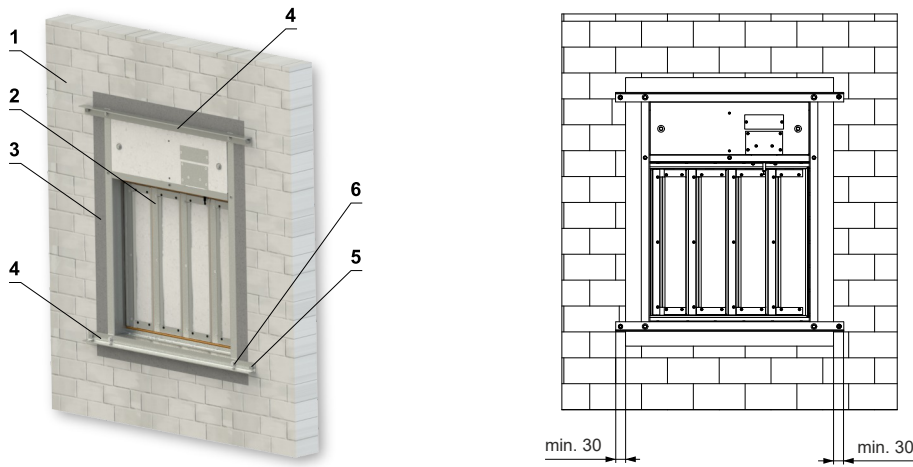
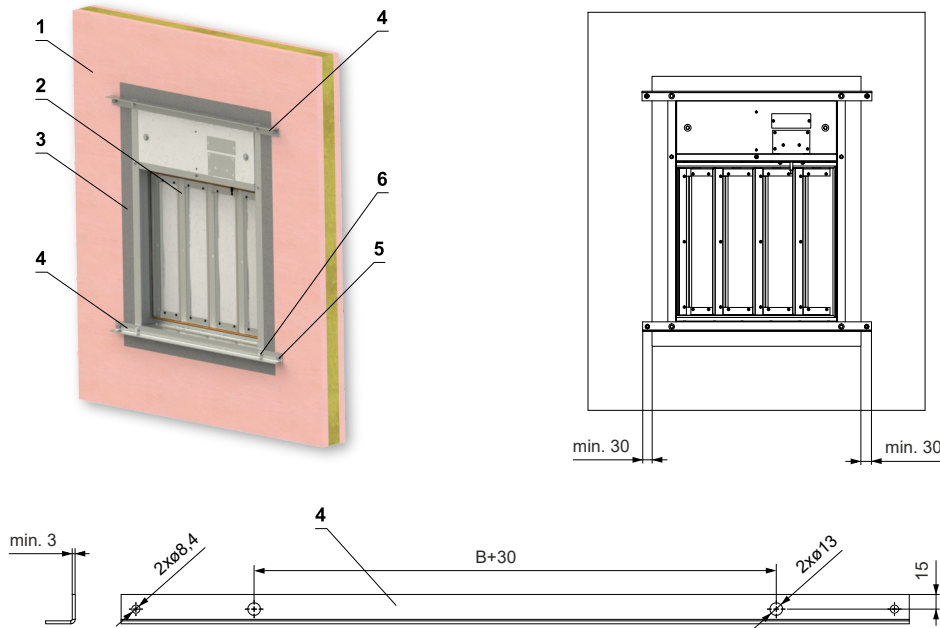


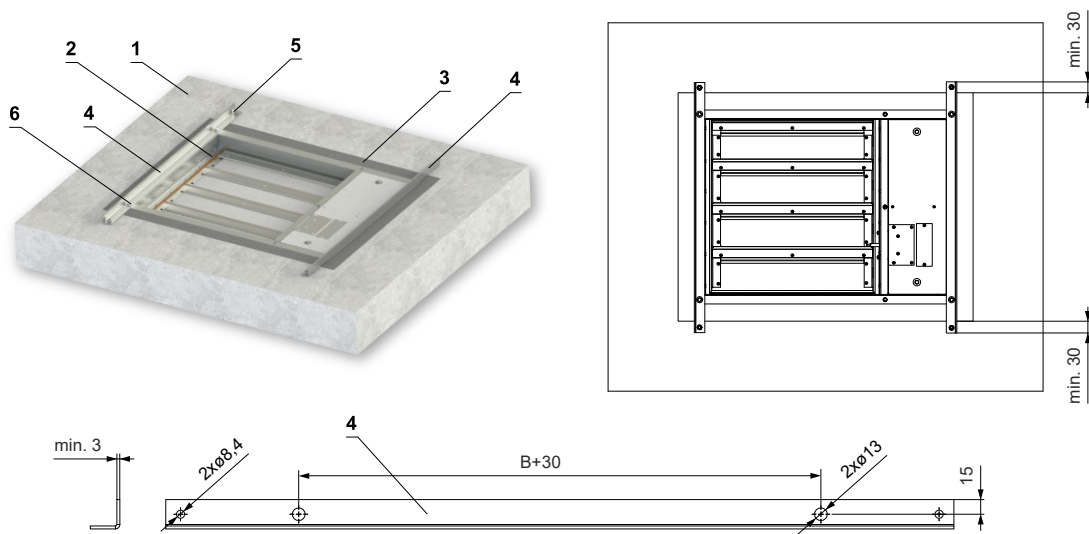
Fig. 7. In gypsum wall construction - mortar or gypsum/Weichschott system



Screw two L-profiles to the damper using M6x20 screws + washers and fix the L-profiles to the wall using M8 anchors and nuts (solid wall construction) or screws (gypsum wall construction - screws must go through a gypsum profile). Fill the gap between the damper and the wall with approved material. L-profiles must be removed before installing grilles or duct and are not part of the installation, they are only used to help install the damper.

- 1 – Solid wall construction/Gypsum wall construction
- 2 – FDML
- 3 – Mortar or gypsum/Weichschott system
- 4 – L-profile - min. 30x30x3, length according to size of the installation opening (min. profile overlap 30 mm on each side) - L-profile is not part of the delivery
- 5 – Nut M8 with anchor - Solid wall construction or Screw with hexagon head - Gypsum wall construction
- 6 – Bolt M6x20 + large-area washer

Fig. 8. In solid ceiling construction - mortar or gypsum



Screw two L-profiles to the damper using M6x20 screws + washers and fix the L-profiles to the ceiling using M8 anchors and nuts. Fill the gap between the damper and the ceiling with mortar or gypsum. L-profiles must be removed before installing grilles or duct and are not part of the installation, they are only used to help install the damper.

- 1 - Solid ceiling construction
- 2 - FDML
- 3 - Mortar or gypsum
- 4 - L-profile - min. 30x30x3, length according to size of the installation opening (min. profile overlap 30 mm on each side) - L-profile is not part of the delivery
- 5 - Nut M8 with anchor
- 6 - Bolt M6x20 + large-area washer

Fig. 9. In solid wall construction - mortar or gypsum/Weichschott system

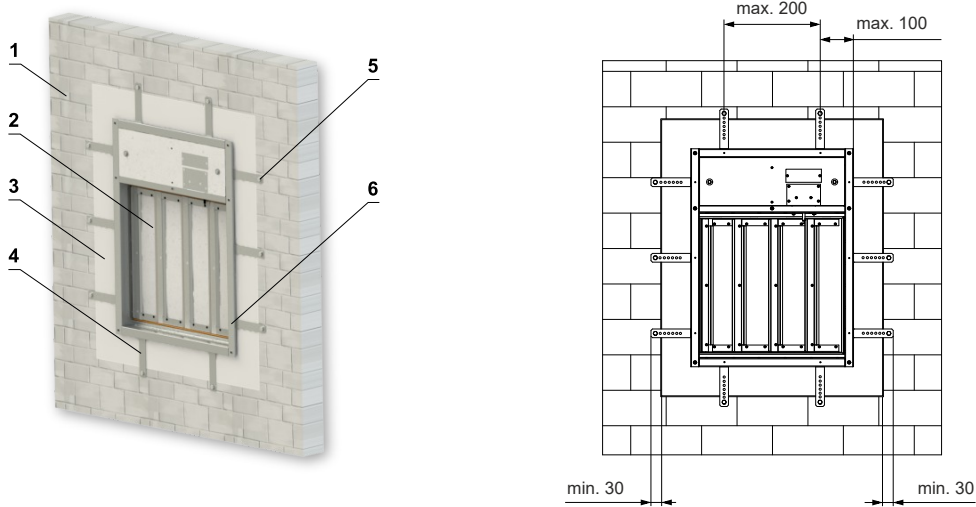
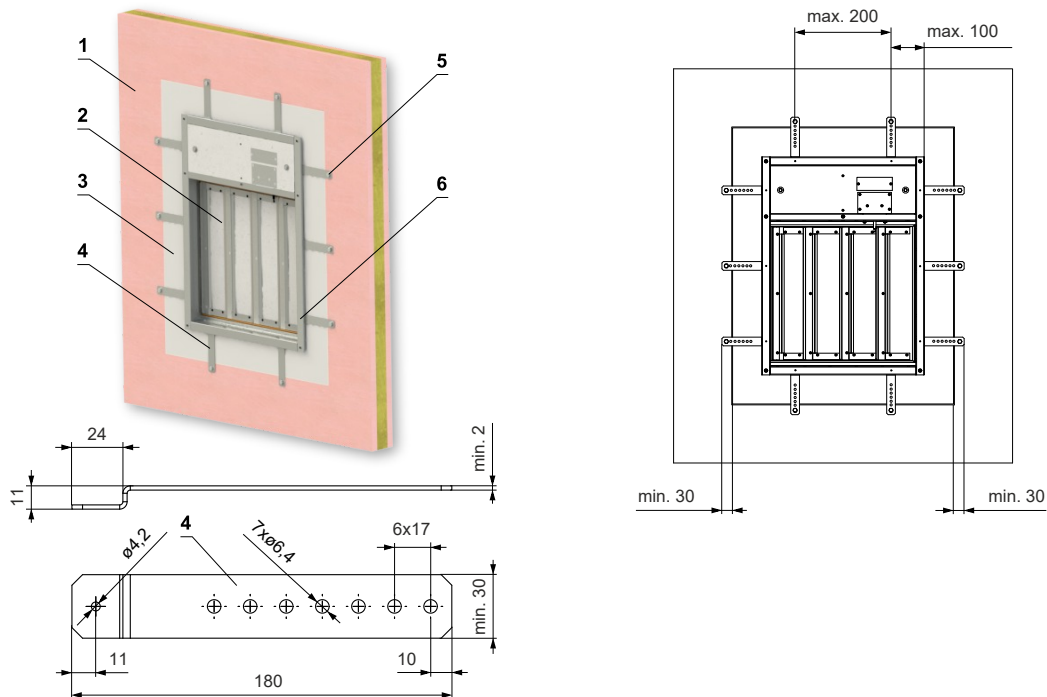


Fig. 10. In gypsum wall construction - mortar or gypsum/Weichschott system

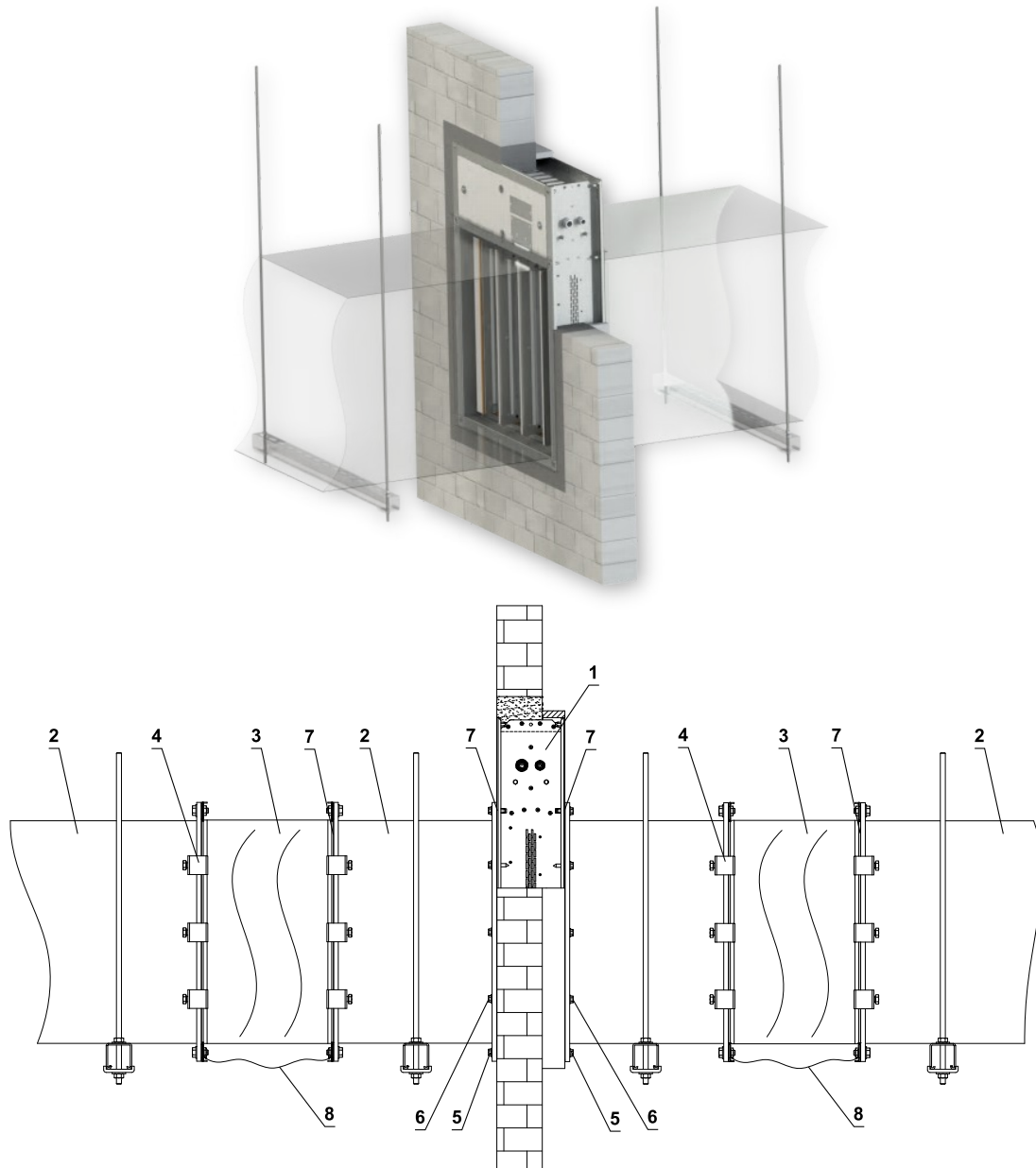


Drill holes for rivets in the damper flange and rivet the damper holders. There must be at least 2 holders on each side of the damper with a maximum spacing of 200 mm and a maximum distance from the edge of the damper of 100 mm. Fix the holders to the wall using M6 anchors and nuts (solid wall construction) or screws (gypsum wall construction - screws must go through a gypsum profile). Fill the gap between the damper and the wall with approved material. The holders cannot be removed afterwards and will remain as a part of the installation. Install grilles or duct on the damper.

- 1 – Solid wall construction/Gypsum wall construction
- 2 – FDML
- 3 – Mortar or gypsum/Weichschott system
- 4 – Damper holder - holders can be ordered from Mandík a.s. or custom-made according to the required dimensions of the installation opening (min. width 30 mm, min. thickness 2 mm and min. overlap of holders 30 mm)
- 5 – Nut M6 with anchor - Solid wall construction or Screw with hexagon head - Gypsum wall construction
- 6 – Rivet 4x6

6.8 Example of duct connection

The air duct is not connected to the damper in the entire cross-section of the damper, but only through the area of the damper with blades. The actuator cover must be accessible from at least one side. It is recommended that the cover be accessible from the side where the thermoelectric activation device cover is located for easy access.



- 1 - FDML
- 2 - Duct
- 3 - Damping pad
- 4 - Steel clamp min. screw M8
- 5 - Screws M6 in corners (more about connecting dimensions see page 9)
- 6 - Self-drilling screw - connection of the flanges of the damper and the duct
- 7 - Sealing
- 8 - Protective bonding conductor

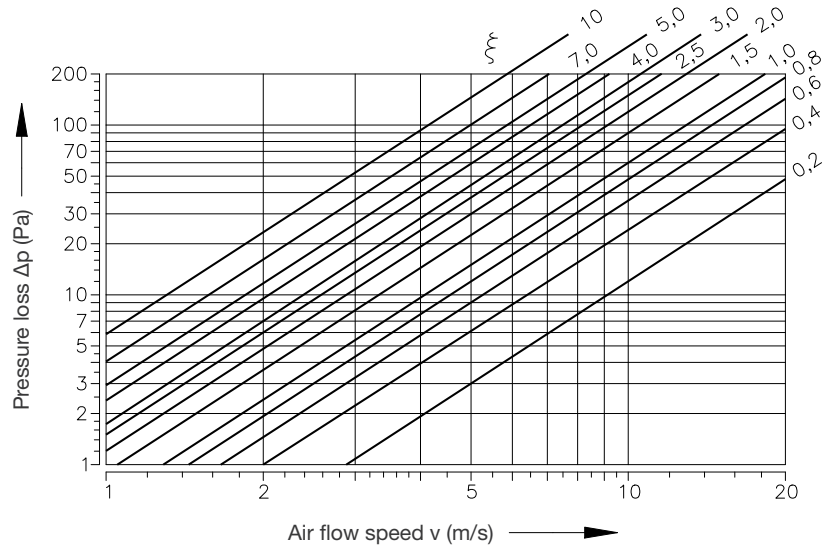
7. Technical data

7.1 Pressure loss

$$\Delta p = \xi * \rho * (w^2 / 2)$$

- Δp - pressure loss (Pa)
- ξ - coefficient of local pressure loss
- ρ - air density (kg/m³)
- v - air flow speed (m/s)

Pressure losses for air density $\rho=1,2 \text{ kg/m}^3$



Tab. 5. Coefficient of local pressure loss

B	A									
	200	250	280	300	315	355	400	450	500	560
300	4,185	4,069	4,000	3,954	3,919	3,827	3,723	3,608	3,492	3,354
315	4,347	4,226	4,154	4,106	4,070	3,974	3,865	3,745	3,625	3,480
355	3,660	3,543	3,472	3,426	3,390	3,297	3,191	3,074	2,957	2,816
400	2,828	2,742	2,690	2,656	2,630	2,561	2,484	2,397	2,311	2,208
450	3,803	3,689	3,622	3,576	3,542	3,452	3,350	3,236	3,123	2,987
500	2,866	2,791	2,747	2,717	2,694	2,635	2,567	2,493	2,418	2,329
560	3,391	3,286	3,223	3,181	3,149	3,065	2,971	2,866	2,761	2,634
600	3,169	3,073	3,015	2,976	2,947	2,869	2,782	2,685	2,589	2,472
630	2,721	2,644	2,597	2,566	2,543	2,481	2,412	2,335	2,258	2,165
650	2,661	2,578	2,527	2,494	2,469	2,402	2,326	2,243	2,159	2,059
700	3,195	3,099	3,042	3,004	2,975	2,898	2,812	2,716	2,620	2,505
710	3,012	2,924	2,871	2,836	2,809	2,739	2,659	2,571	2,483	2,377
750	2,652	2,574	2,527	2,495	2,472	2,409	2,339	2,260	2,182	2,088
800	2,741	2,664	2,617	2,586	2,563	2,501	2,431	2,354	2,276	2,183
850	2,647	2,573	2,528	2,498	2,476	2,417	2,350	2,275	2,201	2,112
900	2,344	2,276	2,236	2,209	2,188	2,134	2,073	2,006	1,938	1,857
950	2,777	2,699	2,652	2,621	2,597	2,535	2,465	2,387	2,309	2,215
1000	2,616	2,538	2,491	2,459	2,436	2,373	2,302	2,223	2,145	2,050

B	A										
	600	630	650	700	710	750	800	850	900	950	1000
300	3,261	3,192	3,146	3,031	3,007	2,915	2,800	2,684	2,569	2,453	2,338
315	3,384	3,312	3,264	3,144	3,119	3,023	2,903	2,783	2,662	2,542	2,422
355	2,722	2,652	2,605	2,488	2,464	2,370	2,253	2,136	2,019	1,901	1,784
400	2,139	2,087	2,053	1,967	1,949	1,880	1,794	1,708	1,622	1,536	1,450
450	2,897	2,829	2,783	2,670	2,648	2,557	2,444	2,330	2,217	2,104	1,991
500	2,269	2,224	2,194	2,119	2,105	2,045	1,970	1,896	1,821	1,746	1,672
560	2,550	2,487	2,445	2,340	2,319	2,235	2,130	2,025	1,920	1,815	1,710
600	2,395	2,337	2,298	2,201	2,182	2,105	2,008	1,911	1,814	1,717	1,621

B	A										
	600	630	650	700	710	750	800	850	900	950	1000
630	2,103	2,057	2,026	1,949	1,933	1,871	1,794	1,717	1,640	1,563	1,485
650	1,992	1,941	1,908	1,824	1,808	1,741	1,657	1,573	1,489	1,406	1,322
700	2,429	2,371	2,333	2,237	2,218	2,141	2,045	1,949	1,853	1,758	1,662
710	2,306	2,254	2,218	2,130	2,112	2,042	1,954	1,865	1,777	1,689	1,601
750	2,025	1,978	1,947	1,869	1,853	1,790	1,712	1,634	1,555	1,477	1,399
800	2,121	2,075	2,044	1,967	1,951	1,889	1,812	1,734	1,657	1,579	1,502
850	2,052	2,008	1,978	1,904	1,889	1,830	1,755	1,681	1,607	1,532	1,458
900	1,803	1,762	1,735	1,668	1,654	1,600	1,532	1,465	1,397	1,330	1,262
950	2,153	2,106	2,074	1,996	1,981	1,918	1,840	1,762	1,684	1,606	1,528
1000	1,987	1,940	1,909	1,830	1,814	1,751	1,673	1,594	1,516	1,437	1,358

8. Transportation, storage and warranty

8.1 Logistic terms

Dampers are delivered in bulk. As standard, the dampers are wrapped in plastic foil for protection during transport and must not be used for long-term storage. Temperature changes during transport can cause condensation of water inside the packaging and thereby cause corrosion of materials used in the dampers (e.g. white corrosion on zinc-coated items or mould on calcium silicate). Therefore, it is necessary to remove the transport packaging immediately after unloading to allow air to circulate around the product.

The dampers must be stored in clean, dry, well ventilated and dust-free environment out of direct sunlight. Ensure protection against moisture and extreme temperatures (minimum temperature +5°C). The dampers must be protected against mechanical and accidental damage prior to installation.

Another required packaging system should be approved and agreed by manufacturer. Packaging material is not returnable in case that another packaging system (material) is required and used and it is not included into final price of damper.

Dampers are transported by box freight vehicles without direct weather impact, there must not occur any shocks and ambient temperature must not exceed +50°C. Dampers must be protected against impact when transported and manipulated. During transportation, the damper blades must be in the “CLOSED” position.

Dampers must be stored indoor in environment without any aggressive vapours, gases or dust. Indoor temperature must be in the range from -30°C to +50°C and maximum relative humidity 95%.

8.2 Warranty

The manufacturer provides a warranty of 24 months from the date of dispatch for the dampers.

The warranty for fire dampers FDML, provided by the manufacturer, is completely void if actuating, closing and control devices are unprofessionally handled by untrained workers or if electric components, i.e. actuators, supply devices and thermoelectric activation devices are dismantled.

The warranty is void if dampers are used for other purposes, devices and working conditions than those allowed by these technical conditions or if the dampers are mechanically damaged during handling.

If the dampers are damaged by transport, a record must be written down with the forwarder at reception for later complaint.

9. Assembly, attendance and maintenance

Assembly, maintenance and damper function check can be done only by qualified and trained person, i.e. “AUTHORIZED PERSON” according to the manufacturer documentation. All works done on the fire dampers must be done according international and local norms and laws.

All effective safety standards and directives must be observed during damper assembly.

To ensure reliable damper function it is necessary to avoid blocking the actuating mechanism and contact surfaces with collected dust, fibre and sticky materials and solvents.

Manual operation - actuator control without electric voltage

A special wrench (part of the actuator) can be used to manually turn the damper blades to any position. When the wrench is turned in the direction of the arrow, the damper blades rotate to open position. As the blades rotation is stopped, in every position, the actuator will be locked. Unlocking is possible even manually as per instructions on the actuator, or by the activation of the supply voltage.

If the actuator is manually locked, the damper blades will not close in the event of a fire after the activation of the thermoelectric activation device BAT. To restore correct damper operation, the actuator must be unlocked (manually or by applying power supply).

Installation / fixing the damper

It is necessary to ground the damper casing before installation.

The damper casing shall not be deformed in the course of bricking in.

Once the damper is built in, the damper blades shall not grind on the damper casing during opening or closing.

Dampers are not equipped with inspection openings. If these dampers are used as dampers for simple maintenance and revision they must be completed with connecting inspection part installed just behind the damper.

9.1 Commissioning and revisions

Before putting the damper into operation, serviceability checks and functional tests must be carried out including testing of functionality of all electrical elements. After putting into operation these serviceability checks must be carried at least twice a year. If no defect is found during two subsequent serviceability checks, these checks can be carried out once a year.

In case that dampers are found unable to serve for their function for any cause, it must be clearly marked. The operator is obliged to ensure that the damper is put into condition in which it is ready for function and meanwhile he is obliged to provide the fire protection by another appropriate way.

Results of regular checks, imperfections found and all important facts connected with the damper function must be recorded in the "FIRE BOOK" and immediately reported to the operator.

Before entering the dampers with actuator into operation after their assembly and by sequential checks. Check of blades rotation into the breakdown position "CLOSED" can be done after disconnecting the actuator supply (e.g. by pressing the test button at the thermoelectric activation device BAT or disconnecting the supply from ELECTRICAL FIRE SIGNALISATION). Check of blades rotation back into the "OPEN" position can be done after restoration of power supply (e.g. by releasing the test button or restoration of supply from ELECTRICAL FIRE SIGNALISATION). Without power supply, the damper can be operated manually and fixed in any required position. Release of the locking mechanism can be achieved manually or automatically by applying the supply voltage. It is recommended to provide periodical checks, maintenance and service actions on fire equipment by authorized persons. The authorized persons can be trained by producer, or by authorized distributor. All effective safety standards and directives must be observed during fire damper assembly.

Visual inspection of proper damper installation, inner area of a damper, damper blades, contact surfaces and silicon seal.

Following checks must be carried out for all dampers

Check the rotation of the blades to "CLOSED" failure position after disconnection the power supply of the actuator (e.g. by pressing the test button on the thermoelectric activation device BAT or by disconnection the power supply from electrical fire signalization). Check the rotation of the blades back to "OPEN" position by restoring the power supply to the actuator (e.g. by releasing the test button or by restoring the power supply from electrical fire signalization).

Following checks must be carried out for dampers with optical smoke detector

The function checks of the optical smoke detector are to be carried out by employees of an authorized organization who have corresponding electrotechnical qualification and have been properly trained by the manufacturer. The function checks are to be carried out as a part of function checks of the fire dampers, at least 1x a year.

For the function checks, the damper blades should be in "CLOSED" position with the fan off or with closed air regulation situated between the fan and the fire damper.

How to proceed after Tf1 or Tf2 fuses have been activated

If the thermal fuse Tf1 is interrupted (due to temperature outside the duct), it is necessary to replace the spring return actuator (see page 8).

If the thermal fuse Tf2 is interrupted (due to temperature inside the duct) , only the spare part ZBAT 72 (95/120/140) needs to be replaced (acc.to the activation temperature) (see page 8).



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