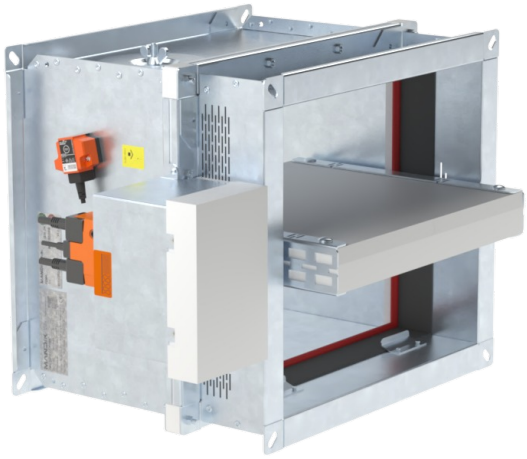
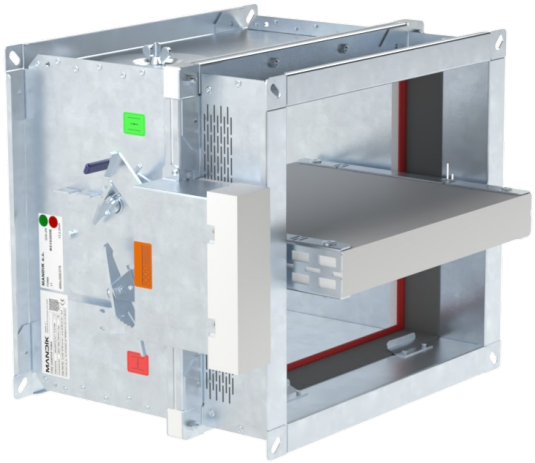




NORDfire

FDMA 120 Fire Damper

Square dampers from 180×180 mm to 1600×1000 mm

CE certified acc. to EN 15650

External casing leakage: class ATC 3, internal leakage class 2 acc. to EN 1751

Damper actuating mechanical or electrical

Fire resistance up to EIS 120

ETS NORD

Contents

General Information

1. Description

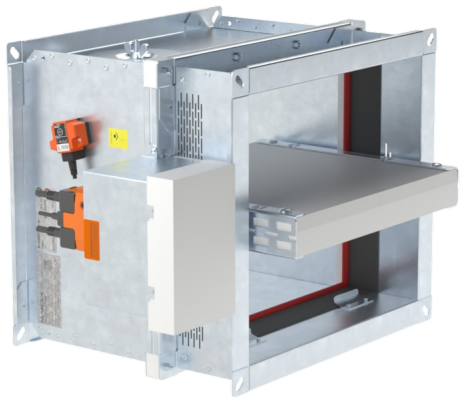
Fire dampers are shutters in ducts of air-conditioning devices that prevent the spread of fire and combustion products from one fire segment to the other one by means of closing the duct in the points of fire separating constructions.

Damper blade automatically closes air duct using a closing spring or a spring return actuator. The closing spring is actuated by pressing a button on the manual control or by melting a thermal fuse.

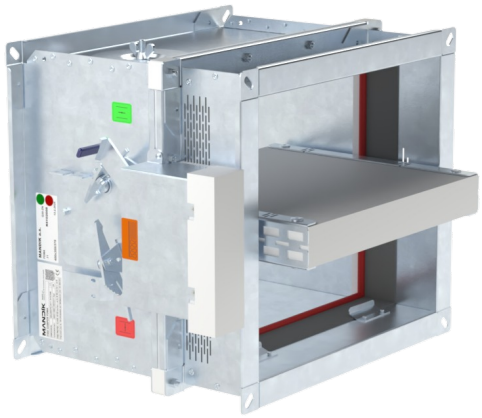
The return spring of the actuator is actuated when a thermoelectric activation device BAT is activated, when a test button on BAT is pressed or when power supply of the actuator is interrupted.

After closing the blade, 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.

FDMA 120 with spring return actuator



FDMA 120 with manual control



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 EIS 120, EIS 90
- External casing leakage: class ATC 3 (old marking “C“), Internal leakage class 2 acc. to EN 1751
- Cycling test in class C_{10000} acc. to EN 15650
- Corrosion resistant acc. to EN 15650
- Certificate of constancy of performance No. 1391-CPR-2026/0052
- Declaration of Performance No. PM/FDMA/ 120/01/26/1
- 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:

a) Maximum air velocity: 12 m/s
   Maximum pressure difference: 1200 Pa
b) The air circulation in the whole damper section must be secured as steady on whole surface.

Dampers can be installed with a horizontal blade axis. 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.

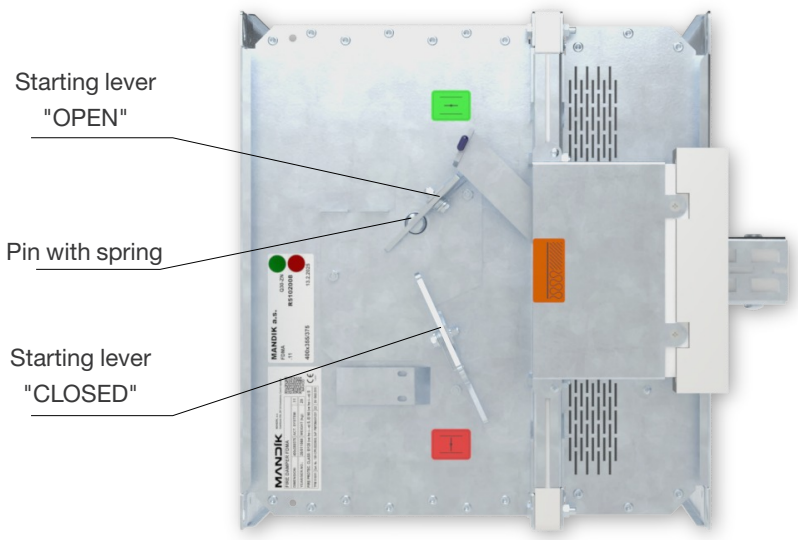
2. Design

2.1 Design with manual control

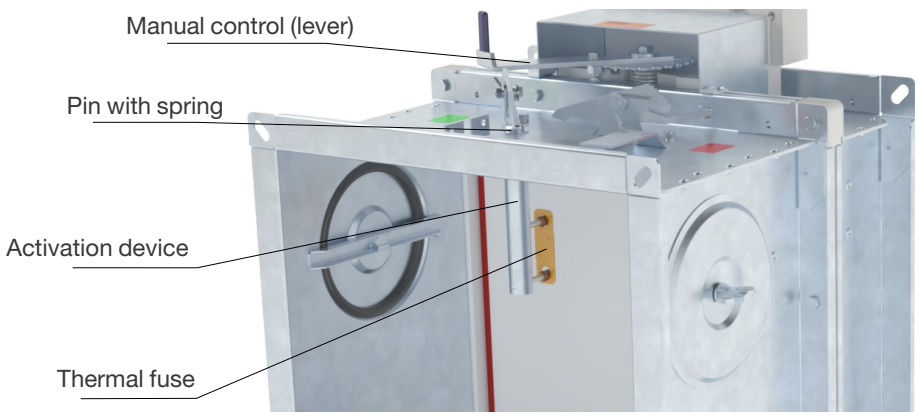
Design .01

Design with manual control with a thermal fuse which actuates the shutting device, after the nominal activation temperature 72°C has been reached. Automatic initiation of the manual control is not activated if the temperature does not exceed 70°C. In case that other activation temperatures are required, thermal fuses with nominal activation temperature +104°C or +147°C can be supplied (this requirement must be specified in the order).

Design .01 - design with manual control



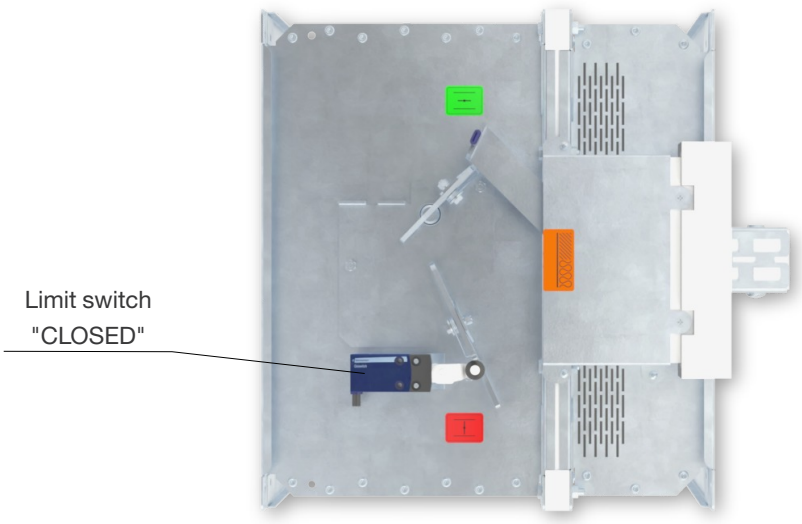
Detail of the manual control, thermal fuse and activation device



Design .11

Design .01 with manual control can be complemented with a limit switch signaling of the damper blade position "CLOSED"

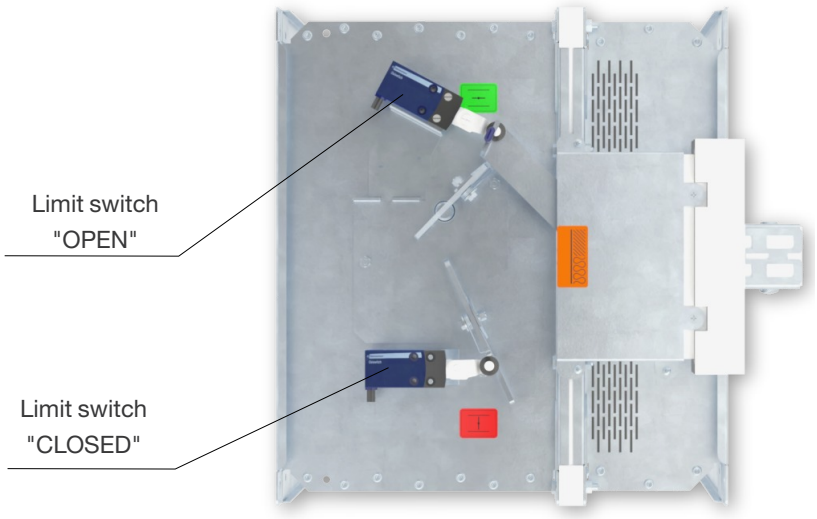
Design .11



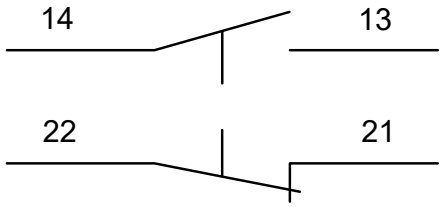
Design .80

Design .01 with manual control can be complemented with two limit switches signaling of the damper blade position "CLOSED" and "OPEN".

Design .80



Limit switch XCKN2118G11



Nominal voltage and max. current	AC 240 V; 3 A DC 250 V; 0,1 A
Degree of protection	IP 65
Ambient temperature	-25°C … +70°C

2.2 Design with spring return actuator

Design .40, .50

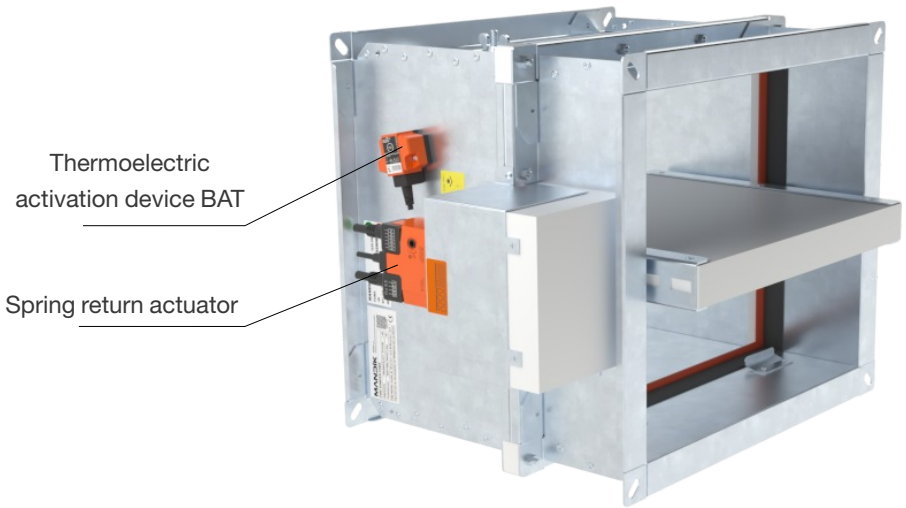
The fire dampers are equipped with Belimo spring return actuators with thermoelectric activation device BAT. The spring return actuator types are BFL, BFN or BF depending on the damper size. (Further mentioned as „actuator“).

After being connected to power supply 230V or AC/DC 24V, the actuator rotates the damper blade to the operating position "OPEN" and at the same time prestretches its return spring. When the actuator is power supplied, the damper blade is in the position "OPEN" and the return spring is prestretched. Time needed for full opening of the damper blade 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 blade to the breakdown position "CLOSED". In case that the power supply is restored again (the blade can be in any position), the actuating mechanism starts to re-displace the damper blade into the position "OPEN". The time of closing the damper blade from the position "OPEN" to the position "CLOSED" takes maximum 20 sec. In case that the power supply is restored again (the blade can be in any position), the actuator starts to rotate the damper blade 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, rotates the damper blade into the breakdown position "CLOSED".

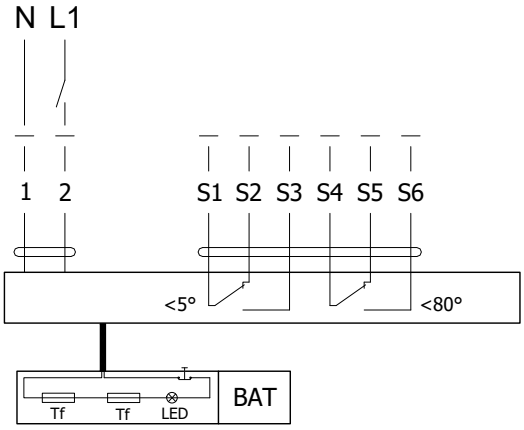
Signalisation of damper blade position "OPEN" and "CLOSE" is provided by two microswitches.

Design .40 and .50



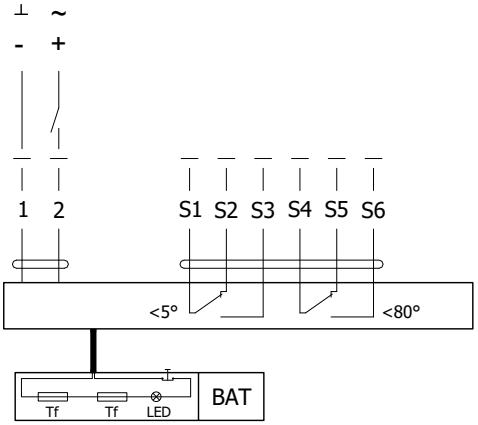
Actuator BELIMO BFL 230-T

AC230 V



Actuator BELIMO BFL 24-T(-ST)

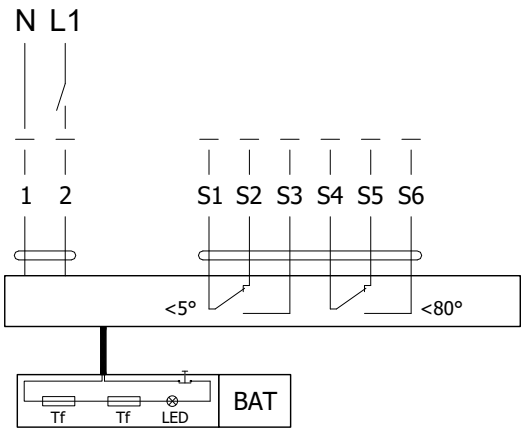
AC/DC 24



Actuator BELIMO - 4 Nm/ 3 Nm Spring	BFL 230-T(-ST)	BFL 24-T(-ST)
Power voltage	AC 230 V 50/60 Hz	AC/DC 24 V 50/60Hz
Power consumption - in operation - in rest position	 2,6 W 0,7 W	 2,0 W 0,7 W
Dimensioning	4 VA (Imax 4 A @ 5 ms)	2,8 VA (Imax 2,9 A @ 5 ms)
Protection class	II	III
Degree of protection	IP 54	
Running time - motor - spring return	 <60 s ~ 20 s	
Ambient temperature - normal duty - safety duty - non-operating temperature	 - 30°C … +55°C The safe position will be attained up to max. +75°C - 40°C … +55°C	
Connecting - supply/control - auxiliary switch	 cable 1 m, 2 x 0,75 mm² (BFL 2xx-T-ST) with 3-pin plug-in connectors cable 1 m, 6 x 0,75 mm² (BFL 2xx-T-ST) with 6-pin plug-in connectors	
Response temperature thermal fuse	duct outside temperature +72°C duct inside temperature +72°C	

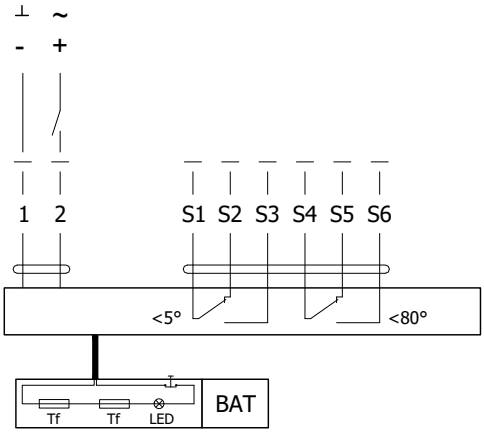
Actuator BELIMO BFN 230-T

AC230 V



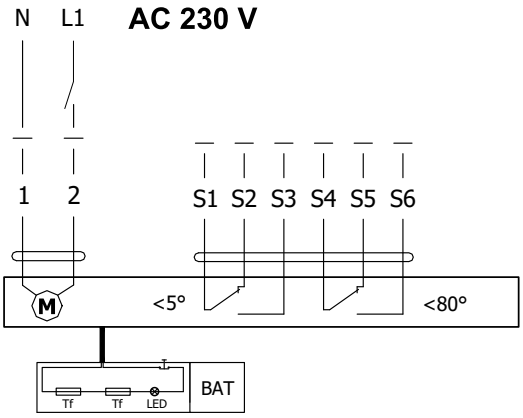
Actuator BELIMO BFN 24-T(-ST)

AC/DC 24

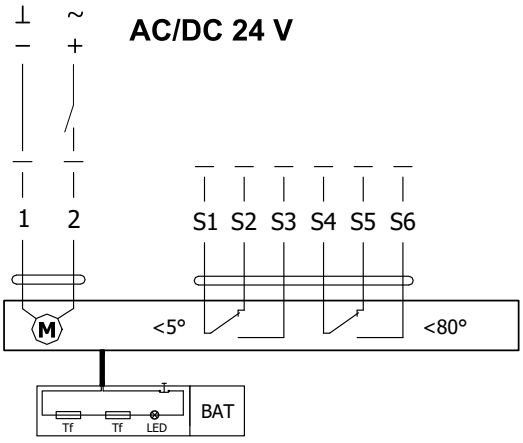


Actuator BELIMO - 9 Nm/ 7 Nm Spring	BFN 230-T(-ST)	BFN 24-T(-ST)
Power voltage	AC 230 V 50/60 Hz	AC/DC 24 V 50/60Hz
Power consumption - in operation - in rest position	 3,5 W 1,3 W	 3,2 W 1,2 W
Dimensioning	6,5 VA (Imax 4 A @ 5 ms)	4,3 VA (Imax 2,9 A @ 5 ms)
Protection class	II	III
Degree of protection	IP 54	
Running time - motor - spring return	 <60 s ~ 20 s	
Ambient temperature - normal duty - safety duty - non-operating temperature	 - 30°C … +55°C The safe position will be attained up to max. +75°C - 40°C … +55°C	
Connecting - supply/control - auxiliary switch	 cable 1 m, 2 x 0,75 mm² (BFN 2xx-T-ST) with 3-pin plug-in connectors cable 1 m, 6 x 0,75 mm² (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-TN



Actuator BELIMO BF 24-TN (-ST)



Actuator BELIMO - 18 Nm/ 12 Nm Spring	BF 230-TN(-ST)	BF 24-TN(-ST)
Powerl voltage	AC 230 V 50/60Hz	AC/DC 24 V 50/60Hz
Power consumption - in operation -in rest position	 8,5 W 3 W	 7 W 2 W
Dimensioning	11 VA (Imax 8,3 A @ 5 ms)	10 VA (Imax 8,3 A @ 5 ms))
Protection class	II	III
Degree of protection	IP 54	
Running time - motor - spring return	 120 sec ~ 16 sec	
Ambient temperature - normal duty - safety duty - non-operating temperature	 - 30°C … +50°C The safe position will be attained up to max. +75°C - 40°C … +50°C	
Connecting: - supply/control - auxiliary switch	 cable 1 m, 2 x 0,75 mm² (BF 2xx-TN-ST) with 3-pin plug-in connectors cable 1 m, 6 x 0,75 mm²	
	cable 1 m, 6 x 0,75 mm² (BF 2xx-TN-ST) with 6-pin plug-in connectors	
Response temperature thermal fuse	duct outside temperature +72°C duct inside temperature +72°C	

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).

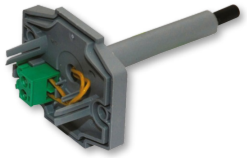
When one of the thermal fuses responds, the supply voltage is interrupted permanently and irreversibly.

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

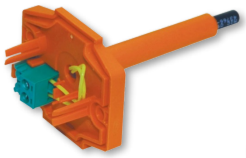
Installation is carried out with the pre-assembled, selftapping screws.

BELIMO ZBAT 72
Black (BK) = 72°C (standard)

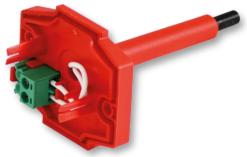
BELIMO ZBAT 95
Grey (GY) = 95°C

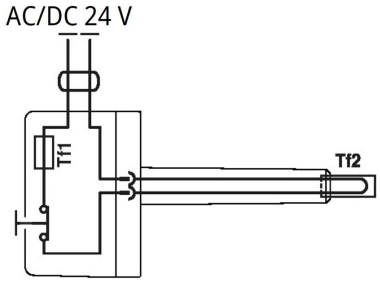


BELIMO ZBAT 120
Orange (OG) = 120°C



BELIMO ZBAT 140
Red (RD) = 140°C

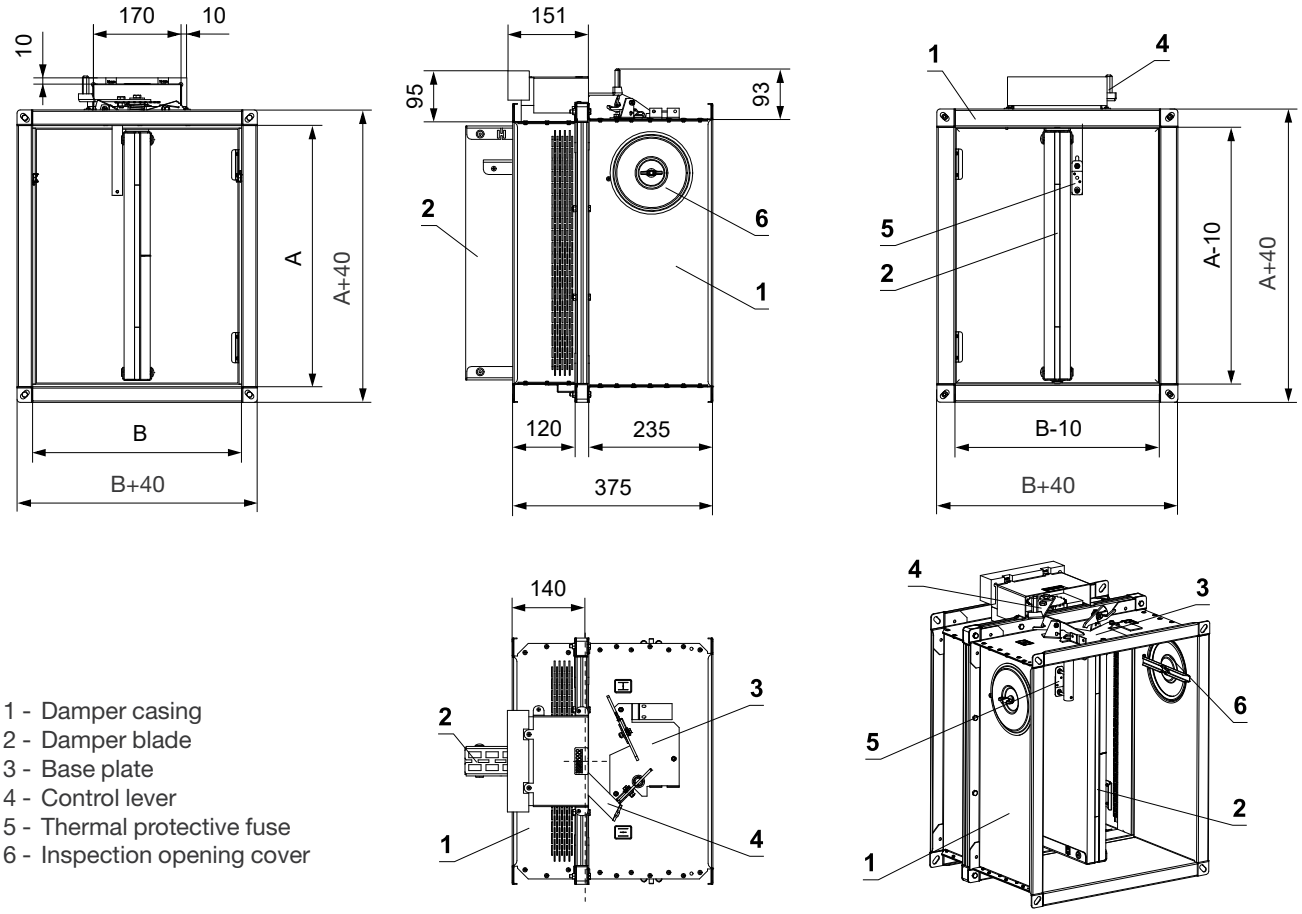




Thermoelectric activation device BAT 72 (95/120/140)	
Power voltage	AC/DC 24 V 50/60Hz
Rated current	1 A
AC/DC throughput resistance	<1 Ω
Protection class	III
Degree of protection	IP 54
Probe length	65 mm
Ambient temperature Storage temperature Ambient humidity	-30°C … +50°C -40°C … +50°C Max. 95% RH, non-condensing
Connection supply	Cable 1 m, 2 x 0.5 mm², 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

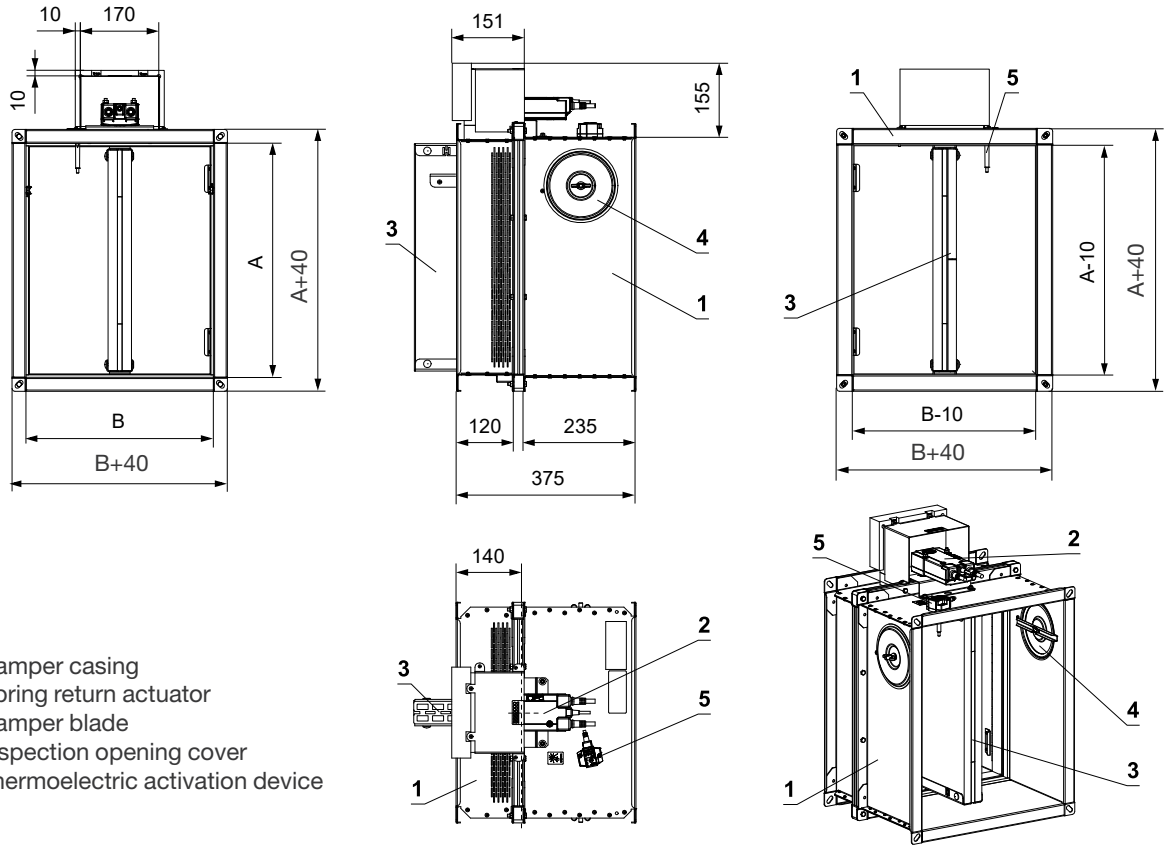
3. Dimensions

FDMA 120 with manual control



1 - Damper casing
2 - Damper blade
3 - Base plate
4 - Control lever
5 - Thermal protective fuse
6 - Inspection opening cover

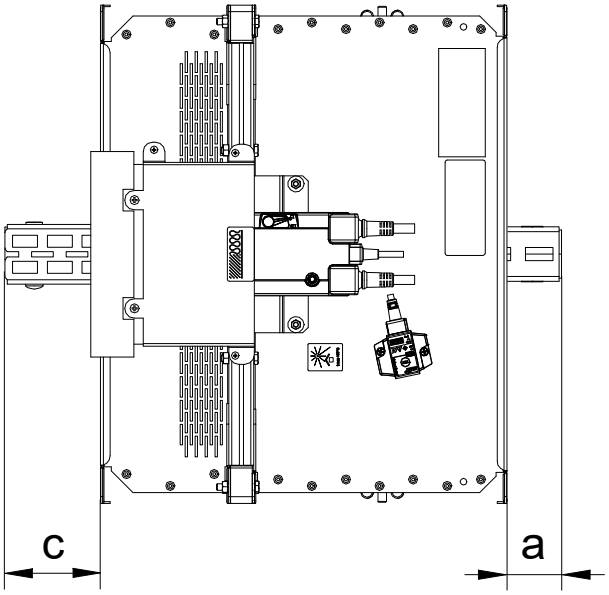
FDMA 120 with spring return actuator



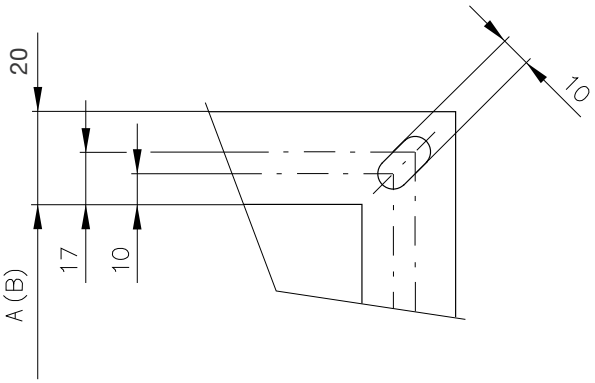
1 - Damper casing
2 - Spring return actuator
3 - Damper blade
4 - Inspection opening cover
5 - Thermoelectric activation device

Damper blade overlaps of FDMA

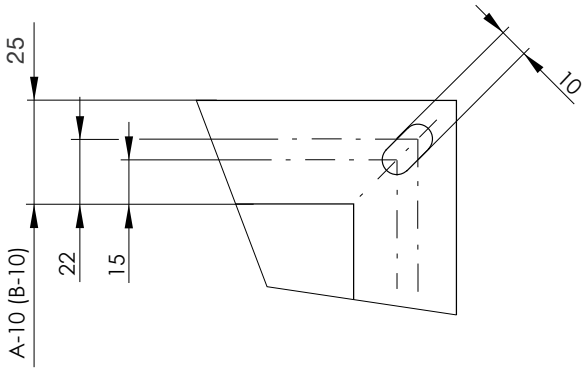
Open damper blade overlaps the damper casing by the value “a” or “c”. These values are specified in chapter “Technical parameters”. Values "a" and "c" has to be respected when projecting following air-conditioning duct.



Flange of a damper - CONTROL SIDE



Flange of a damper - INSTALLATION SIDE



Fanges are fitted with oval holes in the corners.

3.1 Technical parameters

A×B (mm)	a (mm)	c (mm)	Weight Design Man. (kg)	Weight Design Actu. (kg)	Free area Sef (m²)	Spring return actuator
180 × 180	-	-	10,5	11,7	0,0163	BFL
× 200	-	-	11	12,2	0,0194	BFL
× 225	-	0,5	11,6	12,8	0,0233	BFL
× 250	-	13	12,1	13,3	0,0271	BFL
× 280	-	28	12,7	13,9	0,0318	BFL
× 300	-	38	13,2	14,4	0,0349	BFL
× 315	-	46	13,6	14,8	0,0372	BFL
× 355	-	66	14,4	15,6	0,0434	BFL
× 400	-	88	15,5	16,7	0,0504	BFL
× 450	-	113	16,5	17,7	0,0581	BFL
× 500	-	138	17,6	18,8	0,0659	BFL
× 550	-	163	18,7	19,9	0,0736	BFL
× 560	-	168	19	20,2	0,0752	BFL
× 600	13	188	19,9	21	0,0814	BFL
× 630	28	203	20,4	21,6	0,0860	BFL
× 650	38	213	21	22,2	0,0891	BFL
× 700	63	238	22	23,6	0,0969	BFN
× 710	68	243	22,1	23,7	0,0984	BFN
× 750	88	263	23,1	24,7	0,1046	BFN
× 800	113	288	24,3	25,9	0,1124	BFN
200 × 180	-	-	11	12,2	0,0184	BFL
× 200	-	-	11,4	12,6	0,0219	BFL
× 225	-	0,5	12	13,2	0,0263	BFL
× 250	-	13	12,6	13,8	0,0306	BFL
× 280	-	28	13,2	14,4	0,0359	BFL
× 300	-	38	13,8	14,9	0,0394	BFL
× 315	-	45,5	14,1	15,3	0,0420	BFL
× 355	-	65,5	15	16,2	0,0490	BFL
× 400	-	88	16,1	17,3	0,0569	BFL
× 450	-	113	17,2	18,4	0,0656	BFL
× 500	-	138	18,4	19,6	0,0744	BFL
× 550	-	163	19,5	20,7	0,0831	BFL
× 560	-	168	19,7	20,9	0,0849	BFL
× 600	13	188	20,7	21,9	0,0919	BFL
× 630	28	203	21,3	22,5	0,0971	BFL
× 650	38	213	21,9	23,1	0,1006	BFL
× 700	63	238	22,9	24,5	0,1094	BFN
× 710	68	243	23	24,6	0,1111	BFN
× 750	88	263	24,1	25,7	0,1181	BFN
× 800	113	288	25,3	26,9	0,1269	BFN
× 900	163	338	27,5	29	0,1444	BFN
×1000	213	388	29,8	31,4	0,1619	BFN
225 × 180	-	-	11,5	12,6	0,0210	BFL
× 200	-	-	11,9	13,1	0,0250	BFL
× 225	-	0,5	12,6	13,8	0,0300	BFL
× 250	-	13	13,2	14,4	0,0350	BFL
× 280	-	28	13,9	15	0,0410	BFL
× 300	-	38	14,4	15,6	0,0450	BFL
× 315	-	45,5	14,8	16	0,0480	BFL
× 355	-	65,6	15,7	16,9	0,0560	BFL
× 400	-	88	16,9	18,1	0,0650	BFL
225 × 450	-	113	18	19,2	0,0750	BFL
× 500	-	138	19,2	20,4	0,0850	BFL
× 550	-	155	20,4	21,6	0,0950	BFL
× 560	-	160	20,7	21,9	0,0970	BFL
× 600	13	180	21,7	23,3	0,1050	BFL
× 630	28	195	22,3	23,9	0,1110	BFN
× 650	38	205	22,9	24,5	0,1150	BFN
× 700	63	230	24	25,6	0,1250	BFN
× 710	68	235	24,2	25,8	0,1270	BFN
× 750	88	255	25,3	26,9	0,1350	BFN
x 800	113	280	26,5	28,1	0,1450	BFN
× 900	163	330	28,8	30,4	0,1650	BFN
×1000	213	380	31,3	34,6	0,1850	BF
250 × 180	-	-	11,9	13,1	0,0236	BFL
× 200	-	-	12,5	13,7	0,0281	BFL
× 225	-	0,5	13,1	14,3	0,0338	BFL
× 250	-	13	13,7	14,9	0,0394	BFL
× 280	-	28	14,5	15,7	0,0461	BFL
× 300	-	38	15	16,2	0,0506	BFL
× 315	-	45,5	15,4	16,6	0,0540	BFL
× 355	-	65,5	16,4	17,6	0,0630	BFL
× 400	-	88	17,6	18,8	0,0731	BFL
× 450	-	113	18,9	20,1	0,0844	BFL
× 500	-	138	20,1	21,3	0,0956	BFL
× 550	-	163	21,4	22,6	0,1069	BFL
× 560	-	168	21,6	22,8	0,1091	BFL
× 600	13	188	22,7	24,3	0,1181	BFN
× 630	28	203	23,4	25	0,1249	BFN
× 650	38	213	24	25,6	0,1294	BFN
× 700	63	238	25,2	26,8	0,1406	BFN
× 710	68	243	25,3	26,9	0,1429	BFN
× 750	88	263	26,4	28	0,1519	BFN
× 800	113	288	27,8	29,4	0,1631	BFN
× 900	163	338	30,2	31,8	0,1856	BFN
×1000	213	388	32,7	36,1	0,2081	BF
280 × 180	-	-	12,5	13,7	0,0268	BFL
× 200	-	-	13,1	14,3	0,0319	BFL
× 225	-	0,5	13,8	14,9	0,0383	BFL
× 250	-	13	14,4	15,6	0,0446	BFL
× 280	-	28	15,2	16,4	0,0523	BFL
× 300	-	38	15,8	17	0,0574	BFL
× 315	-	45,5	16,2	17,4	0,0612	BFL
× 355	-	65,5	17,2	18,4	0,0714	BFL
× 400	-	88	18,5	19,7	0,0829	BFL
× 450	-	113	19,8	21	0,0956	BFL
× 500	-	138	21,2	22,4	0,1084	BFL
× 550	-	163	22,5	23,7	0,1211	BFL
× 560	-	168	22,8	24,4	0,1237	BFN
× 600	13	188	23,8	25,4	0,1339	BFN
× 630	28	203	24,6	26,2	0,1415	BFN
× 650	38	213	25,2	26,8	0,1466	BFN
280 × 700	63	238	26,5	28,1	0,1594	BFN
× 710	68	243	26,6	28,2	0,1619	BFN

A×B (mm)	a (mm)	c (mm)	Weight Design Man. (kg)	Weight Design Actu. (kg)	Free area Sef (m²)	Spring return actuator
× 750	88	263	27,8	29,4	0,1721	BFN
× 800	113	288	29,2	30,8	0,1849	BFN
× 900	163	338	31,8	35,2	0,2104	BF
×1000	213	388	34,5	37,9	0,2359	BF
300 × 180	-	-	12,9	14,1	0,0289	BFL
× 200	-	-	13,5	14,7	0,0344	BFL
× 225	-	0,5	14,2	15,4	0,0413	BFL
× 250	-	13	14,9	16,1	0,0481	BFL
× 280	-	28	15,7	16,9	0,0564	BFL
× 300	-	38	16,3	17,5	0,0619	BFL
× 315	-	45,5	16,7	17,9	0,0660	BFL
× 355	-	65,5	17,7	18,9	0,0770	BFL
× 400	-	88	19,1	20,2	0,0894	BFL
× 450	-	113	20,4	21,5	0,1031	BFL
× 500	-	138	21,7	22,9	0,1169	BFL
× 550	-	163	23,1	24,6	0,1306	BFN
× 560	-	168	23,4	25	0,1334	BFN
× 600	13	188	24,5	26,1	0,1444	BFN
× 630	28	203	25,2	26,8	0,1526	BFN
× 650	38	213	25,9	27,5	0,1581	BFN
× 700	63	238	27,2	28,8	0,1719	BFN
× 710	68	243	27,3	28,9	0,1746	BFN
× 750	88	263	28,5	30,1	0,1856	BFN
× 800	113	288	29,9	31,5	0,1994	BFN
× 900	163	338	32,5	35,9	0,2269	BF
×1000	213	388	35,2	38,6	0,2544	BF
315 × 180	-	-	13,2	14,4	0,0305	BFL
× 200	-	-	13,8	15	0,0363	BFL
× 225	-	0,5	14,5	15,7	0,0435	BFL
× 250	-	13	15,3	16,4	0,0508	BFL
× 280	-	28	16,1	17,3	0,0595	BFL
× 300	-	38	16,6	17,8	0,0653	BFL
× 315	-	45,5	17,1	18,3	0,0696	BFL
× 355	-	65,5	18,1	19,3	0,0812	BFL
× 400	-	88	19,5	20,7	0,0943	BFL
× 450	-	113	20,8	22	0,1088	BFL
× 500	-	138	22,2	23,4	0,1233	BFL
× 550	-	163	23,6	25,2	0,1378	BFN
× 560	-	168	23,9	25,5	0,1407	BFN
× 600	13	188	25	26,6	0,1523	BFN
× 630	28	203	25,8	27,4	0,1610	BFN
× 650	38	213	23,6	28,1	0,1668	BFN
× 700	63	238	27,8	29,4	0,1813	BFN
× 710	68	243	27,9	29,5	0,1842	BFN
× 750	88	263	29,2	30,8	0,1958	BFN
× 800	113	288	30,6	32,2	0,2103	BFN
× 900	163	338	33,2	36,6	0,2393	BF
×1000	213	388	36	39,4	0,2683	BF
355 × 180	-	-	14	15,2	0,0347	BFL
× 200	-	-	14,6	15,8	0,0413	BFL
× 225	-	0,5	15,4	16,6	0,0495	BFL
355 × 250	-	13	16,2	17,4	0,0578	BFL
× 280	-	28	17	18,2	0,0677	BFL

A×B (mm)	a (mm)	c (mm)	Weight Design Man. (kg)	Weight Design Actu. (kg)	Free area Sef (m²)	Spring return actuator
× 300	-	38	17,6	18,8	0,0743	BFL
× 315	-	45,5	18,1	19,3	0,0792	BFL
× 355	-	65,5	19,2	20,4	0,0924	BFL
× 400	-	88	20,6	21,8	0,1073	BFL
× 450	-	113	22	23,2	0,1238	BFL
× 500	-	138	23,5	25,1	0,1403	BFN
× 550	-	163	24,9	26,5	0,1568	BFN
× 560	-	168	25,4	27	0,1601	BFN
× 600	13	188	26,5	28,1	0,1733	BFN
× 630	28	203	27,3	28,9	0,1832	BFN
× 650	38	213	28	29,6	0,1898	BFN
× 700	63	238	29,4	31	0,2063	BFN
× 710	68	243	29,6	31,2	0,2096	BFN
× 750	88	263	30,9	32,5	0,2228	BFN
× 800	113	288	32,4	35,8	0,2393	BF
× 900	163	338	35,2	38,6	0,2723	BF
×1000	213	388	38,1	41,5	0,3053	BF
400 × 180	-	-	14,9	16,1	0,0394	BFL
× 200	-	-	15,6	16,8	0,0469	BFL
× 225	-	0,5	16,4	17,6	0,0563	BFL
× 250	-	13	17,2	18,4	0,0656	BFL
× 280	-	28	18,2	19,3	0,0769	BFL
× 300	-	38	18,7	19,9	0,0844	BFL
× 315	-	45,5	19,2	20,4	0,0900	BFL
× 355	-	65,5	20,4	21,6	0,1050	BFL
× 400	-	88	21,9	23,1	0,1219	BFL
× 450	-	113	23,4	24,6	0,1406	BFL
× 500	-	138	24,9	26,5	0,1594	BFN
× 550	-	163	26,5	28,1	0,1781	BFN
× 560	-	168	27	28,4	0,1819	BFN
× 600	13	188	28,2	29,8	0,1969	BFN
× 630	28	203	29,1	30,6	0,2081	BFN
× 650	38	213	29,8	31,2	0,2156	BFN
× 700	63	238	31,3	32,9	0,2344	BFN
× 710	68	243	31,5	33	0,2381	BFN
× 750	88	263	32,8	36	0,2531	BF
× 800	113	288	34,4	37,6	0,2719	BF
× 900	163	338	37,4	40,7	0,3094	BF
×1000	213	388	40,5	43,9	0,3469	BF
450 × 180	-	-	15,9	17,1	0,0446	BFL
× 200	-	-	16,6	17.8	0,0531	BFL
× 225	-	-	17,5	18,7	0,0638	BFL
× 250	-	0,5	18,4	19,6	0,0744	BFL
× 280	-	13	19,4	20,6	0,0871	BFL
× 300	-	28	20	21,2	0,0956	BFL
× 315	-	38	20,5	22,9	0,1020	BFL
× 355	-	45,5	21,7	24,5	0,1190	BFL
× 400	-	65,5	23,3	26,5	0,1381	BFL
× 450	-	113	24,9	28,2	0,1594	BFN
× 500	-	138	26,6	29,8	0,1594	BFN
× 550	-	163	28,2	28,3	0,2019	BFN
450 × 560	-	168	28,7	30,3	0,2061	BFN
× 600	13	188	30,1	31,7	0,2231	BFN

A×B (mm)	a (mm)	c (mm)	Weight Design Man. (kg)	Weight Design Actu. (kg)	Free area Sef (m²)	Spring return actuator
× 630	28	203	31	32,6	0,2359	BFN
× 650	38	213	31,8	33,4	0,2444	BFN
× 700	63	238	33,3	36,7	0,2656	BF
× 710	68	243	33,5	36,9	0,2699	BF
× 750	88	263	35	38,3	0,2869	BF
× 800	113	288	36,7	40	0,3081	BF
× 900	163	338	39,8	43,2	0,3506	BF
×1000	213	388	43,1	46,5	0,3931	BF
500 × 180	-	-	16,9	18,1	0,0499	BFL
× 200	-	-	17,6	18,8	0,0594	BFL
× 225	-	0,5	18,6	19,8	0,0713	BFL
× 250	-	13	19,5	20,7	0,0831	BFL
× 280	-	28	20,6	19,8	0,0974	BFL
× 300	-	38	21,3	22,5	0,1069	BFL
× 315	-	45,5	21,9	23	0,1140	BFL
× 355	-	65,5	23,2	24,4	0,1330	BFL
× 400	-	88	24,9	26,1	0,1544	BFL
× 450	-	113	26,7	28,3	0,1781	BFN
× 500	-	138	28,4	30	0,2019	BFN
× 550	-	163	30,2	31,8	0,2256	BFN
× 560	-	168	30,6	32,2	0,2304	BFN
× 600	13	188	32	33,6	0,2494	BFN
× 630	28	203	33	34,6	0,2636	BFN
× 650	38	213	33,9	37,2	0,2731	BF
× 700	63	238	35,6	38,9	0,2969	BF
× 710	68	243	35,8	39,2	0,3016	BF
× 750	88	263	37,4	40,7	0,3206	BF
× 800	113	288	39,2	42,6	0,3444	BF
× 900	163	338	42,6	46	0,3919	BF
×1000	213	388	46,2	49,6	0,4394	BF
550 × 180	-	-	17,9	19,1	0,0551	BFL
× 200	-	-	18,7	19,9	0,0656	BFL
× 225	-	0,5	19,7	20,9	0,0788	BFL
× 250	-	13	20,7	21,9	0,0919	BFL
× 280	-	28	21,8	23	0,1076	BFL
× 300	-	38	22,5	23,7	0,1181	BFL
× 315	-	45,5	23,1	24,3	0,1260	BFL
× 355	-	65,5	24,6	25,8	0,1470	BFL
× 400	-	88	26,4	28	0,1706	BFN
× 450	-	113	28,2	29,8	0,1969	BFN
× 500	-	138	30,1	31,7	0,2231	BFN
× 550	-	163	32	33,6	0,2494	BFN
× 560	-	168	32,3	33,9	0,2546	BFN
× 600	13	188	33,9	35,4	0,2756	BFN
× 630	28	203	34,9	38,3	0,2914	BF
× 650	38	213	35,8	39,2	0,3019	BF
× 700	63	238	37,6	41	0,3281	BF
× 710	68	243	37,8	41,2	0,3334	BF
× 750	88	263	39,5	42,9	0,3544	BF
× 800	113	288	41,4	44,8	0,3806	BF
× 900	163	338	45	48,4	0,4331	BF
550×1000	213	388	48,8	52,2	0,4856	BF
560 × 180	-	-	18,1	19,3	0,0562	BFL

A×B (mm)	a (mm)	c (mm)	Weight Design Man. (kg)	Weight Design Actu. (kg)	Free area Sef (m²)	Spring return actuator
× 200	-	-	18,9	20,1	0,0669	BFL
× 225	-	0,5	19,9	21,1	0,0803	BFL
× 250	-	13	20,9	22,1	0,0936	BFL
× 280	-	28	22,1	23,3	0,1097	BFL
× 300	-	38	22,8	24	0,1204	BFL
× 315	-	45,5	23,4	24,6	0,1284	BFL
× 355	-	65,5	24,8	26	0,1498	BFL
× 400	-	88	26,7	28,3	0,1739	BFN
× 450	-	113	28,5	30,1	0,2006	BFN
× 500	-	138	30,4	32	0,2274	BFN
× 550	-	163	32,3	33,9	0,2541	BFN
× 560	-	168	32,7	34,3	0,2595	BFN
× 600	13	188	34,2	35,8	0,2809	BFN
× 630	28	203	35,3	38,7	0,2969	BF
× 650	38	213	36,2	39,5	0,3076	BF
× 700	63	238	38	41,4	0,3344	BF
× 710	68	243	38,2	41,6	0,3397	BF
× 750	88	263	39,9	43,3	0,3611	BF
× 800	113	288	41,8	45,2	0,3879	BF
× 900	163	338	45,5	48,9	0,4414	BF
×1000	213	388	49,3	52,7	0,4949	BF
600 × 180	-	-	18,9	20,1	0,0604	BFL
× 200	-	-	19,7	20,9	0,0719	BFL
× 225	-	0,5	20,8	22	0,0863	BFL
× 250	-	13	21,8	23	0,1006	BFL
× 280	-	28	23,1	24,3	0,1179	BFL
× 300	-	38	23,8	25	0,1294	BFL
× 315	-	45,5	24,4	25,6	0,1380	BFL
× 355	-	65,5	25,9	27,1	0,1610	BFL
× 400	-	88	27,8	29,4	0,1869	BFN
× 450	-	113	29,7	31,3	0,2156	BFN
× 500	-	138	31,7	33,3	0,2444	BFN
× 550	-	163	33,7	35,3	0,2731	BFN
× 560	-	168	34,1	35,7	0,2789	BFN
× 600	13	188	35,7	39	0,3019	BF
× 630	28	203	36,8	40,2	0,3191	BF
× 650	38	213	37,7	41,1	0,3306	BF
× 700	63	238	39,6	43	0,3594	BF
× 710	68	243	39,9	43,2	0,3651	BF
× 750	88	263	41,6	45	0,3881	BF
× 800	113	288	43,6	47	0,4169	BF
× 900	163	338	47,4	50,8	0,4744	BF
×1000	213	388	51,4	54,8	0,5319	BF
630 × 180	-	-	19,4	20,6	0,0635	BFL
× 200	-	-	20,3	21,5	0,0756	BFL
× 225	-	0,5	21,4	22,6	0,0908	BFL
× 250	-	13	22,5	23,7	0,1059	BFL
× 280	-	28	23,7	24,9	0,1240	BFL
× 300	-	38	24,4	25,6	0,1361	BFL
× 315	-	45,5	25,1	26,3	0,1452	BFL
× 355	-	65,5	26,6	27,8	0,1694	BFL
630 × 400	-	88	28,6	30,2	0,1966	BFN
× 450	-	113	30,6	32,2	0,2269	BFN

A×B (mm)	a (mm)	c (mm)	Weight Design Man. (kg)	Weight Design Actu. (kg)	Free area Sef (m²)	Spring return actuator
× 500	-	138	32,6	34,2	0,2571	BFN
× 550	-	163	34,6	36,2	0,2874	BFN
× 560	-	168	35	36,6	0,2934	BFN
× 600	13	188	36,7	40,1	0,3176	BF
× 630	28	203	37,8	41,2	0,3358	BF
× 650	38	213	38,8	42,1	0,3479	BF
× 700	63	238	40,7	44,1	0,3781	BF
× 710	68	243	41	44,4	0,3842	BF
× 750	88	263	42,8	46,1	0,4084	BF
× 800	113	288	44,8	48,2	0,4386	BF
× 900	163	338	48,8	52,2	0,4991	BF
×1000	213	388	52,9	56,3	0,5596	BF
650 × 180	-	-	19,9	21,1	0,0656	BFL
× 200	-	-	20,8	22	0,0781	BFL
× 225	-	0,5	21,9	23,1	0,0938	BFL
× 250	-	13	23	24,2	0,1094	BFL
× 280	-	28	24,3	25,5	0,1281	BFL
× 300	-	38	25	26,2	0,1406	BFL
× 315	-	45,5	25,7	26,9	0,1500	BFL
× 355	-	65,5	27,3	28,5	0,1750	BFL
× 400	-	88	29,2	30,8	0,2031	BFN
× 450	-	113	31,3	32,9	0,2344	BFN
× 500	-	138	33,3	34,9	0,2656	BFN
× 550	-	163	35,4	37	0,2969	BFN
× 560	-	168	35,8	39,2	0,3031	BF
× 600	13	188	37,5	40,9	0,3281	BF
× 630	28	203	38,7	42	0,3469	BF
× 650	38	213	39,6	43	0,3594	BF
× 700	63	238	41,6	45	0,3906	BF
× 710	68	243	41,9	45,3	0,3969	BF
× 750	88	263	43,7	47,1	0,4219	BF
× 800	113	288	45,8	49,2	0,4531	BF
× 900	163	338	49,8	53,2	0,5156	BF
×1000	213	388	54	57,4	0,5781	BF
700 × 180	-	-	20,8	22	0,0709	BFL
× 200	-	-	21,8	23	0,0844	BFL
× 225	-	0,5	23	24,2	0,1013	BFL
× 250	-	13	24,2	25,4	0,1181	BFL
× 280	-	28	25,5	26,7	0,1384	BFL
× 300	-	38	26,3	27,4	0,1519	BFL
× 315	-	45,5	26,9	28,1	0,1620	BFL
× 355	-	65,5	28,6	30,2	0,1890	BFN
× 400	-	88	30,7	32,3	0,2194	BFN
× 450	-	113	32,8	34,4	0,2531	BFN
× 500	-	138	35	36,5	0,2869	BFN
× 550	-	163	37,1	40,5	0,3206	BF
× 560	-	168	37,6	40,9	0,3274	BF
× 600	13	188	39,3	42,7	0,3544	BF
× 630	28	203	40,5	43,9	0,3746	BF
× 650	38	213	41,5	44,9	0,3881	BF
× 700	63	238	43,6	47	0,4219	BF
700 × 710	68	243	43,9	47,3	0,4286	BF
× 750	88	263	45,8	49,2	0,4556	BF

A×B (mm)	a (mm)	c (mm)	Weight Design Man. (kg)	Weight Design Actu. (kg)	Free area Sef (m²)	Spring return actuator
× 800	113	288	48	51,4	0,4894	BF
× 900	163	338	52,2	55,6	0,5569	BF
×1000	213	388	56,6	60	0,6244	BF
710 × 180	-	-	21	22,2	0,0719	BFL
× 200	-	-	22	23,2	0,0856	BFL
× 225	-	0,5	23,2	24,4	0,1028	BFL
× 250	-	13	24,4	25,6	0,1199	BFL
× 280	-	28	25,8	27	0,1404	BFL
× 300	-	38	26,5	27,7	0,1541	BFL
× 315	-	45,5	27,2	28,4	0,1644	BFL
× 355	-	65,5	28,9	30,5	0,1918	BFN
× 400	-	88	31	32,6	0,2226	BFN
× 450	-	113	33,1	34,7	0,2569	BFN
× 500	-	138	35,3	36,9	0,2911	BFN
× 550	-	163	37,5	40,8	0,3254	BF
× 560	-	168	37,9	41,3	0,3322	BF
× 600	13	188	39,7	43	0,3596	BF
× 630	28	203	40,9	44,3	0,3802	BF
× 650	38	213	41,9	45,3	0,3939	BF
× 700	63	238	44	47,4	0,4281	BF
× 710	68	243	44,3	47,7	0,4350	BF
× 750	88	263	46,2	49,6	0,4624	BF
× 800	113	288	48,4	51,8	0,4966	BF
× 900	163	338	52,7	56,1	0,5651	BF
×1000	213	388	57,1	60,5	0,6336	BF
750 × 180	-	-	21,8	23	0,0761	BFL
× 200	-	-	22,8	24	0,0906	BFL
× 225	-	0,5	24,1	25,3	0,1088	BFL
× 250	-	13	25,3	26,5	0,1269	BFL
× 280	-	28	26,7	27,9	0,1486	BFL
× 300	-	38	27,5	28,7	0,1631	BFL
× 315	-	45,5	28,2	29,4	0,1740	BFL
× 355	-	65,5	29,9	31,5	0,2030	BFN
× 400	-	88	32,1	33,7	0,2356	BFN
× 450	-	113	34,3	35,9	0,2719	BFN
× 500	-	138	36,6	38,2	0,3081	BFN
× 550	-	163	38,8	42,2	0,3444	BF
× 560	-	168	39,3	42,7	0,3516	BF
× 600	13	188	41,1	44,5	0,3806	BF
× 630	28	203	42,4	45,8	0,4024	BF
× 650	38	213	43,4	46,8	0,4169	BF
× 700	63	238	45,6	49	0,4531	BF
× 710	68	243	45,9	49,3	0,4604	BF
× 750	88	263	47,9	51,3	0,4894	BF
× 800	113	288	50,2	53,6	0,5256	BF
× 900	163	338	54,6	58	0,5981	BF
×1000	213	388	59,1	62,5	0,6706	BF
800 × 180	-	-	22,8	24	0,0814	BFL
× 200	-	-	23,9	25,1	0,0969	BFL
× 225	-	0,5	25,2	26,4	0,1163	BFL
× 250	-	13	26,5	27,7	0,1356	BFL
800 × 280	-	28	28	29,2	0,1589	BFL
× 300	-	38	28,7	29,9	0,1744	BFL

A×B (mm)	a (mm)	c (mm)	Weight Design Man. (kg)	Weight Design Actu. (kg)	Free area Sef (m²)	Spring return actuator
× 315	-	45,5	29,5	30,7	0,1860	BFL
× 355	-	65,5	31,3	32,9	0,2170	BFN
× 400	-	88	33,5	35,1	0,2519	BFN
× 450	-	113	35,8	37,4	0,2906	BFN
× 500	-	138	38,2	39,8	0,3294	BFN
× 550	-	163	40,6	43,9	0,3681	BF
× 560	-	168	41	44,4	0,3759	BF
× 600	13	188	42,9	46,3	0,4069	BF
× 630	28	203	44,3	47,7	0,4301	BF
× 650	38	213	45,3	48,7	0,4456	BF
× 700	63	238	47,6	51	0,4844	BF
× 710	68	243	48	51,4	0,4921	BF
× 750	88	263	50	53,4	0,5231	BF
× 800	113	288	52,4	55,8	0,5619	BF
× 900	163	338	57	60,4	0,6394	BF
×1000	213	388	61,7	65,1	0,7169	BF
900 × 180	-	-	24,8	26	0,0919	BFL
× 200	-	-	25,9	27,1	0,1094	BFL
× 225	-	0,5	27,4	28,6	0,1313	BFL
× 250	-	13	28,8	30	0,1531	BFL
× 280	-	28	30,4	31,6	0,1794	BFL
× 300	-	38	31,2	32,4	0,1969	BFL
× 315	-	45,5	32	33,6	0,2100	BFN
× 355	-	65,5	34	35,6	0,2450	BFN
× 400	-	88	36,4	38	0,2844	BFN
× 450	-	113	38,9	40,5	0,3281	BFN
× 500	-	138	41,4	44,8	0,3719	BF
× 550	-	163	44	47,4	0,4156	BF
× 560	-	168	44,5	47,9	0,4244	BF
× 600	13	188	46,6	49,9	0,4594	BF
× 630	28	203	48	51,4	0,4856	BF
× 650	30	213	49,2	52,6	0,5031	BF
× 700	63	238	51,6	55	0,5469	BF
× 710	68	243	52	55,4	0,5556	BF
× 750	88	263	54,2	57,6	0,5906	BF
× 800	113	288	56,8	60,2	0,6344	BF
× 900	163	338	61,8	65,2	0,7219	BF
×1000	213	388	66,9	70,3	0,8094	BF
1000× 180	-	-	26,8	28	0,1024	BFL
× 200	-	-	28	29,2	0,1219	BFL
× 225	-	0,5	29,6	30,7	0,1463	BFL
× 250	-	13	31,1	32,3	0,1706	BFL
× 280	-	28	32,9	34,1	0,1999	BFL
× 300	-	38	33,7	35,3	0,2194	BFN
× 315	-	45,5	34,5	36,1	0,2340	BFN
× 355	-	65,5	36,7	38,3	0,2730	BFN
× 400	-	88	39,3	40,8	0,3169	BFN
× 450	-	113	41,9	43,5	0,3656	BFN
× 500	-	138	44,7	48,1	0,4144	BF
× 550	-	163	47,4	50,8	0,4631	BF
× 560	-	168	48	51,4	0,4729	BF
1000× 600	13	188	50,2	53,6	0,5119	BF

A×B (mm)	a (mm)	c (mm)	Weight Design Man. (kg)	Weight Design Actu. (kg)	Free area Sef (m²)	Spring return actuator
× 630	28	203	51,8	55,1	0,5411	BF
× 650	38	213	53	56,4	0,5606	BF
× 700	63	238	55,6	59	0,6094	BF
× 710	68	243	56,1	59,5	0,6191	BF
× 750	88	263	58,4	61,8	0,6581	BF
× 800	113	288	61,2	64,6	0,7069	BF
× 900	163	338	66,6	69,9	0,8044	BF
×1000	213	388	72,1	75,5	0,9019	BF
1100× 180	-	-	28,8	29,9	0,1129	BFL
× 200	-	-	30,1	31,3	0,1344	BFL
× 225	-	0,5	31,8	33	0,1613	BFL
× 250	-	13	33,4	34,6	0,1881	BFL
× 280	-	28	35,4	36,5	0,2204	BFL
× 300	-	38	36,2	37,8	0,2419	BFN
× 315	-	45,5	37,1	38,7	0,2580	BFN
× 355	-	65,5	39,4	41	0,3010	BFN
× 400	-	88	42,1	43,7	0,3494	BFN
× 450	-	113	45	48,4	0,4031	BF
× 500	-	138	47,9	51,3	0,4569	BF
× 550	-	163	50,9	54,3	0,5106	BF
× 560	-	168	51,5	54,9	0,5214	BF
× 600	13	188	53,8	57,2	0,5644	BF
× 630	28	203	55,5	58,9	0,5966	BF
× 650	38	213	56,8	60,2	0,6181	BF
× 700	63	238	59,7	63	0,6719	BF
× 710	68	243	60,1	63,5	0,6826	BF
× 750	88	263	62,6	66	0,7256	BF
× 800	113	288	65,6	69	0,7794	BF
× 900	163	338	71,3	74,7	0,8869	BF
×1000	213	388	77,2	80,6	0,9944	BF
1250× 180	-	-	31,7	32,9	0,1286	BFL
× 200	-	-	33,2	34,4	0,1531	BFL
× 225	-	0,5	35	36,2	0,1838	BFL
× 250	-	13	36,9	38,5	0,2144	BFL
× 280	-	28	39	40,6	0,2511	BFN
× 300	-	38	39,9	41,5	0,2756	BFN
× 315	-	45,5	40,9	42,5	0,2940	BFN
× 355	-	65,5	43,4	45	0,3430	BFN
× 400	-	88	46,4	48	0,3981	BFN
× 450	-	113	49,6	53	0,4594	BF
× 500	-	138	52,8	56,2	0,5206	BF
× 550	-	163	56	59,4	0,5819	BF
× 560	-	168	56,7	60,1	0,5941	BF
× 600	13	188	59,3	62,7	0,6431	BF
× 630	28	203	61,1	64,5	0,6799	BF
× 650	38	213	62,5	65,9	0,7044	BF
× 700	63	238	65,7	69,1	0,7656	BF
× 710	68	243	66,2	69,6	0,7779	BF
× 750	88	263	68,9	72,3	0,8269	BF
× 800	113	288	72,25	75,6	0,8881	BF
× 900*	163	338	80,3	81,9	1,0106	BF
×1000*	213	388	86,7	88,4	1,1331	BF
1400× 180	-	-	34,7	35,9	0,1444	BFL

A×B (mm)	a (mm)	c (mm)	Weight Design Man. (kg)	Weight Design Actu. (kg)	Free area Sef (m²)	Spring return actuator
× 200	-	-	36,3	37,5	0,1719	BFL
× 225	-	0,5	38,3	39,5	0,2063	BFL
× 250	-	13	40,3	41,9	0,2406	BFN
× 280	-	28	42,7	44,3	0,2819	BFN
× 300	-	38	43,6	45,2	0,3094	BFN
× 315	-	45,5	44,7	46,3	0,3300	BFN
× 355	-	65,5	47,4	49	0,3850	BFN
× 400	-	88	50,7	54,1	0,4469	BF
× 450	-	113	54,2	57,6	0,5156	BF
× 500	-	138	57,7	61,1	0,5844	BF
× 550	-	163	61,2	64,6	0,6531	BF
× 560	-	168	61,9	65,3	0,6669	BF
× 600	13	188	64,7	68,1	0,7219	BF
× 630*	28	203	68,5	70,1	0,7631	BF
× 650*	38	213	70	71,7	0,7906	BF
× 700*	63	238	73,5	75,1	0,8594	BF
× 710*	68	243	74	75,7	0,8731	BF
× 750*	88	263	77	78,6	0,9281	BF
× 800*	113	288	80,5	82,2	0,9969	BF
× 900*	163	338	87,4	89,1	1,1344	BF
×1000*	213	388	94,5	96,1	1,2719	BF
1500× 180	-	-	36,6	37,8	0,1549	BFL
× 200	-	-	38,4	39,6	0,1844	BFL
× 225	-	0,5	40,5	41,74	0,2213	BFL
× 250	-	13	42,7	44,2	0,2581	BFN
× 280	-	28	45,2	46,8	0,3024	BFN
× 300	-	38	46,1	47,7	0,3319	BFN
× 315	-	45,5	47,2	48,8	0,3540	BFN
× 355	-	65,5	50,1	51,7	0,4130	BFN
× 400	-	88	53,6	57	0,4794	BF
× 450	-	113	57,2	60,6	0,5531	BF
× 500	-	138	60,9	64,3	0,6269	BF
1500× 550	-	163	64,6	68	0,7006	BF
× 560	-	168	65,4	68,8	0,7154	BF
× 600	13	188	68,3	71,7	0,7744	BF
× 630*	28	203	72,2	73,9	0,8186	BF
× 650*	38	213	73,8	75,5	0,8481	BF
× 700*	63	238	77,5	79,1	0,9219	BF
× 710*	68	243	78,1	79,7	0,9366	BF
× 750*	88	263	81,2	82,8	0,9956	BF
× 800*	113	288	84,9	86,6	1,0694	BF
× 900*	163	338	92,2	93,9	1,2169	BF
×1000*	213	388	99,6	101,3	1,3644	BF
1600× 180	-	-	38,4	39,6	0,1654	BFL
× 200	-	-	40,2	41,4	0,1969	BFL
× 225	-	0,5	42,5	43,7	0,2363	BFL
× 250	-	13	44,7	46,3	0,2756	BFN
× 280	-	28	47,4	49	0,3229	BFN
× 300	-	38	48,3	49,9	0,3544	BFN
× 315	-	45,5	49,5	51,1	0,3780	BFN
× 355	-	65,5	52,6	54,2	0,4410	BFN
× 400	-	88	56,2	59,6	0,5119	BF
× 450	-	113	60,1	63,4	0,5906	BF

A×B (mm)	a (mm)	c (mm)	Weight Design Man. (kg)	Weight Design Actu. (kg)	Free area Sef (m²)	Spring return actuator
× 500	-	138	64	67,3	0,6694	BF
× 550	-	163	67,8	71,2	0,7481	BF
× 560	-	168	68,6	72	0,7639	BF
× 600	13	188	71,8	75,1	0,8269	BF
× 630*	28	203	75,8	77,4	0,8741	BF
× 650*	38	213	77,4	79,1	0,9056	BF
× 700*	63	238	81,2	82,9	0,9844	BF
× 710*	68	243	81,9	83,6	1,0001	BF
× 750*	88	263	85,2	86,8	1,0631	BF
× 800*	113	288	89,1	90,7	1,1419	BF
× 900*	163	338	96,8	98,4	1,2994	BF
×1000*	213	388	104,6	106,2	1,4569	BF

Sizes in increments of 5 mm can be manufactured on request.

For designs with BKN a weight of 0.5 kg must be added.

* Two closing springs are used for these dimensions.

4. Installation

4.1 Placement and installation

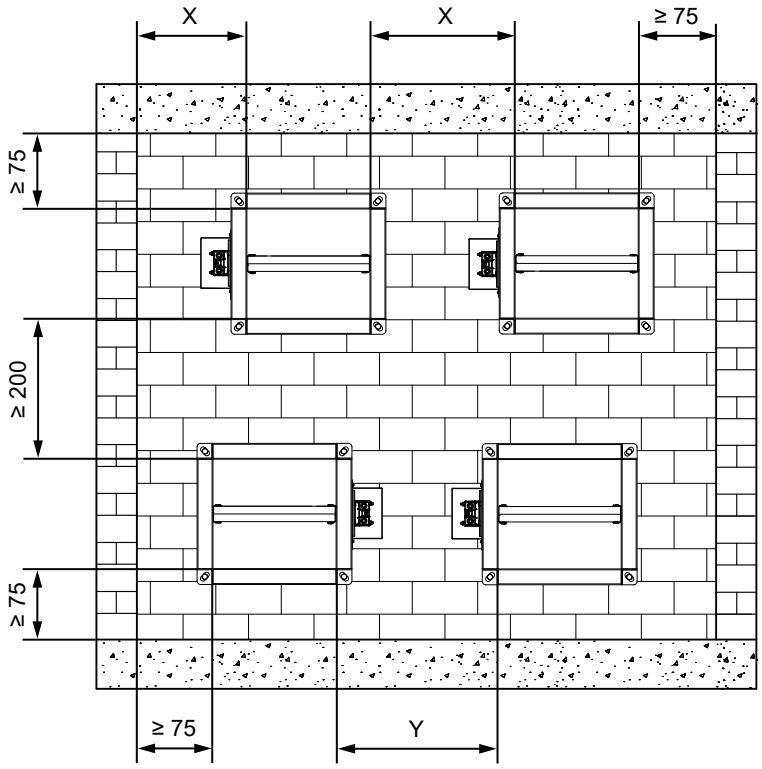
The fire dampers are suitable for installation in arbitrary position in vertical and horizontal passages of fire separating constructions. The damper installation procedures must be done so that all load transfer from the fire separating constructions to the damper is absolutely excluded. Following air-conditioning 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.

The damper must be installed so that the damper blade (in closed position) is situated in the fire separating construction - marked by the label BUILT-IN EDGE on the damper casing.

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 blade 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.

Minimum distance between the fire dampers and the construction



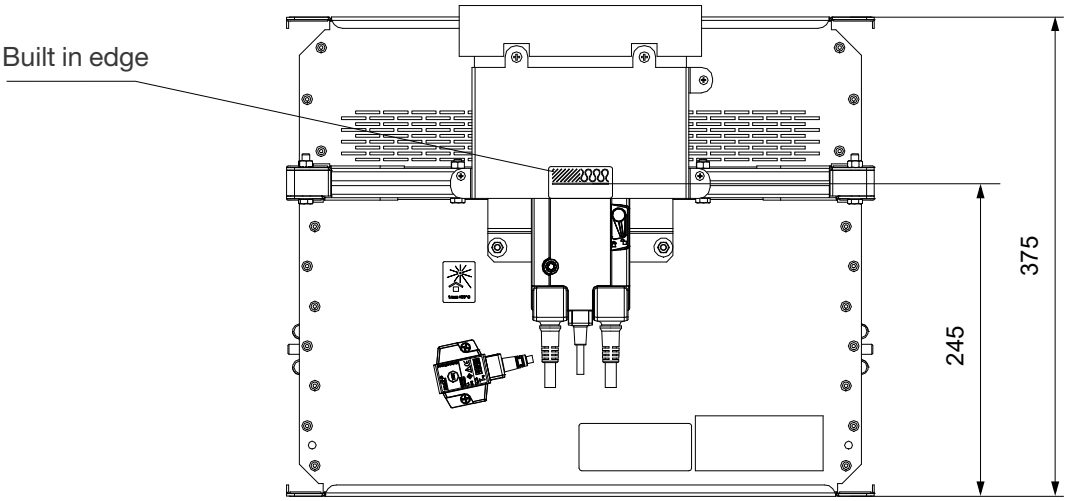
X = recommended min. distance for actuator ≥ 400 mm

X = recommended min. distance for manual control and electrical components ≥ 400 mm

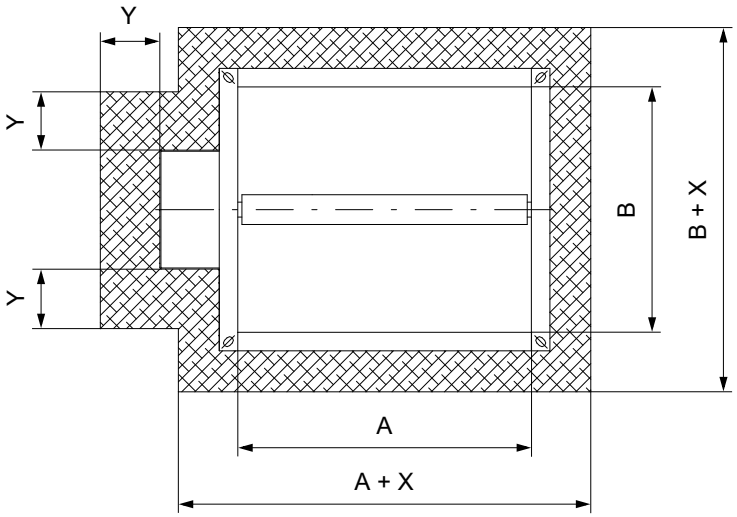
Y = recommended min. distance for actuator ≥ 500 mm

Y = recommended min. distance for manual control and electrical components ≥ 500 mm

Built in edge

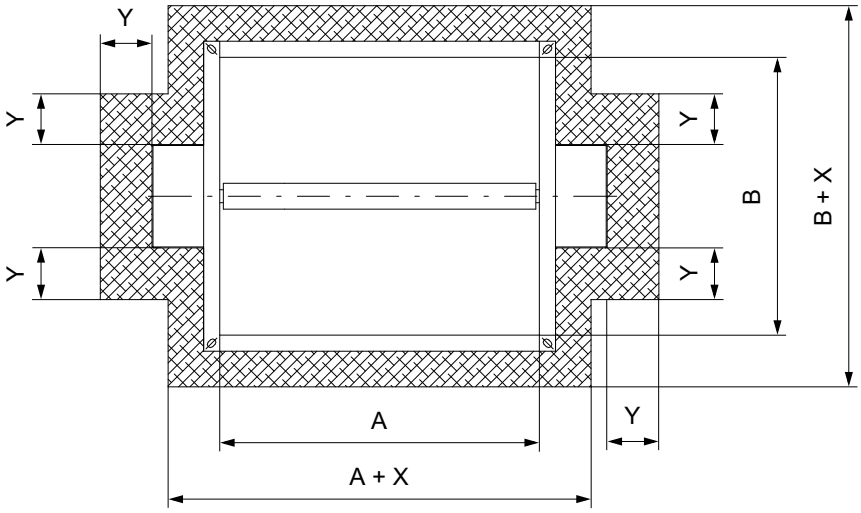


Dimensions of an installation opening



Mortar or gypsum
X = A(B)+100
Y = 50

Dimensions of an installation opening with two springs



5. Statement of Installations

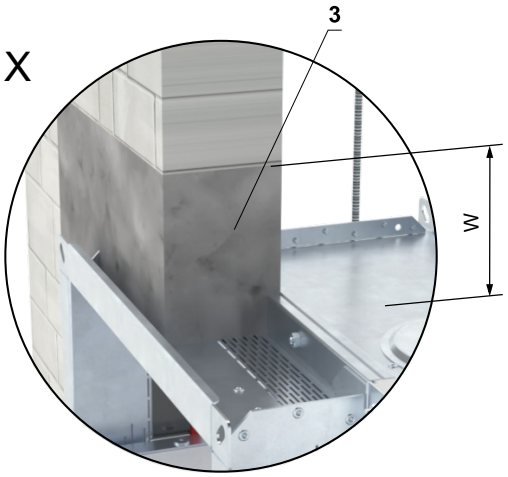
Fire separating construction, location of the damper	Installation	Gap width (mm)	Fire resist.	Page
Standard low- and high-density rigid wall construction according to EN 1363-1 • damper in the wall • 100 mm min. wall thickness	Mortar or gypsum	50–150	EIS 120	22
Standard flexible wall construction min. EI 90 according to EN 1363-1. • damper in the wall • 100 mm min. wall thickness	Mortar or gypsum	50–150	EIS 120	23
Standard low- and high-density rigid floor construction according to EN 1366-2 • damper in the ceiling • 150 mm min. ceiling thickness	Mortar or gypsum	50–150	EIS 120	24

5.1 Installation in solid wall construction

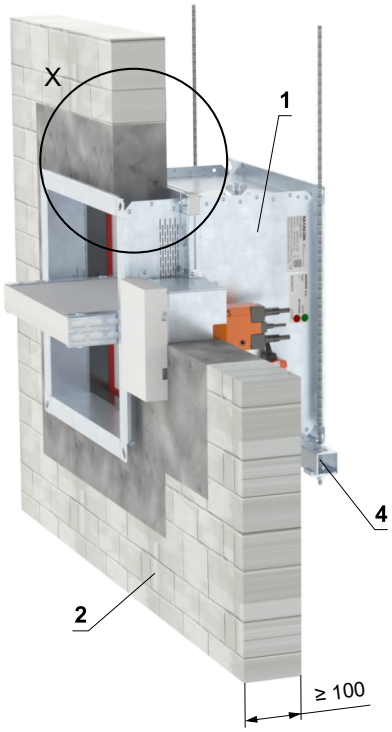
In solid wall construction - mortar or gypsum

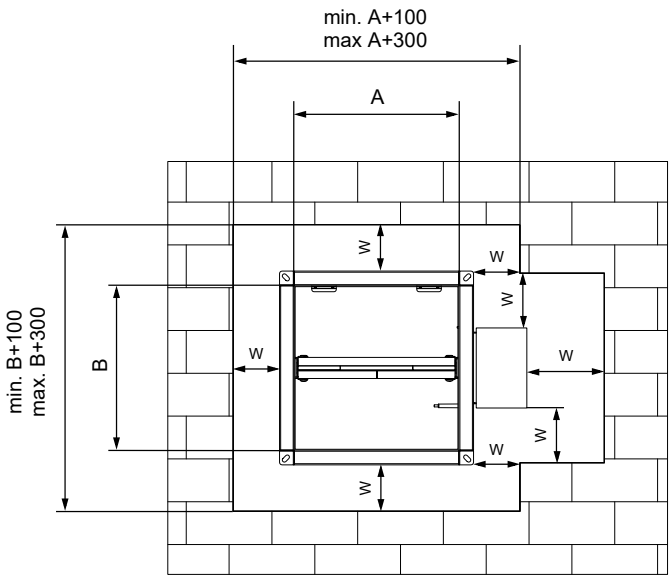
EIS 120

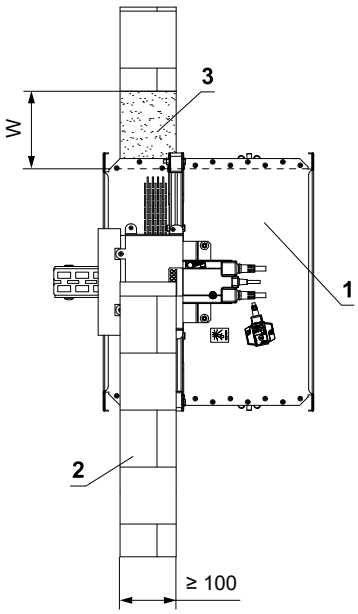
Standard low- and high-density rigid wall construction according to EN 1363-1



W = 50 - 150 mm







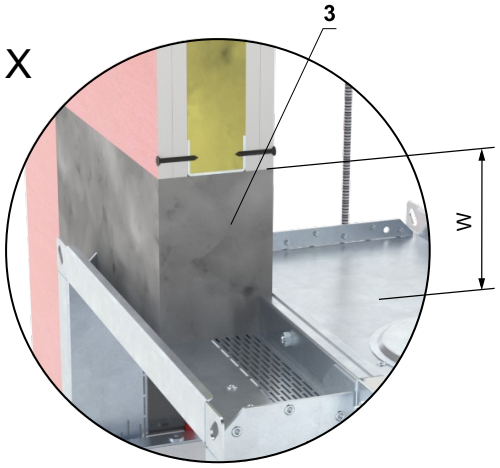
1 - FDMA 120
2 - Solid wall construction
3 - Mortar or gypsum
4 - Profile with threaded rod → see pages 25 to 28

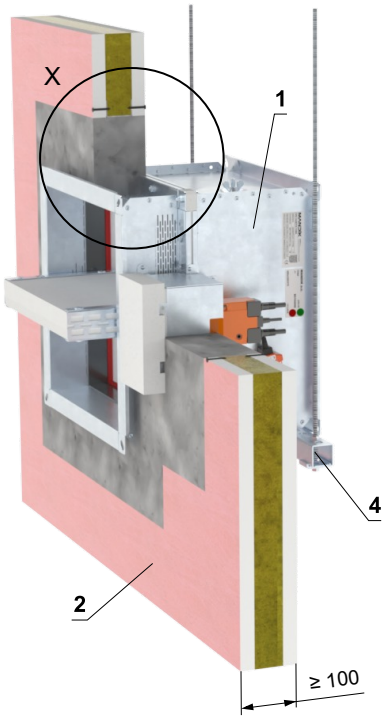
5.2 Installation in gypsum wall construction

In gypsum wall construction min. EI 90 - mortar or gypsum

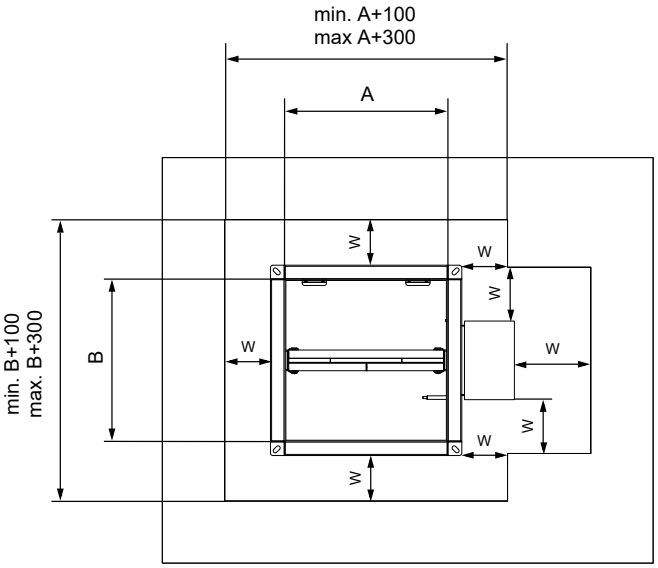
EIS 120

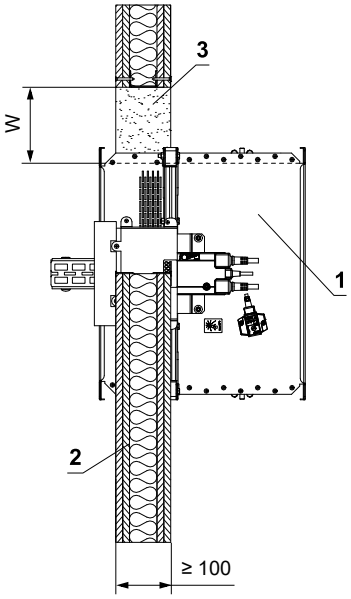
Standard flexible wall construction min. EI 90 according to EN 1363-1.
The installation opening is lined with a UW/CW profile.





W = 50 - 150 mm





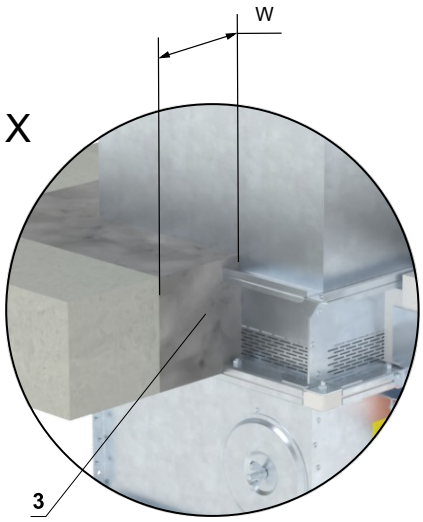
1 - FDMA 120
2 - Gypsum wall construction
3 - Mortar or gypsum
4 - Profile with threaded rod → see pages 25 to 28

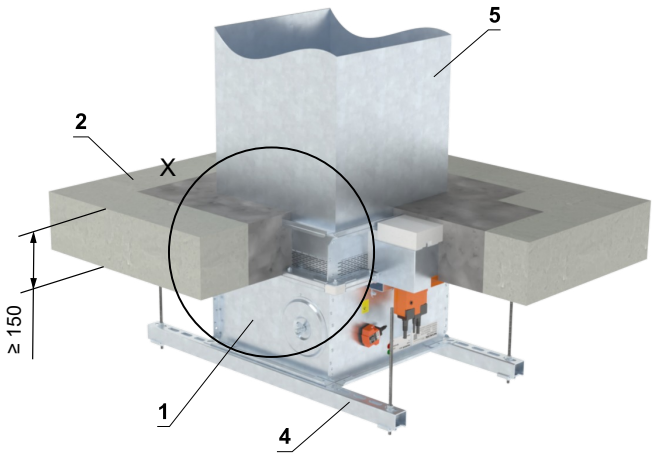
5.3 Installation in solid ceiling construction

In solid ceiling construction - mortar or gypsum

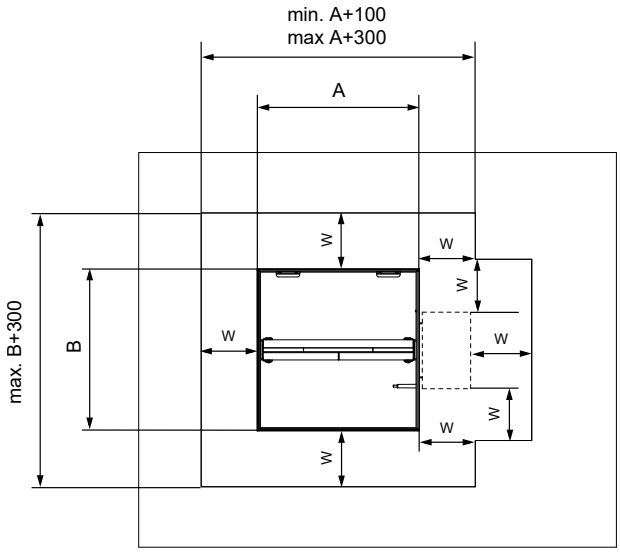
EIS 120

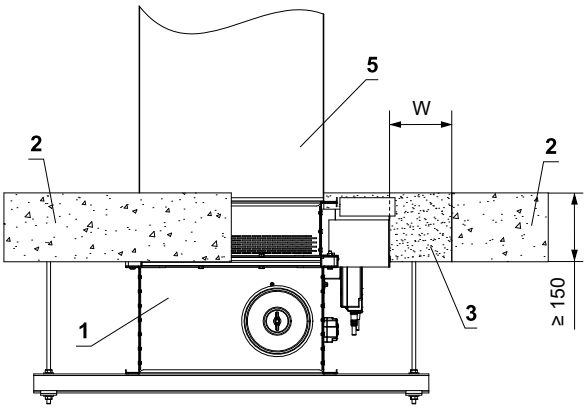
Standard low- and high-density rigid floor construction according to EN 1366-2
The damper can be installed from both sides of the construction, i.e. from the top or the bottom side of the ceiling.





W = 50 - 150 mm





1 - FDMA 120
2 - Solid ceiling construction
3 - Mortar or gypsum
4 - Profile with threaded rod → see pages 25 to 28
5 - Duct

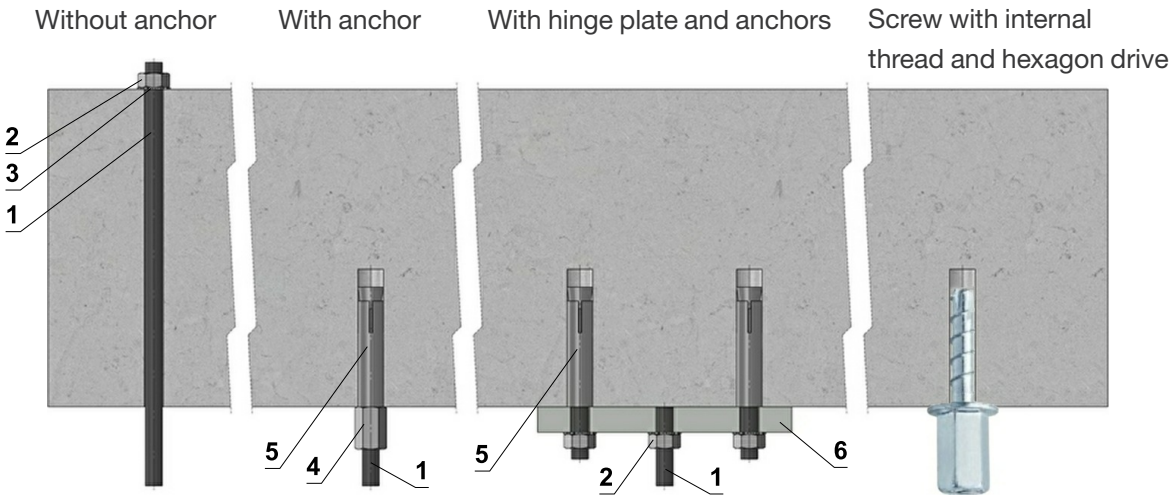
6. Suspension Systems

6.1 Mounting to the Ceiling Wall

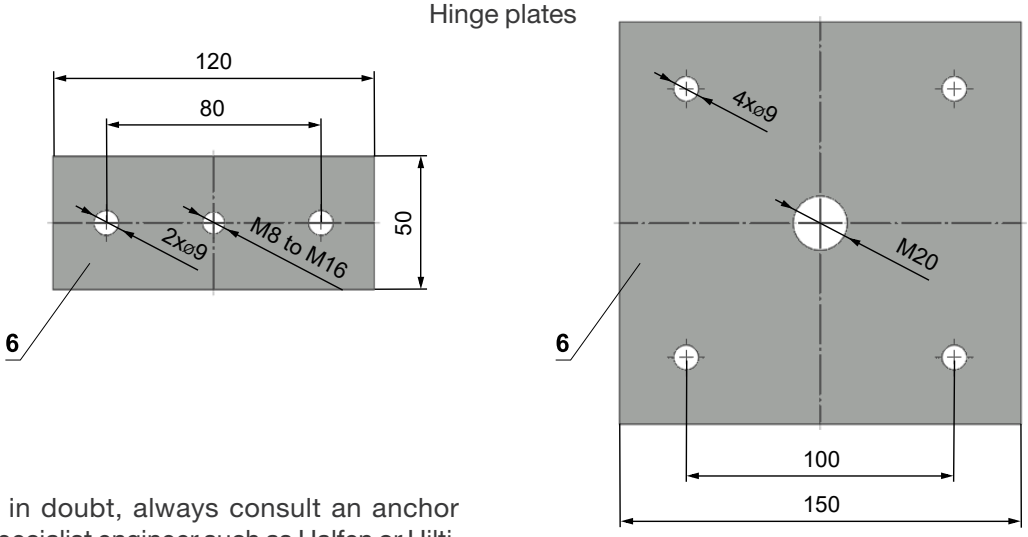
The dampers must be suspended using threaded rods and mounting profiles. Their dimensioning depend on the weight of the damper. The dampers and the duct must be suspended separately. Following air-conditioning duct must be suspended or supported so that all load transfer from the following duct to the damper flanges is absolutely excluded. Adjacent duct must be suspended or supported, as required by the duct suppliers.

Examples of anchoring to the ceiling construction

Follow the instructions of fixing specialist or installation company



Hinge plates



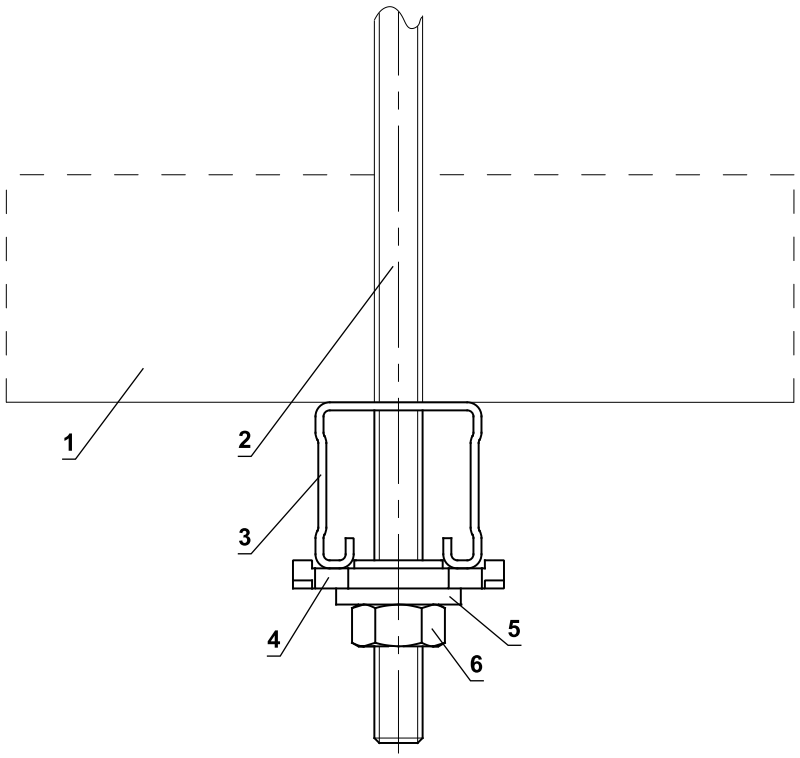
If in doubt, always consult an anchor specialist engineer such as Halfen or Hilti.

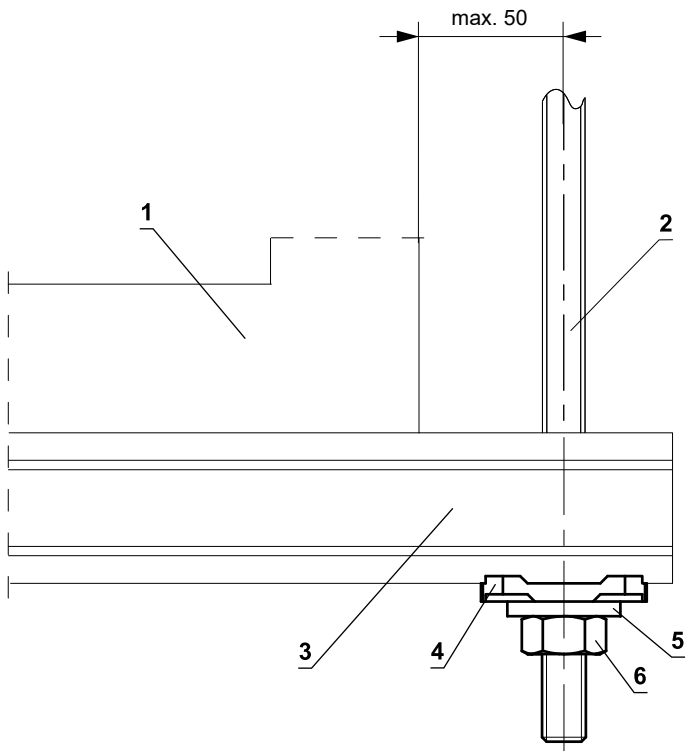
1 - Threaded rod M8 – M20
2 - Nut
3 - Washer for M8 - M20
4 - Coupling Nut M8 - M20
5 - Anchor
6 - Hinge plate - min. thickness 10 mm
7 - Concrete screw tested for fire resistance R30-R90, max. Tension up to 0.75 KN (length 35 mm)

Load capacities of threaded rods at the required fire resistance 60 min. < t 120 min.

Size	A_s (mm²)	Weight (kg)	
		for 1 piece	for 2 rods
M8	36,6	22	44
M10	58	35	70
M12	84,3	52	104
M16	157	96	192
M18	192	117	234
M20	245	150	300

Example of placing of mounting profiles HILTI

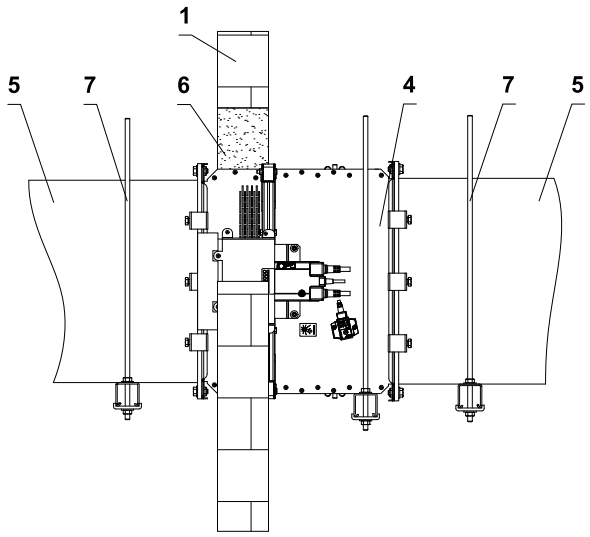




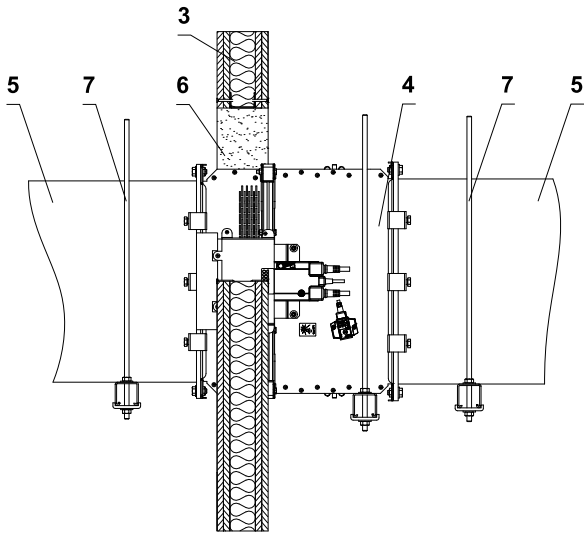
1 - FDMA 120
2 - Threaded rod M8 - M12
3 - Support HILTI MQ-41 or MQ-41/3
4 - Bored plate HILTI MQZ-L
5 - Washer for M8 - M12
6 - Nut M8 - M12

Example of fixing FDMA 120 to the wall /ceiling

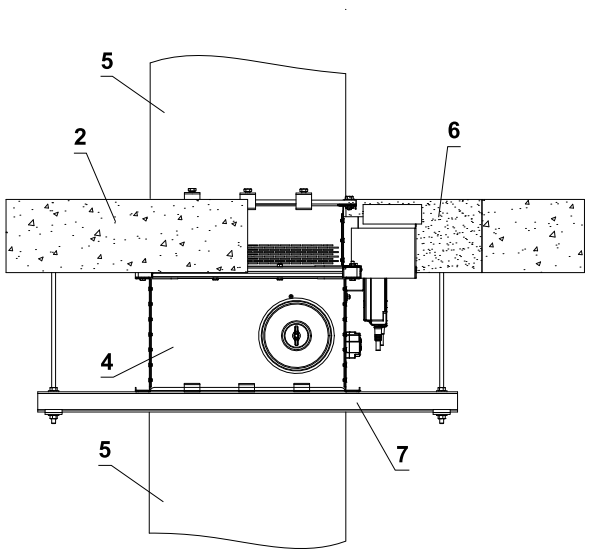
In solid wall construction

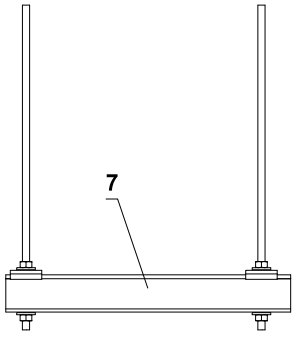


In gypsum wall construction



In solid ceiling construction

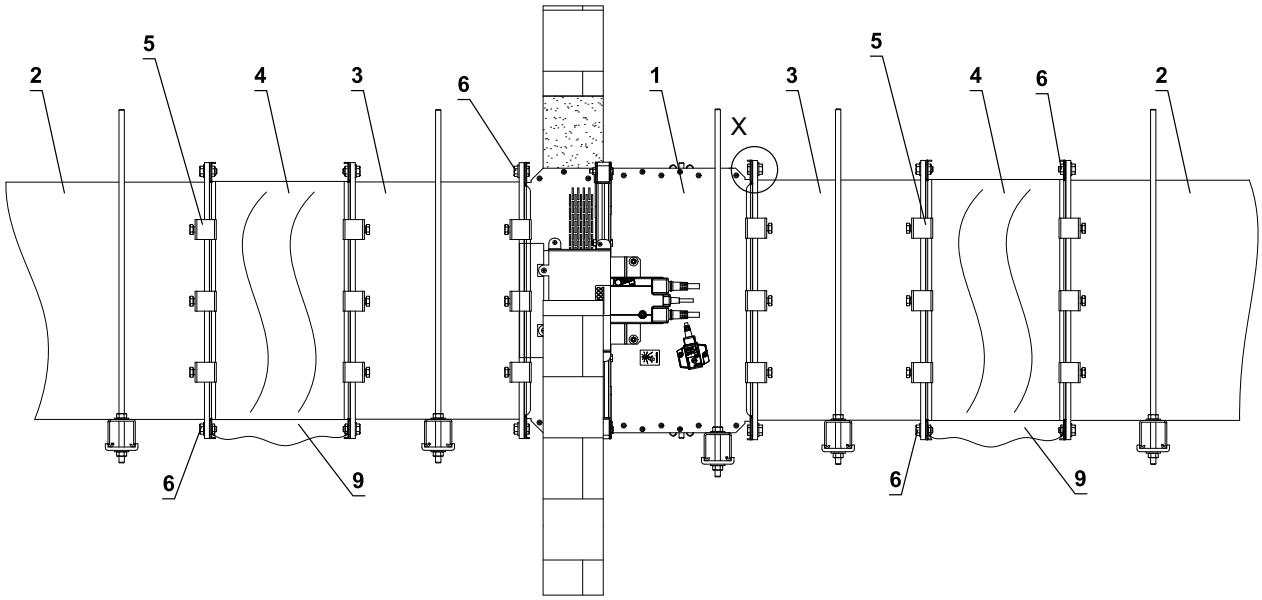


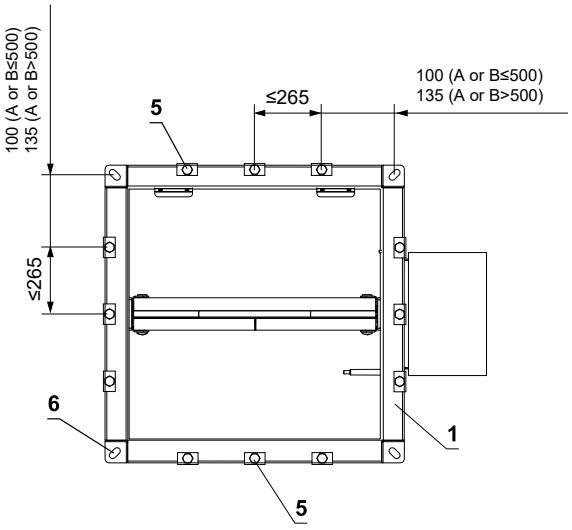


1 - Solid wall construction
2 - Solid ceiling construction
3 - Gypsum wall construction
4 - FDMA 120
5 - Duct
6 - Penetration
7 - Profile with threaded rod → see page 25

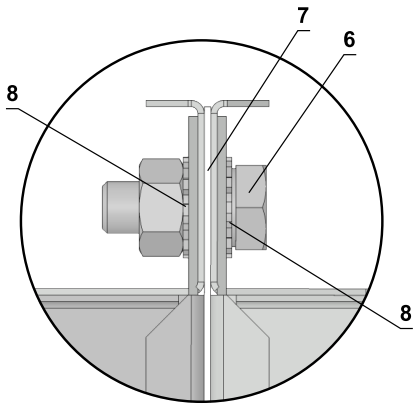
*The method of attachment must follow the minimum requirements for attachment and connection of ductwork in accordance with national regulations. Also, the elements can be suspended from the top, or supported from bottom, or fastened from the side.

Example of duct connection





Electrically conductive connection



* at least one connection must be electrically conductive

1 - FDMA 120
2 - Duct
3 - Extension piece (if required)
4 - Damping pad
5 - Steel clamp min. screw M8
6 - Screw assembly M8 (screw M8x20 mm, 2 pcs toothed lock washer M8, nut M8) *
7 - Sealing
8 - Toothed lock washer M8
9 - Protective bonding conductor

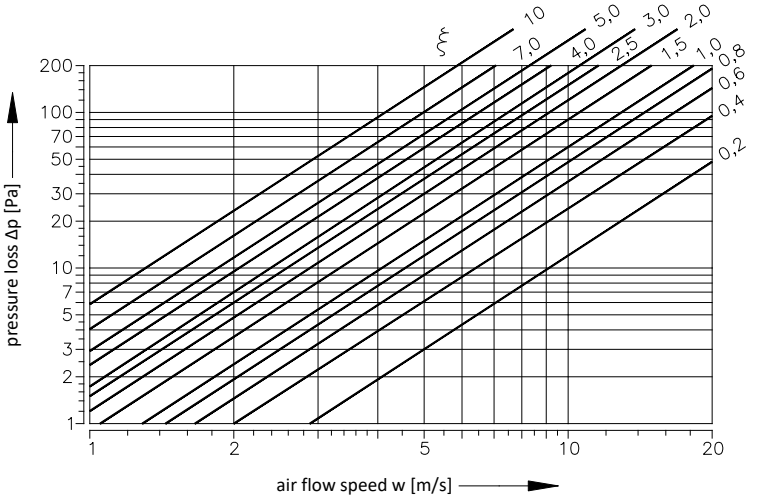
Technical Data

7. Pressure Loss

7.1 Pressure Loss Calculator

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

- **Δp** - pressure loss (Pa)
- **ξ** - coefficient of local pressure loss for the nominal damper section → see page 44
- **ρ** - air density (kg/m³)
- **w** - air flow speed in nominal damper section (m/s)



Determination of pressure loss by using diagram ρ=1,2 kg/m³

7.2 Coefficient of Local Pressure Loss ξ (-)

A	B										
	180	200	225	250	280	300	315	355	400	450	500
180	2,389	1,843	1,465	1,164	1,032	0,947	0,803	0,684	0,596	0,527	0,478
200	2,236	1,723	1,321	1,083	1,002	0,896	0,749	0,638	0,555	0,490	0,443
225	2,153	1,653	1,197	1,044	0,960	0,861	0,724	0,609	0,529	0,470	0,426
250	2,064	1,590	1,173	1,008	0,926	0,823	0,693	0,585	0,509	0,452	0,413
280	1,962	1,502	1,141	0,952	0,881	0,775	0,658	0,556	0,481	0,430	0,387
300	1,889	1,451	1,106	0,902	0,827	0,729	0,618	0,528	0,463	0,405	0,369
315	1,802	1,383	1,067	0,867	0,781	0,677	0,595	0,506	0,439	0,387	0,350
355	1,727	1,325	1,015	0,828	0,728	0,648	0,569	0,483	0,420	0,370	0,334
400	1,664	1,276	0,964	0,799	0,705	0,635	0,546	0,464	0,402	0,355	0,321
450	1,610	1,235	0,948	0,772	0,685	0,601	0,527	0,448	0,389	0,343	0,310
500	1,569	1,201	0,917	0,752	0,673	0,592	0,513	0,436	0,377	0,332	0,301
550	1,547	1,186	0,891	0,739	0,665	0,587	0,503	0,428	0,371	0,330	0,298
560	1,529	1,172	0,881	0,732	0,650	0,584	0,499	0,424	0,367	0,324	0,293
600	1,513	1,154	0,874	0,725	0,645	0,569	0,493	0,419	0,363	0,319	0,288
630	1,495	1,144	0,861	0,714	0,641	0,554	0,487	0,414	0,358	0,315	0,285
650	1,480	1,131	0,841	0,705	0,617	0,550	0,481	0,408	0,352	0,311	0,284
700	1,469	1,123	0,833	0,704	0,612	0,549	0,479	0,405	0,351	0,310	0,281
710	1,462	1,120	0,824	0,698	0,606	0,548	0,476	0,404	0,350	0,309	0,279
750	1,449	1,109	0,817	0,693	0,601	0,541	0,470	0,399	0,345	0,306	0,276
800	1,436	1,099	0,810	0,685	0,593	0,532	0,467	0,397	0,343	0,301	0,273
900	1,412	1,080	0,795	0,673	0,585	0,524	0,459	0,389	0,336	0,296	0,268
1000	1,394	1,066	0,785	0,665	0,576	0,507	0,452	0,384	0,331	0,293	0,264
1100	1,377	1,053	0,775	0,656	0,563	0,496	0,447	0,379	0,327	0,289	0,261
1250	1,363	1,040	0,758	0,648	0,549	0,490	0,442	0,374	0,324	0,286	0,258
1400	1,348	1,031	0,744	0,641	0,540	0,488	0,436	0,370	0,321	0,281	0,256
1500	1,340	1,024	0,740	0,638	0,530	0,480	0,434	0,368	0,318	0,280	0,254
1600	1,327	1,016	0,729	0,633	0,521	0,476	0,430	0,364	0,314	0,277	0,251

A	B										
	550	560	600	630	650	700	710	750	800	900	1000
180	0,455	0,434	0,409	0,398	0,379	0,375	0,368	0,354	0,344	0,333	0,323
200	0,421	0,404	0,384	0,370	0,356	0,348	0,343	0,330	0,320	0,310	0,300
225	0,405	0,390	0,368	0,357	0,342	0,333	0,329	0,321	0,309	0,303	0,294
250	0,390	0,371	0,355	0,343	0,329	0,321	0,316	0,309	0,297	0,290	0,282
280	0,367	0,349	0,333	0,322	0,309	0,306	0,300	0,286	0,282	0,271	0,263
300	0,344	0,334	0,316	0,306	0,297	0,289	0,285	0,271	0,264	0,255	0,246
315	0,326	0,318	0,301	0,291	0,284	0,275	0,268	0,260	0,251	0,243	0,235
355	0,317	0,303	0,289	0,278	0,266	0,262	0,257	0,246	0,239	0,231	0,223
400	0,300	0,291	0,281	0,267	0,257	0,250	0,247	0,238	0,229	0,223	0,216
450	0,289	0,281	0,270	0,257	0,250	0,244	0,237	0,230	0,221	0,214	0,206
500	0,287	0,273	0,259	0,250	0,240	0,234	0,230	0,222	0,215	0,208	0,202
550	0,278	0,270	0,253	0,237	0,229	0,222	0,219	0,219	0,211	0,209	0,205
560	0,275	0,266	0,244	0,243	0,233	0,221	0,219	0,215	0,209	0,205	0,201
600	0,272	0,264	0,242	0,240	0,230	0,219	0,217	0,211	0,206	0,201	0,197
630	0,269	0,259	0,241	0,237	0,227	0,219	0,217	0,208	0,203	0,198	0,192
650	0,264	0,256	0,239	0,234	0,225	0,218	0,216	0,206	0,201	0,195	0,189
700	0,259	0,255	0,238	0,233	0,223	0,217	0,215	0,205	0,200	0,194	0,188
710	0,256	0,253	0,237	0,232	0,222	0,215	0,214	0,204	0,199	0,194	0,188
750	0,254	0,250	0,233	0,229	0,219	0,213	0,212	0,203	0,197	0,192	0,186
800	0,253	0,248	0,228	0,226	0,216	0,211	0,209	0,201	0,194	0,189	0,183
900	0,248	0,244	0,226	0,223	0,210	0,207	0,205	0,197	0,191	0,185	0,180
1000	0,245	0,240	0,222	0,220	0,208	0,204	0,201	0,193	0,188	0,182	0,176
1100	0,242	0,236	0,219	0,217	0,206	0,202	0,199	0,189	0,186	0,179	0,173
1250	0,237	0,233	0,216	0,213	0,201	0,199	0,197	0,187	0,183	0,177	0,171
1400	0,234	0,231	0,214	0,211	0,198	0,196	0,195	0,185	0,182	0,176	0,171
1500	0,232	0,230	0,212	0,209	0,196	0,194	0,193	0,183	0,181	0,175	0,170
1600	0,230	0,228	0,210	0,207	0,193	0,191	0,191	0,181	0,180	0,174	0,170

8. Noise Data

8.1 Level of Acoustic Output Corrected with Filter A

$$L_{WA} = L_{W1} + 10 \log(S) + K_A$$

L_{WA}	[dB(A)]	level of acoustic output corrected with filter A
L_{W1}	[dB]	level of acoustic output L_{W1} related to the 1 m^2 section)
S	[m^2]	duct cross section
K_A	[dB]	correction to the weight filter A

8.2 Level of Acoustic Output in Octave Ranges

$$L_{Woct} = L_{W1} + 10 \log(S) + L_{rel}$$

L_{Woct}	[dB]	spectrum of acoustic output in octave range
L_{W1}	[dB]	level of acoustic output LW1 related to the 1 m^2 section
S	[m^2]	duct cross section
L_{rel}	[dB]	relative level expressing the shape of the spectrum

8.3 Tables of Acoustic Values

Level of acoustic output LW1 (dB) related to the 1 m^2 section

v (m/s)	(-) ξ											
	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9	1,0	1,5	2,0	2,5
2	15,5	18,7	20,9	22,6	24	25,2	26,3	27,2	28	31,2	33,4	35,1
3	26,1	29,2	31,5	33,2	34,6	35,8	36,9	37,8	38,6	41,7	44	45,7
4	33,6	36,7	39	40,7	42,1	43,3	44,3	45,3	46,1	49,2	51,5	53,2
5	39,4	42,5	44,8	46,5	47,9	49,1	50,2	51,1	51,9	55	57,3	59
6	44,1	47,3	49,5	51,3	52,7	53,9	54,9	55,8	56,6	59,8	62	63,8
7	48,2	51,3	53,5	55,3	56,7	57,9	58,9	59,8	60,7	63,8	66,1	67,8
8	51,6	54,8	57	58,8	60,2	61,4	62,4	63,3	64,1	67,3	69,5	71,3
9	54,7	57,9	60,1	61,8	63,2	64,4	65,5	66,4	67,2	70,4	72,6	74,3
10	57,4	60,6	62,8	64,6	66	67,2	68,2	69,1	70	73,1	75,3	77,1
11	59,9	63,1	65,3	67,1	68,5	69,7	70,7	71,6	72,4	75,6	77,8	79,6
12	62,2	65,4	67,6	69,3	70,7	71,9	73	73,9	74,7	77,9	80,1	81,8

Correction to the weight filter A

w (m/s)	2	3	4	5	6	7	8	9	10	11	12
K_A[dB]	-15,0	-11,8	-9,8	-8,4	-7,3	-6,4	-5,7	-5,0	-4,5	-4,0	-3,6

Relative level expressing the shape of the spectrum L_{rel}

w (m/s)	f (Hz)							
	63	125	250	500	1000	2000	4000	8000
2	-4,5	-6,9	-10,9	-16,7	-24,1	-33,2	-43,9	-56,4
3	-3,9	-5,3	-8,4	-13,1	-19,5	-27,6	-37,4	-48,9
4	-3,9	-4,5	-6,9	-10,9	-16,7	-24,1	-33,2	-43,9
5	-4,0	-4,1	-5,9	-9,4	-14,6	-21,5	-30	-40,3
6	-4,2	-3,9	-5,3	-8,4	-13,1	-19,5	-27,6	-37,4
7	-4,5	-3,9	-4,9	-7,5	-11,9	-17,9	-25,7	-35,1
8	-4,9	-3,9	-4,5	-6,9	-10,9	-16,7	-24,1	-33,2
9	-5,2	-3,9	-4,3	-6,4	-10,1	-15,6	-22,7	-31,5
10	-5,5	-4	-4,1	-5,9	-9,4	-14,6	-21,5	-30
11	-5,9	-4,1	-4	-5,6	-8,9	-13,8	-20,4	-28,8
12	-6,2	-4,3	-3,9	-5,3	-8,4	-13,1	-19,5	-27,6

9. Material, finishing

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

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

Thermal fuses are made of sheet brass, thickness 0,5 mm.

Fasteners are galvanized.

According to the customer's requirements, damper can be made of stainless material.

Specifications for stainless-steel design:

- Class A2 – Food-grade stainless steel (AISI 304 – EN 1.4301)
- Class A4 – Chemistry-grade stainless steel (AISI 316, 316L – EN 1.4401, EN 1.4404)

The respective stainless steel is the material for all components that are located or entering the damper inner space; components outside the damper casing are typically from galvanised sheet metal (fasteners for mounting the actuator or manual control), frame components.

The following components, including the fasteners, are made from stainless steel at all times:

1) Damper body and all components permanently attached

2) Leaf holders, including pins, metal parts of blades

3) Parts of a manual control entering the inner space of a damper casing

4) Inspection opening cover including the stirrup and fasteners (if they are parts of the cover)

The damper blade is made of asbestos-free, fire-resistant mineral fibre boards joined with U-shaped drive staples, sealed on the outer side with K84 adhesive.

Thermal fuse is identical for all material variants of the dampers. Upon specification by customer, the thermal fuse can be made from A4 from stainless steel sheet metal.

Thermoelectric activation device BAT is modified for stainless-steel variant of the dampers; standard galvanised screws are replaced with stainless-steel M4 screws of corresponding class. Damper casing has stainless-steel riveting M4 nuts.

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

Some fasteners and components are only available in one class of stainless steel; the type will be used in all stainless-steel variants.

The damper blade in the variant for chemical environments (Class A4) is 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.

10. Transportation, storage and warranty

10.1 Logistic terms

Dampers are delivered on pallets. 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 (minumum 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 blade 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%.

10.2 Warranty

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

The warranty for fire dampers FDMA 120, 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. limit switches, actuators, communication and supply devices and thermoelectric activation devices are dismounted.

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.

11. 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.

Flange and screw joints must be conductively connected to protect against dangerous contact. 2 galvanized lock washers that are placed under the head of one screw and a fastened nut are used for conductive connection.

Manual operation - actuator control without electric voltage

A special wrench (part of the actuator) can be used to manually turn the damper blade to any position. When the wrench is turned in the direction of the arrow, the damper blade rotates to its open position. As the blade 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 blade 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).

Limit switches

If the damper is equipped with limit switches and these switches are not used during operation (e.g. because of a project change), they can be left on the damper and not connected (they need not be dismounted). On the other hand, if the limit switch is to be added to the damper design, the change can be implemented by change kit.

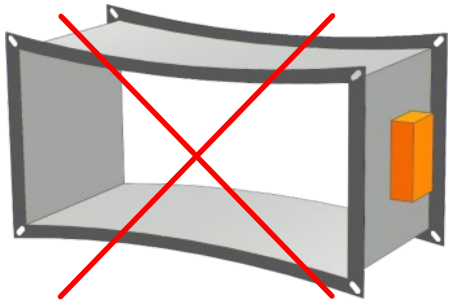
These facts must be recorded in the respective operation documentation of the damper (record books of the damper, fire logs, etc.) and subsequently, adequate function checks must be carried out.

Installation / fixing the damper

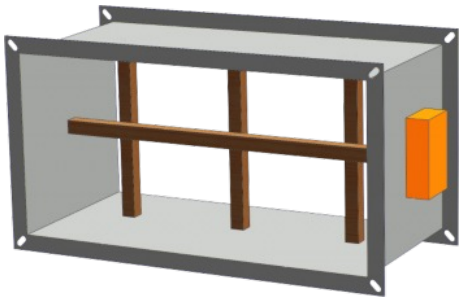
The damper casing shall not be deformed in the course of bricking in.

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

Protection of the damper casing against buckling during installation, especially for large sizes!



WRONG!



Reinforcement of the casing with wooden beams

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 allimportant 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 blade 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 blade 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 blade, contact surfaces and silicon seal.

Following checks must be carried out for dampers with manual control

Check of a manual control and thermal fuse

To check the function of the manual control proceed as follows:

Turn the damper blade to "CLOSED" position as follows:

- The damper blade is in "OPEN" position.
- By pressing the activation lever ("OPEN" position), release the control lever to turn the damper blade to the "CLOSED" position.
- Check the damper blade rotation to "CLOSED" position.
- The closing of the damper blade must be smooth and fast and the control lever shall be in „CLOSED“ position.(If the damper is not closing strongly enough and the control lever is not reliably locked by the latch in the "CLOSED" position, it is necessary to set a higher preload of the closing spring using the toothed rosette)

Turn the damper blade to "OPEN" position as follows:

- Release the latch in the "CLOSED" position by pressing and return the control lever to the second end position, where the lever is held by the trigger lever in the "OPEN" position.
- Check the damper blade rotation to "OPEN" position.
- In the case of a damper with an electromagnet, a test of moving the control lever to the "CLOSED" position is performed after connecting the electrical voltage.

Check of function and condition of the thermal fuse:

- By removing the thermal fuse from the pin of the triggering device, its correct function is checked.
- The pin must be extended and the triggering lever must be flipped (position "OPEN").
- If this does not happen, it is necessary to check the pin and spring of the triggering device, or replace the base plate. The base plate is attached to the damper body with three M5 screws with nuts.

Following checks must be carried out for dampers with actuator

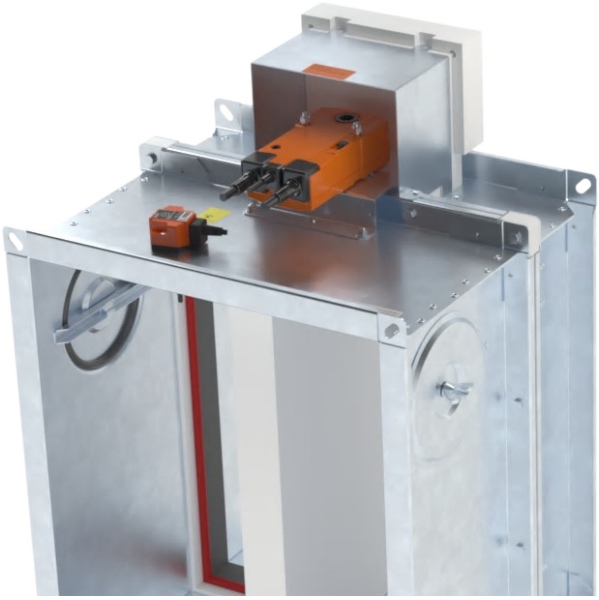
- Check the rotation of the blade to "CLOSED" failure position after disconnection the power supply of the actuator (e.g. by pressing the test button on the thermoelectric activation device BAT or by disconnection the power supply from electrical fire signalization). Check the rotation of the blade back 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 blade should be in "CLOSED" position with the fan off or with closed air regulation situated between the fan and the fire damper.

Inspection opening disassembly

- Release the covering lid by turning the wing nut and while turning the lid right or left release it from the security belt. Then tilt the lid and remove it from its original position.



Inspection opening detail

- Ensure each damper is fully checked for operational capability, control should be initiated from the control system or by manual control. Damper blades should open and close correctly and operation should be visually inspected and documented prior to handover.

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 13
- 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 13

12. Ordering Key

12.1 Fire Damper

FDMA 120 - 800 x 700/375 - .40

Type

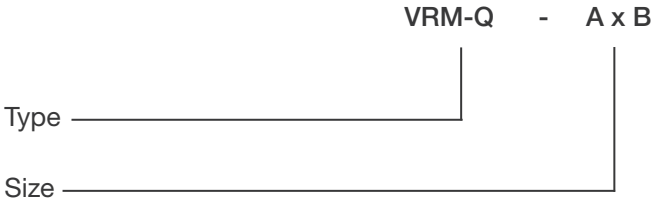
Nominal size

Building size

Design

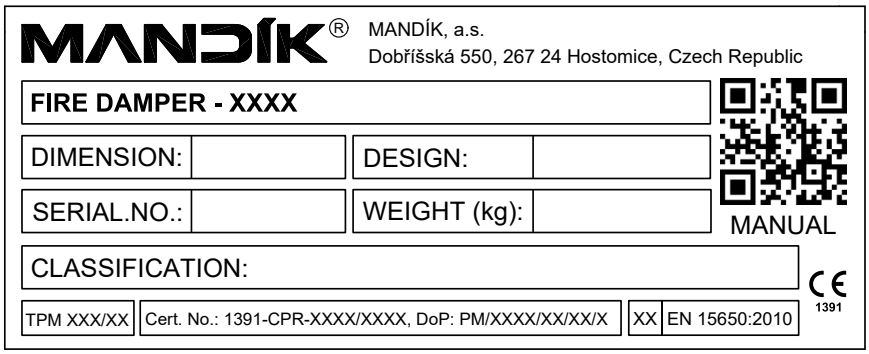
- .01 - Manual and thermal
- .11 - Manual and thermal with a terminal switch („CLOSED“)
- .40 - With actuating mechanism BF 230-TN (BFL, BFN 230-T)
- .50 - With actuating mechanism BF 24-TN (BFL, BFN 24-T)
- .80 - Manual and thermal with two terminal switches („OPEN“, „CLOSED“)

12.2 Reinforcement - Damper Placement Outside Wall or Ceiling Construction



13. Data Label

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



ETS NORD

ETS NORD AS

Address: Peterburi tee 53
11415 Tallinn
Estonia

Phone: +372 680 7365

info@etsnord.ee
www.etsnord.ee

ETS NORD Finland

Address: Pakkasraitti 4
04360 Tuusula
Finland

Phone: +358 401 842 842

info@etsnord.fi
www.etsnord.fi

ETS NORD Sweden

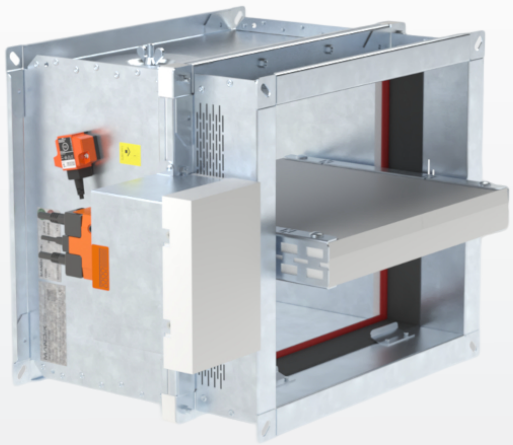
Address: Järsjögatan 7
69235 Kumla
Sweden

Phone: +46 19 554 20 50

Address: Pinjegatan 5
21363 Malmö
Sweden

Phone: +46 40 94 68 70

info@etsnord.se
www.etsnord.se



Let's move the air ***together!***