



Maintenance-free

FK90 fire dampers - series FK120 -

- Heights up to 1000 mm
- **Fire resistance period up to 120 minutes**
- Fire classification: EI 30/60/90/120 ($v_e - h_o, i \leftrightarrow o$) S C₁₀₀₀₀
- Hygiene certificate
- Environmental Product Declaration according to ISO 14025 and EN 15804

FK90 fire dampers

Features and characteristics

Single-piece sheet steel casing

galvanized - pressure-joined - extremely robust, airtight

Leak tightness class C according to EN 1751

Option: Epoxy resin powder coating

Dimensions B and H in 5-mm increments

Nominal width B: 200 mm to 1500 mm

Nominal height H: 200 mm to 1000 mm

Lengths: 400 mm and 500 mm

Break-resistant damper blade

for vertical or horizontal installation, with galvanized metal frame and attached elastomer lip seal

- frictionless sealing -
- replaceable -

Options:

Metal cover made of galvanized steel

Metal frame made of 1.4301 stainless steel

Metal frame and metal cover made of 1.4301 stainless steel

Large free cross-section

Maximum volume flows

Minimum pressure drop

Extremely low sound

power level



Two control openings
(inspection openings)
for viewing both sides of the damper blade

Fully enclosed:

- Operation unit
- Release mechanism
- Release element

Thermal-mechanical release mechanism

for manual single handed operation

Option:

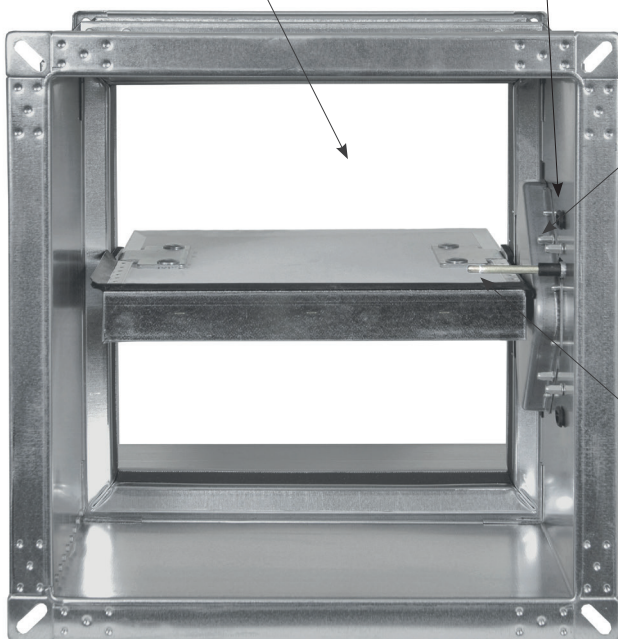
Electric actuators, also explosion-protected
⇒ see page 5

All-round enclosed thermal release elements

70°C, 95°C or 100°C

Option:

Corrosion-resistant release element 70°C



Connection holes

for profiles from 20 mm in height

FK90 fire dampers

Description

Maintenance-free **FK90 fire dampers according to EN 15650**

Fire classifications: **EI 30/60/90/120 (v_e - h_o, i ↔ o) S C₁₀₀₀₀** ⇒ see page 11

Declaration of performance: **DoP no.: CPR/FK120/002**

EU Declaration of Conformity according to Directive 2014/34/EU

for **use in potentially explosive atmospheres**

Environmental Product Declaration ISO 14025, EN 15804: **EPD-WWB-20130081-IBA1-DE**

Pressure-joined casing with all-round single-piece design, made of galvanized sheet steel, leak tightness class C according to EN 1751. Formed connection flanges, outer beading and tapered inner beading ensure stability, freedom of damper blade movement, minimum pressure drop and low noise level.

Option: Casing with epoxy resin powder coating.

Replaceable damper blade made of high-temperature-resistant, corrosion-resistant and abrasion-proof calcium silicate with galvanized metal frame and folded, wear-resistant elastomer lip seals.

Options: Damper blade with metal frame made of 1.4301 stainless steel/damper blade with metal cover made of galvanized steel/damper blade with metal cover made of 1.4301 stainless steel.

Fully enclosed, maintenance-free slider crank transmission in the area of the casing wall, as a self-locking drive mechanism for break-proof torque transmission. Sealed drive axles made of stainless steel, with red metal bearings.

Thermal release mechanisms for 70°C, 95°C and 100°C nominal temperature. The operation units can be actua-

ted manually or electrically.

⇒ see pages 4 and 5

Release mechanisms, operation units and electric actuators are enclosed and fitted with a spring return. They are maintenance-free, can be connected in a form-locking or force-fitting manner, are easy to replace and can be easily retrofitted as required.

For installation with horizontal or vertical damper blade axles. Air inflow from any connection side. Connection to ventilation ducts made of non-combustible or combustible materials, including protective grilles.

Option: Additional openings on the operation side in the casing. ⇒ see page 14

Widths B: 200 mm to 1500 mm | 200 mm to 1000 mm

Heights H: 200 mm to 800 mm | 200 mm to 1000 mm

Lengths: 400 mm and 500 mm

The respective width and height dimensions are available in 5-mm increments and can be combined. ⇒ see page 14

For installing in rigid walls, ceilings and in metal stud walls. ⇒ see pages 11 and 12

FK90 fire dampers

- Meet the **hygiene requirements** according to VDI 6022-1, DIN 1946-4 and DIN EN 13779

- **Do not promote the growth of microorganisms¹⁾ (fungi, bacteria).**

This reduces the risk of infection for people and also the necessary cleaning and disinfection work!

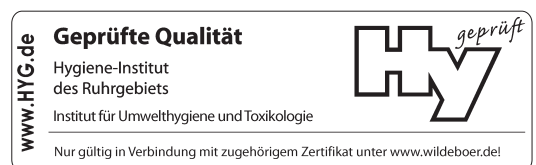
- Are **resistant to disinfectants²⁾**

- Are suitable for use in hospitals and similar facilities!

- Permanently **perform their function under high corrosion conditions.** Tested according to EN 15650, annex B with 20% saline solution.

¹⁾ The corresponding **resistance of the materials to fungi and bacteria** was verified by testing the microbial metabolic potential under DIN EN ISO 846 for all materials in the FR90 fire dampers.

²⁾ The **resistance to disinfectants** of the materials in the FR90 fire dampers was tested with the disinfectant groups of active ingredients **alcohol** and **quaternary compounds**. These disinfectants are on the list by the Robert Koch Institute, and were used in accordance with the specifications in the list of disinfectants by the Disinfectants Commission in the German Association for Applied Hygiene (VAH). It has been verified that FR90 fire dampers can withstand normal use of disinfectants and disinfection methods.



Increased corrosion protection through powder coating and stainless steel

Casings coated internally and externally are recommended:

- metal frames of the damper blades **made of 1.4301 stainless steel** and – if present – the metal cover as well

- thermal-mechanical release mechanisms with **corrosion-resistant** (coated) **release element 70°C**.

These combinations allow additional corrosion protection for harsh service conditions.

FK90 fire dampers

Release mechanisms and actuators (1)

FK90 fire dampers, series FK120, are fitted with maintenance-free thermal-mechanical release mechanisms or with thermal-electrical release mechanisms on the spring return actuators. **Release** occurs at a nominal temperature of **70°C**. Coated release elements provide increased corrosion protection. Release mechanisms with a release element for nominal temperatures of **95°C** and **100°C** are provided for warm air heating systems. The requirements for use in ventilation systems for "cold smoke extraction" are country-specific.

Electric spring return actuators also close the fire dampers if the supply voltage is interrupted. They reopen the fire dampers as soon as the voltage is present again.

Release mechanisms and operation units can be replaced on site!

Thermal-mechanical release mechanism - standard - with 70°C release element.

Option: with coated 70°C release element.

Option: with coated 95°C release element.

Option: with **limit switch**

E Changeover with gold-plated contacts for 5 A at 250 V AC or 24 V DC; IP67; 1 m silicone-free connection cable, 3 x 0.34 mm².

One or two can be plugged in for the CLOSED and/or OPEN position indicator; instead of blind caps.

Option: with additional **remote release** based on the:

closed circuit principle. The fire dampers must be opened manually, and close after the electrical supply voltage is interrupted.

GU24 with magnetic clamp 24 V DC; 1.6 W; 100% duty cycle; IP42.

WU220 with magnetic clamp 230 V AC; 4 VA; 100% duty cycle; IP42.

Open circuit principle. The fire dampers must be opened manually, and close by means of electrical or pneumatic stimulus.

G24 with lifting solenoid 24 V DC; 3.5 W; 100% duty cycle; IP42.

W220 with lifting solenoid 230 V AC; 5.5 VA; 100% duty cycle; IP42.

P with lift cylinder 4 to 8 bar.

P2 with lift cylinder 1.2 to 8 bar.

Option: **Electric spring return actuator - standard** - with 70°C release element; IP54.

M220-9/V 230 V AC; 9.2 VA; $I_{\max \leq 2 \text{ ms}} = 0.27 \text{ A}$.

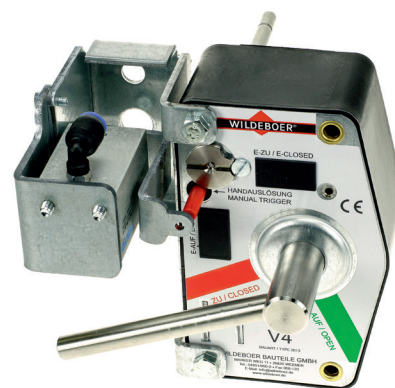
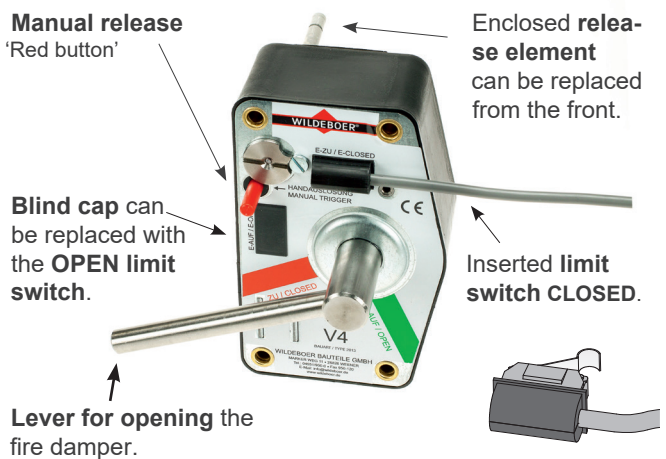
M24-9/V 24 V AC/DC; 6.1 VA / 3.5 W; $I_{\max \leq 2 \text{ ms}} = 3.5 \text{ A}$.

Runtime: Opening ≈ 60 s, closing ≈ 21 s.

CLOSED/OPEN position indicators via limit switches for 5 A at ≤ 240 V AC.

Halogen-free connection cable; 0.9 m long; 2 x 0.75 mm² and 6 x 0.75 mm². The AMP connector plugs are detachable.

Option: with 100°C release element.



Release mechanism and **remote release** with lifting solenoid

Enclosed release element



FK90 fire dampers

Release mechanisms and actuators (2)

Option: Electric spring return actuator

with 70°C release element; IP54.

M220-7 230 V AC; 7 VA/6 W; $I_{\max \leq 10 \text{ ms}} = 0.15 \text{ A}$.

M24-7 24 V AC/DC; 7 VA/5 W; $I_{\max \leq 5 \text{ ms}} = 5.8 \text{ A}$.

Runtime: Opening 40 to 75 s, closing $\approx 20 \text{ s}$.

CLOSED/OPEN position indicators via limit switches for 0.5 A at $\leq 250 \text{ V AC}$ or for 1 mA up to 3 A at 5 up to 250 V DC.

Halogen-free connection cable; 1 m long; 2 x 0.75 mm² and 6 x 0.75 mm². The AMP connector plugs are detachable.

Option: with 95°C release element.

Enclosed release element



Ex - designs

Thermal-mechanical release mechanism

with 70°C release element.

Option: with coated 70°C release element.

Option: with **explosion-protected limit switch**

E-Ex with normally open contact and normally closed contact for 6 A at $\leq 250 \text{ V AC}$ or 0.25 A at $\leq 230 \text{ V DC}$; IP65; 2 m connection cable 4 x 0.75 mm².

One or two can be attached for the CLOSED and/or OPEN position indicator.

Enclosed release element



Option: **Electric spring return actuator**

with 70°C release element and terminal box.

EM-1 10 Nm
EM-2 15 Nm
RM-1 10 Nm } 24 to 240 V AC/DC; IP66.

Power consumption up to 20 W including heating; $I_{\text{rated}} \leq 0.7 \text{ A}$; $I_{\max \leq 1 \text{ ms}} \approx 2.5 \text{ A}$

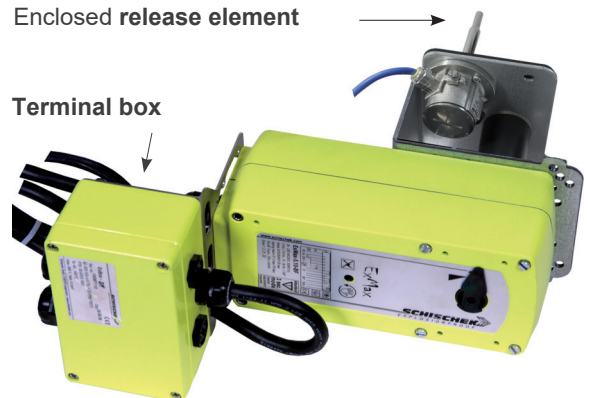
Runtime: Opening $\approx 30 \text{ s}$, closing $\approx 10 \text{ s}$.

CLOSED and OPEN position indicators via limit switches for $\leq 3 \text{ A}$ at 24 V AC/DC and $\leq 0.25 \text{ A}$ at 250 V AC/DC; at least 5 V, 10 mA.

The 12 x 0.5 mm² halogen-free connection cable must be wired in the terminal box! All of the contained voltages must be the same!

Enclosed release element

Terminal box



The actuators can be rotated into suspended and vertical positions on site.

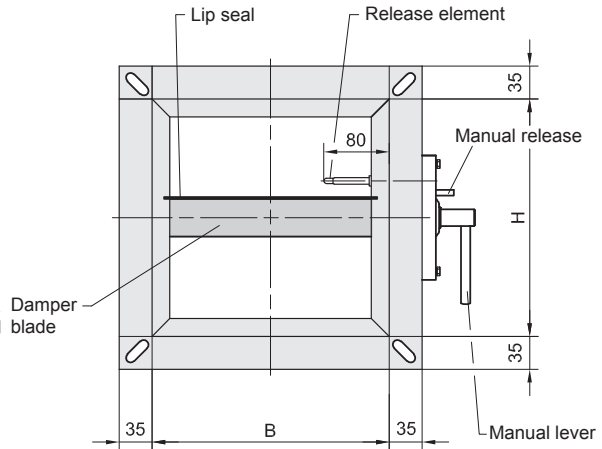
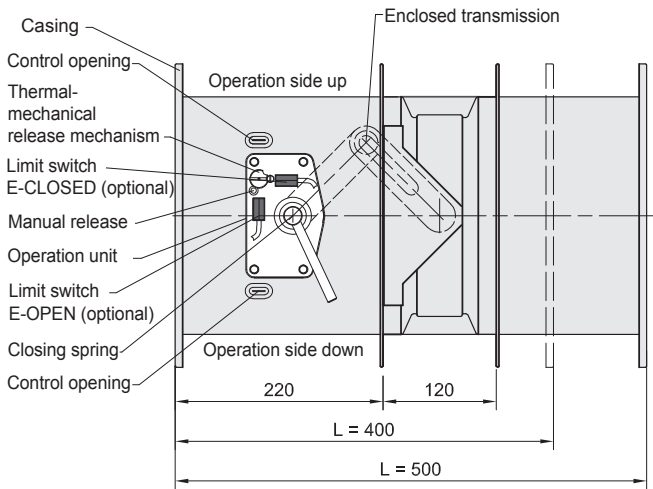
Use of explosion-protected designs

Building area where a dangerous, potentially explosive atmosphere may occur in normal operation...	... as a mixture of air and combustible gases, mists or vapours...		... in the form of a cloud of combustible dust contained in the air...	
	... occasionally	... temporarily or not at all.	... occasionally	... temporarily or not at all.
Zone	1	2	21	22
Identification of the fire damper	II 2 G c IIc T6/T5	II 3 G c IIc T6/T5	II -/2 D c T80°C/T95°C	II -/3 D c T80°C/T95°C
Thermal-mechanical release mechanism with or without explosion-protected limit switch	X	X *)	X	X *)
Motor drive	EM-1 or EM-2	X *)	X	X *)
	RM-1	-	-	X

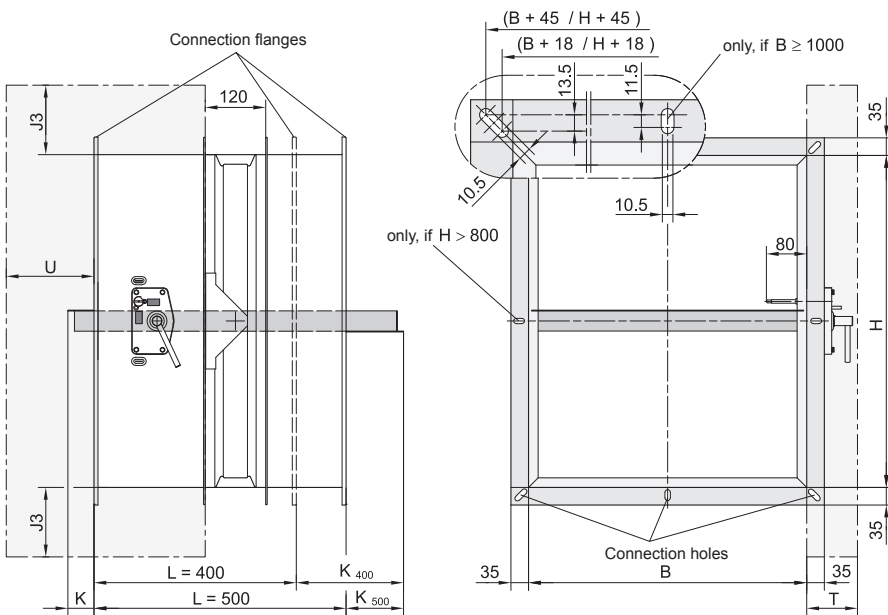
Ambient temperatures: -20°C ... +40°C for T6 and T80°C/-20°C ... +50°C for T5 and T95°C *) Can also be used in this zone!

FK90 fire dampers

Data sheet (1) Dimensions



Maximum excess lengths of mechanical and electrical equipment parts.



Thermal-mechanical release mechanisms are labelled with **V1**, **V2**, **V4** and are mounted based on the width **B** and height **H** of the fire dampers.

These size-dependent allocations must not be changed on site!

H/B	≤400	> 400 to 750	> 750
≤ 300	V2	V4	V1
> 300 to 1000		V4	V1

Damper blade

- Operation side: K
- Non-operation side: K_{400} , K_{500}
L = 400 and L = 500

Actuators

- U horizontal (delivery condition)
- J rotated to vertical or suspended position:
- J3 EM-1, RM-1, EM-2

Height-independent excess lengths	T	U	J
Thermal-mechanical release mechanism	95	-	-
with: • W220, WU220	120	-	-
• G24, GU24	120	-	-
• P, P2	105	-	-
• E-Ex limit switch	105	-	-
M220-9/V, M24-9/V	90	-	-
M220-7, M24-7	145	40	-
EM-1, EM-2, RM-1	245	150	J3

H	J3	K	K_{400}	K_{500}
200	170	-	-	-
225	160	-	-	-
250	145	-	-	-
275	135	-	4	-
300	120	-	17	-
325	110	-	29	-
350	95	-	42	-
375	85	-	54	-
400	70	-	67	-
450	45	-	92	-
500	20	-	117	17
550	-	-	142	42
600	-	7	167	67
650	-	32	192	92
700	-	57	217	117
750	-	82	242	142
800	-	107	267	167
850	-	132	292	192
900	-	157	317	217
950	-	182	342	242
1000	-	207	367	267

Additional space must be provided for assembly, electrical connections and servicing; observe the cable entry points!

In addition to the "**T**" measurement, it is recommended that a distance of 400 mm be kept from adjacent walls, ceilings or other fire dampers, in order to ensure that the release mechanisms and actuators can be accessed for operational purposes.

Connection flanges are fitted with connection holes. If additional holes are required for duct connection, these can be added on site!

FK90 fire dampers

Data sheet (2) Free cross-sections, weights

Free cross-sections A_{free} [m²]

B/H	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	900	1000
200	0.018	0.022	0.026	0.030	0.034	0.041	0.049	0.057	0.065	0.073	0.080	0.088	0.096	0.104	0.112	0.127	0.143
225	0.021	0.026	0.030	0.035	0.039	0.048	0.057	0.066	0.075	0.084	0.093	0.102	0.111	0.121	0.130	0.148	0.166
250	0.024	0.029	0.034	0.039	0.044	0.055	0.065	0.075	0.086	0.096	0.106	0.117	0.127	0.137	0.147	0.168	0.189
275	0.027	0.033	0.038	0.044	0.050	0.061	0.073	0.085	0.096	0.108	0.119	0.131	0.142	0.154	0.165	0.188	0.212
300	0.030	0.036	0.042	0.049	0.055	0.068	0.081	0.094	0.106	0.119	0.132	0.145	0.158	0.170	0.183	0.209	0.234
325	0.033	0.040	0.047	0.054	0.061	0.075	0.089	0.103	0.117	0.131	0.145	0.159	0.173	0.187	0.201	0.229	0.257
350	0.035	0.043	0.051	0.058	0.066	0.081	0.097	0.112	0.127	0.143	0.158	0.173	0.188	0.204	0.219	0.250	0.280
375	0.038	0.047	0.055	0.063	0.071	0.088	0.105	0.121	0.138	0.154	0.171	0.187	0.204	0.220	0.237	0.270	0.303
400	0.041	0.050	0.059	0.068	0.077	0.095	0.112	0.130	0.148	0.166	0.184	0.201	0.219	0.237	0.255	0.290	0.326
450	0.047	0.057	0.067	0.078	0.088	0.108	0.128	0.149	0.169	0.189	0.209	0.230	0.250	0.270	0.291	0.331	0.372
500	0.053	0.064	0.076	0.087	0.098	0.121	0.144	0.167	0.190	0.212	0.235	0.258	0.281	0.304	0.326	0.372	0.418
550	0.059	0.071	0.084	0.097	0.109	0.135	0.160	0.185	0.210	0.236	0.261	0.286	0.312	0.337	0.362	0.413	0.463
600	0.064	0.078	0.092	0.106	0.120	0.148	0.176	0.203	0.231	0.259	0.287	0.315	0.342	0.370	0.398	0.454	0.509
650	0.070	0.085	0.101	0.116	0.131	0.161	0.191	0.222	0.252	0.282	0.313	0.343	0.373	0.404	0.434	0.494	0.555
700	0.076	0.092	0.109	0.125	0.142	0.174	0.207	0.240	0.273	0.306	0.338	0.371	0.404	0.437	0.470	0.535	0.601
750	0.082	0.100	0.117	0.135	0.152	0.188	0.223	0.258	0.294	0.329	0.364	0.400	0.435	0.470	0.505	0.576	0.647
800	0.088	0.107	0.125	0.144	0.163	0.201	0.239	0.277	0.314	0.352	0.390	0.428	0.466	0.503	0.541	0.617	0.692
850	0.093	0.114	0.134	0.154	0.174	0.214	0.255	0.295	0.335	0.376	0.416	0.456	0.496	0.537	0.577	0.658	0.738
900	0.099	0.121	0.142	0.163	0.185	0.228	0.270	0.313	0.356	0.399	0.442	0.484	0.527	0.570	0.613	0.698	0.784
950	0.105	0.128	0.150	0.173	0.196	0.241	0.286	0.332	0.377	0.422	0.467	0.513	0.558	0.603	0.649	0.739	0.830
1000	0.111	0.135	0.159	0.183	0.206	0.254	0.302	0.350	0.398	0.445	0.493	0.541	0.589	0.637	0.684	0.780	0.876
1050	0.117	0.142	0.167	0.192	0.217	0.268	0.318	0.368	0.418	0.469	0.519	0.569	0.620	0.670	0.720		
1100	0.122	0.149	0.175	0.202	0.228	0.281	0.334	0.386	0.439	0.492	0.545	0.598	0.650	0.703	0.756		
1150	0.128	0.156	0.184	0.211	0.239	0.294	0.349	0.405	0.460	0.515	0.571	0.626	0.681	0.737	0.792		
1200	0.134	0.163	0.192	0.221	0.250	0.307	0.365	0.423	0.481	0.539	0.596	0.654	0.712	0.770	0.828		
1250	0.140	0.170	0.200	0.230	0.260	0.321	0.381	0.441	0.502	0.562	0.622	0.683	0.743	0.803	0.863		
1300	0.146	0.177	0.208	0.240	0.271	0.334	0.397	0.460	0.522	0.585	0.648	0.711	0.774	0.836	0.899		
1400	0.157	0.191	0.225	0.259	0.293	0.361	0.428	0.496	0.564	0.632	0.700	0.767	0.835	0.903	0.971		
1500	0.169	0.205	0.242	0.278	0.314	0.387	0.460	0.533	0.606	0.678	0.751	0.824	0.897	0.970	1.042		

Weights [kg] for the standard version

B/H	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	900	1000
200	10	11	11	12	12	13	14	15	15	16	17	18	19	19	20	22	24
225	11	11	12	12	13	13	14	15	16	17	18	19	19	20	21	23	24
250	11	12	12	13	13	14	15	16	17	17	18	19	20	21	22	24	25
275	12	12	13	13	13	14	15	16	17	18	19	20	21	22	23	24	26
300	12	13	13	13	14	15	16	17	18	19	20	21	22	22	23	25	27
325	12	13	13	14	14	15	16	17	18	19	20	21	22	23	24	26	28
350	13	13	14	14	15	16	17	18	19	20	21	22	23	24	25	27	29
375	13	14	14	15	15	16	17	19	20	21	22	23	24	25	26	28	30
400	14	14	15	15	16	17	18	19	20	21	22	23	24	26	27	29	31
450	15	15	16	16	17	18	19	20	21	23	24	25	26	27	28	30	33
500	15	16	17	17	18	19	20	21	23	24	25	26	27	29	30	32	35
550	16	17	17	18	19	20	21	23	24	25	26	28	29	30	31	34	36
600	17	18	18	19	20	21	22	24	25	26	28	29	30	32	33	36	38
650	18	19	19	20	21	22	23	25	26	28	29	30	32	33	35	37	40
700	19	19	20	21	22	23	24	26	27	29	30	32	33	35	36	39	42
750	19	20	21	22	22	24	26	27	29	30	32	33	35	36	38	41	44
800	20	21	22	23	23	25	27	28	30	31	33	35	36	38	39	42	46
850	21	22	23	24	24	26	28	29	31	33	34	36	38	39	41	44	48
900	22	23	24	24	25	27	29	30	32	34	36	37	39	41	42	46	49
950	23	24	25	25	26	28	30	32	33	35	37	39	41	42	44	48	51
1000	24	24	25	26	27	29	31	33	35	36	38	40	42	44	46	49	53
1050	24	25	26	27	28	30	32	34	36	38	40	42	43	45	47		
1100	25	26	27	28	29	31	33	35	37	39	41	43	45	47	49		
1150	26	27	28	29	30	32	34	36	38	40	42	44	46	48	50		
1200	27	28	29	30	31	33	35	37	39	42	44	46	48	50	52		
1250	28	29	30	31	32	34	36	38	41	43	45	47	49	51	54		
1300	28	30	31	32	33	35	37	40	42	44	46	49	51	53	55		
1400	30	31	32	34	35	37	40	42	44	47	49	51	54	56	58		
1500	32	33	34	35	37	39	42	44	47	49	52	54	57	59	62		

To be added on:

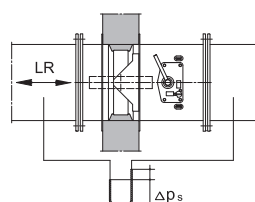
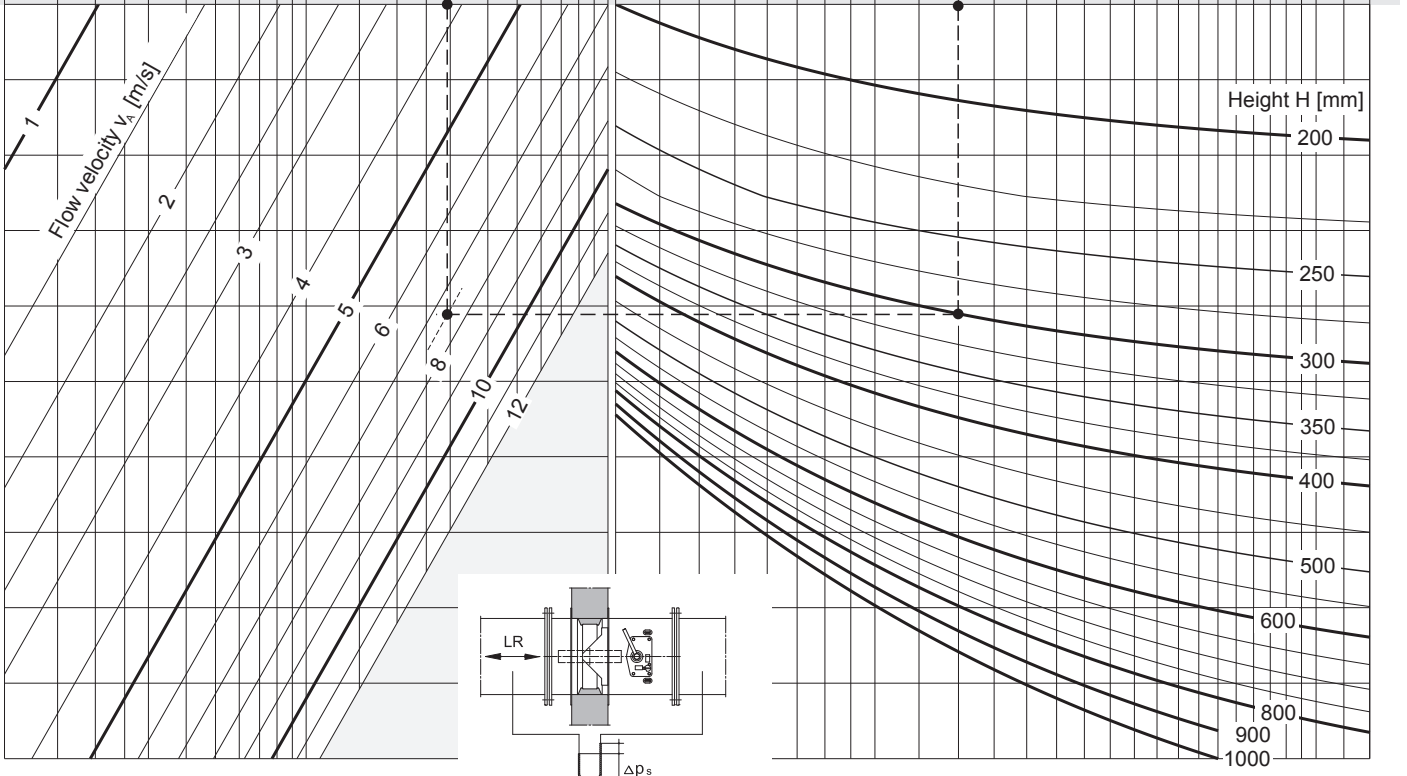
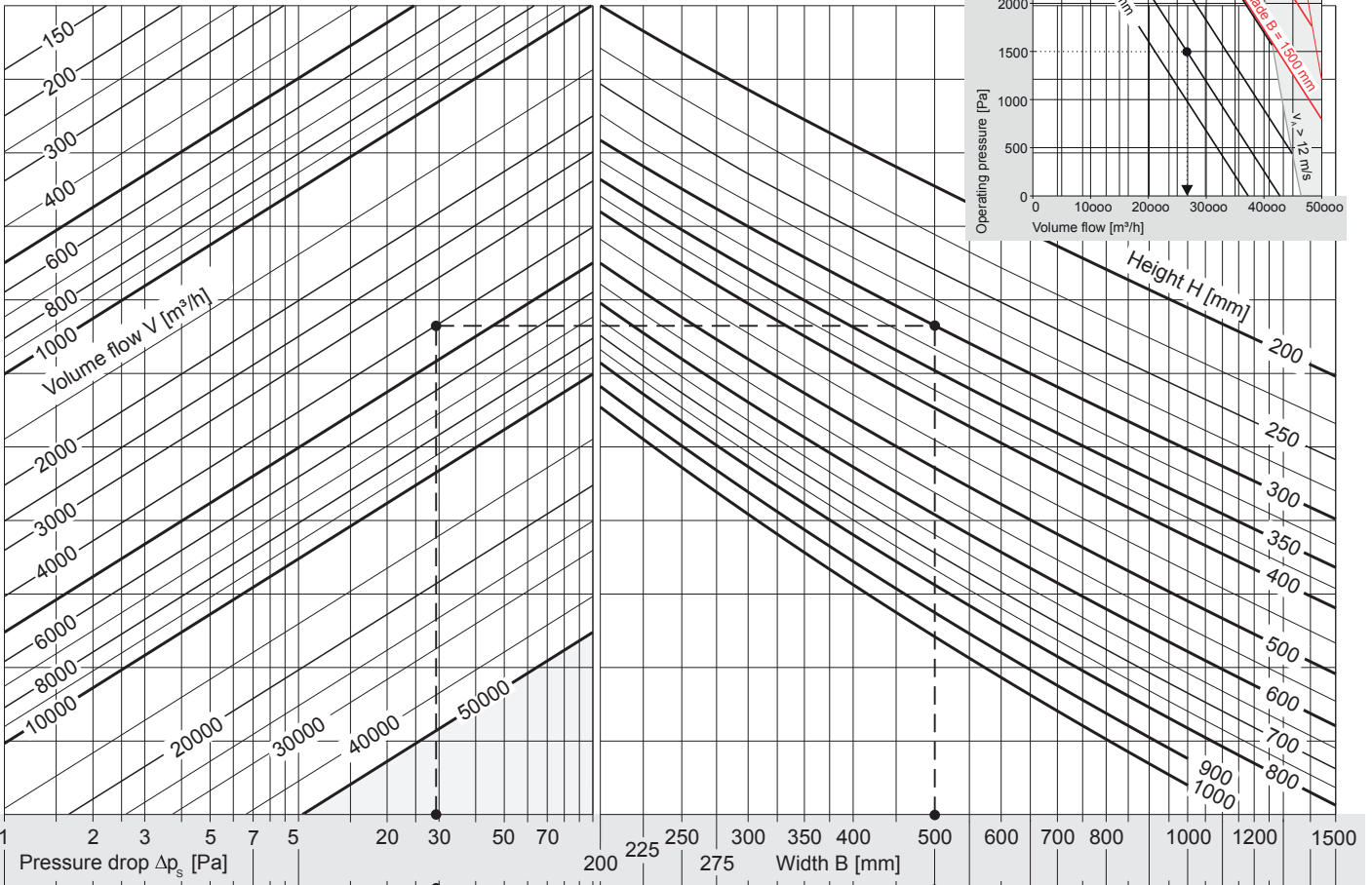
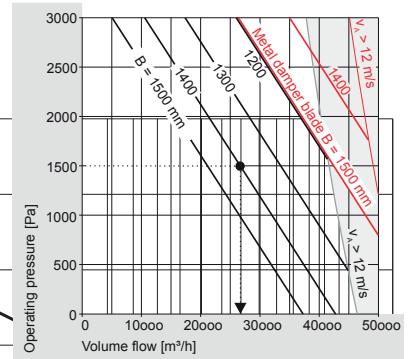
- Damper blade with metal cover 10%
- Actuators:
 - M220-9/V; M24-9/V 2 kg
 - M220-7; M24-7 3 kg
 - EM-1; EM-2; RM-1 5 kg

FK90 fire dampers

Dimensioning (1) Pressure drop with ventilation duct connection on both sides

FK90 fire dampers can be used in the area of the nomograms. With large dimensions, restrictions should be taken into account depending on operating pressure and volume flow.

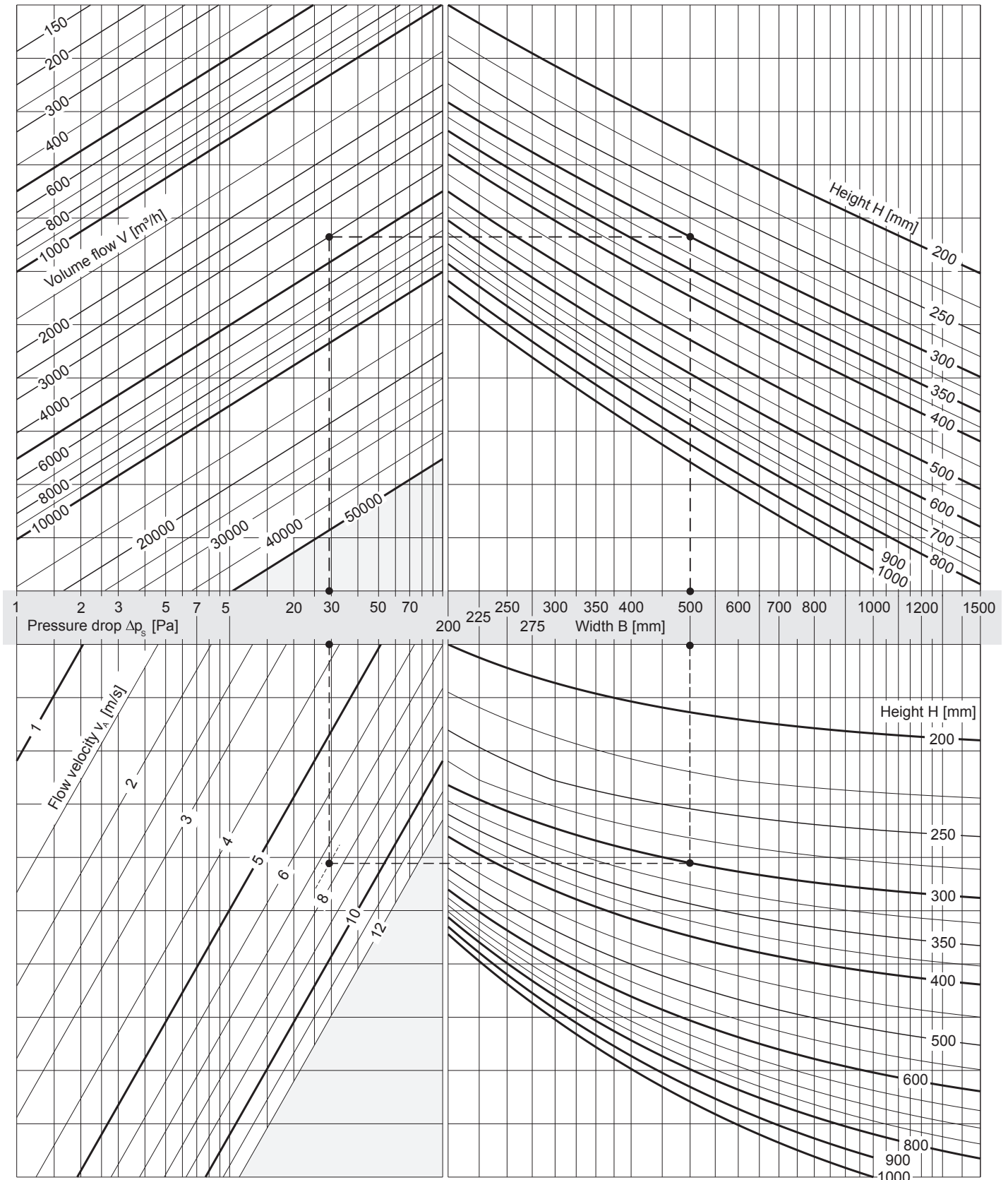
Example: At an operating pressure of 1500 Pa and a width of 1400 mm, the permissible volume flow is 26475 m³/h. This may increase if the width is smaller or if the damper blade has a metal cover, or if an electric drive version is being used.



FK90 fire dampers

Dimensioning (2) Sound power level with ventilation duct connection on both sides

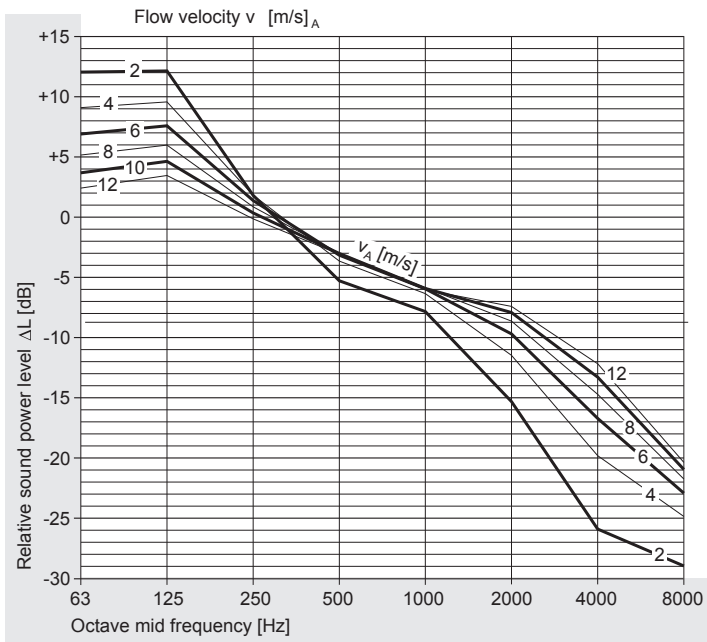
Example: ⇒ see page 10



FK90 fire dampers

Dimensioning (3) Relative sound power level, examples, nomenclature

Relative sound power level



Example:

$V = 4000 \text{ m}^3/\text{h}$ $A_{\text{free}} = 0.098 \text{ m}^2$
 $B = 500 \text{ mm}$ $\Delta p_s = 29 \text{ Pa}$
 $H = 300 \text{ mm}$ $v_A = 7.4 \text{ m/s}$
 $A_A = 0.150 \text{ m}^2$ $L_{\text{WA}} = 47 \text{ dB(A)}$

Sound power level $L_{\text{W-Oct}}$ for the octave mid frequencies

f [Hz]	63	125	250	500	1000	2000	4000	8000
L_{WA} [dB(A)]	47	47	47	47	47	47	47	47
$\Delta L_{7.4 \text{ m/s}}$ [dB]	5	6	1	-3	-6	-9	-15	-22
$L_{\text{W-Oct}}$ [dB]	52	53	48	44	41	38	32	25

Nomenclature

B [mm] Width
 H [mm] Height
 A_A [m²] Inflow cross-section $B \times H$
 A_{free} [m²] Free cross-section
 V [m³/h] Volume flow
 v_A [m/s] Flow velocity in inflow cross-section
 Δp_s [Pa] Static pressure drop
 L_{WA} [dB(A)] A-weighted, area-corrected sound power level
 $L_{\text{W-Oct}}$ [dB] Octave sound power level $L_{\text{W-Oct}} = L_{\text{WA}} + \Delta L$
 ΔL [dB] Relative sound power level to L_{WA}
 f [Hz] Octave mid frequency

FK90 fire dampers

Installation in rigid walls and ceilings and in metal stud walls (1) with cladding on both sides

The fire dampers are

EI 30/60/90/120 (v_e - h_o, i ↔ o) S C₁₀₀₀₀

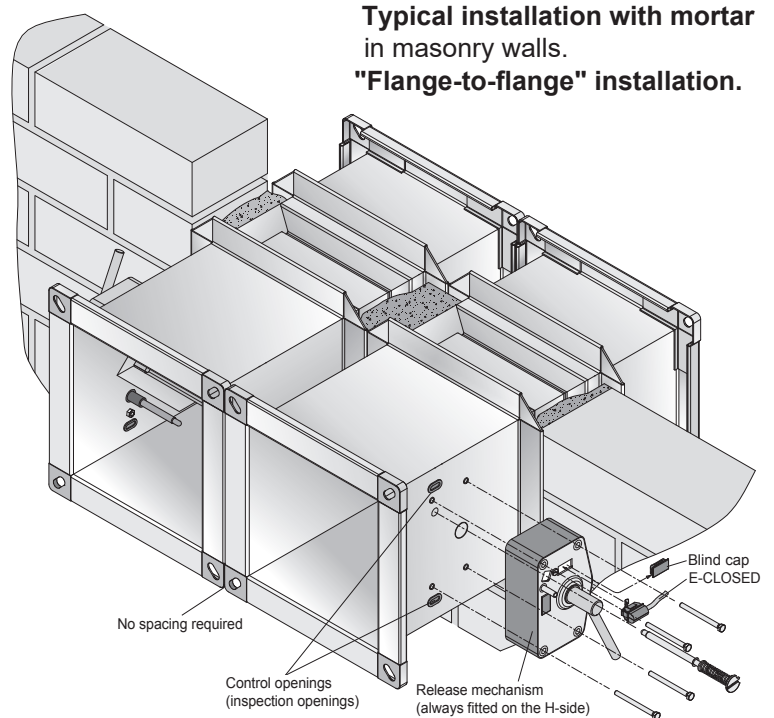
classified and labelled.

The effective fire resistance period is dependent on the installation.

Minimum thicknesses W, D [mm] are required:

Fire resistance period in minutes	30 60 90	120
Rigid walls	100	100
Rigid ceilings • with H ≤ 800 and B ≤ 1500	100	115
Rigid ceilings • with H > 800 and B ≤ 1000	115	
Metal stud walls with ≤ 1000 mm stud spacing	95	95

All dimensions in mm



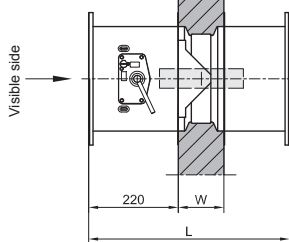
Horizontal installation positions

The drive positions of right, left, up and down all relate to the visible side.

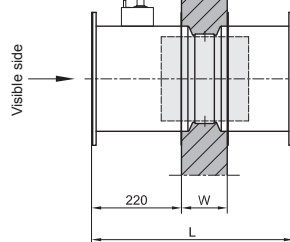
Horizontal damper blade axle

Vertical damper blade axle

Operation side Non-operation side

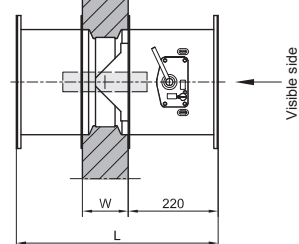


Actuator on the right

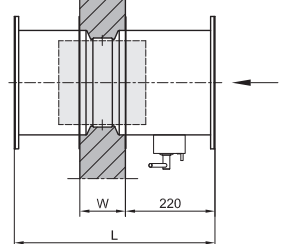


Actuator above

Non-operation side Operation side



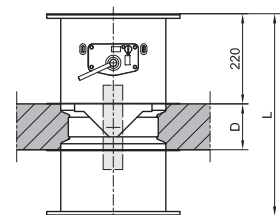
Actuator on the left



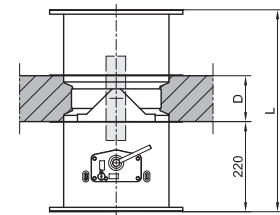
Actuator below

Vertical installation positions

Horizontal damper blade axle



Actuator above the ceiling



Actuator underneath the ceiling

The release mechanisms and actuators are always located to the H-side on the casing of the fire dampers ⇒ see page 6

FK90 fire dampers

Installation in rigid walls and ceilings and in metal stud walls (2) with cladding on both sides

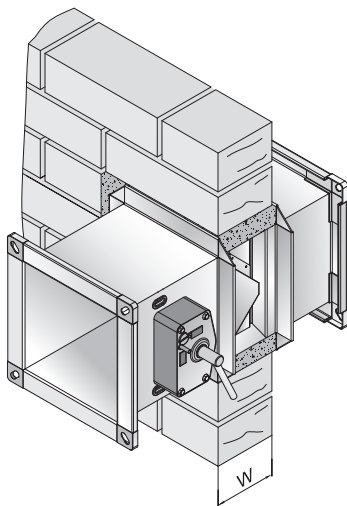
The rigid walls and ceilings can be made of concrete, lightweight concrete, porous concrete (aerated concrete) or plaster. They can be constructed as masonry or from wallboard. Walls may also be configured as fire walls, shaft walls, shafts or ducts.

Ceilings are generally made of concrete or aerated concrete in solid construction.

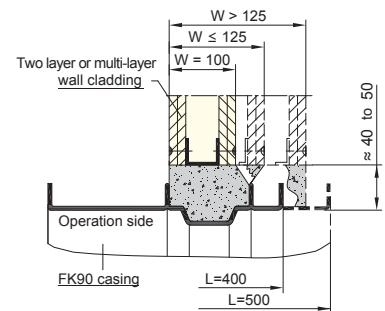
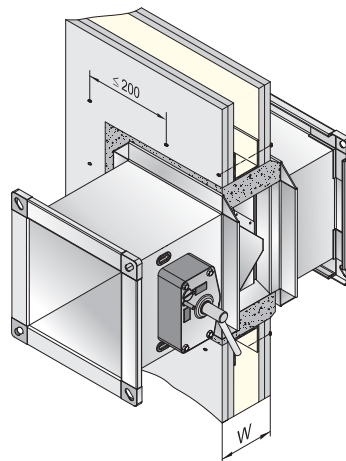
- **Rigid walls and ceilings** must have bulk density $\geq 450 \text{ kg/m}^3$.
- **Metal stud walls** should be clad on both sides in two or more layers with 12.5-mm GKF plasterboard. Installation openings produced from metal stud profiles must be used as circumferential frames for installing the fire dampers. Cladding should be fastened to these using drywall screws $\varnothing \geq 3.5 \text{ mm}$ in $\leq 200 \text{ mm}$. All frame parts should be joined to each other correctly and appropriately with respect to the type of wall. The top and bottom frame parts must always be connected to the stud profiles. Frames can also be configured as trimmers.
- **Installation** is carried out **with mortar** of groups II or III according to DIN 1053 or with class M10 according to EN 998-2 or with the corresponding fire protection mortar or gypsum mortar.
- **Minimum thicknesses** of walls, ceilings, and spacings \rightarrow see table on page 11
- Recommended size of **installation opening** $b \times h = (B + 80 \text{ to } 100 \text{ mm}) \times (H + 80 \text{ to } 100 \text{ mm})$. The structural conditions should be taken into account by the customer, particularly when installing in metal stud walls.

Installation in rigid walls

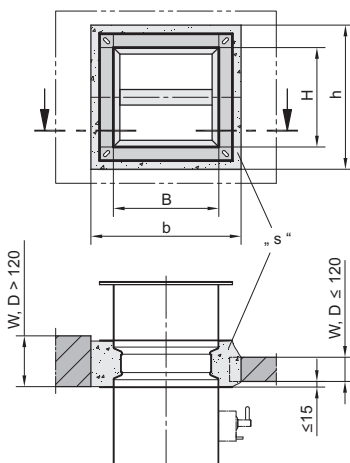
Installation in rigid ceilings is carried out in the same way.



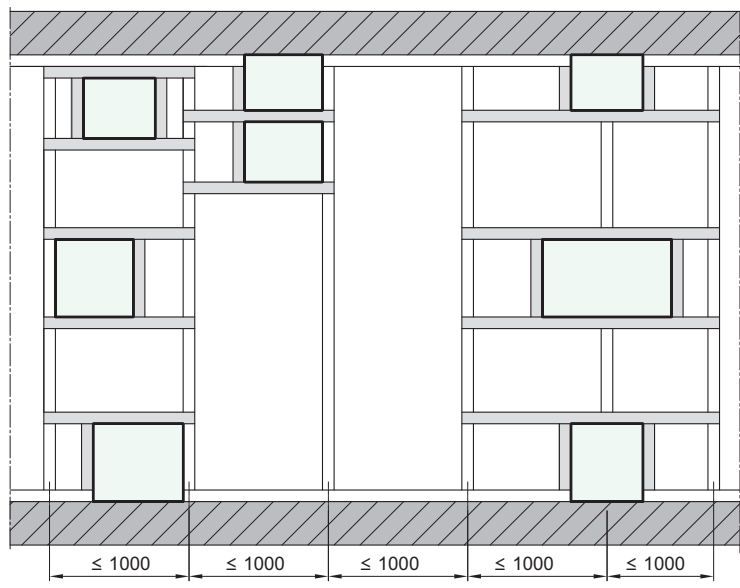
Installation in metal stud walls



Installation openings (examples)



All dimensions in mm



Installation between supports

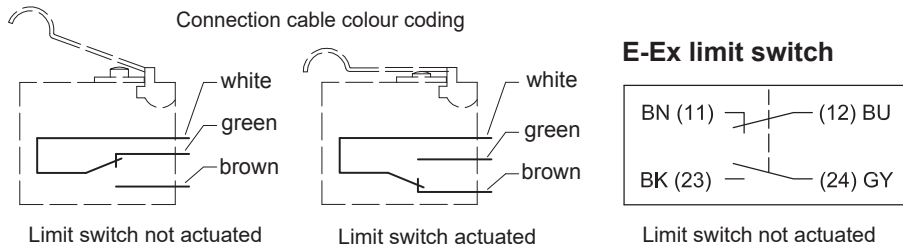
Support interrupted (trimmer)

FK90 fire dampers

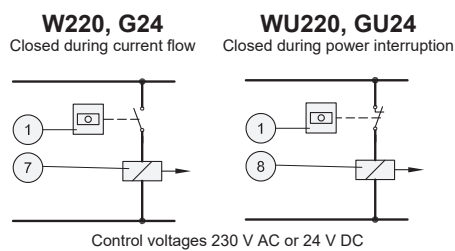
Electrical connections, installation, functional testing, servicing

Limit switches on thermal-mechanical release mechanisms

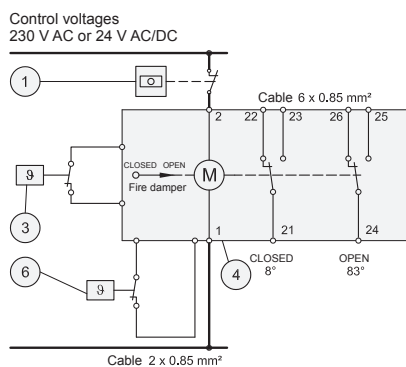
The CLOSED limit switches are actuated when the fire damper is closed, and the OPEN limit switches are actuated when the fire damper is open.



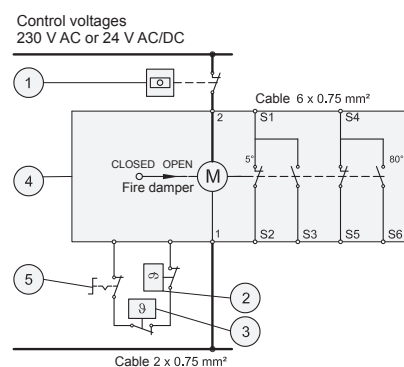
Remote release



Actuators M220-9/V, M24-9/V

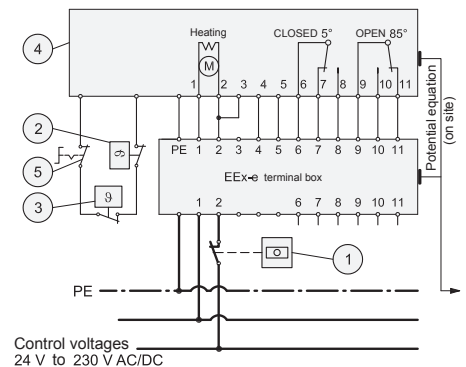


Actuators M220-7, M24-7



- 1 Thermostats, smoke detectors and switches should only be installed if required. On site delivery.
 - 2 Thermal-electrical release element 70°C or 95°C; EM-1, EM-2 and RM-1 only 70°C!
 - 3 Thermal cut-off approx. 70°C
 - 4 Electric actuator with limit switches for OPEN-CLOSED position indicator.
- The illustration shows the de-energised operating position where the fire dampers are closed.**
- The plugs on the connection cables can be removed if they are not being used.
 - Due to their in-built thermal release elements, all actuators must be stored at temperatures not exceeding 50°C.
- 5 Switches or buttons for testing the actuators
 - 6 Thermal-electrical release element 70°C or 100°C with plug-in connection for testing the actuator.
 - 7 Lifting solenoid
 - 8 Magnetic clamp
- The right to allow for variations in delivery from the versions shown remains reserved.

Actuators EM-1, EM-2 and RM-1



Installation

- FK90 fire dampers, series FK120, must be installed based on the instructions in this user manual. The technical regulations and national statutory regulations must be observed during installation.
- In Germany, this means the "Technical Building Regulations" (VV TB) and the "Guideline on Fire Protection Requirements Pertaining to Ventilation Systems" (Lüftungsanlagenrichtlinie - LüAR).
- FK90 fire dampers meet these requirements and generally recognised technical regulations.
- **Electric wiring** must be installed by the customer.
- **Potential equalisation conductors** to bridge flexible connection pieces on fire dampers can be fastened with metal screws if they are made of copper up to a cross-section of 6 mm² or made of aluminium.
- Fire dampers in **potentially explosive atmospheres** must be grounded in accordance with regulations.

Functional testing and servicing

- Fire dampers must be serviced by the owner and tested periodically to ensure they are functioning correctly. The intervals largely depend on the system operation. Relevant regulations should be followed.
- FK90 fire dampers, series FK120, are maintenance-free due to fully enclosed components, corrosion-resistant materials and precise manufacture. There is no need for regular cleaning and lubrication, which would otherwise be necessary.
- Functional tests on FK90 fire dampers, series FK120, are generally limited to a release and re-opening. This can be performed remotely with electric actuators.
- Repairs or service work are required in the event of malfunctions. Original spare parts must be used for this.
- Cleaning work required in ventilation systems for hygiene reasons must be performed in an operation-dependent manner, and also includes the fire dampers.

Operating instructions for the FK90 fire dampers, series FK120, can be downloaded online at www.wildeboer.de/en.

FK90 fire dampers

Ordering FK90 fire dampers, series FK120

Size

B [mm] x H [mm] x L [mm]

⇒ see page 3

Option: Damper blade

- Metal frame made of 1.4301 stainless steel
- Galvanized metal cover
- Metal frame and metal cover made of 1.4301 stainless steel

Metal frames/metal covers made of stainless steel should be used with casings coated with epoxy resin.

⇒ see page 3

Option: Casing design

- Casing with inner and outer epoxy resin coating.

⇒ see page 3

Option: Additional casing openings

- 132-mm Ø with cover; position of the opening: top/bottom/top + bottom

Option: Release temperature

- 95°C or 100°C ¹⁾
- 70°C corrosion protected ²⁾

⇒ see pages 2 to 5

Option: Limit switches

- E-CLOSED } also E-CLOSED together with E-OPEN
- E-OPEN }

These limit switches can also be combined with the following remote releases!

Option: Remote release

- GU24 } Magnetic clamps
- WU220 }
- G24 } Lifting solenoids
- W220 }
- P } Pneumatic cylinders
- P2 }

Option: Explosion-protected

Option: Explosion-protected limit switch

- EX-CLOSED } also EX-CLOSED together with EX-OPEN
- EX-OPEN }

Option: Electric actuators

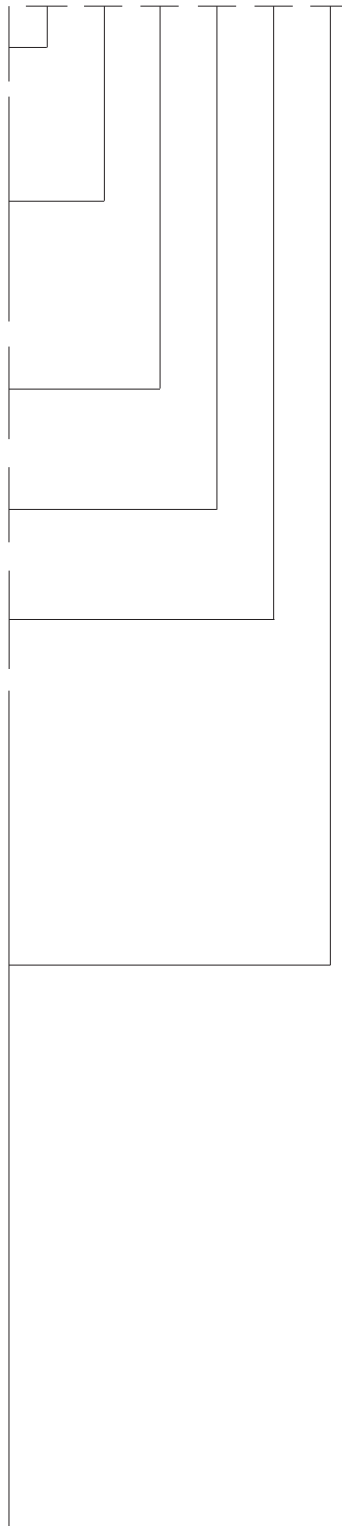
- M220-9/V } Standard
- M24-9/V }
- M220-7 }
- M24-7 }

Option: Electric explosion-protected actuators

- EM-1 } Standard
- RM-1 }
- EM-2 }

⇒ see pages 5 and 6

FK120 - - - - -



Standard widths B and heights H

Intermediate dimensions are available in 5-mm increments.

200	550	1050
225	600	
250	650	1100
275	700	1150
300	750	
325	800	1200
350	850	1250
375	900	
400	950	1300
450	1000	1400
500		1500

Heights H up to 1000 mm can be combined with widths B up to 1000 mm

Heights H up to 800 mm can be combined with widths B up to 1500 mm

Lengths L = 400 mm and 500 mm
All dimensions B and H can thus be combined!

Actuators with thermal-electrical release mechanisms and limit switches

¹⁾ only for actuators EM-1, EM-2, RM-1.
²⁾ only for mechanical release mechanisms.

FK90 fire dampers

Specification text

Maintenance-free fire dampers according to EN 15650 with 30/60/90/120-minute fire resistance period and the fire classifications EI 30/90/90/120 (ve - ho, i ↔ o) S. C 10000. Air-tight casing, leak tightness class C according to EN 1751, made of galvanized steel with single-piece circumferential edging and pressure-joining, tapered inner beading for freedom of damper blade movement, outer beading to ensure comprehensive stability, and connection flanges. Casing with epoxy resin powder coating. Replaceable damper blade made of abrasion proof calcium silicate, with folded, wear-resistant elastomer lip seals on a profile frame made of galvanized steel/stainless steel and full cover made of galvanized steel/stainless steel. Fully enclosed, maintenance-free drive mechanism in the area of the casing walls, with self-locking slider crank for break-proof torque transmission. Sealed drive axles made of stainless steel, with red metal bearings. Suitable for installation with horizontal or vertical damper blade axles in rigid walls and ceilings and in metal stud walls.

Enclosed maintenance-free thermal release mechanism 70C /95°C or 100°C

- for manual single handed operation
 - corrosion-resistant release element
 - with (two) electrical limit switch(es) for signalling the damper blade positions CLOSED/OPEN
 - with remote release via magnetic clamp 230 V AC or 24 V DC /lifting solenoid 230 V AC or 24 V DC /pneumatic cylinder 4 to 8 bar/1.2 to 8 bar.
- with electric actuator 230 V AC or 24 V AC/DC for remote control and functional checks.
- explosion-protected for zones 1, 2, 21, 22
 - with (two) electrical explosion-protected limit switch(es) for signalling the damper blade positions CLOSED/OPEN
 - with explosion-protected electric actuator for 24 V to 240 V AC/DC.

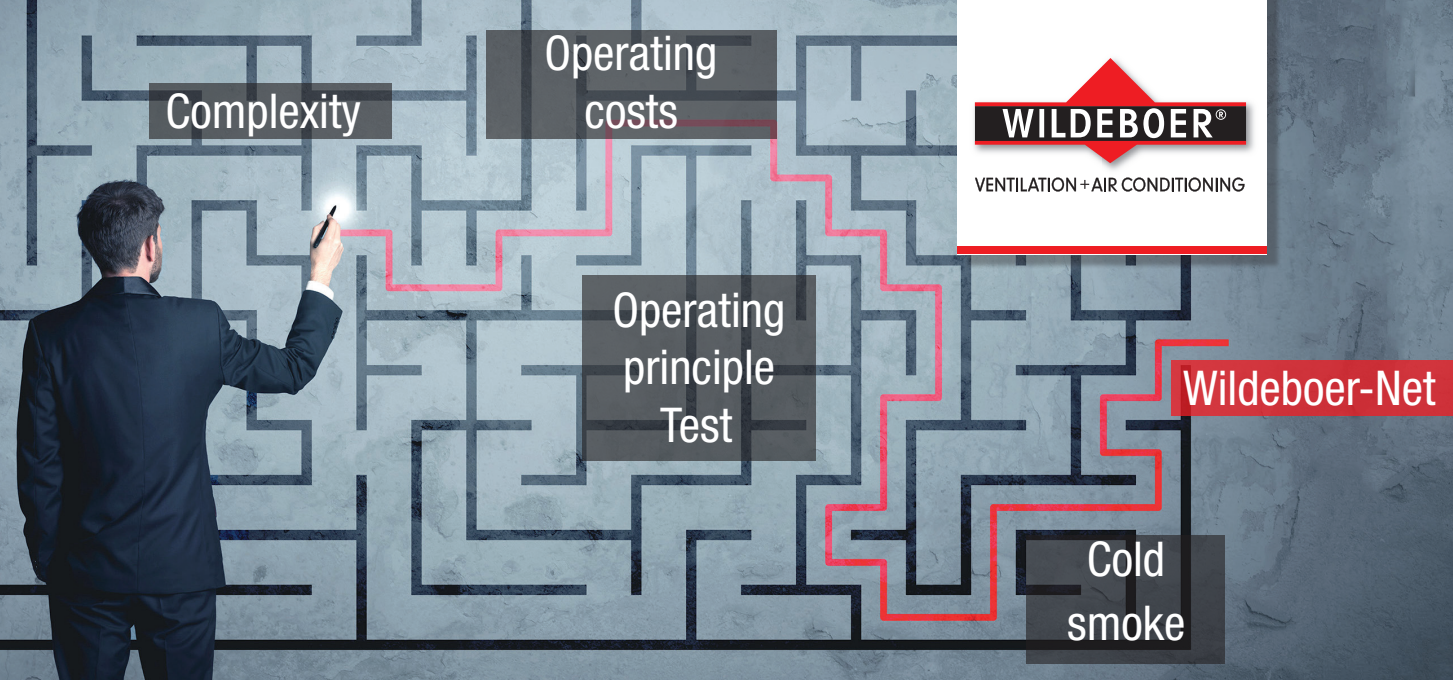
Tested according to 15650, annex B, with 20% saline solution, for verification of permanent functioning under highly corrosive conditions.

In order to comply with the hygiene requirements according to VDI 6022-1, DIN 1946-4 and DIN EN 13779, verification of the necessary resistance of all materials to microorganisms (fungi, bacteria) and disinfectant resistance. With Environmental Product Declaration according to ISO 14025 and EN 15804.

..... Pc	Width:	.....	mm
	Height:	.....	mm
	Length:	400, 500	mm
	Volume flow:	.....	m ³ /h
	Pressure drop:	.....	Pa
	Sound power level:	.....	dB(A)
	Manufacturer:	WILDEBOER	
	Type/series:	FK90/FK120	

deliver:
install:

Select texts not highlighted in bold as required!



Existing problems:

- | The system design, installation, programming and commissioning of conventional control systems in buildings is complex.

- | Preventing smoke spreading is a challenge.

- | Recurring functional tests are time-consuming, affect operation and incur high costs.

- | Fire dampers have to operate reliably. Changes in the building control system always require new operating principle testing.



Our response:

- Special plug-and-play functionality allows control systems for fire dampers to be designed, built and connected in parent hierarchy without any measuring and control know-how.

- Detect smoke and close fire dampers reliably and in good time via flexible release groups.

- The BS2 communications system "Wildeboer-Net" performs functional testing in less than 10 minutes in all.

- The BS2 communication system "Wildeboer-Net" controls and safeguards the functioning of fire dampers. Changes in the building control system have no effect.



The solution:

BS2 communication system "Wildeboer-Net"

Network your fire protection and significantly minimise the cost of planning, installation and testing. The BS2 communication system "Wildeboer-Net" lays all the groundwork for you. Don't miss out on these benefits. We would be glad to advise you.



Watch explanatory video on YouTube
wildeboer.de/youtube



BAUTEILE FÜR LÜFTUNG + KLIMA



BS2 communication system "Wildeboer-Net"

- Optimum system solution combined with our maintenance-free fire dampers

Wildeboer Bauteile GmbH

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