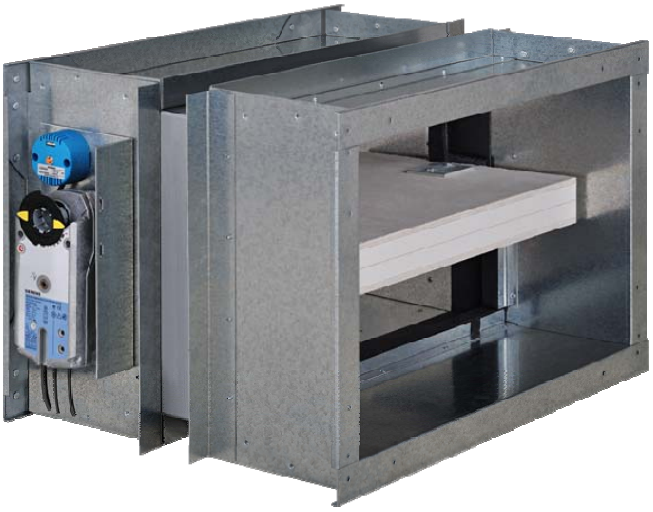
MADEL®



Approved by an Independant Laboratory EN-1366-2

Patented

FBK-EIS-120 fire dampers EIS-120

MADEL®

The fire dampers **FBK-EIS-120** work as a separator between two sectors of fire and ensure the same fire resistance that the structural elements of compartmentalisation, which limits the risk of spreading of fire by interior of the building.

These dampers can be installed in the wall *and are classified as follows:

Testing European Standard **EN 1366 -2**

Classification European Standard **EN 13501-3**

Classified **EI 120 (ho i ↔ o) S**

(E) Integrity
(I) Insulation
120 minutes fire resistance
(ho) Air direction: horizontal
(i↔o) symmetrical
(S) airtightness

(to install in the floor, see the FOK-EIS-180 series)

The housing is made from galvanised steel and the assembly using clinch system. It has a symmetrical design that allows wall mounting regardless of air flow.

The housing is reinforced, at the height of the blade with longitudinal angles that give rigidity to the damper. The blade is made of ceramic material resistant to high temperatures and abrasion.

These dampers meet the conditions required for the symbol (S) to cold smoke seal. In case of fire, smoke poisoning is the leading cause of death.

The airtightness to the passage of cold smoke is achieved through a joint between the perimeter of the housing and the blade.

For high temperatures, the damper is equipped with an expanding intumescent seal, forming a paste that prevents the passage of hot air and smoke from one side of the damper to another.

The operating devices of the dampers is automatic shooting by means of a thermal fuse calibrated at 72 ° C to activate the closure when reaches that temperature. Reset is manual except for motorized dampers.

CLASSIFICATION

FBK-EIS-120-H Damper with angled flange connection. Blade parallel to the large side.

FBK-EIS-120-V Damper with angled flange connection. Blade parallel to the short side.

…-MA Manual resetting damper. Is not necessary to open the box device.

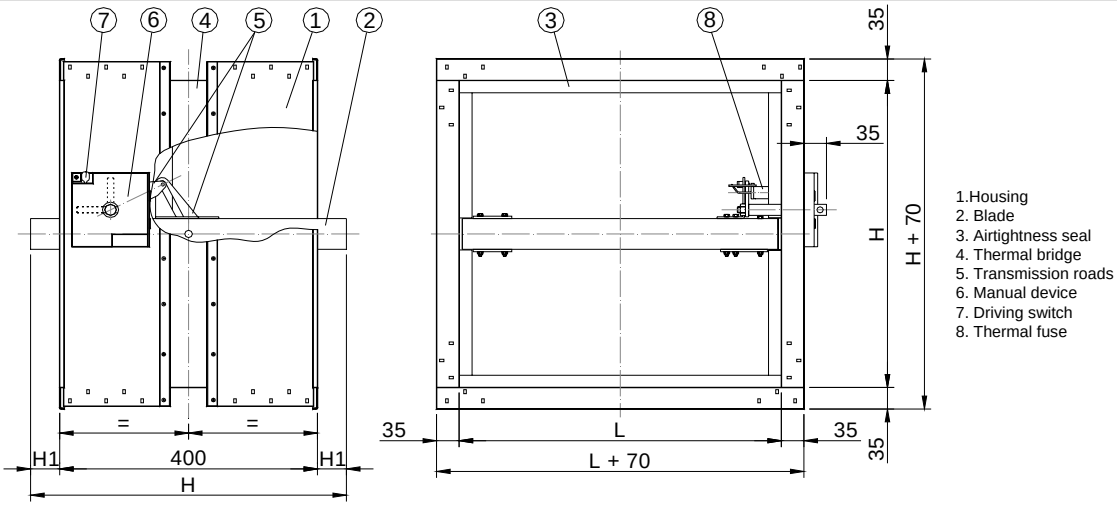
…-M7F Damper operated by an actuator with switch off device at 24 or 230v.

SIZES

L (mm)	L (mm)
200	700
250	800
300	900
350	1000
400	1100
450	1200
500	1300
550	1400
600	1500

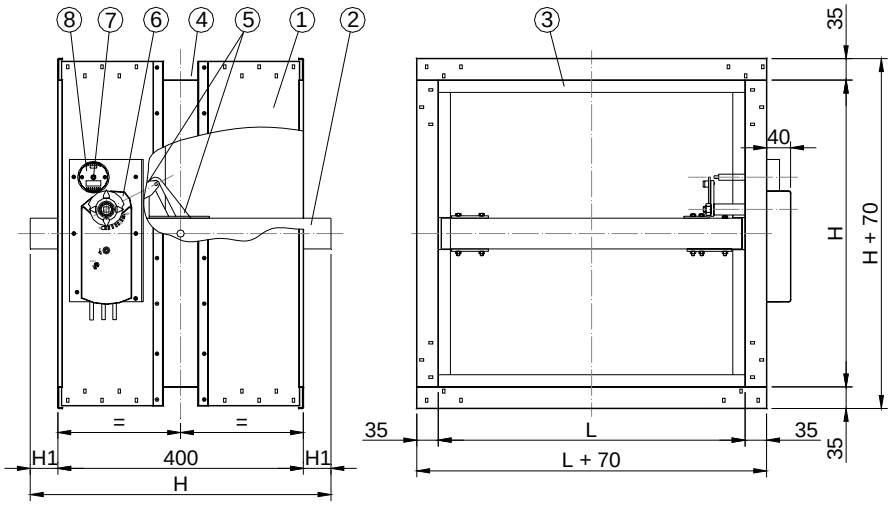
H (mm)	H1 (mm)
200	-
250	-
300	-
350	-
400	-
450	25
500	50
550	75
600	100
700	150
800	200

FBK-EIS-120-H-MA



1.Housing
2. Blade
3. Airtightness seal
4. Thermal bridge
5. Transmission roads
6. Manual device
7. Driving switch
8. Thermal fuse

FBK-EIS-120-H-M7F

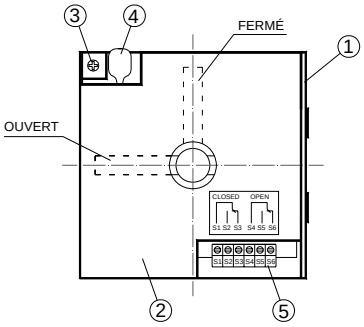


1.Housing
2. Blade
3. Airtightness seal
4. Thermal bridge
5. Transmission roads
6. Actuator
7. Test switch
8. Thermal fuse

OPERATING DEVICES

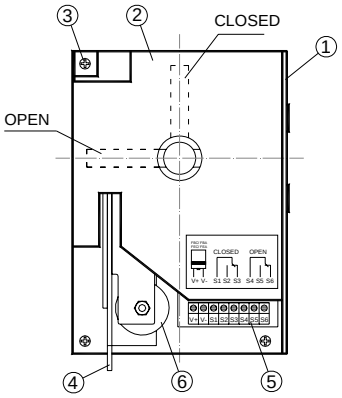
…-MA Manual resetting damper. Automatic shooting by means of a thermal fuse calibrated at 72 °C.
Is not necessary to open the box device to reset or to test the damper.

1. Command support
2. Command cover
3. Screw for cover attachment
4. Button to close rhe damper.
5. Terminal connection of open/closed switches device



…-MA /EL/ Manual resetting damper. Automatic shooting by remote control by means of an elecromagnetement or a thermal fuse calibrated at 72 °C.
Is not necessary to open the box device to reset or to test the damper.

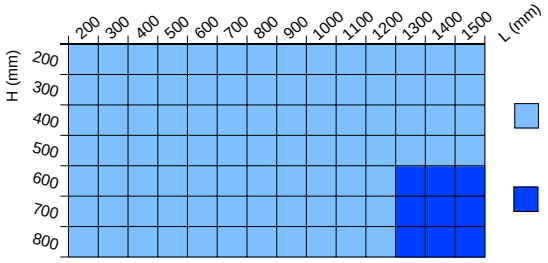
REF. ELECTROMAGNET	Consumption	Description
/FBC/	3.5 W	Closes by electric current. (VCC 24V/ 48V)
/FBA/	5.5 W	Closes by electric current. (VAC 230V)
/FEC/	1.6 W	Closes when current stops. (VCC 24V/ 48V)
/FEA/	4W	Closes when current stops. (VAC 230V)

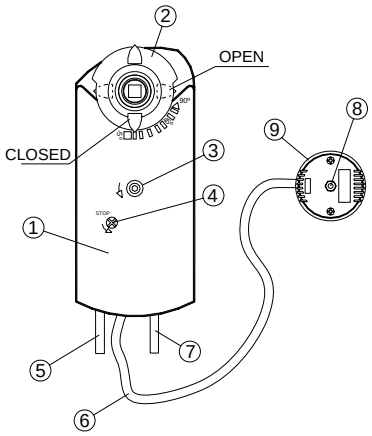


1. Command support
2. Command cover
3. Screw for cover attachment
4. Button to close rhe damper.
5. Electromagnet

…-M7F Damper operated by remote control by means of an actuator with switch off device at 24 or 230v or a thermal fuse calibrated at 72 °C.

Reférence	Voltage	Torque	Consumption	Time to Open / Close
M7F230V	CA 230V	7Nm	4.5W	90s / 15s
M7F24V	CC 24V/ 48V CA 24V	7Nm	3.5W	90s / 15s
M16F230V	CA 230V	18Nm	6W	90s / 15s
M16F24V	CC 24V/ 48V CA 24V	18Nm	VDC 4W VAC 5W	90s / 15s





1. Actuator
2. Position indicator
3. Manual operation
4. Position lock
5. Connection cable for auxiliary switches
6. Themal fuse cable
7. Power cable connection
8. Thermal fuse
9. Test button

OPEN

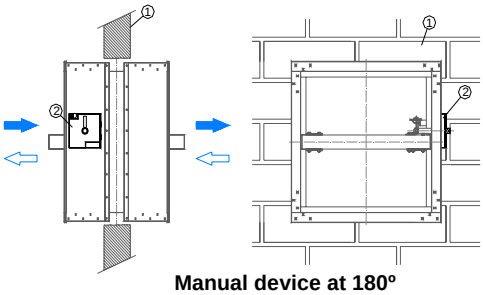
MOUNTING PRECAUTIONS

POSITION LOCKING DEVICE

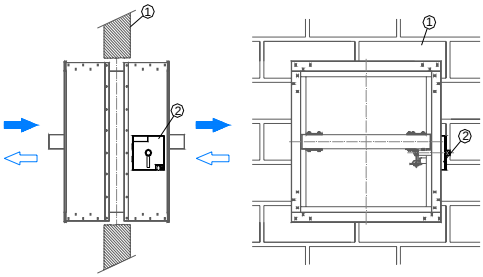
PROPER INSTALLATION

FBK-EIS-120-…-MA

Manual device at 0º

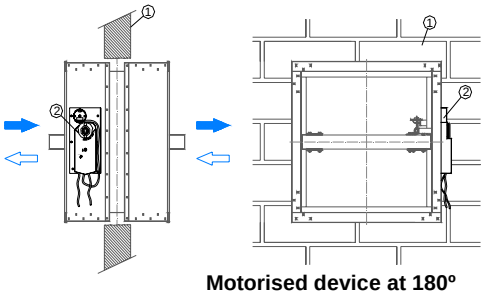


Manual device at 180º

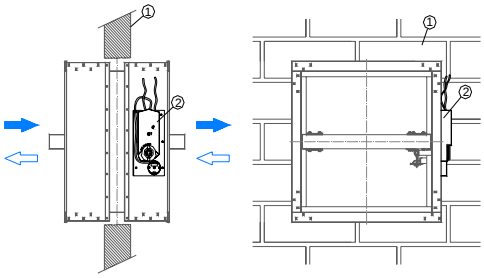


FBK-EIS-120-…-M7F

Motorised device at 0º



Motorised device at 180º



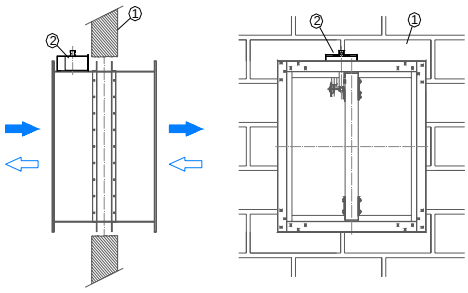
1. Wall
2. Actuator

The dampers must be installed with the device on the side.

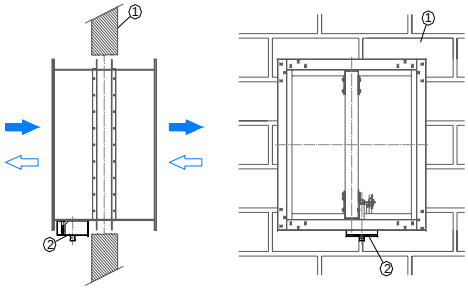
IMPROPER INSTALLATION

FBK-EIS-120-…-MA

Manual device at the top

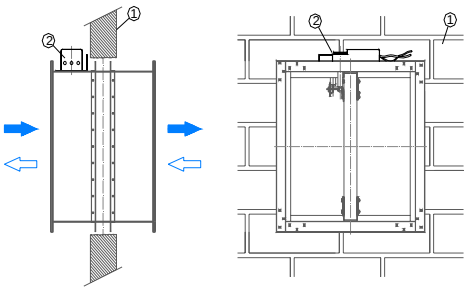


Manual device at the bottom

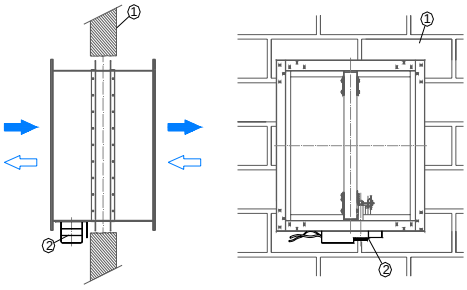


FBK-EIS-120-…-M7F

Motorised device at the top



Motorised device at the bottom



1. Wall
2. Actuator

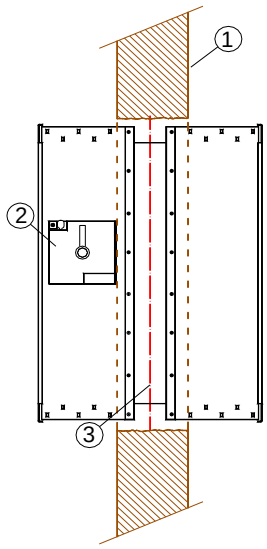
The dampers have never been installed with the device at the top or at the bottom.

MOUNTING PRECAUTIONS

WALL MOUNTING

PROPER INSTALLATION

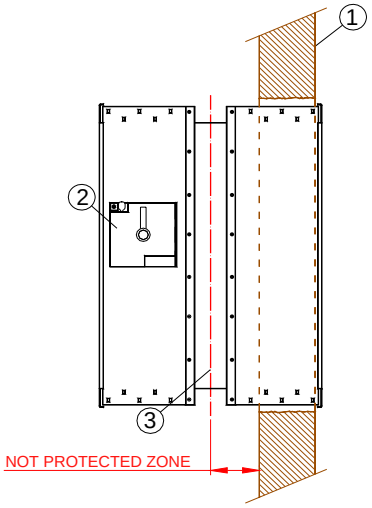
FBK-EIS-120-…-MA
FBK-EIS-120-…-M7F



The design of the damper with driving device shaft offset from the blade, helps us the connection to the wall.
To achieve the sectorization, the damper will be placed with the axis line of the blade in the work support (wall).

IMPROPER INSTALLATION

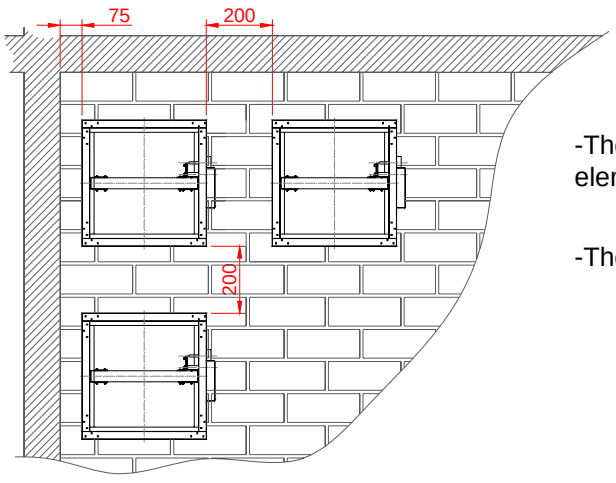
FBK-EIS-120-…-MA
FBK-EIS-120-…-M7F



1. Wall
2. Locking device
3. Axis of the blade

The damper will not be placed with the axis line of the blade off-site support (wall) because it would lose the function of sectorization.
The locking device must be accessible and nothing impede its work.

DISTRIBUTION BETWEEN DAMPER AND CONSTRUCTION ELEMENTS



-The distance between dampers and construction elements will be 75mm.

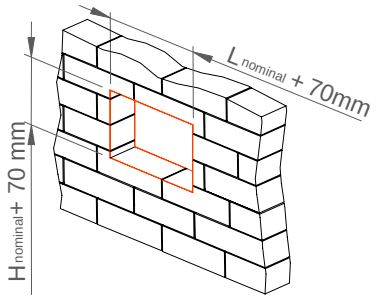
-The distance between dampers shall be 200 mm.

INSTALLATION AND COMMISSIONING

1. DAMPER RECEPTION

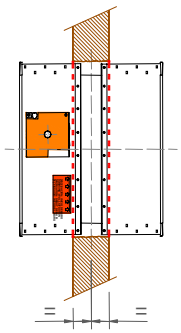
Unpack the damper and visually check that has not been damaged during transport.
Do a test at the damper (open / close) to verify that it works correctly .

2. WALL OPENING



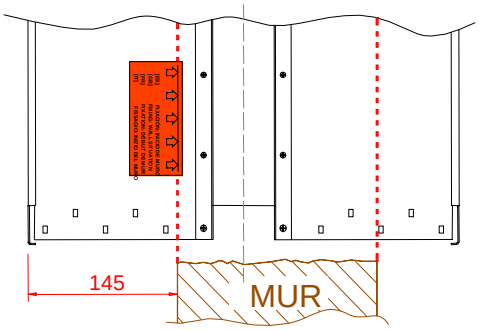
FBK (rectangular dampers)
Size of rectangular opening :
(H nominal + 70 mm) x (L nominal + 70mm)

3. DAMPER POSITION IN THE WALL



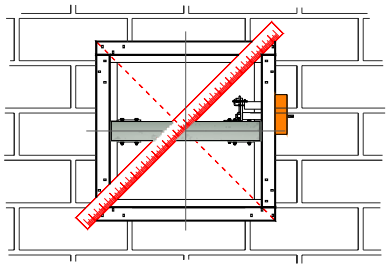
A.WALL (maximum thickness 120 mm)

Place the damper in the middle of the opening (the axis rotation of the blade coincides with half the opening) when the wall thickness is less or equal to 120mm thick.



B. WALL (thickness exceeding 120 mm)

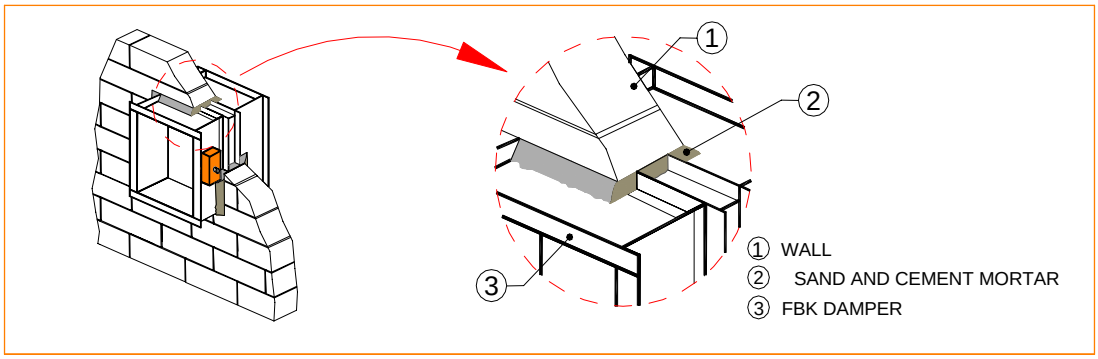
Place damper below the line indicated in the adhesive of wall starting when the thickness of was higher than 120mm.



C. TEST MEASUREMENTS

After placing the damper in the correct position (A or B) we measure the diagonals of the front and make sure they are equal. Now you can lock the damper.

4. DAMPERT-TO-WALL ASSEMBLY



• Set the damper filling with sand and cement mortar the space between the and damper and the opening.
• Check that the damper blade is not trapped against the housing.
• Avoid projecting mortar moving parts of damper (blade, actuator, manual device).
• Once dry the damper-to-wall assembly, open and close the damper to check for proper operation.

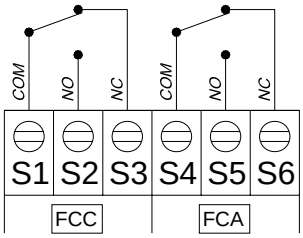
5. CONNECTION TO AIR DUCTS

•Take precautions to ensure that flow of air to get uniformly to the damper and prevent their installation in the presence of vibrations.
• The inner dimension of the air ducts can not be smaller than inside dimension of the damper.
• Observe the alignment of the damper before to connect to the air duct.
• Open and close the damper to check that the blade does not touch the duct.

7. ELECTRICAL CONNECTION

FBK-EIS-…-MA+PIF

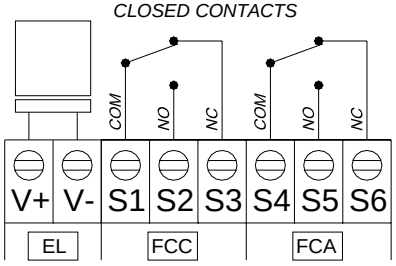
**SWITCHES NORMALLY CLOSED CONTACTS*



FCC Closed damper signal
FCA Open damper signal

FBK-EIS-….-MA-EL+PIF

**SWITCHES NORMALLY CLOSED CONTACTS*



FCC Closed damper signal
FCA Open damper signal
EL Electromagnet

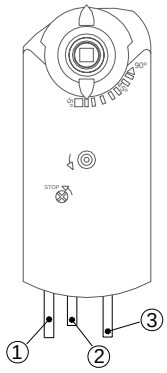
/FBC/ closes by electric current (VCC 24V/ 48V)

/FBA/ closes by electric current (VAC 230V)

/FEC/ closes when current stops (VCC 24V/ 48V)

/FEA/ closes when current stops (VAC 230V)

FBK-EIS-….-M7F24V ò 230V



1. Connection cable for auxiliary switches

MEANING	Nº	COLOR
Switch A Input	S1	grey/ red
Switch A Normally closed	S2	grey/ blue
Switch A Normally open	S3	grey/ pink
Switch B Input	S4	black/ red
Switch B Normally closed	S5	black/ blue
Switch B Normally open	S6	black/ pink

2. Connection cable for thermal fuse

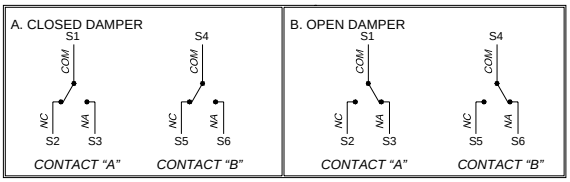
3. Connection cable for power

MOTOR 24V CA/24...48V CC
(SIEMENS GNA 126.1E, GGA 126.1E)

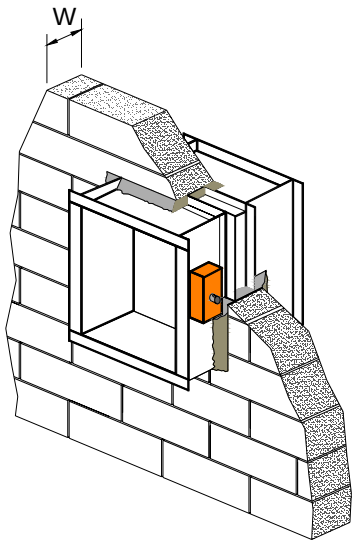
MEANING	Nº	COLOR
Potential system 24VAC/ 24…48VCC	1	red
Zero of the system	2	black

MOTOR 230V CA
(SIEMENS GNA 326.1E, GGA 326.1E)

MEANING	Nº	COLOR
Potentiel 230V	3	brown
Neutral	4	blue



•Fixed switching points at 5 º and 80 º:
•Contact A 5º •Contact B 80º



SPECIFICATION TEXT

Supply and mounting of fire damper classed EIS-120 in accordance to the European standard EN-1366-2 series **FBK-EIS-120-H-M7F230 LxH**. Operated by means of a servomotor at 230v **M7F230**, start and end of course switches. Dampers made from galvanised steel and non-combustible board. Thermal fusible link at 72ºC. An expanding joint together an air-tightness joint, as much prevent the propagation of smoke to high as to low temperature.
Manufacturer **MADEL**.

MADEL®

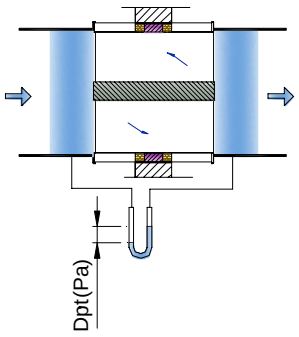
TECHNICAL DATA

FBK-EIS-120

CORRECTION VALUES FOR DPt and Lwa1.
FREE AREA FOR THE AIR PASS (m2),

H \ L		100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500
200	Afree	0,007	0,019	0,03	0,042	0,053	0,065	0,077	0,088	0,1	0,111	0,12	0,13	0,14	0,155	0,166
	Kr	1,070	1,075	0,930	0,920	0,895	0,875	0,865	0,855	0,845	0,830	0,815	0,8	0,785	0,77	0,76
	Kf	-24	-21,75	-17,5	-15,5	-14	-11,75	-10,25	-9,5	-8,75	-8	-7,5	-7,25	-7	-6,75	-6,5
300	Afree	0,013	0,035	0,056	0,078	0,099	0,121	0,143	0,164	0,186	0,207	0,22	0,25	0,26	0,28	0,31
	Kr	0,805	0,790	0,740	0,685	0,645	0,625	0,615	0,6	0,59	0,58	0,57	0,56	0,545	0,53	0,515
	Kf	-18	-17,25	-13	-10,5	-8,75	-7,25	-6	-5	-3,75	-3	-2,75	-2,5	-2,25	-2	-1,75
400	Afree	0,019	0,051	0,082	0,114	0,145	0,177	0,209	0,240	0,270	0,303	0,33	0,367	0,39	0,42	0,45
	Kr	0,735	0,715	0,655	0,595	0,550	0,530	0,525	0,490	0,480	0,470	0,46	0,450	0,445	0,43	0,415
	Kf	-18	-14,5	-10,5	-9	-6,25	-4	-3,25	-2,25	-1	-0,5	-0,45	-0,4	-0,35	-0,325	-0,3
500	Afree	0,025	0,067	0,108	0,150	0,191	0,233	0,275	0,316	0,358	0,399	0,44	0,483	0,518	0,558	0,598
	Kr	0,675	0,670	0,585	0,520	0,485	0,450	0,440	0,415	0,410	0,4	0,39	0,38	0,375	0,36	0,345
	Kf	-16	-11,75	-8,5	-6	-3,5	-2	-0,75	-0,25	0,75	2,5	2,25	2	1,75	1,5	1,25
600	Afree	0,031	0,083	0,134	0,186	0,237	0,289	0,341	0,392	0,444	0,495	0,54	0,599	0,643	0,693	0,742
	Kr	0,655	0,630	0,535	0,470	0,425	0,4	0,375	0,365	0,360	0,345	0,33	0,32	0,302	0,029	0,27
	Kf	-14,75	-10,25	-6,5	-3,5	-2,25	-0,25	1	2	3	4	4	4	4	4	4
700	Afree	0,037	0,099	0,16	0,22	0,28	0,34	0,4	0,46	0,53	0,59	0,65	0,715	0,767	0,82	0,88
	Kr	0,635	0,58	0,5	0,44	0,4	0,37	0,35	0,33	0,32	0,31	0,3	0,28	0,265	0,25	0,24
	Kf	-14,75	-10,25	-6,5	-3,5	-2,25	-0,25	1	2	3	4	4	4	4	4	4
800	Afree	0,043	0,115	0,186	0,25	0,32	0,4	0,47	0,54	0,61	0,68	0,75	0,83	0,88	0,95	1,02
	Kr	0,605	0,56	0,49	0,42	0,38	0,35	0,32	0,31	0,3	0,29	0,27	0,26	0,245	0,23	0,22
	Kf	-14,75	-10,25	-6,5	-3,5	-2,25	-0,25	1	2	3	4	4	4	4	4	4

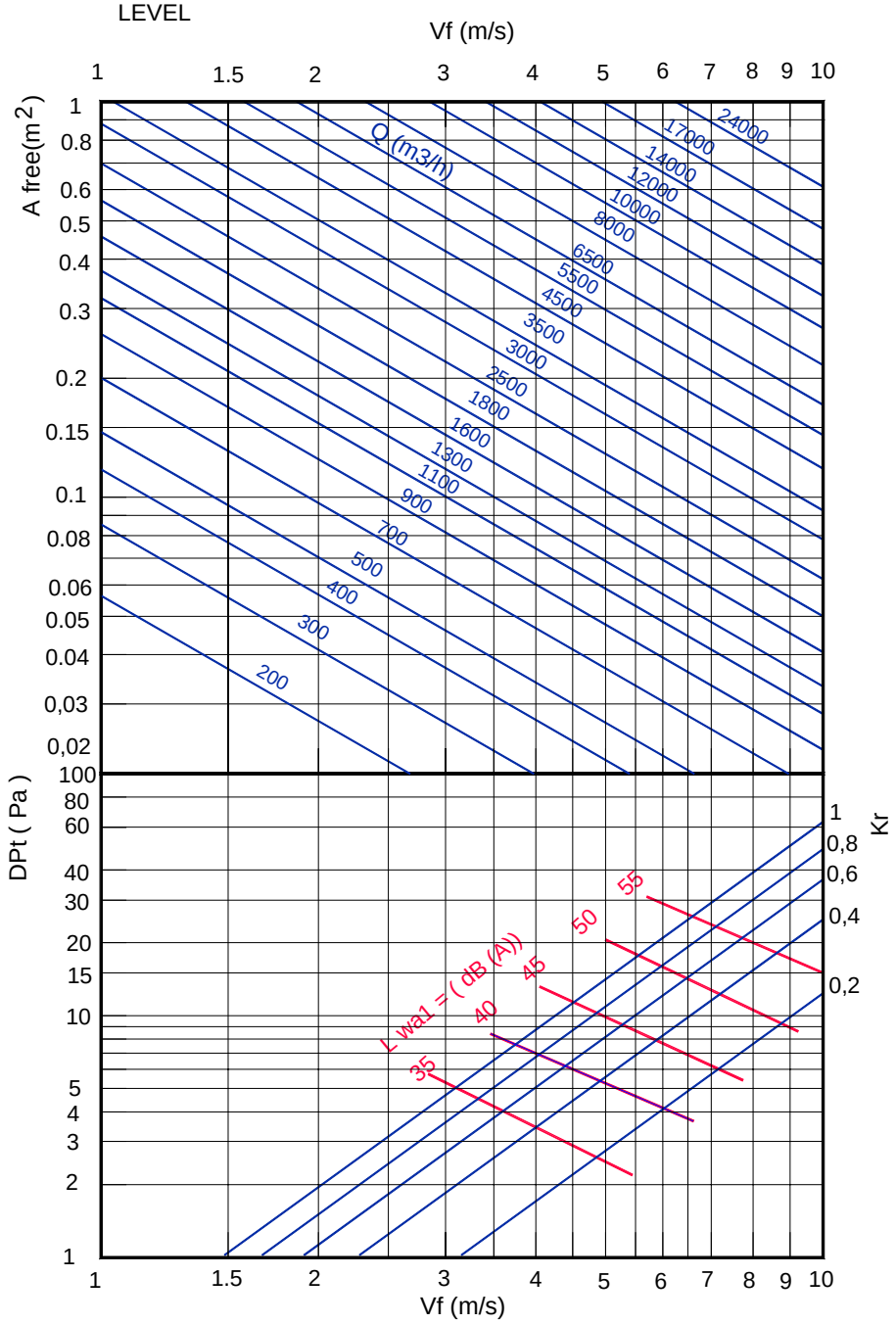
Lwa = Lwa1 + Kf



TECHNICAL DATA

FBK-EIS-120

FREE VELOCITY, PRESSURE DROP AND SOUND POWER LEVEL



LGAI

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Fecha: 28/02/2011 Páginas (incluida esta): 1

AVANCE DE RESULTADOS

Peticionario: MADEL Air Technical Diffusion, S.A.
Avda Ildefons Cerdà, s/n P.O. Box nº 5
E-08540 Centelles (Barcelona).

Norma de ensayo: UNE EN 1366-2:2000
Referencia expediente nº: 10/101611-2699
Fecha ensayo: 16/11/2010
Material ensayado:

Compuerta cortafuegos rectabgular con sección nominal de 1000 x 600 mm y lama de 50 mm de espesor. El ensayo se realizó con la compuerta empotrada en un obra soporte vertical.

Fabricante: MADEL Air Technical Difusión, S.A
Referencia: "FBK-EIS-120".

Clasificación según UNE EN 13501-3:2007:

EI 120 (ho i ↔ o) S

Atentamente,

Xavier Vizcaya
Técnico de Resistencia al Fuego
LGAI Technological Center, S.A.

Este documento es a nivel meramente informativo.
Los documentos válidos son los informes de ensayo completos Applus – LGAI con números de expediente 10/101611-2699 Partes 1 y 2.
Los resultados se refieren única y exclusivamente a las muestras ensayadas y en el momento y las condiciones indicadas.
Los resultados aquí mostrados son provisionales y están sujetas a posibles cambios en el informe definitivo.