



FOK-EIS-180 Fire dampers CE

“ The fire dampers **FOK-EIS-180** 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.

“ FOK-EIS-180 fire dampers are according with the following standards:

European Test Standard, EN 1366-2

*(Fire resistance tests for service installations .
Part 2: Fire dampers)*

European Classification Standard, EN 13501-3

*(Fire classification of construction products and building elements .
Part 3: Classification using data from fire resistance tests on products and elements used in building service installations:
fire resisting ducts and fire dampers,*

European Standard for CE Marking, EN 15650

(Ventilation for buildings. Fire dampers)

European Test Standard, EN 60529:1991

(Degrees of protection provided by enclosures (IP Code))

European Test Standard EN 1751

*(Ventilation for buildings . Air terminal devices .
Aerodynamic testing of dampers and valves)*

International Test Standard ISO 10294-4

*(Fire resistance tests . Fire dampers for air distribution systems
Part 4: Test of thermal release mechanism)*

“ The casing is made of galvanised steel, and joined by clinching system (cold forming the material).

“ It incorporates a solid perimeter frame to facilitate the sealing between the fire damper and support construction.

“ The housing is made from galvanized steel. It has a symmetrical design that allows wall mounting regardless of air flow.

“ 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.

“ 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.

DECLARATION OF PERFORMANCES

DECLARATION OF PERFORMANCE (N° 0370-CPR-1392)					V01/19
1. Product and identification name:					<i>Fire damper %OK-EIS-180+</i>
2. Name and address of manufacturer:					Madel Air Technical Diffusion S.A. C/ Pont de les Bruixes P-5, P.I. La Gavarra, 08540 CENTELLES (Barcelona)
3. Uses to:					To prevent fire and reduce smoke spreading from one fire compartment to another through the air ductwork system which may penetrate fire separating vertical compartments, according to Standard EN 15650:2010 (annex ZA.1).
4. Assessment of conformity system:					System 1, according to Construction Products Regulation n° 305/2011
5. Certification body:					<p>APPLUS - 0370 Performed tasks: - Determination of the product type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product; - Initial inspection of the manufacturing plant and of factory production control; - Continuous surveillance, assessment and evaluation of factory production control.</p> <p>System 1 Certification number: 0370 . CPR . 1392 Test report: 09/100022-20, 14/8629-947, 17/12815-16, 18/17552-1207 18/12815-700, 18/12815-2189</p>
6. Performances (EN 15650 :2010):					
<i>Essential characteristics</i>					<i>Performances</i>
<i>Dimensions</i>	<i>Type</i>	<i>Wall</i>	<i>Type of installation</i>	<i>Mechanism orientation</i>	<i>Class</i>
200 x 200 a 1500 x 800	Rigid wall	Brick wall/ Reinforced concrete - 150 mm	Built-in	0-180°	EI 180 (v _e i o) S (500Pa)
	Rigid floor	Hormigón armado - 200 mm	Built-in	0-360°	EI 180 (v _e i o) S (300Pa)
Nominal activation conditions/ sensitivity:					
Sensing element load bearing capacity					Approved
Sensing element response temperature					
Response delay according to EN 1366-2:					
Closure time					Approved
Operational reliability according to EN 1366-2					
Cycling (opening and closing) on fire test.					50 cycles
Cycling (opening and closing) according to Standard for CE Marking					ð - /MA/ - 300 cycles, ð - /MAF/ - 300 cycles, ð - /MFSð V/ - 10.200 cycles, ð - /MFBð V/ - 10.200 cycles
Durability of response delay according to EN1366-2:					
Sensing element response temperature and load bearing capacity					Approved
Durability of operational reliability according to 15650:					
Opening and Closing cycle					Approved
7. The performances of the product identified in point 1, are in line with the declared performance in point 6. This declaration of performance is issued under the responsibility of the manufacturer listed in point 2. Signed for and on behalf of the manufacturer:					
					
Joan Arcarons Alibés (Technical Director)			Centelles, 10/01/19		

OPERATING DEVICES

Å -/MA/ Manual resetting damper. Automatic shooting by means of a thermal fuse calibrated at 72 °C.

Standard:

- Thermal fuse 72°C
- Manual test button
- Manual resetting
- Position indicator
- IP42 protection

Optional

Å - /PIF/ Closed switches device

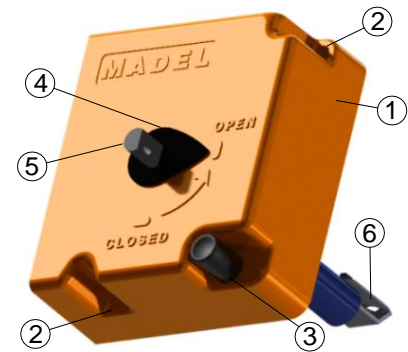
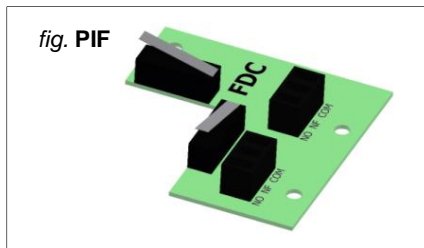


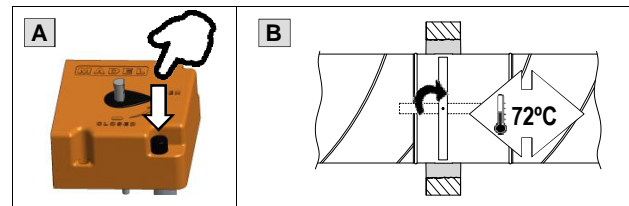
fig. MA

1. Plastic command cover
2. Screws for cover attachment
3. Manual test button
4. Position indicator
5. Manual resetting axle.
6. Thermal fuse 72°C

		L	
		200Å 1000	1050Å 1500
H	200Å 550	- /MA/	- /MA/
	600Å 800	- /MA/	-

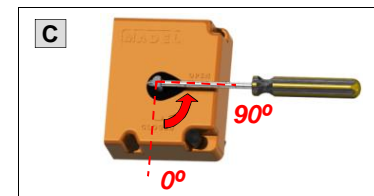
Close (unlocking)

- ~ **Manual:** Pressing the unlocking button (A)
- ~ **Automatic:** The fusible link reaches 72°C (B)
- ~ **Remote:** -

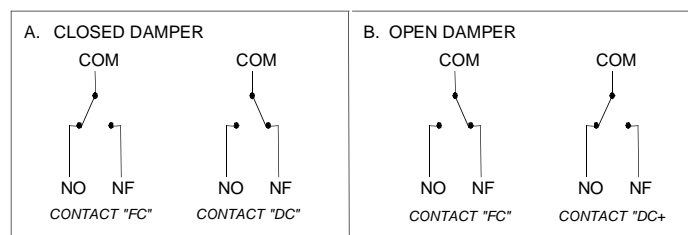
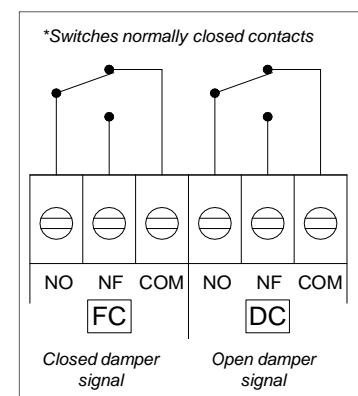
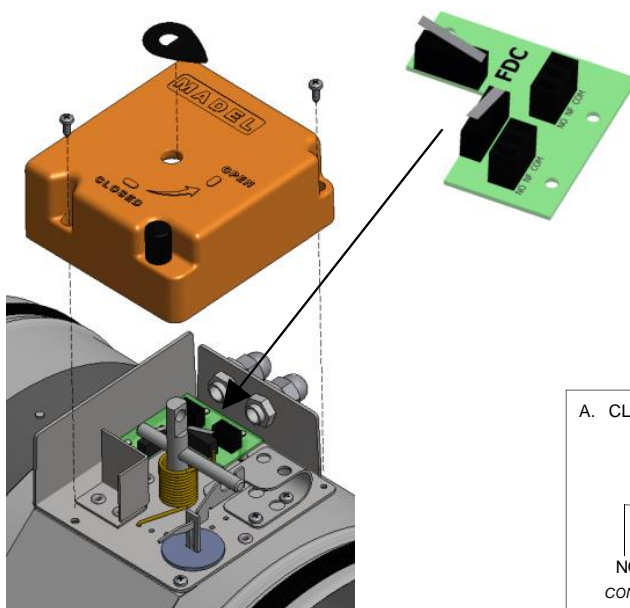


Open (resetting)

- ~ **Manual:** Turning counterclockwise 90° the manual resetting axle using a tool with a smaller diameter than 8mm (C)
- ~ **Automatic:** -



Electrical connection



OPERATING DEVICES

Å - /MFSÅ / 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. .

Standard:

- Internal and external thermoelectrical fuse 72°C
- Automatic resetting
- Automatic closing by fuse 72°C
- Remote closing by interruption of power supply
- Manual test switch
- LED status fusible indicator
- Position damper indicator
- Closed switches
- IP54 Protection

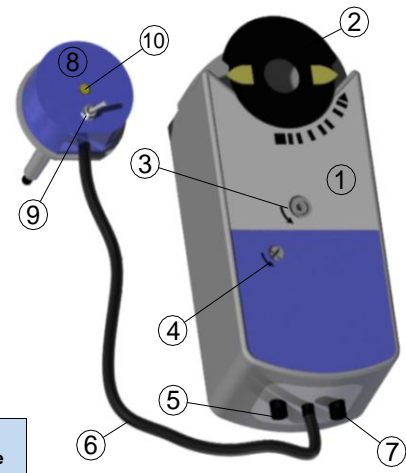


fig. MFSÅ V

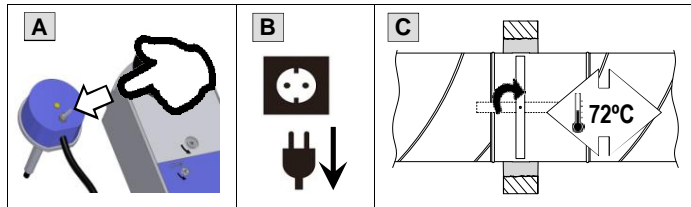
1. Actuator
2. Position damper indicator
3. Manual resetting
4. Manual lock
5. Plug closed switches cable
6. Thermoelectrical fuse cable
7. Power supply cable
8. Thermoelectrical fuse 72°C
9. Manual test switch
10. LED status fusible indicator

Reference a/size	Torque	Voltage	Consumption	Time Open/ Close
MFS24V	4 Nm	CA 24V, CC 24/48V	3,5W (running)/ 2W (stationary)	90s/ 15s
MFS230V	4 Nm	CA 230V	4,5W (running)/ 3,5W (stationary)	90s/ 15s
MFS24V	7 Nm	CA 24V, CC 24/48V	3,5W (running)/ 2W (stationary)	90s/ 15s
MFS230V	7 Nm	CA 230V	4,5W (running)/ 3,5W (stationary)	90s/ 15s
MFS24V	18 Nm	CA 24V, CC 24/48V	5W (running)/ 4W (stationary)	90s/ 15s
MFS230V	18 Nm	CA 230V	6W (running)/ 4W (stationary)	90s/ 15s

		L																											
		200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	
H	200																												
	250																												
	300																												
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	400																												
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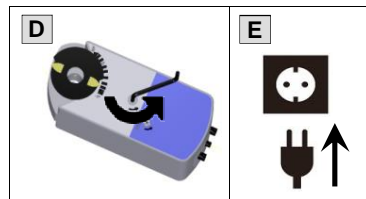
Close (unlocking)

- ~ **Manual:** Pressing the manual test switch (A)
- ~ **Remote:** By interrupting the power supply (B)
- ~ **Automatic:** The fusible link reaches 72°C (C)



Open (resetting)

- ~ **Manual:** Turning counterclockwise the manual resetting with allen key (D)
To keep the blade open, lock by manual lock
- ~ **Automatic:** By supplying the power supply (E)

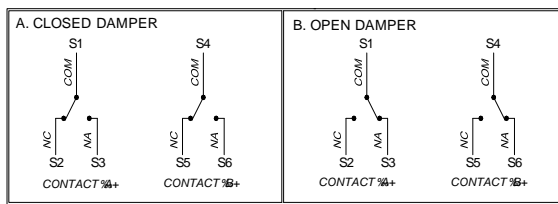


Electrical connection

AUXILIARY SWITCHES CABLE		
MEANING	Nº	COLOR
Switch "A" input	S1	grey/ red
Switch "A" normally-closed contact	S2	grey/ blue
Switch "A" normally-open contact	S3	grey/ pink
Switch "B" input	S4	black/ red
Switch "B" normally-closed contact	S5	black/ blue
Switch "B" normally-open contact	S6	black/ pink

ACTUATOR 230VCA		
MEANING	Nº	COLOR
Line 230VCA	3	Brown
Neutral	4	Blue

ACTUATOR 24VCA/24Å 48VCC		
MEANING	Nº	COLOR
System potential 24VCA/ 24Å 48VCC	1	red
System neutral	2	black



~ Fixed switching points at 5° and 80°
 ~ Fixed switching point at 5° to contact %A+
 ~ Fixed switching point at 80° to contact %B+

OPERATING DEVICES

Å - /MFBÅ / 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. .

Standard:

- Internal and external thermoelectrical fuse 72°C
- Automatic resetting
- Automatic closing by fuse 72°C
- Remote closing by interruption of power supply
- Manual test switch
- LED status fusible indicator
- Position damper indicator
- Closed switches
- IP54 Protection

1. Actuator
2. Position damper indicator
3. Manual resetting
4. Manual lock
5. Plug closed switches cable
6. Thermoelectrical fuse cable
7. Power supply cable
8. Thermoelectrical fuse 72°C
9. Manual test button
10. LED status fusible indicator

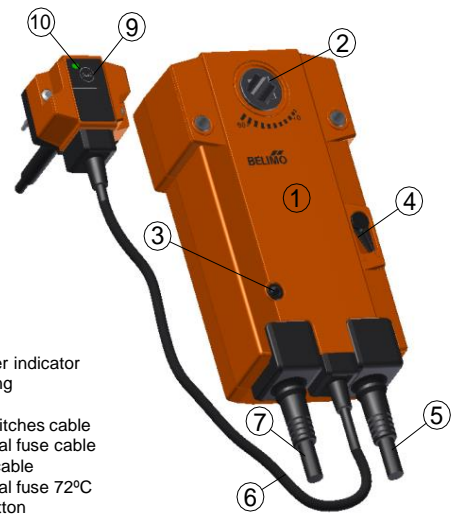


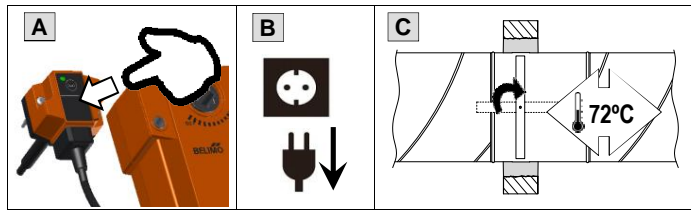
fig. MFBÅ V

Reference a/size	Torque	Voltage	Consumption	Time Open/ Close
MFB24V	9 Nm	CA 24V/ CC 24/48V	4W (running)/ 1,4W (stationary)	60s/ 20s
MFB230V	9 Nm	CA 230V	4,5W (running)/ 3,5W (stationary)	60s/ 20s
MFB24V	18 Nm	CA 24V/ CC 24/48V	7W (running)/ 2W (stationary)	120s/ 16s
MFB230V	18 Nm	CA 230V	8,5W (running)/ 3W (stationary)	120s/ 16s

		L	
		200Å 1250	1300Å 1500
H	200Å 500		
	550Å 800		

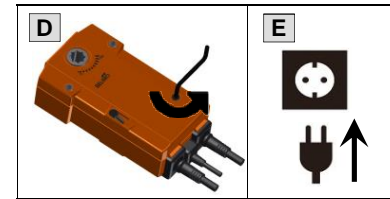
Close (unlocking)

- ~ **Manual:** Pressing the manual test switch (A)
- ~ **Remote:** By interrupting the power supply (B)
- ~ **Automatic:** The fusible link reaches 72°C (C)



Open (resetting)

- ~ **Manual:** Turning counterclockwise the manual resetting with allen key (D)
To keep the blade open, lock by manual lock
- ~ **Automatic:** By supplying the power supply (E)

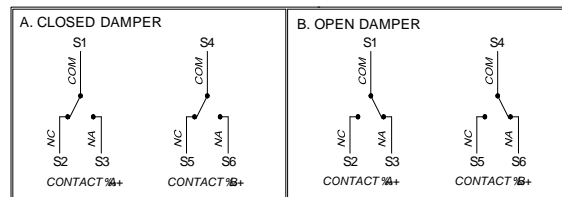


Electrical connection

MEANING	N°	BFL/ BFN	BF
Switch "A" input	S1	Violet	White
Switch "A" normally-closed contact	S2	Red	White
Switch "A" normally-open contact	S3	White	White
Switch "B" input	S4	Orange	White
Switch "B" normally-closed contact	S5	Pink	White
Switch "B" normally-open contact	S6	Grey	White

ACTUATOR 24VCA/24Å 48VCC		
MEANING	N°	COLOR
Neutral	1	Black
System potential 24VCA/ 24Å 48VCC	2	Red

ACTUATOR 230VCA		
MEANING	N°	COLOR
Neutral	1	Blue
Line 230VCA	2	Brown



~ Fixed switching points at 5° and 80°

~ Fixed switching point at 5° to contact VA+

~ Fixed switching point at 80° to contact VB+

GENERAL POINTS

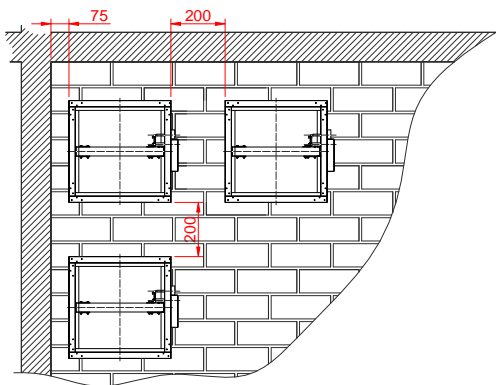
STORAGE AND HANDLING

- ~ Avoid to store outdoor.
- ~ Avoid the contact with liquids.
- ~ Avoid impacts.
- ~ Not to put loads on the blade.
- ~ Not to use the fire damper for a different purpose to which it's been designed.
- ~ Use the operating device for open/ close the damper, never through the blade.

SUPPORTING CONSTRUCTION AND INSTALLATION

- ~ The MADEL fire dampers are classified for the supporting constructions described in this manual or similar supporting constructions with a same or superior fire resistance (more thickness/ density or number of boards (*according to EN 1366-2*)).
- ~ Any variation in supporting construction as described in the previous point, different sealing or type of installation regarding this document, the fire damper will not comply the classification.
- ~ Install the fire damper with the blade closed and avoid excessive pressures in its casing.
- ~ Avoid to project materials to the interior of the tunnel.
- ~ Avoid vibrations in the installation.
- ~ Check the opening and closing after the installation.
- ~ The inner dimension of the air ducts can not be smaller than inside dimension of the damper.

MINIMAL DISTANCES (a/ European Standard EN 1366-2)

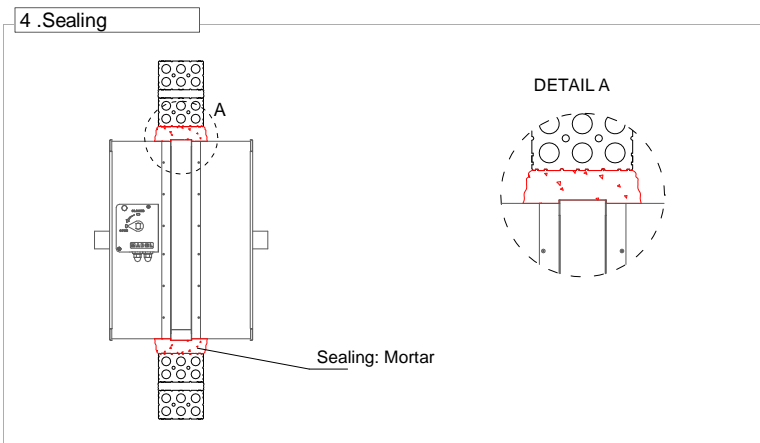
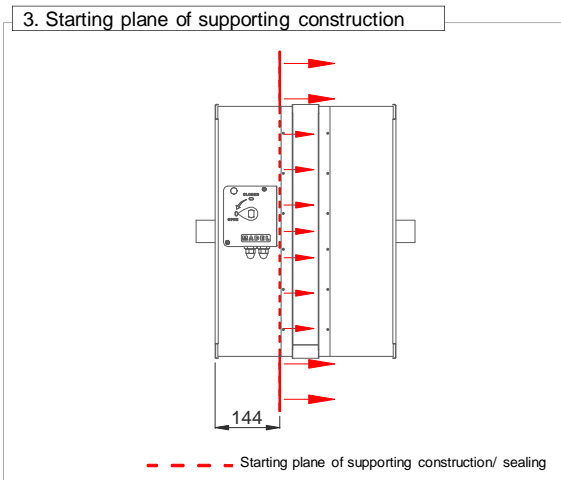
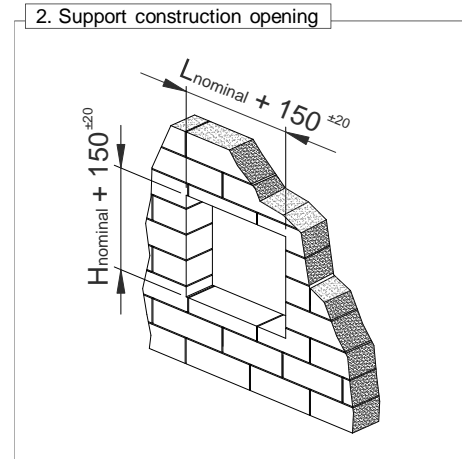
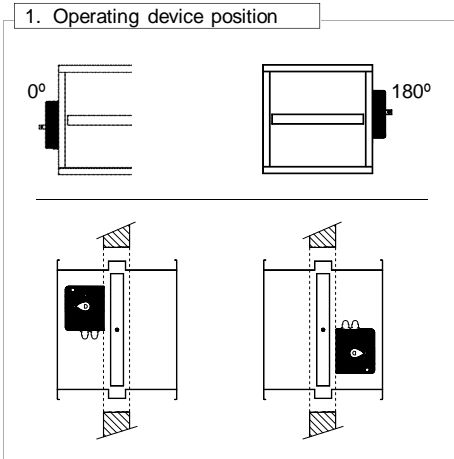


- ~ The minimum distance between fire dampers and construction elements will be 75mm.
- ~ The minimum distance between fire dampers will be 200mm.

INSTALLATION

- RIGID WALL

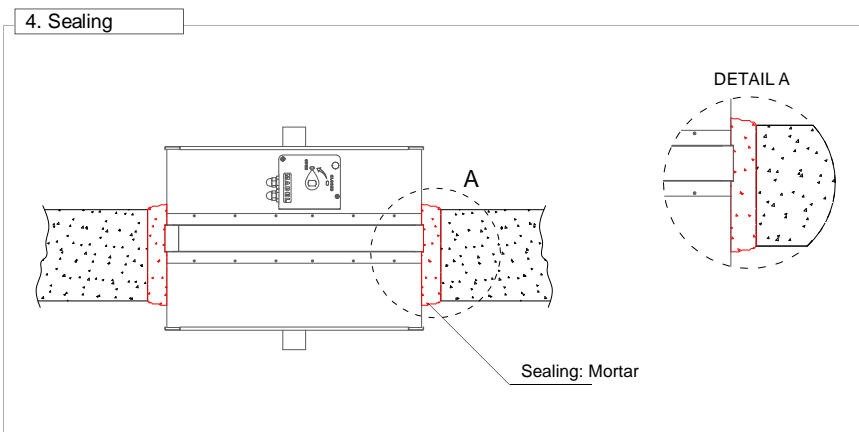
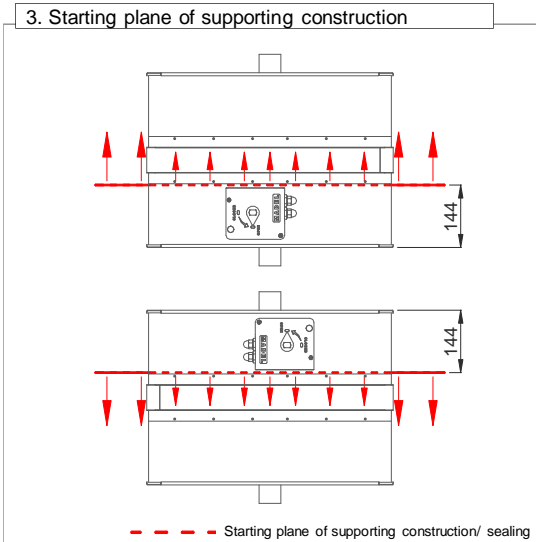
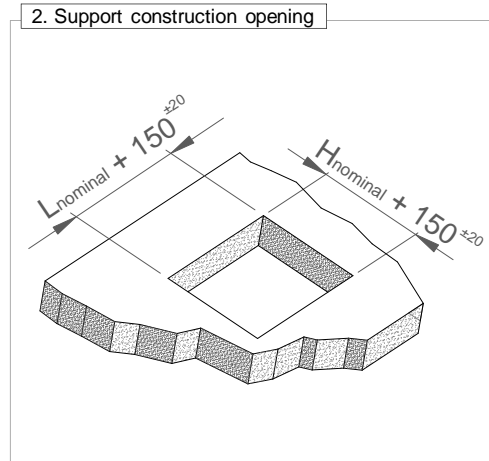
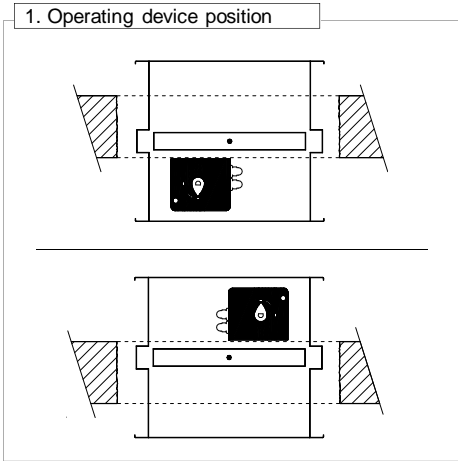
Dimensions	Supporting construction		Sealing	Classification
200 x 200 to 1000 x 600	Rigid wall	Brick wall ~ 110mm	Mortar	EI180 (v _e i o) S (300Pa)
200 x 200 to 1000 x 600	Rigid wall	Reinforced concrete ~ 110mm	Mortar	EI180 (v _e i o) S (300Pa)
>1000 x 600 to 1500 x 800	Rigid wall	Brick wall ~ 150mm	Mortar	EI180 (v _e i o) S (500Pa)
>1000 x 600 to 1500 x 800	Rigid wall	Reinforced concrete ~ 150mm	Mortar	EI180 (v _e i o) S (500Pa)



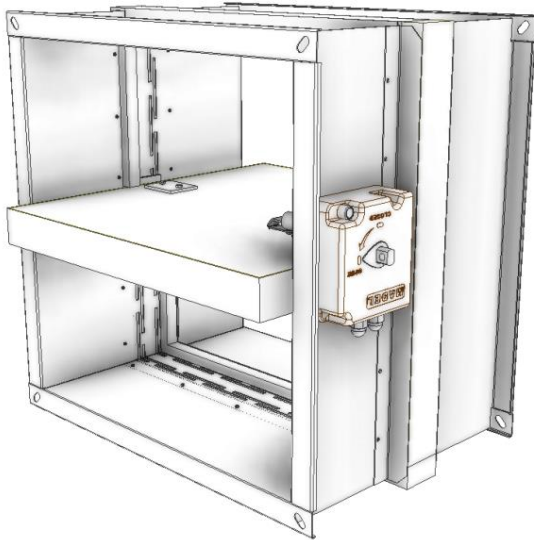
INSTALLATION

- RIGID FLOOR

Dimensions	Supporting construction		Sealing	Classification
200 x 200 to 1500 x 800	Rigid floor	Reinforced concrete \geq 200mm	Mortar	EI180 (h _o i o) S (300Pa)



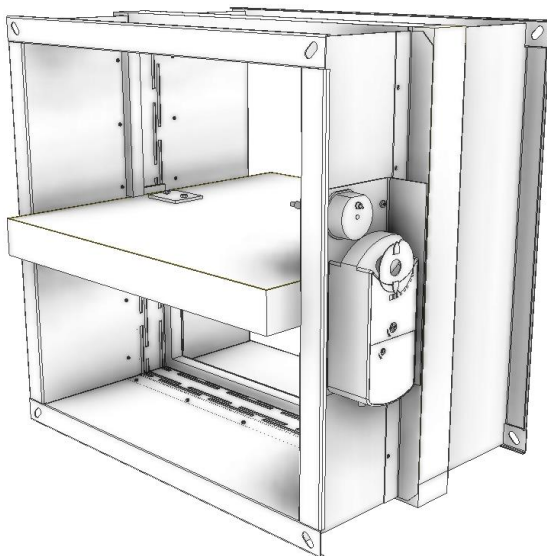
SPECIFICATION TEXT



(Manual)

Supply and mounting of rectangular fire damper classed EIS-180 in accordance to the European Standard *EN 13501-3* and certified CE according to *EN 15650*, series **FOK-EIS-180-MA dim. 500 x 300** Operated by means of a manual operating device. Built in galvanized steel and refractory material. Thermal fusible link at 72°C. An expanding joint together an air-tightness joint, as much prevent the propagation of smoke to high as to low temperature.

Manufacturer **MADEL**.



(Motorized)

Supply and mounting of rectangular fire damper classed EIS-180 in accordance to the European Standard *EN 13501-3* and certified CE according to *EN 15650*, series **FOK-EIS-180-MFS230V dim. 500 x 300** Operated by means of a motorized operating device. Built in galvanized steel and refractory material. Thermoelectric fusible at 72°C. An expanding joint together an air-tightness joint, as much prevent the propagation of smoke to high as to low temperature.

Manufacturer **MADEL**.

CODIFICATION

FOK-EIS-180 - /CR/ - H - MA - /PIF/ dim. L x H

1

2

3

4

5

6

1. Product

2. Operating device

- (90° angled frame) *(by default)*
- /CR/ (50mm straight flange)

3. Orientation

- **H** (Blade axe parallel to the smaller size) *(by default)*
- **V** (Blade axe parallel to the higher size)

4. Operating device

- **MA** (Manual)
- **MFS** (Siemens actuator)
- **MFB** (Belimo actuator)

5. Accessories

- /PIF/ (Open-closed switches device)

6. Dimensions (mm)

- **L** (Length of the base)
- **H** (Height of the operating device side)

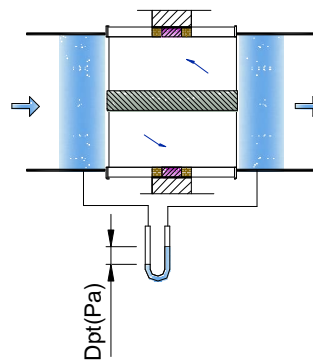
TECHNICAL DATA

FOK-EIS-180

FREE AREA FOR THE AIR PASS (m²) / CORRECTION VALUES FOR DPt, Lwa

L H		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
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

FOK-EIS-180

FREE VELOCITY, PRESSURE DROP AND SOUND POWER LEVEL

