MADEL®

CE
EN 15650:2010

FMC-EIS-120 Fire dampers CE

ÅThe fire dampers **FMC-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.

ÅFMC-EIS-120 fire dampers are according with the following standards:

European Test Standard, EN 1366-2
(Fire resistance tests for service installations ï Part 2: Fire dampers)

European Classification Standard, EN 13501-3
(Fire classification of construction products and building elements ï 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 ï Air terminal devices ï Aerodynamic testing of dampers and valves)

International Test Standard ISO 10294-4
(Fire resistance tests ï Fire dampers for air distribution systems Part 4: Test of thermal release mechanism)

French Standard, NF S 61-937 (part 1/ part 5)
(Fire Safety Systems - Operated safety devices)

ÅThe casing is made of galvanised steel, and joined by welding.

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

ÅThe blade is made of ceramic material resistant to high temperatures and abrasion.

ÅThese dampers meet the conditions required for the symbol (S) to cold smoke seal.

ÅThe airtightness to the passage of cold smoke is achieved through a joint between the perimeter of the housing and the blade. This design, together with the low thickness of the blade, allow to minimize the pressure loss..

ÅFor 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.

ÅA rubber sealing ring at both ends of the casing ensures an airtightness between the damper and the ducts.

ÅThe 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 (Nº 0370-CPR-2178) **V10/18**

1. Product and identification name:	*Fire damper ñFMC-EIS-120ò*
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 nº 305/2011
5. Certification body:	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. System 1 Certification number: 0370 ï CPR ï 2178 Test report: 15/10323-820, 15/10323-819, 15/10702-2171, 16/12815-1583, 18/17552-1209, 15/10702-2218

6. Performances (EN 15650 :2010):

Essential characteristics					***Performances***
Dimensions	***Type***	***Wall***	***Type of installation***	***Mechanism orientation***	***Class***
Ø 100 - 315 mm	Rigid wall	Reinforced concrete wall Ó110 mm	Built-in	0-360º	EI 120 (v_e iź o) S (500Pa)
	Rigid wall	Brick wall Ó110 mm	Built-in	0-360º	EI 120 (v_e iź o) S (500Pa)
	Rigid floor	Reinforced concrete floor Ó150 mm	Built-in	0-360º	EI 120 (h_o iź o) S (500Pa)
	Flexible wall	Plasterboard type F (s/ EN 520) 108 (15x2 + 48 (LM 40Kg/m^3) + 15x2)	Built-in	0-360º	EI 90 (v_e iź o) S (500Pa)
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					é - /MA/ - 300 cycles, é -/MAF/ - 300 cycles, é - /MFSé V/ - 10.200 cycles, é - /MFBé 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 **Centelles, 22/10/18**
(Technical Director)

CLASSIFICATION

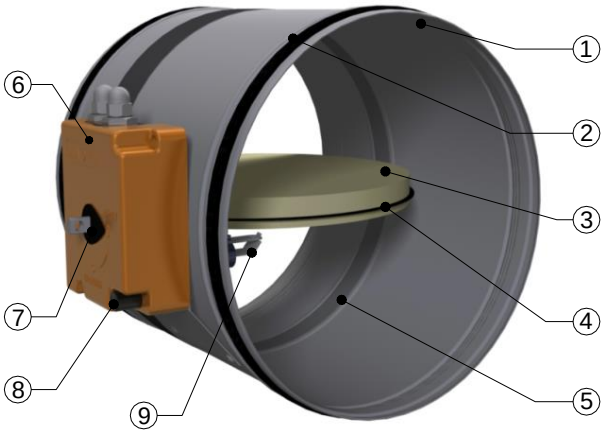
FMC-EIS-120 Circular damper with direct connection to the ducts.

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

é -MFé Damper operated by an actuator with switch off device at 24 or 230V.

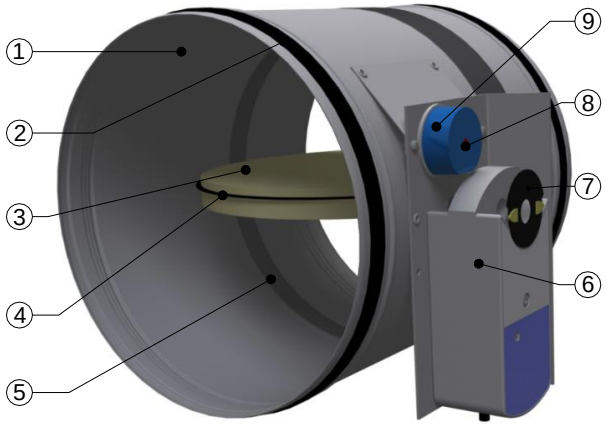
PARTS

FMC-EIS-120-MA



1. Casing
2. Rubber sealing ring
3. Blade
4. Airtightness seal
5. Cold bridging
6. Manual device /MA/
7. Position indicator
8. Test button
9. Thermal fuse 72ºC

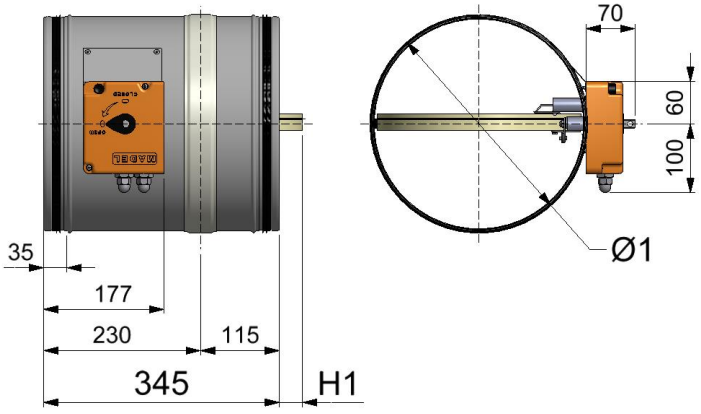
FMC-EIS-120-MFé



1. Casing
2. Rubber sealing ring
3. Blade
4. Airtightness seal
5. Cold bridging
6. Actuator /MFé V/
7. Position indicator
8. Test switch
9. Thermoelectrical fuse 72ºC

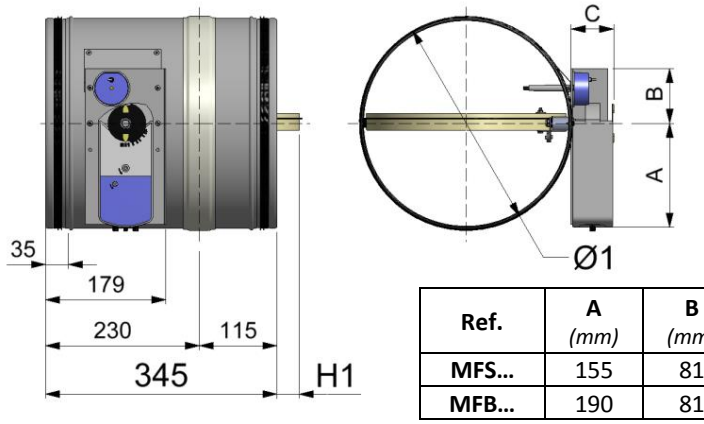
DIMENSIONS

FMC-EIS-120-MA



Dn (mm)	Ø (mm)	H1 (mm)
100	98	-
125	123	-
150	148	-
160	158	-
200	198	-
250	248	6
300	298	31
315	313	38

FMC-EIS-120-MFé



Ref.	A (mm)	B (mm)	C (mm)
MFS...	155	81	64
MFB...	190	81	57

Dn (mm)	Ø (mm)	H1 (mm)
100	98	-
125	123	-
150	148	-
160	158	-
200	198	-
250	248	6
300	298	31
315	313	38

OPERATING DEVICES

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

Standard:

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

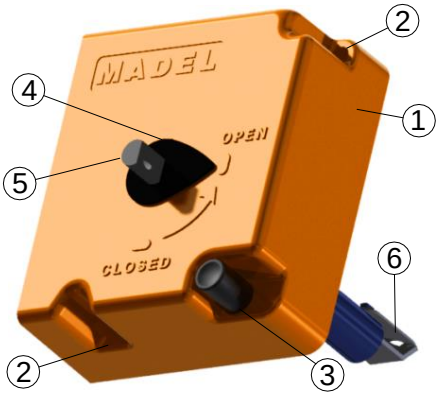


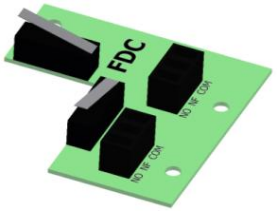
fig. **MA**

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

Optional

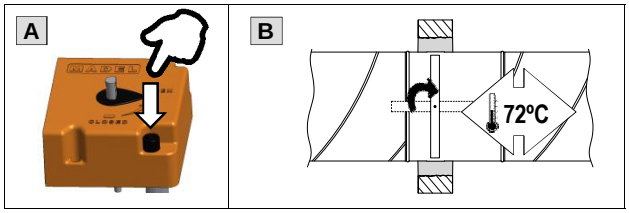
é - /PIF/ Closed switches device

fig. **PIF**



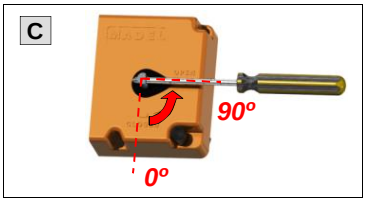
Close (unlocking)

Å **Manual:** Pressing the unlocking button *(A)*
Å **Automatic:** The fusible link reaches 72ºC *(B)*
Å **Remote:** -

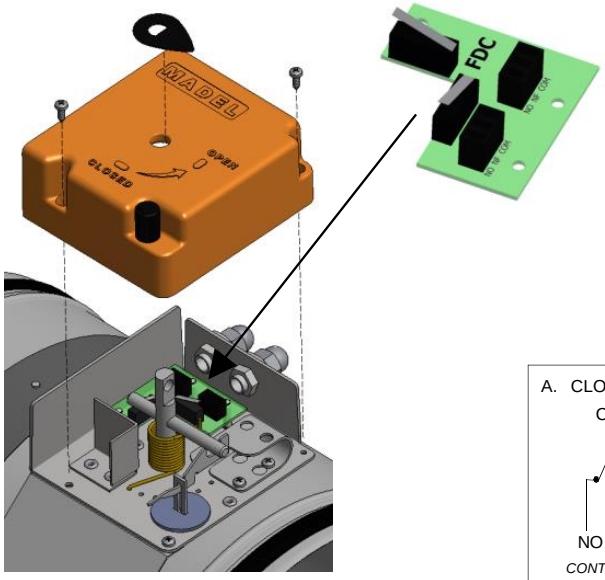


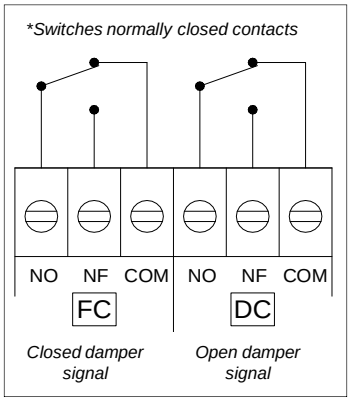
Open (resetting)

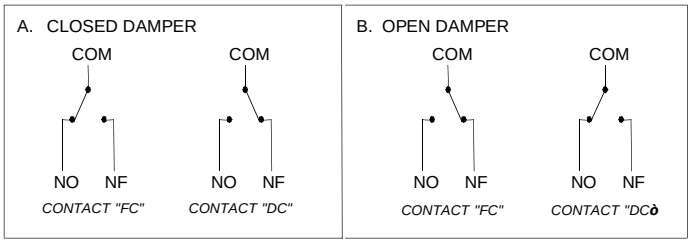
Å **Manual:** Turning counterclockwise 90º the manual resetting axe using a tool with a smaller diameter than 8mm *(C)*
Å **Automatic:** -



Electrical connection







OPERATING DEVICES

é - /MFSé / 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. .

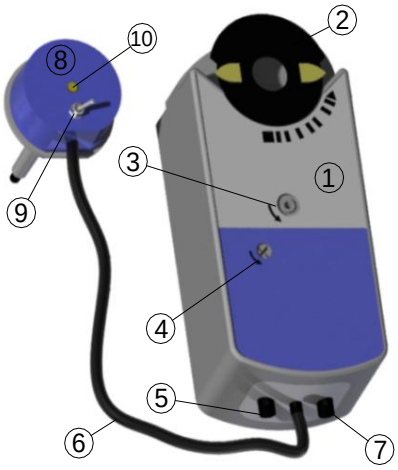


fig. **MFSé V**

Standard:

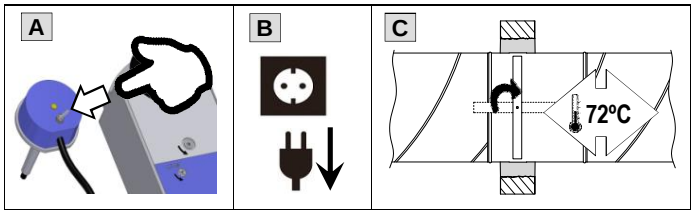
- Internal and external thermoelectrical fuse 72ºC
- Automatic resetting
- Automatic closing by fuse 72ºC
- Remote closing by interruption of power supply
- Manual test switch
- LED status fusible indicator
- Position damper indicator
- Closed switches
- IP54 Protection

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

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 72ºC
9. Manual test switch
10. LED status fusible indicator

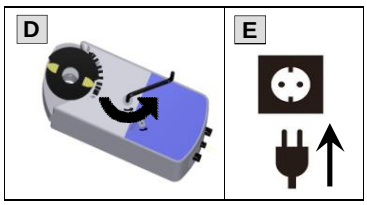
Close (unlocking)

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



Open (resetting)

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

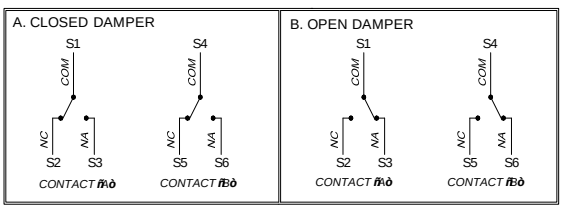


Electrical connection

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/24é 48VCC			
MEANING	**Nº**	**COLOR**	
System potential 24VCA/ 24é 48VCC	1	red	
System neutral	2	black	



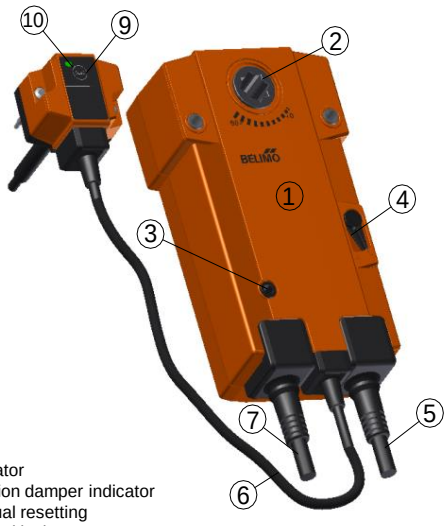
ÅFixed switching points at 5º and 80º
ÅÅFixed switching point at 5º to contact ñAò
ÅÅFixed switching point at 80º to contact ñBò

OPERATING DEVICES

é - /MFBé / 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 72ºC
- Automatic resetting
- Automatic closing by fuse 72ºC
- Remote closing by interruption of power supply
- Manual test switch
- LED status fusible indicator
- Position damper indicator
- Closed switches
- IP54 Protection



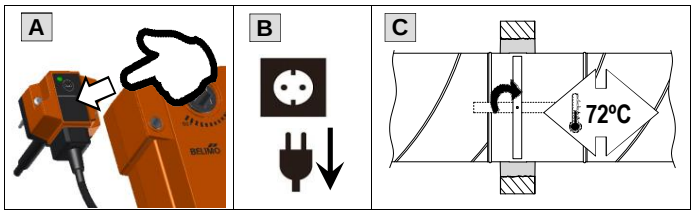
1. Actuator
2. Position damper indicator
3. Manual resetting
4. Manual lock
5. Plug closed switches cable
6. Thermoelectrical fuse cable
7. Power supply cable
8. Thermoelectrical fuse 72ºC
9. Manual test button
10. LED status fusible indicator

fig. **MFBé 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

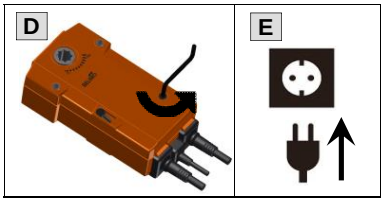
Close (unlocking)

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



Open (resetting)

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

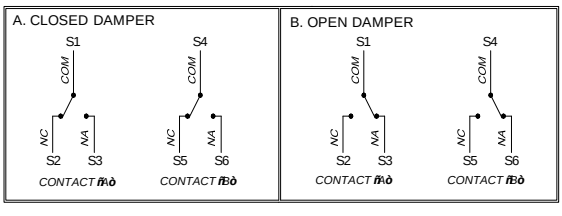


Electrical connection

MEANING	Nº	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/24é 48VCC			
MEANING	**Nº**	**COLOR**	
Neutral	1	Black	
System potential 24VCA/ 24é 48VCC	2	Red	

ACTUATOR 230VCA			
MEANING	**Nº**	**COLOR**	
Neutral	1	Blue	
Line 230VCA	2	Brown	



ÅFixed switching points at 5º and 80º
ÅÅFixed switching point at 5º to contact ñAò
ÅÅFixed switching point at 80º to contact ñBò

GENERAL POINTS

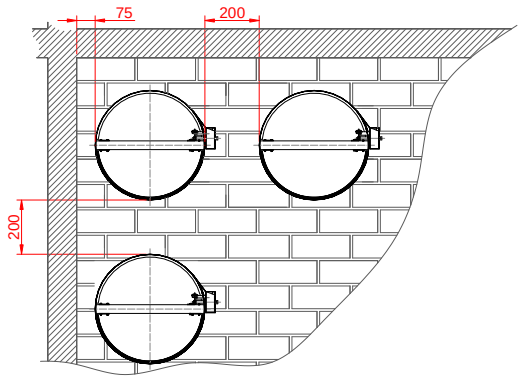
STORAGE AND HANDLING

- 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 has 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.

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



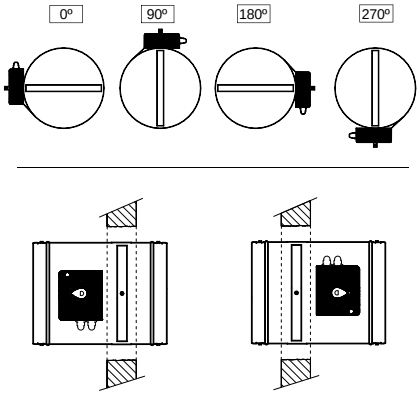
- The minimum distance between fire dampers and construction elements will be 75mm.
- The minimum distance between fire dampers will be 200mm.

INSTALLATION

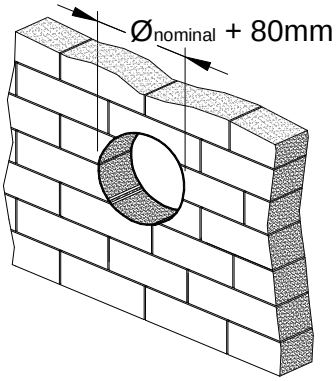
- RIGID WALL

Dimensions	Supporting construction		Sealing	Classification
Ø100 to Ø315	Rigid wall	Brick wall Ó110mm	Mortar	EI 120 (V_e iź o) S (500Pa)
Ø100 to Ø315	Rigid wall	Reinforced concrete Ó110mm	Mortar	EI 120 (V_e iź o) S (500Pa)

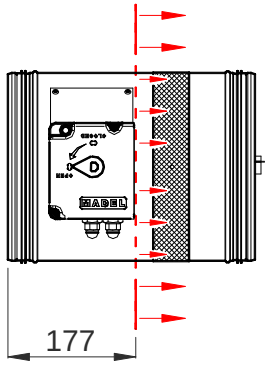
1. Operating device position



2. Support construction opening

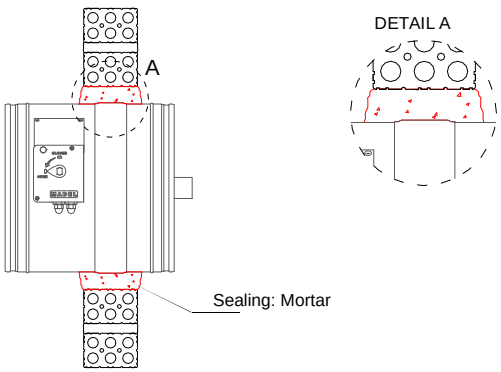


3. Starting plane of supporting construction



Starting plane of supporting construction/ sealing

4. Sealing

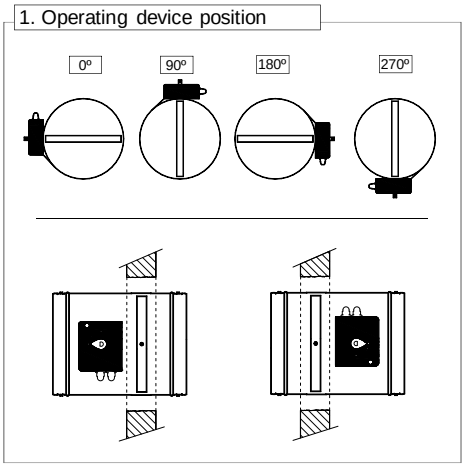


INSTALLATION

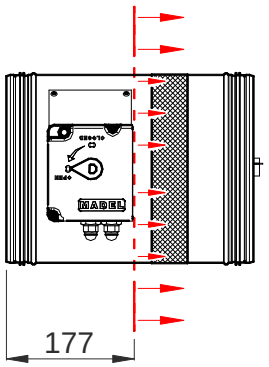
- FLEXIBLE WALL

Dimensions	Supporting construction		Sealing	Classification
Ø100 to Ø315	Flexible wall	15 x2 *(Plasterboard type F, s/ EN 520)* + 48 *(LM, 40Kg/m³)* +15 x2 *(Plasterboard type F, s/ EN 520)*, modulation 400mm Ó108mm	kit /ACF/	EI 90 (v_e iź o) S (500Pa)

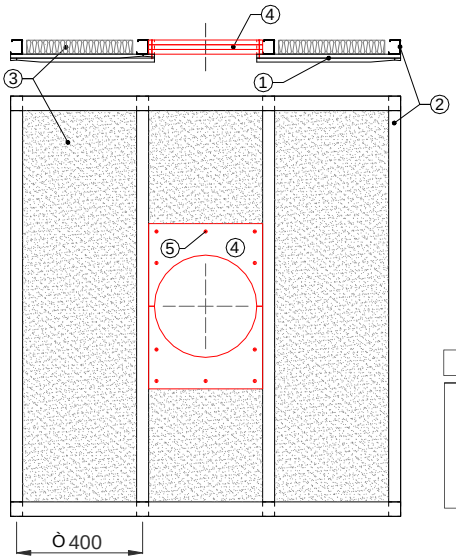
1. Operating device position



2. Starting plane of supporting construction



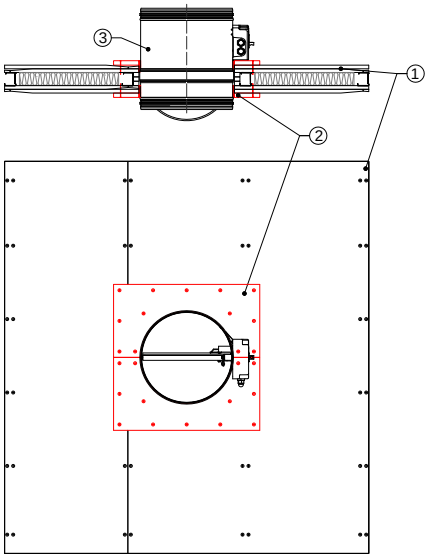
3. Wall mounting



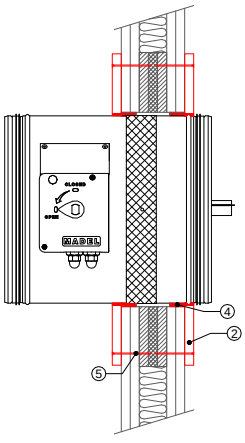
DESCRIPTION

1. Plasterboard type F *(EN-520)* 15mm x 2 *(1ª side)*
2. Vertical profiles 48mm
3. Mineral wool 40Kg/m³
4. Kit /ACF/
5. Steel metal screws 70 x 3.5mm

4. Sealing fire damper- wall



(Sealing between fire damper - wall)



DESCRIPTION

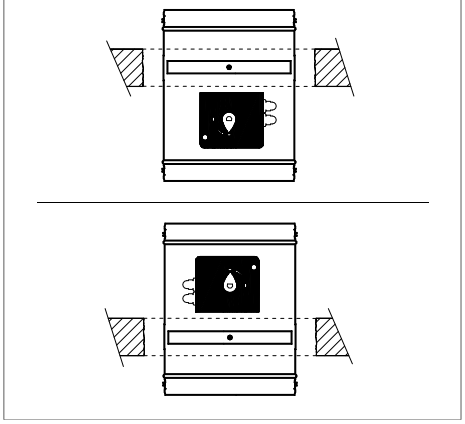
1. Plasterboard type F *(EN-520)* 15mm x 2 *(2nd side)*.
2. Kit /ACF/
3. FMC-EIS-120
4. Intumescent mastic
5. Steel metal screws 70 x 3.5mm

INSTALLATION

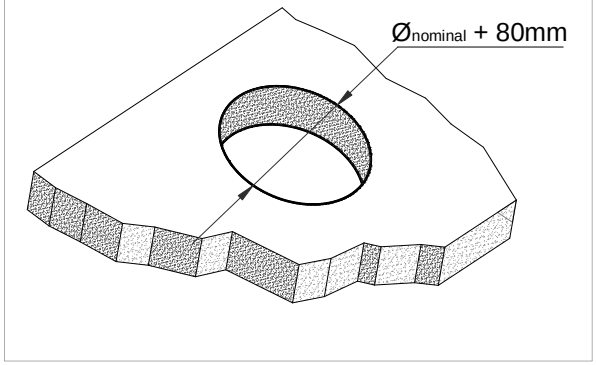
- RIGID FLOOR

Dimensions	Supporting construction		Sealing	Classification
Ø100 to Ø315	Rigid floor	Reinforced concrete Ó150mm	Mortar	EI 120 (h_o iź o) S (500Pa)

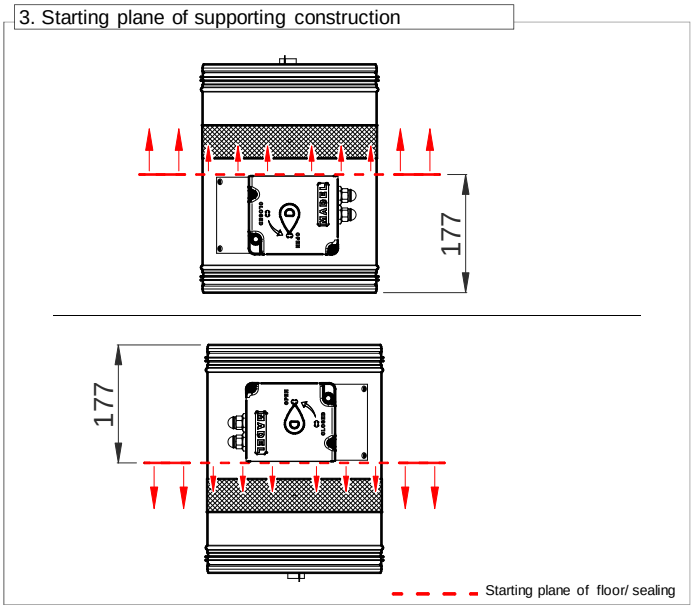
1. Operating device position



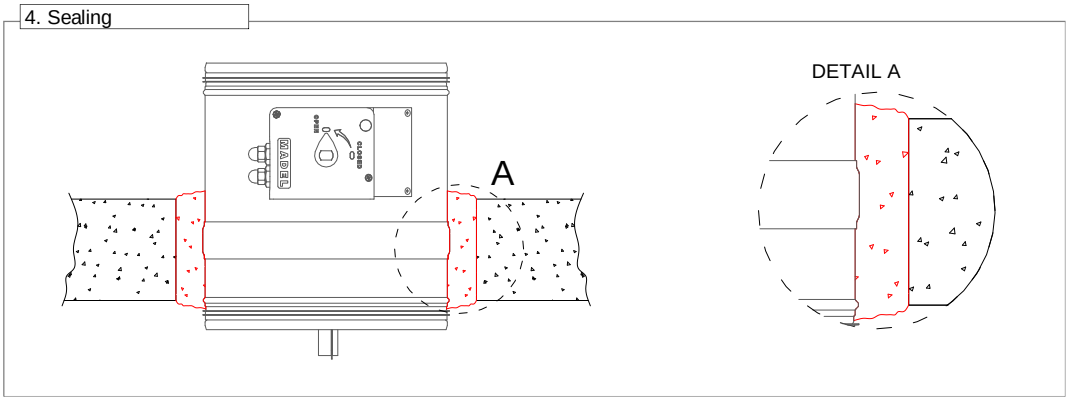
2. Support construction opening



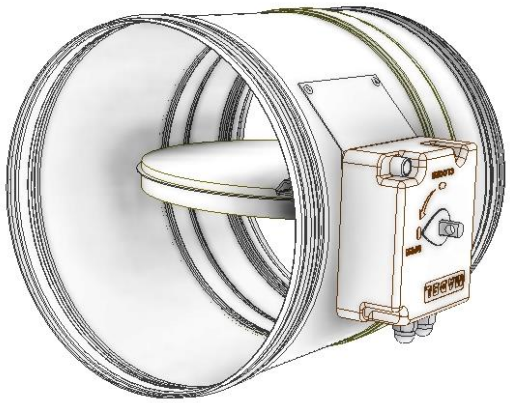
3. Starting plane of supporting construction



4. Sealing



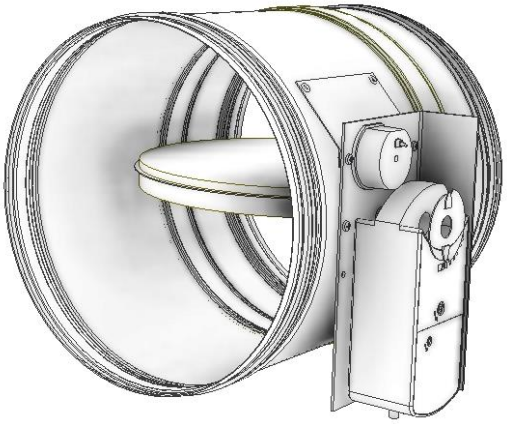
SPECIFICATION TEXT



(Manual)

Supply and mounting of circular fire damper classed EIS-120 in accordance to the European Standard *EN 13501-3* and certified CE according to *EN 15650,* series **FMC-EIS-120-MA diam. 315**.
Operated by means of a manual operating device.
Built in galvanized steel and refractory material.
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**.



(Motorized)

Supply and mounting of circular fire damper classed EIS-120 in accordance to the European Standard *EN 13501-3* and certified CE according to *EN 15650,* series **FMC-EIS-120-MFS230V diam. 315**.
Operated by means of a motorized operating device.
Built in galvanized steel and refractory material.
Thermoelectric fusible 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**.

CODIFICATION

FMC-EIS-120 - MA - /PIF/ diamé é

1 2 3 4

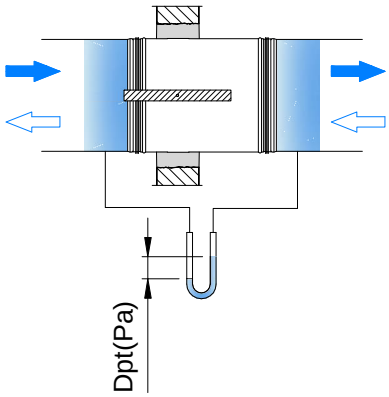
1. Product
2. Operating device
   - **MA** (Manual)
   - **MFS** (Siemens actuator)
   - **MFB** (Belimo actuator)
3. Accessories
   - **/PIF/** (Open-closed swtiches device)
   - /**ACF**/ (Square piece of plaster with a circular hole in the center for mounting on flexible wall)
4. Nominal diameter (mm)

TECHNICAL DATA

FMC-EIS-120

FREE AREA FOR THE AIR PASS (m²)

Ø nominal (mm)	Afree (m^2)	Qmin (m^3/h)	Qmax (m^3/h)
100	0,0045	47	235
125	0,008	76	382
150	0,0125	113	564
160	0,0146	129	646
200	0,0244	207	1034
250	0,0403	329	1645
300	0,0601	480	2398
315	0,0668	530	2651



PRESSURE DROP AND SOUND POWER LEVEL