



FIRE PROTECTION CURTAIN GATE
Type: **MARC™- Ok EI₁-45/EI₂-60/EW_{3,5}-120**
INTERNAL MOTOR (TUBULAR)

USE, OPERATION AND MAINTENANCE MANUAL

Factory number:.....
Type:.....
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Approval of this manual	Representative of manufacturer of Fire Protection Curtain Gate	Authorized representative of investor
Date		
Signature and name stamp		

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1. INTRODUCTION

This manual for Fire Protection Curtain Gate Type : **MARC™- Ok EI₁-45/EI₂-60/EW_{3,5}-120** (hereinafter referred to device/fire protection curtain gate) with internal electric drive for winding/unwinding of curtain blanket, is the document containing the data and guidelines for the owner (user) which are indispensable to getting know of functioning, use, operation and maintenance of the fire protection curtain gate.

To ensure a long term, safe use of the device, the user and operation personnel shall entirely master and deploy the requirements included in this manual.

The use of fire protection curtain gate, including its operation, servicing, maintaining of proper technical conditions as well as periodical inspections and repairs shall be conducted according to this manual.

This manual and other technical documents attached as the annexes to the manual shall be stored properly and accessible to the operation and service personnel.

We reserve the right to continuous verification of a content of the manual and to readjust this content to the state of the art. We hope the user understand the content of the manual can vary without previous notice. Some drawings or content of the manual may be different from actually delivered device due to its improvement or changes in legal regulations, or due to other similar reasons. Such differences do not change the use of the device.

In case of damage or lose of the manual, please contact our Service Department to obtain the same version of the manual.

NOTE!

Non-observance or non-application of recommendations and guidelines contained in this manual by the user absolves the manufacturer from any obligations and warranties.

The scope of works that service personnel and user can carry out is defined hereinafter. Assembly, adjustments, repairs or elimination of breakdowns can be carried out by the manufacturer's representative or by authorized manufacturer's service staff.

This manual covers the standard equipment of fire protection curtain gate, possible application of optional equipment is described in business contract.

Fire protection curtain gate shall be used according to the technical design developed for particular building object of its use with taking into account:

➤ standards and technical-construction regulations in force, especially:

- Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonized conditions for the marketing of construction products and repealing Council Directive 89/106/EEC,
- Acts of 16 April 2004 on construction products (Journal of Laws Dz.U.2015.1165; Dz.U.2016.542; Dz.U.2016.1570),
- Acts of 07 July 1994 on Construction Law (Dz.U.2016.290; Dz.U.2016.961; Dz.U.2016.1165; Dz.U.2016.1250; Dz.U.2016.2255),

- Acts of 30 August 2002 on Compatibility System (Dz.U.2017.1226)
- Regulation of Ministry of the Interior and Administration of 07 June 2010 on fire protection of building, construction objects and terrains (Dz.U.2010.109.719),
- Standard PN-EN 16034:2014-11 Doorsets, gates and openable windows - product standard, performance characteristics - fire resisting and/or smoke control characteristics,
- Standard PN-EN 13501-2:2016-07 Fire classification of construction products and building elements. Part 2: Classification using data from fire resistance tests, excluding ventilation services
- Standard PN-EN 13241 +A2:2016-10 Gates -- Product standard, performance characteristics,
- Standard PN-EN 12635+A1:2010 Gates --

➤ performance characteristics declaration;

➤ this Use, Operation and Maintenance Manual.

According to PN-EN 16034:2014-11 Standard and also to Journal of Laws Dz.U.2016.1966 Annex 1, pos. 2, the fire protection curtain gate belongs to the construction product group ruled by **system 1** of assessment and verification of constancy of performance. According to above and the fact, that PN-EN 16034:2014-11 product standard is the standard harmonized before introduction and making available of the construction product on the market, the manufacturer is obliged to mark the fire protection curtain gate with CE sign and to prepare and issue the Declaration of Performance.

NOTE!

The copy of Declaration of Performance and the Warranty Document are delivered to the user by the manufacturer on completion of commissioning of assembly/installation of fire protection curtain gate as per conditions included in the contract (offer/agreement).

The Declaration of Performance and the Warranty Document for the fire protection curtain gate are integral parts of this manual and constitute its annexes (see "Annexes" chapter).

CE marking of fire protection curtain gate is included on the rating plate of fire protection curtain gate delivered (see "Marking" chapter).

The up-to-date list of authorized companies for assembly, installation, inspections and maintenance works (including assessment and confirmation of proper completion of works mentioned above) is available on the fire protection curtain gate manufacturer's website (www.malkowski.pl).

2. SCOPE AND CONDITIONS OF USE

2.1 DESIGNATION

Fire protection curtain gate constitute the vertical, movable fire-stop and is used to close a gangway between fire zones within industrial objects, storage rooms, technical storeys within office buildings, hospitals, and other public buildings (constitutes so called fire division).

The basic version of fire protection curtain gate is designated to maintain the curtain blanket in extremely winded (open) or extremely unwounded (closed) position continuously.

2.2 IMPROPER USE

Fire protection curtain gate is not designated to use in:

- areas with danger of explosions, EX zones;
- in environment with dustiness, salts, acids, liquors, and other aggressive chemical substances (eg. cement, lime) causing corrosions (maximum relative humidity allowed: 80%)
- at temperatures outside -20⁰ C to +40⁰C range
- within the area of atmospheric discharges, strong magnetic fields (above 0,1 T), strong winds above 60 kmph, etc.

NOTE, WARNINGS, RISKS

The fire protection curtain gate is not a general purpose partition. Every day operations, ie. closing (unwinding)/ opening (winding) of the gangway between above mentioned zones within the objects is admissible only under conditions defined in a separate manufacturer's declaration. This not apply to a periodical operation (test alarms, sudden fire cases, etc.).

Moreover, it is also inadmissible to:

- assembly/installation of fire protection curtain gate by installation company/personnel not having a fire protection curtain gate manufacturer's authorization;
- unauthorized repairs, troubleshooting, improving, modification, swapping or assembling parts not included within limits included in this manual as well as without obtaining written consent from the manufacturer of fire protection curtain gate (see: manufacturer's consent/no consent - tables in "Technical specification" chapter);
- installation of parts and assemblies being so called replacements, which are not defined and unauthorized by the manufacturer of the fire protection curtain gate;
- using the faulty fire protection curtain gate or partially/completely incompatible with characteristics or designation (due to fire influence, construction disaster, etc.);
- using the fire protection curtain gate with no proper operator inspections, periodical technical inspections and maintenance works as per this manual (see chapter "INSPECTIONS, MAINTENANCE, REPAIRS). or as per individual settlements included in the contract between the user and the manufacturer of fire protection curtain gate;
- using the fire protection curtain gate having mechanical defect or other faults caused by improper operation, including emergency downtime with fault not fixed;
- using the fire protection curtain gate when improper functioning of the gate or its component was detected and an appropriate supervision, service team nor manufacturer's service team were not advised;
- using the fire protection curtain gate having its rate plate removed or damaged;
- carrying out of repair or maintenance works while movable components of the fire protection curtain gate are in motion;
- walking/running and driving through the closed fire protection curtain gate or when movable components of the fire protection curtain gate are in motion;
- transporting (lifting/carryover/lowering) of materials and/or persons using the fire protection curtain gate;

➤ washing, cleaning of the fire protection curtain gate using caustic substances based on broad band acids or solvents as well as cleaning with washers, with liquids under pressure (see "CLEANING, LUBRICATION" section);

Failure to adhere to the cases mentioned above will result in loss of obligations and warranties granted to the fire protection curtain gate, including maintaining of fire resistance declared and validity of performance characteristics declaration issued for the fire protection curtain gate by its manufacturer.

2.3 HEALTH AND SAFETY AT WORK PRECAUTIONS

During use of the fire protection curtain gate the general regulations regarding health and safety at work shall be observed, including conditions related to fire protection requirements. The scheduled periodical inspections/maintenance works and repairs shall be carried out on time. Do not use the fire protection curtain gate while it is in emergency downtime with fault not fixed.

During any works on fire protection curtain gate the general regulations regarding decreasing in the amount of waste and proper removal/utilization of waste. Special attention should be paid while cleaning/servicing/repairing of fire protection curtain gate to not pollute the soil/ sewage system with dangerous substances, such as greases, cleaning agents containing solvents. Such substances shall be collected, stored and transported in special containers and utilized.

2.4 REQUIREMENTS REGARDING OPERATORS

No specific authorization is required for operation of fire protection curtain gate. It shall be operated by person/operator (eg. maintenance person from maintenance department) designated by the user and trained in operation of fire protection curtain gate by the manufacturer's representative or its authorized team/ installation company.

The user shall ensure the operator personnel is trained in health and safety at work, including possible hazards as well as in requirements of this manual, working instructions and instructions being annexes to this manual.

3 PACKING, STORING, TRANSPORT

Depending on the contract (offer/agreement) specifications, receipt of fire protection curtain gate can take place from the manufacturer's warehouse or the manufacturer can deliver it to the location of installation with quantitative and qualitative acknowledgement by WZ document.

The fire protection curtain gate is delivered in form of assemblies and subassemblies ready to assembly and install on the user's site. Each assembly and subassembly is separately secured against mechanical damage for transportation, i.e.:

- curtain blanket is wound on winding shaft and placed on the pallet on mineral wood or foamed polystyrene spacers;
- guides, shields, etc. are placed on pallet on mineral wood or foamed polystyrene spacers;
- each above mentioned palette (load unit) is secured with foil and fastened with polyester band through timber securing beams:
- minor accessories of equipment of fire protection curtain gate, such as fasteners, etc. are collected in one separate carton box:
- each package has its label stucked, containing an identification data of assemblies, subassemblies enclose, as well as number of client's order, number of assembly, type of fire protection curtain gate, number of constancy of performance declaration.

During transportation, storage and assembly/installation of fire protection curtain gate, the following rules shall be observed:

- assemblies, subassemblies, and components of fire protection curtain gate shall be sufficiently secured during transportation (with belts, spacers, etc.)
- after unloading/during storage, the components of fire protection curtain gate shall be stored in roofed and protected against damages, dirt, weather conditions (rain, snow), etc. area;
- walking, cycling, driving onto assemblies, subassemblies, and components of fire protection curtain gate is forbidden. Similarly, putting the weights, tools, chemical agents on them are not allowed. Leaning against the fire protection curtain gate, and any other activities not mentioned above resulting in damage or decreasing the value/quality of fire protection curtain gate are forbidden.

4. ASSEMBLY AND INSTALLATION

Assembly and installation of mechanical and electric part of fire protection curtain gate can be carried out exclusively by trained manufacturer's staff or by installation team/company having the manufacturer's authorization.

The basic tasks related to assembly/installation of fire protection curtain gate include:

- 1) Before starting the works check the completeness of delivered goods and make sure no component was damaged during transportation/storing;
- 2) All connections must be made/mounted scrupulously and their proper seating must be checked;

Upon completion of assembly/installation works on fire protection curtain gate the inspection is carried out regarding proper works performed and functioning.

The assessment mentioned above is carried out by the manufacturer's representative (or in the name of manufacturer the person belonging to its authorized installation team/company) in the presence of competent representative of the Orderer. This assessment is confirmed by the record in Inspection Sheet (which constitutes the Anex to this manual) or by separate protocol.

4.1 MECHANICAL ASSEMBLY

Assembly/installation of mechanical part of fire protection curtain gate must be carried out according to installation instructions which are attached to this manual as annexes (see "ANNEXES" chapter). This is specialized technical documentation available only for fitters having appropriate assembly certificates issued by manufacturer of fire protection curtain gate.

NOTE!

To proper grasp, lift and affix of whole structure of fire protection curtain gate the appropriate conditions and equipment for health and safety at works shall be provided, eg. ladders of appropriate height, harnesses, safety lines and other tools, like slings, traverses, power winch, or lift truck of load capacity and lifting height adequate to the weight and mounting height of the structure.

It is defined in the contract who is the provider of "equipment" mentioned above, also for periodical inspections and maintenance works.

4.2 ELECTRIC INSTALLATION

Configuration of the drive and the set of electric equipment of fire protection curtain gate depends on the Order, while assembly/installation shall be as per specialist documentation (for installers) attached to this manual in form of annexes.

Electric system of fire protection curtain gate shall be mounted, tested or, in case of failure, repaired by an electrician having appropriate qualifications and certificates.

Diagram of electric system is included in the instructions for installation of set of electric equipment attached to this manual in form of annex (see "ANNEXES" chapter).

NOTE!

User shall provide an access to the electric mains in place of assembly/installation of fire protection curtain gate having proper parameters and fusing enabling the fire protection curtain gate to be connected, tested, and used smoothly.

Electric power supply for fire protection curtain gate shall be equipped with separate system having cut-out switch for power circuit secured with padlock.

5 DESCRIPTION OF OPERATION

The basic function of an electric equipment set (see clause "ELECTRIC EQUIPMENT SET") is an automatic start of unwinding of curtain blanket to the floor level, ie. to so called technical closure position upon detection of fire hazard. Detailed description of design, assembly and functioning of above mentioned fire signaling and detecting set which have been used in fire protection curtain gate delivered are included in the instructions for electric equipment set installation attached to this manual.

The electric equipment set for fire protection curtain gate mentioned above is equipped with rechargeable battery which, in case of power failure, enables the curtain blanket to be unwound (closed), including minimum one wound operation of curtain blanket (eg. after false alarm occurrence). The electric power supply from mains is required for service inspections or maintenance works.

Manual control of unwinding/winding of curtain blanket is performed using the key-operated switch shown below.



Figure 1. Key-operated switch for fire protection curtain gate.

Pos. 0 - Neutral position of key (stand-by) - key can be removed

Pos. I - start of "closing"

Pos. II - start of "open"

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Item	Description of components	Notes
1	Indicator of system operability (complete electric system for fire protection curtain gate)	Indication color: green
2	Indicator of system failure	Indication color: yellow
3	Indicator of fire alarm	Indication color: red
4	Key operated switch	-

The process of manual start of unwinding as well as winding of curtain blanket, ie. a movement of motor of electric drive is continued as long as the key is kept in a particular position ("I" or "II").

NOTE!

It is possible to equip the fire protection curtain gate with a fire protection starting system (as per individual settlements including in the contract):

- electromagnet/electromagnets
- fuse

In such case the above described lifting and lowering of curtain blanket process is not valid.

6 TECHNICAL DATA

Table of parameters of curtain gate MARC™-Ok EI₁-45/EI₂-60/EW_{3,5}-120

Description	Symbol and Units	Value of parameter	Notes
Fire resistance class	-	EI ₁ -45/EI ₂ -60/EW _{3,5} -120	-
Velocity of lifting/lowering	m/s	< 0,15	-
Manual/mechanical operation	-	-	functioning only with electric drive
Electric drive	-	yes	internal (tubular)
Power supply (voltage/current)	V / A	230 VAC/4A	-
tubular drive VIC-0403	-	24 VDC / 1,4	-
tubular drive VIC-0101	-	24 VDC / 2,0	-
Color of curtain blanket	-	close to RAL 7035	-
Color of external components of guides, casings	-	any RAL	standard colors 9002, 7035

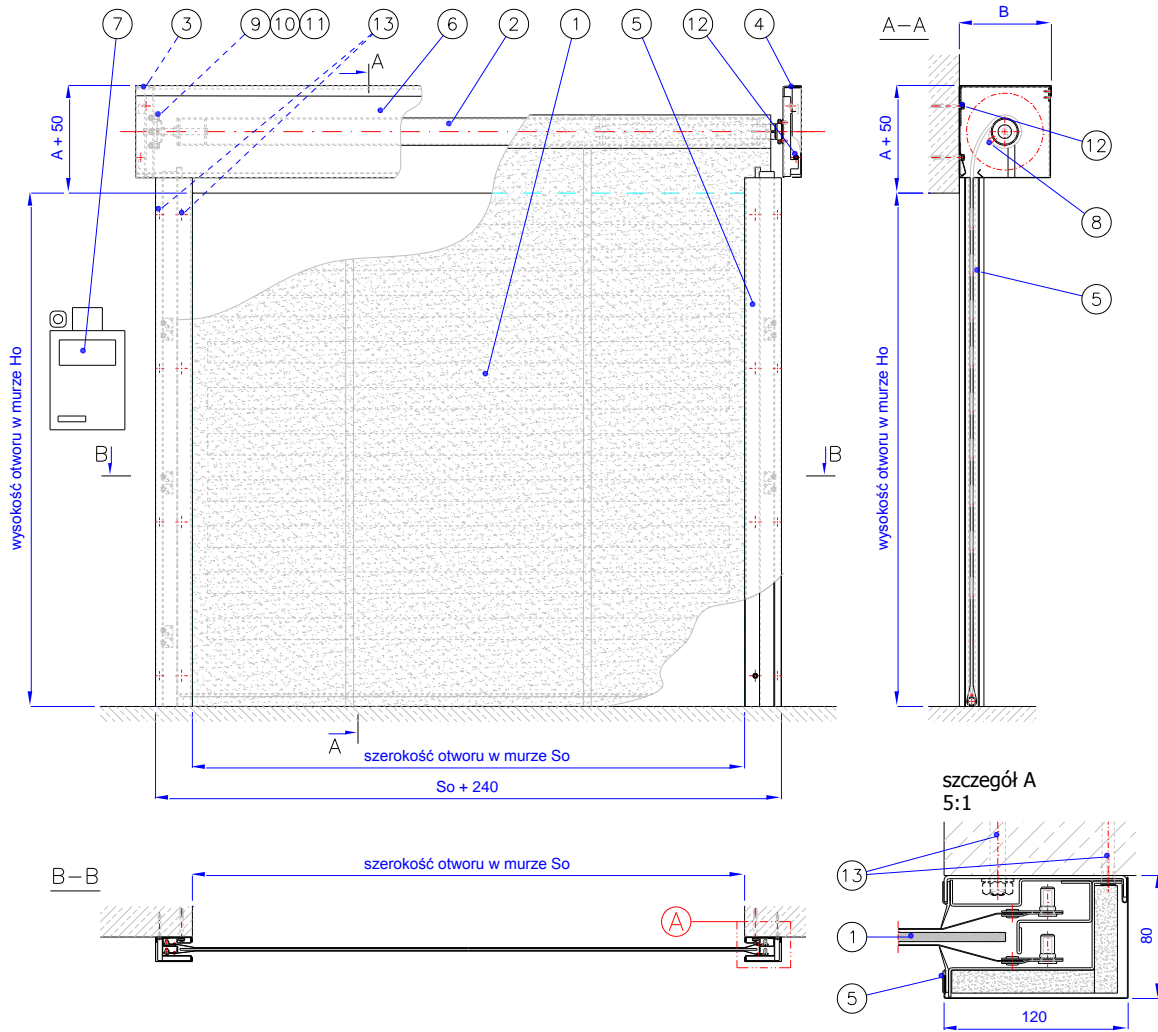


Figure 2. Fire protection curtain gate MARC™- Ok EI₁₋₄₅/EI₂₋₆₀/EW_{3,5-120}

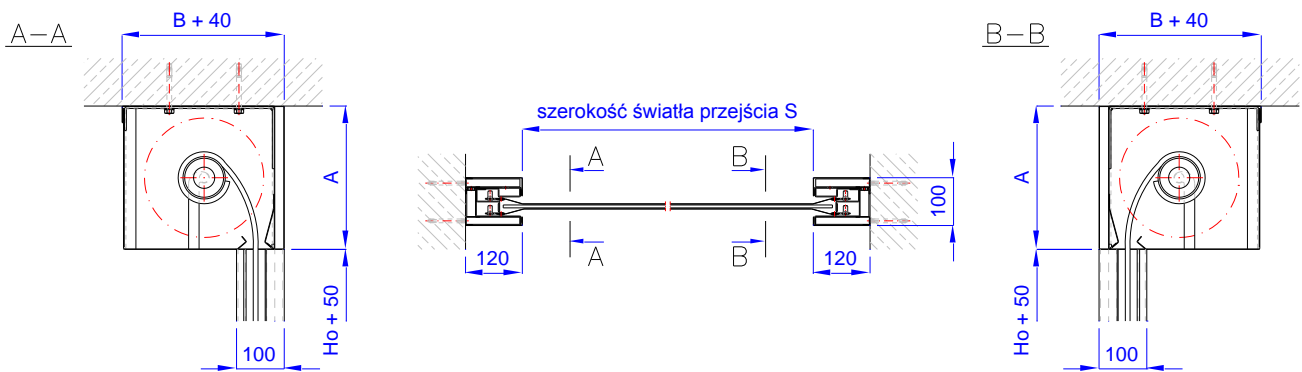


Figure 3. Fire protection curtain gate - arrangement in parallel walls (corridor type)

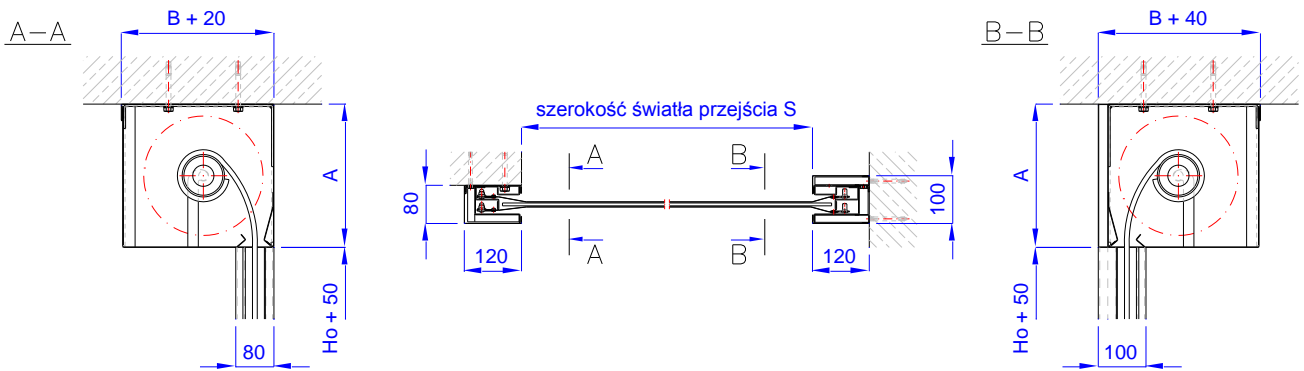


Figure 4. Fire protection curtain gate - "mixed" arrangement

List of assembly, parts of fire protection curtain gate

MARC™- Ok EI₁-45/EI₂-60/EW_{3,5}-120

Item	NAME	Q-ty	Dwg/Catalogue Number	REPLACEMENT / REPAIR			NOTES
				User	Authorized Service	Manufacturer	
1.	Curtain blanket	1	MARC-OK-01.01.00	-	-	x	-
2.	Winding shaft	1	MARC-OK-01.02.00	-	-	x	-
3.	Shaft bracket A	1	MARC-OK-01.03.00	-	-	x	-
4.	Shaft bracket B	1	MARC-OK-01.04.00	-	-	x	-
5.	Guide	2	MARC-OK-01.05.00	-	-	x	-
6.	Casing assy	1	MARC-OK-01.06.00	x	x	-	-
7.	Electric equipment set	1*	MARC-Vic-01.00	-	x	-	*depending on the order
8.	Self-tapping screw with cheese head 4,2 x 25	1*		-	x	-	*DIN 7504N - every 500 mm; fo fixing of blanket to winding shaft
9.	Screw M10x30 with hex head	4		-	x	-	PN 82105, Class 8.8; to fasten a shaft bracket B to electric drive collar
10.	Washer M10 with hex head	4		-	x	-	PN 82144; - to fasten a shaft bracket B to electric drive collar
11.	Spring washer 10,2	4		-	x	-	PN 82008; - to fasten a shaft bracket B to electric drive collar
12.	List of anchoring elements for fastening of						

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Item	NAME	Q-ty	Dwg/Catalogue Number	REPLACEMENT / REPAIR			NOTES
				User	Authorized Service	Manufacturer	
	shaft brackets to ceiling/wall of object:						
	- bolt anchor Fischer FAZ II 10/100 (or equivalent) *	4	-	-	x	-	*in case of mounting to ferroconcrete walls
	- chemical anchor Fischer FIS VS along with injection mortar (or equivalent) **	4	-	-	x	-	**in case of mounting to solid brickwork walls (concrete blocks, silicate blocks, solid bricks) as well as hollow brickwork walls (checker brick, porotherm, hollow bricks type U, Max)
	- anchor Fischer FPX-I (or equivalent) ***	4	-	-	x	-	*** in case of mounting to aerated concrete walls (ytong, solbet, siporex, suporex, suporeks)
13.	List of anchoring elements for fastening of guides to prowadnice do wall of object:						
	- bolt anchor Fischer FAZ II 10/100 (or equivalent) *	4	-	-	x	-	* in case of mounting to ferroconcrete walls
	- chemical anchor Fischer FIS VS along with injection mortar (or equivalent) **	4	-	-	x	-	** in case of mounting to solid brickwork walls (concrete blocks, silicate blocks, solid bricks) as well as hollow brickwork walls (checker brick, porotherm, hollow bricks type U, Max)
	- anchor Fischer FPX-I (or equivalent) ***	4	-	-	x	-	*** in case of mounting to aerated concrete walls (ytong, solbet, siporex, suporex, suporeks)

NOTE! If the replacement of parts reserved for manufacturer is performed by another company then it results in immediate cancellation of CE marking of the gate as well as the declaration of performance (DWU) issued for this gate becomes invalid immediately, especially for fireproof capacity.

6.1 CURTAIN BLANKET MARC-OK-01.01.00

Curtain blanket is the main part of fire protection curtain. In so called closed (wounded) position it constitutes an air-tight partition of fire resistance class of EI₁-45/EI₂-60/EW_{3,5}-120. The curtain blanket consists of three layers: two identical external layers type FM1D of thickness of 1,5 mm and one middle layer type FMC of thickness of 5,5 mm. Total thickness of blanket is approx. 10 mm.

Each external layer, on its inner side, has the horizontal strips sewn-on, made of the same material as a material of base external layers. The length of strips is less than total width of blanket. The

inner layer is made of ceramic wool based material, both-sided with reinforced aluminum foil. Top edge of blanket is fixed to winding shaft using flat bar. At the opposite bottom edge the external layers are connected to each other and additionally loaded with section steel. Every approx. 500 mm the sliders are fixed on side edges of external layers.

Table of parameters of curtain blanket MARC-OK-01.01.00

Description	Symbol and units	Value of parameter	Notes
Total [height / width / thickness]	mm	Ho+525 / So+135 / 10	Ho/So - height / width of opening in wall
Color	-	close to RAL 7035	-
Quantity	pcs.	1	-
Total weight	kg/m ²	6,50	-

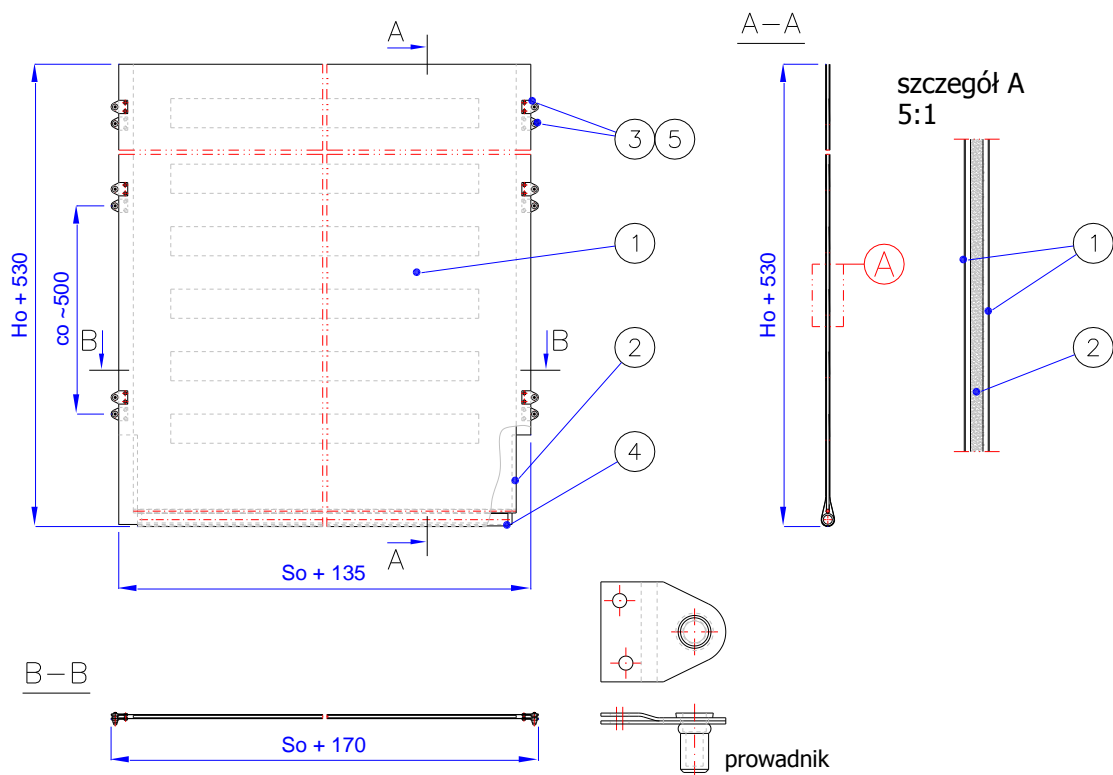


Figure 5. Curtain blanket MARC-OK-01.01.00

List of assemblies, parts of curtain blanket MARC-OK-01.01.00

Item	NAME	Q-ty	Dwg. no. / catalogue no.	REPLACEMENT / REPAIR			NOTES
				User	Authorized Service	Manufacturer	
1.	External layer of blanket	2	MARC-OK-01.01.01	-	-	x	-
2.	Middle layer of blanket	1	MARC-OK-01.01.02	-	-	x	-
3.	Slider	2*	MARC-OK-01.01.04	-	x	-	*per side, apprx. 500 mm on length of blanket
4.	Section steel	1	MARC-OK-01.01.05	-	x	-	steel bar/pipe Ø 30mm depending on dimensions of curtain

NOTE! If the replacement of parts reserved for manufacturer is performed by another company then it results in immediate cancellation of CE marking of the gate as well as the declaration of performance (DWU) issued for this gate becomes invalid immediately, especially for fireproof capacity.

6.2 WINDING SHAFT MARC-OK-01.02.00

Curtain blanket is fixed to the winding shaft. The shaft, while rotates, causes closing/opening of curtain. It is made of steel tube of diameter of Ø88,9 x 3,6; Ø127 x 4,5; Ø159 x 4,5; Ø159 x 6,3; Ø244,5x7,1 (depending of dimensions of whole curtain).

At one end the shaft is terminated with bearing journal to mount the shaft in self-aligning bearing type UCF. On the other end the shaft has tubular drive mounted, depending on the drive used.

Table of parameters of winding shaft MARC-OK-01.02.00

Description	Symbol and Units	Value of parameter	Notes
Length of shaft	mm	$l = So + 80$	So - width of opening in wall
Total length	mm	$So + 280$	-
Diameter	mm	Ø88,9 x 3,6; Ø127 x 4,5; Ø159 x 4,5; Ø159 x 6,3; Ø244,5 x 7,1*	* depending of dimensions of whole curtain.
Quantity	pcs.	1	-
Total weight	kg/mb.	12,50/ 24,50*	* depending of diameter of whole shaft

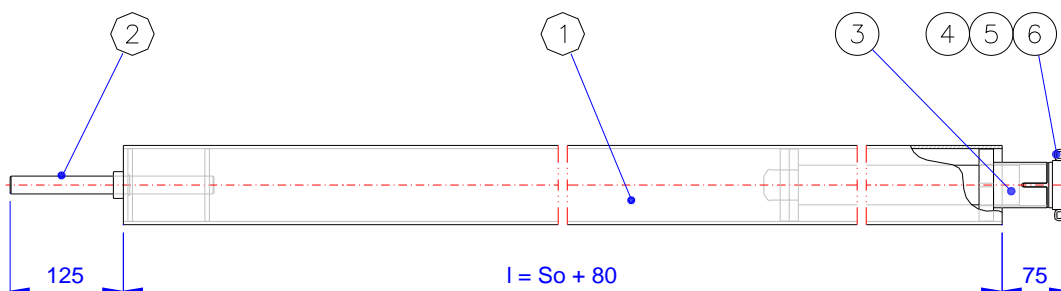


Figure 6. Winding shaft MARC-OK-01.02.00

List of assemblies, parts of winding shaft MARC-OK-01.02.00

Item.	Name	Q-ty	Dwg. no. / catalogue no.	Replacement / Repair			NOTES
				User	Authorized Service	Manufacturer	
1.	Shaft's tube	1	MARC-OK-01.02.01	-	-	x	-
2.	Bearing journal - passive end	1	MARC-OK-01.02.02	-	-	x	-
3.	Tubular electric drive	1	VIC-0403 or VIC-010x	-	-	x	-
4.	Screw M6x16 with hex head	4	-	-	x	-	PN 82105, class 8.8
5.	Washer M6 with hex head	4	-	-	x	-	PN 82144
6.	Spring washer 6,1	4	-	-	x	-	PN 82008

NOTE! If the replacement of parts reserved for manufacturer is performed by another company then it results in immediate cancellation of CE marking of the gate as well as the declaration of performance (DWU) issued for this gate becomes invalid immediately, especially for fireproof capacity.

6.3 SHAFT BRACKET A MARC-OK-01.03.00 AND SHAFT BRACKET B MARC-OK-01.04.00

Shaft brackets are designed to fix the shaft and to support the casing assembly. The fire protection curtain gate has the A and B brackets (A- passive end; B- drive end) made of galvanized steel plate (depending of diameter of shaft) of thickness of 3 or 4 mm (according to DX51D+Z225, PN-EN 10327). The self-aligning bearing with the type UCF cast iron mounting is secured to the shaft bracket of passive end using screws. Each of two brackets is mounted to the wall/ceiling of object at two points using anchors. The type of anchoring elements depends on the type of wall/ceiling and is placed on the list in the main table of assemblies and parts of fire protection curtain gate (see: "TECHNICAL DATA").

Table of parameters of shaft bracket A MARC-OK-01.03.00

Description	Symbol and Unit	Value of parameter	Notes
Height / width	Hw/Sw mm	250/250 - 450/450	dimensions depend of height of curtain
Thickness	mm	58	-
Quantity	pcs.	2	-
Total weight	kg	2,30 - 7,00	weight depends on size of bracket

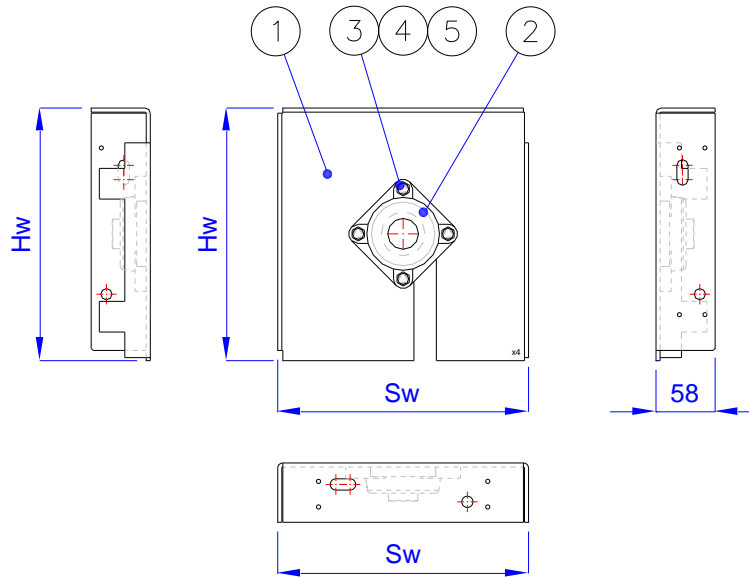


Figure 7. Shaft bracket A MARC-OK-01.03.00

List of assemblies, parts of shaft bracket A MARC-OK-01.03.00

Item.	NAME	Qty	Dwg. no. / catalogue no.	Replacement / Repair			NOTES
				User	Authorized Service	Manufacturer	
1.	Bracket plate A	1	MARC-OK-01.03.01	-	-	x	-
2.	self-aligning bearing with type UCF mounting	1	-	-	x	-	-
3.	Screw M10x30 with hex head	4	-	-	x	-	PN 82105, class 8.8
4.	Washer M10 with hex head	4	-	-	x	-	PN 82144
5.	Spring washer 10,2	4	-	-	x	-	PN 82008

NOTE! If the replacement of parts reserved for manufacturer is performed by another company then it results in immediate cancellation of CE marking of the gate as well as the declaration of performance (DWU) issued for this gate becomes invalid immediately, especially for fireproof capacity.

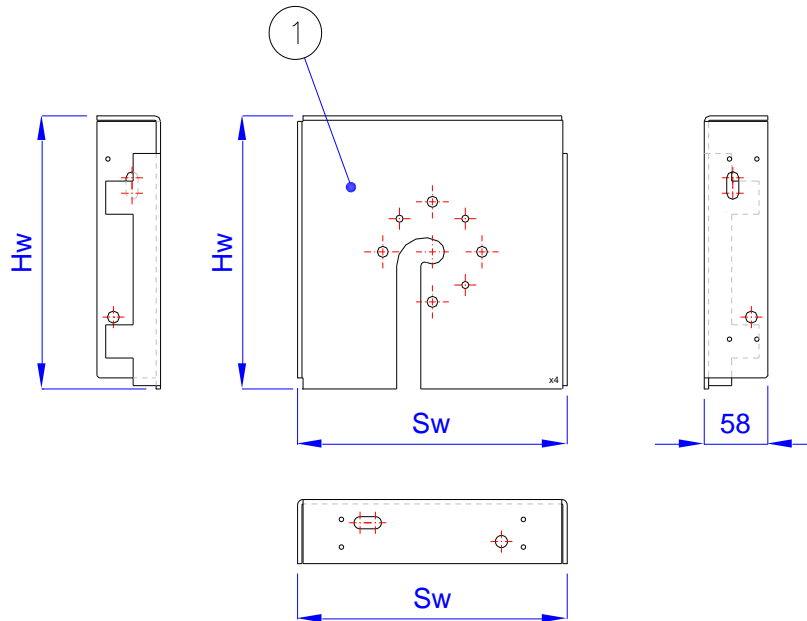


Figure 8. Shaft bracket B MARC-OK-01.004.00

List of assemblies, parts of shaft bracket B MARC-OK-01.04.00

Item.	NAME	Q-ty	Dwg. no. / catalogue no.	Replacement / Repair			NOTES
				User	Authorized Service	Manufacturer	
1	Bracket plate B	1	MARC-OK-01.04.01	-	-	x	-

NOTE! If the replacement of parts reserved for manufacturer is performed by another company then it results in immediate cancellation of CE marking of the gate as well as the declaration of performance (DWU) issued for this gate becomes invalid immediately, especially for fireproof capacity.

6.4 GUIDE MARC-OK-01.05.00

The guides ensure a proper position of curtain blanket within opening. The fire protection curtain gate comprises two guides. The sectional dimensions of the guide are 80x 120 mm. Wall section and central section are made of galvanized steel sheet of thickness of 1,5 and 2 mm (according to DX51D+Z225, PN-EN 10327:2005)

The central section is additionally protected with Promat plates of 10 and 20 mm. The fascia panel of guide is made of galvanized steel sheet of 0,7 mm and painted in any RAL color on external side. The EPDM gaskets are attached to the edges of cavity of guide where blanket moves. The guides are secured to the wall with approx. 500 mm spacing. The type of anchoring elements depends on the type of wall.

Table of parameters of guide MARC-OK-01.05.00

Description	Symbol and Units	Value of parameter	Notes
Length	mm	Ho+70	Ho - height of wall opening

Use, Operation and Maintenance Manual
Fire Protection Curtain Gate MARC™- Ok EI₁-45/EI₂-60/EW_{3,5}-120

Description	Symbol and Units	Value of parameter	Notes
Width / thickness	mm	120 x 80	-
Color	-	galvanized/ RAL	inside guide / fascia panel
Quantity	pcs.	2	-
Total weight	kg/running m	11,65	-

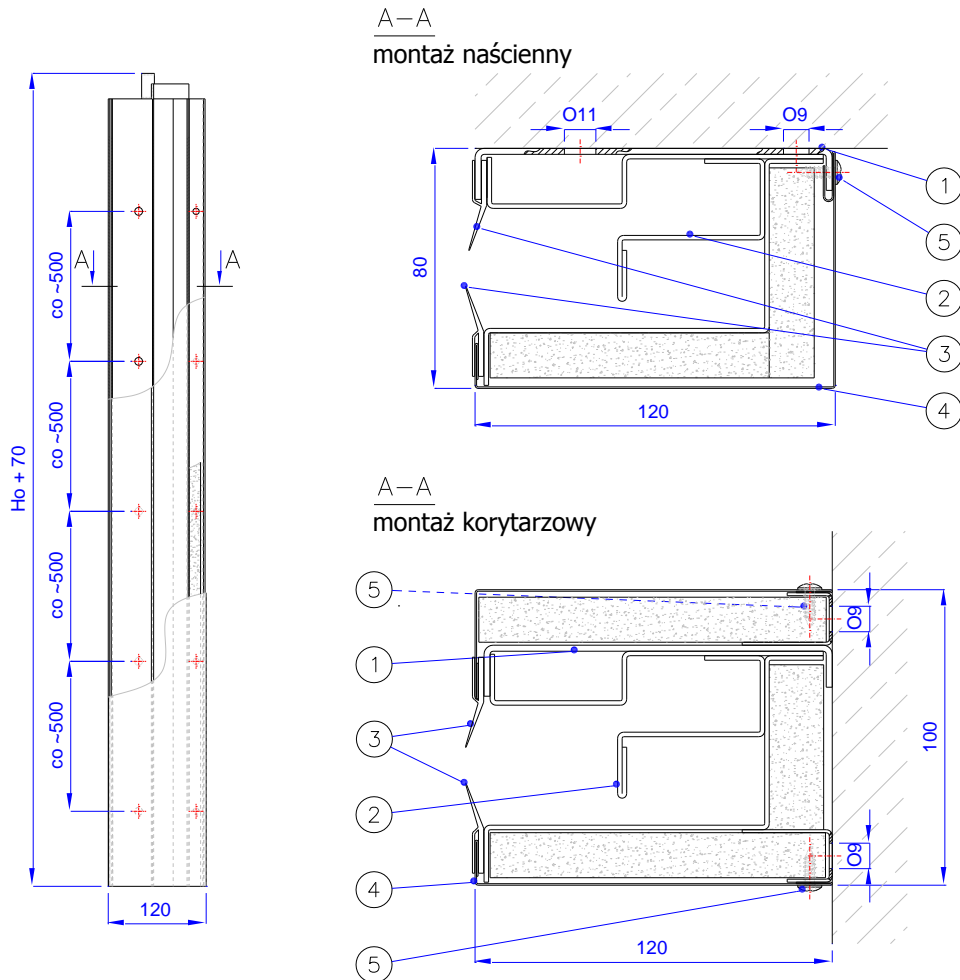


Figure 9. Vertical guide MARC-OK-01.05.00

List of assemblies/parts of guide MARC-OK-01.05.00

Item	NAME	Q-ty	Dwg. no. / catalogue no.	Replacement / Repair			Notes
				User	Authorized Service	Manufacturer	
1.	Wall section	1	MARC-OK-01.05.01	-	-	x	-
2.	Central section	1	MARC-OK-01.05.02	-	-	x	-
3.	Gasket	2	-	x	x	-	EPDM
4.	Fascia panel	1	MARC-OK-01.05.04	x	x	-	-
5.	Self-tapping screw with cyl. head 4,2 x 19	1*	-	x	x	-	DIN 7504N

* Quantity depends on length of guide, ~500 mm spacing

NOTE! If the replacement of parts reserved for manufacturer is performed by another company then it results in immediate cancellation of CE marking of the gate as well as the declaration of performance (DWU) issued for this gate becomes invalid immediately, especially for fireproof capacity.

6.5 CASING ASSEMBLY MARC-OK-01.06.00

The casing assembly has an aesthetic function as well as hides the winding shaft and brackets.

The set of shield comprises: rear shield along with slide of blanket, front shield and two side shields. all shields are made of galvanized steel sheet of thickness of 1 mm (according to DX51D+Z225, PN-EN 10327:2005). Outer side of shields are generally painted in any color of RAL palette. Individual elements of casing set are connected each other and to the shaft brackets using steel self-tapping screws or steel breakstem rivets.

Table of parameters of casing set MARC-OK-01.06.00

Description	Symbol and Units	Value of parameter	Notes
Height / width	A/B mm	250/250 - 450/450	dimensions depend of height of curtain
Length	mm	So + 350	So - width of wall opening
Color	-	Any RAL	9002 i 7035 standard
Quantity	set	1	-
Total weight	kg/running m	14,00 or 30,00	weight depends on size of casing set

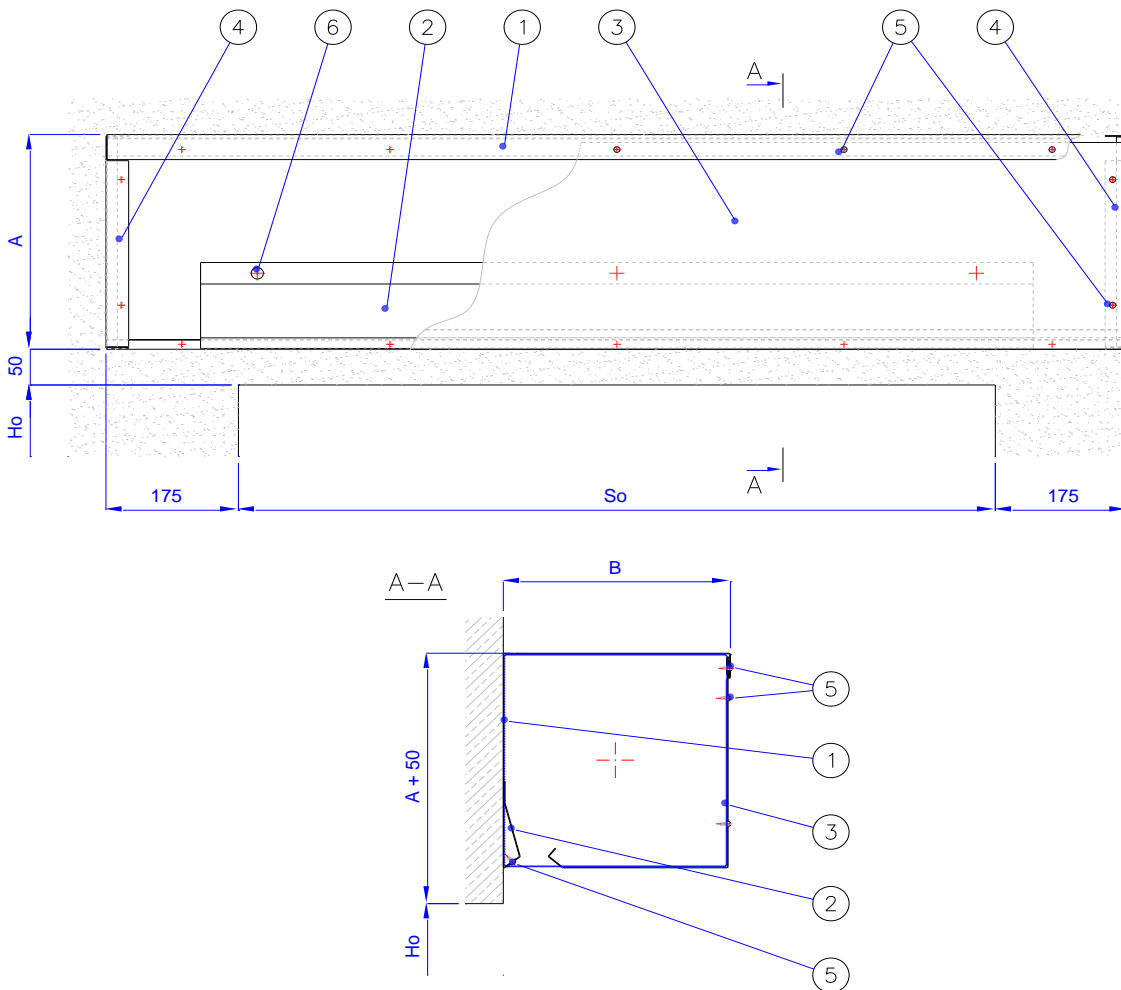


Figure 10. Casing set MARC-OK-01.06.00

List of assemblies, parts of casing set MARC-OK-01.06.00

Item	Name	Q-ty	Dwg. no. / catalogue no.	Replacement / Repair			NOTES
				User	Authorized Service	Manufacturer	
1.	Back shield	1	MARC-OK-01.06.01	-	x	-	-
2.	Slide of blanket	1	MARC-OK-01.06.02	-	x	-	-
3.	Front shield	1	MARC-OK-01.06.03	x	x	-	-
4.	Side shield	2	MARC-OK-01.06.04	x	x	-	-
5.	List of fasteners:						
	- Self-tapping screw with cyl. head 4,2 x 19, or	10*	-	x	x	-	DIN 7504N
	- breakstem rivet	10*	-	x	x	-	Ø4x6mm

* - quantity depends on length of casing; ~1000mm spacing

NOTE! If the replacement of parts reserved for manufacturer is performed by another company then it results in immediate cancellation of CE marking of the gate as well as the declaration of performance (DWU) issued for this gate becomes invalid immediately, especially for fireproof capacity.

6.6 ELECTRIC EQUIPMENT SET MARC-Vic-01.00

Fire detectors constitute a part of electric equipment set for monitoring of fire occurrence and are positioned within the object, close to the protection curtain gate installed, according to recommendations included in instructions on electric equipment set installation (see chapter "Annexes").

For the purpose of fire signaling and alarming and for starting of curtain blanket unwinding (i.e. closing) the fire alarm visual/audible signaling device is used. The location of its installation is also defined in above mentioned instructions on electric equipment set installation.

Table of parameters of electric equipment set MARC-Vic-01.00

Description	Symbol and Units	Value of parameter	NOTES
Power voltage	V	230 VAC	-
Current consumption	A	up to 4A	-
Power consumption	W	up to 400W	-
Protection class	IP	44	-
Operation mode	-	automatic	automatic and manual
Noise of fire alarm device	dB	>100dB (at 1m distance)	according to alarm device manufacturer's specifications
Recharge battery	V/Ah	24/7,2Ah	-

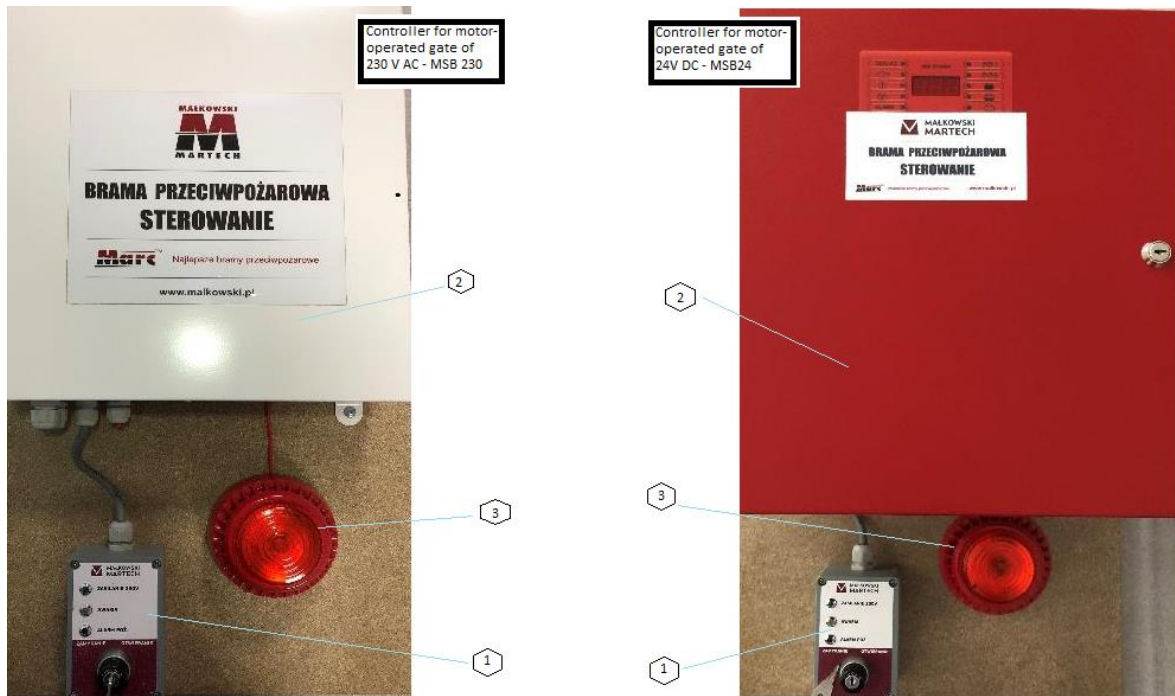


Figure 11. Example of the views of electric equipment sets MARC-Vic-01.00.00 (prepared for delivery)

List of assemblies, parts of electric equipment set MARC-Vic-01.00.00

Item	NAME	Q-ty	Dwg. no. / catalogue no.	Replacement / Repair			NOTES
				User	Authorized service	Manufacturer	
1.	Key-operated switch	1	PKL	-	X	-	-
2.	Gate Controller	1	MSB230 or MSB24	-	X	-	-
3.	Visual/audible signaling device	1		-	X	-	-

NOTE! If the replacement of parts reserved for manufacturer is performed by another company then it results in immediate cancellation of CE marking of the gate as well as the declaration of performance (DWU) issued for this gate becomes invalid immediately, especially for fireproof capacity.

7 Possible defects and problem remedy

Any defects to the fire protection curtain gate must be reported to its manufacturer and shall be fixed according to manufacturer's recommendations by authorized personnel (see chapter: "INSPECTIONS, MAINTENANCE, REPAIRS").

Type of defect	Cause of defect / operator's fault	Manner of elimination of defect by operator
Curtain blanket does not unwind, drive motor working	Guides obstructed or damaged	Call service to unblock or to replace the guides
	Mechanical damage to structure element	Call service to repair/ replace of damaged element
	Mechanical damage to drive	
	Weighting steel element is out of blanket	Slide the weighting element into blanket's groove
Drive motor does not start	Power failure, power switched off	Check the position of key-operated switch, turn it to "I" position
	Battery discharged	Charge the battery
	Electric power fuse blown	Replace the fuse
Fire detector does not work/ does not start the control circuit	Dirty/faulty	Call service to clean/adjust/replace
Visual/audible signaling does not start	Circuit component faulty	
Gate Controller		
		Call service for repair

8 INSPECTIONS, MAINTENANCE, REPAIRS

8.1 TABLE OF FREQUENCY OF INSPECTIONS AND MAINTENANCE WORKS

Inspections, maintenance works, and repairs of fire protection curtain gate must be performed by the competent person having appropriate knowledge and experience in this kind of works.

According to the conditions stated in the contract, the manufacturer of fire protection curtain gate or his authorized teams/installation companies (see chapter "INTRODUCTION" and clause "Requirements regarding operators") do perform payable service inspection and maintenance, repairs, fault elimination for fire protection curtain gate. Above mentioned companies has adequate technical means, spare parts and competent personnel.

Written orders for above mentioned works shall be sent to Service Dept. of Małkowski-Martech S.A. (serwis@malkowski.pl or fax. 48 61 2227 501). The contact addresses can be found on manufacturer's website and in warranty document.

To ensure proper and safe functioning of fire protection curtain gate, the inspections and maintenance works shall be carried out according to this manual and these works are obligatory to maintain the declared performance of fire protection curtain gate valid as well as to not lose the warranty.

Type of inspection	Frequency*	Performed by
Before use inspection	Before each use (not applicable in case of fire occurrence)	Operator
Monthly inspection	Every 1 month	
Service inspection and maintenance	Every 6 months	Authorized service team

s - Check, review, clean

x - Adjust, lubricate*.

TABLE OF FREQUENCY OF INSPECTIONS, MAINTENANCE WORKS

Assembly, subassembly	Required operation	Before each use*	Every 1 month*	Every 6 months*
Whole device				
Device structure	Check the painted surface (no dirt, rust, etc), clean if needed		S	S
	Check the completeness of components and lack of mechanical and performance faults	S	S	S
	Check the gate marking (rating plate present and legible?)		S	S
Curtain blanket	Check if dirty, mechanical damaged, etc. (clean if needed)	S	S	S
	Check the position and fixing of weighting profile element		S	S
Brackets, shields	Check the fixings and their condition.			S
Curtain unwinding/winding system				
Guides	Check the fixtures, condition of guides and their patency			S
Expanding seals	Check the fixing and condition, lubricate if needed ¹			S
	Check if damaged, ruptured		S	S
Electric circuit/control				
Whole electric equipment set	Check by detector initiation that set is working correctly; adjust if necessary			SX
Fire detector	Check the condition, clean; adjust if necessary			SX
Gate Controller	Check the proper operation of all components of the controller			S
	Check if no error is displayed on key-operated switch	S	S	S
Key-operated switch	Check the condition, i.e. regarding damages, operation		S	S
Electric drive motor	Check the condition (smooth operation, with no jerks, humming, vibrations, etc.)		S	S
Battery	Check the condition of terminals and cables, clean and lubricate if necessary ²		S	SX
	Check the level of electrolyte, if necessary refill the electrolyte, recharge.		S	S
Electric power supply ³	Check the equipment fixtures, cable ducts and their condition		S	S
	Check the condition of fuses for contacts, burn-ons, etc.; replace if necessary			SX

Worn parts of fire protection curtain gate and faulty parts shall be replaced with new ones. Only original and authorized by manufacturer of fire protection curtain gate parts are allowed to use.

Inspections, maintenance works, and repair works are performed by authorized worker who certifies the scope of these works in Periodical Inspections and Maintenance Sheet attached to this manual as an Annex or in a separate protocol.

The fire protection curtain gate user shall keep the records on inspections, maintenance works and repairs performed.

8.2 INSPECTIONS PERFORMED BY OPERATOR

Operator's inspection shall be performed by person designated by the user and trained in operation of fire protection curtain gate by the manufacturer of fire protection curtain gate or its authorized team/ installation company. (see also recommendations in chapter "REQUIREMENTS REGARDING OPERATORS" and table " TABLE OF FREQUENCY OF INSPECTIONS, MAINTENANCE WORKS").

During inspection works the basic personal safety means shall be used, eg. rubber gloves, etc.

¹ Technical vaseline is recommended.

² Technical vaseline is recommended.

³ Tests of insulation resistance of electric power supply mains and tests of continuity of cables at least every 5 years.

In case of defect or damage to the fire protection curtain gate or in case of notice of irregularity in its operation the supervisor and the manufacturer or his authorized installation team/company shall be advised.

8.3 SERVICE INSPECTIONS AND MAINTENANCE WORKS

Service works are performed by teams of qualified and experienced MAŁKOWSKI-MARTECH S.A manufacturer's workers or by subcontracted companies having the manufacturer's authorization for servicing of fire protection curtain gates.

To ensure that client are sure the service works were performed by team/company fully professional/ authorized, the personnel authorized for these works should have and show the **Authorization for Assembly Certificate** and service workers the **Object Authorization for Service Certificate** issued by the manufacturer of fire protection curtain gate MAŁKOWSKI-MARTECH S.A.

According to the "List of assemblies, parts" include in Chapter "Technical data" of this manual, the manufacturer of fire protection curtain gate has defined who is entitled to repair/replace of assemblies, subassemblies, parts on pain of losing the warranty rights and validity of performances declaration fire protection curtain gate.

NOTE!

According to the Decree (Dz.U.2010.109.719 with later amendments) §3.2"Fire protection devices (...) should be subject to technical reviews and maintenance works according to the rules and manners defined in Polish Standards on fire protection equipment and extinguishers, in technical and service manuals and in operator's manuals developed by manufacturers of this equipment. " §3.3 "Technical reviews and maintenance works should be carried out within the periods defined by the manufacturer, at least once a year. "

The service inspections, maintenance works, repairs, overhauls of fire protection curtain gate can be performed only by trained manufacturer's workers or by service teams/companies authorized by the manufacturer.

The user of fire protection curtain gate or person/entity authorized by him is obliged to manage and storing the documented evidences of service and maintenance works performed at least once a 6 months, unless otherwise agreed in the contract (or unless special local requirements/regulation did not force a different frequency of service inspections and maintenance works).

8.4 CLEANING

The operating worker is obliged to keep the workplace and fire protection curtain gate clean. General commercial cleaning means for kitchen applications are recommended for this purpose (eg. dishwashing liquid).

It is not allowed to use an aggressive cleaning agents nor organic solvents. Do not use a pressurized washing (eg. water). In case of dirty fire protect curtain gate with insoluble materials, carefully clean it mechanically to not damage or scratch a painting coat.

8.5 REPLACEMENTS

WHEN ORDERING THE SPARE PARTS, THE FOLLOWING SHOULD BE LISTED: YEAR OF MANUFACTURING OF FIRE PROTECTION CURTAIN GATE, PART NUMBER AND THE NAME, NUMBER OF PIECES.

REPLACEMENTS USED IN INSPECTIONS, MAINTENANCE WORKS, REPAIRS, OVERHAULS MUST BE ORIGINAL MANUFACTURER'S PARTS AS PER "LISTS OF ASSEMBLIES, SUBASSEMBLIES, PARTS..." INCLUDED IN "TECHNICAL DATA" CHAPTER OF THIS MANUAL.

9 DISPOSAL

Disposal of fire protection curtain gate and its worn component shall be carried out according to the regulations in force.

In case of complete worn, the disposal of fire protection curtain gate or its single components, the following should be done:

- disassemble the components of fire protection curtain gate and electric system in a manner reverse to assemble and send them to recovery.
- plastic components, rubbers, mineral wool shall be sent to recycling,
- steel structure, sheet metal, steel profiles, metal bars shall be chopped up and sent to the scrap along with other metal components (screws, bolts, etc.)

9.1 INFORMATION ON SUBSTANCES

Neither of components of fire protection curtain gate contains asbestos and coating/elements causing emissions of negative affecting the ozone layer of the atmosphere. Colors and corrosion preventive coatings of the structure and components do not contain cadmium, chromates, etc. which could contaminate the air or aquifers.

10 MARKING

The fire protection curtain gate is marked with the rating plate (KT plate), the temple of which was shown below. The parameters referring to delivered fire protection curtain gate are shown on the plate placed on the gate.



 2310	 MAŁKOWSKI MARTECH MAŁKOWSKI-MARTECH S.A. Konarskie ul. Kórnicka 4 62-035 Kórnik 18 001/CPR/MARC-Ok/2018 – PL/B	EN 16034:2014 Brama kurtynowa przeciwpożarowa MARC- Ok EI ₁ -45/EI ₂ -60/EW _{3,5} -120 Przegrody ogniowe oraz/lub drogi ewakuacyjne Odporność ogniowa: EI ₁ 45, EI ₂ 60, EW 120 Zdolność do uwolnienia: uwolnione Samozamknięcie: C0 Trwałość zdolności do uwolnienia: uwolnienie utrzymane Wytzymałość samozamknięcia: - na degradację: C0 - na starzenie się (korozję): spełniona Nr fabryczny: / 2018
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Figure 12. Example of rating plate for fire protection curtain gate (according to PN-EN 16034/2014)

The rating plate is factory mounted on right column of frame of fire protection curtain gate installed, apprx. 1 m above the floor of object/room.

11 Appendixes

Periodic inspection and maintenance sheet.

Warranty card.

Copy of Performance Declaration

Available for companies, which have the authorization for installation issued by the manufacturer:

- instructions for installation of electric equipment set MARC-Vic_01.00.00
- instructions for assembly of fire protection curtain gate

WARRANTY CARD

Warranty for Buyer/Entitled to warranty *:		Location of installation *:			
Warranty period*:		according to agreement, order no.*:			
Item.	Subject of sale	additional description*:		Marking no.*:	Quantity.*:
1.	Fire protection curtain gate MARC™- Ok EI ₁ -45/EI ₂ -60/EW _{3,5} -120	EI45, EI60, EW120			
2.	Gate Controller	MSB230/ MSB24			
3.	Key-operated switch	PKM			
4.	Visual/audible signaling device	SA			

Signing by the Buyer (Entitled to warranty) of this manual on its title page, to which this Warranty Card is attached, constitutes an acceptance of warranty conditions for the subject of sale.

§ 1

Dispatch; Acceptance; Pre-assembly works

1. Quantitative acceptance of a subject of sale takes place before its charging, at "MAŁKOWSKI-MARTECH" S.A." (hereinafter referred to as the Warrantor "). The signature of Assembly Technician/Buyer on the WZ document delivered along with the subject of sale is an acknowledgement that the subject of sale is complete and consistent with the specification on this WZ document.
2. Before an attempt to assembly/installation of the subject of sale, the assembly technician shall thoroughly check this subject of sale for transportation damages, completeness and validity. When any discrepancy in ordered and delivered goods and/or any defect is discovered, the assembly/installation works shall be hold back and the Warrantor should be advised immediately
3. In case of the defect to the subject of sale could be found, with reasonable degree of diligence, before an attempt to assembly/installation of the subject of sale - the CLAIMS issued after assembly/installation shall be rejected as unfounded.

§ 2

General terms of warranty

1. The Entitled entity maintains the warranty rights under condition:
 - a) the assembly/installation of the subject of sale was carried out by the Warrantor or by the entity having Authorization Certificate for Installation (issued by the Warrantor) and confirmed this by means of an entry to the last page of this warranty card,
 - b) orders for periodic service inspections (on the basis of separate agreement) of the subject of sale covered by this warranty, are placed at Warrantor or at the entity having Authorization Certificate for Installation (issued by the Warrantor) for following periods:
 - every 6 months - in case of the subject of sale remains in extreme position - open/closed - without cyclic starts,
 - every 3 months - in case the use of the subject of sale is different than this described above, according to the criteria defined in above mentioned agreement by the Warrantor,
2. These warranty terms apply to the subject of sale bought, assembled and installed on the territory of Republic of Poland.
3. The service inspection defined in paragraph 1 are carried out for a fee.
4. The copy of reports on the service inspections performed by the entity having Authorization Certificate for Installation shall be sent by the Entitled to warranty within 14 days after completion of works to the Warrantor at address:
 - a) by e-mail to service@malkowski.pl
 - b) to Warrantor's head office, or otherwise the rights provided in the warranty are lost.

5. The warranty period starts on the date of protocol acceptance of assembled and installed subject of sale.
6. The rights granted by this warranty do not cover the right to claim reimbursement of lost profits nor possible injury in connection with the defects to the subject of sale.

§ 3

Procedures for claiming damages and exercising warranty rights

1. The entitled to warranty is obliged to appoint the device defect to subject of sale in written form immediately, but no later than 14 days after disclosure the defect.
2. The claim shall be reported to the Warrantor in writing on pain of invalidity.
3. The claim should contain:
 - a) copy of Warranty Card
 - b) detailed description of discovered faults, cause and condition of occurrence,
 - c) serial number of subject of sale,
 - d) reports on the service inspections performed on the subject of sale as per §2.p.4.
4. To ensure an efficient warranty procedure, it is recommended to attach the photos of damaged subject of sale for estimation of damage.
5. The entitled to warranty is obliged to ensure conditions to allow and enable a repair of subject of sale (especially by enable an access to the subject of sale, eg. exempting other devices which could put repair technician at risk).
6. Failure to appoint a claim within period indicated in p.1 releases the Warrantor from realization of this claim.

§4

Warranty rights

1. In case of duly supported claim, the Warrantor - in his sole discretion - will remove the damages to subject of sale (perform a repair) or will replace the subject of sale (or its part) with the new one.
2. Replaced faulty subject of sale shall become the property of the Warrantor.
3. In case the faults and damages discovered within warranty period do not allow the user to use the subject of sale properly, the Warrantor shall undertake all the necessary steps to remove the inoperability within 10 working days after the moment of claim report.
4. In case the faults and damages discovered within warranty period do allow the user to use the subject of sale, the Warrantor shall undertake all the necessary steps to remove the inoperability within 20 working days after the moment of claim report.
5. Above mentioned periods (p. 3 and p.4) can be prolonged, due to important reasons, especially when:
 - a) parts, necessary for realization of warranty obligations, are not available on the market at the moment,
 - b) there is a necessity to bring in some parts from abroad,
 - c) due to reasons beyond the control of the Warrantor, of which the entitled to warranty shall be advised.
6. The working days means days between Monday and Friday, excluding public holidays.
7. When, while executing its duty, the Warrantor has delivered to the Entitled to warranty the free-of-defects part as a replacement for faulty part or the Warrantor performed an essential repairs to the subjects of sale, the warranty period restarts from the date of delivery of the free of defect part or of returning of the faulty part.
8. Warranty period for replaced parts restarts from the date of delivery of the free of defect part and applies to these parts.
9. Replacement of parts does not extend the warranty period for whole subject of sale.
10. The Warrantor is entitled to charge the Entitled to warranty with costs induced by unjustified claims (what means the lack of damage or request for removal of fault not covered by this warranty).
11. Costs mentioned above in p.10. include especially the transportation costs and repair costs - if the repair took place.
12. Costs of repairs not covered by the warranty are to be calculated according to the Warrantor's price list.

§4

Exclusions of Warranty rights

The Warranty does not cover:

1. defects due to the reason other than belonging to the subject of sale,
2. defects due to any interference in the subject of sale made by the Entitled or by the third party, especially the alterations and design changes to the subject of sale without prior consent of the Warrantor on pain of invalidity of the PERFORMANCE DECLARATION AND WARRANTY GRANTED.
3. defects due to misuse of the subject of sale or to failure to correct maintenance, especially use and maintain in contradiction to statements enclosed in an operations manual concerning this subject of sale, and to which this Warranty card is the Annex.
4. defects due to assembly works or repair works performed by the personnel not having Warrantor's authorization,
5. subject of sale installed on the object which is covered with the warranty and on which was no service inspections were carried out by the Warrantor or by an entity having Service Authorization Certificate.
6. parts of the subject of sale that are subject to natural partial/complete wear according to the performances or destination (eg. components of moving parts, battery, etc.),
7. mechanical damage to the subject of sale and faults being consequences of such damage,
8. faults being consequences of defective structure where the subject of sale was installed,
9. improper selection of the subject of sale regarding compatibility with conditions at installation location,
10. improper operation of devices not originated from the Warrantor and having negative effects on operation of the subject of sale. In case of discovering of such fact , the PERFORMANCE DECLARATION ISSUED FOR THIS SUBJECT OF SALE AND WARRANTY GRANTED are canceled immediately.
11. defects caused by external factors, especially by: fire, abnormal weather conditions, random events.
12. defects caused by improper use or use in a manner inconsistent with the operation manual of the subject of sale, including excessive use.
13. use of spare parts of other manufacturers, other than original parts of Warrantor,
14. subject of sale, of which this Warranty card has been changed in any way or blurred,
15. subject of sale, of which the rating pate has been removed, destroyed or modified,
16. warranty seal on the subject of sale was broken or torn off.

.....
Date and signature of Representative having Warrantor's Assembly Authorization Certificate

.....
Authorization No. and date of its issue

* fill this field