



Safe Doors

Regulations overview

Safety of gates and doors

Notice on EN 12453

Conformity and CE Marking

Risk assessment

Technical File

2021 edition

Notes for the use of this guide – Safe doors

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THE EUROPEAN REGULATIONS

The world of automatic doors is regulated by the European Directives; in the last 20 years there has been a gradually update of the regulations that **govern the essential safety requirements of the products**, here is an updated overview:

THE DIRECTIVES are European laws, that once transposed by the single countries, become national laws.

THE COMPLIANCE of a product with a Directive is declared when a product respects the essential requirements described in the Directive.

THE CE MARKING of a product is subject to compliance with all the applicable Directives.

THE TECHNICAL REGULATIONS define the minimum safety requirements and the construction criteria imposed by the Directives.

The obligation of the CE marking implies that the builder assumes the responsibility and declares the compliance of the product with the European Directives.

In the case of industrial, commercial and garage gates and doors, the principal Directives and the general Regulations of reference are the following:

MAIN DIRECTIVES

- 305/2011/UE** - Construction products regulation
- 2006/42/CE** - Machinery Directive
- 2014/35/UE** - Low Voltage Directive (LVD)
- 2014/30/UE** - Electro magnetic compatibility EMC Directive
- 2014/53/UE** - Radio Equipment R&TTE Directive
- 2011/65/CE** - RoHS Directive II - Restriction of Hazardous Substances

305/2011/EU - Construction products regulation

The Construction Products Regulation **CPR** no. 305/2011 (that has substituted the 89/106/EEC Directive on construction products CPD) lists the harmonized conditions for the correct sale of construction products. The Directive establishes the concepts and the application of the **CE marking**, essential condition for the companies that must adopt the **simplified procedures**, with consequent reduction of the costs. From 2013 has been added also the **Declaration of Performance DoP**, a particular "Declaration", more detailed than the previous Declaration of Conformity made by the builder.

MACHINERY DIRECTIVE 2006/42/EC – Automatic gates and doors

The Machinery Directive **2006/42/EC** states that automatic gates and doors must be regarded as **real Machineries**, and as such they must comply with specific safety standards. This applies to new installations, while those already present must be adjusted (if necessary). The definition of the "**Partly Completed Machinery**" has also recently been inserted and updated.

DEFINITION OF MACHINERY: group of stationary and moveable parts (at least one moveable), connected and/or assembled with each other (also sturdily) and actioned by electrical systems or by power actuators with the aim of perform well determined applications (movements, transformations, generations).

DEFINITION OF PARTLY COMPLETED MACHINERY: group of parts and/or systems that do not constitute or generate specific actions; a partly completed machinery has an autonomous operation and it is designed to be part of a machinery or of a bigger plant.

(N.B. The definitions of the other Directives can be found in the website of the European Commission)

LIST OF THE REGULATIONS GOVERNING THE INDUSTRY OF MANUAL AND AUTOMATIC GATES

- EN 13241** Industrial, commercial and garage doors and gates - Product standard, performance characteristics
- EN 12604** Industrial, commercial and garage doors and gates - Mechanical aspects - Requirements and test methods
- EN 12433/1/2** Terminology - Types of doors - Parts of doors
- EN 12444** Resistance to wind load - Testing and calculations
- EN 12427** Air permeability - Test method
- EN 12453** Safety in use of power operated gates and doors – Requirements and test methods
- EN 16005** Pedestrian power operated doors – Requirements and test methods
- EN 60335-2-95** Specific provisions for single residential garage doors with vertical moving
- EN 12978** Safety devices for power operated doors and gates – Requirements and test methods
- EN 13849** General principles for the design of safety-related parts of control systems
- EN 13857** Safety distances to prevent hazard zones being reached by upper and lower limbs

FULFILLMENTS FOR THE INSTALLER OF AUTOMATIC DOORS

The Machinery Directive 2006/42/CE transposed to all intents and purposes by all the countries members of the European Union, is today the reference point for the **obligations of making the machineries safe.**

So, let's start from the important concept that: "...the responsibility of the CE marking lies with the installer who has assembled the automation in place, creating a machinery that is one of a kind and that differentiates itself from the serial products for several constructive, structural and environmental aspects...."



“

... clearly, the responsibility of potential damages to persons and/or things caused by the door itself, lies directly with the final installer, because he has built the machinery, assembling ex-novo various electromechanical components (engine, gate, warning and protection devices, etc.) in a final configuration that is never a serial product, but every time a new machine ...

”

MAKE AN AUTOMATIC DOOR COMPLIANT

To obtain the presumption of conformity with the Machinery Directive, and so the CE marking, the professional who installs an automatic door must refer to the harmonized regulation **EN 12453** that describes the requirements and test methods for operational safety.

Among the obligations of the installer there is the one of compile the Technical File of the machinery, that contains the verification of the **essential requirements**, the **risk assessment** and the reports of the tests made in situ to check the operation of the safety devices; first of all, the system of **limitation of impact/crush forces**, by means of the specific measurement device required by the EN12453 standard.

The following paragraphs describe the sequential operations for the installer/maintenance technician.

- "Taking charge" procedure
- Mechanical and safety devices checks (Risk Assessment)
- Writing of the Technical File
- Maintenance Plan / Maintenance Log
- CE Marking and Certificate of Conformity

OPERATING PROCEDURE: INSTALLATION, REPAIR, ADJUSTMENT, EXTRAORDINARY MAINTENANCE

1

- **Initial phase “taking charge”**
 - Inspection of the installer/ maintenance technician
 - Evaluation of the intervention
 - Presentation of the **Acceptance Report**

2

- **Works execution**
 - Execution of works (as in the Acceptance Report approved by the customer)
 - Execution and drafting of the Risk Assessment (including the adopted solutions)
 - **CE Marking** of the door
 - Submission of the **Inspection Report** (customer’s copy)

3

- **Final phase**
 - Drafting of the **Technical File**
 - Drafting of the **Declaration of Conformity**
 - Drafting and printing of the **Maintenance Log**

SIMPLIFIED GUIDES FOR TECHNICAL FILE AND RISK ASSESSMENT

The documents represented in the **Operating Procedure** can be drafted and completed with the **Simplified Guides** available in two formats: as a **paper/PDF** document or through access to the **Online Portal**.
For more information, please visit the [Microtronics website](#) at the "[Simplified Guides](#)" page.

ANALISI DEI RISCHI - BASCULANTE
IN CONFORMITÀ ALLA DIRETTIVA MACCHINE 2006/42/CE - NORME APPLICABILI: EN 13241:2016 - EN 12453:2017 - EN 12978:2009

La lista dei controlli è stata redatta e semplificata per agevolare la comprensione e la compilazione per l'installatore o il manutentore, per questo motivo Microtronics non si assume alcuna responsabilità per eventuali errori, omissioni o approssimazioni dovute ad esigenze grafiche di redazione. Microtronics ricorda che le Guide Semplificate non sostituiscono quanto previsto dalle normative che il costruttore della portinella motorizzata è tenuto a rispettare.

PORTONI BASCULANTI

- Zona a rischio Schiacciamento, Convogliamento, taglio (all'interno delle guide laterali A): devono essere applicati dei profili che impediscano l'introduzione delle dita/mani, oppure la zona di pericolo deve essere segnalata o evidenziata.
- In caso sia presente una porta per il passaggio pedonale (B), è necessario verificare l'intervento dell'interblocco.
- Per evitare il rischio di convogliamento delle mani nella parte superiore (C), l'altezza della chiusura deve essere > 2500mm.
- Oppure applicare delle protezioni a un dispositivo di sicurezza (costa sens.)
- Zona a rischio Cavigliamento, Schiacciamento, Convogliamento tra il profilo laterale del telaio e i bracci dei motori (D): la distanza deve essere = 25mm
- N.B. Questa operazione non è obbligatoria nel caso il portone rispetti la Norma EN60335-2-95, e sussistano contemporaneamente queste condizioni:
 - Installazione in luogo privato
 - Senza accesso diretto ad un'area pubblica
 - Senza automatismo

Forza Din. max	Fd= 475 N	<=	1400 N
Periodo Dis.	Td= 0.43 s	<	0.75 s
Forza Stat. med.	Fs= 0 N	<=	150 N
Forza Finale	Ff= 3 N	<=	25 N

TECHNICAL FILE

The Technical File includes **all the documentation related to the “machinery”**, so gate/door including motorization/automation. The Technical File must be kept by the installer/builder for at least 10 years. (N.B it must be available for the competent authorities). Contents:

- Declaration of conformity of the electrical system according to D.M. 37/08 (if made by the installer)
- Diagram of electrical connections and control circuits of the door
- Drawing of the overall door/gate and/or pictures
- Risk assessment with adopted solutions
- Impact force measurements and corresponding print report
- Declaration of Conformity (or DoP if the mechanical structure has been modified)
- Maintenance log
- Declarations of conformity of the individual components
- Instructions for use and general safety warnings

TECHNICAL FILE - DOCUMENTS IN DETAIL

■ Declaration of Conformity of the electrical system

Normally the drafting of the Declaration of Conformity of the electrical system is the task of the electrician or the qualified professional, while the installer of the motorised door will carry out only the Declaration of Conformity according to 2006/42/CE. (If it is the same person, it will be necessary to realise both).

■ Diagram of electrical connections and control circuits of the door

This documentation may already be attached to the project or may be present among the last pages of the user manual, however the diagram of the automatic door and its components can be represented also with a "block diagram".

■ Drawing of the overall door/gate and/or pictures

The graphical representation of the door may be included in the project itself, but it can also be made with the specific [Microtronics' Simplified Guides](#) or be documented with drawings and/or pictures.

■ Risk assessment with adopted solutions

The risk assessment deals with the main safety problems related to the mechanical parts of the automation in movement. The impact/crush force generated by the electric engine is potentially dangerous for people passing through the affected area.

In this regard, the regulation **EN 12453:2017** “*Industrial, commercial and garage gates and doors – Safety in use of power operated doors. Requirements and test methods*” describes in detail all the possible situations of injury that must be taken in account for the adoption of the appropriate preventive measures: it goes from the already mentioned risk of impact/crush, but also to the risks of: dragging, shearing, hooking, etc... up to the problems that may arise when the electrical grid shuts down or when this should return unexpectedly

The **regulation suggests the most suitable measures** to make doors safe, such as the implementation of safety distances, the installation of protective barriers, the elimination of mechanical parts that are dangerously protruding and the adoption of automatic systems for the limitation of forces.

N.B. In the paragraph Risk assessment - in-depth analysis there is the example of a sliding gate.

■ Impact force measurements and corresponding print report

The impact forces between the edges of the door must be measured with the specific device (see [Microtronics' BlueForce Smart](#)), described in detail in the regulations EN12453 and EN16005. This device must have specific (mechanical and constructive) characteristics and a well determined precision because the tests must give concrete, reliable and reproducible results.

For every kind of automatic door must be carried out a certain number of tests at determined distances and positions. BlueForce Smart, thanks to its advanced software and to the free **App** for mobile devices, allows to have close at hand all the specific points and distances listed in the Regulations.

■ Drafting and print of the Declaration of Conformity

The CE Declaration of Conformity (in addition to the manufacturer data) lists all the applicable Directives and Regulations. In case that one of the components of the door is accompanied by a **Declaration of Incorporation** (relating to a partly completed machine), it is necessary to attach it or quote its reference.

In case redevelopment/adjustment works have been carried out on the door, it is possible that the mechanical structure has undergone several changes, it will also be necessary to carry out the report on the structural calculations (wind forces, loads, etc.), as well as a new **Declaration of Performance** containing the list of the technical performance values.

N.B. a copy of the CE Declaration is represented in the last page.

■ Maintenance log

The maintenance is of the **utmost importance** for the efficient maintenance of automatic doors, both for private use, therefore with limited crossing flow, and for doors installed in high-density areas (public places, companies, hospitals).

In both cases, it is mandatory to carry out **the Maintenance** and to compile the **Maintenance Log**, which must clearly contain this information:

- Customer data, technical data of the door
- Indication of the date of first installation (or following maintenance)
- List of the inspections/operations carried out
- A space for the description of the activities of maintenance/repair
- Date of the next maintenance

Note: with reference to the rules on work safety and according to the Machinery Directive, the regular maintenance of machinery, equipment and plants **must be mandatory**, for this reason a **Maintenance Contract** may be necessary to establish a contract between the parties, allowing greater protection for the user and a pre-established maintenance program for the installer.

With the update of the recent Directive 99/44/CE, the rules of seller-customer relationship have been implemented. Since an automatic door is considered a consumer good, the installer must also remember the duration of the warranty period and any replacement of components for defects.

■ Declarations of Conformity of the individual components

Often the automation in its complex is composed of more electrical or electromechanical parts assembled together. If the parts come from different manufacturers, it will be necessary to give the appropriate documentation (CE Declaration, manuals etc.).

In case that the component(s) is/are considered by the manufacturer as **partly completed machinery** (ref. Machinery Directive 2006/42/CE) it will also be necessary to attach the **Declaration of Incorporation** to the documentation.

■ Instructions for use and general safety warnings

Normally the instructions for use of the different components are provided by the manufacturer and can include also electrical schemes, CE declarations, mechanical representations, etc. The instructions have all the necessary information for the user to utilize properly the automatic door, also including the **modalities of maintenance** and the indications of the **risks and of the safety**.

“ It is important to underline that the application of the Regulations should not be considered as a heavy bureaucratic burden, but as an opportunity to promote and **requalify the work of the installer of automatic doors**; not only in terms of improvement of the quality of the service provided, but also with a view to a new big potential market, that is the one of the **making safe**, also obligatory for all the pre-existing automatic doors ”

RECOMMENDATIONS FOR THE INSTALLER

- Advise the customer in the choice of the kind of door preferring, if possible, the lightest models with a simple structure, without sharp borders, dangerous protrusions, or slots with the risk of entrapment
- Install an engine/control unit of latest generation, with electronic control of the force
- Follow the assembly instructions of the engine and of potential safety devices suggested by the door manufacturer
- Making the door compliant applying “common sense” in the risk assessment, then prepare the documentation required by the Regulations
- Keeping up to date by taking part to training courses dedicated to the automatic doors sector

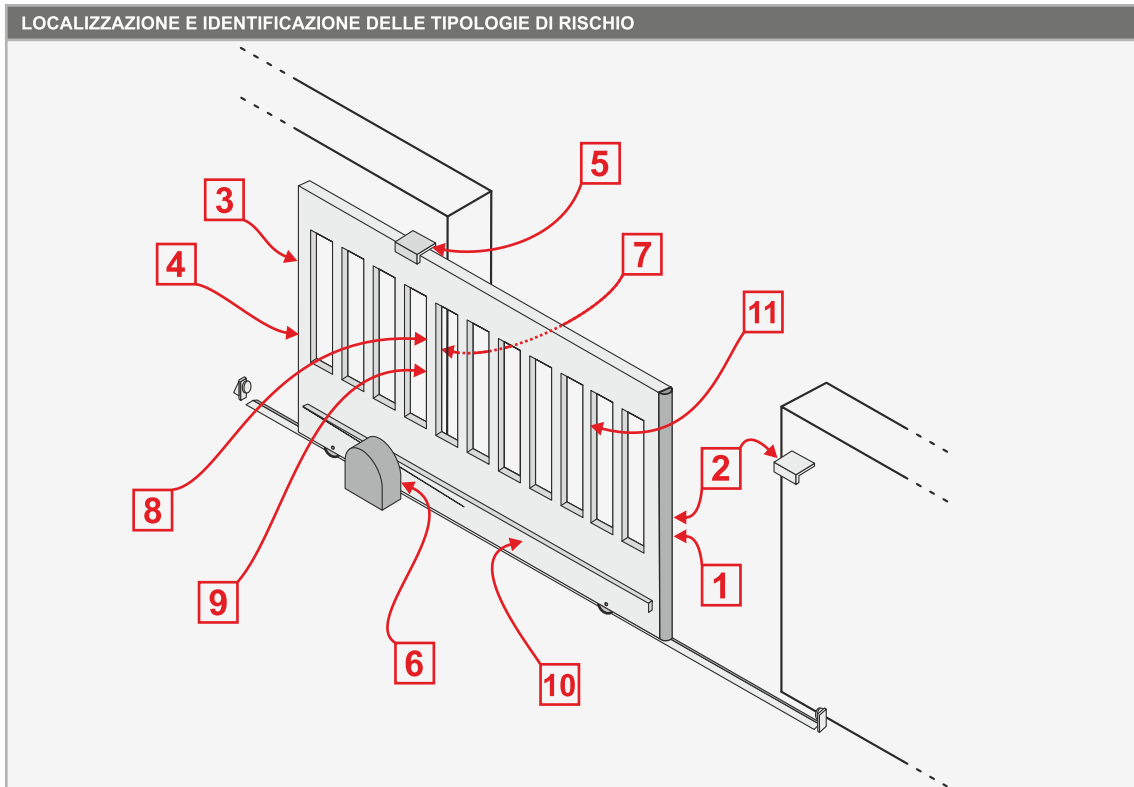


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RISK ASSESSMENT/ANALYSIS

The Risk Assessment is compulsory for preventing accidents in the areas where there is a powered operated door. Unfortunately, in relation to the risks, there may be several dangers, consequently it is necessary to implement all the activities to eliminate or **reduce as much as possible** the level of risk in the interested area and in the proximity of the automatic door.

One of the sheets contained in the *Microtronics Simplified Guides* shows a sliding gate with the indications of the various hazard points and below also the space for the inclusion of the list of activities or interventions for the reduction of risks.



OK		NON APPLICABILE		TIPO RISCHIO	DESCRIZIONE DELLA PROTEZIONE / CONTROLLO APPLICATO
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1 Impatto/Spinta Anteriore	.....
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2 Schiacciamento Anteriore	.....
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3 Impatto/Spinta Posteriore	.....
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4 Schiacciamento Posteriore	.....
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5 Convogliamento	.....
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6 Convogliamento	.....
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7 Cesoiamento	.....
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8 Cesoiamento	.....
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9 Taglio	.....
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10 Uncinamento	.....
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11 Uncinamento	.....
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

RISK ASSESSMENT/ANALYSIS - CHECK LIST

The Risk Assessment consists of several verification points, a written and appropriate list is necessary for the installer for the mechanical and electrical functional control of the interested parts and for the verification of the risks (e.g., the movement of the doors and/or the safety spaces).

The risk assessment is applicable to all types of automatic doors (doors, gates, barriers, etc.).

LEGENDA: OK / Verificato Riparare / Revisionare NON Applicabile

VERIFICA DEI RISCHI MECCANICI STRUTTURALI

- Solidità e la stabilità della struttura e degli organi meccanici di sostegno (anticaduta)
- Stato e l'usura di ruote/cuscinetti/cardini, oppure altri sistemi di scorrimento
- Stato e fissaggio del motore o degli organi adibiti al movimento
- Stato e solidità dei fermi meccanici di fine corsa (limitazione corsa dell'anta)

VERIFICA DEI RISCHI DOVUTI AL MOVIMENTO DELL'ANTA

- Funzionamento e posizionamento delle fotocellule (interne, esterne e supplementari)
- Se installate, verificare lo stato ed il funzionamento dei bordi sensibili o delle coste di sicurezza (attive o passive)
- Se installate, verificare il corretto funzionamento delle barriere ottiche, laser, radar di tipo "E"
- Presenza delle distanze/spazi di sicurezza relative all'area di chiusura ed apertura dell'automazione (franchi di sicurezza)
- Se presenti, verificare lo stato delle protezioni di sicurezza (reti, griglie, profili in gomma, ecc.)
- Verificare i limiti delle forze d'impatto o di schiacciamento con lo strumento dedicato BlueForce

VERIFICHE GENERALI

- Stato e funzionamento dello sblocco manuale/meccanico per la chiusura/apertura manuale dell'anta
- Se installato, verificare il funzionamento del comando/pulsante per l'apertura/chiusura manuale e che non sia posizionato in una zona pericolosa per l'utilizzatore
- Se installato, verificare lo stato ed il funzionamento del comando/pulsante per l'arresto d'emergenza
- Se accessibile, verificare lo stato ed il funzionamento del sezionatore/interruttore elettrico generale
- Verificare che il gruppo di azionamento/motore riprenda il suo regolare funzionamento dopo una temporanea mancanza dell'alimentazione elettrica
- Se presenti delle soglie con altezza superiore a 5/8 mm, verificare l'evidenziazione e la modellazione
- Stato e funzionamento dei dispositivi di cortesia (lampeggiante, cicalino, catarifrangenti, ecc.)
- Presenza e stato della targhetta CE
- Presenza della documentazione tecnica (Fascicolo Tecnico, Registro di Manutenzione ecc.)

NOTE AGGIUNTIVE

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.....

.....

DICHIARAZIONE DI CONFORMITA' CE



■ **IL SOTTOSCRITTO**

Nome:

Indirizzo:

■ **IN QUALITA' DI RESPONSABILE PER LA MESSA IN FUNZIONE, DICHIARA CHE IL PRODOTTO:**

Tipo:

Modello:

■ **RISULTA IN CONFORMITA' A QUANTO PREVISTO DALLE SEGUENTI DIRETTIVE COMUNITARIE:**
(Comprese tutte le modifiche applicabili)

Direttiva Macchine **2006/42/CE**

Direttiva Compatibilità Elettromagnetica **2004/108/CE**

Direttiva Bassa Tensione **2006/95/CE**

Direttiva **R&TTE 99/05/CE**

■ **INOLTRE DICHIARA CHE SONO STATE APPLICATE LE NORME ARMONIZZATE E LE SPECIFICHE TECNICHE:**
(Comprese tutte le modifiche applicabili)

- EN 13241-1: Cancelli e porte industriali, commerciali e residenziali - Norma di prodotto
- EN 12453: Porte e cancelli industriali, commerciali e da garage - Sicurezza in uso di porte motorizzate Requisiti e metodi di prova
- EN 16005: Porte pedonali motorizzate - Requisiti e metodi di prova
- EN 60335-2-95: Porte da garage singole residenziali a movimento verticale
- EN 12978: Dispositivi di sicurezza per porte e cancelli automatizzati
- EN 12604: Requisiti meccanici di: porte, cancelli e barriere ad azionamento manuale
- EN 12605: Metodi di prova di: porte, cancelli e barriere ad azionamento manuale
-

LUOGO:

DATA:

NOME DEL RESPONSABILE LEGALE:

FIRMA:

Microtronics S.r.l. non si assume alcuna responsabilità su compilazioni non corrispondenti o errate

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