

# **Practical Guide for EU-standards in the field of Gates and Doors**

Technical Recommendations for Gates and Doors

## **Introduction**

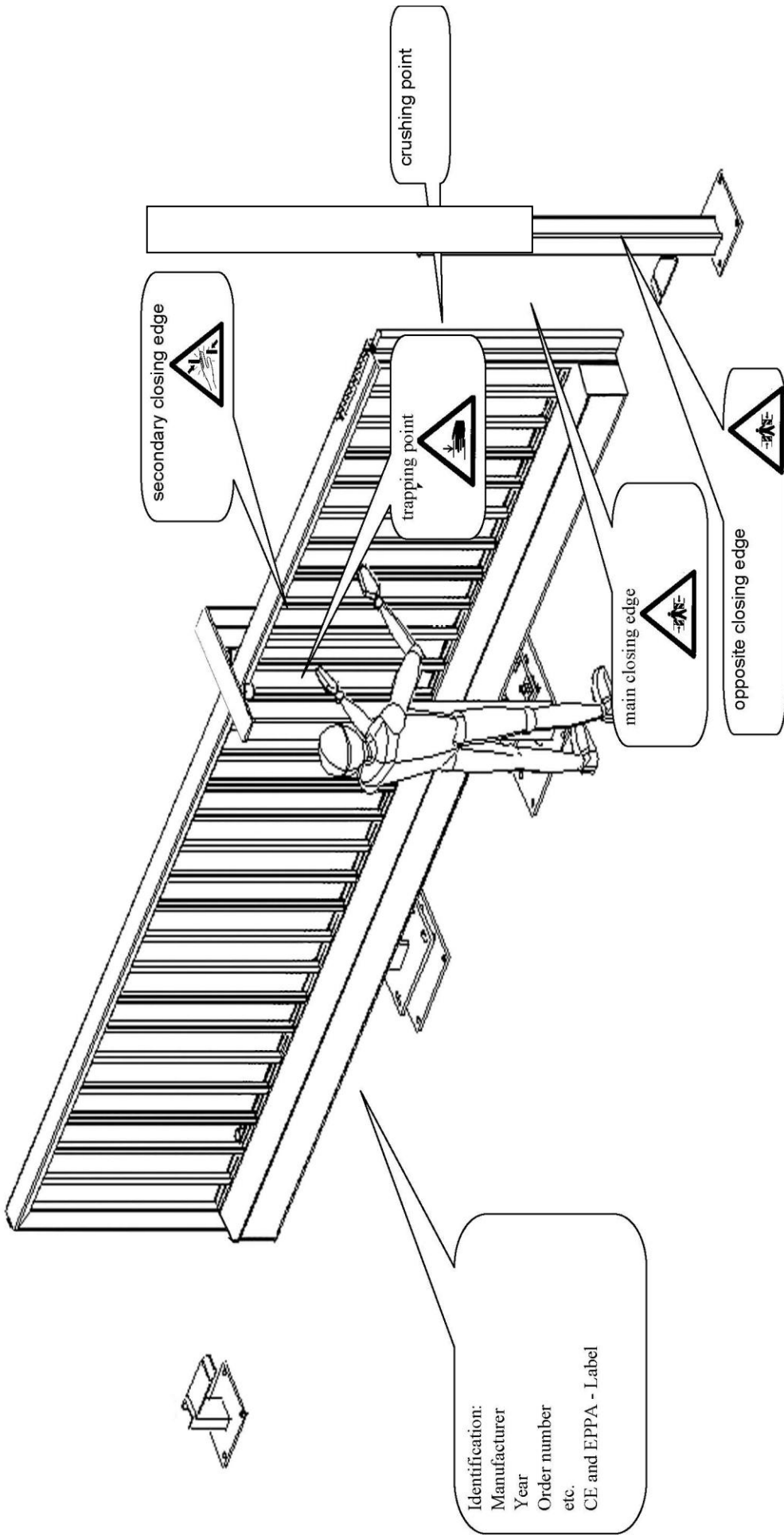
This guide is issued by the Gates Standards working group of EPPA for the attention of architects, specifiers, customers and potential customers. Gates are quality products which often present safe and secure solutions. This workbook gives an overview of the norms that exist for gates and doors, and aims to lead the buyer/reader to a quality solution providing a clear insight into the basic requirements as well as the major points of importance to be considered when buying or installing a gate.






This booklet should guide you through the variety of relevant EU standards and should function as an efficient search tool for norms when buying a gate.

EPPA Gates standards Working Group

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**Main attention points for a gate buyer**



Main attention points for a gate buyer	Definition	Danger
<b>Crushing point</b>	Areas that could potentially cause a crush injury when the gate is being opened or closed. In particular the area between the main and opposing closing edge	Crushing danger 
<b>Closing edges</b> Main closing edge:  Opposing closing edge:	Edge of a gate leaf, whose distance from the parallel opposing edge determines the usable aperture. Edge formed by the main closing edge of a counter closing leaf, a fixed edge or a surface against which the gate leaf is moving.	
<b>Trapping point/ Drawing in</b>	Areas that could catch someone while the gate is moving and pull them towards shearing and crush points causing injury	Trapping/Drawing-in danger 
<b>Shearing points</b>	Points at which a person may be at risk of injury through shearing between fixed and moving areas, i.e. bars on the gate and guide post	Shearing points 
<b>Automatic starting machine</b>		Automatic starting machine danger 

GLOSSARY OF TERMS FOR THE BUYER: 18 requirements	Glossary of terms for the buyer
<b>Shearing points</b>	Points at which a person may be at risk of injury through shearing between fixed and moving areas, i.e. bars on the gate and guide post
<b>Crushing points</b>	Areas that could potentially cause a crush injury when the gate is being opened or closed. In particular the area between the main and opposing closing edge
<b>Drawing-in point</b>	Areas that could catch someone while the gate is moving and pull them towards shearing and crush points causing injury
<b>Meeting safety distances</b>	The minimum distance required between a person and any moving part to prevent shearing, crushing or drawing in
<b>Safety protection of secondary closing edge</b>	Means of protecting the gate end stop, in particular the area between the main and secondary closing edges, this may require some means of detection or a securing distance
<b>Avoiding or safeguarding hazards caused by crushing, shearing and drawing in points</b>	Means of eliminating potential crushing, trapping or drawing in hazards, or guarding against them while maintaining security
<b>Identification</b>	Information written on a plate, fixed onto the product indicating manufacturer, type serial number and manufacturing date.
<b>Pre-sale technical information</b>	Technical product information given to the Customer by the Supplier in order to purchase the appropriate product
<b>Manual operation</b>	A system to open and close the gate manually, taking into account the allowable forces for closing manually or automatically
<b>Emergency stop device</b>	A safe and effective way of stopping the motorised gate to prevent damage or injury
<b>Trapping</b>	Risk of trapping someone when the gate is being opened or closed
<b>Hold to run control (dead man)</b>	A system of opening or closing the gate safely, where the operator has full view of the gate area, reducing the risk of trapping someone while operating. The operator must keep hold of the control in order to operate the gate. The gate must stop if the control is released, The instructions for the installation of the device must be followed
<b>Safeguarding against impact hazard</b>	A system to prevent the risk of impacts, either by limiting the dynamic force, or by eliminating the risk of contact with the gate
<b>Dynamic / static forces</b>	The dynamic forces are measurable while the gate is moving, in particular the dynamic forces between the primary and opposing edges of the gate. The static forces are to be measured when the gate has stopped
<b>Pressure Sensitive Protective Equipment (PSPE) and Electro Sensitive Equipment (ESPE)</b>	The PSPE will stop the gate should it come into contact with a body. The ESPE will provide detection without contact with a body
<b>Minimum levels of safeguarding at main edge</b>	This will be dependant upon the gate itself and the specific risk each model poses. Notice must be paid to the national regulations and a risk assessment of the site where the gate is being erected
<b>Testing</b>	A range of functionality and durability tests carried out on the gate, this would also include any special tests or inspections depending on the type of gate being used
<b>Installation, usage, maintenance and service instructions</b>	Instructions and useful recommendations for the safe installation, usage and maintenance of the gate and its component parts, including controls and appropriate regulations

**EPPA-recommendation: a manufacturer has to produce its gates in compliance with the requirements as mentioned in EC declaration of conformity '(see hereunder)**

**EC Declaration of Conformity**

**For the purposes of this Annex, "machinery" means either "machinery" or "safety component" as defined in Article 1 (2) (93/44).**

1. The EC declaration of conformity is the procedure by which the manufacturer, or his authorized representative established in the Community declares that the machinery being placed on the market complies with all the essential health and safety requirements applying to it.
2. Signature of the EC declaration of conformity authorized the manufacturer, or his authorized representative in the Community, to affix the EC marking (93/68) to the machinery
3. Before drawing up the EC declaration of conformity, the manufacturer, or his authorized representative in the Community, shall have ensured and be able to guarantee that the documentation listed below is and will remain available on his premises for any inspection purposes:

(a) technical construction file comprising:

- an overall drawing of the machinery together with drawings of the control circuits
- full detailed drawings, accompanied by any calculation notes, test results, etc., required to check the conformity of the machinery with the essential health and safety requirements
- a list of:
  - the essential requirements of this Directive,
  - standards, and
  - other technical specifications, which were used when the machinery was designed,
  - a description of methods adopted to eliminate hazards presented by the machinery,
- if he so desires, any technical report or certificate obtained from a competent body or laboratory,
- if he declares conformity with a harmonized standard which provides therefore, any technical report giving the results of tests carried out at his choice either by himself or by a competent body or laboratory (1).
- a copy of the instructions for the machinery.

(b) for series manufacture, the internal measures that will be implemented to ensure that the machinery remains in conformity with the provisions of the Directive.

The manufacturer must carry out necessary research or tests on components, fittings or the completed machine to determine whether by its design or construction, the machine is capable of being erected and put into service safely.

Failure to present the documentation in response to a duly substantiated request by the competent national authorities may constitute sufficient grounds for doubting the presumption of conformity with the requirements of the Directive.

4. (a) The documentation referred to in 3 above need not permanently exist in a material manner but it must be possible to assemble it and make it available within a period of time commensurate with its importance. It does not have to include detailed plans or any other specific information as regards the sub-assemblies used for the manufacture of the machinery unless a knowledge of them is essential for verification of conformity with the basic safety requirements.

(b) The documentation referred to in 3 above shall be retained and kept available for the competent national authorities for at least 10 years following the date of manufacture of the machinery or of the last unit produced, in the case of series manufacture.

(c) The documentation referred to in 3 above shall be drawn up in one of the official languages of the Communities, with the exception of the instructions for the machinery.

(1) A body or laboratory is presumed competent if it meets the assessment criteria laid down in the relevant harmonized standards.

Requirements	Relevant EU-standards	Contacts/Description	Details
1	<b>OVERVIEW EU-STANDARDS : INTRODUCTION</b>		
	NOTE: The English word 'gate' and the French word 'portail' refer to such products used outside buildings, e.g. in boundaries, fences etc. The German word 'Tor' refers to all products used to close openings, permitting the passage of vehicles. The German word Tür refers to those products for the passage of pedestrians only. According to the standards the term 'door' is being used to describe gates and shutters as well as doors.		
1.1	<b>Validity</b>		
	Machine rules 89/392 EWG Machine rules 98/37 EWG	Supplement 1	Valid from 1996 Valid from 1997
	EN 292-1/2 Safety of machinery Basic concepts, general principles for design		Valid since 1991
	EN 294 Safety of machinery – Safety distances to prevent danger zones being reached by the upper limbs		Valid from 1992
	EN 349 Safety of machinery Minimum gaps to avoid crushing of parts of the human body		Valid from 1993
	EN 418 Safety of machinery Emergency stop equipment, functional aspects - Principles for design		Valid from 1992
	EN 954-1 Safety of machinery - Safety related parts of control systems. Part 1: General principles for EN 12424 Industrial , commercial and garage doors and gates Resistance to wind load -classification		Valid from 1996  Valid from 7/2000
	EN 12433 – 1/2 Industrial, commercial and garage doors and gates - Terminology		Valid from 5/2000
	EN 12445 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Test methods		Valid from 6/2001
	EN 12453		Valid from 6/2001

	Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements		
Requirements	Relevant EU-standards	Contacts/Description	Details
	EN 12604 Industrial commercial and garage doors and gates Mechanical aspects Requirements		Valid from 11/2000
	EN 12605 Industrial, commercial and garage doors and gates Mechanical Aspects – Test methods		Valid from 11/2000
	EN 12635 Industrial, commercial and garage doors and gates Installation and use		Valid from 1/2003
	prEN 12978 Industrial, commercial and garage doors and gates Safety devices for power operated doors and gates Requirements and test methods		-
	prEN 13241-1 Industrial, commercial and garage doors and gates Product standard - Part 1: Product without fire resistance or smoke control characteristics		-
	EN 50082-2 Electromagnetic compatibility - Generic immunity standard Part 2: Industrial environment		Valid from 1992
	EN 60204-1 Safety of machinery – Electrical equipment of machines Part 1: General requirements		Valid from 1998
	EN 60335-1 Safety of household and similar electrical appliances - Part 1: General requirements		Valid from 1994
	EN 61496-1 Safety of machinery Electro-sensitive protective equipment -Part 1: General requirements and tests		Valid from 1997

	Requirements	Relevant EU-standards	Contacts/Description	Details
1.2	<b>Definition of application (scope)</b>			
		EN 12604 Industrial commercial and garage doors and gates Mechanical aspects Requirements	Scope § 1	- Manually and electrically operated gates in private and industrial/commercial areas
		EN 12605 Industrial, commercial and garage doors and gates Mechanical Aspects – Test methods	Scope § 1	- Manually and electrically operated gates in private and industrial/commercial areas
		EN 12445 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Test methods	Scope § 1	- Manually and electrically operated gates in private and industrial/commercial areas
		EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements	Scope § 1	- Electrically operated gates must be seen as one unit. This also applies to manual gates where these are changed to electrical operation.
1.3	<b>General terms</b>			
		EN 12433 - 1/2 Industrial, commercial and garage doors and gates – Terminology 1 Types of doors 2 Parts of doors	Terms and definitions § 3	- Definitions of terms in German, English and French language. Description of the different types of gates and special parts of a gate. - Valid for manually and electrically operated gates.  Examples: - Safety device to prevent hazard to persons, equipment, vehicles etc. - Guards; physical protection against hazard - Sensitive edges
2	<b>BASIC REQUIREMENTS OF THE EUROPEAN STANDARDS REGARDING CONSTRUCTION AND DESIGN</b>			
		EN 12604 Industrial commercial and garage doors and gates Mechanical aspects Requirements	Design and construction § 4.2          Security on transparent surfaces § 4.2.5	- Construction and structure - Suitable material - Approved structure - Mechanical property - The construction has to be based on existing and acknowledged technical regulations - Dynamic and static force should not cause mechanical or technical problems  Special requirements for transparent infill's for a gate Should remain fully secured under normal operating conditions. If transparent material

	EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements	Shaping of leaf surfaces and parts which project § 5.1.1.3	should break, no sharp splinter, cutting edges or other dangerous parts shall occur. - Protruding parts and sharp edges should be avoided in the design of the leaf - Injuries may be avoided by suitable shaping or covering (this should be done by respecting minimum distances and safety clearances).
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**3**

**3.1**

Requirements	Relevant EU-standards	Contacts/Description	Details
<b>DANGER ZONE</b>			
<b>Danger zone</b>			
	EN 12433 – 1/2 Industrial, commercial and garage doors and gates - Terminology  EN 292-1/2 Safety of machinery Basic concepts, general principles for design  EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements	Terms and definitions Part 2 § 7   Hazards caused by crushing, shearing and drawing-in points § 4.1.1	- Place where person can be injured by moving parts of a gate - Crushing points, shearing points and trapping points - According to the machine rules 89/37 EG, a risk analysis is necessary   - A hazardous point is considered to exist up to a height of 2.5 m above the floor: - Gaps in the leaf, projecting parts etc. - Moving parts of the drive unit which are capable of causing injury
<b>3.2</b>	<b>Closing edges</b>		
	EN 12433 - 1/2 Industrial, commercial and garage doors and gates - Terminology  EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements	Terms and definitions part 2 § 3/7  Hazards caused by crushing, shearing and drawing-in points § 4.1.1	- Main closing edge, opposite closing edge and secondary closing edge.
<b>3.3</b>	<b>Shearing points</b>		
	EN 12604 Industrial commercial and garage doors and gates Mechanical aspects Requirements  EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements	Requirements during manual mode § 4.5.1  Requirements during power operation § 4.5.2 Requirements during self-closing § 4.10 Avoiding or safeguarding hazards caused by crushing, shearing and drawing-in points § 5.1.1	- Design of mechanical features to eliminate risks to operator and others. Accessible closing gaps shall be eliminated or safeguarded up to 2.5 m above access level  - Examples of guards described in Annex C2 - Requirements for gates operating by gravity or self closing mechanism  -The force impact shall not exceed the values shown in EN 12453 Annex A2.

			Measures to avoid crushing, shearing and drawing-in points: - Creating safety distances - Installing guards - Suitable shaping - Operating in hold to run mode - Limiting the forces generated by the door leaf - Installing protective equipment	
	<b>Requirements</b>	<b>Relevant EU-standards</b>	<b>Contacts/Description</b>	<b>Details</b>
		prEN 12978 Industrial, commercial and garage doors and gates Safety devices for power operated doors and gates Requirements and test methods	Annex A - List of significant hazards	- Mechanical hazards due to shape § 4.2.3.2 - Inadequacy of mechanical strength § 4.1.7 - Cutting or severing hazards § 4.2.3.2
<b>3.4</b>	<b>Crushing points</b>			
		EN 12604 Industrial commercial and garage doors and gates Mechanical aspects Requirements  EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements  prEN 12978 Industrial, commercial and garage doors and gates Safety devices for power operated doors and gates Requirements and test methods	Requirements during manual mode § 4.5.1  Requirements during power operation § 4.5.2 Requirements during self-closing § 4.10 Avoiding or safeguarding hazards caused by crushing, shearing and drawing-in points § 5.1.1  Annex A - List of significant hazards	- Design of mechanical features to eliminate risks to operator and others Accessible closing gaps shall be eliminated or safe-guarded up to 2.5m above access level.  - Examples of guards described in Annex C2 - Requirements for gates operating by gravity or self-closing mechanism  - The force impact shall not exceed the values shown in EN 12453 Annex A2. Measures to avoid crushing, shearing and drawing-in points: - Creating safety distances - Installing guards - Suitable shaping - Operating in hold-to-run mode - Limiting the forces generated by the door leaf - Installing protective equipment  - Mechanical hazards due to shape § 4.2.3.2 - Inadequacy of mechanical strength § 4.1.7 - Cutting or severing hazards § 4.2.3.2
<b>3.5</b>	<b>Drawing-in points</b>			
		EN 12604 Industrial commercial and garage doors and gates Mechanical aspects Requirements  EN 12453 Industrial, commercial and garage doors and gates	Requirements during manual mode § 4.5.1  Requirements during power operation § 4.5.2 Requirements during self-closing § 4.10 Avoiding or safeguarding hazards caused by crushing, shearing and drawing-in points	- Design of mechanical features to eliminate risks to operator and others Accessible closing gaps shall be eliminated or safeguarded up to 2.5m above access level  - Examples of guards described in Annex C2 - Requirements for gates operating by gravity or self-closing mechanism  - The force impact shall not exceed the values shown in EN 12453 Annex A2. Measures to avoid crushing, shearing and drawing-in points: - Creating safety distances

	Safety in use of power operated doors - Requirements	§ 5.1.1	<ul style="list-style-type: none"> <li>- Installing guards</li> <li>- Suitable shaping</li> <li>- Operating in hold-to-run mode</li> <li>- Limiting the forces generated by the door leaf</li> <li>- Installing protective equipment</li> </ul>	
	<b>Requirements</b>	<b>Relevant EU-standards</b>	<b>Contacts/Description</b>	<b>Details</b>
	prEN 12978 Industrial, commercial and garage doors and gates Safety devices for power operated doors and gates Requirements and test methods	Annex A - List of significant hazards	<ul style="list-style-type: none"> <li>- Mechanical hazards due to shape § 4.2.3.2</li> <li>- Inadequacy of mechanical strength § 4.1.7</li> <li>- Cutting or severing hazards § 4.2.3.2</li> </ul>	
<b>SECURING DANGER ZONES</b>				
<b>4</b>	<b>Meeting safety distances</b>			
<b>4.1</b>	<p>EN 12604 Industrial commercial and garage doors and gates Mechanical aspects Requirements</p> <p>EN 294 Safety of machinery – Safety distances to prevent danger zones being reached by the upper limbs</p> <p>EN 292-1/2 Safety of machinery Basic concepts, general principles for design</p> <p>EN 349 Safety of machinery Minimum gaps to avoid crushing of parts of the human body</p> <p>EN 12605 Industrial, commercial and garage doors and gates Mechanical Aspects – Test methods</p>	<p>Annex C</p> <p>Reaching distances § 4.4</p> <p>Reaching through gaps § 4.5</p> <p>-1: Terminology and methods § 3.2.2/3.2.3 -2: Technical principles and specifications Minimum safety distances § 4.2</p> <p>Mechanical protection and safety clearances against crushing, cutting, shearing, entanglement and drawing-in § 5.4.5</p>	<ul style="list-style-type: none"> <li>- Examples for safety distances &amp; minimum dimensions § C.3</li> <li>- Table 3 Safety distances for fundamental movements for people of 14 years or older</li> <li>- Tables 4 &amp; 5. Listing and examples for safety distances according to age of persons.</li> <li>- Table 1 Listing of minimum distances for different limbs of the body</li> <li>Annex A Illustrations of crushing zones</li> <li>- Safety distance - for example the distance from a fence to the moving wing of the gate</li> </ul> <p>General checkpoints for examination</p>	
<b>4.2</b>	<b>Separating protective device (guarding against hazards)</b>			
	EN 12453 Industrial, commercial and garage doors and gates	Guards § 5.1.1.2	<ul style="list-style-type: none"> <li>- Safeguards danger points up to 2.5 high</li> <li>- Do not create additional hazards</li> <li>- Difficult to make ineffective</li> </ul>	

	Safety in use of power operated doors - Requirements  EN 294 Safety of machinery – Safety distances to prevent danger zones being reached by the upper limbs	Reaching over guard constructions § 4.3	- Uninstalling only with tools - Stable and long lasting in respect of their safety function  - Symbols and related dimensions of the construction - Table 1: values for limited risk situations - Table 2: values for high risk situations - No interpolation between the two tables is allowed	
	<b>Requirements</b>	<b>Relevant EU-standards</b>	<b>Contacts/Description</b>	<b>Details</b>
	EN 12604 Industrial commercial and garage doors and gates Mechanical aspects Requirements	Annex C	Examples of guards § C.2	
4.3	<b>Safety protection of secondary closing edge</b>			
	EN 12604 Industrial commercial and garage doors and gates Mechanical aspects Requirements EN 349 Safety of machinery Minimum gaps to avoid crushing of parts of the human body  EN 294 Safety of machinery – Safety distances to prevent danger zones being reached by the upper limbs EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements	Requirements § 4  Minimum gaps § 4  Values for safety distances § 4  Avoiding or safeguarding hazards caused by crushing, shearing and drawing-in-points § 5.1	Mechanical protection and safety clearances. Eliminate risk by door design, clearances or provision of guarding. § 4.5. (See EN 12604, Annex C : examples of mechanical protection and safety clearances.)  Different minimum safety gaps for different parts of the human body to avoid hazards from crushing zones.  - creating safety distances - installing guards such as enclosures, covers, enclosing guards, fixed protection leaves - shaping in a proper way any leaf surfaces and parts which protrude - operating the door in the hold to run control mode - limiting the forces generated by the door leaf when meeting a person or an obstacle - installing sensitive protective equipment (PSPE or ESPE)	
4.4	<b>Avoiding or safeguarding hazards caused by crushing, shearing and drawing in points</b>			
	EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements	Requirements § 5.1.1  Hazards, hazardous situations	- creating safety distances - installing guards such as enclosures, covers, enclosing guards, fixed protection leaves - shaping in a proper way any leaf surfaces and parts which protrude - operating the door in the hold to run control mode - limiting the forces generated by the door leaf when meeting a person or an obstacle - installing sensitive protective equipment (PSPE or ESPE) A hazardous point is considered to exist up to 2.5m on any permanent access level. §	

	EN 292-1/2 Safety of machinery Basic concepts, general principles for design	etc § 4 Informative, EN 292-2 Annex A § 1.7.2	4.1.1 Warning of residual risks. Where risks remain, the manufacturer must provide warnings. § 1.7.2
	<b>Requirements</b>	<b>Relevant EU-standards</b>	<b>Contacts/Description</b>
			<b>Details</b>
<b>5</b>	<b>IDENTIFICATION AND DOCUMENTATION</b>		
<b>5.1</b>	<b>Identification</b>		
	prEN 13241-1 Industrial, commercial and garage doors and gates Product standard - Part 1: Product without fire resistance or smoke control characteristics	Product Standard § 5	- Valid for manually and electrically operated gates. The following information has to be written on the name plate: - Manufacturer - Type of gate - Order or Serial Number - Date of Production
	EN 12635 Industrial, commercial and garage doors and gates Installation and use	Reference to prEN 13241 § 5	
<b>5.2</b>	<b>Pre-sale technical information</b>		
	EN 12604 Industrial commercial and garage doors and gates Mechanical aspects Requirements	Mechanical specifications of door characteristics § 4.1.3	The manufacturer shall provide all relevant information to enable the door to be correctly selected and to help the purchaser see the differences between products. If data are not presented by purchaser at the time of request/order the producer may ask for such data or specify his standard ones. For specific conditions on site, the manufacturer might ask for additional data.  Specifications that should be given - Structural opening size, dimension details - Frequency of operation - Operation mode - Degree of automation - Building materials to be used - Position and types of fixings
	EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements	Safety distances § 5.1.1.1	The installation instruction shall precisely describe the method of ensuring that the safety distances are respected after the installation is completed. The purchaser should be aware of these safety distances.
	EN 12424 Industrial, commercial and garage doors and gates Resistance to wind load - classification	Minimum level of safeguarding § 5.5  Classification § 4	In order to choose the right minimum level of safeguarding, the manufacturer may ask for information on the type of user (trained/untrained); the surrounding area (public access/no public access) and the type of door activation (hold-to-run/impulse/automatic).  Classification of resistance to wind load 0: no performance determined 1: 300 Pa 2: 450 Pa 3: 700 Pa 4: 1000 Pa

			5: >1000 Pa; exceptional Also: EN 13241; Annex A: form for designation and classification of performances table A.1
Requirements	Relevant EU-standards	Contacts/Description	Details
	prEN 13241-1 Industrial, commercial and garage doors and gates Product standard - Part 1: Product without fire resistance or smoke control characteristics  EPPA Proposal	Annex ZA	Models of label to be fixed on the door or to be included in documentation. CE conformity marking including product's regulated characteristics  Classification types of drive units. This should be presented to the purchaser to help clarify differences between different drives. ED 1: Operating time drive 40% ED 2: Operating time drive 60% ED 3: Operating time drive 100%  S 1: Water resistance 1 = IP54 S 2: Water resistance 2 > IP54  V 1: Gate speed < or = 0,25 m/s V 2: Gate speed > 0,25 m/s < 0,5 m/s For double leaf gates divide speeds by 2 BH 1: Operating endurance 16 cycles/day; max <5 cycles/hr BH 2: Operating endurance 40 cycles/day; max 5-10 cycles/hr BH 3: Operating endurance 100 cycles/day; max >10 cycles/hr
<b>REQUIREMENTS FOR MANUALLY OPERATED DOORS</b>			
<b>6</b>	<b>6.1</b>	<b>Manuel operation</b>	
	EN 12604 Industrial commercial and garage doors and gates Mechanical aspects Requirements	Manual operation § 4.4.1	Maximum force for the movement of a manual gate - 150 N for private use - 260 N for industrial / commercial use - This force should not be exceeded during the entire lifetime of the gate when properly maintained according to the manufacturer's instructions
	EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements	Manual operation § 5.3	- Electrically operated gates can be moved manually with 50% higher force than is written in EN 12604 - Regulations for device to move a gate manually without causing any dangerous situation
<b>6.2</b>	<b>Operation from a safe position</b>		
	EN 12604 Industrial commercial and garage doors and gates Mechanical aspects Requirements	Manual operation § 4.4.2	- Gates shall be fitted with a suitable device for manual operation which must be in a safe position to protect the operator

	<b>Requirements</b>	<b>Relevant EU-standards</b>	<b>Contacts/Description</b>
6.3	<b>Positioning of manual controls</b>		
		EN 292-1/2 Safety of machinery Basic concepts, general principles for design EN 12604 Industrial commercial and garage doors and gates Mechanical aspects Requirements	Informative, EN 292 Annex A § 1.3.7 and 1.3.8  Devices for manual operation § 4.4.2
			Prevention of risks related to moving parts § 1.3.7 Choice of protection against risks related to moving parts. § 1.3.8  Doors intended for manual operation shall be fitted with suitable devices, e.g. handles on inside and outside of the door. Devices shall be designed and located so that they are convenient for use and there is no risk of injuries.
7	<b>REQUIREMENTS FOR POWER OPERATED DOORS</b>		
7.1	<b>Positioning of electrical controls</b>		
		EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements	Requirements § 5.1.1.4  For hold to run mode operating controls must be fixed in a position where the operator has full view of the gate - no remote control allowed.
7.2	<b>Power operation</b>		
		prEN 13241-1 Industrial, commercial and garage doors and gates Product standard - Part 1: Product without fire resistance or smoke control characteristics  EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors – Requirements EN-60204 Electrical equipment of machinery -general requirements	Requirements §4  Power operation §4.2 Additional requirements for specific performance characteristics §4.3  See points 3.1 (danger point) and 7.3 (switching off the drive)  General requirements All requirements
7.3	<b>Switching off the drive (motor and transmission)</b>		
		EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements	Requirements § 5.2.7  There shall be devices fitted that bring the leaf movement to a standstill after switching off the drive or after interruption of power supply if this can result in a hazardous leaf movement, ie brakes or self stopping gear.

7.4

Emergency stop device			
Requirements	Relevant EU-standards	Contacts/Description	Details
	EN 292-1/2 Safety of machinery Basic concepts, general principles for design	Informative, EN 292-2 Annex A § 1.2.4	Each machine must be fitted with one or more emergency stop device. Exceptions if emergency stop fails to reduce the stopping time. § 1.2.4
	EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements EN 418 Safety of machinery Emergency stop equipment, functional aspects - Principles for design EN 954-1 Safety of machinery - Safety related parts of control systems. Part 1: General principles for design. EN 60204-1 Safety of machinery – Electrical equipment of machines Part 1: General requirements	Drive systems and power supply § 5.2  § 4  Emergency stop function § 5.3  Control functions § 9.2	Emergency stop in accordance with EN 418 as a stop command. § 5.2.7.1 § 5.2.2 Emergency stop devices at each operator control station may cause inconvenience, since they may be misused and therefore prevent the door from normal operation.  Specifies the functional requirements the emergency stop equipment must comply with.  Standards giving requirements for characteristics of safety function. Specific requirements for group of machines etc (e.g. double automatic gates)  Requirements for emergency stop function. § 9.2.5.4
<i>EPPA recommends that all power operated gates should have an emergency stop device.</i>			
7.5	<b>Main switch</b>		
	EN-60204 Electrical equipment of machinery -general requirements  EN 12433 - 1/2 Industrial, commercial and garage doors and gates - Terminology 2 Parts of doors  EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements	Equipment for separation of power supply § 5.3  Main switch § 5.10  Supply disconnection § 5.2.9	Any main power supply has to have a manually operated main switch. If necessary, e.g. in case of maintenance, the power supply has to be cut off.  Definition: "Device to disconnect the power supply to the complete door."  The same content as EN 12445; 4.2.9 (see above)
7.6	<b>Overrun distance</b>		
	EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements	Hazards, hazardous situation etc § 4.4.3	Hazardous situation can occur when a door leaf can overrun its final position

		Requirements § 5.1.1.4  Drive systems and power supply § 5.2.7	Overrun distance related to hold-to-run: Door leaf shall not overrun > 50mm for opening gaps <500mm and not > 100mm for opening gaps >500mm.  Overrun distance related to switching off of the drive: Door leaf shall not overrun > 50mm for opening gaps <500mm and not > 100mm for opening gaps >500mm.	
	<b>Requirements</b>	<b>Relevant EU-standards</b>	<b>Contacts/Description</b>	<b>Details</b>
<b>7.7</b>	<b>Securing of chain wheels</b>			
	EN 12604 Industrial commercial and garage doors and gates Mechanical aspects Requirements	Mechanical protection and safety clearances against crushing, cutting, shearing, entanglement, drawing-in and trapping § 4.5	- persons shall not be exposed to any crushing, cutting, shearing, entanglement, drawing-in or trapping hazards (refers to requirement 7.8 Trapping, 3.3 shearing, 3.4 crushing, 3.5 drawing in, 4.4 avoiding and safeguarding hazards) - eliminating the risks: the door design, setting suitable clearances or provision of guarding - where all risks cannot be provided, suitable warning signs shall be provided	
	EN 349 Safety of machinery Minimum gaps to avoid crushing of parts of the human body	normative reference of EN 12604;	detailed values for safety clearances for certain parts of the human body	
	EN 294 Safety of machinery – Safety distances to prevent danger zones being reached by the upper limbs	normative reference of EN 12604; § 4.5.1	detailed safety distances to prevent access to danger zones in relation to the width of the gap (see separate drawing 2)	
	EN 12604 Industrial commercial and garage doors and gates Mechanical aspects Requirements	Chains (requirements for parts used in suspension systems of doors) § 4.7.3.3  Annex C - Examples of mechanical protection and safety clearances	- chain wheels up to a height of 2,50 m above floor level shall be fitted with a guard  - C1: Examples of safeguarding against crushing, shearing and drawing-in - C2: Examples of guards - C3: Examples of appropriate safety clearances and safety distances	
<b>7.8</b>	<b>Trapping</b>			
	EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements	Trapping § 4.4.2  Trapping hazard § 5.4.2	- May exist where the power operated door is the only way out or where safety distances are created See also Annex C3 of EN 12604, EN 349 and EN 294  Examples of prevention - Provide alternative exit or pass-door - Easy decoupling of the drive unit required (to be accessible from the enclosed space)	
<b>7.9</b>	<b>Hold to run control (dead man)</b>			
	EN 12453 Industrial, commercial and garage doors and gates	Requirements § 5.1.1.4	Overrun distances max 50mm when opening gap is <500mm and max 100mm when opening gap >500mm. For hold to run mode operating controls must be fixed in a position where the operator has full view of the gate - no remote control allowed;	

	Safety in use of power operated doors - Requirements	General requirements § 5.1	speed of the main edge max 0.5 m/sec; double gates max speed 0.25 m/sec for each gate. This also applies to all power operated gates. Minimum level of safeguarding: Hold-to-run push button for trained users (no public) and hold-to-run with key switch for trained users (public) § 5.5.1. If hold to run operation is used and fulfils requirements in § 5.1.1.4. then no other safety devices are needed.
<b>7.10</b>	<b>Requirements</b>	<b>Relevant EU-standards</b>	<b>Contacts/Description</b>
	<b>Automatic control</b>		<b>Details</b>
<b>7.11</b>	<b>Safeguarding against impact hazard</b>		
	EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements	§ 5.1.3	- Dangerous situation by impact force - Dynamic force limitation according to Annex A measured according to EN 12445, or safety device so that no person can be touched by the moving door leaf - additional choice to add risk-reducing warnings and functions (e.g. traffic lights; lighting passage areas)
<b>7.12</b>	<b>Dynamic /static forces</b>		
	prEN 12978 Industrial, commercial and garage doors and gates Safety devices for power operated doors and gates Requirements and test methods  EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements	Maximum Working Force § 3.6  Stopping distance for gates under hold-to-run mode § 5.1.1.4  Limitation of forces § 5.1.1.5  Annex A - Specification for limitation of forces	Fig.3 Force/travel relationship see also requirements in point 7.14 (minimum levels of safeguarding)  - Releasing hold to run will result in overrun distance of the wing not bigger than 50mm in gaps smaller or equal to 500mm and not bigger than 100mm in gaps bigger than 500mm. Otherwise the door shall have a deformable edge and where the static force will not exceed 150 N on a 80mm test piece.  - Forces are considered safe if values specified in Annex are not exceeded.  Admissible dynamic forces between wing and guiding posts and counter closing edges (e.g. lock post) and also between 2 closing edges: - In gaps from 50 to 500mm => 400N (see also separate drawing) - In gaps bigger than 500mm = 1400N (see also separate drawing) After maximum 0.75 s. the static force is maximum 150N and should go down to less than 25N in maximum 5 s. total time after activation.
<b>7.13</b>	<b>Pressure Sensitive Protective Equipment (PSPE) and Electro Sensitive Equipment (ESPE)</b>		
	EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements	Sensitive protective equipment § 5.1.1.6	PSPE shall be designed so that: a) when they are in working order, they respond by giving an appropriate output signal(s) - when part of a person is in the detection zone of the ESPE - when a person applies the activating force at any point within the active area of the PSPE sensing element, - or when closing on a test piece positioned at any angle between 90° and 45° to the direction of the motion  b) the control command for stopping the hazardous leaf movement is maintained for so long as the protective device is actuated, or until a signal for reversing the direction of movement of the door leaf is given;

			c) a device will prevent forces delivered at any point of main and/or secondary edges from being beyond those specified in EN 12453 Annex A, or will ensure that, in no circumstances, a person can be touched by the moving door leaf. For PSPE, the forces can be exceeded for the extreme 30mm of each end, but the device shall remain active.
Requirements	Relevant EU-standards	Contacts/Description	Details
	<p>EN 954-1 Safety of machinery – Safety related parts of control systems. Part 1: General principles for design.</p> <p>prEN 12978 Industrial, commercial and garage doors and gates Safety devices for power operated doors and gates Requirements and test methods</p>	<p>Table 2 - Summary of requirements for categories</p> <p>Requirements § 4</p> <p>Marking § 5</p>	<p>d) danger points are safeguarded up to a height of 2.50 m above the floor</p> <p>e) if a single fault occurs in the components between the sensing unit and the door control: - either they maintain their protective function if according to category 3 or 4 of EN 954-1 - or they are monitored according to category 2 of EN 954-1, with the acceptable deviation that the check of the safety function can be done at the latest at one of the final end positions of the leaf, or the control shall switch over automatically to a hold-to-run control.</p> <p>f) if a single fault occurs in the sensing unit preventing the control signal from stopping the leaf movement: - either it maintains its protective function according to category 3 or 4 of EN 954-1 - or it is monitored according to category 2 of EN 954-1, check at the latest at one of the final end positions of the leaf, or automatic switch to a hold-to-run control. If not all possible occurrence of non-active areas can be detected, periodic checks, at intervals not greater than six months, covering the whole active area shall be specified in the maintenance instructions for the door. NOTE The periodic checks specified in the instructions may be carried out by the user or any other organisation.</p> <p>g) they meet the requirements of prEN 12978:2000.</p> <p>See Summary of Requirements and system behaviour for different categories.</p> <p>Additionally: - The safety device shall be suitable for operation in the expected environmental conditions. (-10°C to +50°C) and after storage at a relative humidity of 93%, at a temperature of +40°C for four days, the device shall operate normally. - The device shall have sufficient immunity to electromagnetic disturbances. - The device shall be resistant to specified vibrations. - Electrical equipment shall be protected against electric shock and overcurrent protection. - Enclosures shall be at least IPX4 - The sensing element must be able to withstand maximum forces stated by the manufacturer.</p> <p>A label shall be located on the sensing unit and the control unit and shall contain the following information: - Name of manufacturer</p>

7.14

	EN 1760-2 – Safety of machinery -Pressure sensitive protective devices (PSPE)		- Serial number or trace ability code - Manufacturer's type reference - Rated power supply level - Intended temperature range of sensing unit General principles for the design and testing of pressure sensitive edges and pressure sensitive bars.
<b>Requirements</b>	<b>Relevant EU-standards</b>	<b>Contacts/Description</b>	<b>Details</b>
<b>Minimum levels of safe-guarding at main edge</b>			
	<p>The minimum levels of safeguarding of the main edge with reference to the way the door is used, are listed in Table 1 according to the following abbreviations:</p> <p>A: Hold-to-run push button control  B: Hold-to-run control with key-switch or similar  C: Limitation of forces according to Annex A1 either by force limiting devices according to § 5.1.1.5 or by safeguarding devices.  D: A means for detection of presence of a person or an obstacle standing on the floor at one side of the door. When combining two safeguarding systems, e.g. C and D, the D-means shall not necessarily fulfill EN 12453, § 5.1.1.6; in this case, periodic checks of the D-device, at intervals which may not exceed six months, shall be specified in the maintenance instructions of the door.  E: A means for detection of presence which is designed and installed in a way that in no circumstances can a person be touched by the moving door leaf. Such a means has to fulfil EN 12453, § 5.1.1.6.</p>		
Table 1: Minimum levels of safeguarding at main edge according to EN 12453			
Type of door activation	Types of use		
	Type 1: trained users (no public)	Type 2: trained users (public)	Type 3: untrained users
Hold to run control	A	B	Not possible
Impulse activation in sight of the door	C or D	C or D	C and D, or E
Impulse activation out of sight of the door	C or D	C and D, or E	C and D, or E
Automatic control	C and D, or E	C and D, or E	C and D, or E

**NOTE: In cases where contact with the moving door leaf does not create any risk of injury or damage, the D-type means may not be necessary.**

8

8.1

8.2

Requirements	Relevant EU-standards	Contacts/Description	Details
<b>FURTHER REQUIREMENTS AND SPECIAL APPLICATIONS (manually and power operated doors)</b>			
<b>Gravity operation and self closing mechanism</b>			
	EN 12604 Industrial commercial and garage doors and gates Mechanical aspects Requirements	Additional requirements for doors operating by gravity or other self-closing mechanism § 4.10	Doors operated using gravity shall not: - Expose any person being crushed or entangled to forces causing injury or damage - Travel faster than 0.3 m/s - Exceed admissible values according to EN 12453 when impacting a human body If the above is not possible, an audible warning device shall be fitted to the door which starts to sound immediately when the door starts to close.
<b>Protection against unintentional and uncontrolled movements</b>			
	EN 12604 Industrial commercial and garage doors and gates Mechanical aspects Requirements	Protection against uncontrolled movements § 4.3	Regulations for the construction of a door leaf state that - construction of the gate must ensure that in normal use neither the door leaf nor any parts collapse or leave the rail. -the leaf has to stop without unnecessary impact at the end position -there should be no unintentional movements due to the wind -there should be a derailment limiting device -there should be a limiting device
	EN 12605 Industrial, commercial and garage doors and gates Mechanical Aspects – Test methods	Test procedures § 5.1.2	Regulations for testing the construction and the measures taken against derailing and collapsing
	EN 12605 Industrial, commercial and garage doors and gates Mechanical Aspects – Test methods	Test procedures § 5.4.2	The gate leaf must be tested and safe against dismantling of parts during normal use.
	EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements	Additional hazards § 5.4.3	Regulations now relevant for manually and electrically operated gates - The gate leaf has to stop in the end position without causing hazard - The requirement can be fulfilled by using a bumper or a comparable device to stop the movement of the gate leaf. This means force caused by non-manual movement.
		Regulations for overrunning of the leaf § 4.4.3	
		Hazards caused when the door is not in working order, but used	

8.3

		correctly § 4.4.4	
	<b>Requirements</b>	<b>Relevant EU-standards</b>	<b>Contacts/Description</b>
	<b>Pass door / wicket door</b>		<b>Details</b>
	EN 12433 - 1/2 Industrial, commercial and garage doors and gates - Terminology 1 Types of doors	Pass door/wicket door § 2.6	- Definition: "Door within a door leaf for the passage of pedestrians only"
	EN 12605 Industrial, commercial and garage doors and gates Mechanical Aspects – Test methods	Pass doors § 5.4.12	- Pass door may not open unintentionally, when the main door is not in the closed position - Power operated door: main power of the drive engine is switched off when Pass door is not in the closed position
	EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements	Pass doors §4.4.1	When a pass door is fitted in the main door leaf, the power operation of the main door leaf whilst the pass door is not in the closed position may lead to a dangerous situation
		Pass doors (additional hazards) § 5.4.1	- a device exists which prevents the movement of the drive as long as the pass door is not fully closed - a device exists which stops the movement of the drive when the pass door is opened
		§ 5.4.5 locking device	When a locking device is fitted on a power operated door, the interaction of this device with the power operation shall not cause any dangerous situation

9

**TESTING**

9.1

	<b>Testing</b>		
	EN 12635 Industrial, commercial and garage doors and gates Installation and use	Scope § 1	
	prEN 13241-1 Industrial, commercial and garage doors and gates Product standard - Part 1: Product without fire resistance or smoke control characteristics	General § 6.1	Where a door is the result of an in-site assembly of products from several manufacturers or suppliers the installer is assumed to be the manufacturer.
		Production Control § 6.4	Note: In a situation where an installation requires trained installers but is carried out by a separate organisation, the installation should be covered by a separate control system. For manufacturers who complete their own installation, the installation control system shall be part of Factory Production Control (FPC). Note: Certificate 2A will always be delivered by whoever is considered to be the manufacturer.
		Initial type test § 6.2	Shall demonstrate conformity of the test specimen. An initial type test can be a test on a specimen or a specified calculation. Specimen shall demonstrate that the required values and properties are achieved. Specimens shall be selected in order that the

		Test on site § 6.3	<p>results are valid for the product type. When test results need to be applied to products of different dimensions to those of the specimens, the rules given in the relevant test method shall be observed: test the most unfavourable size in the most unfavourable arrangement.</p> <p>Is only applicable to power operated doors which are produced by the retrospective addition of a drive unit in order to demonstrate conformity.</p>
Requirements	Relevant EU-standards	Contacts/Description	Details
	<p>EN 12444 Industrial commercial and garage doors and gates – Resistance to wind loads</p> <p>EN 12605 Industrial, commercial and garage doors and gates Mechanical Aspects – Test methods</p> <p>EN 12605 Industrial, commercial and garage doors and gates Mechanical Aspects – Test methods</p> <p>EN 12605 Industrial, commercial and garage doors and gates Mechanical Aspects - Test methods</p>	<p>Production control § 6.4</p> <p>Annex A - Form for designation and classification of performances table A.1</p> <p>Annex C - Safety factors to be considered in door design in respect of their resistance to wind load.</p> <p>Table 1 - Table of reference (requirements and test methods)</p> <p>Table 2 - Test methods - structural overview (procedures: functionality tests, durability test, special tests, inspection) Test specimen §4 Test procedures §5 Objective § 5.1.6.1</p> <p>Procedure § 5.1.6.2</p> <p>Test results § 5.1.6.3 Test reports § 5.1.6.4 Durability test § 5.2</p>	<p>Factory Production Control (FPC) shall be recorded and show clearly whether the product has satisfied the defined acceptance criteria. There are specific requirements for the FPC system documentation.</p> <p>Items with direct relevance</p> <ul style="list-style-type: none"> <li>- Resistance to wind load</li> <li>- Type of use for power operated doors</li> <li>- Durability</li> <li>- Mechanical and performance characteristics</li> </ul> <p>There are 5 different classes of resistance to wind load each with different requirements</p> <p>Specifies test methods and or calculation of resistance to wind load for doors in a closed position. To be used in conjunction with prEN 13241.</p> <p>Quick overview of requirements and test methods (Tests by inspection, functionality tests, durability test).</p> <p>The objective of the test is to measure the operating speed and the operating forces.</p> <p>Establish the position of the door leaf where the maximum speed occurs due to the effect of gravity or other self operating mechanism. Determine the speed and the forces at the main closing edge at this position.</p> <p>Record the maximum speed and the maximum forces See EN 12605; § 5.1.2.5 Durability test shall verify that doors fulfill the relevant requirements and criteria of EN 12604. Durability test must verify the economic working life of door expressed in operating cycles. The door has to be subjected to a number of test cycles, corresponding to the economic working life of the door, multiplied by a factor 1,1.</p>

Requirements	Relevant EU-standards	Contacts/Description	Details
	<p>prEN 12978 Industrial, commercial and garage doors and gates Safety devices for power operated doors and gates Requirements and test methods</p> <p>EN 12445 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Test methods</p> <p>EN 12445 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Test methods</p> <p>EN 12445 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Test methods</p> <p>EN 12445 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Test methods</p>	<p>Test reports § 5.2.6</p> <p>Verification and test methods § 7</p> <p>Test method §4</p> <p>Force measuring method §5</p> <p>Single fault failure §6</p> <p>Testing methods for presence detection §7</p> <p>Test report § 8 Test method § 4.1.2.2</p> <p>Test method § 4.1.1.4</p> <p>Additional hazards § 4.4.3</p>	<p>Several checks have to be performed during and at the end of the test.</p> <p>Test reports shall contain details of: - Number of cycles performed - Visual inspections - Control of safety functions - Verification of functionality after the economic lifetime - Records of failures - Result from measurement of wear - Maintenance performed including replacement parts</p> <p>Description of test specimen, preferred test samples, test conditions, testing methods, etc.</p> <p>The level of safeguarding of a power operated door, in respect of the requirements specified in EN 12453, shall be determined by tests and inspections</p> <p>Specific equipment has to be used to measure the opening and closing forces of a power operated door. The points where the forces have to be measured are specified (see §5.2.1.1 figure 1) Measurements have to be performed on a complete door, equipped with all safety devices as specified in manufacturer instructions. When one single fault occurs in force limiting devices or other safeguarding devices this must not lead to a dangerous situation, as required in EN 12453</p> <p>In case of using presence detection equipment, the correct installation shall be assessed by using test pieces. The test pieces shall have to be detected by the equipment, this shall make the moving door stop or reverse, and prevent a door at standstill from moving (see points 3.3, 3.4, 3.5, 4.1, 4.2, 4.4, 7.8, 7.11).</p> <p>All results of tests shall be provided documented and recorded in a test report (see list). Shearing point at secondary closing edge: <math>F_s &lt; 150N</math> and <math>F_d &lt; 400</math> and distance of <math>&gt; 25</math> mm between passing edges or the passing edges have been provided with round edges with a radius of at least 2mm for each edge and a combined value (sum of 2 radii) of at least 6 mm has not been exceeded.</p> <p>Check list § 4.1.1.4. Requirements in accordance with EN 12453.</p> <p>A test has to be carried out to ensure that the gate leaf stops automatically at the end position (terminal switch-off) without causing any hazard.</p>

	garage doors and gates Safety in use of power operated doors - Test methods		
Requirements	Relevant EU-standards	Contacts/Description	Details
	<p>EN 12445 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Test methods</p> <p>EN 12445 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Test methods</p> <p>EN 12445 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Test methods</p> <p>EN 12445 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Test methods</p>	<p>Additional hazards § 4.4.5</p> <p>Safeguarding against impact hazards § 4.1.3</p> <p>Force measuring methods § 5</p> <p>Measurement location points on a sliding door § 5.2.1.1</p> <p>Pass doors 4.4.1</p> <p>Supply disconnecting device § 4.2.9</p>	<p>No hazard situation caused by simultaneous locking of manual and electrical components</p> <p>- 50mm above lower edge of the door - In the middle of the wing or at 2500mm above the floor when the main closing edge is higher than 5000mm - 300mm below the upper edge of the wing or at 2500mm high when the main closing edge is higher than 2800mm. - All these points will be measured with 3 different opening gaps - 50mm, 300mm, 500mm between the wing and counter closing edge. It shall be checked by inspection that, if a pass door is fitted in a power operated door, a device exists which prevents movement of the drive as long as the pass door is not in its fully closed position and stop the movement if the pass door is opened.</p> <p>- each door supplied with an electrical drive unit shall be equipped either with a "supply disconnecting device", or with a plug-in system – supply disconnecting device is safeguarded against unintentional/unauthorized switching on</p>
<b><i>EPPA recommends that manufacturers use only components designed and tested to the appropriate products standards.</i></b>			
9.2 Proof of durability			
	<p>prEN 13241-1 Industrial, commercial and garage doors and gates Product standard - Part 1: Product without fire resistance or smoke control characteristics</p> <p>EN 12604 Industrial commercial and garage doors and gates</p>	<p>Mechanical resistance § 4.1.2</p> <p>Mechanical durability § 4.1.3</p> <p>Durability § 5</p>	<p>Doors shall be designed and constructed in accordance with EN 12604 §4.2.2 and 4.2.3 so that in normal operation the imposed forces, impacts and stresses neither damage the door nor impair its mechanical performance.</p> <p>The manufacturer shall state the mechanical performance of the door by the number of operational cycles. The manufacturer shall state, on request, the number of cycles performed by the door under the durability test in accordance with EN 12605</p>

9.3

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	Mechanical aspects Requirements  See 3.4.3 Crushing points See 3.5.3 Drawing in point See 4.1.5 Meeting safety distances		
<b>Other</b>			
<b>Requirements</b>	<b>Relevant EU-standards</b>	<b>Contacts/Description</b>	<b>Details</b>
<b>INSTALLATION, USAGE, MAINTENANCE AND SERVICE INSTRUCTIONS</b>			
	<p>EN 12635 Industrial, commercial and garage doors and gates – Installation and use</p> <p>EN 13241-1 Industrial, commercial and garage doors and gates – Product standard – Part 1: Product without fire resistance or smoke control characteristics</p> <p>EN 12605 Industrial, commercial and garage doors and gates – Mechanical Aspects – Test methods</p> <p>EN 12604 Industrial, commercial and garage doors and gates – Mechanical aspects – Requirements</p> <p>EN 12453 Industrial, commercial and garage doors and gates Safety in use of power operated doors - Requirements</p> <p>EN 12978 Industrial, commercial and garage doors and gates Safety devices for power operated doors and gates – Requirements and test methods</p>	<p>Maintenance and proof test record book § 3.3</p> <p>Documentation § 4</p> <p>Maintenance and repairs § 5.5</p> <p>Instructions for installation, operation and maintenance § 4.4</p> <p>Documentation to be supplied § 4.1.4</p> <p>Mechanical specifications of door characteristics § 4.1.3</p> <p>Sensitive protective equipment § 5.1.1.6 Single fault occurs in the sensing unit. Information for use § 6</p>	<p>A book in which general data relating to the door, records of tests, maintenance and any modification is kept.</p> <p>All documentation shall be legible and written in a language acceptable in the country in which the product is installed. Installation instructions to be used solely by the professional installer may be written in any official language of the EU. Maintenance instructions shall contain: - Various levels of competence required - Advice against non-specialist interference with dangerous parts that can cause Suitable instructions shall be provided by the manufacturer so that doors can be assembled, installed, operated, maintained and dismantled safety in accordance with prEN 12635:2000. The manufacturer shall specify in the maintenance instructions the main wearing parts of the product, discard criteria, requisite action and maintenance intervals. Components which wear or age, such as seals or insulating materials shall be designed to be replaceable.</p> <p>For testing reasons manuals covering installation, maintenance, operation shall be provided.</p> <p>The planned maintenance and replacement of parts subject to normal wear and fatigue.</p> <p>f) If it is not possible to check automatically all sensing units of a safety device, periodic checks at intervals &lt; 6 month shall be specified in the maintenance instruction. Note: the periodic checks specified in the instructions may be carried out by the user or any other organisation. - Instruction handbook - general requirements - Installation of a safety device - Use of a safety device -Maintenance</p>

	English	Deutsch	Français
<b>1</b>	<b>INTRODUCTION</b>	<b>EINLEITUNG</b>	<b>INTRODUCTION</b>
	Extract from machinery declaration of conformity	Auszug aus der Konformitätsbescheinigung für Maschinen	Extrait de la déclaration de conformité des machines
1.1	Validity	Gültigkeit	Validité
1.2	Definition of application (scope)	Anwendungsbereich	Domaine d'application
1.3	General terms	Begriffsbestimmung	Terminologie
<b>2</b>	<b>BASIC REQUIREMENTS OF THE EUROPEAN STANDARDS REGARDING CONSTRUCTION AND DESIGN</b>	<b>EUROPÄISCHE NORMEN FÜR KONSTRUKTION UND DESIGN</b>	<b>EXIGENCES DES NORMES EUROPEENES DE LA CONCEPTION ET DE LA CONSTRUCTION</b>
2.1	Design and construction	Konstruktion und Beschaffenheit	Conception et construction
<b>3</b>	<b>DANGER ZONE</b>	<b>GEFAHRENZONE</b>	<b>ZONES DE DANGER</b>
3.1	Danger point	Gefahrenpunkt	Zone dangereuse
3.2	Closing edges	Schließkanten	Bord de fermeture
3.3	Shearing points	Scherstellen	Zones de cisaillement
3.4	Crushing points	Quetschstellen	Zones d'écrasement
3.5	Drawing-in point	Einzugstellen	Entraînement
<b>4</b>	<b>SECURING DANGER ZONES</b>	<b>ABSICHERN VON GEFAHRENZONEN</b>	<b>PROTECTION DES ZONES DE DANGER</b>
4.1	Meeting safety distances	Einhalten von Sicherheitsabständen	Distances de sécurité des zones de croisement et de collision
4.2	Separating protective device (guard against hazard)	Trennende Schutzeinrichtungen	Défaillance unique des composants de sécurité
4.3	Safety protection of secondary closing edge	Sicherung von Nebenschließkanten	Protection et sécurité du bord secondaire (côté fermeture)
4.4	Avoiding or safeguarding hazards caused by crushing, shearing and drawing in points	Vermeiden oder Sichern von Gefährdungen an Quetsch-, Scher- und Einzugsstellen.	Suppression ou protection contre les risques engendrés par les points d'écrasement, de cisaillement et d'entraînement
<b>5</b>	<b>IDENTIFICATION AND DOCUMENTATION</b>	<b>IDENTIFIKATION UND DOKUMENTATION</b>	<b>IDENTIFICATION ET DOCUMENTATION</b>
5.1	Identification	Kennzeichnung	Identification
5.2	Pre-sale technical information	Angaben zu den Toreigenschaften	Informations techniques à communiquer lors de la revue du contrat
<b>6</b>	<b>REQUIREMENTS FOR MANUALLY OPERATED DOORS</b>	<b>VORSCHRIFTEN FÜR MANUELL BETRIEBENE TORE</b>	<b>EXIGENCES POUR PORTES A OUVERTURE MANUELLE</b>
6.1	Manual operation	Handbetätigung	Manœuvre manuelle
6.2	Operation from a safe position	Bedienung von sicherem Standort aus	Sécurité pendant la manœuvre
6.3	Positioning of manual controls	Anordnung der manuellen Bedienelemente	Position des organes de manœuvre manuelle
<b>7</b>	<b>BASIC REQUIREMENTS FOR POWER OPERATED DOORS</b>	<b>VORSCHRIFTEN FÜR ELEKTRISCH BETRIEBENE TORE</b>	<b>EXIGENCES POUR PORTES A OUVERTURE ELECTRIQUE</b>
7.1	Positioning of electrical controls	Anordnung von elektrischen Bedienelementen	Position des organes de manœuvre électrique
7.2	Power operation	Kraftbetätigung	Fonctionnement motorisé
7.3	Switching off of the drive (motor and transmission)	Abschalten des Antriebes	Arrêt de l'operateur (moteur et transmission)
7.4	Emergency stop device	Nothalt	Equipeement d'arrêt d'urgence
7.5	Main switch	Hauptschalter	Coupe circuit général
7.6	Overrun distance	Nachlaufweg	Dépassements de distance de manœuvre
7.7	Securing of chain wheels	Sicherung von Zahn- und Kettenrädern	Sécurité des transmissions
7.8	Trapping	Einschliessen	Risque d'emprisonnement
7.9	Hold to run control (dead man)	Totmannsteuerung	Commande de mise en marche sous contrôle (homme mort)
7.10	Automatic control	Automatische Steuerung	Contrôle automatique
7.11	Safeguarding against impact hazard	Absicherung gegen Stoßgefährdung	Protection contre les risques de choc et d'écrasement
7.12	Dynamic / static forces	Dynamisch und statische Kräfte	Forces dynamiques et statiques
7.13	Pressure Sensitive Protective Equipment (ESPE) and Electro Sensitive Equipment (ESPE)	Schaltende Schutzeinrichtungen	Dispositif de Protection Sensible à la Pression et Dispositif de Protection Electrosensible
7.14	Minimum levels of safeguarding at main edge	Mindestschutzniveau an der Hauptschliesskante	Niveau Minimal de Sécurité de Bord Primaire
<b>8</b>	<b>FURTHER REQUIREMENTS AND SPECIAL APPLICATIONS (manually and power operated doors)</b>	<b>ZUSÄTZLICHE VORSCHRIFTEN UND BESONDERE ANWENDUNGEN (manuell und elektrisch betriebene Tore)</b>	<b>RECOMMANDATIONS SUPPLEMENTAIRES ET APPLICATIONS SPECIALES (portails à ouverture manuelle ou électrique)</b>
8.1	Gravity operation and self closing mechanism	Schließen durch Schwerkraft oder Türschliesser	Manœuvre utilisant la gravité et autres mécanismes de fermeture automatique
8.2	Protection against unintentional and uncontrolled movements	Schutz gegen unbeabsichtigte und ungesteuerte Bewegung	Protection contre les mouvements non intentionnels et non contrôlés
8.3	Passdoor/ wicket door	Schlupftüren	Portillon / accès contrôlé
<b>9</b>	<b>TESTING</b>	<b>PRÜFUNG</b>	<b>CONTROLE</b>
9.1	Testing	Prüfung	Contrôle
9.2	Proof of durability	Dauerbetätigungsnachweis	Attestation de durabilité
9.3	Other	Andere	Autres

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**INSTALLATION, USAGE,  
MAINTENANCE AND SERVICE  
INSTRUCTIONS**

**MONTAGE, BETRIEBS-  
WARTUNGS- UND  
SERVICEHINWEISE**

**NOTICES D'INSTALLATION,  
D'UTILISATION, DE MAINTENANCE  
ET DE SERVICE**

<b>Lexique pour l'acheteur : 18 exigences</b>	<b>Définition</b>
<b>Zone de cisaillement</b>	Zones accessibles entre éléments fixes et mobiles, où des ajourages varient en dimensions durant le mouvement du tablier, principalement entre bords primaires et opposés de fermeture et entre éléments parallèles fixes et mobiles pouvant causer le cisaillement d'un membre. (scissor action)
<b>Zone d'écrasement</b>	Zones accessibles entre éléments fixes et mobiles, où des distances varient durant le mouvement du tablier, principalement entre bords primaires et opposés de fermeture ou entre bord secondaire et bord fixe, pouvant causer l'écrasement d'un membre ou du corps humain. (jamming)
<b>Entraînement</b>	Zones accessibles d'une partie mobile, où un membre ou une partie du corps humain peut être entraîné et pouvant créer un risque de cisaillement ou d'écrasement. (entraînement)
<b>Distances de sécurité des zones de croisement et de collision</b>	Distances minimales prescrites entre parties fixes et mobiles pour assurer la sécurité contre les risques de cisaillement, d'écrasement ou d'entraînement d'un membre ou du corps humain.
<b>Protection et sécurité du bord secondaire (coté fermeture)</b>	Moyens de protection permettant d'assurer la sécurité principalement en fin d'ouverture du tablier, dans la zone entre bord secondaire et bord fixe, au choix un moyen de détection ou une distance de sécurité peuvent être requis.
<b>Suppression ou protection contre les risques engendrés par les points d'écrasement, de cisaillement et d'entraînement</b>	Obtention de la sécurité, particulièrement dans les zones de cisaillement, d'écrasement et d'entraînement, soit par élimination des conditions générant les risques (conception), soit par la mise en place de moyens de protection.
<b>Identification</b>	informations contenues sur la plaque posée sur le produit, permettant d'identifier le fabricant, le type et n° de série, la date de fabrication.
<b>Informations techniques à communiquer lors de la revue de contrat</b>	Informations, particulièrement techniques, à fournir par le fabricant à l'acheteur pour la réalisation du choix de produit appropriée.
<b>Manœuvre manuelle</b>	Moyen d'actionner manuellement l'ouverture et la fermeture, conditions de forces admissibles pour fermetures avec et sans motorisation
<b>Équipement d'arrêt d'urgence</b>	Moyen accessible de provoquer l'arrêt du mouvement du tablier d'une fermeture motorisée en cas de danger imminent
<b>Risque d'emprisonnement</b>	Risque d'enfermer une personne à l'intérieur d'une zone à proximité de la fermeture, particulièrement si une distance de sécurité ne permet pas le passage entre bord secondaire et bord fixe ou dans un périmètre clos, particulièrement lorsque la fermeture motorisée est l'unique accès
<b>Commande de mise en marche sous contrôle (homme mort)</b>	Moyen de commander la mise en mouvement de la fermeture permettant d'assurer la sécurité par le contrôle et la vue directe de l'utilisateur sur le tablier, les contraintes de vitesse de manœuvre et d'installation de la commande doivent être observées.
<b>Protection contre les risques de chocs et d'écrasement</b>	Moyens de prévenir les risques de chocs, soit par la limitation de la force dynamique, soit par l'élimination du risque de contact, principalement des éléments mobiles, à l'aide d'équipement de sécurité.
<b>Forces dynamiques et statiques</b>	Les forces dynamiques sont mesurables en cours de mouvement du tablier, particulièrement la force dynamique admissible entre les bords primaires les bords opposés de fermeture. Les forces statiques sont mesurées lorsque le tablier est arrêté particulièrement les forces résiduelles consécutives à l'action de la sécurité du bord primaire.
<b>Dispositif de protection sensible à la pression (PSPE) et dispositif de protection électro sensible</b>	Les PSPE permettent de réaliser la détection par pression au contact d'un corps. Les ESPE permettent de réaliser la détection sans contact de la présence d'un corps.
<b>Niveau minimal de sécurité de bord primaire</b>	Le niveau minimal de protection requis sur le bord primaire est fonction des risque à l'utilisation de la fermeture, le type d'utilisation, le type d'actionnement de la commande, la satisfaction soit aux réglementations nationales spécifiques, soit à une analyse de risque d'un site particulier.
<b>Contrôles</b>	Ensemble des essais de fonctionnalité, de durabilité, essais spéciaux et inspections.
<b>Notices d'installation, d'utilisation et de maintenance</b>	notice d'instructions et conseils destinés à la réalisation de l'installation et la mise en service de la fermeture, de son utilisation, de sa maintenance et prestations associées (contrôles et réglementations / ...)

<b>LEXICON FÜR DEN KÄUFER : 18 Anforderungen</b>	Begriffsbestimmung
<b>Scherstellen</b>	Zugängliche Zonen zwischen festen und frei beweglichen Elementen, wo die Öffnungsgröße während der Bewegung des Flügels variieren kann, hauptsächlich zwischen Haupt- und gegenüberliegenden Schließkanten und zwischen parallelen Kanten, die fest oder frei beweglich sind und das Abtrennen von Körperteilen verursachen können (Scherstelle)
<b>Quetschstellen</b>	Zugängliche Zonen zwischen festen und frei beweglichen Elementen, wo die Distanz während der Bewegung des Flügels variieren kann, hauptsächlich zwischen Haupt- und gegenüberliegenden Schließkanten und zwischen sekundären und festen Kanten, die Körper oder Körperteile einquetschen können
<b>Einzugsstellen</b>	Zugängliche Zonen eines frei beweglichen Elements, wo Körper oder Körperteile eingezogen werden können und dabei das Risiko von Scher- oder Quetschstellen besteht (einschließen, einziehen)
<b>Einhalten von Sicherheitsabständen</b>	Minimale Distanz zwischen festen und frei beweglichen Elementen, um Scher-, Quetsch- und Einzugsstellen als Gefahrenpunkte für Körper und Körperteile zu vermeiden
<b>Sicherung von Nebenschließkanten</b>	Schutzeinrichtung, um vor allem bei der Öffnung des Flügels in der Zone zwischen Nebenkanten und festen Kanten Sicherheit zu gewährleisten; Erkennungsmittel oder ein Sicherheitsabstand sind erforderlich.
<b>Vermeiden oder Sichern von Gefährdungen an Quetsch-, Scher- und Einzugsstellen</b>	Erlangen von Sicherheit hauptsächlich in den Zonen mit Scher-, Quetsch- oder Einzugsstellen, entweder durch Eliminierung der Risiko erzeugenden Bedingungen oder durch die Einrichtung von Schutzmaßnahmen
<b>Kennzeichnung</b>	Informationen, die sich auf einem Schild am Tor befinden, um den Hersteller, den Tortyp, die Seriennummer und das Herstellungsdatum anzugeben
<b>Angaben zu den Toreigenschaften</b>	Informationen, hauptsächlich technischer Art, die dem Käufer vom Hersteller gegeben werden müssen, um eine entsprechende Kauf- bzw. Produktentscheidung treffen zu können.
<b>Handbetätigung</b>	Mittel, um den Flügel manuell zu bewegen; zulässige Kräfte für das Öffnen und Schließen mit oder ohne Motorisierung
<b>Nothalt-Einrichtung</b>	Zugängliches Mittel, um bei unmittelbarer Gefahr die Bewegung des Flügels bei der motorisierten Schließung stoppen zu können
<b>Einschließen</b>	Risiko, eine Person im Bereich der Schließzone einzusperren, insbesondere wenn der Sicherheitsabstand kein Durchkommen zwischen Haupt- und Nebenschließkante ermöglicht; oder in einer abgeschlossenen Zone immer dann, wenn das motorisch betriebene Tor der einzige Ausgang ist
<b>Totmannsteuerung</b>	Lösung zum sicheren Bewegen des Tors aus Sicht des Endkundens; Torgeschwindigkeitsvorschriften und Montagerichtlinien müssen beachtet werden
<b>Stoßgefährdung</b>	Lösungen, um die Stoßgefährdung zu verhindern; entweder durch die Reduzierung der dynamischen Kraft oder durch Ausschluß des Kontakttrisikos, hauptsächlich bei beweglichen Teilen durch die Installation einer Sicherheitseinrichtung
<b>Dynamische und statische Kräfte</b>	Dynamische Kräfte werden während der Bewegung des Torflügels gemessen, insbesondere die zulässige dynamische Kraft zwischen der Haupt- und der gegenüberliegenden Kante des Tores. Die statische Kraft wird gemessen, wenn das Tor angehalten wird, insbesondere die Restkraft, die auf den Kontakt mit der Hauptschließkante folgt
<b>Schaltende Schutzeinrichtungen</b>	Die Schutzeinrichtungen (PSPE) zeigen an, wenn Druck auf den Kontaktkörper ausgeübt wird; (ESPE) Schutzeinrichtung können auch wahrnehmen, ohne den Druck eines Kontaktkörpers
<b>Mindestschutzniveau an der Hauptschließkante</b>	Minimale Sicherheitsanforderung an der Hauptschließkante richten sich nach der Art und Weise, wie das Tor genutzt wird, der Betätigungsart, der Art der erteilten Steuerungseinheiten; sie müssen den besonderen nationalen Vorschriften genügen und der Risikoanalyse vor Ort entsprechen
<b>Prüfung</b>	Gruppenfunktionsüberprüfungen, Haltbarkeitsprüfung, besondere Überprüfung und Inspektionen
<b>Montage-, Betriebs-, Wartungs- und Inspektionshinweise</b>	Vorschriften, Anleitungen und nützliche Hinweise für Montage und Erstinbetriebnahme des Tores; Hinweise zur Handhabung und Wartung und zusätzliche Servicemaßnahmen (Kontrollen und Vorschriften....)