January 2005

GUIDELINES
REGARDING
EUROPEAN STANDARD
EN 13241-1

Edition 2 January 2005

Important!
These Guidelines do not cover the total content of the Product Standard. They contain only a selection of particular examples, and therefore must not under any circumstances be assumed to be a substitute for the standard itself.

Content

INTRODUCTION

EDSF has supported the preparation of European standards for all types of door products through national member associations and by direct EDSF liaison with CEN and CENELEC committees.

Principally, the standards produced for doors and shutters have been in response to satisfying the Essential Health and Safety requirements identified in the Construction Products Directive.

Where necessary, due notice has also been taken of the specific requirements related to power operated products in the Machinery Directive, the Low Voltage Directive and the Electro-Magnetic Compatibility Directive.

The first product standard, EN 13241-1, covering industrial, commercial and garage doors & gates, excluding fire resistance and smoke control characteristics, has been voted and its reference published in the Official Journal of the EU in March 2004, establishing the end of the transition period on 30 April 2005.

All supporting standards referenced in this product standard were already published, some being currently under revision. CEN TC33 has acknowledged the need of interpretation and approved the creation of an adhoc Group. Interpretations are now published on the following web site Interpretation group IG5 and EDSF recommends to consider them even before they are incorporated in a revised version of the related standard.

In order to support the introduction and use of this product standard EN 13241-1, EDSF has summarized some of the major safety aspects covered by this standard and all related supporting standards in this safety guidelines section.

Some of the sketches identify hazards which can occur if particular requirements of the standards are not complied with.
Section A covers basic safety requirements for all types of industrial, commercial and garage doors & gates, whether designed for manual or power operation.
Section B identifies some of the additional basic safety requirements specific to power operated doors.
Section C identifies alternative solutions specific to vertically operating domestic garage doors for one household only, not opening onto a public thoroughfare and not automatic operation.

Not covered in these safety guidelines are important environmental aspects which although identified in the Construction Products Directive, are not specifically safety related.

It is EDSF's intention to expand these guidelines when the additional product standards which cover the following product types are nearing their publication dates:

- manually operated pedestrian doors (prEN14351-1)
- power operated pedestrian doors: currently on stand-bye
- fire resisting/smoke control doors and shutters: (prEN13241-2)

Basic Safety Requirements

A.1 Safeguarding against dropping of vertically operating door leaves

Requirement:

Vertically operating door leaves shall be safe-guarded against dropping, or uncontrolled out-of-balance movement in the event of a failure of a single component in their suspension or balancing systems.

Relevant Directives:

CPD, Construction Products Directive

References:

EN 13241-1 clause 4.2.8
EN 12604 clause 4.3.4 (5.3.4 in revised draft version)

What to do:

Safeguards against dropping can be achieved by using anti-drop devices or other design features incorporated into the door suspension system (see EN 12604).
Springs shall be arranged so that one spring cannot cause faulty operation of another.

Evaluation of conformity:

Evaluation of conformity shall be based on an Initial Type Test
carried out for the manufacturer by a notified body.

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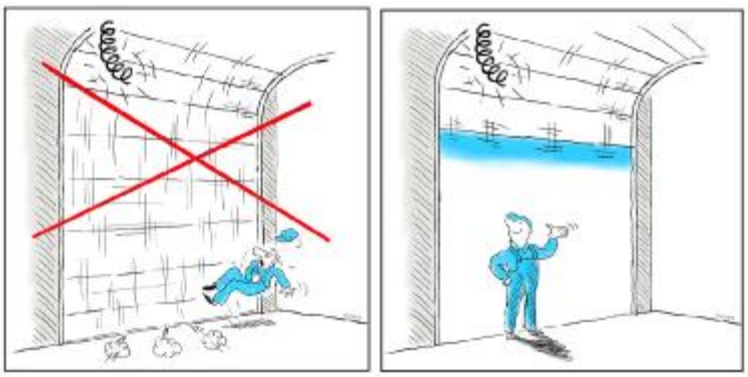


Basic Safety Requirements

A.2 Resistance to wind load

Requirement:

Resistance to wind load of a defined class means that at the prescribed load the closed door shows no collapse or permanent deformation or derailment or the like which can influence the functional and safety performance.

Relevant Directive:

CPD, Construction Products Directive

References:

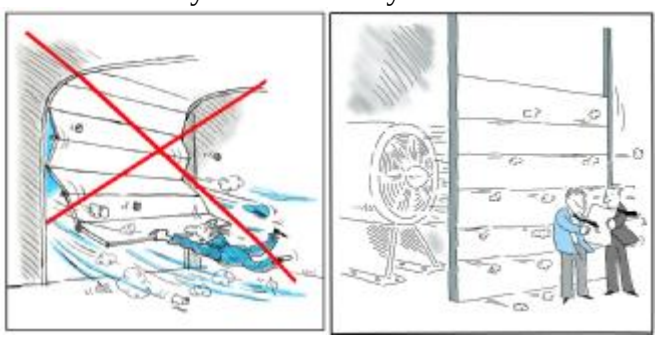
EN 13241-1 clause 4.4.3 and annex C
EN 12424
EN 12444
EN 12604 clause 4.2.2 and 4.2.4

What to do:

Resistance to wind load shall be determined from a full scale test, model test, component part test or calculation in accordance with EN 12444, unless “no performance determined” is to be declared.
The results of tests or calculations which incorporate safety factors as identified in EN 13241-1 and EN 12444, shall show that the door is able to withstand the reference wind load of the relevant class listed in EN 12424 unless no performance determined is declared.
A suction or reverse direction load shall be specified as a negative class.
It should be noted that products installed on the façade of a building should meet class 2 as a minimum.

Evaluation of conformity:

Evaluation of conformity shall be based on an Initial Type Test carried out for the manufacturer by a notified body.



Basic Safety Requirements

A.3 Dangerous substances

Requirement:
Materials in products shall not release any dangerous substances in excess of the maximum permitted levels specified in the relevant European material standard and/or any national regulation.

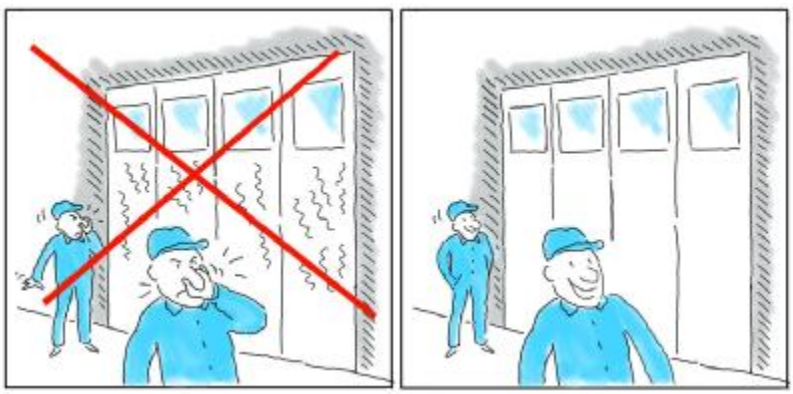
Relevant Directives:
CPD, Construction Product Directive

References:
EN 13241-1 clause 4.2.9

What to do:
Existing National regulations to be checked individually for each Country.

For general information about dangerous substances in the EU, see:
http://europa.eu.int/comm/enterprise/construction/internal/dangsub/dangmain.htm
For information about dangerous substances per country, see:
http://europa.eu.int/comm/enterprise/construction/internal/dangsub/dangcount.htm

Evaluation of conformity: *(to be checked for each and every Member State)*
Compliance with national regulations related to dangerous substances shall be based on an Initial Type Test carried out for the manufacturer or his material supplier by a notified body.



Basic Safety Requirements

A.4 Uncontrolled movements of vertically operating door leaves

Requirement:

Vertically operating door leaves shall not move in an uncontrolled or dangerous manner. The door movement shall in normal use be able to be stopped in any position.

Relevant Directives:

CPD, Construction Products Directive

References:

EN 13241-1 clause 4.2.1
EN 12604 clause 4.3.3

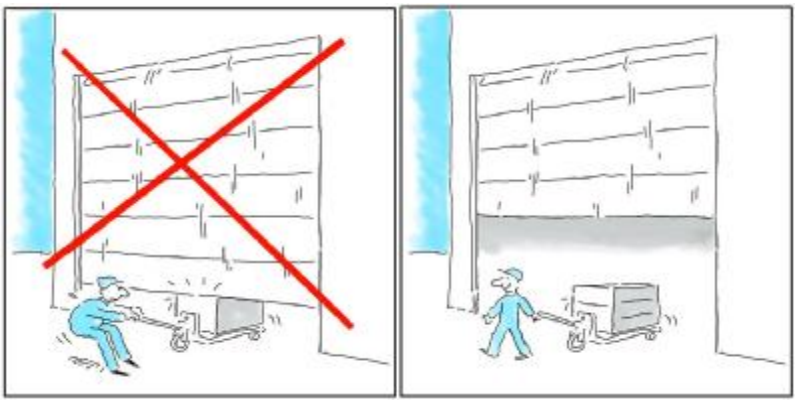
What to do:

To comply with the requirement, EN 12604 describes the following examples of possible solutions:

- An operational braking system which automatically engages when the door movement is stopped in any position
- A balancing system which balances the door leaf in any position (not only the terminal ones)
- A balancing system which balances the door leaf only in an intermediate or the fully open position. The out-of-balance state in the other positions should be minimised as far as possible, but in any case shall not produce a static force at the primary closing edge of the door exceeding 150N.
- A self-sustaining gear which stops the door leaf and holds it firm in any position.

Evaluation of conformity:

Evaluation of conformity shall be done under manufacturer's responsibility.



Basic Safety Requirements

A.5 Unintentional movements due to wind etc.

Requirement:

Doors of a type which can cause injury or damage if they move under the influence of wind or similar extraneous forces shall be able to be retained in their terminal positions.

Relevant Directives:

CPD, Construction Products Directive

References:

EN 13241-1 clause 4.2.1
EN 12604 clause 4.3.2.

What to do:

This type of doors shall incorporate devices to prevent such movement.
Such devices shall automatically be effective at the terminal positions.

Evaluation of conformity:

Evaluation of conformity shall be done under manufacturer's responsibility.

Basic Safety Requirements

A.6 Closing gaps

Requirement:

Closing gaps which are accessible during the leaf movement shall be eliminated or safe-guarded up to a height of 2,5 m above floor level or other permanent access level.

Relevant Directive:

CPD, Construction Products Directive
MD, Machinery Directive

References:

EN 13241-1 clause 4.2.6
EN 12604 clause 4.5.1
EN 12453 clause 5.1.1

What to do:

On manually operated doors:
The mechanical features of a door shall be designed so that as far as possible the risk to the operator and adjacent persons of crushing, cutting, shearing is eliminated. This shall be done primarily by the door design, setting suitable clearances and provision of guarding. Examples are given in EN 12604 annex C.
Where this action does not eliminate all risk, suitable warning signs shall be provided.
On power operated doors:
All accessible closing gaps shall be avoided or safeguarded (warning signs are not acceptable).

Evaluation of conformity:

Evaluation of conformity shall be done under manufacturer's responsibility.

Basic Safety Requirements

A.7 Precaution for transparent surfaces

Requirement:

Transparent elements in leaves shall be so designed that they remain fully secured under normal operating conditions.
No sharp splinters, cutting edges or other dangerous part shall occur if the transparent material should break.

Relevant Directives:

CPD, Construction Product Directive

References:

EN 13241-1 clause 4.2.5
EN 12604 clause 4.2.5.
EN 12605 clause 5.3.1

What to do:

Vision panels must not fall out of their frame. Broken transparent elements must not result in sharp edges.
The requirements of class 1 of EN 12600 shall be fulfilled (should read class 3: EN12604 is under revision on this point).
If the transparent surface of the test object is smaller than the dimensions stated in EN 12600, this is to be built into a representative door leaf segment and tested. Total impact to be centred to the middle of the transparent element.

Evaluation of conformity:

Evaluation of conformity shall be done under manufacturer's responsibility.

Basic Safety Requirements

A.8 Installation and use

Requirement:

A door shall be able to be installed and maintained such that it performs satisfactorily and safely in its intended situation and under its expected conditions of use.

Relevant Directives:

CPD, Construction Products Directive
MD, Machinery Directive

References:

EN 12635 clause 5
EN 13241-1 clause 4.5

What to do:

Unless installation is carried out by the manufacturer, the manufacturer shall provide for each product, installation instructions which shall include a step by step guidance on the correct sequence of operations necessary to achieve a correct installation.
The following documentation shall be handed over to the user on completion of installation:

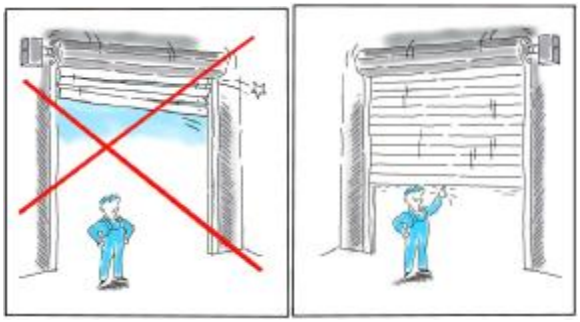
- Instructions for use and maintenance
- Maintenance and proof test record book for power operated doors other than for private domestic garage doors.
- Declaration of Conformity where applicable. The door shall be labelled according to the product standard EN 13241-1.

The instructions for use and maintenance shall at least:

- clearly state the correct method of door operation.
- advise against non-specialist interference with critical items that could be dangerous to an untrained person.
- specify the minimum level of frequency and type of maintenance of the door (including operational safety checks) necessary to obtain the working life expected from the product classification.
- advise the user of the importance to keep maintenance records.
- include guidelines for the safe dismantling of the door.

Evaluation of conformity:

Evaluation of conformity shall be done under manufacturer's responsibility.



Additional Basic Safety Requirements for power operated doors

B.1 Crushing, shearing, drawing-in, impact

Requirement:

Operating forces exerted by the door leaf of power operated doors, shall be kept to a safe level for users.
Crushing, shearing and drawing-in points generated by the door leaf during normal use shall be eliminated or safeguarded.

Relevant Directives:

CPD, Construction Products Directive
MD, Machinery Directive

References:

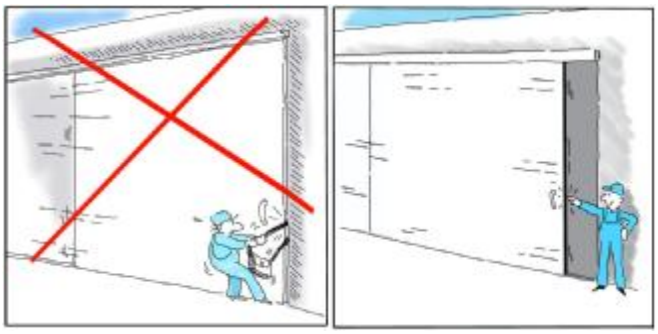
EN 13241-1 Clause 4.3.2 and 4.3.3
EN 12453 clause 5.1.1, 5.1.3, 5.5.1 and normative annex A.

What to do:

On doors which are not operated in the “hold to run” mode of operation, either forces are kept below maximum acceptable levels (see 12453 clause 5.1.1 and annex A), or specific features guarantee that no one can be touched by the moving door (see EN 12453 clause 5.1.3).
When the above is fulfilled via safety devices, these devices shall not fail to danger in case of a single fault failure (see EN 12453 clause 5.1.1.6).
Shearing and drawing-in hazards cannot be eliminated nor safeguarded by force limitation only. Other safety measures such as safety distances are needed (see EN 12453 clause 5.1.1.5).

Evaluation of conformity:

Evaluation of conformity shall be based on an Initial Type Test carried out for the manufacturer by a notified body.



Additional Basic Safety Requirements for power operated doors

B.2 Lifting people

Requirement:

Doors which open upwards and which are not operated in the “hold-to-run” mode of operation shall not be able to lift an adult or a child in a dangerous way.

Relevant Directives:

CPD, Construction Products Directive
MD, Machinery Directive

References:

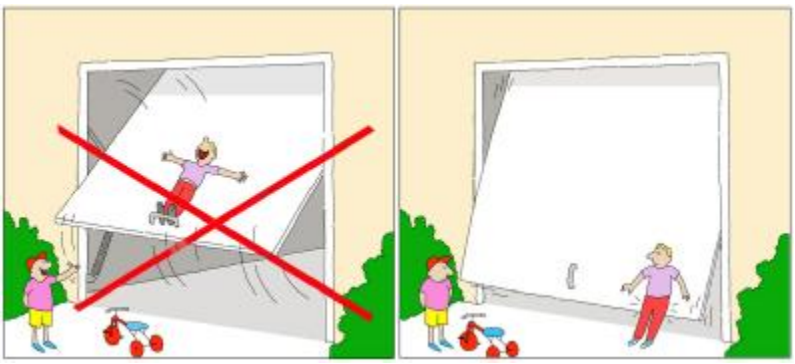
EN 13241-1 clause 4.3
EN 12453 clauses 5.1.1.6 and 5.1.2
EN 12445 clauses 4.1.2 and 7.4

What to do:

To avoid any lifting hazard, the door leaf shall not have holes nor protruding parts or the door shall not be able to lift a test load of 20kg.
If the door is able to lift the test load, that load shall be detected by a sensitive protective equipment before coming into contact with any hard fixed part of the surroundings such as the lintel (see EN 12445 clause 4.1.2).
Any sensitive protective equipment shall not fail to danger in case of a single fault failure (see EN 12453 clause 5.1.1.6).

Evaluation of conformity:

Evaluation of conformity shall be done under manufacturer’s responsibility.



Additional Basic Safety Requirements for power operated doors

B.3 Source of energy

Requirement:

All hazards originated by the source of energy used for the power operation shall be avoided or safeguarded.
In particular electric shock, fire from overheating or bursting due to hydraulic or pneumatic overpressure, in normal use as well as in foreseeable misuse, shall be avoided or safeguarded.

Relevant Directives:

CPD, Construction Products Directive
MD, Machinery Directive
LVD, Low Voltage Directive

References:

EN 13241-1 clause 4.3.4
EN 12453 clause 5.2

What to do:

Electrical drive units shall meet the specific requirements of EN 60335-1 identified in clause 5.2.1 of EN 12453 (EN12453 is going to be revised to simply require for compliance with EN 60335-2-103).
Electrical equipment outside the drive unit shall meet the requirements of EN 60204-1 (see EN 12453 clause 5.2.2).
Hydraulic drive systems shall meet the requirement of EN 982. In particular they shall be protected against overpressure and be able to resist 3 times the working pressure (see EN 12453 clause 5.2.3).
Pneumatic drive systems shall meet the requirement of EN 983. In particular they shall not be allowed to be operated at a working pressure higher than 1.2 mPa and they shall be able to resist 3 times the working pressure (see EN 12453 clause 5.2.4).

Evaluation of conformity:

Evaluation of conformity shall be done under manufacturer's responsibility.

Additional Basic Safety Requirements for power operated doors

B.4 Over-running

Requirement:

The door shall stop automatically at its terminal end positions and remain in a safe state. Also the door movement shall stop and the drive shall be switched off as soon as a stop command is given.

Relevant Directives:

CPD, Construction Products Directive
MD, Machinery Directive

References:

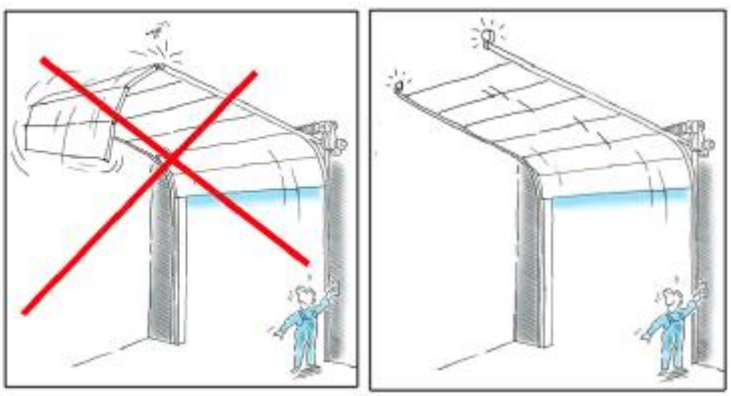
EN 13241-1 clause 4.3.1
EN 12453 clauses 5.2.7 and 5.4.3

What to do:

Doors shall always have means to stop the movement (see EN12453 clause 5.2.7).
After a stop command has been given, the door shall stop within an over-travel distance less than or equal to 50 mm when the opening gap is less than or equal to 500 mm and not more than 100 mm when the opening gap is greater than 500 mm. (see EN 12453 clauses 5.1.1.4 and 5.2.7).
Doors shall not be able to overrun their terminal end positions (see EN 12453 clause 5.4.3).

Evaluation of conformity:

Evaluation of conformity shall be done under manufacturer's responsibility.



Additional Basic Safety Requirements for power operated doors

B.5 Change over to manual operation

Requirement:

When a manual operation is available on a power operated door, the manual operation shall be designed so that it can be carried out without risk.

Relevant Directives:

CPD, Construction Products Directive
MD, Machinery Directive

References:

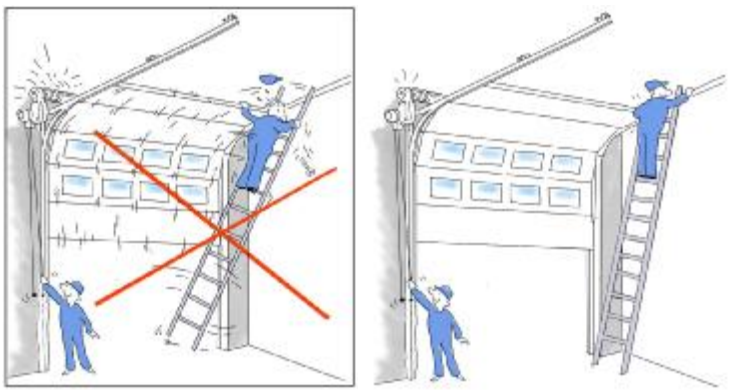
EN 13241-1 clause 4.3.1
EN 12453 clause 5.3 and 5.4.4

What to do:

The manual operation shall be possible with a reasonable physical effort (see EN 12453 clause 5.3.5). Devices for manual operation shall be provided. They shall not be located close to danger points. Crank handle shall not be able to fly back and they shall be safeguarded against slipping off (see EN 12453 clauses 5.3.2 to 5.3.4). The manual operation shall not interfere with the power operation (see EN 12453 clause 5.3.1). When the manual operation is achieved by releasing the drive, that release shall not lead to hazardous situation due to unexpected movement. In particular, vertically moving doors shall be safeguarded against falling back in case of a failure in the suspension system. (see EN 12453 clause 5.4.4).

Evaluation of conformity:

Evaluation of conformity shall be done under manufacturer's responsibility.



Additional Basic Safety Requirements for power operated doors

B.6 Trapping

Requirement:

Persons shall not be trapped in areas where a power operated door is the only means of exit, even in case of a failure in the drive or a loss of power supply.

Relevant Directives:

CPD, Construction Products Directive
MD, Machinery Directive

References:

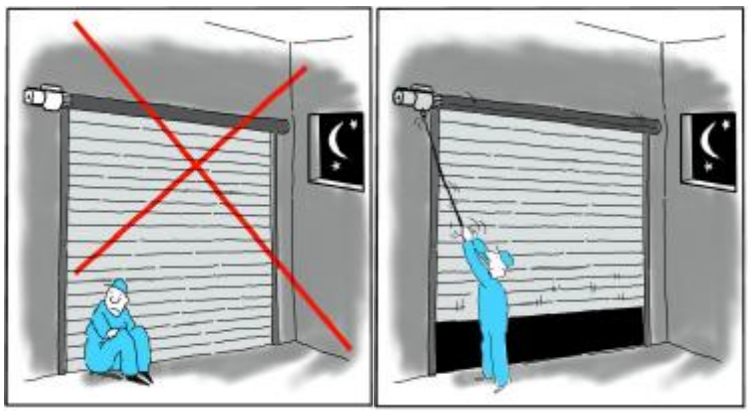
EN 13241-1 clause 4.3.1
EN 12453 clause 5.4.2

What to do:

It is always recommended to install power operated doors in rooms where other exits are provided, independent from the power operated doors. When there is no other exit other than through the power operated door itself, this door shall be fitted with a manual release, or a pass-door. Users must be aware that the manual release might not be operable in a case where there is a failure in the suspension system in addition to the failure in the drive or the loss of power supply.

Evaluation of conformity:

Evaluation of conformity shall be done under manufacturer's responsibility.



Additional Basic Safety Requirements for power operated doors

B.7 Pass-doors

Requirement:

When a pass-door is fitted in a power operated door leaf, it is necessary that the movement of the door is not possible when the pass-door is not secured in its closed position.

Relevant Directives:

CPD, Construction Products Directive
MD, Machinery Directive

References:

EN 13241-1 clause 4.3.1
EN 12453 clause 5.4.1

What to do:

A device shall prevent the movement of the drive when the pass-door is not fully closed or stop the movement if the pass-door is opened. Such devices shall not be able to ”fail to danger”.

Evaluation of conformity:

Evaluation of conformity shall be done under manufacturer’s responsibility.

Alternative Additional Requirements specific to non-automatic power operated, vertically moving domestic garage doors for one household only

C.1 Forces exerted by the door

Requirement:

Power operated domestic garage doors shall be so designed or safeguarded that the forces which they exert at the main closing edge are kept to a safe level for the users.

Relevant Directives:

CPD, Construction Products Directive
MD, Machinery Directive
LVD, Low Voltage Directive

References:

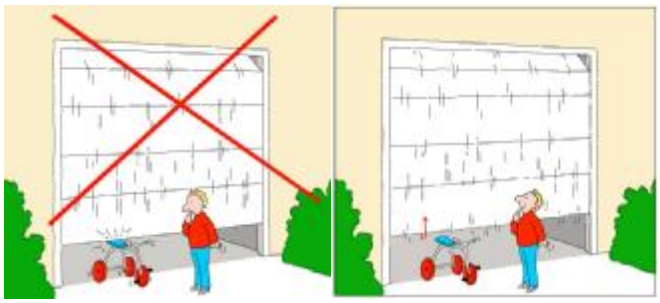
EN 13241-1 clause 4.3.6
EN 12453 clause 5.5.2
EN 60335-2-95

What to do:

Unless the drive is operated in the "hold to run" mode of operation, the drive shall incorporate an entrapment protection system with sensing devices which either prevent the door from coming into contact with an obstacle (EN 60335-2-95 clause 20.Z.102) or keep the forces below maximum acceptable levels (EN 60335-2-95 clause 20.Z.103)
Entrapment protection systems shall always provide an adequate level of protection in the event of a failure within the system (EN 60335-2-95 clause 20.Z.104). A mechanical fault in the drive shall not result in a hazardous operation (EN 60335-2-95 clause 20.Z.105).
Adjustment shall not be possible without the use of a tool (EN 60335-2-95 clause 22.101).

Evaluation of conformity:

Evaluation of conformity for permissible forces has to be demonstrated by the drive unit manufacturer.



Alternative Additional Requirements specific to non-automatic power operated, vertically moving domestic garage doors for one household only

C.2 Source of energy

Requirement

All hazards originated by the source of energy used for the power operation shall be avoided or safeguarded. In particular electric contact direct or indirect, fire from over-heating, in normal use as well as in foreseeable misuse, shall be avoided or safeguarded.

Relevant Directives:

CPD, Construction Products Directive
MD, Machinery Directive
LVD, Low Voltage Directive

References:

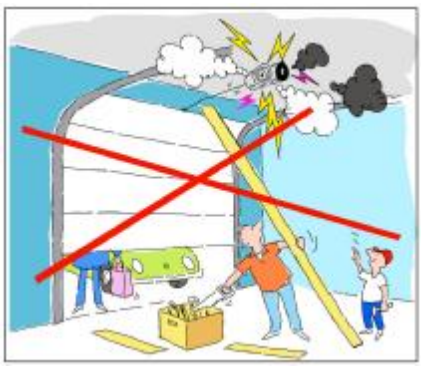
EN 13241-1 clause 4.3.1
EN 12453 clause 5.5.2
EN 60335-1 and EN 60335-2-95

What to do:

Electrical drive units for single residence domestic garage doors, without automatic control and not opening onto a public area shall, in accordance with clause 5.5.2 of EN 12453, meet the requirements of EN 60335-2-95 and EN 60335-1.

Evaluation of conformity:

Evaluation of conformity is based on declarations from both the door and/or drive unit manufacturer.



Alternative Additional Requirements specific to non-automatic power operated, vertically moving domestic garage doors for one household only

C.3 Over-running

Requirement:

The door shall stop automatically at its terminal end positions and remain in a safe state. Also the door movement shall stop and the drive shall be switched off as soon as a stop command is given.

Relevant Directives:

CPD, Construction Products Directive
MD, Machinery Directive
LVD, Low Voltage Directive

References:

EN 13241-1 clause 4.3.1
EN 12453 clause 5.5.2
EN 60335-2-95

What to do:

Doors shall always have means to stop the movement at the terminal positions.
Drives that are only controlled by a biased-off switch shall make the bottom edge of the door stop within a distance of 50mm when the actuating member of the switch is released (EN 60335-2-95 clause 20 Z 101).

Evaluation of conformity:

Evaluation of conformity shall be done under manufacturer's responsibility.

Alternative Additional Requirements specific to non-automatic power operated, vertically moving domestic garage doors for one household only

C.4 Change over to manual operation

Requirement

All drives for domestic garage doors shall incorporate a manual release so that the door can be operated manually.
Operation of the manual release shall not give rise to a hazard such as kickback or unexpected operation of the drive.

Relevant Directives:

CPD, Construction Products Directive
MD, Machinery Directive
LVD, Low Voltage Directive

References:

EN 13241-1 clause 4.3.1
EN 12453 clause 5.5.2
EN 60335-2-95

What to do:

The instructions for use shall give details on how to use the manual release and, if applicable, state that activation of the manual release may cause uncontrolled movement of the door if the springs are weak or broken or if the door is out of balance (EN 60335-2-95 clause 7.12). The manual release shall be operable with a force not exceeding 220 N or a torque not exceeding 1.6 Nm (EN 60335-2-95 clause 20.109). Drives shall be supplied with a label describing how to use the manual release (EN 60335-2-95 clause 7.103).

Evaluation of conformity:

Evaluation of conformity shall be done under manufacturer's responsibility.

Alternative Additional Requirements specific to non-automatic power operated, vertically moving domestic garage doors for one household only

C.5 Controls

Requirement

It shall only be possible to open or close the door by use of a manual control.
When operating the manual controls the user shall not be in a dangerous situation.

Relevant Directives:

CPD, Construction Products Directive
MD, Machinery Directive
LVD, Low Voltage Directive

References:

EN 13241-1 clause 4.3.1
EN 12453 clause 5.5.2
EN 60335-2-95

What to do:

The instructions for installation shall specify that any fixed control has to be installed within sight of the door but away from moving parts and at a height of at least 1.5 m (EN 60335-2-95 clause 7.12.1).
If the entrapment protection system is a biased-off switch, it shall only be possible to operate the switch within sight of the door (EN 60335-2-95 clause 22 Z 101).
If the drive is supplied with a three button control, all other controls shall be of the same type (EN 60335-2-95 clause 22.106).
During the movement of the drive in either direction, it shall always be possible to actuate a manual control to stop the movement.

Evaluation of conformity:

Evaluation of conformity shall be done under manufacturer's responsibility.

Additional Requirements for fire resisting and smoke control doors

D.1

Although the harmonised fire resistance and smoke leakage test method standards EN 1634-1 and EN 1634-3 have been published, the product standard for fire resisting doors and shutters has not yet been completed.

Work is still progressing on these product standards, supporting requirements standards, European classification standard, and extended field of application standards.

Until these are in place, CE marking of fire resisting products will not be possible and conformity to national regulation requirements will continue.