

HEALTH AND SAFETY EXECUTIVE – SAFETY NOTICE

Department Name:	<i>Field Operations Directorate</i>
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Target Audience:	<i>Gate manufacturers and installers, construction and estates and/or facilities management companies</i> <i>Industries - Services, Construction, Manufacturing (general) Services</i>
Key Issues:	<i>Actions required to prevent the trapping and crushing of persons by electrically powered gates</i>

Risks to Pedestrians from crushing zones on electrically powered gates - 2

INTRODUCTION:

The purpose of this Safety Notice is to reinforce and update previous information (HSE Safety Notice FOD WSW 1-2010) to organisations and individuals involved in the design, construction, installation and commissioning of electrically powered gates and organisations in control of their use and/or maintenance. It is also relevant to companies carrying out ongoing maintenance of these types of gates.

It will be of particular interest to gate manufacturers, gate installers, those involved in the commissioning of electrically-powered gates, organisations involved in construction projects including the installation of gates, and persons or organisations in control of premises where persons other than their own employees may have access to such gates, such as site management and/or lettings agents.

BACKGROUND:

Two recent separate incidents that both led to the deaths of young children have highlighted a risk of using automatic vehicle access gates. These are in addition to a further fatal accident again involving a young child in 2008 and other recent near misses.

In the two recent fatal accidents referred to above the gates were automatic sliding gates, however this alert applies to all powered access gates.

In both cases the children were trapped between the closing edge of the gate and the gate post at the end of the gates' travel.

In both cases the children were trapped because

- Their presence in the vicinity of the closing edge was not detected ;and

- The closing force of the gate when they obstructed the gate was not limited to the values specified in Annex A of BS EN 12453:2001.

BS EN 12453:2001 recommends a minimum level of safeguarding against the crushing hazard depending on the type of environment in which the gate is operating. The Standard defines 3 types of use:

Type 1 – The gate is only used by trained users and there is no access to it by members of the public.

Type 2 – A limited group of persons (for example persons sharing a block of flats) are trained to operate the gate and the gate is located in a public area.

Type 3 – Any person is free to operate the gate and the gate is in contact with the general public.

The Standard advises on the minimum levels of safeguarding of the main edge according to its type of use. Type 1 gates are not considered further in this safety notice because they do not involve access by the general public.

In the case of those powered gates categorised as Type 2 or Type 3 and which have automatic control the advised level of safeguarding is as follows:

Limitation of forces according to Annex A of the Standard using force limitation devices or sensitive protective equipment.

AND

A means for detection of presence of a person or an obstacle standing on the floor at one side of the gate.

OR

A means for detection of presence which is designed in a way that in no circumstances can a person be touched by the moving gate leaf.

In a significant number of gate installations the type of use may not have been taken into account during the design stage, with the consequence that the installations may not comply with the safeguarding measures recommended in the standard.

BS EN 12453:2000 advises that adopting one or a combination of measures including creating safety distances, installing guards, shaping the leaf surfaces, operating the gate in hold to run, limiting the forces and installing sensitive protective equipment will achieve a safe state.

It is HSE's view that the force limitation function on its own is unlikely to be sufficiently reliable to prevent a person being trapped or crushed. In accordance with the recommendations of BS EN 12453:2001, where the force limitation technique is used in Type 2 or Type 3 installations with automatic operation, additional safeguarding techniques should be used to reduce the likelihood of hazardous situations occurring.

In some installations single or twin photoelectric beams have been used as an additional safeguard; however, analysis of their installation and configuration has shown that these do not guarantee person detection and prevention of crushing. Whereas photoelectric beams, when suitably installed and configured, are a possible safeguarding option, pressure sensitive strips on the closing edge of the gate are more effective when used in combination with force limitation.

An important consideration with the operation of automatic gates is the emergency arrangements to release someone should a crushing, shearing or drawing-in incident occur

and the person remains trapped. Many designs of drive units require the use of a release key and lever to disconnect the drive from the gate and allow it to be moved manually. In such circumstances access to the release key is critical to the quick release of the gate and so arrangements should be in place to ensure release keys and release instructions are readily available to all authorised users of the gate.

ACTION REQUIRED:

- All designers and installers of electronic gates should ensure that the forces generated by a gate when meeting a person or an obstacle are limited, in that they do not exceed the values specified in Annex A of BS EN 12453:2001 that are considered safe.
- These forces should be measured in accordance with BS EN 12445:2000. "Industrial commercial and garage doors and gates. Safety in use of power operated doors. Test methods" and the performance of the system validated before the gate is put into use.
- Forces should be periodically re-measured and checked as part of the planned preventative maintenance schedule for the gates.
- In addition to force limitation, additional safeguards such as pressure sensitive strips on the closing edge and photoelectric sensing devices should be fitted where the risk assessment identifies the gate as high risk, in that it is operating automatically in a public place where children and other members of the public may be present
- Other hazards associated with the opening and closing of the gate should also be addressed; these will include crushing, shearing, impact and drawing in hazards. Examples of other hazard points are described in the EN 12453: 2001 and include: the opening edge; gaps in the gate where they pass fixed structures; and at the drive mechanism. (Note: force limitation on its own is also unlikely to be sufficient for these hazards).
- All safety devices and features should be checked on a regular basis and in accordance with the manufacturer's instructions to ensure they continue to function as designed to ensure safety is maintained. This should be specified in a planned preventative maintenance schedule agreed by persons responsible for the gate's management and their appointed maintenance company.

HSE published a Safety Notice (FOD WSW 1-2010) on 26 February 2010 relating to the death of a nine-year old child.

A number of actions were identified relating to the design, installation and commissioning and management and maintenance of gates in operation. These actions are still valid and can be viewed by following the link below.

<http://www.hse.gov.uk/safetybulletins/electricgates.htm>

REFERENCES:

Further information for gate designers and installers, including procedures that need to be followed, and instructions that need to be provided can be sourced from:

BS EN 12453:2001: Industrial, commercial and garage doors and gates - Safety in use of power operated doors - Requirements. The relevant extracts are contained below:

BS EN 12445:2001: Industrial commercial and garage doors and gates. Safety in use of power operated doors. Test methods.

BS EN 12635:2002: Industrial, commercial and garage doors and gates - Installation and use

BS EN 12604:2000: Industrial, commercial and garage doors and gates - Mechanical Aspects. Requirements

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FURTHER INFORMATION:

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GENERAL NOTE:

Please pass this information to a colleague who may have this Product/ Equipment or operate this type of system/process.