AUTOMATIC GATES

GUIDANCE FOR **ELECTRICIANS**

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ENDORSED BY

ECA FSA Fire & Security Association

AUTOMATED GATES – GUIDANCE FOR ELECTRICIANS

Electricians are regularly called upon to complete an automated gate installation by handling the power connection, which activates the device. Additionally, there are many occasions where an electrician may be working on other projects within a site – either domestic or commercial - and is also tasked with installing a powered gate, putting him into the position of 'the accidental installer'.

Both these scenarios place a responsibility on the electrician to deliver a safe and compliant installation. If the electrician is simply adding power to the gate, he effectively becomes the professional that transforms a regular gate into what is legally defined as a machine and as such, he may be deemed accountable for his actions. In the event of an unsafe or faulty automated gate installation, which results in injury or death as recently highlighted through the courts indicates that professionals have a legal and moral responsibility to understand and observe the accepted protocol described in this guide to ensure the 'gate is safe'. Equally, if an electrician adopts an installer role – both in terms of the original installation, adapting the gate in any way or undertaking routine maintenance – the electrician assumes a direct responsibility for the device.

On a more positive note, automatic gate installations can represent a revenue stream for electricians, who can invest in the relevant specialist training to enable them to understand the actions and responsibilities they need to consider to deliver a safe automated gate.

Type of gate

Automated gates come in two main configurations:

Swing gates - offer the most cost effective solution and are the easiest of all automated gates to install. However, a swing gate will be more adversely affected by windy conditions so care needs to be taken to ensure that these load factors are taken into consideration. A swing gate may also not be suitable if the driveway has a gradient.

Sliding gates – are not affected by wind and if installed correctly are very reliable, particularly those which are cantilevered systems without a track. Sliding gates also represent the ideal solution for entrances with a gradient.

All automated access points should feature a separate independent gate to allow for pedestrian access.

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Type of gate operator

A swing gate functions using a ram operator: Ram operators will ultimately offer the most 'powerful' solution to opening and closing the gates but be aware of the crushing hazards associated with this style of gate (especially if the gate is opening against a solid object) care must be taken to incorporate the correct safety features to avoid an accident. Ram operators are more widely accessible allowing ease of maintenance. Although common practice is to position the ram at about waist height, the most sensible place to site the ram would be at the top of the gate, provided the gate is of a sufficient height to prevent being reached by young children's fingers bearing in mind the need to access manual release locks.

A swing gate using an underground operator clearly has the advantage of not detracting from the aesthetic charm of the gate, however the gate owner would need to be aware of the additional cost associated with installing this type of operator, in addition maintenance becomes complex due to the limited access.

A sliding gate is typically operated by a 'rack and pinion' mechanism. Attention should be paid to the support rollers as these must be made in such a way as to reduce a drawing in hazard. Both the support rollers and the motor drive must feature some kind of physical protection around the support posts and physical stops in open/close position to stop overrun.

Method of entry and exit

There are a variety of methods, which might be employed to gain access to premises using automated gates. The degree of security provided by the gate will be largely dictated by the method of entry and this in turn will have an impact on the safety requirements of the gate., see the table below.

Type of Entry / exit	Control over security	Safety required
Ground loop	1	Maximum
Push button	1	Maximum
Radio remote control	2	Maximum
Digital keypad	2	Maximum
Coded card reader	3	Maximum
Audio/video intercom	3	Maximum
Biometric card reader	4	Maximum
Automatic Number Plate Recognition (ANPR)	4	Maximum
Automatic Number Plate Recognition (ANPR) with secondary security check (e.g biometric)	5	Maximum
Guard house with remote control/intercom	4	Maximum
Guard house with hold to run control	4	Minimum
Guard house with hold to run and airlock	5	Minimum
Time clock	1	Maximum

KEY: 1 – None 2 – Minimal 3 – Fair 4 – Good 5 - excellent

Safety recommendations

Before an automated gate is installed, a risk assessment must be undertaken which identifies all the potential risks associated with automating a gate. From the risk assessment measures will need to be put in place to eliminate or substantially reduce the likelihood of an automated gate accident occurring.

All automated gates should be installed with at least two different type of safety devices which protect the gate users from the risk of injury or becoming trapped. Gate Safe recommends the use of photocells (or light curtains/laser scanners) and pressure edges on all gates that are automated. Remember, whoever installs these devices must possess the appropriate knowledge and skills to understand WHERE they should be sited to work effectively and mitigate or eliminate the risk. The installer must also have a clear understanding of how to select the correct pressure edges to ensure that they are capable of effectively stopping then automatically reversing the gate when an object / person is detected.

Additional factors influencing gate safety

In addition to the general automated operation of the gate and the risks associated with this, there are some physical factors pertaining to the gate itself or the siting of the gate, which may influence its overall safety.

- If the gate is not solid (whether it is a swing or sliding gate), mesh is frequently used, as the infill for the gate. This poses a risk in that people may try and climb the gate or reach through the mesh. If someone reaches through the mesh, the risk of entrapment must be considered.

- Vertical pales featuring on any automated gate are required to feature a maximum gap of 100 mm between the pales to minimise the risk of whole / part body entrapment.

- Swing gate hinges must be fitted so that there are no reducing gaps as the gate opens and closes. If there are closing gaps, these should be protected by shrouds or electronically (ie using pressure edges). The failure of a swing gate hinge must not create a situation, which could potentially lead to the gate falling, ie the failure of one component should no jeopardize the safety of the whole gate.

- Gate posts must be sufficiently strong and correctly bedded into the ground to support the overall gate structure. The foundations into which the gate is installed must be adequate and consistent with the specific ground conditions for the site. For example a sandy type soil will require a deeper foundation than a stony soil.

- The siting of any control equipment (push button or key switch) should be such that a person cannot put their arm through the gate to start the operation. Control equipment should always be (on both sides of the gate) a minimum of 1500 mm away from the gate or shrouded to prevent activation from the wrong side of the gate.

- Objects which might obscure the photocells' ability to detect movement will also influence the operations of the gate. Snow, a build of leaves or general debris can therefore represent a further potential safety hazard by sending a false message to the gate controller and not allowing the gate to move.

- All automated vehicle access points should feature a separate independent gate to allow for pedestrian access. Where the pedestrian gate is located next to the vehicle gate, there should be fencing or a guard rail to ensure that pedestrians are kept away from the main gate during its operations.

- Automated gates should feature a lockable IP rated control cabinet with the correct ingress protection. All visual and/or audible warnings and signage must be in place. The electrical connection to the gate must be via an isolator, installed by a qualified electrician to the current 19th edition of BS 7671. New electrical installations for automated gates within dwellings must be in accordance with Part P of Building Regulations.

Adapting an existing automated gate

Electricians are regularly called upon to make adjustments to a gate that is already powered. Interfacing with the existing gate controls, for example via an intercom system / electronic card reader or undertaking any other adaptations (mechanical or electrical) places the electrician into a position which requires him to assume responsibility for the gate's safety, making him liable for prosecution in the event of an accident. It is vital that you check the operation of the gate, safety devices, fail safes and features as part of this work.

Automated Gate handover

All automated gates are legally required to be CE marked to demonstrate that they comply with the EU Machinery Directive. In addition all gates must be supplied with a Declaration of Conformity, issued by the Responsible Person (normally the manufacturer) declaring the product's conformity. A gate that is CE marked is not necessarily safe.

Once the gate has been installed the installer should provide a handover pack that will include:

- Location of control cabinet keys and manual release keys
- How to operate the gate automatically and how to put the gate into manual operation
- Key contacts
- Maintenance log book
- Electrical Installation certificate
- Compliance certificate

In addition to this key personnel at the site should also be given a comprehensive briefing on how to use the gate, witness a demonstration on how to place the gate in manual operation and be provided with details of the weekly checks on the safety equipment fitted and gate structure that need to be carried out to ensure the gate continues to operate correctly and safely.

Automated gate kits

Automated gate kits which transform a manual gate into a powered gate 'machine' are now readily available online. Electricians should shun any automation kits that feature the minimal safety equipment and no training guidance. Typically, automated gate kits offer a low spec motor with a low duty cycle and only one pair of photocells (no pressure edges). In reality, for a double leaf swing gate, the gate should be supported by two pairs of photocells and five pressure edges. Such kits are simply perpetuating the risk of another accident occurring. If an automated gate kit does not carry the correct safety features and is therefore not fit for purpose, installers should refuse to fit it and report the supplier to Trading Standards.

Maintenance matters

All automated gates require routine maintenance. The gate should be checked over by a **competent** installer every six months as a minimum. Most reputable installers will supply an automated gate with a warranty of a minimum of 12 – ideally 24 – months covering parts and labour.

Training for electricians

Electricians who are interested in working on automatic gate installations should undertake specialist training to understand the protocol required to ensure a safe and compliant automated gate installation – and to protect themselves and their businesses from the risk of costly litigation which could potentially follow a non-compliant installation.

Gate Safe has joined forces with the Joint Industry Board, which administers the Electrotechnical Certification Scheme (ECS) in England, Wales and Northern Ireland – the industry's recognized competence card scheme - to offer a dedicated Gate Safe Aware ECS Card.

Operatives in the gate installation industry can now participate in the accredited Gate Safe Aware training programme, which has been running since August 2012.

The half-day session provides delegates with a practical and comprehensive overview of the current standards / safety guidelines pertaining to automated gates, along with a guidance manual to provide an ongoing reference source. Individuals who successfully complete and pass the assessment are eligible to use the Gate Safe Aware Installer logo and they will also be entered onto the established Gate Safe Aware Installer database (found on the Gate Safe website, **(www.gate-safe.org)** which promotes the appointment of professionally trained installers to undertake all works on an automated gate.

Legal Responsibilities

Installer:

- Supply of Machinery (safety) Regulations 2008
- Health and Safety at Work Act 1974
- The Workplace (health, safety and welfare) Regulations 1992
- Provision and Use of Work Equipment Regulations 1998

Electricians:-

- Supply of Machinery (safety) Regulations 2008
- 19th edition BS 7671 the IET Wiring Regulations
- Health and Safety at Work Act 1974
- The Workplace (health, safety and welfare) Regulations 1992
- Provision and Use of Work Equipment Regulations 1998

Important contacts

Gate Safe **www.gate-safe.org / info@gate-safe.org / 01303 840 117**

Electrical Contractors' Association **www.eca.co.uk / 020 7313 4800**

Fire & Security Association **www.fireandsecurityassociation.co.uk / 020 7313 4807**

ECS **www.ecscard.org.uk / administration@ecscard.org.uk / 01322 661600**

Trade Skills 4 U **www.tradeskills4u.co.uk/pages/courses?q=gate+safe / 0800 856 4448 or 01293 529 777**

Health and Safety Executive
www.hse.gov.uk/work-equipment-machinery/powered-gates/introduction.htm

Glossary of terms

For a full glossary of automated gate related terms, visit the Gate Safe website, **www.gate-safe.org.**

About the ECA

The Electrical Contractors' Association (ECA) is the UK's largest trade association representing electrical, electrotechnical and other engineering contractors, at regional, national and European level. ECA member-companies are rigorously assessed before membership is approved.

www.eca.co.uk
020 7313 4800

About the FSA

The FSA is a specialist group of the Electrical Contractors' Association and is the leading trade association dedicated to companies who design, install commission, maintain and monitor electronic fire, emergency and security systems.

www.fireandsecurityassociation.co.uk
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Gate Safe working together with IOSH

GATE SAFE IS PROUD TO BE SUPPORTED BY THE FOLLOWING ORGANISATIONS

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