



# Permanent electric fencing for security

# How to?

## Permanent electric fencing for security

Gallagher Security Management Systems (GSMS) is a global leader in perimeter security solutions. Over 60 years experience in researching and developing the world's leading electric fence systems has enabled GSMS to develop a total solution for your security needs.

Permanent electric fencing is the most effective way to secure your property and protect your family from the threat of intruders, thieves and burglars. It is important

to make sure your electric fence system is constructed properly.

At Gallagher, we understand the importance of constructing an electric fence that is both effective and suitable for your particular security needs.

Electric fencing is safe, simple to install and cost-effective.

## So how does an electric fence work?

Electric current (AMPS) only flows when a circuit is completed between a positive and negative terminal.

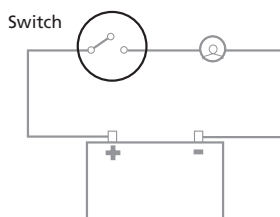


Diagram A

In Diagram A the current cannot flow from the positive terminal to the negative terminal because the switch is open.

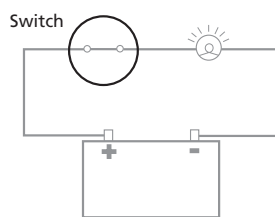


Diagram B

In Diagram B the switch is now closed, allowing the current to flow from the positive terminal through the light bulb (lighting the bulb) to the negative terminal.

An electric fence circuit draws on the same principles but on a larger scale (see Diagram C). The energizer fence terminal (positive) is connected to the insulated fence wires, and the energizer earth terminal (negative) is connected to a galvanised metal stake driven into the ground.

The same 'circuit completion' (as in Diagram B) is necessary before a person gets a shock. A person standing on the ground and touching the electrified wires will complete the circuit like the closed switch in Diagram B above.

For example, a bird sitting on the fence wire would not receive a shock. It would not be touching the ground (or an earth wire) so the circuit would not be completed.

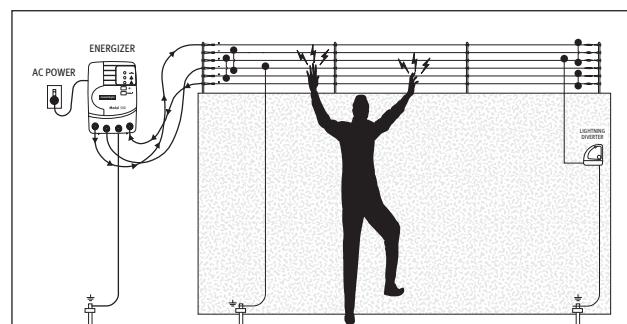


Diagram C

# Electric fence components

There are four main components to a permanent electric fence:

1. An AC powered energizer (possibly with battery back up)
2. An earthing system
3. A well insulated fence system
4. An adequate lead-out (connection between the energizer and the fence).

The effectiveness of your fence depends on the correct combination of these four factors for your particular situation.

## 1. Energizer

It is important to choose the right energizer, ensuring enough power for your fencing requirements. The type of energizer best suited for securing your property depends on the following factors:

1. The availability of an AC power supply
2. The area or distance of fence wire to be powered

## 2. Earthing System

The earthing system allows the completion of the electric circuit, resulting in a potential intruder receiving a shock. Important factors to remember are:

### » Soil conditions

Soil that is very dry, sandy or pumice will not conduct the electric current as effectively as clay or slightly moist soil. In these less than ideal conditions, it is more difficult to get an adequate earth system to ensure the intruder receives the maximum shock, so it is important to add an earth (negative) wire into the fence. The intruder must touch both a live wire and the earth wire to feel an effective shock. Ideally, every other wire should be an earth wire.

### » Proximity to energizer

It is preferable to install the earthing system as close as possible to the energizer.

However if the ground in the immediate vicinity is unsuitable due to stones, concrete etc, install it in the closest most suitable ground, and ensure the earth stakes are connected to the energizer with an adequate cable or wire. The earth system should be at least 10 metres from any AC power supply earth, underground telephone or power cables.

## 3. Well Insulated Fence

It is important for your fence to be well insulated to avoid any loss of power and to ensure the voltage remains as high as possible along your entire fence system.

Insulators that are attached to the fence posts should be of good size and quality to prevent voltage loss. This loss can result from the wire coming into contact with the post, and power being lost to the ground, i.e. 'shorting out'. A common misconception is that the sound of the fence clicking is proof that it is working. In actual fact, if you hear clicking, it indicates that the fence is shorting out and losing power.

PowerFence™ insulators are UV stabilised to prolong their life.

The use of crimps or joint clamps will also ensure good contact and transfer of power. If wires are not securely connected, arcing will occur which weakens the wire over time and causes radio frequency interference affecting television reception and telecommunications.

## 4. Lead Out Cable

It is important to have a low resistance lead out cable that is able to deliver the full power of the energizer to your electric fence. To ensure a good delivery of power, always use double insulated purpose built undergate cable. In addition, use hard undergate cable for direct burial, and use soft undergate cable for clipping to structures. The cable can be buried in the ground where necessary.

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The above outline gives you a basic understanding of what you need to remember when constructing a permanent electric fence. For further help or information please contact your local supplier or contact us by mail, phone or fax:

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