

PowerPlus

Thank you for purchasing this PowerPlus Energizer.

Gallagher, as world leader in Power Fencing is committed to providing leading products. Gallagher Power Fences are alternatives to traditional barbed and net wire fences at a lower cost. Your new Energizer incorporates the latest in electric fencing technology, ensuring powerful animal control. This Energizer has built-in lightning protection devices to reduce the incidence of lightning damage and built-in RFI (Radio Frequency Interference) Suppressed Circuitry.

If for any reason you are not happy with your purchase, please return the Energizer to your dealer within 30 days of purchase and we will give you a full refund - guaranteed. If you have any questions regarding this product please email us: sales@gallagher.co.nz, or contact the store where you purchased this Gallagher product.

Important Information


- **WARNING: READ ALL INSTRUCTIONS.**
- Do not touch live fence with the head or mouth, or become entangled.
- This appliance is not intended for use by young children or infirm persons without supervision.
- Young children should be supervised to ensure they do not play with this appliance.
- Electric fences should be installed and operated so that they cause no electrical hazard to persons, animals or their surroundings.
- Electric fence constructions which are likely to lead to the entanglement of animals or persons should be avoided.
- In areas of public access, use an electric fence warning sign (G6020) every 10m (33ft) to identify the electrified wire(s).
- Check your local ordinance for specific regulations.
- Crossing with overhead powerlines should be avoided wherever possible. If such a crossing cannot be avoided, it should be made underneath the powerline and as nearly as possible to right angles.
- If connecting leads and electric fence wires are installed near an overhead power line, the clearances should be not less than those shown below:

Power Line Voltage V	Clearance M
≤ 1 000	3
> 1 000 ≤ 33 000	4
> 33 000	8

- If connecting leads and electric fence wires are installed near an overhead power line, their height above the ground should not exceed 3m. This height applies either side of the orthogonal projection of the outermost conductors of the power line on the ground surface, for a distance of:
 - 2 m for power lines operating at a nominal voltage not exceeding 1000V;
 - 15 m for power lines operating at a nominal voltage exceeding 1000V

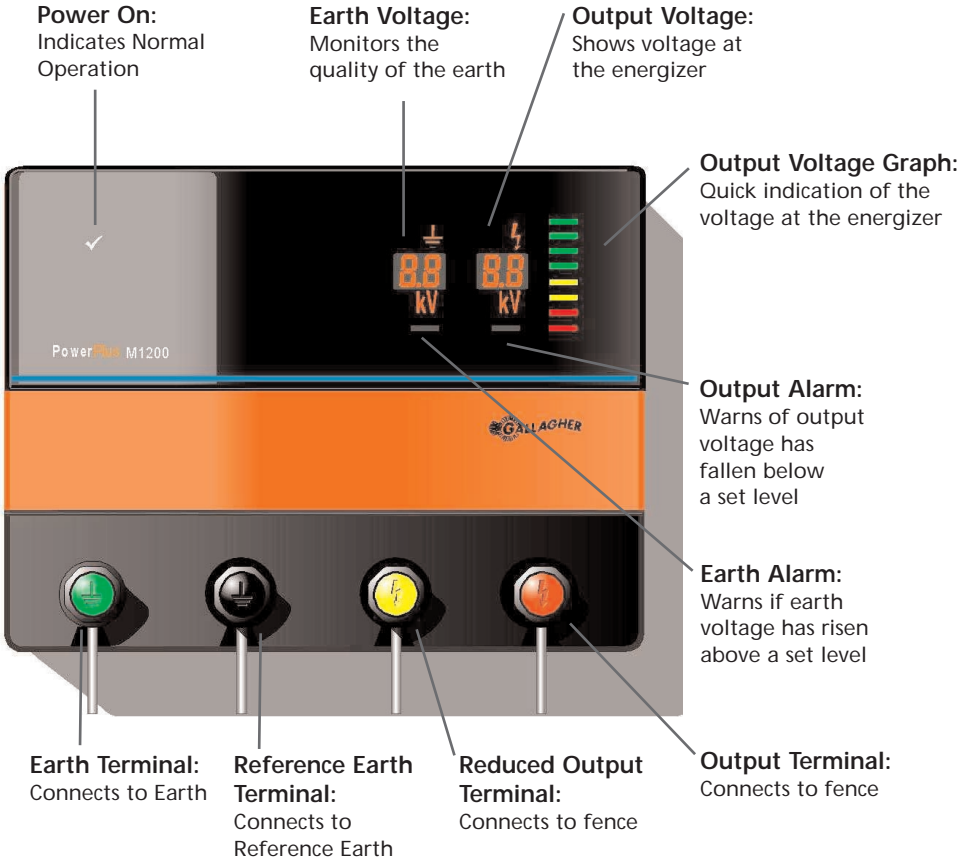
- Fence wiring should be installed well away from any telephone or telegraph line or radio aerial.
- An electric fence should not be supplied from two different energizers or from independent fence circuits of the same energizer.
- For any two different electric fences, each supplied from a different energizer independently timed, the distance between the wires of the two electric fences should be at least 2m. If this gap is to be closed, this should be effected by means of electrically non-conductive material or an isolated metal barrier.
- Do not electrify barbed or razor wire in an electric fence.
- **WARNING: Risk of Electric Shock.** Do not connect the Energizer to a fence and to any other device such as a cattle trainer or a poultry trainer. Otherwise, lightning striking your fence will be conducted to all other devices.
- Follow the energizer manufacturer's recommendations regarding earthing.
- Do not install an earth (ground) system for your Power Fence within 10m (33ft) of any utilities type ground system.
- Except for low output battery operated energizers, the energizer earth electrode should penetrate the ground to a depth of at least 1m.
- Use lead-out cable in buildings and where soil could corrode exposed galvanised wire. Do not use household electrical cable.
- Connecting leads and electronic animal fence wires shall not cross above overhead power or communication lines.
- Connecting leads that are run underground should be run in a conduit of insulating material or else insulated high voltage cable should be used. Care should be taken to avoid damage to the connecting leads due to the effects of animal hooves or tractor wheels sinking into the ground.
- Refer servicing to qualified Gallagher service personnel.
- Do not place combustible materials near the fence or Energizer connections. In times of extreme fire risk, disconnect Energizer.
- Train livestock to Power Fencing prior to entry into pastures. Allow livestock to approach a Power Fence for the first time without stress.
- For detachable power cords: If the supply cord is damaged, it must be replaced by a special cord or assembly available from the manufacturer or its service agent.
For fixed power cords: If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.
- Do not handle power cord if temperature is below +5°C
- Ensure that all mains operated, ancillary equipment connected to the electric animal fence circuit provides a degree of isolation between the fence circuit and the supply mains equivalent to that provided by the energizer.

- **Game Fencing:** Power Fencing has been used widely throughout the world for game animals, deer, bears, elk and elephant. Power Fences are a psychological barrier and should not be considered a complete physical barrier fence. With any Power Fence occasional animal penetration may occur (as with any other type of fence). It is important for game fencing to have power on the fence the same day as the fence is constructed. Animals investigating the new obstruction will be shocked and will relate the shock to the new obstruction. If no power is on the fence and animals learn to walk through the fencing system with no electric shock, this causes major problems later on since they will not relate the electric shock to the fence after the power is turned on. A Power Fence is not recommended for animals under hunting pressure. For specific questions on game fencing contact your Gallagher dealer.
- **Bird Deterrent:** Where the Energizer is used to supply a system of conductors used for deterring birds from roosting on buildings, no conductor should be connected to earth. A switch should be installed to provide means of isolating the Energizer from all poles of the supply and clear warning signs should be fitted at every point where persons may have ready access to the conductors. The notice should bear the words "LIVE WIRES" in block letters not less than 13mm (1/2" high). The letters should be red on a white background. Each notice should be at least 62mm x 50mm (2 1/2" x 2").
- Electric animal fences intended for deterring birds, household pet containment or training animals such as cows need only be supplied from low output energizers to obtain satisfactory and safe performance.
- Connecting leads shall not be installed in the same conduit as the mains supply of wiring, communicating cables or data cables.
- A non-electrified fence incorporating barbed wire or razor wire may be used to support one or more off-set electrified wires of an electric fence. The supporting devices for the electrified wires shall be constructed so as to ensure that these wires are positioned at a minimum distance of 150mm from the vertical plane of the non-electrified wires. The barbed wire and razor wire shall be earthed at regular intervals.
- Where an electric animal fence crosses a public pathway, a non-electrified gate shall be incorporated in the electric fence at that point or a crossing by means of stiles shall be provided. At any such crossing, the adjacent electrified wires shall carry warning signs (G602).

SERVICE OF DOUBLE INSULATED APPLIANCES: In a double insulated controller, two systems of insulation are provided instead of grounding. No equipment grounding means is provided in the supply cord of a double-insulated controller, nor should a means for equipment grounding be added to the controller. Servicing a double insulated controller requires extreme care and knowledge of the system, and should be done only by qualified service personnel. Replacement parts for a double-insulated controller must be identical to the parts they replace. A double insulated controller is marked with the words "DOUBLE INSULATION" or "DOUBLE INSULATED". The symbol for double insulation may also be marked on the appliance. 

For 110-120V Energizers only: To reduce the risk of electric shock, this fence controller has a polarized plug (one blade is wider than the other.) This plug will fit in a polarized outlet only one way. If the plug does not fit fully in the outlet, reverse the plug. If it still does not fit, contact a qualified electrician to install the proper outlet. Do not change the plug in any way.

Your PowerPlus Energizer...

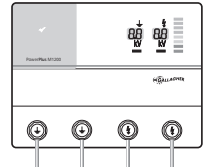


Installation Guide

Mains Operation Only Step 1


Install the Energizer

- a) Mount the Energizer on a wall, under cover, out of reach of children. Install where there is no risk of the Energizer incurring fire or mechanical damage and if possible away from heavy electrical equipment eg. pumps or other items that may cause electrical interference. Note: Install the Energizer in a frequently accessed place. The display gives valuable information that can save time and help prevent costly problems.
- b) Using the template on centre pages, drill 2 x 4mm (5/32") holes (as marked). Fix the screws provided into the wall leaving the head of the screw about 3mm (1/8") out from the wall. Place the Energizer over and slide down onto the mounting screws.




Step 2

Connect to earth (ground) system

Using Underground Cable (G6270) remove 5cm (2") of plastic coating from one end of the cable and connect to the green () terminal on the Energizer. Attach the cable to the earth system by removing 10cm (4") of insulation from the cable at each Earth Stake (G8790), then clamp the exposed wire to each stake using an Earth Clamp (G8760). Tighten the clamp.



Reference Earth:

An additional earth stake is required to allow correct measurement of Earth Voltage. Install a single stake (G8780) at least 60cm (2ft) long, at least 5m (16ft) from the main Energizer earth system and at least 10m (33ft) from any power supply earth peg, underground telephone or power cable. Using Underground Cable (G6270) connect the Reference Earth Stake to the Black () terminal on the Energizer.


Important

If the Reference Earth is not connected the Earth Voltage display will flash 0.0. Note that if your earth is near perfect, the display may also flash 0.0. To confirm that your earth system is good check the voltage at the stakes is 0.0.



Step 3

Connect the fence

Connect Energizer's red output () terminal to the fence using Underground Cable (G6270). Attach the other end of the cable to the fence using a Joint Clamp (G603).

Important!

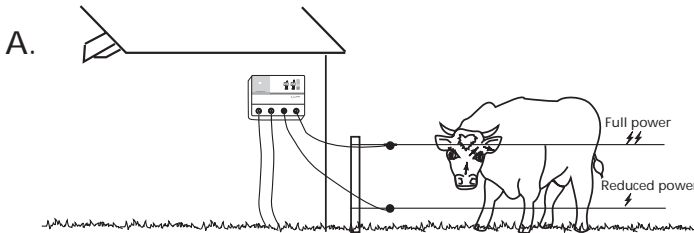
If you wish to use the Output Voltage information see the section "Understanding your PowerPlus Energizer: Output Voltage and Alarm", page 9.

Step 4

Connect the fence - Reduced Power

Use the reduced output terminal (yellow) when fencing young animals, sensitive animals or pets. It is also recommended that in areas of public access or where children may be present that you connect your fence to the yellow reduced terminal. This can be done on an independent section of the fence or separate fenceline amongst a multewire fence - refer diagram A below.

Simply connect the Energizers yellow reduced output terminal to the fence using Underground Cable (G6270). Attach the other end of the cable using a Joint Clamp (G6030).



Step 5

Turn the Energizer on

a) Plug the Energizer into a power outlet and switch ON.

IMPORTANT!

Readings will change as the fence conditions change. This is the Energizer monitoring the fence and Energizer performance. Read the sections "Understanding your PowerPlus Energizer for a complete understanding of the displays and alarms.

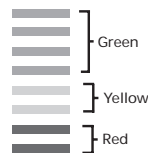
Understanding your PowerPlus Energizer

"Power On" Light

Green light constant- Normal operation

Output Voltage Bar Graph

The output voltage bargraph will pulse with every Energizer pulse. Each colour segment gives an approximate indication of the fence performance. The Graph is read in the following manner



Green Segments: If you can see one or more green segments then your fence is performing well. No action required.

Yellow Segments: If you cannot see any green segments but one or more yellow segments then your fence is under some load but still delivering an effective shock.

Red Segments: If you cannot see any green or yellow segments but one or more red segments then your fence is under heavy load.

Use this bar graph for quick indication of your Energizer and Fence performance.

Output Voltage and Alarm

Output voltage indicates the quality of your fence system - the higher the voltage the better the animal control. If Output Voltage drops below 2kV (default setting), then the alarm is activated. The Output Alarm light will turn on and remain on until the alarm is cleared. This alarm indicates the fence system is heavily loaded and at risk of being inadequate for affective animal control. Urgent fence maintenance is required.

Earth Voltage and Alarm

Earth voltage indicates the quality of your earth system - the lower the voltage the better the animal control.

The Earth Alarm:

If Earth Voltage rises above 0.5kV, the alarm is activated. The Earth Alarm light and will turn on and remain on until the alarm is cleared. Ideally, under maximum fence load, the Earth Voltage should be 0.2 - 0.3kV. To achieve this, do the following Earth test.

Earth Test:

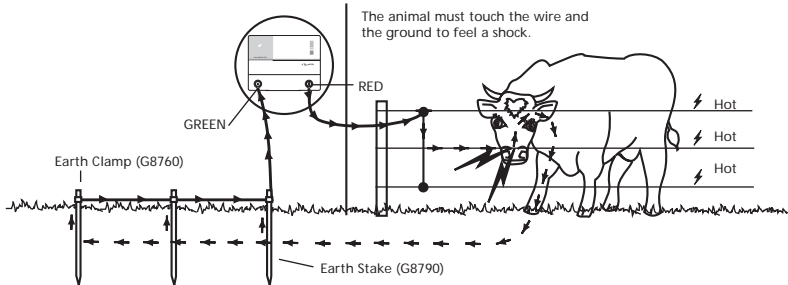
- a) Turn the Energizer OFF. At least 40m (130ft) along the fence, drive a steel stake into the soil (enough to reach moist soil) and connect it to the live wire.
- b) Add Earth Stakes (G8790) until you achieve 0.2 - 0.3kV or less on the earth reading. Construct the earth system as described in the enclosed Gallagher Power Fence™ manual.
- c) Turn the Energizer OFF. Remove the steel stakes from the fence.

How to install earth (ground) system

Improperly earthed Energizers can cause barns, gates etc to become hot. Follow earthing instructions carefully.

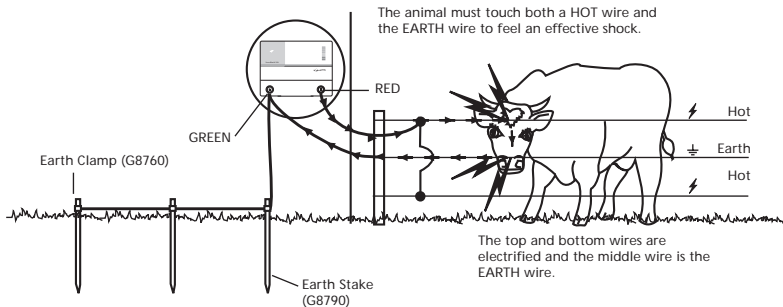
The most effective place for an earth system is in continuously damp soil (illustration a).

a ALL HOT WIRE SYSTEM for areas with good earthing conditions



For dry areas with poor earthing conditions, install the fence using illustration b.

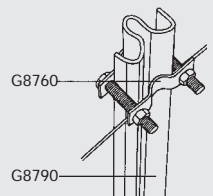
b EARTH RETURN SYSTEM for areas with poor earthing conditions



Earth stakes, at least 2m (6ft) long, should be spaced 3m (10ft) apart. Use a minimum of 3 earth stakes for the M1200, M600, M300.

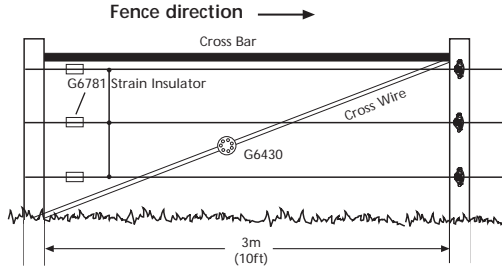
Find a location for your earth system that is permanently damp, has high fertility or salinity and is away from dairy sheds. Install the earth system at least 10m (33ft) from any power supply earth peg, underground telephone or power cable. The best construction is 2m (6½ft)

long galvanised stakes G8790 or Super Earth Kits G8800, 3m (10ft) apart, connected to the Energizer by high quality Lead-out cable G6270. Do not use materials that rust. (Use G6272 if the earth system is over 100m (300ft) from the Energizer).



How to install the fence

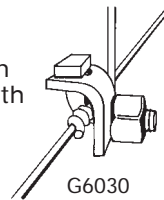
- Plan the fence line. Avoid rough, stony or steep areas if possible. For best electric fence performance use multi-wire (at least 3 wires connected in parallel) fencing.
- Install end strain posts and corner posts. Ensure that all corner posts are well installed to withstand the wire strain.



- Run out the bottom wire between the end posts.
- Tension wires until there is only a slight visible sag.
- Connect all live wires in parallel at the end of each fence section using Joint Clamps G6030.

Use Joint Clamps G6030 to ensure tight wire connections.

Connect any earth wires together in parallel. Never connect live and earth wires together.



Handyhint

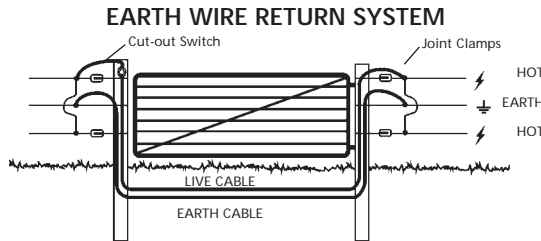
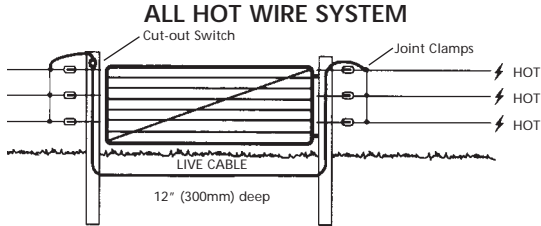
Fence Lead-out

Inadequate fence lead-out is often the reason for poor voltage on the fence. Particularly on either larger fence systems or fence systems heavily loaded with vegetation.

Lead-out is defined as the wire system that takes the power from the Energizer to the centre of the fence system - not just from the Energizer to the fence! Basically, the more



- f. Conduct the fence system under gateways, rather than overhead. Do not use electric gates to get power across gateways. Install Lead-out Cable G6270 in a plastic pipe (for physical protection), 30cm (12") deep. Turn the ends of the pipe down to keep water out. Connect each end of the cable to the Joint Clamps.



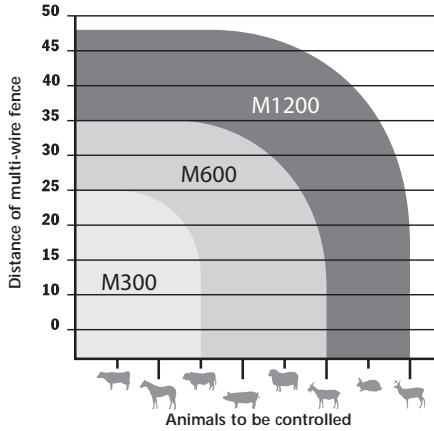
Offset Fence

Existing non-electric fences can be protected to last for many more years simply by attaching Offset Brackets (G6590 or G6620) and an electrified wire on one or both sides of the non-electric fence. Use a single offset wire, positioned at two thirds the height of the animal (chest height) to be controlled.

wires connected in parallel, the better the voltage at the end of the fence. If the centre of the fence system is more than 100m (300 ft) from the Energizer, at least 1 x 2.5mm wire is required. If the centre of the fence system is more than 1km (5/8 mile) from the Energizer, a

minimum of 3 x 2.5mm wires or a single High Conductive 2.5mm "PowerWire" is required. Larger fence systems or heavily loaded fence systems with large Energizers may require more wires to adequately transfer the power from the Energizer onto the fence system.

Animal Control Chart



Game Fencing

Power Fencing has been used widely throughout the world for game animals, deer, bears, elk and elephant. Power Fences are a psychological barrier and should not be considered a complete physical barrier fence. With any Power Fence occasional animal penetration may occur (as with any other type of fence). It is important for game fencing to have power on the fence the same day as the fence is constructed. Animals investigating the new obstruction will be shocked and will relate the shock to the new obstruction. If no power is on the fence and animals learn to walk through the fencing system with no electric shock, this causes major problems later on since they will not relate the electric shock to the fence after the power is turned on. A Power Fence is not recommended for animals under hunting pressure. For specific questions on game fencing contact your Gallagher dealer.

Bird Determent

Where the Energizer is used to supply a system of conductors used for deterring birds from roosting on buildings, no conductor should be connected to earth. A switch should be installed to provide means of isolating the Energizer from all poles of the supply and clear warning signs should be fitted at every point where persons may have ready access to the conductors. The notice should bear the words "LIVE WIRES" in block letters not less than 13mm ($1/2$ " high). The letters should be red on a white background. Each notice should be at least 62mm x 50mm ($2\ 1/2$ " x 2").

Handyhint

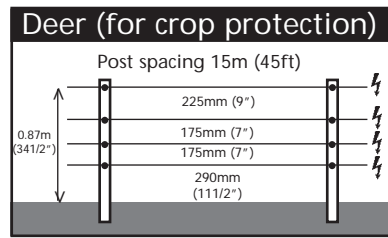
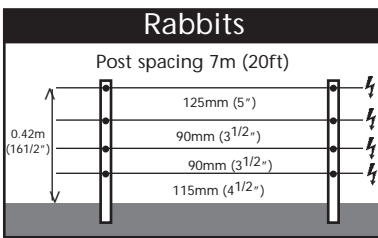
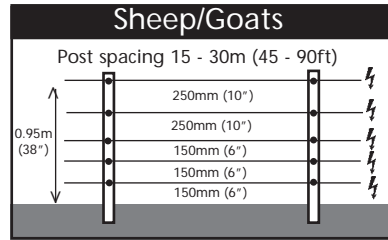
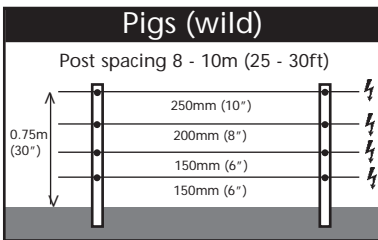
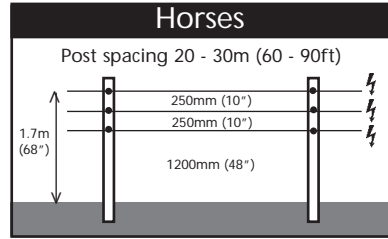
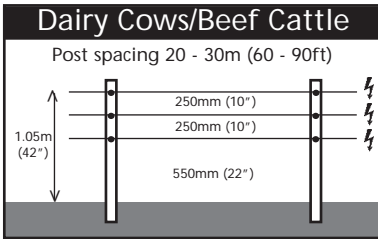
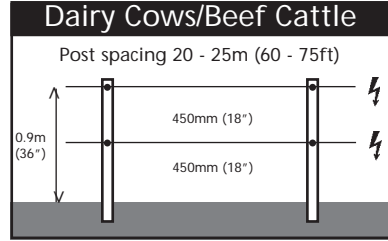
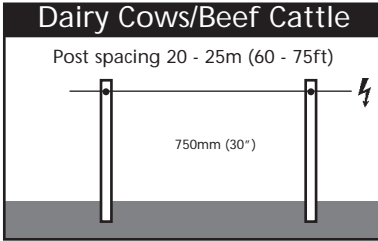
Lightning Strikes

Lightning strikes can damage Energizers. Damage can be minimised by disconnecting the Energizer from the fence line and unplugging it from the power supply during electrical storms.

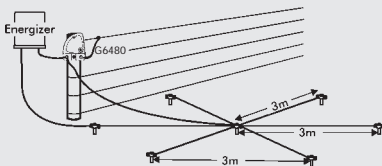
The Gallagher Adjustable Lightning Diverter G6480 with a 'Crow's foot' earth configuration is recommended to minimise Energizer damage.

Options for Wire and Post Spacings

These figures are guidelines only for flat country conditions.



For wire and post spacings in dry areas with poor earthing conditions, see your Gallagher dealer.

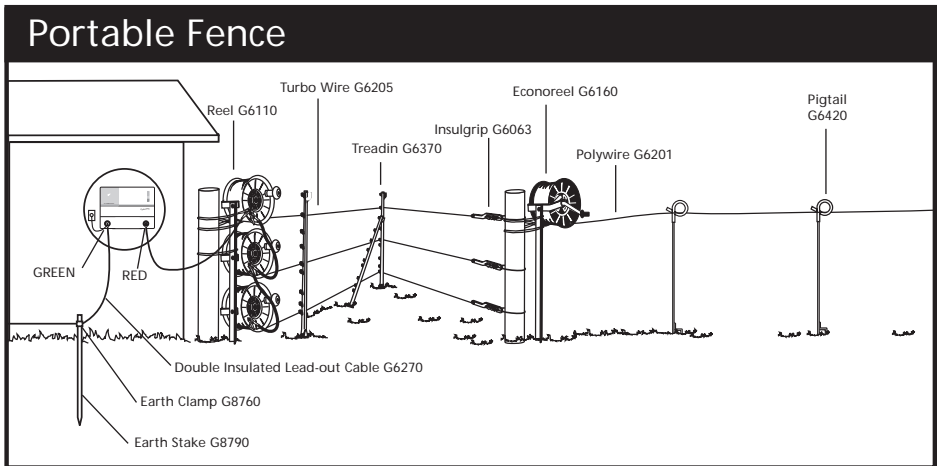
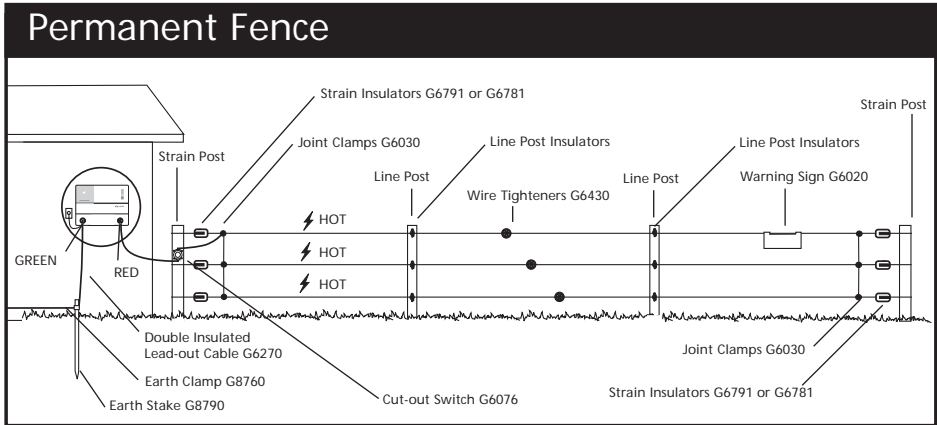


Lightning is transferred to the earth system rather than through the Energizer, thereby reducing the likelihood of Energizer damage.

Materials and Tools

Gallagher dealers offer a complete range of products for your Power Fence. For fence specifications and design contact your Gallagher dealer.

On permanent Power Fencing, use high tensile, 12.5 gauge wire. Do not use barbed wire or 16 or 18 gauge wire. On portable fences, Polywire, Polytape or light gauge wire may be used.



Handyhint

Insultimber

Gallagher Insultimber is a product unique to Gallagher which is made from a self-insulated high-density timber and which does not conduct electricity. Because it does not need any additional insulation, Insultimber is ideal for Power Fencing.

Insultimber is environmentally-friendly because it is a non-rainforest hardwood and a natural renewable resource.

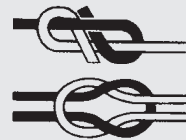
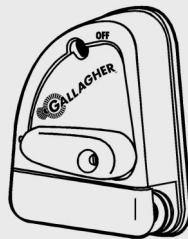
And, best of all, Insultimber is 1/3 the cost of conventional non-electric fence systems!

Energizer and Fence Maintenance Chart

Fault	Possible Cause(s)	Solution
Energizer doesn't operate	Energizer Off	Switch ON
	Break in supply circuit	Test power point
	Faulty Energizer	Have Energizer repaired
Electric fence voltage is below 3000V or your stock are escaping	Faulty Energizer	Unplug the Energizer from the power supply and remove the fence wire from the Red terminal. Plug Energizer in again. Using a Digital Volt Meter (G5030) check the voltage across the terminals. If the voltage is less than 5000V, have Energizer repaired.
	Inadequate earthing	Improve the earth system by adding more galvanised earth stakes to the earth system until the earth voltage is 200V or below.
	Short on the fence line	Check the electrical connections are secure eg. from the fence to the red terminal, from the earth system to the green terminal, at gates etc. Check the voltage on the fence every 33m (100ft) using the Digital Volt Meter. Note if the voltage is dropping. The closer to a fault, the lower the voltage reading will be. Become aware of things that cause faults and always be on the lookout for: stray pieces of wire on the fence, heavy vegetation growth, cracked or broken insulators, broken wires.

Handyhint

Use Cut-out Switches (G6076) to allow sections of the fence system to be switched off during fence maintenance. Put a switch at each gateway and at every major change in fence direction.



When joining wires under tension, use a figure eight or reef knot. Do not use copper wire anywhere in your fence system.