



Electric Fence Energiser Manual

**Model Number:
13/70**

Contents

Page	
1	Introduction
1	Installation
5	Operating Instructions
7	Specifications
8	Safety Regulations

Introduction

Thank you for purchasing an O'Briens energiser. O'Briens products are engineered using the latest technology.

We trust that you will be well satisfied with your energiser. For safe and reliable operation please follow the instructions given in this booklet carefully.

Installation

- * Read the Safety Regulations at the back of this booklet.
- * The energiser should be mounted vertically **only**. (**Do not** use lying down either on the ground or on another object).
- * **WARNING** -Do not connect battery operated energisers to mains operated equipment.

Fence Layout

Good planning will ensure a reliable electric fence system. There are a few things to keep in mind when designing your fence layout:

- * The main feeder wires should not be run parallel within 100m of phone or communication lines irrespective of above or below ground.
- * The electric fence wires should not run parallel and/or in close proximity to power lines.
- * Avoid making complete loops around paddocks. Terminate the wire with an end insulator close to another live wire or gateway instead. This will make fault finding easier.
- * Install a cut out switch wherever the live wire splits into 2 or more directions. This will also make fault finding easier.
- * Put underground cable in poly pipe when running the cable under the ground for protection. Never run live and earth wires in the same pipe.
- * No two separately powered electric fences can be closer than 2.5m apart. Ask your neighbour if you can power his side of the fence if they are close together. It won't cost you any more in electricity.
- * All joins should be done with joint clamps for reliability.

Post Spacing

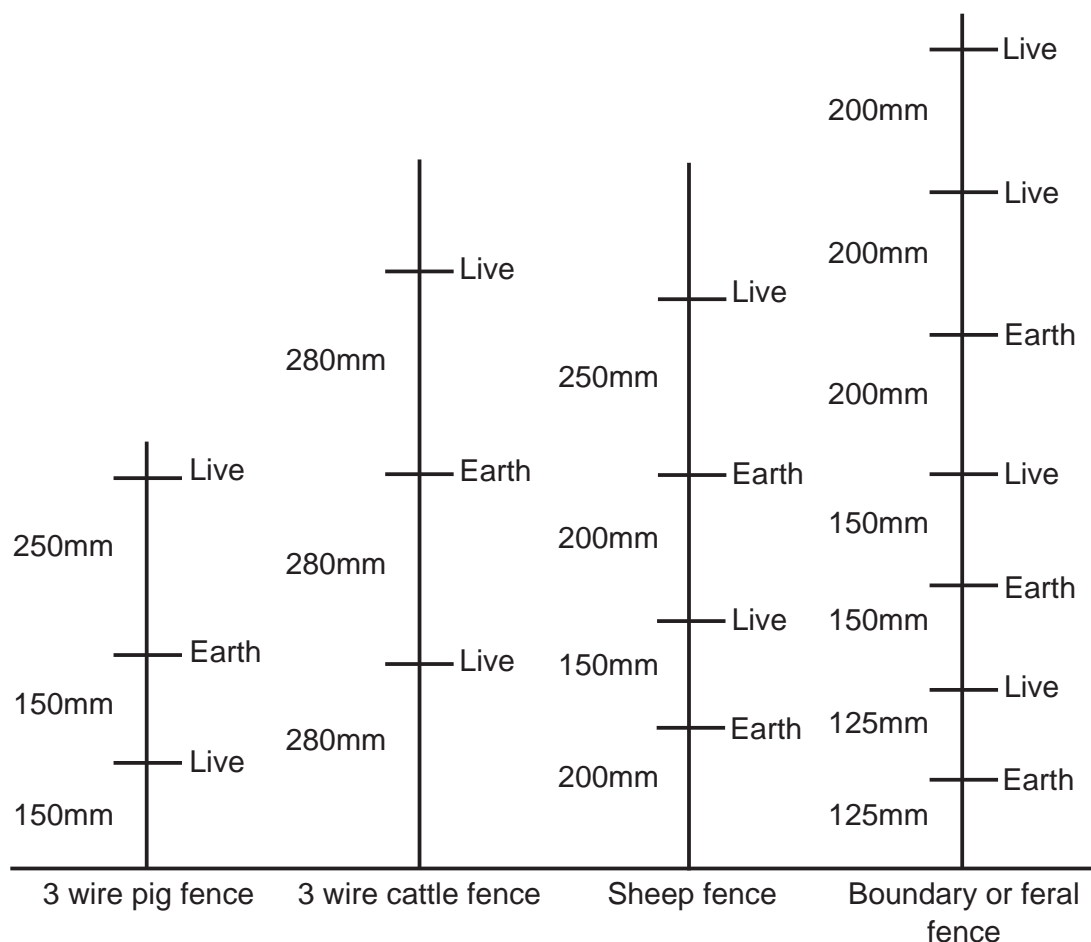
Post spacings can be further apart for electric fences. Up to 15m spacing between posts may be done on level ground. Distances will need to be reduced depending on the terrain.

Steel and wood posts require insulators for the live wires.

Wire Size & Spacing

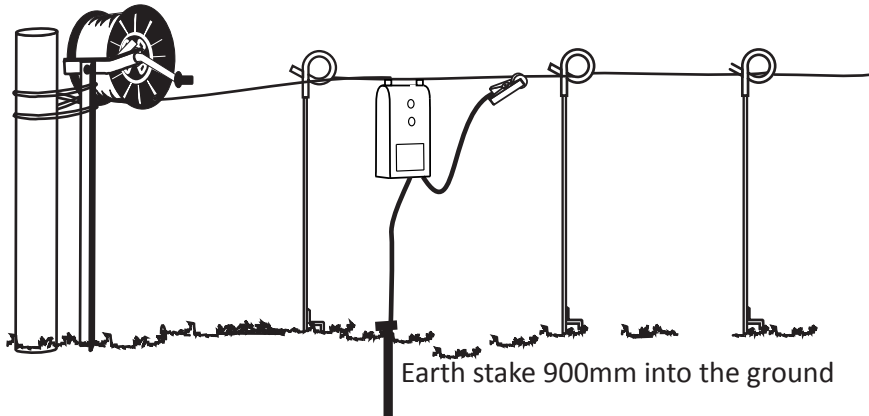
Generally 2.5mm or 3mm galvanised wire will work well in most situations. 1.6mm wire is OK for small areas, but can be difficult to see. Many poly wires and poly tapes are only suitable for short distances, so check the label on these products.

Wire spacings vary depending on the animal to be contained and other conditions. Live and earth wire spacings closer than 200mm apart will affect the distance that the energiser is effective due to capacitance between the wires. Wires should be strained to around 90kg (200lb). Multiple live wires and earth wires should be linked together at the start and ends of the fence and at gateways. Following are recommended spacings for different animals.



Strip or Cell Grazing

Electric fences are ideal for selectively grazing pastures, in that they can be moved in minutes. Strip grazing typically only uses 1 or 2 live wires and no earth wire. The O'Brien's 13/70 Solar Energiser is an ideal energiser to use for strip grazing. The ground must be reasonably moist for the fence to work effectively if there is no earth wire.



Lightning Diverter

It is highly recommended that a good quality lightning diverter be installed, to minimise energiser damage during lightning strikes.

Earthing is extremely important with the lightning diverter. The energy from the lightning strike will follow the path of least resistance into the ground, so the lightning diverter earth should be much better than the fence earth. This will direct the lightning's energy into this earth, rather than through the energiser and into the fence earth. The lightning diverter earth should be separated from the fence earth.

Up to 6 galvanized earth stakes should be placed a few metres apart, driven 1.5m into the ground, all electrically connected together, and then connected to the lightning diverter earth terminal. The lightning diverter should be connected between the energiser fence terminal lead out wire and the fence.

Gateways

Conduct the fence system under gateways, rather than overhead. Use double insulated underground electric fence cable for both live and earth wires and run inside poly pipe for protection. The cables should be buried 300mm underneath the ground. Do not put both live and earth wires in the same pipe. Turn the ends of the pipe down to keep water out.

Note: It is highly recommended that a cut out switch be used in the live wire supply side entering the pipe so that it is easier to locate a fault should a short occur under the ground.

Earthing

Good earthing of the electric fence system is critical to the performance of the fence. A poor earth system won't allow a shock to be properly delivered to the animal, and may not deter the animal from going through the fence.

Things to keep in mind are:

- * Earth stakes must be driven at least 900mm for strip grazing, and 1.5m into the ground for a permanent fence.
- * Only use galvanised or stainless steel earth stakes.
- * Electric fence earth stakes must be a minimum of 10m from any existing electrical or communication earthing.
- * Position earth stakes in a permanently moist area if possible.
- * Earth return wires in the fence are required for good earthing. Ground return earthing is only suitable for strip grazing with moist soil.
- * If the live wire is to be offset from an existing fence, earth all the wires in that fence, especially any barbed wire. Don't rely on the fence wires touching when they terminate at a strainer post or as they pass through a steel post.

Offset Fence

Existing non-electric fences can be protected to last for many more years simply by attaching offset insulators 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. All wires in the existing fence must be earthed.

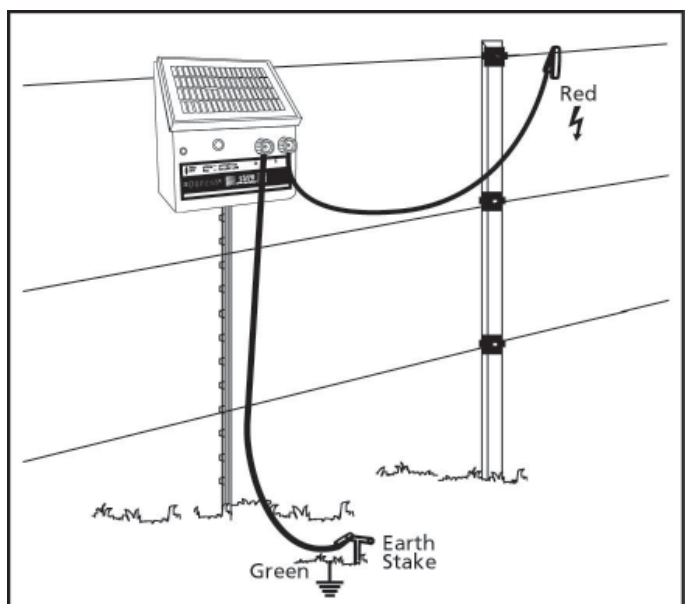
Energiser Mounting

- * Mount the energiser on top of a steel 'Y' post. There is a special groove on the rear of the energiser that the 'Y' post will fit into.
- * The solar panel must face the equator (northwards in the southern hemisphere) and must receive full sun all day. **Do not** allow shade to cover the panel for any period during the day.
Note: The effectiveness of solar power will be reduced if the solar panel is in shade during any time of the day. Cloudy weather will reduce the charge received from the sun.
- * Slide the energiser on top of the post.

Connect to Earth System

The energiser comes with a green earth lead and a red fence lead.

- * Make sure the energiser is switched off before connecting wires to the fence terminals.
- * Connect the green earth lead to the energiser and clip the lead to an earth stake or an earthed part of the fence.
- * Connect the red fence lead to the energiser, and clip it to the live wire. The unit is now ready to operate.



Operating Instructions

Important! Read the warnings, regulations and installation instructions throughout this booklet before installing and operating this energiser.

O'Briens 13/70 Solar Energiser is a versatile tool for controlling stock around your property. It can be installed in minutes in any location, and use the power from the sun for continuous operation.

The 13/70 Solar Energiser has an internal sealed lead acid battery for power storage. The internal battery has a 12 month pro-rata warranty. The battery has a 4 - 5 year lifetime if it is properly cared for. Do not store the energiser for extended periods out of the sunlight unless the supplied charger is connected and plugged into the mains. The battery will fail within a month or so if it's stored in a discharged state.

Refer to the Installation section earlier in this booklet for fence construction and earthing.

NOTE: Hot tape and polywire can be used effectively for lengths up to 400m from the energiser. Use galvanised fencing wire for longer distances.

This energiser is supplied with leads for connecting the energiser to the fence. *Refer to the Energiser Mounting section on previous page.*

Operation

Carefully read the Safety Regulations at the back of this booklet.

- 1 After installation, connect the unit to the power supply.
- 2 The 13/70 Solar has a 3 position switch to select OFF, High Power or Low Power level. Move the switch lever in the upwards direction to select high power level. This is the normal operating mode. The energiser will start pulsing, and the LED will flash green once at every pulse.
- 3 Move the switch lever in the downwards position to select low power. The energiser will also start pulsing, but at a lower output voltage level. The LED will also flash green once per pulse.

Note: The low power level is intended to be used during extended periods of cloudy weather, where there is little sunshine to keep the internal battery charged. The energiser should operate in high power for approximately 10 days before the battery gets low, even with little or no sun.

- 4 Move the switch lever to the centre position to turn the energiser off. The battery will continue to be charged from the solar panel when the energiser is switched off.

Notes:

- * The LED will start flashing both red and green once per pulse if the battery voltage falls below approximately 12.0V, and the output power will be reduced.
- * The LED will pulse red rapidly if the battery voltage falls below approximately 11.4V, and the energiser will stop pulsing. This is to protect the battery.

- * The energiser detects the amount of sunlight that is received, and will slow the pulse rate down during the night to help conserve the battery.

Faults

This energiser also has self testing built in. Should a fault occur, multiple flashes of green from the pulse LED will be seen at pulse rate intervals. Return the unit for repair if this ever occurs.

Charging the Energiser

The 13/70 Solar has a charge socket built into the front of the unit. There is a small black cover over this socket to prevent moisture and insects from damaging the socket. Remove this cover to enable the charger to be plugged in. A charger is provided with the unit.

If the low battery indication starts to show, or the unit is to be left in a shed for extended periods, plug the charger into the energiser, and then plug it into the mains. A green LED will be lit on the charger to indicate that there is power available. The battery in the energiser will be charged, and the charge current will automatically be turned off once the battery becomes fully charged. The switch on the energiser may be in any position for charging to occur. The LED indicator on the energiser will be lit green continuously whenever there is power from the charger if the switch is in either the high or low positions.

Note - The energiser will NOT operate while the battery is being charged via the charger socket. This energiser must not be used as a substitute mains energiser.

Product Specifications

Operating Voltage	12.7V nominal from internal battery
Operating Current	High 16 mA Low 11 mA
Solar Panel Rated Power	2W
Charger Output Voltage	18Vdc
Charger Rated Current	500mA
Energiser Charge Current	200mA nominal
Output Voltage	High 8.0kV Low 6.0kV
Stored Energy	High 0.13 joules Low 0.07 joules
Temperature	-10 to 50 degrees Celsius
Humidity	Maximum 90% non-condensing

Safety Regulations



Warning: Read all instructions

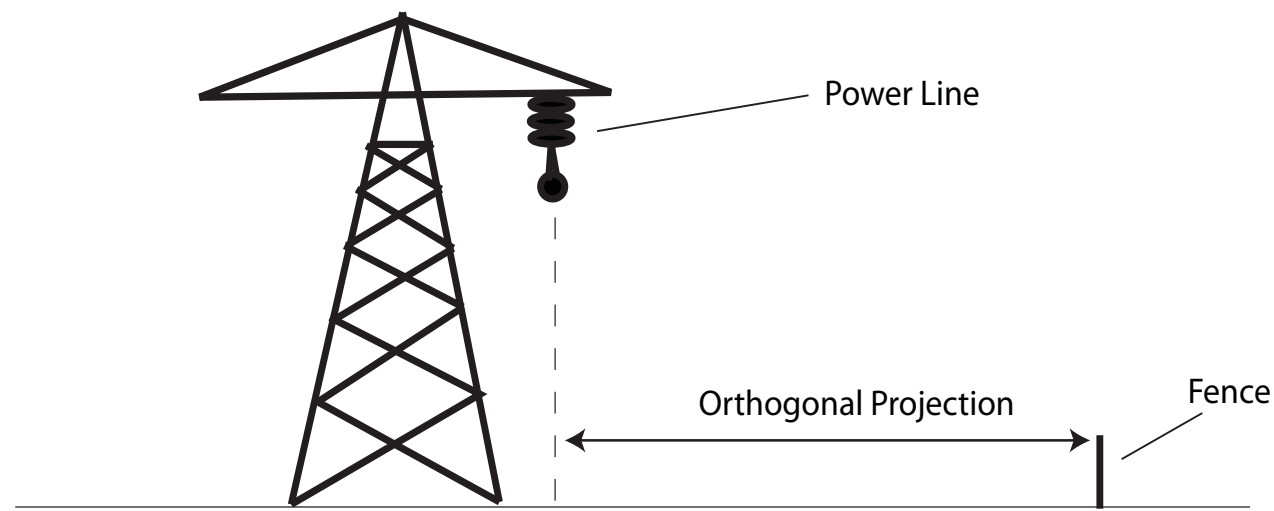
- * **Warning: Do not connect to mains-operated equipment.**
- * This appliance is not intended for use by young children or infirm persons unless they are adequately supervised by a responsible person to ensure that they can use the appliance safely. Young children should be supervised to ensure that they do not play with the appliance.
- * Electric animal fences and their ancillary equipment shall be installed, operated and maintained in a manner that minimizes danger to persons, animals or their surroundings.
- * Electric animal fence constructions that are likely to lead to the entanglement of animals or persons shall be avoided.
- * An electric animal fence shall not be supplied from two separate energisers or from independent fence circuits of the same energiser.
- * For any two separate electric animal fences, each supplied from a separate energiser independently timed, the distance between the wires of the two electric animal fences shall be at least 2m. If this gap is closed, this shall be effected by means of electrically non-conductive material or an isolated metal barrier.
- * Barbed wire or razor wire shall not be electrified by an energiser.
- * A non-electric fence incorporating barbed wire or razor wire may be used to support one or more off-set electrified wires of an electric animal 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/ grounded at regular intervals.
- * Follow the recommendations in this instruction sheet regarding earthing/ grounding.
- * A distance of at least 10m shall be maintained between the energiser earth/ ground electrode and any other earthing/ grounding system connected parts such as the power supply system protective earth or the telecommunication system earth.
- * Connecting leads that are run inside buildings shall be effectively insulated from the earthed/ grounded structural parts of the building. This may be achieved using insulated high voltage cable.
- * Connecting leads that are run underground shall be run in a conduit of insulating material or else insulated high voltage cable shall be used. Care must be taken to avoid damage to the connecting leads due to the effects of animal hooves or tractor wheels sinking into the ground.
- * Connecting leads shall not be installed in the same conduit as the mains supply wiring, communication cables or data cables.
- * Connecting leads and electric animal fence wires shall not cross above overhead power or communication lines.

- * Crossings with overhead power lines should be avoided wherever possible. If such a crossing cannot be avoided it must be made underneath the power line and as nearly as possible at right angles to it.
- * If connecting leads and electric animal fence wires are installed near an overhead power line, the clearances shall not be less than those shown in Table 3.

Minimum Clearances From Power Lines for Electric Animal Fences

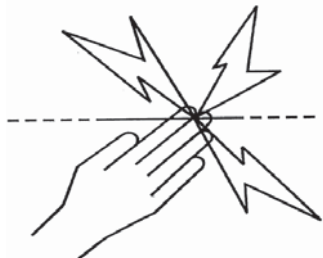
Power Line Voltage (V)	Clearance (m)
Less than 1,000	3
Between 1,000 and 33,000	4
More than 33,000	8

- * If connecting leads and electric animal fence wires are installed near an overhead power line, their height above ground shall not exceed 3m.
- * This height applies to either side of the orthogonal projection of the outermost conductors of the power line on the ground surface, for a distance of:
 - * 2m for power lines operating at a nominal voltage not exceeding 1000V (1 kV);
 - * 15m for power lines operating at a nominal voltage exceeding 1000V.



- * In electric animal fences intended for deterring birds from roosting on buildings, no electric fence wire shall be connected to the energiser earth electrode. A warning sign shall be fitted to every point where persons may gain ready access to the Conductors.
- * Where an electric animal fence crosses a public pathway, a non-electrified gate shall be incorporated in the electric animal 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.
- * Any part of an electric animal fence that is installed along a public road or pathway shall be identified at frequent intervals by warning signs securely fastened to the fence posts or firmly clamped to the fence wires.

- * The size of the warning sign shall be at least 100mm x 200mm.
- * The background colour of both sides of the warning sign shall be yellow. The inscription on the sign shall be black and shall be either:
 - * the substance of “CAUTION: Electric Animal Fence” or,
 - * the symbol shown below:



- * The inscription shall be indelible, inscribed on both sides of the warning sign and have a height of at least 25mm.
- * Ensure 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 energiser.
- * Protection from the weather shall be provided for the ancillary equipment unless the equipment is certified by the manufacturer as being suitable for use outdoors, and is of a type with a minimum degree of protection IPX4.

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	New Zealand	Web: www.obrienplastics.com

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two years from the date of purchase

WARRANTY

This card must be completed by the dealer at the time of purchase and be retained as the proof of purchase.

This product is warranted against faulty material and workmanship for a period of two years from the date of purchase. If any warranted defect occurs during the warranty period, return the product with the proof of purchase to your nearest O'Briens dealer, distributor, or directly to the manufacturer.

Model:
Serial No:
Name of Owner:
Address:
Date of Purchase:
Dealer Contact Details:

This warranty does not cover defects due to:

- | | |
|-------------------------|--|
| Incorrect input voltage | Damage to external wiring |
| Physical mishandling | Water immersion |
| Vermin or ant damage | Damage resulting from battery leakage or chemicals |
| Lightning strike | |

Note: This product has been manufactured to comply with international safety standards. O'Briens and its agents accept no responsibility for any accident caused subsequent to any tampering with or modification or misuse of this product, including repairs or alterations made by anyone other than O'Briens or its agents.

No conditions, warranties or guarantees, statutory or otherwise, whether oral or in writing (other than service guarantee above), shall attach to this product and its sale and purchase, other than that it will be delivered in good working condition.

Please read the operation manual before use

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