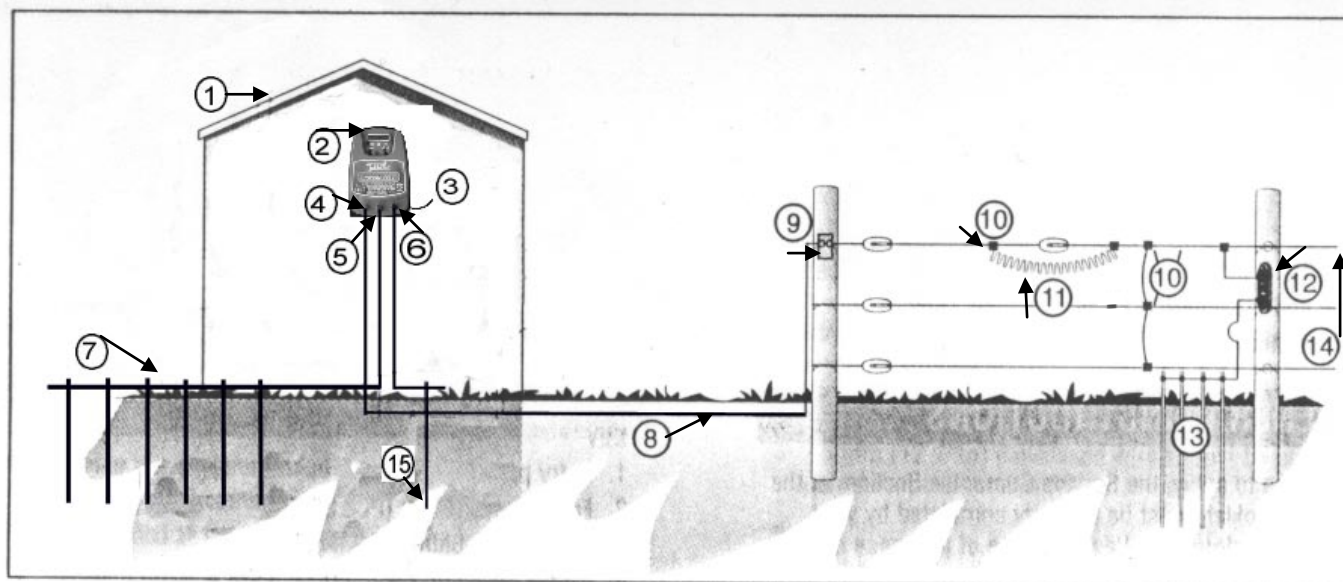


Operating Instructions for PEL 4100 and 475 Mains Powered Energizers.

Installation Diagram Key



KEY

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Building for mains Energizer. 2. Energizer. 3. Mains Connection 4. Fence Terminal. 5. Earth* Terminal. 6. Earth* Monitor terminal 7. Energizer Earth System 8. Under ground connection to fence line. | <ol style="list-style-type: none"> 9. Cutout switch to fence line. (PEL PA 40) 10. Joint clamps ((PEL PA 47) 11. Lightning Choke 12. Lightning arrester 13. Separate earth* stakes for lightning arrester 14. Electric Fence 15. Earth Monitor Earth* Stake |
|---|--|

*Note: in North America please read "Ground" for "Earth"

1. Contents

- These installation and operating instructions apply to the following PEL electric fence Energizers:
PEL Series 4 Mains Powered Energizers PEL 4100 and PEL475
- Read all sections of these instructions carefully.
- For more detail and any information on PEL Electric Fencing Systems, fence construction, layout and principles of electric fencing, refer to your local dealer, PEL web site (www.pel.co.nz) and the PEL Electric Fence Manual.

2. General Instructions

- For PEL 2 year guarantee to apply, the sale information is recorded and completed by your dealer. Please retain the purchase receipt as evidence of purchase date in the event of the Energizer failing during the guarantee period.
- All models have removable service modules for quick repair service.
- Stated specifications of Energizers are subject to variation and are dependent on component tolerances, temperature and the requirements of national standards.
- If the supply cord of this energizer is damaged it shall be replaced by a special cord available from the manufacturer or his service agents.
- No user maintenance can be performed on this Energizer. Return to manufacturer or accredited service agent for service.
- *Specifications are subject to change without prior notice.*

Energizer Pulse Operating Lamp

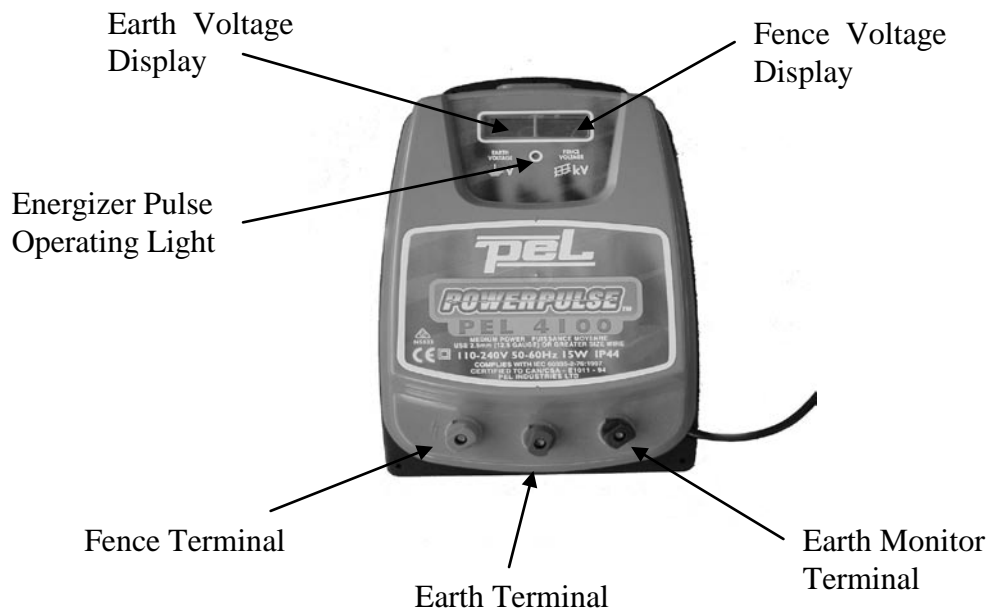
- Flashing Red light indicates normal operation of Energizer.

Special Features.

The PEL4100 and PEL475 Energizers will operate on any 50 or 60 hertz Supply from 100 volts to 240 volts
There is a liquid crystal display which shows the Fence and Earth voltage continuously.

Intelligent power control supplies more energy to the fence line as it is required. When the earth loss is excessive (above 1000 volts) the display will show the words EARTH FAILURE.

4 Series Mains Energizer



Display

This gives the follow information:

1. Voltage Between the Fence and Earth terminal.
2. Earth Voltage
3. Earth Failure message if the earth loss is above 1000 volts.

Operating Light

Flashes Red when the Energizer is operating.

This appliance is not intended for use by young children or infirm persons without supervision. Young children should be supervised to ensure that they do not play with the appliance.

4.1 Energizer Location – Mains Powered Energizers

- Mount the Energizer under shelter, on a wall, in a cool shaded position, close to a power source and **out of the reach of animals and children.**

Warning - Never allow combustible materials to be near the electric fence or its connections to the Energizer.

4.2 Earthing

Putting in an Earthing or Grounding System.

Good Earthing (grounding) is essential for good performance. Earthing is achieved by connecting the **GREEN** earth terminal located on the Lower front cabinet of the Energizer to a series of earth stakes or ground rods.

2 metre Earth Stakes (PA 52 Ground Rods) should be driven into damp ground, approximately 5 metres (16 feet) apart and at least 10 metres (32 feet) from any power or telephone earth system.

DO NOT USE HOUSE OR ELECTRICAL EARTHING STAKE.

Connect earth stakes with one continuous galvanised wire. (Preferably 4mm or 8 gauge.)

Ensure the earth wire is connected securely to the Energizer and to each of the earth stakes. (Recommend to use PEL Earth Stake Clamps PA 44 for excellent connection)

Recommended minimum number of Earth Stakes
(Under normal operating situation.)

PEL 475	5
PEL 4100	6

The number of earth stakes recommended is the minimum required in electrically conductive, damp ground. In dry soil conditions more earth stakes may be required.

4.3 Earth Monitor Connection

The Earth Monitor Terminal (Black) requires a separate earth stake. This is additional to the main earth system. This single earth stake should be driven at least 2 metres into damp ground and be at least 10 metres away from both the energizer's main earth system and any power or telephone earth stake.

If the Energizer display shows the words Earth Failure then the earth system needs to be upgraded (more earth stakes driven deeper in the ground or an earth return system). In most circumstances it is preferable to maintain the earth voltage lower than 600 volts.

4.4 Fence or Output Connections

Never use poly tape or wire as the main lead out wire. Both have poor electrical properties.

Always install good quality insulators or use good quality standards. Always use PEL insulated cable for under gateways. (PEL 1.6mm, 2.5mm or Aluminium cable.)

Barbed wire should never be used for electric fencing..

4.5 Lightning Protection

Lightning strikes can be very high in energy and are impossible to completely protect against however as a minimum protection the use of a PEL Lightning protection kit (PA 68) is recommended.

Refer to PEL Fence Manual for complete information or consult your local dealer. It is recommended that a PEL Digital Volt Meter (PV 18) is used for fault finding.

Refer to PEL Fence Manual for complete information or consult your local dealer. Always use high quality PEL products for Insulated Cable, Insulators, Accessories and other products associated with your fence system.

Instructions for installation and connection of electric fences

1 Definitions

1.1

electric fence

a barrier which includes one or more electric conductors, insulated from earth, to which electric pulses are applied by an **energizer**

1.2

connecting lead

an electric conductor, used to connect the **energizer** to the **electric fence** or the **earth electrode**

1.3

electric animal fence

an **electric fence** used to contain animals within or exclude animals from a particular area

1.4

electric security fence

a fence used for security purposes which comprises an **electric fence** and a physical barrier electrically isolated from the **electric fence**

2 General requirements for electric fences

Electric fences shall 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 shall be avoided.

An **electric fence** shall 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** shall be at least 2m. If this gap is to be 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 **energizer**.

Any part of an **electric fence** which is installed along a public road or pathway shall be identified at frequent intervals by warning plates securely fastened to the fence posts or firmly clamped to the fence wires.

The size of the warning plates shall be at least 100mm x 200mm.

The background colour of both sides of the warning plate shall be yellow. The inscription on the plate shall be black and shall be either
- the symbol of figure 1, or
- the substance of TAKE CARE - ELECTRIC FENCE.

The inscription shall be indelible, inscribed on both sides of the warning plate and have a height of at least 25mm.

Except for low output **battery-operated energizers**, the **energizer earth electrode** shall penetrate the ground to a depth of at least 1m.

Connecting leads that are run inside buildings shall be effectively insulated from the earthed structural parts of the building. This may be achieved by 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 shall 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 fence** wires shall not cross above overhead power or communication lines.

Crossings with overhead power lines shall be avoided wherever possible. If such a crossing cannot be avoided, it shall be made underneath the power line and as nearly as possible at right angle to it.

If **connecting leads** and **electric fence** wires are installed near an overhead power line, the clearances shall not be less than those shown in table 1.

Table 1 - Minimum clearances from power lines

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 ground shall not exceed 2m.

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

- 2m for power lines operating at a nominal voltage not exceeding 1 000V;
- 15m for power lines operating at a nominal voltage exceeding 1 000V.

3 Particular requirements for electric animal fences

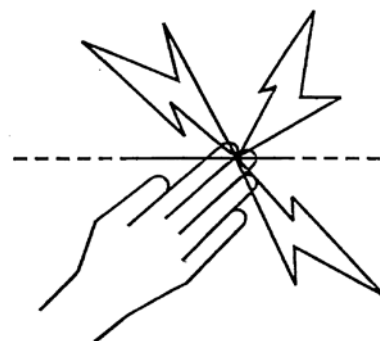
A distance of at least 10m shall be maintained between the **energizer earth electrode** and any other earthing system such as the power supply system protective earth or the telecommunication system earth.

Electric 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.

In **electric fences** intended for deterring birds from roosting on buildings, no **electric fence** wire shall be connected to the **energizer earth electrode**. A warning plate, as described in 2, shall be fitted to every point where persons may gain ready access to the conductors.

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 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 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 plates as described in 2.



Symbol for warning plate

Figure 1