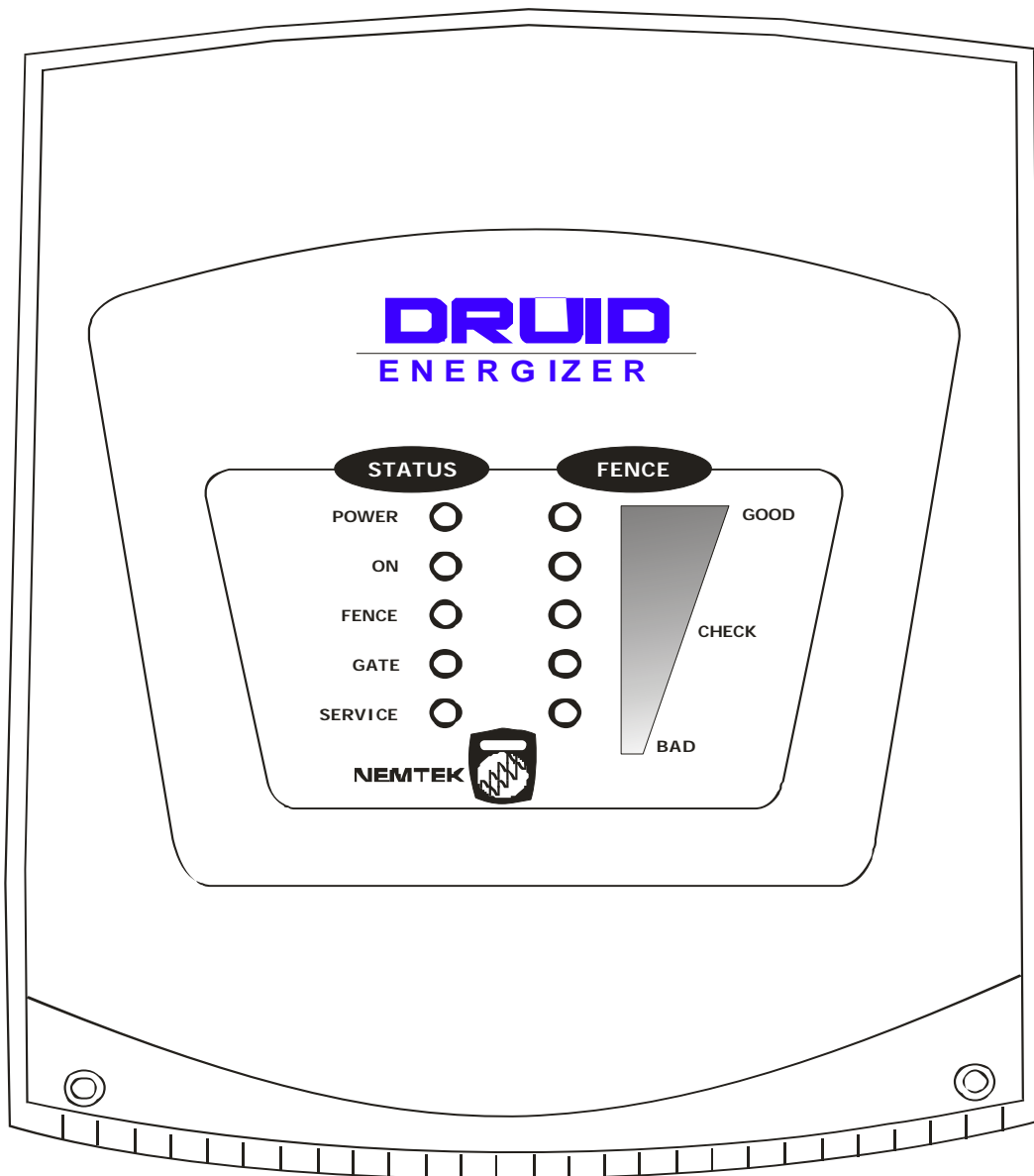




# DRUID – Electric Fence Energizer

## INSTALLER MANUAL



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## **I N T R O D U C T I O N**

The DRUID is a battery (12V 7AH nominal) operated energizer suitable for connection to mains (230V 50Hz nominal).

The batteries to be used are rechargeable lead-acid batteries. Non-rechargeable batteries must NOT be used. The lead-acid batteries require venting and it is imperative that the energizer be situated in a well-ventilated area.

## **D I S C L A I M E R**

NEMTEK Holdings (Pty) Ltd or any of its subsidiary companies does not guarantee that the operation of the product will be uninterrupted or totally error free.

Energizer specifications may be altered without prior notification.

The installer is referred to the definitions and general requirements in Appendix A.

The installer must take into consideration the applicable municipal laws concerning the installation of electric fences. General guidelines are available, or refer to the website: <http://www.nemtek.com>. International standards can be viewed at <http://www.iec.ch> and South African standards on <http://www.sabs.co.za>.

\*Energizer to be mounted vertically against a flat surface, in well ventilated area.

\*Avoid prolonged exposure to direct sunlight

**STEP 1:** Disconnect mains. Open the lid by removing the two cap screws. Unplug the battery terminals if connected.

**STEP 2:** Remove screws and battery bracket

### STEP 3: Remove battery

*\*Dispose of old battery according to legal requirements. Do NOT replace with non-rechargeable battery!!*

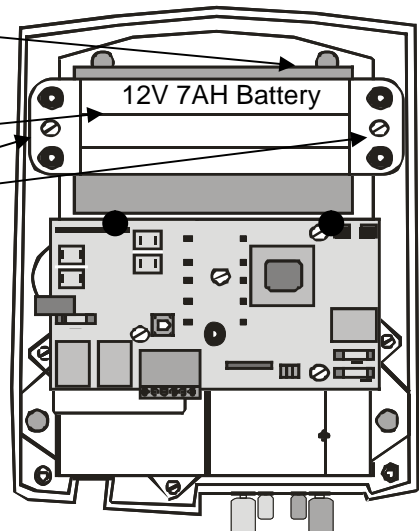
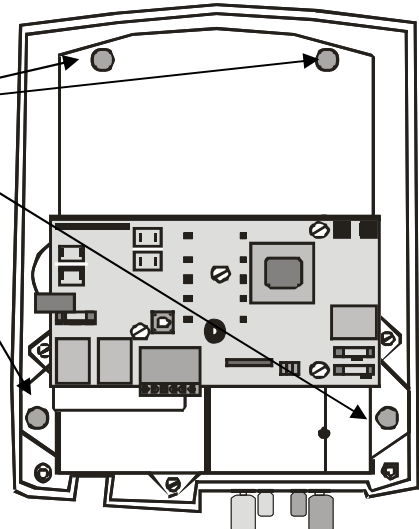
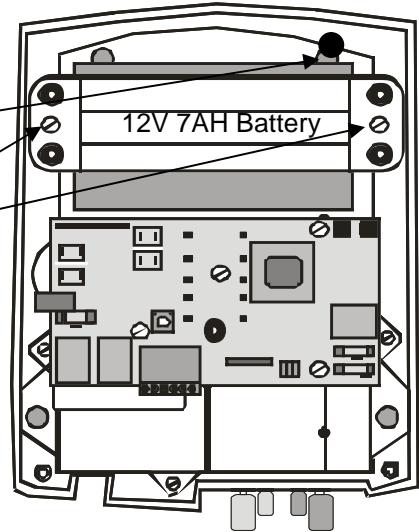
**STEP 4:** Drill 4 x 8mm holes for mounting the unit, use the template provided with the unit. Four nail-in anchors are also supplied with the unit. Insert the plastic sleeve of the nail-in anchor from the inside of the box and then hammer the screw in with a screw driver and hammer.

NB: Always insert the plastic sleeve from the inside of the box.

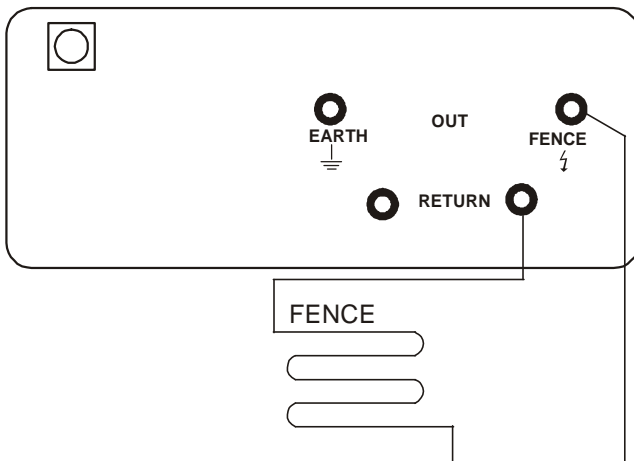
**STEP 5:** Insert battery with the positive terminal to the top.

**STEP 6:** Place the battery bracket back (with plastic offsets at the top) and fasten the screws.

**STEP 7:** Connect battery wires. Close the lid by hooking the top of the lid in first and then fasten the bottom down with the two cap screws. Apply mains to the unit.



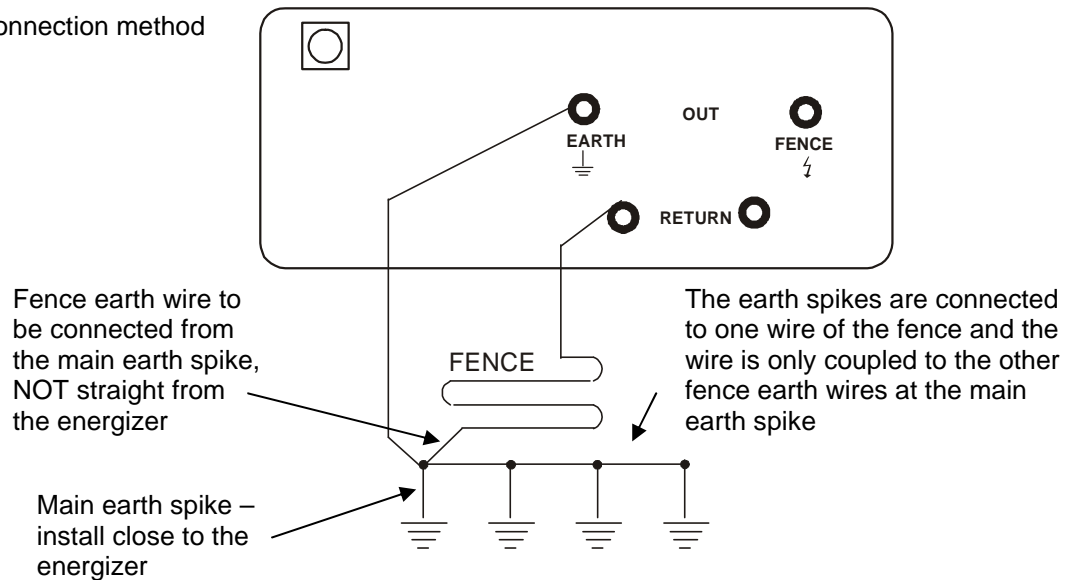
## LIVE WIRE CONNECTION



NOTE:  
The installation and erection of the electric fence should be done in South Africa according to SANS 10222-3 latest edition. In other countries according to the local specifications.

## EARTH WIRE CONNECTION WITH EARTH LOOP MONITORING

Preferred connection method



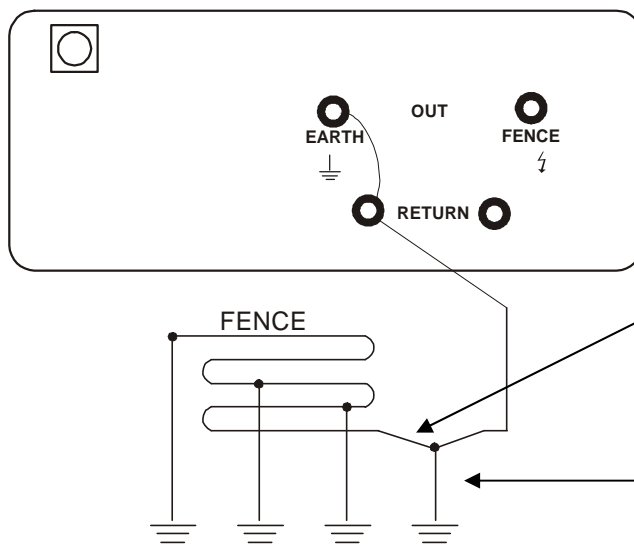
Fence earth wire to be connected from the main earth spike, NOT straight from the energizer

The earth spikes are connected to one wire of the fence and the wire is only coupled to the other fence earth wires at the main earth spike

Main earth spike – install close to the energizer

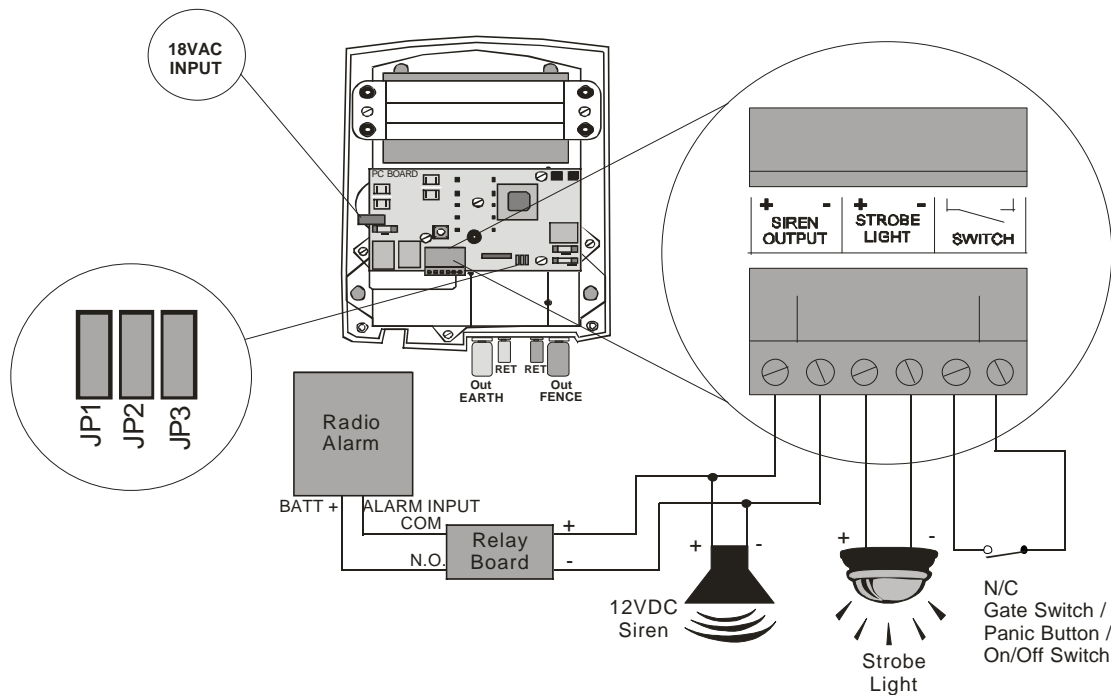
## EARTH WIRE CONNECTION WITHOUT EARTH LOOP MONITORING

Alternative connection method



Fence earth wire to be connected from the main earth spike, NOT straight from the energizer

Main earth spike – install close to the energizer



### JUMPER OPERATION

Function	JP1	JP2	JP3	Energizer Operation
Gate Alarm	out	in	out	Switched Input delayed for 4 minutes with energizer On only
Gate Alarm	in	out	out	Switched Input delayed for 1 minute with energizer On only
Panic Alarm	out	out	out	Switched Input instantaneous (panic alarm) with energizer On or Off
High/Low Voltage Mode	in	in	out	Switched Input toggles the energizer between High Voltage and Low Voltage mode
Remote On/Off	out	out	in	Switched Input acts as remote On\Off switch
Remote On/Off indication and Gate alarm	in	out	in	Strobe indicates fence is On or Off, Switched Input delayed for 4 minutes with energizer On only
Not yet available	out	in	in	Service Alarm disabled, Switch Input delayed for 4 minutes with energizer On only
	in	in	in	Reserved for factory use

All other Jumpers are reserved for factory use only

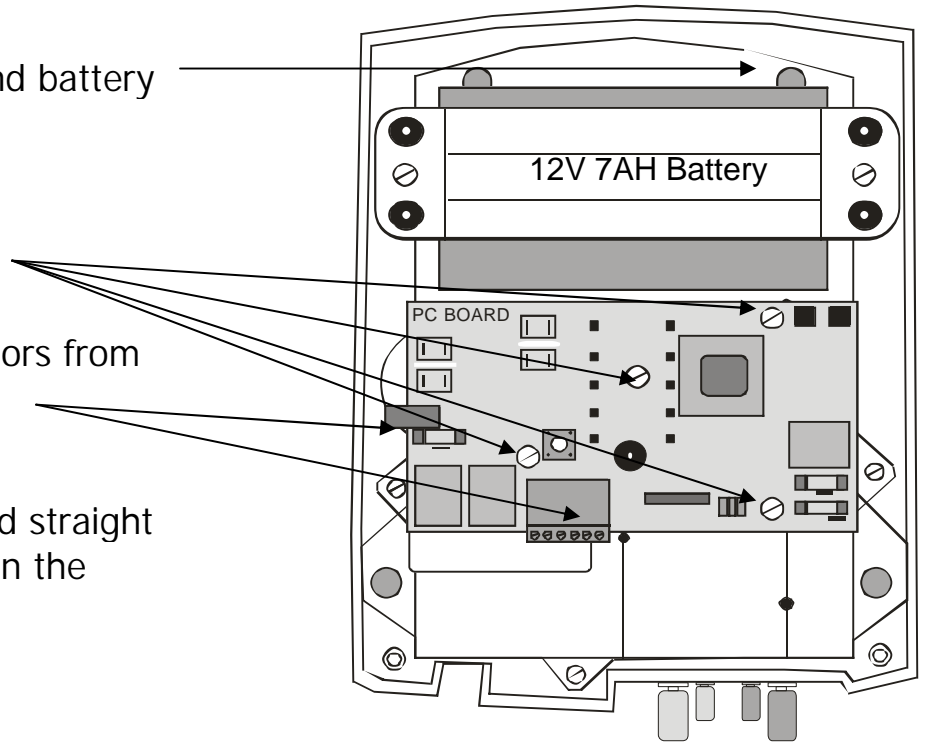
### REMOVAL:

STEP 1: Disconnect mains and battery terminals if connected

STEP 2: Remove screws

STEP 3: Remove all connectors from PC Board

STEP 4: Gently pull PC Board straight up to remove (connections on the back)



### REPLACEMENT:

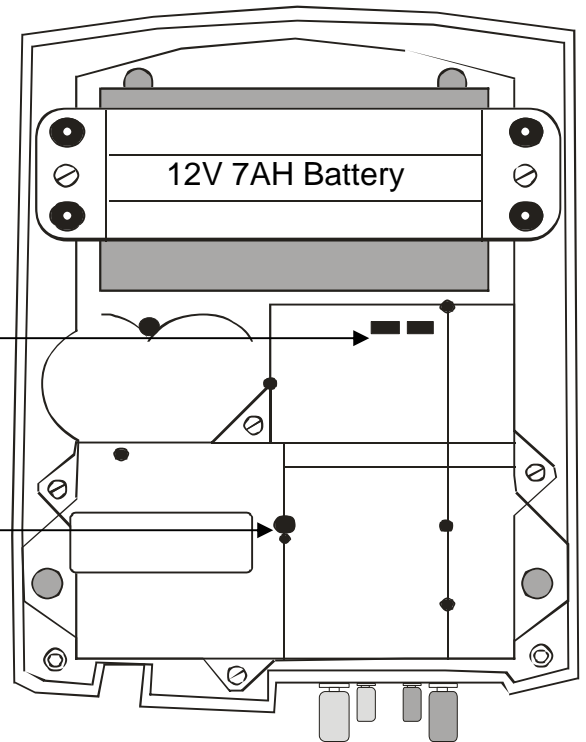
STEP 5: Gently push PC Board back into place

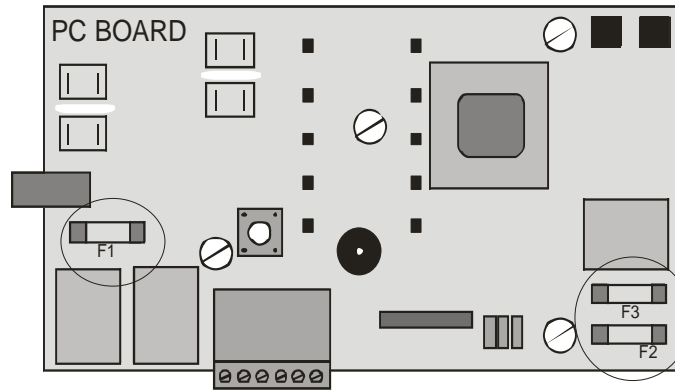
Take care that the spade connectors are correctly positioned before pushing the PC Board into place.

Also ensure that the opto-coupler (looks like LED) is correctly positioned before pushing the PC Board into place

STEP 6: Reconnect all connectors to PC Board

STEP 7: Reconnect battery terminals



**FUSE DESCRIPTION & FAULT SYMPTOMS****HOW TO CHECK: (ALL FUSES ARE 2 AMPERE FAST BLOW)****18Vac Supply Fuse**

**F1:** Power light is not lit, even when mains is present

**Auxiliary Output Fuse**

**F2:** Siren or strobe light does not operate (ensure that the unit was switched off with no fault conditions)

**Battery Protection Fuse**

**F3:** Energizer does not operate when mains is switched off



**INSTALLATION NOTES:**

- 1) Use **high voltage insulation** wire between the fence and energizer, including the earth wire. Never run these wires in the same conduit or through the same hole as the low voltage wiring.
- 2) Always **use ferrules or line clamps** to connect two high voltage wires together. Avoid using different types of material for connections like copper on steel.
- 3) The **fence must be earthed properly** with at least one earth electrode as close as possible to the energizer. The distance between the fence earth electrode and other earth systems shall be not less than 10m.
- 4) Do **not try to modify the unit**. Any unauthorized modifications will null and void the warranty and possibly render the unit illegal.
- 5) To connect the energizer to a radio alarm transmitter or alarm panel **use an isolation relay** between the siren output and the panel. Never use the energizer battery to power a radio alarm transmitter or alarm panel (see 4).
- 6) The **siren** output can **maximum** be loaded with a 15W siren (**1.25 Amps**).
- 7) The **strobe** output can **maximum** be loaded with a strobe which will draw less than **0.5 Amps**.
- 8) The wires to the gate input can be up to 100m long but must not run in parallel with the fence wires. The gate input must be connected to a **normally closed contact** when the gate is **closed**.
- 9) Keep the **high voltage wires** to the fence **separate** from the mains, gate, siren and strobe wiring.
- 10) When **replacing the lid** of the energizer hook the top in first while holding it at an angle and then push it closed at the bottom. Fasten the lid down with the two cap screws.
- 11) Always **test the fence** alarm for a short and open-circuit after installation at the furthest point on the fence.
- 12) Do not use the energizer with **Non-rechargeable** batteries and any lead-acid batteries must be placed in a well-ventilated area during charging.
- 13) The unit contains a sealed lead-acid battery that will vent to the atmosphere under certain conditions. For this reason it is imperative that the energizer be **installed in a well ventilated area**.
- 14) **Refer to the applicable laws** concerning the installation of electric fences.

**BASIC DEFINITIONS:**

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

Connecting Lead: an electric conductor, used to connect the energizer to the electric fence or the earth electrode

Electric Security Fence: a fence used for security purposes which comprises an electric fence and a physical barrier electrically isolated from the electric fence

Public Access Area: any area where persons are protected from inadvertent contact with pulsed conductors by a physical barrier.

Pulsed Conductors: conductors which are subjected to high voltage pulses by the energizer.

Secure Area: an area where a person is not separated from pulse conductors below 1,5m by a physical barrier.

**GENERAL REQUIREMENTS FOR ELECTRIC SECURITY 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 2.5m. 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 prominently placed warning signs securely fastened to the fence posts or firmly clamped to the fence wires. The size of the warning signs 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. The warning sign shall typically appear as depicted in Figure x. The inscription shall be indelible, inscribed on both sides of the warning plate and have a height of at least 25 mm.

Warning signs shall be placed at

- each gate
- each access point
- intervals not exceeding 10m
- adjacent to each sign relating to chemical hazards for the information of emergency services.

Gates in electric security fences shall be capable of being opened without the person receiving an electric shock.

The energizer earth electrode shall penetrate the ground to a depth of at least 1m. The distance between any electric security fence earth electrode and other earth systems shall not be less than 2m.

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 external factors.

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.

Mains supply wiring shall not be installed in the same conduit as signaling leads associated with the electric security fence installation.

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 angles 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.

Power Line Voltage (V)	Clearance(m)
Equal or less than 1 000	3
>1 000 and equal or less than 33 000	4
>33 000	8

Table 1

If connecting leads and electric fence wires are installed near an overhead power line, their height above the ground shall not exceed 3m.

Where an electric security fence passes below bare power line conductors, the highest metallic element shall be effectively earthed for a distance of not less than 5m on either side of the crossing point.

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 1 000 Volts.
- 15m for power lines operating at a nominal voltage exceeding 1 000V

Electric security fences and their ancillary equipment shall be installed, operated and maintained in a manner that minimizes danger to persons, and reduces the risk of persons receiving an electric shock unless they attempt to penetrate the physical barrier, or are in a secure area without authority. Exposed conductive parts of the physical barrier shall be effectively earthed.

A spacing of 2.5 m shall be maintained between uninsulated electric fence conductors or uninsulated connecting leads supplied from different energizers. This spacing may be less where conductors or connecting leads are covered by insulating sleeving, or consist of insulated cables, rated to at least 10kV.

This requirement need not apply where the separately energized conductors are separated by a physical barrier, which does not have any openings greater than 50mm.

A vertical separation of not less than 2.5m shall be maintained between pulsed conductors fed from different energizers.

Ensure that all ancillary equipment connected to the electric security fence circuit provides a degree of isolation between the fence circuit and the supply mains equivalent to that provided by the energizer. Protection from the weather shall be provided from the ancillary equipment unless this equipment is certified by the manufacturer as being suitable for use outdoors, and is of a type with a minimum degree of protection IPX4.

**FIGURE X**

