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JVA ELECTRIC FENCE ENERGIZER

MB8 • MB12 • MB16

Installation and User Manual

October 2019 Edition

JVA AGRIRANGE ENERGIZERS

INTRODUCTION

Congratulations, and welcome to the shocking world of JVA. We thank you for placing your faith in our product range. In doing so you have joined the world-wide body of satisfied JVA users who are benefiting from our products.

The JVA range of energizers is the result of a joint venture between the Australian company, Pakton Technologies and the South African company Ndlovu Fencing (Pty) Ltd. With over 40 years' experience in some of the harshest agricultural and security environments around the globe, JVA Technologies has produced a comprehensive range of agricultural, wildlife and security energizers that meet the needs of these diverse markets. The range extends from small strip grazing energizers to very high-powered units which incorporate Wi-Fi, Auto-Sync™, capable of partitioning long game fences into fifty individual sectors. For full particulars of our energizer ranges and fencing accessories, visit our websites:

www.jva-fence.com or www.jvasecurity.com

- ★ MAINS OR BATTERY POWERED (See warning on page 6)
- ★ BUILT-IN WI-FI
- ★ AUTO-SYNC™
- ★ MULTI-SECTORIZATION
- ★ CAPABLE OF SECTORIZING UP TO 50 SECTORS
- ★ IEC/SANS 60335.2.76 APPROVED

2-yr WARRANTY

TWO-YEAR WARRANTY

All JVA products carry a 2-year warranty against defective components and faulty workmanship. The warranty excludes damage caused by acts of Nature such as lightning, fire and flooding, power supply surges, rough handling, malicious action or incorrect wiring. Consumable components (i.e. batteries) are also not covered under the warranty agreement.

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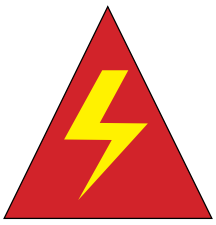


WARNING
Risk of shock!

- High voltages exist inside the electric fence energizer and on the fence terminals.
- High voltages are also retained for a while after switching off. It is advisable to wait for at least 10 minutes before opening the energizer case.
- Before working on the high voltage wiring of an electric fence, it is recommended that the energizer be turned off and an intentional short circuit be placed from the fence live wires to earth. This is a precaution against the energizer being turned on while work on the fence is in progress

1. IMPORTANT NOTES – PLEASE READ

1.1 Electric Fences

1. Electric fences must be installed only in accordance with the relevant Standards and Workplace Health and Safety regulations.
2. Electric fences are designed to deliver a short, safe shock. Do not let children play near them.
3. Electric fences must have warning signs. These must comply with IEC standards and should be prominently displayed on electric fences at distances specified by the country in which they are installed.
4. In order to operate effectively, electric fences must be well earthed. This involves the use of galvanized, *steel stakes/spikes/rods/electrodes (various terms are in use) driven into the earth at a depth of at least 1.2m. A minimum of 3 earth stakes are recommended at the energizer. Additional earth stakes may be required on higher powered energizers and along the fence in dry soil conditions. The deeper the earth stakes, the better.

   * Hot-dipped galvanized steel earth stakes are recommended because the effectiveness of the earthing is reduced by corrosion at the joints. This is caused by the electrolytic effect resulting from a current flowing through unlike metals making contact in a moist environment.

1.2 Energizers

1. The energizer places a very short, safe, high voltage pulse on the fence live wires approximately once every second. Please be advised that there is always a risk associated with any device designed to impart an electric shock. Do not allow children or elderly persons to touch the energizer or fence live wires.

2 The maximum length of fence able to be energized depends on many factors, for example the earth resistance, competition from vegetation, number, spacing and configuration of wires – series or parallel, type/quality of insulators, resistance of wire type used, etc. Another factor to consider is acceptable fence voltage: for some livestock situations this is 3kV, others require more or less. Therefore the rated mileage of fence that the energizer will power effectively is a guide only.

3. ***WARNING!*** The energizer should never be operated with the cover removed as high voltages exist inside the enclosure while operating. High voltage may remain on some internal parts long after the unit has been switched off.

1.3 Power Supply Options

The JVA MB series of electric fence energizers can be powered from a range of power sources.

- 12V Battery
- 24V Battery
- 12V Battery with Solar panel
- 240Vac (via Power Pack)

N.B.

- **Do not connect directly to mains – use the power supply provided.**
- The JVA MB8, MB12 and MB16 energizers have limited power supply options. For more information please refer to section 2.3 on page 5.
- When using a battery option, always ensure adequate ventilation is given to the battery. Lead-acid batteries may emit explosive gases while charging!
- Always mount the power supply either indoors or undercover.

1.4 Auto-Sync™

Auto-Sync™ is a new method of synchronizing electric fence energizers, patented by Pakton Developments Pty Ltd.

Auto-sync detects when something or someone touches the wires from two different electric fences, and synchronizes the output pulses so that the potentially dangerous condition of receiving more than one pulse per second is avoided.

The magnitude and frequency of the electric fence pulse is restricted by safety standards such as IEC60335.2.76. This limitation is specifically intended to ensure that a shock received from the energizer (and hence the fence) is safe for humans. An important part of the safety requirement is that the person receives no more than one shock per second. When the pulses are one second or more apart, the human body treats them as separate events and the heart is unaffected. Receiving more than one pulse per second can interrupt the natural rhythm of the heart.

Although international safety standards require a 2.5 metre gap between live wires powered from two different unsynchronized energizers, through neglect or ignorance this is often not adhered to. For example, live wires running down both sides of farm dividing fences are a common sight.

An energizer running the Pakton patented Auto-Sync™ technology can synchronize with any brand of energizer, provided that the energizer conforms to international standards regarding pulse timing.

If synchronization cannot be achieved or is lost, the energizer will not shut down. It will continue to operate as though no foreign signal were present on the fence (i.e. its regular pulse frequency and energy output).

1.5 Wi-Fi

The JVA MB8, MB12 and MB16 have a built-in Wi-Fi module.
This enables the owner/user to monitor and control the energizer via an Android or iOS smartphone.
Alongside is a example screenshot of the application.

1.6 Rechargeable Batteries

1. If powered from a rechargeable battery, JVA MB energizers are compatible with lead-acid batteries. SLA battery life is shortened considerably if it is
   a) left in a discharged state or
   b) exposed to very high temperatures.
2. When not in use, store the solar energizer in such a way as to allow the panel to get as much light as possible, such as on a window sill with the panel facing outwards. Take the unit out into sunlight for a few hours once every month to keep the battery from self- discharging.
3. *WARNING!*
   SLA batteries can produce hydrogen. The energizer case is designed to release hydrogen gas to prevent an explosion. Do not take steps to further seal the case. Return the unit for repair if the O-ring seal has become damaged.

2. JVA MODELS AND FEATURES

2.1 Features

Table 1

	MB8	MB12	MB16
Mains powered via 12V Power Pack	✓	✓	✓
Battery powered	✓	✓	✓
Solar powered			
Digital control	✓	✓	✓
'Smooth' wave shape	✓	✓	✓
Power on demand	✓	✓	✓
LCD showing kV and stored energy	✓	✓	✓
Ant & moisture protection	✓	✓	✓
UV stable enclosure	✓	✓	✓
Overload indication (audible and visible)	✓	✓	✓
Lightning protection	✓	✓	✓
Reverse battery protection	✓	✓	✓
Self-resetting fuse	✓	✓	✓
Solar capability	✓	✓	✓
Solar Ready (includes battery, regulator & solar panel)			
Low battery indication	✓	✓	✓
Flat battery indication	✓	✓	✓

	MB8	MB12	MB16
Over discharge battery protection	✓	✓	✓
Battery life maximization	✓	✓	✓
Battery voltage measurement	✓	✓	✓
Stored joules	12J	18 J	24 J
Energy output	8 J	12 J	16 J
Power consumption at 12.5Vdc	0.9 A	1.25 A	1.6 A
Warranty	2 Years	2 Years	2 Years
Power adapter included (24Vdc)	✓	✓	✓
Battery leads included	✓	✓	✓
Audible alarm	✓	✓	✓
Auto recover	✓	✓	✓
Auto-Sync™	✓	✓	✓
Bi-Polar output	✓	✓	✓
Wi-Fi Capable	✓	✓	✓

2.2 Benefits of Features

- The **battery life maximization** works by slowing the frequency of high voltage pulses just before the battery dies to keep the energizer operating for as long as possible without damaging the battery.
- The **over discharge battery** protection will stop the energizer when the battery is flat and flash the status LED twice each second. This stops too much charge being extracted from the battery and prevents permanent damage. The energizer will restart automatically once the battery voltage returns to a normal level.
- The **reverse battery protection** protects the energizer from damage should the external battery be connected the wrong way round in error.
- The MB series of energizers has the **electronics enclosed inside a durable UV stable case** to protect against ants, moisture and dust and so maximize reliability.
- The **overload indication** warns if the fence is heavily loaded by flashing a warning LED and alerting with a short audible beep.
- The MB series utilizes the latest **digital microcontroller** technology to extend battery life, provide useful feedback on the energizer status, and increase reliability and performance.
- The **audible alarm** will sound in the event of a serious error for 30 seconds and then shut down for 7 minutes before sounding again.
- The **Auto Recover** feature will attempt to recover the energizer from severe errors which cause the energizer to stop working. This automatic recovery process will occur at 7-minute intervals.

- Our patented **Auto-Sync**™ technology prevents the potentially dangerous condition of receiving a shock of more than one pulse per second. JM we'll need to do something with this orphan bit?.
- **Power on demand** automatically increases the power to heavy fence loads.
- To use the MB Range with a solar panel, an external 12 volt sealed lead-acid battery, solar panel and solar regulator are required.

2.3 Specifications

Table 2

	Specifications									
Model	*a Energizer output voltage	Stored Energy	Power	*d 12V drain	*c Solar Panel Size for Minimum Expected Sun Hours Per Day				*c Solar Battery	Peak Output
					3hrs	4hrs	5hrs	>6hrs		
MB8	8.2kV	12J	*b 12 to 24Vdc	0.9A	150W	120W	100W	85W	150Ah	8J
MB12	8.2kV	18J	*b 12 to 24Vdc	1.25A	180W	150W	120W	100W	200Ah	12J
MB16	8.2kV	24J	*b 12 to 24Vdc	1.6A	220W	180W	150W	120W	260Ah	16J

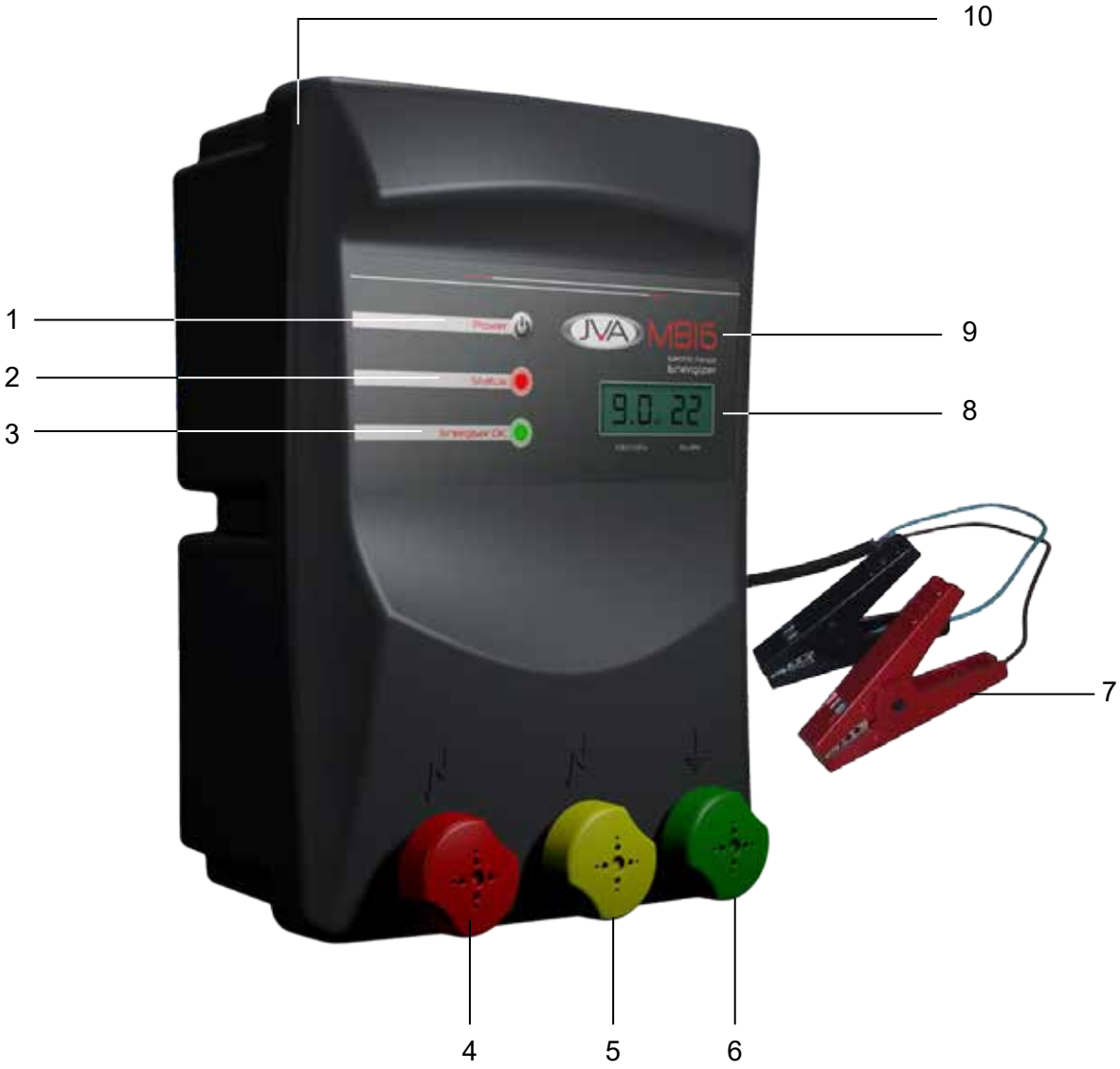
KEY:

*a No load, actual voltage on a short fence can be as high as 10kV
*b The energizer can also be powered from 240Vac by using the external power pack supplied with the energizer.
*c Minimum recommended sizes for 5 consecutive days of overcast weather.
*d Current drain rating is for a 12V power source. Current drain will vary with voltage.

In line with our policy of continual improvement, specifications are subject to change without notice.

3. PARTS OF THE ENERGIZER

MB8, MB12, MB16



1. ON/OFF switch
2. Status indicates fence overload or internal energizer fault (red LED)
3. Energizer On and OK indicator (green LED)
4. High power fence connection terminal
5. Half power fence connection terminal
6. Ground/Earth return connection terminal
7. 12 volt battery clips (black = negative, red = positive)
8. LCD – Liquid Crystal Display
9. Model number panel
10. Rubber O-ring seal between front and back case pieces

WARNING: **Do not connect the energizer directly to mains. Use the 12VDC power supply provided.**

3.1 Fence Connectors

Full Voltage Operation

1. The *Green Earth Terminal* (right) should be connected to suitable electric fence earth stakes.
2. The *Red Fence Terminal* (left) should be connected to the live wires of the fence.

Low Voltage Operation (MB series only)

1. The *Green Earth Terminal* (right) should be connected to suitable electric fence earth stakes.
2. The *Yellow Fence Terminal* (centre) should be connected to the live wires of the fence.

Bi-Polar Operation (MB series only)

1. The *Green Earth Terminal* (right) should be connected to one of the live wires on the fence. (This will become negative relative to true earth.
2. *The Yellow Fence Terminal* (centre) should be connected to suitable electric fence earth stakes.
3. *The Red Fence Terminal* (left) should be connected to the other live wire on the fence. (This will become positive relative to true earth.)

3.2 Energizer LED Display

This feature is included in all units.

Status red LED – This LED has multiple functions, listed below:

- Flashes – slowly (once per pulse) when the load exceeds an acceptable level indicating that the fence probably has a fault. Operating in the overloaded condition for extended periods of time will NOT harm the energizer. See *Common Energizer Problems* below.
- Flashes – twice in quick succession (2 flashes per pulse) to indicate the battery is low. Arrange to change or recharge the battery. See *Common Energizer Problems* below.
- Flashes – an error code if an internal error causes the energizer to shut down. See *Common Energizer Problems* below.

Energizer OK green LED – Flashes with each pulse to show the unit is on and operating correctly.

Kilovolts display – Shows the voltage on the output terminals of the energizer. The higher the voltage the more effective the fence will be.

Joules display – This new feature allows one to see how much energy the energizer is storing for each fence pulse. On smaller fences the voltage will be high but the energy may be low; on larger and longer fences, as the voltage starts to drop, the energizer will ramp up the amount of energy it is storing between high voltage pulses to try to maintain a good fence voltage.

Power Supply Voltage display – When the energizer is turned off it will display the power supply voltage. This is useful for checking the battery voltage status quickly.

3.3 Power Button

The power button turns the energizer on or off, and silences the beeper.

- If the energizer is off, push the Power button to turn it on.
- If the beeper is giving an audible warning, push the Power button to silence the beeper for 10 minutes.
- If the energizer is on, push the Power button to turn it of.

4. INSTALLATION

4.1 Location of the Energizer

If possible keep the energizer in a cool and dry environment (either indoors or at least well covered) to maximize reliability. To deter any water ingress, keep the energizer upright when located outdoors.

4.3 Mounting the Energizer

There are a number of mounting options.

- Wall Mount: The energizer may be mounted from two screws
- Shelf Mount: Lay or stand the energizer on a shelf
- Hang Mount: Thread wire or string through the keyholes to hang the energizer, or hang the energizer from a single nail or hook.

4.3 Connecting the Energizer to the Fence (Standard)

The electric fence requires a dedicated ground/earth system. Drive at least three earth stakes into the ground to a depth of at least 1.2m. Attach a wire from the green Earth Terminal on the front of the energizer to the earth stakes in the ground.

For full power: connect a wire from the red Fence Terminal on the front of the energizer to the live wire of the fence.

For half power: connect a wire from the yellow Fence Terminal on the front of the energizer to the live wire of the fence.

4.4 Connecting the Energizer to the Fence (Bi-Polar)

The electric fence requires a dedicated ground/earth system. Drive at least three galvanized earth stakes into the ground to a depth of at least 1.2m. Attach a wire from the yellow (half power) Terminal on the front of the energizer to the earth stakes in the ground. Connect the red Fence Terminal to one of the bi-polar, live fence wires, and the green Earth Terminal to the other bi-polar live, fence wire.

4.5 Powering the Energizer

1. **Battery Power Source:** Attach the energizer to the battery and connect the red clip to the positive battery terminal and the black clip to the negative battery terminal. For battery choice see the specification table (Table 2 page 5).

   Mains Power Source: Attach the energizer to the supplied power pack. Plug the power pack into the mains power outlet and turn on the switch at the wall.

2. Turn the energizer on by pushing the Power button once.

5. OPERATION

5.1 Electric Fences

Electric fence energizers work by discharging a short, safe, high voltage pulse onto the fence wires. The animal will not be harmed by a pulse, but it will remember to avoid contact with the energized fence in future.

The high voltage is discharged from the red, positive fence terminal of the energizer and this is connected to the fence wire or electric fence tape to make them live or 'hot' wires. Live wires must be insulated from earth or any conductive material touching the ground, e.g. fence posts).

The green terminal connector on the energizer is the earth (or ground) terminal. Electric fences need earthing to complete the circuit: When an animal touches the live wire of the fence, a current will flow from the live wire, through the animal, back through the ground or the earth return wires to the earth stake and back up to the energizer earth terminal thereby completing the circuit. (See Fig 1 below)

On touching the earth terminal on the energizer or the earth stakes in the ground, no shock should be felt. If a shock is felt on either of the above, it is an indication that the earthing is insufficient. To overcome this problem, extra earth stakes need to be added to the system. The better the quality of the earthing system, the more effective and efficient the electric fence system will be.

The more earth stakes in the ground and the higher the moisture content in the soil, the better the system will function. The higher powered (higher joule rated) the energizer and the longer the fence, the more earthing is required.

In very dry conditions and sandy soils, it is recommended that a dedicated earth wire be added to the fence line. This in turn should be connected to the energizer earth and the ground/earth stakes. (See Fig 2)

For best results locate the energizer as centrally as possible in a fencing layout. For the Bi-Polar unit refer to 4.4 on page 9.

The fence and the earth voltages can be measured using an electric fence digital voltmeter, or a digital electric fence directional fault finder, such as the JVA Electric Fence Digital Directional Fault Finder.

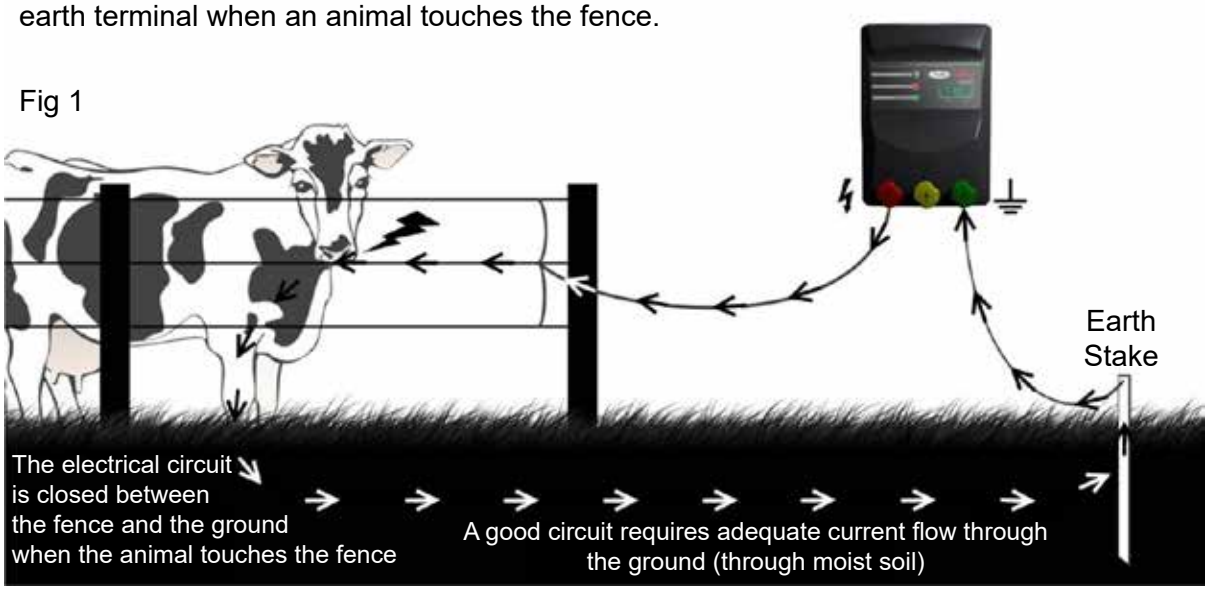
5.2 Benefits of Electric Fences

- An electric fence offers a psychological barrier as well as a physical barrier.
- The risk of injury to livestock is lower than with barbed wire fences.
- Electric fences cost less to install and maintain than conventional fencing. Users enjoy low maintenance costs because their stock stays off the fence.
- Their use is versatile:
  - they can be permanent or portable systems
  - they can be arranged in variety of designs to suit needs
  - they are quick and easy to erect
- They improve pasture and grazing control
- They can improve existing fence life as a result of less physical pressure on the fence
- They are easy to set up compared with traditional fences.

5.3 All-Live Wire, Earth Return System (Fig 1)

The Earth Return (also known as *Ground Return*) configuration is the most common method of configuration for electric fences, particularly smaller fence applications such as strip grazing. The fence live wire(s) are electrified and rely on the ground to complete the circuit back to the energizer earth terminal when an animal touches the fence.

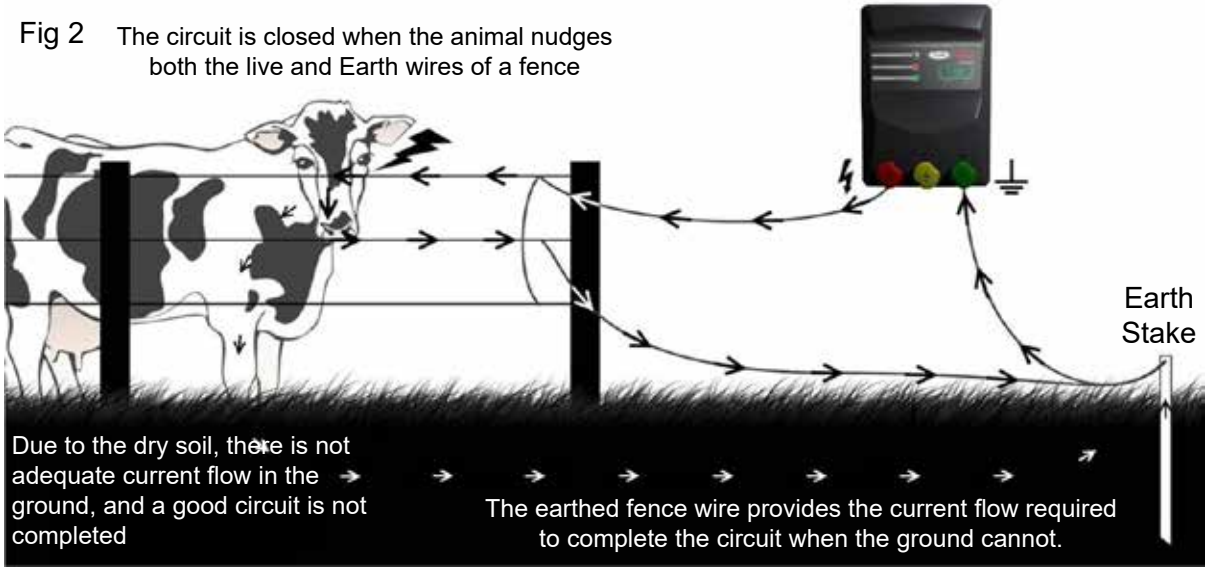
Fig 1



5.4 Live-/Earth-Wire Fence Return System (Fig 2)

The live-/earth-wire fence return configuration for electric fences is used where the soil is too dry to complete the circuit adequately, or the animals are likely to try to force their way through between the fence wires. In this system earth wire(s) are also run along the fence with the live wire(s) to provide a low resistance path for the current to return to the energizer. This system, if the soil is moist enough, will also function as a return path for the current when the animal touches the live wire, and if the soil is not moist or has poor conductance, this system will still keep the fence effective provided the animal touches both a live and the earth wire simultaneously.

Fig 2 The circuit is closed when the animal nudges both the live and Earth wires of a fence

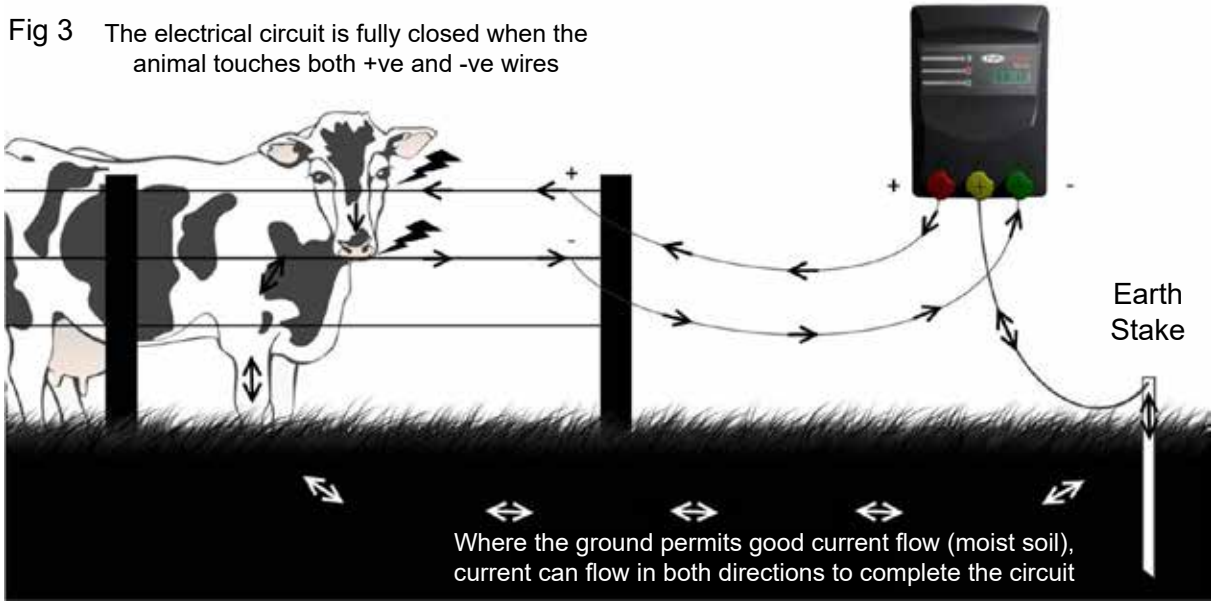


5.5 Bi-Polar System (Fig 3)

A Bi-Polar fence is a combination of both the earth return system and the fence return system. The benefits are:

1. If either the positive or negative fence wires are loaded with a fault and have a low voltage, the other wire will not be affected by the fault and still have good voltage on it.
2. A bi-polar fence will interfere less with wireless signals (e.g. digital TV) because the electrical noise generated by the fence will cancel itself out.
3. It is less affected by parasitic elements of the fence, which means it can power longer fences more effectively.

Fig 3 The electrical circuit is fully closed when the animal touches both +ve and -ve wires



5.6 Earthing Your Energizer

The best way to earth an energizer is to use a minimum of 1.2 metre galvanized earth stakes. If the earth stake is too rusty it will not work properly. The best place to locate the earth stake is somewhere close to where the fence commences and if possible where the ground is damp such as a garden bed, a water course, or the overflow from a rain water tank. (South African regulations require a minimum of 3 earth stakes to be located close to the energizer.) Do not connect the earth of the energizer to a metal shed, metal pipes or utility earthing system as this could lead to shock from tap, showers etc.

5.7 Semi-Permanent and Permanent Fences

The quickest and easiest way to set up a permanent fence is to use steel posts, but timber and fiberglass posts can also be used. Make sure that the wires are tight enough to eliminate sagging. 2.5mm galvanized fence wire is recommended as poly tape or rope will degrade and break over time. Warning signs need to be fitted as per the requirements outlined in the, *General Requirements for Electric Fences* section of this manual.

5.8 The Importance of Insulators

If the live wire is not well insulated the fence load will be much higher. This means that, for any given length of fence, the voltage will be lower. Pieces of wood and garden hose are not good insulators! For reliable results standard insulators designed for this purpose are recommended.

In a live-/earth-wire fence return system the earth wire(s) do not need to be insulated. In fact, if using steel intermediates, the more times the earth wire touches a metal post the better it is earthed/grounded.

UV stable poly insulators will last much longer than non-UV stable plastics. Plastic insulators are not as susceptible to fracture as ceramic insulators. However, ceramic insulators are better in grass, fire prone areas as they do not melt.

5.9 Maintenance

Maintaining permanent fences is important, especially during the warmer months when plant growth is at its highest and after any disruptive weather events.

1. Check the fence voltage using an electric fence voltmeter. The JVA Fault Finder will also detect faults and direct you towards them.
2. Keep vegetation away from the fence. If it touches the fence it will reduce its performance. The judicious use of weed killer may be used if so wished to deter any growth.
3. Check that nothing has fallen against the fence and that the wires are not broken or have been unclipped from insulators.
4. Check the condition of the earthing system for corrosion and loose joints.
5. Check that lightning diverters are all still operational.
6. Check and tighten any loose line clamps along the fence.
7. Check the energizer battery. If the energizer is flashing a low battery warning it is time to recharge or replace the battery.

6. COMMON ENERGIZER PROBLEMS

The most common problems with electric fence energizers are:

- Flat batteries
- Lightning
- Moisture and ants
- Blown fuses

The intelligent JVA Series of energizers will self-diagnose and report their status. (See *Errors and Error Codes*) on the LED and LCD displays.

6.1 Flat Batteries

The JVA series energizers, to run effectively, require a battery that is in good condition. The energizer will protect the battery by slowing down and eventually stopping altogether as the battery charge is depleted. For best results, check on the energizer at regular intervals. If not receiving the expected life from a battery consider having it checked by an electrician.

6.2 Lightning

The JVA range of energizers is covered by a two-year warranty that excludes lightning. Surge protection components inside the energizer are fitted to reduce the risk of damage by lightning. However, nature is capable of performing more extremely than can be tested for in the laboratory; to ensure the wellbeing of your JVA investment for the longer term, it is recommended that a Lightning Protection Kit is installed to prevent lightning damage and possible costly repairs.

6.3 Moisture and Ants

Moisture and ants should not be a significant problem for the JVA range of energizers as they are protected in a weatherproof case. However, where possible, keep the energizer protected from the weather.

6.4 Blown Fuses

The fuse used is a self-resetting type. Disconnect the power for a minute and then reapply the power. If the unit still does not power up, return it to a service centre.

6.5 Errors and Error Codes

The JVA Energizer may stop and display error codes. The error codes are displayed in two places. The first of these is on the Status (red) LED, where it will flash rapidly a number of times. The number of these flashes corresponds to the Error Code. The second place is on the LCD, where it will display a message.

Table 3

Error Code #	Red LED Flashes	LCD Display	Meaning
2	2	Battery symbol “Lo b”	Flat Battery: the energizer will recover and re-start when the battery is recharged.
6	6	“Er 06”	High battery: the energizer will restart when the battery voltage returns to the correct range

Errors 2 and 6 indicate the battery voltage is either too low or too high. The energizer will restart as soon as the voltage returns to the correct range. All other errors indicate an internal malfunction.

Should the error continue to re-occur, please return the unit to a qualified service centre for repair. There are no user-serviceable parts inside the energizer. All internal fuses will automatically reset themselves.

7. COMMON FENCE PROBLEMS

The most common problem with electric fences is low voltage on the live wires caused by

- Inadequate earthing/grounding
- Shorts on the fence

For tips on fence construction please refer to an Electric Fencing Manual.

7.1 Testing the Earthing/Grounding System

The earth/ground is essential to all electric fence systems. Larger energizers require more earth spikes/stakes/rods/electrodes. Additionally, all energizers require a low resistance wired connection from the energizer earth terminal to the earth stake.

Short the end of your fence to earth by hammering a metal stake into the soil and connecting this to the live fence wire. Using an electric fence voltmeter or a JVA Electric Fence Fault Finder, (Do not use a standard multimeter.) check the voltage is at the earth terminal of the energizer. In general it should be a reading less than 300 volts (0.3kV).

7.2 Testing the Fence, Finding Shorts

To test the performance of the fence or find faults on the fence, an electric fence voltmeter is essential, and a JVA Electric Fence Fault Finder is even better. An effective fence will have more than 2 kV (2000 volts).

8. INSTRUCTIONS FOR THE INSTALLATION AND CONNECTION OF ELECTRIC FENCES

Instructions for installation and connection of electric fences vary from country to country. Most are based on the International Electrical Commission (IEC) AS60335.2.76 specifications.

It is recommended that, in addition, local electric fencing legislation be consulted as well.

8.1 Definitions

Connecting lead	an electric conductor, used to connect the **energizer** to the **electric fence** or the **earth electrode** (stake)
Electric animal fence	an **electric fence** used to contain animals within or exclude animals from a particular area
Electric fence	a barrier which includes one or more electric conductors, insulated from earth, to which electric pulses are applied by an **energizer**

8.2 General Requirements for Electric Fences

1. Electric animal fences shall be installed and operated so that they cause no electrical hazard to persons, animals or their surroundings.
2. Electric animal fence constructions which are likely to lead to the entanglement of animals or persons shall be avoided.
3. An electric animal fence shall not be supplied from two different energizers or from independent fence circuits of the same energizer. For any two separate electric animal fences, each supplied from a separate energizer independently timed, the distance between the wires of the two electric animal fences shall be at least 2 m. If this gap is to be closed, this shall be effected by means of electrically non-conductive material or an isolated metal barrier.
4. Barbed wire or razor wire shall not be electrified by an energizer.
5. 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.

   a) The size of the warning sign shall be at least 100 mm × 200 mm.

   b) 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 symbol of Figure 3, or
      - the substance of TAKE CARE – ELECTRIC ANIMAL FENCE

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

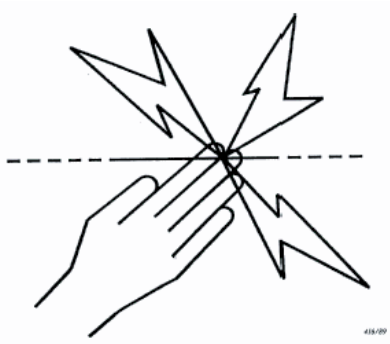


Figure 4
Warning plate symbol

6. The **energizer earth electrode** shall penetrate the ground to a depth of at least 1.2 m.
7. **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.
8. **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.
9. **Connecting leads** shall not be installed in the same conduit as the mains supply wiring, communicating cables or data cables.
10. **Connecting leads** and **electric animal fence wires** shall not cross above overhead power or communication lines.
11. 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.
12. If **connecting leads** and **electric animal fence wires** are installed near an overhead power line, the clearances shall be not less than those shown in table 5 below.

    Table 4

Power line voltage V	Clearance m
<=1 000	3
>1 000 <=33 000	4
>33 000	8

    Minimum Clearances from Power Lines

13. If connecting leads and electric animal fence wires are installed near an overhead power line, their height above the ground shall 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 1,000 V
    - 15 m for power lines operating at a nominal voltage exceeding 1,000 V.

9. WARRANTY

9.1 For Assistance

If you have any questions or need further assistance, or for more information on our complete range of electric fencing products, please see the JVA website at www.jva-fence.com.

9.2 Service or Repairs

If service is required, package your energizer carefully and return it to the place of purchase or your nearest JVA distributor along with your proof of purchase.

9.3 Contacts

www.jva-fence.com.au
www.jva.security.co.za

www.jva-fence.com

Manufactured for JVA by Pakton Technologies

ST058 JVA MM Energizer Manual 1v31

The JVA range of agricultural and security electric fence energizers are the result of a joint venture between the Australian company, *Pakton Technologies* and South African company, *Ndlovu Fencing (Pty) Ltd*. With a combined experience of well over 40 years in the industry, and drawing on experiences from operating in some of the hardest agricultural and security environments around the globe, JVA produce a comprehensive range of both agricultural and security energizers that meet the needs of both markets. For full particulars of our ranges of energizers and accessories visit:

www.jva-fence.com **www.jvasecurity.com**