www.jva-fence.com.au

JVA Electric Fence Energiser Installation and User Manual

(MB8, MB12, MB16, SV5, SV10)

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Introduction

Congratulations on your choice of a JVA Energiser. In choosing to purchase the JVA brand you have opted for the highest quality in electric fencing. Please read this manual entirely before installing your new energiser.

All JVA products offer a three-year warranty against faulty components and workmanship but excludes Acts of God, i.e. lightning, flood damage, etc. or malicious damage to the unit or faulty application. Consumable components (i.e. batteries) are also not covered by the warranty agreement. To ensure your eligibility for this warranty program, *please retain your proof of purchase.*

DANGER! Risk of Shock!

High voltages exist inside the electric fence energiser and on the fence terminals.

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1 Important notes – **PLEASE READ**

1.1 Electric Fences

1. Electric fences are not toys; do not let children play with them.
2. Electric fences should only be installed with regard to the relevant Standards and work place health and safety requirements.
3. Electric fences must have an 'earth'. An electric fence ground is one or more pieces of metal (eg. 1.8m Galvanized earth rods) driven into the earth.

1.2 Energisers

1. The energiser places a very short, very high voltage pulse on the fence live wires approximately once every second. The fence is 'safe' in that the pulse is too short to cause electrocution. 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 energiser or fence live wires.
2. The maximum length of fence able to be energised depends on many factors, for example the earth resistance, number and spacing of wires on the fence, type/quality of insulators, resistance of wire etc. The amount of grass or shrubbery touching the wires also alters the performance. Fence circuit layout is very important. Another factor to consider is acceptable fence voltage, for some stock situations this is 3kV others require more or less. Therefore the rated mileage of fence that the energiser will power effectively is a guide only.
3. **DANGER!** The Energiser 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 energisers can be powered from a range of power sources.

- 12 or 24V external battery (not supplied)
- 12 or 24V external battery with solar panel (not supplied)
- 110/240Vac via power pack (supplied with MB models only)

The JVA SV series of electric fence energisers are fully self contained solar powered energisers. Each energiser in the SV series comes with an internal battery, integrated battery charger, solar panel bracket and solar panel.

1.3.1 IMPORTANT NOTES

- Always ensure adequate ventilation is given to the external 12 volt battery. Lead Acid batteries may emit explosive gases while charging!
- Always mount the power supply either indoors or undercover.

1.4 Auto-SyncTM

Auto-Sync™ is a new method of synchronising electric fence energisers patented by Pakton Developments Pty Ltd.

Auto-sync detects when something or someone touches the wires from two different electric fences, and synchronises 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 energiser (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 unsynchronised energisers, 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 site in rural Australia.

An energiser running our patented Auto-Sync™ technology can synchronise with any brand of energiser provided that energiser conforms to international standards regarding pulse timing.

If synchronisation cannot be achieved or is lost, the energiser 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 Solar Panels

1. Mount solar powered energisers so that the solar panel is facing the noon sun (due north and angled at 45 degrees).
2. The SV5/SV10 solar panel needs as much direct sunlight as possible, preferably full sun all day. The SV series are solar powered energisers and, unlike small solar powered items such as calculators, solar energisers **need direct sunlight** to generate enough electricity to charge the battery.
3. The solar panel also needs to be clean to operate properly. Clean off any dust or dirt using a damp cloth.

1.6 Rechargeable Batteries

1. The SV5/SV10 contains a rechargeable sealed lead acid (SLA) battery. SLA battery life is shortened considerably if it is
   a) left in a discharged state or;

b) exposed to high temperatures.

2. When not in use store the SV5/SV10 in such a way as to allow the panel to get as much light as possible, say on a window sill with the panel facing out. Take the unit out into sunlight for a few hours once every month to keep the battery from self discharging.

1.7 Other

1. Keep the SV5/SV10 from being immersed in water and out of extreme heat.
2. Be aware that thieves target solar powered items, so a padlock may be useful in securing the SV5/SV10 to a fence post.

2 JVA Models and Features

2.1 Features

	MB8	MB12	MB16	SV5	SV10
Mains powered	*	*	*		
Battery 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	*	*	*	*	*
Over discharge battery protection	*	*	*	*	*
Battery life maximisation	*	*	*	*	*
Battery voltage measurement	*	*	*	*	*
Stored Joules	12J	18 J	23 J	0.7 J	1.1 J
Energy Output	8 J	12 J	16 J	0.5 J	0.8 J
Power consumption at 12.5Vdc	0.9 A	1.25 A	1.6 A	67mA	84mA
Warranty	3 Years	3 Years	3 Years	3 Years	3 Years
Power adapter included (24Vdc)	*	*	*		
Battery leads included	*	*	*		
Audible alarm	*	*	*		
Auto Recover	*	*	*	*	*
Auto-Sync™	*	*	*	*	*
Bi-Polar output	*	*	*		

- **Battery life maximization** works by slowing the frequency of high voltage pulses just before the battery dies to keep the energiser going for as long as possible without damaging the battery.
- **The over discharge battery protection** will stop the energiser when the battery is flat and flash the status LED twice each second. This stops too much charge being pulled from the battery and prevents permanent damage. The energiser will automatically restart once the battery voltage returns to a normal level.
- **The reverse battery protection** protects the energiser from damage in the event you are having a bad day and connect the external battery the wrong way around.
- The MB series of energisers **seals the electronics inside a durable UV Stable case** to protect from ants, moisture and dust to maximise reliability.
- **Overload indication** warns you if your fence is heavily loaded by flashing a warning LED and alerting you with a short audible beep.
- The MB series utilizes the latest **digital microcontroller** technology to extend battery life, provide useful feedback on the energiser 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 energiser from severe errors which causes the energiser to stop working. This automatic recovery process will occur at 7 minute intervals.
- Our patented **Auto-Sync™** technology to help keep your fences safe.
- **Power on demand** automatically increases the power to heavy fence loads.

^To use with a solar panel, an external 12 volt sealed lead acid battery, solar panel and solar regulator are required (not supplied with this kit).

2.2 Specifications

Model	Energiser Output Voltage #	Power Input Range	~12V drain	^Solar Panel Size for Minimum Expected Sun Hours Per Day				*Solar Battery	Peak Stored Energy	Peak Output Energy
				4hrs	5hrs	6hrs	7hrs			
MB8	8.2kV	12 to 24Vdc	0.9A	85W	60W	60W	40W	150Ah	12J	8J
MB12	8.2kV	12 to 24Vdc	1.25A	180W	150W	120W	85W	200Ah	18J	12J
MB16	8.2kV	12 to 24Vdc	1.6A	220W	180W	150W	120W	260Ah	24J	16J
SV5	7.5kV	3 sun hours/ day @	67mA	-	-	-	-	-	0.7J	0.5J
SV10	7.5kV	3 sun hours/ day @	84mA	-	-	-	-	-	1.1J	0.8J

#No load, actual voltage on a short fence can be as high as 10kV

~Current drain rating is for a 12.5V power source. Current drain will vary with voltage.

^Recommended solar panel sizes based on the number of sun hours/day a region receives. To find the minimum number of sun hours/day your region receives contact your local meteorological authorities.

*The recommended battery size will allow the energiser to operate for up to 4 days on the battery alone.

@ The minimum number of sun hours per day for continual operation.

Due to our policy of continual improvement specifications are subject to change without notice

3 Parts of the Energiser

1. Status indicates fence overload or internal energiser fault (red LED)
2. Energiser On and OK indicator (green LED)
3. High Power fence connection terminal
4. Low Power fence connection terminal (Not on SV5/SV10)
5. Ground/Earth return connection terminal
6. Rubber O-ring seal between front and back case pieces
7. Model number panel (both units)
8. LCD – Liquid Crystal Display
9. 12 volt battery clips (black = negative, red = positive)
   (Not on SV5/SV10)
10. ON/OFF switch
11. Solar Panel Bracket (SV5/SV10 Only)
12. Solar Panel (SV5/SV10 Only)

3.1 Fence Connectors

Fence Connections

Full Voltage Operation

1. The *Green Earth Terminal* (Right) should be connected to suitable electric fence earth spikes.
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 spikes.
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 one of the live wires on the fence (this will become negative relative to earth)
2. The *Yellow Fence Terminal* (Centre) should be connected to suitable electric fence earth spikes.
3. The *Red Fence Terminal* (Left) should be connected to the other live wire on the fence (this will become positive relative to earth).

3.2 Energiser LED and LCD Display

This feature is included on all units.

Status red LED – This LED has multiple functions. These are 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 energiser. See *Common Energiser 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 Energiser Problems* below.
- Flashes an error code if an internal error causes the energizer to shut down. See *Common Energiser Problems* below.

Energiser 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 energiser. The higher the voltage the more effective the fence will be.

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

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

3.3 Power Button

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

- If the energiser 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 energiser is on, push the power button to turn it off.

4 Installation

4.1 Mounting the energiser

If possible keep the energiser in a cool and dry environment (either indoors or at least well covered) to maximise reliability. When mounting it there are a number of options. To deter any water ingress, keep the energiser upright when located outdoors.

- Wall Mount: The energiser may be mounted from two 12 gauge screws at 5.5cm centres, OR
- Lay or stand the energiser on a shelf, OR
- Thread wire or string through the keyholes to hang the energiser, OR
- Hang the energiser from a single nail or hook.

4.2 Connecting to the Fence (Standard)

The electric fence requires a dedicated ground/earth system. Drive at least three earth spikes (minimum length 90cms) into the ground. Attach a wire from the Green Ground (Earth) Terminal on the front of the energiser to the earth spikes in the ground.

For full power connect a wire from the Red Fence Terminal on the front of the energiser to the live wire of the fence. For half power connect a wire from the Yellow Fence Terminal on the front of the energiser to the live wire of the fence.

4.3 Connecting to the Fence (Bi-Polar)

The electric fence requires a dedicated ground/earth system. Drive at least three earth spikes (minimum length 90cms) into the ground. Attach a wire from the Yellow (Half Power) Terminal on the front of the energiser to the earth spikes 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.

4.4 Connecting to Power

1. **Battery Power Source:** Attach the energiser 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.

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

   The mains power pack MUST be kept indoors!

   Solar Power Source: It is recommended that a solar regulator is used in conjunction with a solar panel and a rechargeable battery. Please refer to instructions provided with the solar regulator for information regarding its setup. Once the solar regulator, solar panel and rechargeable battery have been configured, connect the

energiser to the rechargeable battery. Red to positive and black to negative battery terminals.

2. Turn the energiser ON by pushing the Power button once.

5 Operation

5.1 Electric Fences

Electric fence energisers work by discharging a short, high voltage pulse onto the fence wires. Although the voltage is very high (up to 10,000V) the pulse is too short to cause electrocution. The result is a short, sharp, safe but effective shock that an animal will remember and so will avoid contact with the energised fence in future.

The high voltage is discharged from the red positive fence terminal of the energiser and this is connected to the live wires, or fence tape, of the fence to make them “live” or “hot” wires. Live wires must be insulated (e.g. with insulators) from earth or any other conductive material touching earth (e.g. fence posts).

The green connection on the energiser 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 earth return wires to the earth spike and back up to the energiser earth terminal.

On touching the earth terminal on the energiser or the earth spikes 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 spikes 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.

You should not feel a shock from the earth connection or earth rod. If you do, the ‘earth’ is probably not sufficient. An electric fence ‘earth’ is some metal in contact with the soil. The more metal in the earth and the higher the moisture content in the soil the better. The larger the energiser and the longer the fence the more ‘earth’ is required.

In very dry conditions, i.e. sandy soil, it is recommended that a dedicated earth wire be added to the fence line which in turn should be connected to the energiser earth and the ground/earth spikes

For best results place the energiser in the middle of long lines of fence. A cartwheel pattern of farm fences with the energiser positioned centrally is more effective than a tree arrangement with the energiser at the base of the trunk with many branches.

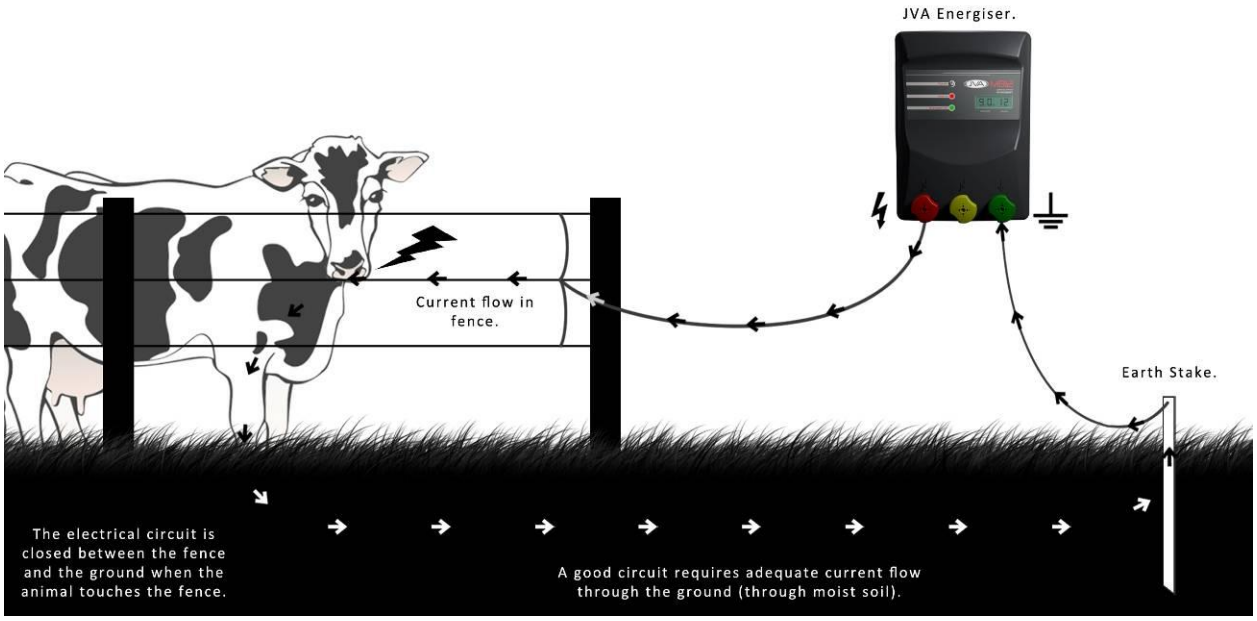
The fence and the earth voltages can be measured using an electric fence digital voltmeter or digital electric fence directional fault finder (the JVA Electric Fence Fault Finder).

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 a variety of designs to suit different needs and environments
    - they are quick and easy to erect
- They improve pasture and grazing control.

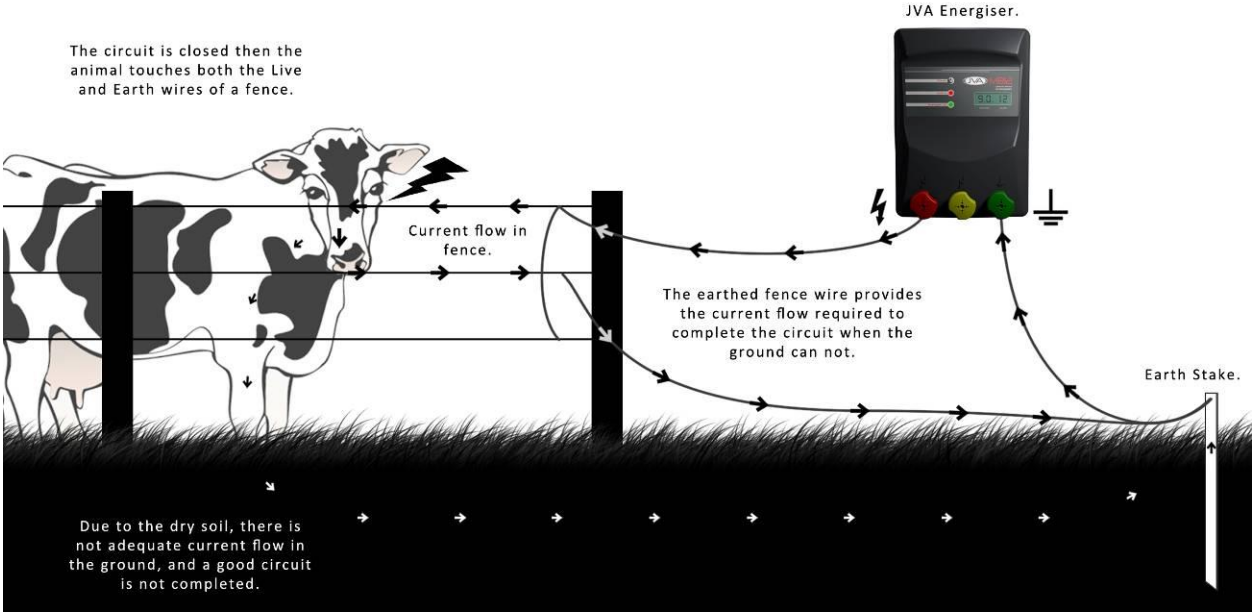
5.3 Earth Return System

The Earth Return (also called Ground Return) configuration is the most common method for electric fences, particularly smaller fence applications like “strip grazing”, due to its lower cost and ease of setting up. The fence live wire(s) are electrified and rely on the dirt to complete the circuit back to the energiser Earth terminal when an animal touches the fence.



5.4 Fence Return System

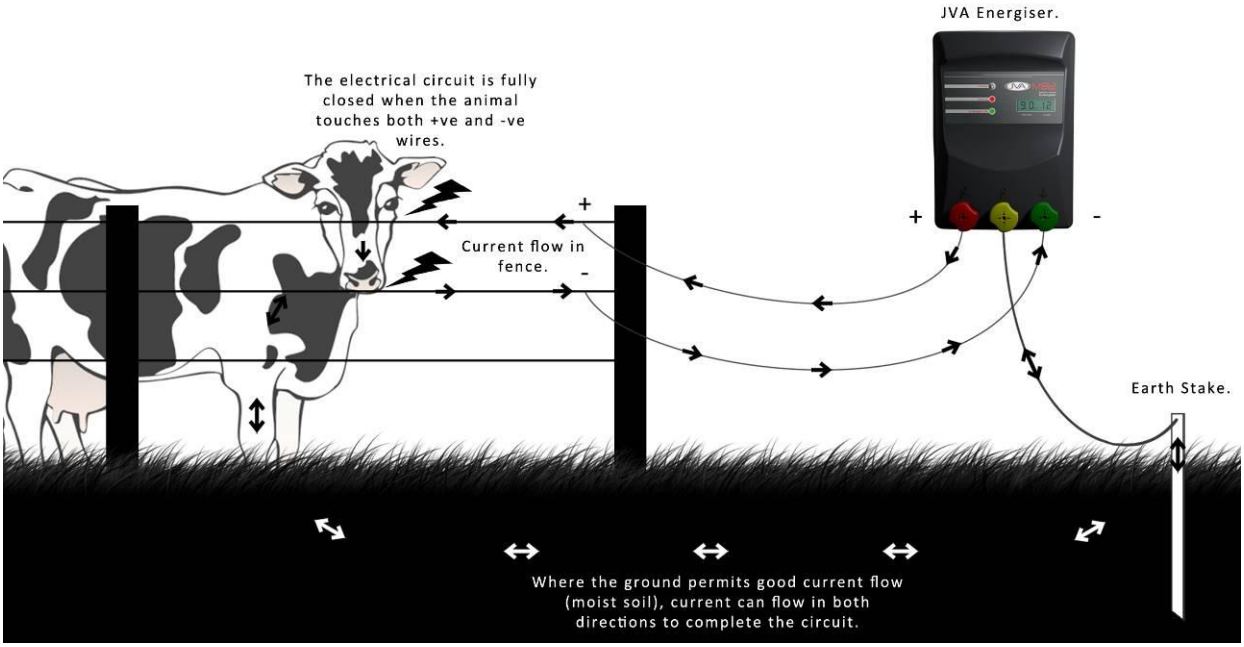
The Fence Return configuration for electric fences is used where the soil could be too dry to complete the circuit, or the animals are likely to try to force their way through between the fence wires. In this system earth wire(s) are also run along the fence with the live wire(s) to provide a low resistance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



5.5 Bi-Polar System

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

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 with wireless signals (like digital TV) less 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.



5.6 Earthing Your Energiser

The best way to earth your energiser is using a 1 meter galvanized earth stakes. If the earth stake is too rusty it may not work properly. The best place to locate the earth stake is somewhere close to where the fence starts and that is kept damp like a garden bed, a water course, or the overflow from a rain water tank. Do not connect the earth of your energiser to a metal shed or the same earth your home electricity system uses. It is also advised not to use any metal water pipes as this could lead to someone receiving a shock from a tap.

5.7 Semi-Permanent and Permanent Fences

Steel posts are the quickest and easiest way to set up a fence, but timber and fibreglass posts can also be used. Make sure that the wires are tight enough that there is no sagging. 2.5mm galvanized fence wire is recommended as poly tape or rope will degrade and break over time. Safety signs need to be fitted as per the requirements outlined in the “General requirements for electric fences” part 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 for any given length of fence the voltage will be lower. Pieces of wood and garden hose are not good insulators. Use the ones made for the job and you will get a better result.

In a fence return system the earth wire(s) do not need to be insulated, in fact if you are using steel intermediates the more times the earth wire touches a metal post the better it is “earthed”.

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

On permanent fences maintaining the fence is important, especially during the warmer months when plant growth is at its highest and after any large weather events.

1. Check the fence voltage using an electric fence volt meter. 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. Along permanent fence lines you may wish to use a weed killer 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.

The energiser battery must be checked. If the energiser is flashing a low battery warning it is time to recharge or replace the battery

6 Common Energiser Problems

The most common problems with electric fence energisers are:

- Moisture and Ants
- Lightning
- Flat batteries

The intelligent JVA series of energisers will self diagnose and report their status (See Errors and Error Codes) on the LED and LCD displays.

6.1 Moisture and Ants

Moisture and Ants should not be a significant problem for the JVA range of energisers as they come in a weatherproof case. Still, where possible, keep the energiser protected from the weather.

6.2 Lightning

The JVA range of energisers is covered with a three-year warranty that excludes Lightning. Surge protection components inside the energiser 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 Flat Batteries

The JVA series of energisers require a battery that is in good condition to run correctly. The energiser will protect the battery by slowing down and eventually stopping altogether as the battery charge is depleted. For best results, check on the energiser at regular intervals. If you are not getting the expected life from the battery consider having it checked by an auto electrician.

The JVA series of energisers indicate a depleted battery by flashing the red Error LED twice (see “Parts of the energiser” above).

If the battery fails it should be recycled, not sent to land fill. Return it to the manufacture if unsure.

6.4 Battery Replacement (SV5/SV10 only)

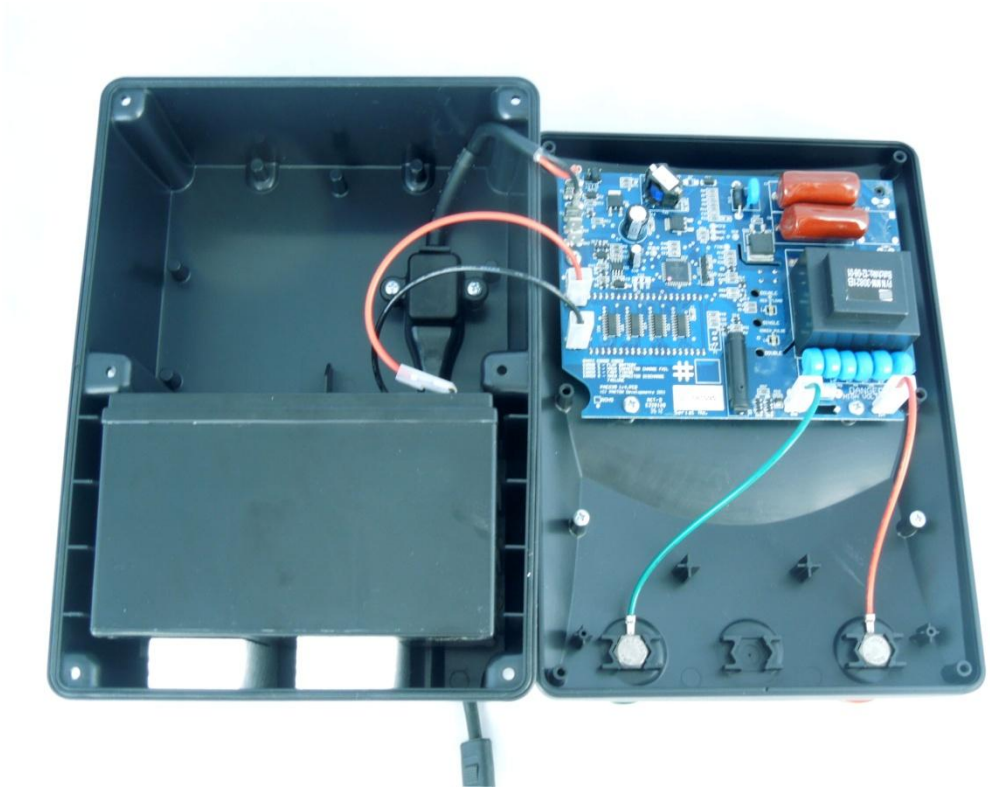
The JVA SV series of energisers contain a sealed lead-acid (SLA) battery that is charged by the solar panel. If the unit indicates a depleted battery is will flash the red error LED twice. The unit should be turned off and placed in full sun for 2 to 3 days to allow the battery to fully charge.

If after this time the unit still indicates a depleted battery, or the life of the battery is reduced, the battery may be damaged or at the end of its life and should be replaced.

To replace the battery

1. Place the unit with the solar panel flat on a smooth surface. Unplug the solar panel from the unit. Remove the six screws attaching the solar panel to the solar panel bracket.
2. Next place the unit face down. Remove the three screws attaching the bracket to the unit. Remove the six screws securing the case back to the front of the unit.
3. Hold the front and back of the unit together and turn the unit over. Gently separate the front from the case back and place the front face down to the right of the case back.
4. Inside you will see the battery. Disconnect the red and black battery leads from the battery. Remove the battery and replace it with an equivalent 12V SLA battery of the same dimensions.
5. Re-attach the battery leads, being careful to connect red to positive and black to negative.
6. Re-assemble the unit by performing the above steps in reverse.

Replacing the battery should only be performed if you are confident with the steps as described. If performed correctly it will not affect the warranty. However, any damage to the unit caused during battery replacement, particularly swapping the battery leads, or physical damage to the circuit board, will void the warranty.



Notes:

- The battery must be a rechargeable sealed lead acid battery, never use non rechargeable batteries.
- The battery should last up to 5 years depending on average temperature and usage. Are you sure it needs replacing?
- Lead acid batteries should be recycled, not sent to land fill. Send it back to the manufacturer if unsure.
- If you don't feel confident in changing the battery, or can't find the correct replacement please call us, for a small fee we will be happy to service your unit.

6.5 Errors and Error Codes

The JVA energiser 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.

Error Code #	Red LED Flashes	LCD Display	Meaning
2	2	Battery symbol & "Lo b"	Flat Battery: the energiser will recover and re-start when the battery is recharged.
3	3	"Er 03"	Charging failure
4	4	"Er 04"	Fast Pulsing
5	5	"Er 05"	Discharge failure
6	6	"Er 06"	High battery: the energiser will re-start when the battery voltage is supplied.
7	7	"Er 07"	EEPROM write failure
8	8	"Er 08"	Self-calibration failure – insufficient output
9	9	"Er 09"	Self-calibration failure – insufficient capacitor charge
10	10	"Er 10"	Capacitor failure, charged too quickly
11	11	"Er 11"	Calibration error, voltage reading too low for fence conditions
21	n/a	"Er 21"	Opto-coupler failure

For errors 3 and 5 the energiser will try and recover these three errors which are classed as severe errors. This automatic recover process will occur at 7 minute intervals. Error 4 is classed as a fatal error. The energiser will not attempt to automatically restart due to safety concerns. Errors 2 and 6 indicate the battery voltage is either too low or too high.

The energiser 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 energiser. 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

- Insufficient ‘earth’
- Shorts on the fence

For tips on fence construction please see an Electric Fencing Manual.

7.1 Testing the ‘Earth’

The ‘earth’ is essential to all electric fence systems. Larger energisers require more earth rods. Additionally, all energisers require a low resistance wired connection from the energiser earth terminal to the earth rod.

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 volt meter or a JVA Electric Fence Fault Finder (do not use a standard multimeter) check what the voltage is at the earth terminal of the energiser. In general you should see 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 installation and connection of electric fences in Australia as required under AS60335.2.76

8.1 Definitions

Connecting lead — an electric conductor, used to connect the **energiser** to the **electric fence** or the **earth electrode**

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 **energiser**

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 **energisers** or from independent fence circuits of the same **energise**r. 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 2 m. If this gap is to be closed, this shall be affected by means of electrically non-conductive material or an isolated metal barrier.
4. Barbed wire or razor wire shall not be electrified by an **energiser**.
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.
    1. The size of the warning sign shall be at least 100 mm x 200 mm.
    2. 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:
        a) the symbol of Figure 1, or
        b) the substance of TAKE CARE – ELECTRIC ANIMAL FENCE.
    3. The inscription shall be indelible, inscribed on both sides of the warning sign and have a height of at least 25 mm.

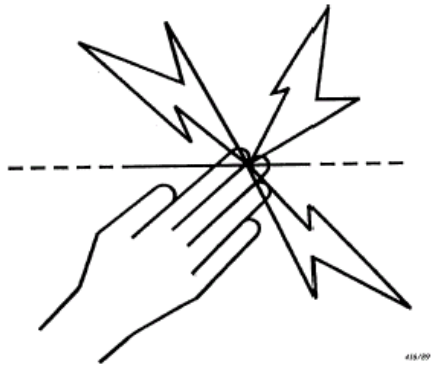


Figure 1 – Warning plate symbol

6. The **energiser earth electrode** shall penetrate the ground to a depth of at least 1 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 3.

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

Table 1 – 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.

8.3 Particular requirements for electric animal fences in Australia

1. A distance of at least 10 m shall be maintained between the **energiser earth electrode** and any other earthing system connected parts such as the power supply system protective earth or the telecommunication system earth.
2. **Electric animal fences** intended for deterring birds, household pet containment or training animals such as cows need only be supplied from low output **energisers** to obtain satisfactory and safe performance.
3. 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.
4. 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 150 mm from the vertical plane of the non-electrified wires. The barbed wire and razor wire shall be earthed at regular intervals.
5. 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.

8.3.1 PROHIBITED MOUNTING

Electric fence conductors should not be mounted on a support used for any overhead power line.

9 Warranty

9.1 For Assistance

If you have any questions or need further assistance, please call a JVA sales representative, service department on the relevant number below, or email us at: sales@jva-fence.com.au For more information on our complete range of electric fencing products please see the JVA website: www.jva-fence.com.au

Region	Phone
Australia	07 3103 0582
South Africa	0861 782 349
Other	+61 7 3103 0582

9.2 Service or Repairs

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

Australian Distributors

Ken Skerman
Aussie Tuff Liners & Tanks
36 Merrol Street
Highfields QLD 4352
Ph: 07 4696 8244
Fax: 07 4696 8029
Email: kskerman@bigpond.net.au

Neil McQuinn
McQiunns Agencies
121 Forrest Street
Beverley WA 6304
Ph: 08 9647 2062
Fax: 08 9647 2062

South African Distributors

46 Montrose Drive,
Pietermaritzburg
KwaZulu Natal

7 Suffert St.
Pinetown
KwaZulu Natal

Unit 6 Viking Business Park
Viking Way, Epping Industria,
Cape Town. Western Cape

977 Voortrekker St.
Wonderboom South
Pretoria
Gauteng

14 Kelly Rd
Jet Park
Boksburg
Gauteng

19A Suez Street
Nirvana
Polokwane
Limpopo

Unit D1, Waterfall Park
15 Rapid Street
Riverside Industrial Park
Nelspruit
Mpumalanga

45 Mangold Street
Newton Park
Port Elizabeth
Eastern Cape

4a Monument Rd
Oranjesig
Bloemfontein
Free State

174 Bernie Street
Kya Sands
Randburg

602 Ondekkers Road
Delarey
Roodepoort

For more information on our range of electric fencing products, please see the JVA website: www.jva-fence.com.au

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