

# **FenceMate**

## ***Electric Fence Energizer***

*Mains Powered Models*

*FM M50, M75, M100*

*Battery Powered Models*

*FM B50, B75, B100*

## **Instruction Manual**

***FenceMate, Inc.***

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### Warning: Read all instructions !

If you suspect that the product is not working, follow steps below:

1. Disconnect the unit from the fence.
2. Check the indicator light is flashing.
3. Check that the voltage between the fence and ground terminals is greater than 2000 V, using a fence tester, or FenceMate Digital Volt Mate or Fence Doctor.
4. If these testings are OK, you have an installation problem. Please contact us at [info@fencemate.com](mailto:info@fencemate.com) for any problem you have, we will respond within 24 hrs on working days.

## ***1. Mains powered fence energizers***

- Suitable for electric wire fencing or net fencing, for containment of poultry, livestock, hobby animal
- Indoors or dry location (shelter, box) installation of energizer with 110/120V, 60Hz (or 220-240V, 50Hz in Europe) line connection
- Compact, sealed structure, easy erection with hanging holes on the back of the unit, slide the unit onto screw or nail with the holes on the back for installation
- Indicator light flashes and shows pulse condition
- A temporary ground (earth) rod is included, better with ground rod at length > 100 cm, if possible
- Lightning protection, double insulation

## ***2. Battery powered fence energizers, DC 12 V***

- The unit can be mounted directly onto a wooden post, or other suitable vertical support. Slide the unit onto screw or nail with the holes on the back for installation
- Connect the fence output terminal (red) to the fence line, and connect ground terminal (black) to a ground (earth) rod, better with a ground rod with length > 100 cm, if possible
- Connect the unit to a 12V battery, attach the “+” (red) clip to the positive terminal of the battery, and the “-” (black) clip to its negative terminal. The pulse indicator light flashes each time the unit pulses.
- To prevent damage caused by stock interference and bad weather, house the battery and the unit in

protective enclosures.

### ***Cautions***

- When you connect the 12V battery, be careful not to short-circuit the supply terminals.

### ***Battery Information***

- Use a 12 V rechargeable lead-acid battery.
- Do not dispose of the battery in a land-fill or in a fire.

### ***Battery Charging***

Do not attempt to recharge a non-rechargeable battery.

- When recharging a battery, ensure that there is adequate ventilation to allow gases to disperse.
- The battery must be disconnected from the unit before connecting it to a battery charger.

Regular recharging of battery is essential. Use a suitably rated battery charger and refer to the recommendations from battery manufacturer.

### 3. *Parts of mains & battery powered fence energizer*



#### *Mains powered*



## *Battery powered*



#### 4. Product Data (US & Canada)

	FM M50	FM M75	FM M100
Output Energy	0.5 Joule	0.75 Joule	1 Joule
Stored Energy	0.7 Joule	1 Joule	1.4 Joules
Input Power, A/C	110/120V, 60 Hz	110/120V, 60 Hz	110/120V, 60 Hz
Output Voltage, Peak	10 kV	10 kV	10 kV
Output Voltage, 500 $\Omega$ Load	5.1 kV	5.5 kV	5.6 kV
Effective Fence Length, Average (multi wire, low vegetation)	1.5 Miles / 6 Acres	2 Miles / 8 Acres	2.5 Miles / 10 Acres

	FM B50	FM B75	FM B100
Output Energy	0.5 Joule	0.75 Joule	1 Joule
Stored Energy	0.7 Joule	1 Joule	1.4 Joules
Input Power, D/C	13.6 V	13.6 V	13.6 V
Output Voltage, Peak	10 kV	10 kV	10 kV
Output Voltage, 500 $\Omega$ Load	4.8 kV	4.9 kV	5.0 kV
Effective Fence Length, Average (multi wire, low vegetation)	1.5 Miles / 6 Acres	2 Miles / 8 Acres	2.5 Miles / 10 Acres

\* Estimation only, subject to type and resistance of wires, number of fence wires, vegetation on fence, animal or livestock intensity level, etc.

\* Above length is estimated on basis of steel or aluminum wire, if with poly wire, rope, braided, tape, netting, approx. half of above length is left.

#### 4. Product Data (EU, UK, AU, NZ)

	FM M50	FM M75	FM M100
Output Energy	0.5 Joule	0.75 Joule	1 Joule
Stored Energy	0.7 Joule	1 Joule	1.4 Joules
Input Power, A/C	220-240V, 50 Hz	220-240V, 50 Hz	220-240V, 50 Hz
Output Voltage, Peak	10 kV	10 kV	10 kV
Output Voltage, 500 $\Omega$ Load	5.5 kV	6.0 kV	6.5 kV
Effective Fence Length, Average (multi wire, low vegetation)	2 km	3 km	4 km

	FM B50	FM B75	FM B100
Output Energy	0.5 Joules	0.75 Joules	1 Joules
Stored Energy	0.7 Joules	1 Joules	1.4 Joules
Input Power, D/C	13.6 V	13.6 V	13.6 V
Output Voltage, Peak	10 kV	10 kV	10 kV
Output Voltage, 500 $\Omega$ Load	4.8 kV	4.9 kV	5.0 kV
Effective Fence Length, Average (multi wire, low vegetation)	2 km	3 km	4 km

- \* Estimation only, subject to type and resistance of wires, number of fence wires, vegetation on fence, animal or livestock intensity level, etc.
- \* Above distance is estimated on basis of steel or aluminum wire, if with poly wire, rope, braided, tape, netting, approx. half of above length is left.

## 5. Symbols



Fence ground terminal

Connect the fence ground terminal to the ground system.



Fence output terminal

Connect the fence output terminal to the fence



Risk of electric shock



Read full instruction before use.



This symbol on the product or its package indicates that this product must not be disposed of with other waste, instead, it's your responsibility to dispose of your waste equipment by handling it over to a designated collection point for recycling of waste electrical / electronic equipment.



This energizer has a double-insulated construction

## Warnings

- Switch the energizer off before installation or performing any work on the fence.
- Read the safety construction carefully.
- Check your installation to ensure that it complies with all local safety regulation.
- Risk of electric shock ! Do not connect simultaneously to a fence and any other device such as a cattle trainer or poultry trainer. Otherwise, lightning striking your fence will be conducted to all other devices.

- USA and Canada. To reduce the risk of electric shock, the energizer's power adapter may have polarized plug (one blade is wider than the other), this plug will fit in a polarized outlet one way.

### ***Notes***

- This product has been designed for use with electric animal fence.
- Keep instruction manual in a handy location.

### ***6. Limited warranty***

This product is warranted against faulty materials and workmanship for a period of 12 calendar months from date of purchase, this warranty does not cover defect caused by:

- Physical mishandling
- Incorrect input voltage or polarity
- Damage to external wiring
- Water immersion
- Battery leakage or chemicals
- Vermin or insect damage
- Lightning strike

If any warranted defect occurs during the warranty period, return the product with proof of purchase to your dealer, distributor, or directly to manufacturer.

This product as been made to comply with international safety standards.

## ***Appendix***

### ***Definition of terms***

Electric fence energizer/charger/unit - An appliance that is intended to periodically deliver voltage impulse to a fence connected to it.

Fence - A barrier for animals or for the purpose of security, comprising one or more conductors such as metal wires, rods or rails.

Electric fence - A barrier that includes one or more electric conductors, insulated from ground, to which electric pulses are applied by an electric fence energizer.

Ground electrode - Metal structure that is driven into the ground near an electric fence energizer and connected electrically to the output fence ground terminal of the electric fence energizer, and that is independent of other grounding arrangements.

Connecting lead – An electric conductor, used to connect the electric fence energizer to the electric fence or the ground electrode.

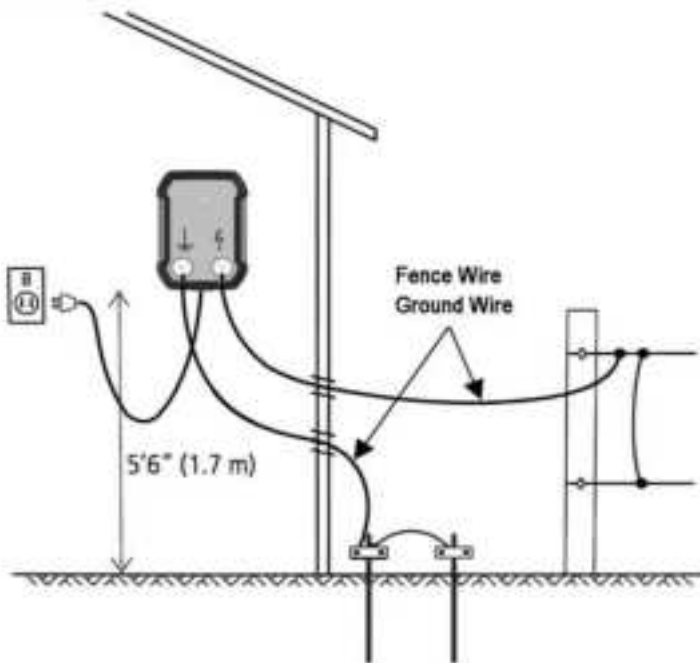
### ***Installation***

#### ***Warning!***

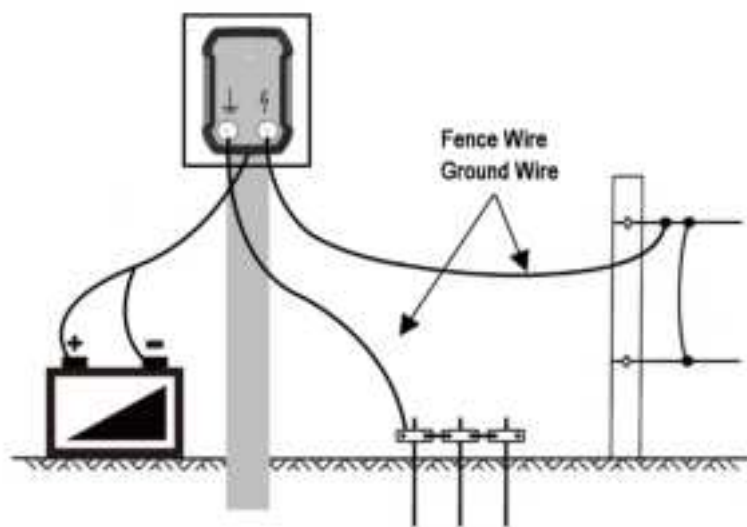
- Disconnect power before making changes to fence or ground wiring.
- Mount out of reach of children.
- 1 Connect the fence output terminal to the fence.

- 2 Connect the fence ground terminal to a separate ground system that is at least 33' (10 m) away from other ground systems.

*Indoors /Dry location with AC 110-120 V, 220-240V*

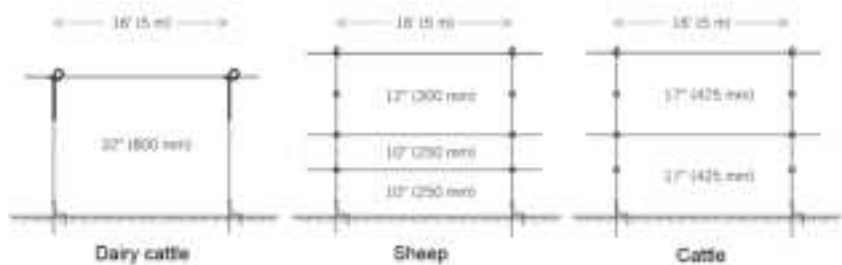


*Outdoors with DC 12V Battery*



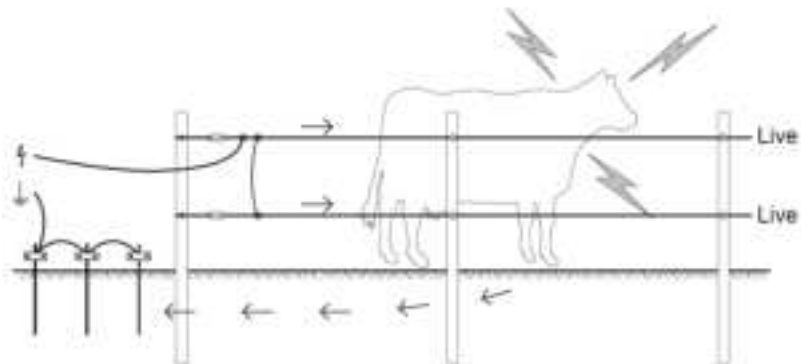
## ***Building an electric fence***

### *Recommended wire spacing*



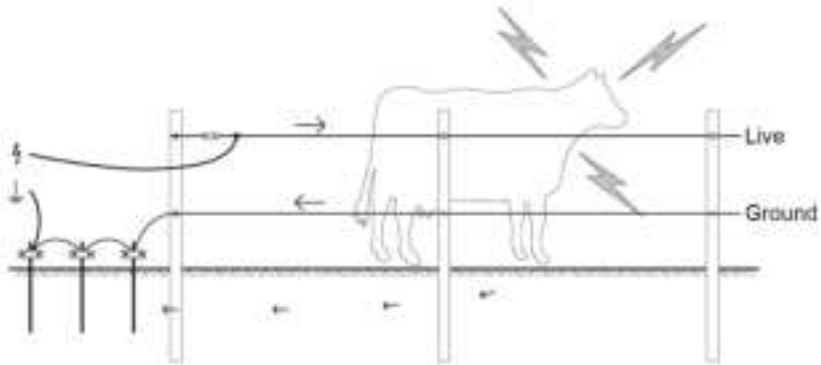
### *Grounding a fence*

#### *All live fence*



For most soil types. The animal receives a shock when it completes a circuit between the fence and the ground system. The fence above has all live wires and requires conductive soils

### *Ground wire return fence*



For dry, sandy or frozen ground conditions, where soil conductivity is low. The animal receives a shock when it completes a circuit between a live wire and a ground wire. The fence above has both live wires and ground wires (not insulated to the post). The ground wire is connected back to the grounding system.

### *Installing and testing a ground system*

Select a suitable site for the ground system. Site need to be:

- At least 33" (10 m) from other ground systems (e.g. telephone, 110-240V power supply or the ground system from another electric fence energizer).
- Away from stock or other traffic that could interfere with the installation.
- At a site that can be easily observed for maintenance.
- Ideally at a site that has damp soil (e.g. a shaded or swampy location). Note that the ground does not need to be directly adjacent to the electric energizer installation.

Drive ground rods into the soil. Use high-voltage, insulated cable and ground clamps continuously connect the ground rods and the energizer's fence ground terminal. Make sure the insulation is stripped back to ensure good contact between the wire and the ground rod.

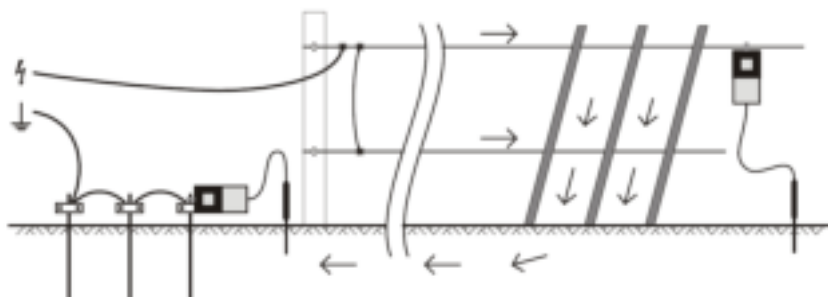
For an all live fence only, test the ground system using the following procedure:

1. Turn off the electric fence energizer
2. At least 330' (100 m) away from the electric fence energizer, short-circuit the fence by laying several steel rods or lengths of pipe against the fence. For best results, the fence voltage should be lowered to 2 kV or less. In dry or sandy condition, it may be necessary to drive the rods up to 12" (30 cm) into the ground.

*Note:* It is not acceptable to short circuit a ground wire return system to the ground wire of the fence.

3. Turn the electric fence energizer back on.
4. Using a digital voltmeter, ensure that the fence voltage is below 2 kV
5. Check your ground system. Insert the voltmeter's ground probe into the ground at the full extent of the lead, and hold the other terminal against the last ground rod. The tester should not read more than 0.3 kV. Anything higher than this indicates that better grounding is required. Either add more ground rods or find a better ground area to drive in the ground rods.

*Note:* When ground electric fence energizer located in dairies, ground at least 65' (20 m) away from the dairy using double-insulated wire to avoid touching the dairy building or equipment.



### ***Safe electric fence construction***

***Warning !*** Read before use

An electric fence can be hazardous when there is a risk of entrapment or entanglement, or other hazards exist. Serious injury or death may result. Take all steps to avoid the risk of entrapment or entanglement. This safety information should be read in conjunction with Requirements for electric animal fences.

### **Hazards**

1. Do not climb through or under an electric fence. If it is necessary to cross an electric fence use a gate or specially designed crossing point.

2. Do not allow young or infirm persons to use this electric fence energizer without supervision, Do not allow young children to play with this energizer or near an electric fence or electrified wire.
3. Do not electrify barbed wire.
4. Do not support off-set electrified wires less than 6" (15 cm) from a barbed wire fence.
5. Do not electrify any fence construction which could lead to entanglement of persons or animals. We recommend for instance that on more than one electrified off-set wire be supported on either side of a barbed wire or mesh fence.
6. Do not supply an electric fence from two energizers.
7. Do not allow electrified wires from two energizers on the same or adjacent properties to be less than 6'6" (2 m) apart.
8. Do not place energizer ground electrodes within 33' (10 m) of any part of a power supply ground system or telecommunications ground system.
9. Do not run electric fence wires above or close to overhead power or communication lines.

### *Duty to the public*

Fasten warning signs to electric fence posts or wires at frequent intervals along any public road or pathways. Incorporate a non-electrified gate or stile where an electric animal fence crosses a public pathway and fasten warning signs to fence posts or wires adjacent to the crossing.

### ***Requirements for electric animal fences***

Electric animal fences and their ancillary equipment shall be installed, operated and maintained in a manner that minimizes danger to persons, animals or their surroundings.

Warning ! Avoid contacting electric fence wires especially with the head, neck or torso. Do not climb over, through or under a multi-wire electric fence. Use a gate or a specially designed crossing point

This electric fence energizer is not intended for use by person (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the unit by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the energizer.

Electric animal fence constructions that are likely to lead to the entanglement of animals or persons shall be avoided.

An electric animal fence shall not be supplied from two separate electric fence energizers or from independent fence circuits of the same electric fence energizer.

For any two separate electric animal fences, each supplied from a separate electric fence energizer independently timed, the distance between the wires of the two electric animal fences

shall be at least 8' (2.5 m). 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 electric fence charger.

A non-electrified fence incorporating barbed wire or razor wire may be used to support one or more offset 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 6" (15 cm) from the vertical plane of the non-electrified wires. The barbed wire and razor wire shall be grounded at regular intervals.

A distance of at least 33' (10 m) shall be maintained between the electric fence energizer ground electrode and any other grounding system connected parts such as the power supply system protective ground or the telecommunication system ground.

Connecting leads that are run inside buildings shall be effectively insulated from the grounded 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 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 vehicle

wheels sinking into the ground.

Connecting leads shall not be installed in the same conduit as mains supply wiring, communication cables or data cables.

Connecting leads and electric animal fence wires shall not cross above overhead power or communication lines.

Crossings with overhead power lines 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 animal fence wires are installed near an overhead power line, the clearances shall not be less than those shown in the table below.

Minimum clearances from power lines for electric animal fences:

<u>Power line voltage</u>	<u>Distance</u>
< 1000V	10' (3 m)
> 1000 to 33,000V	13' (4 m)
> 33,000V	27' (8 m)

If connecting leads and electric animal fence wires are installed near an overhead power line, their height above the ground shall not exceed 10' (3 m). This height applies to either side of the orthogonal projection of the outermost conductors of the power line on the ground surface, for a distance of:

- 6'6" (2 m) for power lines operating at a nominal voltage not exceeding 1000V.
- 50' (15 m) for power lines operating at a nominal voltage exceeding 1000V.

Electric animal fences intended for deterring birds, household pet containment or training animals such as cows need only be supplied from low output electric fence energizers to obtain satisfactory and safe performance.

In electric animal fences intended for deterring birds from roosting on buildings, no electric fence wire shall be connected to the electric fence energizer ground electrode.

A warning sign shall be fitted to every point where persons may gain ready access to the conductors.

Where an electric animal fence crosses a public pathway, a non-electrified gate shall be incorporated in the electric animal fence at that point or a crossing by means of stiles shall be provided. At any such crossing, the adjacent electrified wires shall carry warning signs.

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

- The size of the warning sign shall be at least 4x8" (100x200 mm).
- The background color of both sides of the warning sign

shall be yellow. The inscription on the sign shall be black and shall be either symbol or sentence "Warning: Electric Fence"



- The inscription shall be indelible, inscribed on both sides of the warning sign and have a height of at least 1" (2.5 cm).

Ensure that all line-operated, ancillary equipment connected to the electric animal fence circuit provides a degree of isolation between the fence circuit and the supply mains equivalent to that provided by the electric fence energizer.

Protection from the weather shall be provided for 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.

### ***Servicing***

See "repair service" below

## ***Frequently asked questions/Troubleshooting\***

### *How do I increase fence voltage?*

Sometimes recent extensions to your fence, a poor fence layout, or soil conditions may be causing inadequate voltage.

To check the electric fence charger, disconnect it from the fence and the ground system. Measure the voltage across the electric fence charger terminals with a digital voltmeter. If the voltage is less than 2 kV your electric fence charger may be faulty.

### *How do I locate faults?*

The most common cause of low voltage is faults on the fence line. Faults can be arcing faults that often make a clicking sound that can be heard when walking along a fence line. These are most often caused by faulty insulators or poor connections (loose clamps, tied wires or faulty cutout switches) and are normally fixed by replacing the faulty insulator or repairing the faulty connections. Note: Always use specially made joining clamps or crimps to secure wire to wire connections on the fence line.

Another fault type is a short circuit fault. This fault occurs when a live fence wire becomes connected in some way to the ground. A short circuit fault wastes the power of the electric fence energizer by drawing energy away from where it is needed, the fence line. A common cause of short circuit faults is vegetation touching the live wires.

Regular clearing of vegetation from the fence line will enhance

your electric fence energizer's performance. The best method to locate a short circuit fault is to use a special fault finder. These products save considerable time by directing you straight to the fault.

Another tool used to locate faults is a digital voltmeter. When using a digital voltmeter, simply isolate sections of your fence by opening cut-out switches or otherwise disconnecting sections of the fence from the main lead out wire/s. Measure the voltage and determine whether the voltage has improved. If after disconnecting a section of the fence you record a significant improvement in fence voltage, it is likely that the fault is located in the section of fence that you have just isolated. Often a visual inspection of the faulty section will reveal the problem.

*There are no lights flashing on the electric fence energizer*

Check the power supply. If fence charger is connected to line power adapter, ensure that the power is switched on. Disconnect the power then reconnect the power 30 seconds later.

If fence energizer is connected to a 12V battery, ensure that the positive (red) clip is connected to the positive terminal on the battery and the negative (black) clip is connected to the negative terminal on the battery.

If the fence energizer's pulse light still does not flash, disconnect the battery then reconnect the battery 30 seconds later. Also, check the battery voltage.

### ***Caution***

1. This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
2. Children should be supervised to ensure that they do not play with the appliance.
3. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
4. The installation of electric fences (see above)
5. The means of connecting the energizer to the electric fence (see above)

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**Warning: Read all instructions !**

**If you suspect that the product is not working, follow steps below:**

1. Disconnect the unit from the fence.
2. Check the indicator light is flashing.
3. Check that the voltage between the fence and ground terminals is greater than 2000 V, using a fence tester, or FenceMate Digital Volt Mate or Fence Doctor.
4. If these testings are OK, you have an installation problem. Please contact us at [info@fencemate.com](mailto:info@fencemate.com) for any problem you have, we will respond within 24 hrs on working days.

## **Repair Service**

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