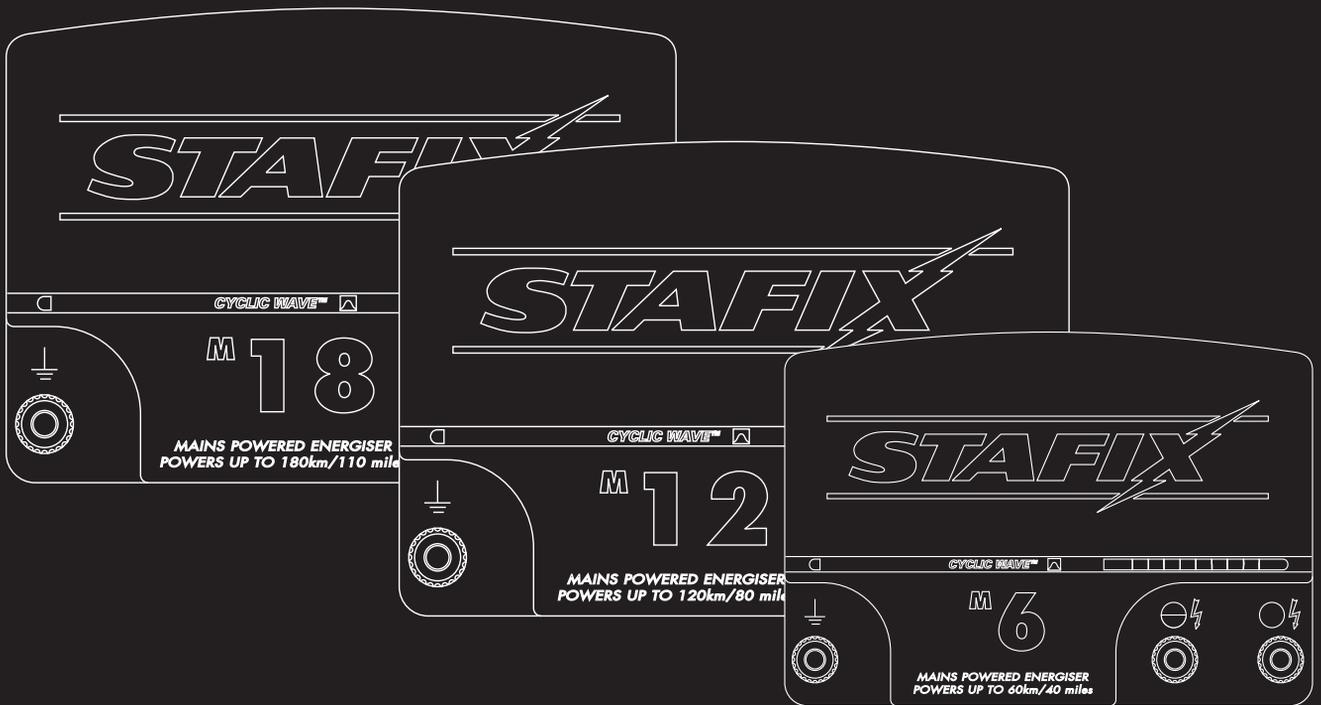




Instruction Manual

M6/M12/M18



CYCLIC WAVE



innovation
technology
performance
power

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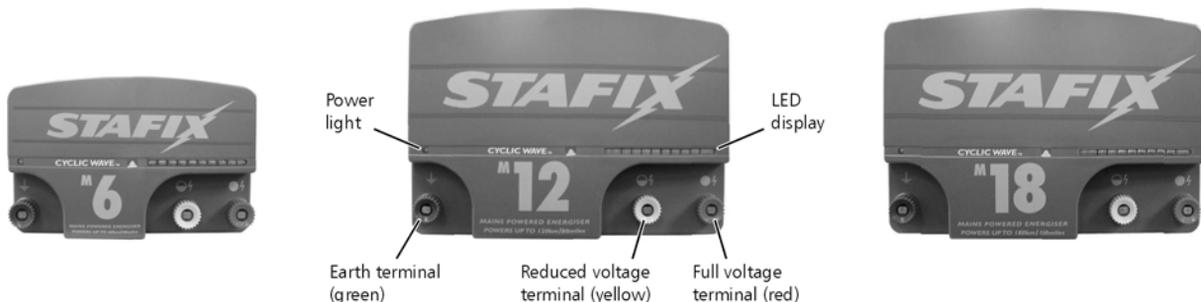
XED00109 (GB) Issue 1 10/03

Electric Fencing and your Energiser

Congratulations on your purchase of a Stafix Mains/Line energiser. This product has been constructed using the latest technology and

construction techniques. It has been engineered to give superior performance and many years of service.

It is important to carefully and thoroughly read these instructions. They contain important safety information and will assist you in ensuring that your electric fencing system gives maximum performance and reliability.



Explanation of symbols that may be on your energiser



Indicates that, to reduce the risk of electric shock, the energiser should be opened or repaired only by qualified Stafix-appointed personnel.



Read full instructions before use.



Indicates that the energiser is of a double-insulated construction.

How does an electric fence work?

An electric fence system comprises an energiser and an insulated fence. The energiser puts very short pulses of electricity onto the fence line. These pulses have a high voltage, but are of very short duration (less than 3/10,000ths of a second). However, a shock from an electric fence pulse is very uncomfortable and animals quickly learn to respect electric fences. An electric fence is not only a physical barrier, but is also a strong psychological barrier.

What are the benefits of an electric fence?

An electric fence has many benefits over conventional fencing:

- Requires less labour and material to construct than conventional fencing.
- Flexibility to change or add paddocks when

required. The use of strip grazing techniques can allow temporary fencing to be quickly and easily erected or removed.

- Controls a broader range of animals.
- Minimises damage to expensive livestock when compared with other fencing mechanisms, for example barbed wire.

Installation

- Read carefully all of the safety instructions in this manual before installing the mains/line energiser.
- The energiser must be located in a shelter, and the cable must not be handled when the temperature is below 5 °C.
- Mount the energiser close to a power outlet.

USA and Canada:

Warning! To reduce the risk of electric shock, the energiser has a polarised plug (one blade is wider than the other). This plug will fit in a polarised outlet one way. If the plug does not fit fully in the outlet, reverse the plug. If it still does not fit, contact a qualified electrician to install the proper outlet. Do not change the plug in any way.

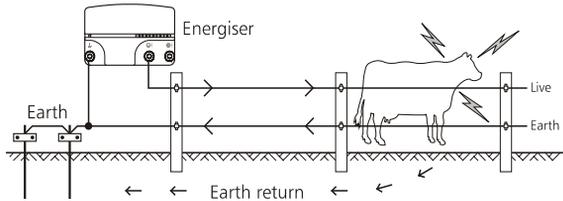
- Mount the energiser out of reach of children.

See the diagram below to install the energiser:

- 1 Connect the Earth terminal (green) to a separate earth system that is at least 10 m (33') away from other earth systems.

Alternative installation

For poor conductivity soils (dry or sandy), a 'fence-return' or 'earth-wire-return' system is recommended. On these fences the Earth terminal is connected directly to at least one of the fence wires. The animal gets maximum shock from touching a live and earth wire at the same time.

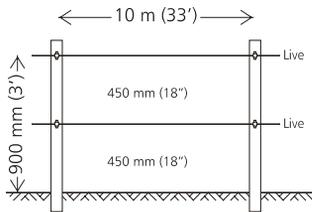


Fence designs

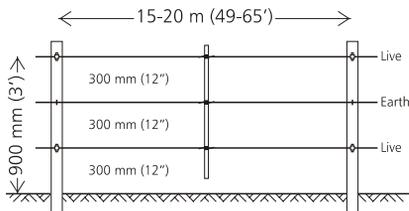
Fences can be constructed to suit the type of livestock and materials available. Discuss with your Stafix distributor which design best suits your needs. Some suggested fence configurations are below.

Cattle and horses

10-15 m (33-49') spacing, posts only

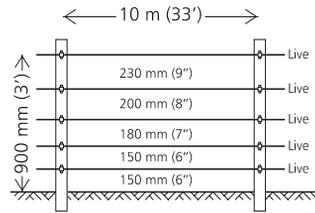


15-20 m (49-65') spacing with droppers

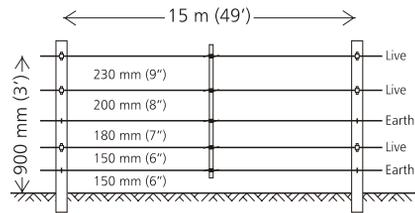


Sheep, goats, cattle and horses

10 m (33') spacing, posts only

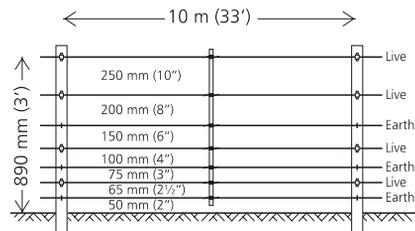


15 m (49') spacing with droppers



Wild animals

7 wire, 10 m (33') spacing with droppers



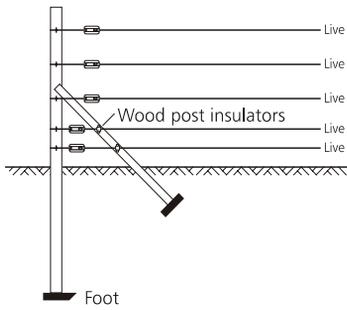
End assemblies

Angle stay

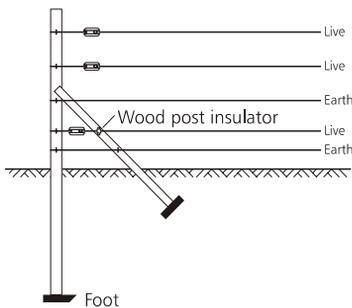
Suitable for field gate, high-tension strainer.

After firmly setting the footed strainer in the ground, dig in the stay block just below ground level, at a distance to ensure the angle stay will be held snugly in position. The stay can be levered into position with a spade.

All-live system



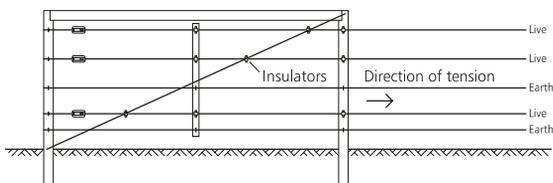
Earth-return system



Horizontal stay

Suitable for field gate, high-tension strainer.

Very simple to erect and most suitable as a high tension strainer, excellent in areas where the soil gets very wet or where heavy frost occurs.



Installing and testing an earth system

Select a suitable site for the earth system. Sites need to be:

- At least 10 m (33') from other earth systems (e.g. telephone, mains power or the earth system from another energiser).
- 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 earth does

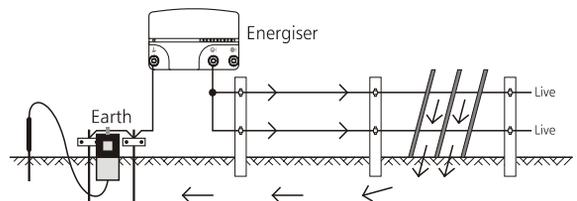
not need to be directly adjacent to the energiser installation.

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

The number of earth rods used will vary with the soil conditions. For larger energisers, at least six 2 m (6'6") earth rods are required. To ensure that an adequate number of earth rods have been used, test the earth system using the following procedure:

- 1 Turn off the energiser.
- 2 At least 100 m (330') away from the energiser, 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 2,000 V or less. In dry or sandy conditions, it may be necessary to drive the rods up to 300 mm (1') into the earth.
Note: It is not acceptable to short circuit a fence return system to the earth wire of the fence.
- 3 Turn the energiser back on.
- 4 Using a Stafix Digital Voltmeter (FSTDV2P), ensure that the fence voltage is below 2 kV.
- 5 **Check your earth system.** Insert the voltmeter's earth probe into the ground at the full extent of the lead, and hold the hook against the last earth rod. The tester should not read more than 0.3 kV. Anything higher than this indicates that better earthing is required. Either add more earth rods or find a better ground area to drive in the earth rods.

Note: When earthing energisers located in dairies, earth at least 20 m (65') away from the dairy using double insulated wire to avoid touching the dairy building or equipment.



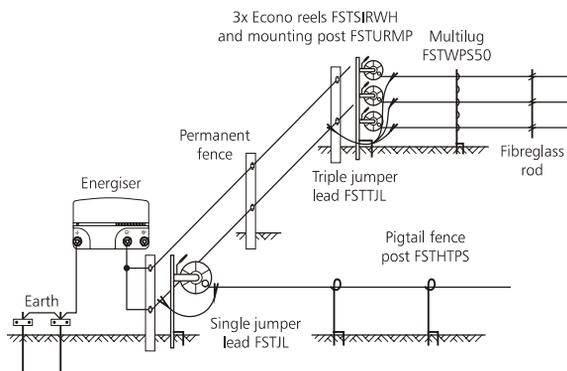
Temporary Electric Fencing

Stafix offers a range of products that allow the farmer to construct a temporary electric fence. A temporary fence that can be quickly erected and easily moved allows the farmer to:

- Make smaller paddocks (fields)
- Keep herds of animals separated
- Ration feed

Note: Use more wires for smaller animals and wild animals. Politape should be used when greater visibility is required (e.g. horses).

An example of a temporary fence is shown below.



Safety Considerations

Definition of special terms

Electric fence energiser – An appliance that is intended to periodically deliver voltage impulses 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 which includes one or more electric conductors, insulated from earth, to which electric pulses are applied by an energiser.

Fence circuit – All conductive parts or components within an energiser that are connected or are intended to be connected, galvanically, to the output terminals.

Earth electrode – Metal structure that is driven into the ground near an energiser and connected electrically to the output Earth terminal of the

energiser, and that is independent of other earthing arrangements.

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

Physical barrier – A barrier not less than 1.5 m (5') high intended to prevent inadvertent contact with the pulsed conductors of the electric fence. Physical barriers are typically constructed from vertical sheeting, rigid vertical bars, rigid mesh, rods or chainwire mesh.

Public access area – Any area where persons are protected from inadvertent contact with pulsed conductors by a physical barrier.

Pulsed conductors – Conductors which are subjected to high voltage pulses by the energiser.

Secure area – The side of an electric security fence where a person may come into contact with the electric fence, without the protection of a physical barrier.

Requirements for electric animal fences

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

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 energisers or from independent fence circuits of the same energiser.

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 (7'). 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 energiser.

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 150 mm (6") from the vertical plane of the non-electrified wires. The barbed wire and razor wire shall be earthed at regular intervals.

Follow our recommendations regarding earthing. See *Installing and testing an earth system* on page 4.

A distance of at least 10 m (33') 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.

Connecting leads that are run inside buildings shall be effectively insulated from the earthed structural parts of the building. This may be achieved by using insulated high voltage cable.

Connecting leads that are run underground shall be run in 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 the 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

Power line voltage	Clearance
≤1,000 V	3 m (10')
>1,000 ≤33,000 V	4 m (13')
>33,000 V	8 m (27')

If connecting leads and electric animal fence wires are installed near an overhead power line, their height above the ground shall not exceed 3 m (10'). 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:

- 2 m (7') for power lines operating at a nominal voltage not exceeding 1,000 V.
- 15 m (50') for power lines operating at a nominal voltage exceeding 1,000 V.

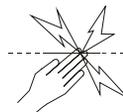
Electric animal fences intended for deterring birds, household pet containment or training animals such as cows need only be supplied from low output energisers to obtain satisfactory and safe performance.

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.

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 100×200 mm (4x8").
- 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:



or the substance of "CAUTION: Electric animal fence".

- The inscription shall be indelible, inscribed on both sides of the warning sign and have a height of at least 25 mm (1").

Ensure that all mains-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 energiser.

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.

Requirements for electric security fences

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

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

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

An electric security fence shall not be supplied from two separate energisers or from independent fence circuits of the same energiser.

For any two separate electric security fences, each supplied from a separate energiser independently timed, the distance between the wires of the two electric security fences shall be at least 2.5 m (9'). 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 energiser.

Follow our recommendations regarding earthing. See *Installing and testing an earth system* on page 4.

The distance between any electric security fence earth electrode and other earth systems shall not be less than 2 m (7'), except when associated with a graded earth mat.

Note: Where possible this distance should be at least 10 m (33').

Exposed conductive parts of the physical barrier shall be effectively earthed.

Where an electric security fence passes below bare power line conductors, the highest metallic element shall be effectively earthed for a distance of not less than 5 m (17') on either side of the crossing point.

Connecting leads that are run inside buildings shall be effectively insulated from the earthed structural parts

of the building. This may be achieved by using insulated high voltage cable.

Connecting leads that are run underground shall be run in 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 vehicle wheels sinking into the ground.

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

Connecting leads and electric security 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 security fence wires are installed near an overhead power line, the clearances shall not be less than those shown in the *table* on page 6.

If connecting leads and electric security fence wires are installed near an overhead power line, their height above the ground shall not exceed 3 m (10'). 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:

- 2 m (7') for power lines operating at a nominal voltage not exceeding 1,000 V.
- 15 m (50') for power lines operating at a nominal voltage exceeding 1,000 V.

A spacing of 2.5 m (9') shall be maintained between uninsulated electric security fence conductors or uninsulated connecting leads supplied from separate energisers. This spacing may be less where conductors or connecting leads are covered by insulating sleeving, or consist of insulated cables rated to at least 10 kV.

This requirement need not apply where the separately energized conductors are separated by a physical barrier that does not have any openings greater than 50 mm (2").

A vertical separation of not less than 2 m (7') shall be maintained between pulsed conductors fed from separate energisers.

Electric security fences shall be identified by prominently placed warning signs.

The warning signs shall be legible from the secure area and the public access area.

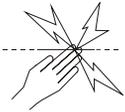
Each side of the electric security fence shall have at least one warning sign.

Warning signs shall be placed:

- at each gate
- at each access point
- at intervals not exceeding 10 m (33')
- adjacent to each sign relating to chemical hazards for the information of the emergency services

Any part of an electric security 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 100×200 mm (4×8").
- 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:



or the substance of "CAUTION: Electric security fence".

- The inscription shall be indelible, inscribed on both sides of the warning sign and have a height of at least 25 mm (1").

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

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

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.

Frequently Asked Questions/ Troubleshooting

What voltage is required to control animals?

4 kV is widely accepted as the recommended minimum voltage to control animals. However, you also require a well-constructed fence system to ensure that animals cannot push through electrified wires.

The fence voltage is below 4 kV. How do I increase the voltage?

Check the energiser. Disconnect the energiser from the fence and earth system. Measure the voltage across the energiser terminals with a Stafix Fence Compass, DVM or Lite Tester. If the voltage is less than 6 kV, request your Stafix service agent to check the energiser.

Check the energiser earthing. Use the procedure described in *Installing and testing an earth system* on page 4.

Check your fence system for faults. The most common source of low voltage is faults on the fence line.

If the fence, earth and energiser are in good condition and the voltage is still below 4 kV, talk to your Stafix distributor. They will help you identify whether recent extensions to your fence, a poor fence layout, or soil conditions may be causing inadequate voltage.

How do I locate faults?

The recommended tool for locating faults is the Stafix Fence Compass. This combined voltage and current meter allows you to rapidly locate sources of current leakage. Alternatively, use a Stafix DVM or Lite Tester. Use cut-out switches to turn off the power to different sections of the farm. If the voltage on the fence increases when a section of the farm is turned off, then investigate that section for possible faults.

The power light is not illuminated.

Check the power supply. Ensure that the power is switched on. If the energiser still does not operate, request your Stafix service agent to check the energiser.

There are no green lights, only red lights illuminating on the LED display

The green lights on the LED display represent the output voltage of the energiser. If no green lights illuminate when the energiser pulses, there may be faults on the fence line. See 'How do I locate faults?' above.

Servicing

This energiser contains no user serviceable parts. It must be returned to a Stafix-appointed service agent for repair. If the supply cord is damaged it must only be replaced by a Stafix-appointed service agent, as a special cord is required.

This energiser uses Double Insulation, where two systems of insulation are provided instead of grounding. No equipment grounding means is provided in the supply cord of a double-insulated

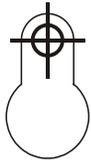
energiser, nor should a means for equipment grounding be added to the energiser. Servicing a double-insulated energiser requires extreme care and knowledge of the system and should only be done by qualified service personnel. Replacement parts for a double-insulated energiser must be identical to the

parts they replace. A double-insulated energiser is marked with the words DOUBLE INSULATION or DOUBLE INSULATED and/or the symbol below.



Product Specifications

	M6	M12	M18
115 V Models			
Power Supply	110-120 V, 60 Hz	110-120 V, 60 Hz	110-120 V, 60 Hz
Power Consumption	11 W	20 W	27 W
Maximum Output Voltage	up to 8.5 kV	up to 8.0 kV	up to 8.0 kV
Maximum Output Energy	6.7 J	12.0 J	18.0 J
Stored Energy	10.0 J	20.0 J	30.0 J
Dimensions (WxHxD)	100x175x270 mm (4x7x10½")	350x240x115 mm (13¾x9½x6")	350x240x115 mm (13¾x9½x6")
Weight (approximate)	3.6 kg (7 lb,15 oz)	7.3 kg (16 lb,2 oz)	7.8 kg (17 lb,3 oz)
230 V Models			
Power Supply	230-240 V, 50 Hz	230-240 V, 50 Hz	230-240 V, 50 Hz
Power Consumption	11 W	20 W	27 W
Maximum Output Voltage	up to 8.5 kV	up to 8.0 kV	up to 8.0 kV
Maximum Output Energy	6.7 J	12.0 J	18.0 J
Stored Energy	10.0 J	20.0 J	30.0 J
Dimensions (WxHxD)	100x175x270 mm (4x7x10½")	350x240x115 mm (13¾x9½x6")	350x240x115 mm (13¾x9½x6")
Weight (approximate)	3.6 kg (7 lb,15 oz)	7.3 kg (16 lb,2 oz)	7.8 kg (17 lb,3 oz)
Europe Models			
Power Supply	220-240 V, 50 Hz	220-240 V, 50 Hz	220-240 V, 50 Hz
Power Consumption	11 W	20 W	27 W
Maximum Output Voltage	7.9 kV	7.6 kV	8.0 kV
Output Energy at 500 Ω	4.5 J	4.0 J	4.8 J
Stored Energy	10.0 J	20.0 J	30.0 J
Dimensions (WxHxD)	100x175x270 mm (4x7x10½")	350x240x115 mm (13¾x9½x6")	350x240x115 mm (13¾x9½x6")
Weight (approximate)	3.6 kg (7 lb,15 oz)	7.3 kg (16 lb,2 oz)	7.8 kg (17 lb,3 oz)



M6 65 mm
←————→
M12, M18 100 mm

M6 65 mm
←————→
M12, M18 100 mm

↑
M6 130 mm **M12, M18** 200 mm
↓





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