

# Sureguard Possum Barrier

25m Roof & Fence Barrier Kit



75m Galvanized Wire & 2 x 1m High Voltage Cable

10 Brackets (2 x 5)



10 Brackets (2 x 5)



Item Code  
300





## How Does the Pingg-String Fence Work?

The purpose of an electronic fence is to keep animals within an area, or prevent undesired animals from entering a property. High voltage electrical impulses are applied to the fence wire to make it "live". This impulse lasts only thousandths of a second but is repeated at 150 pulses per minute. An animal that strays into contact with the fence wire completes an electrical circuit. The circuit can be completed between the live wire and the soil or by having several wires that are alternately made live and earthed. The electrical pulse produces a muscle contraction which is sufficiently unpleasant to cause the animal to avoid the wires.

## How Do I Operate the Pingg-String Energizer?

### Power Source:

Firstly decide what sort of power source you need. For portable use you can use either non-rechargeable alkaline batteries, or rechargeable NiCad's or NiMH batteries. The battery compartment on the back of the case holds two "AA" size batteries. For permanent installations you should purchase the power adapter model PA12V (Item # 210 available separately from Sureguard and its distributors). You do not need batteries if you are running off this adapter. However, if you want to use the in-built timer feature to switch the energizer on and off at predetermined times then you must also place some rechargeable batteries into the energizer as a backup during mains power failures. CAUTION: 1/ To avoid damaging the energizer do not use non-rechargeable batteries together with the power adapter. 2/ Input voltage range is 11 to 16 volts. 3/ Power Adapter is NOT weatherproof (but the energizer is). 4/ Operating time on "AA" rechargeable batteries of 2000mAh rating is 55 hours. In stand-by mode the batteries will last 3000~4000 hours.

### Manual ON/OFF:

Secondly, decide if you want to operate the energizer continually or by using the in-built timer. For most situations you will want to energize the fence wire continually. In this case you simply switch the energizer on or off by pressing the front panel switch.

### Timer Controlled ON/OFF:

The timer has two operating modes. 1/ *24-hour operation*, and 2/ *7-day operation*. 24-hour operation has only one on-time and one off-time. The energizer will switch at these times every day. For 7-day operation you can choose up to 7 on and off times. Each setting can be at any time on any day or have several entries on the one day. The cycle repeats every 7 days.

Prior to setting the timer you must set the clock. The clock should be reset at 12 noon; the clock will keep time from this noon reference point. If you only use the 24-hour timer then you can set the clock on any day of the week because each day is handled the same way. If you want to use the 7-day timer then choose a particular day to reset the time, for example 12 noon Sunday. Remember the day you use because occasionally you will need to reset the timer to adjust for drifting of the clock over time.

### How to Enter & Select Functions:

The front panel switch not only provides ON/OFF operation but also gives access to the 12 in-built functions. To select a function you should press and hold the switch closed until the front panel light glows brightly. Then immediately press the number of times for the function you want to select. These functions are:

- 1/ Report an error message.
- 2/ Report the state of charge of the battery.
- 3/ Report the present output voltage.
- 4/ Report the minimum fence voltage.
- 5/ Report the maximum fence voltage.
- 6/ Record a timer ON time.
- 7/ Record a timer OFF time.
- 8/ Reset the clock to 12 noon Sunday.
- 9/ Activate the timer control.
- 10/ De-activate the timer control.
- 11/ Clear all timer settings.
- 12/ Set timer control to 24-hour operation.
- 13/ Cancel this entry.

### These Functions in More Detail:

- 1/ Error Message:** If the device detects a problem it will emit a pulsating beep noise about every 5-seconds. This noise will continue while the problem exists. To discover the nature of the problem select this function after which the device will beep a number of times to indicate the type of error. Count the number of beeps. Their meaning is as follows:
  - 3-Beeps: The output voltage has been low for a prolonged period. Probably indicating shorted wires. Find the fault on the fence and rectify it.
  - 4-Beeps: The internal battery is nearly exhausted. Recharge or replace.
  - 5-Beeps: (solar models) Solar panel orientation is incorrect or panel is experiencing shading. Rechargeable batteries could also be old.
  - 6-Beeps: The output voltage keeps going low. Probable an intermittent fault.
  - 7-Beeps: Device malfunction. Contact the manufacturer.
- 2/ State of Charge of Battery:** Count the number of beeps. The number will be 1-10 meaning 10% to 100% charge. Batteries need 12 hours to charge. Readings are only accurate if charging has ceased for at least 1-hour.
- 3/ Output Voltage:** Will report the present fence voltage. Two groups of beeps are sounded. Count each group. These represent two digits. For example: if you counted 4 beeps followed by 2 beeps this would represent 4.2kV. kV meaning kiloVolts. i.e. 4.2kV is 4200Volts. Typical figures will depend of fence design but could be from 3.5kV to 9.5kV. The alarm is triggered at <3.5kV.
- 4/ Minimum Output Voltage:** Reports the minimum fence voltage since midnight (that is if the clock has been set), or from the last time a reading was taken (whatever period is shortest). Small fluctuations will naturally occur over a 24-hour period. Large fluctuations can indicate intermittent faults or aged fence components. NOTE: To measure the un-loaded voltage of the energizer disconnect the live fence wire. However, it is important to connect the energizer's earth terminal to the fence earth, otherwise the reported minimum voltage will be incorrect.
- 5/ Maximum Output Voltage:** Reports the maximum fence voltage in a similar way to the minimum. This reading gives you a reference point for interpreting the minimum reading.
- 6/ Record an ON Time:** Refer to the example below for the exact sequence of setting the timer. This function sets a start time and the energizer will start generating output. The timer must be activated to allow operation.
- 7/ Record an OFF Time:** Ditto. This function sets a stop time and the energizer will cease generating output. NOTE: The clock records times in steps of 10 minutes. Therefore, control of the ON/OFF time will be +/- 5 minutes. Durations less than 5 min are not recorded.
- 8/ Reset Clock:** Perform this operation at 12-noon Sunday. The internal clock is set to this time. If the ON/OFF times start to drift over the next few months then reset the clock to realign the times. If power is lost to the device (power failure or changing batteries) the device will restart at the last remembered time. For example, if the power went off for 1 hour the clock will be 1-hour behind.
- 9/ Activate the timer:** When ON/OFF times have been recorded there may be instances when you want to switch the device off. Pressing the front panel switch will turn the device ON and OFF but if the timer has been activated then the timer mode will still be active when you switch the device back ON. This option allows you to activate (or de-activate see 10) the timer to bring the device under full manual control. Any timer settings that were entered are not changed. NOTE: If the you activate the timer the energizer may not start operation immediately. It will wait until the next ON time. If you select Activate Timer and no times are currently recorded the device will give an error beep to indicate this. The indicator light will now start glowing.
- 10/ De-activate the Timer:** De-activating the timer brings the energizer back into manual control. IMPORTANT: How do you know if the device is currently in timer mode or manual mode? In timer mode the indicator light glows continually with an additional flash when an output pulse is generated. In manual mode the light does not glow but it will still flash when output pulses are generated.
- 11/ Clear All Timer Settings:** All seven timer ON/OFF times are cleared. The timer is de-activated. The timer mode reverts to the default 7-day timer.
- 12/ 24-Hour Timer Control:** Selects 24-hour timer control. Once selected 24-hour control is selected, if you want to change times or revert to the 7-day timer you must clear the timer settings (#11)..
- 13/ Cancel:** If you press the switch the wrong number of times and want to cancel then just keep pressing.

**Error Beeps:** This is a brief low pitched beep indicating that the selected function is not available or requires further attention.

### Step-by-Step Example of Setting the Timer:

- 1/ Set the clock using function #8.
- 2/ Select function #9 to enter timer mode. The indicator light will start to glow.
- 3/ At the time of day you want to start the energizer, select function #6. The device will start generating output.
- 4/ At the time of day you want to stop the energizer, select function #7. The device will stop generating output.
- 5/ Repeat steps 3 & 4 to record more times. OR, go to step 6.
- 6/ Select function #12 if you want to enter 24-hour operation.



**! Attach your purchase receipt to this card.  
! Keep this information card handy for future reference.**

# Sureguard Possum-Barrier

## 25m Fence & Roof Barrier Kit

### Ah, Possums!

Beautiful Animals.  
Part of Australia's National Heritage.

*"Fine, but I wish they didn't dance on my roof, damage my garden and make my dog bark. They're a nuisance; I wish I could stop them."*



If you experience these problems then you need **Possum Barrier™**. This electronic system developed by Sureguard Fencing uses an exclusive innovative technology to rid your garden and home of these unwanted visitors. Sureguard Fencing is a leading Australian manufacturer of animal containment products.

#### Possum Barrier™:

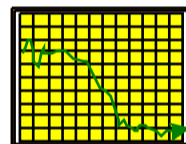
- ★ Highly Effective
- ★ Environmentally Friendly
- ★ Safe and Humane
- ★ Satisfaction Guaranteed - **It works!**



#### How Does it Work?

Almost invisible, close-up, the system looks like 3 or 5 fine parallel wires. These can be installed virtually anywhere as a barrier to possums. The Sureguard device, called a Pingg-String energizer, puts a special electrical impulse on the wires. The possum discovers that encountering the wires is painful and avoids repeating the experience. The electrical impulse will not harm the possum. As each

possum in the local area learns to avoid the wires the number of nuisance visits decreases. **PROBLEM SOLVED!**



What is the "Pingg-String" energizer? It's an improved type of electric fence that is especially designed for small fast moving animals. The rapid pulsing design is ideal for possums. Included with the energizer are the wire, brackets and various accessories you need to install this barrier yourself.

**This kit (#300) will create a barrier up to 25m long to stop possums crossing roof areas and climbing or running along fences. Suited to: timber, colourbond, chain-link and brick fences.**

#### Full Range of Possum Fencing:

- \* **Fence & Roof Barrier Kit (Item #300)**. Constructs up to 25m of a 3-wire barrier to stop possums on fences & roofs. Includes battery/mains powered energizer.
- \* **Fence & Roof Barrier Kit (Item #305)**. Same as Item #300 but with solar powered energizer.
- \* **Ground Barrier Kit (Item #301)**. Constructs up to 15m of a 5-wire barrier to stop possum movement at ground level. Includes battery/mains powered energizer..
- \* **Ground Barrier Kit (Item #306)**. Same as Item #301 but with solar powered energizer.
- \* **Kit to extend the length by 25m of the fence & roof barrier (Item #310)**.
- \* **Kit to extend the length by 15m of the ground barrier (Item #311)**.
- \* **Gate Barrier Kit (Item #312)**. Protects the top of gates while still allowing gates to open.
- \* **Tree Barrier Kit (Item #313)**. Stops possum movement up or down trees.
- \* **High Voltage Lead-out Cable in 5m & 15m pairs (Item #212 & #213)**. Connect energizer to barrier or interconnect a number of barriers.

*Visit our web site for more information.*

#### Features of the Pingg-String Energizer Include:

- ★ Two in-built timers allow you to switch the energizer ON & OFF at predetermined times. The 24-hour timer switches every day at your selected times. Alternatively, the 7-day timer allows up to seven ON & OFF cycles on any day or spread throughout the week.
- ★ The in-built fence monitoring function will sound an alarm if the fence requires attention. If the alarm sounds then you can get a readout of the problem, including: 1/ Low battery power, 2/ Low output voltage (temporary), 3/ Low output voltage (persistent), 4/ Device malfunction. You can also get a read-out of the actual fence voltage.
- ★ You can power this energizer in a number of ways: from batteries for temporary portable usage or by using a mains power adapter (Item #210 available separately) for full-time use.
- ★ All weather design.
- ★ 12 Months Warranty.



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#### FULL DETAILS OF OPERATION & INSTALLATION



9328941003005

[www.sureguard.com.au](http://www.sureguard.com.au)

**Tel. 1800-800-044**

*Sureguard & Pingg-String  
are Trade Marks.*

Made in Australia  
by  
Power Innovations  
Patent Pending  
No.2004902887





# Where to Start?

Before designing your system you need to ask a fundamental question: Where are the possums coming from and where are they going to? The solution to your problem is to install this barrier to break their route. If the possums are targeting just one or two plants then consider protection just around these plants, perhaps at ground level together with some adjacent fencing. If the possums are running amuck over the whole garden then a barrier around the whole property on the fence-line might be the answer. By installing the barrier on existing fences and gates you can stop possums climbing over the fence or using the top of the fence as a thoroughfare. Consider whether breaks in the existing fence-line could be an entry point. For instance, do the possums walk into your property from an open driveway? In this situation it may not be possible to place a barrier to protect the opening and therefore the barrier should be installed at the plants. Utility cables from street to roof could be an entry point; by installing the barrier on the gutter of the house you can protect this entry point. So, initially, take some time to consider the possums favourite routes. This information you glean will help you design the most effective barrier.

## What Tools & Additional Hardware are Required?

All of the Sureguard kits are complete in themselves apart from fixing materials used to secure brackets (in the kits that use them). Refer to the recommended fixing hardware below. For tools, you'll need something to cut the wire and either a screw driver or hammer for the fixings.

## Other Products in this Range

Sureguard recognize that every installation is going to be different and varied. Therefore, this kit may require additional barrier materials to complete the job. Our full range is listed on the outside cover. ([full details at www.sureguard.com.au](http://www.sureguard.com.au))

**Caution:** When extending the barrier be aware that the energizer has a maximum distance limitation of 500m. Ensure you are within this distance by counting the total length of wire that is made live. i.e. for the 3-wire barrier the top and bottom wires are live and for the 5-wire barrier the top, centre and bottom wires are live. Also count the length of any lead-out cables that might be used.

## Installation

For your complete understanding of the designs that are possible, the following installation guide discusses both the *3-Wire Fence & Roof Barrier Kit* and the *5-Wire Ground Barrier Kit*. The complete kit you have purchased is one or other of these starter kits (including the energizer). However, you can purchase the other style kit as an extension without the energizer and mix the two system together if necessary to achieve your objectives.

### Step 1. Decide on a location for the energizer.

The mains powered version of the energizer should be installed inside out of the weather because the mains power adapter is not weatherproof (the energizer is weatherproof). Therefore, to minimize the lead-out connection from the energizer to the barrier, locate the mains powered energizer as close to the barrier as possible. This requirement does not apply to the solar powered energizer because it will be located somewhere on the barrier in a sunny spot. A small amount of lead-out cable is supplied in this kit but this is intended for use interconnecting sections of the barrier. Additional lead-out cable is available separately in cable pairs of 5m and 15m (Item # 212 & 213). This cable has a special insulation able to withstand 10,000 volts. Do not substitute other cable such as building wire because its insulation is only rated to 600 volts and your system will fail. Electric fence cable is okay but is quite stiff and cumbersome to use. Figure 1 shows the lead-out connections to the energizer: beige to "live" and green the "earth".

### Step 2. Install the brackets. (3-Wire System)

Install the brackets using the recommended fixing hardware: 1/ Timber Fence - Nails, Wood Screws or Tek Screws, 2/ Colourbond Steel - Tek Screws, 3/ Brick Fence - Masonry Fastenings, 4/ Chain-Link - Tek Screws. Place brackets no more than 2.5m (8ft) apart. On timber fences these brackets can be fixed to the posts or the top rail. On chain-link fences secure brackets onto posts. Colourbond and brick fences are secured wherever convenient. For roofing the most convenient location is often the rain gutter. The brackets could also be installed across a roof space but you may need to improvise a method of fastening the posts to the roof depending on the type of roofing material. For example securing the bracket to a block of wood. Colourbond steel roofs are easily handled by bending the bracket (Figure 2) and fixing with Tek screws. On a fence-line an extra bracket is required for changes of direction and changes of levels (Figure 3). The two brackets should be close to each other to avoid creating a weak spot in the barrier. Every inside and outside corner must have two brackets. To secure gateways purchase the Gateway Kit (Item #312). This kit includes two brackets for either side of the gate and a pair of 5m lead-out cables to connect the barrier on either side of the gate. (Double gates require two kits). This cable can also be used to form a flexible coupling at the hinge side of the gate (Figure 4). To stop possums using trees you can purchase the tree kit (Item #313). This kit includes 8 brackets and a 75m roll of wire (Figure 5).

### Step 3. Wiring up the brackets. (3-Wire System)

This step is best handled by two people. After installing all the brackets you then install the wires one straight section at a time, from corner to corner, or from gate or wall to corner. Wires are installed and tied off in straight sections. This method will maintain tension in each wire.

Start with the top wire. One person holds the reel of wire and carefully un-spools it by rotating the reel while the other person threads the wire through the insulators (Figure 6). Rotating the reel enables the wire to come off straight. If you pull the wire from the edge it will have a residual spiral which makes it difficult to handle and runs the risk of knotting (Figure 7) creating a weakness that will eventually break.

At the end of the section thread the wire through the insulator and fold it back on itself and twist to secure it in place (Figure 8). Cut off any excess wire. You must at all times keep this wire at least 5mm away from the steel bracket otherwise the wire may spark to the bracket.

At the start end of this section cut the wire to length with some excess to allow hand tensioning. Pull the wire firmly to achieve a neat appearance but do not tension like a spring because you could damage the insulator. Tie the wire off on this end insulator (Figure 8). Cut off any excess wire. Repeat the procedure for the centre and bottom wires. If you need to join wire together use the knots shown in Figure 9.

### Step 4. Interconnecting each section. (3-Wire System)

When all three wires have been installed on all of the straight sections they then need to be electrically interconnected as follows. The top and bottom wires of the 3-wire barrier are connected together somewhere (usually once) on the barrier as shown in Figure 10. Cut a short piece (15cm or 6") of the beige lead-out cable. (The cables are colour coded. Only use beige for "live" connections and only use green for "earth" connections).

Remove about 1cm (1/2") of insulation from each end of this short piece of cable. Twist the exposed wire around the fence wire to make the electrical connection (Figure 11). To make connections at corners cut a short piece of green & two beige pieces of lead-out cable. Connect as shown in Figure 3.

If two sections are separated by some distance it is only necessary to use one beige and one green cable to interlink the two sections. However, on the new section you'll need to add an additional link, as shown in figure 10, so that both top and bottom wires become energized.

### Step 5. Install the fibreglass posts. (5-Wire System)

The wire is held by rubber grommets that are placed onto the fibreglass posts. Use five grommets per post. Install the grommets before placing the posts into the ground (Figure 12). The grommets are installed every 7cm (3") starting near the top of the post. Push the fibreglass posts into the ground 15cm (6") either by hand or using a hammer. The distance from the ground to the first wire should be 3cm to 7cm. Place posts no more than 2.5m (8ft) apart. On curved sections you'll need to reduce this distance. Make sure the barrier extends from and to a wall or fence so the possums can't simply walk around the end of the barrier. (Figure 15).

### Step 6. Wiring up the posts. (5-Wire System)

After installing all the posts you then install the wires one at a time starting with the bottom wire. Start at either end of the barrier and wrap the wire around the groove in the grommet and twist the wire to itself to secure it (Figure 13). Unroll the wire while walking to the next post. Wrap the wire 360 degrees around the groove in the corresponding grommet (Figures 14 & 15) and continue this process from post to post. At the last post tie off the wire as you did on the first post. Repeat this process for all five wires. Ensure sufficient tension in the wires so that no wire touches an adjacent wire (Figure 16). If necessary you can anchor each end post to enable more tension (Figure 17). An anchor can be formed by tying the wire several times around the fibreglass post (Figure 19), a blob of glue might be necessary, and anchoring it on a fence using a screw or by using a post inserted into the ground at an angle (or anything such as a tent peg) and tying off to this.

### Step 7. Interconnecting each section. (5-Wire System)

When all five wires have been installed they need to be electrically interconnected as follows. Consider the 5-wires are numbered 1 to 5. Wires 1, 3 & 5 are connected together somewhere (usually once) on the barrier as shown in Figure 18. Cut two short pieces (20cm or 8") of the beige lead-out cable. (The cables are colour coded. Only use beige for live connections and green for earth). Remove about 1cm (1/2") of insulation from each end of these short pieces of cable. Twist the exposed wire around the fence wire to make the electrical connection. Repeat this process for wires 2 & 4 using the green cable (Figure 18).

If two sections are separated by some distance it is only necessary to use one beige and one green cable to interlink the two sections (Figure 16 & 18 - top right). However, on the new section you'll need to add additional links to interconnect wires 1, 3 & 5 (live - beige) and 2 & 4 (earth - green).

### Step 8. Connection to the energizer

Use a beige lead-out cable to connect the live barrier wire to the "Live" terminal of the energizer. Use a green lead-out cable to connect the earth barrier wire to the "Earth" terminal of the energizer. The solar powered energizer already has these lead-out cables built into the energizer.

### Step 9. Testing the barrier

Connect power to the energizer and switch it ON. Let it run for about 60 seconds and then take a reading of the minimum and maximum output voltages. Both readings should be over 3.5kV meaning that the system is working correctly. (Generally they will be much higher - anything up to 9.5kV). If you get such readings you are finished!

However, if the minimum reading is less than 3.5kV then the energizer will emit an error beep every few seconds because a problem exists on the fence. Here are some troubleshooting tips: 1/ If both the minimum and maximum voltage readings are very low, say less than 1.0kV, then look for somewhere on the barrier where the live and earth wires are touching each other. 2/ If the minimum reading is less than 3.5kV but the maximum is much higher then the wires are probably sparking somewhere. Walk slowly along the fence and you should hear the sparking. The wire can only spark about 4mm so increase the distance from the wire where it is sparking. 3/ If the minimum and maximum voltages are similar and between 1.0kV and 3.5kV then you may have foliage touching the centre and outer wires simultaneously; remove this foliage. Alternatively, you may be energizing too much wire.

### Maintenance

You should get many years of trouble free service from this equipment. No specific maintenance procedure is needed. After some time the wires may need replacing. Most hardware stores stock this fine galvanized wire at the cost of only a few dollars. The system is self testing, so the energizer will emit an error beep if the wires are not being energized properly. Refer to the energizer section for more details on its operation.



FIGURE 1



FIGURE 2



FIGURE 3



FIGURE 4



FIGURE 5



FIGURE 6



FIGURE 7



FIGURE 8

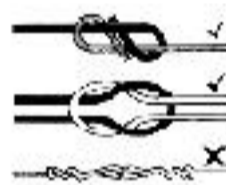


FIGURE 9



FIGURE 10



FIGURE 11



FIGURE 12



FIGURE 13



FIGURE 14



FIGURE 15



FIGURE 16



FIGURE 17



FIGURE 18



FIGURE 19