Operating instruction for electric fence controller "INTELLISHOCK™ 284" in connection with SECURA safety hints

Installation and connection:
The 284 energizer can be mounted either inside or outside of a building, but not where there is risk of fire. If mounted outside, the energizer must be mounted in a vertical position. Fence and ground wires must be attached to the marked fence and ground terminals.

Operation and control :
Plug the cord into a 110 volt AC supply socket.
After a few seconds, a quiet ticking can be heard. The fence indicator light flashes with each pulse.There will be no flashing if the fence voltage drops below 2000 volts.
If does not flash, disconnect the energizer from fence. If the fence indicator light does not flash when disconnected, the energizer is at fault and needs repair. If the fence indicator light flashes when disconnected the fence is at fault, either from too much vegetation contact or from a short between the wire and the ground or a metal post/ wire attached to the ground. Correct as soon as possible.

INTELLICHECK SWITCH 

The 284 energizer has two energy output settings (high and low). The settings are controlled by a brass switch. In the high setting (thick spark icon), the output is usually high enough to overcome moderate vegetation contact with the fence. However, in this setting, the fence indicator light is not voltage sensitive. To check the fence, push the switch up (into the energizer case) to the low (thin spark icon) setting. This allows the energizer to properly "look" at the fence and determine if the voltage is over 2000 volts.

If the switch is left in the up position, the energy output will be reduced. This setting is advised for weed-free horse fences and for short fences where strangers (especially children) might touch it.

Requirements:
The energizer conforms to the standards indicated on the case (all European standards), which are more strict than USA UL standards.

Service:
If the energizer fails, first check the fuse. If the fuse is OK, the fault will very likely be on the printed circuit board. This is supplied as a plug-in module. It can be replaced easily by your dealer or any local person with electronic training.

Technical changes reserved !

Energizer Installation & Operation Instructions

Mounting a 110v/AC Energizer

Mount a 110v/AC energizer vertically on a wall of a building or other mounting surface, with-in reach of an AC power outlet without the use of an extension cord. It is not recommended to use extension cords due to potential power drop of undersized cords. Keep out of reach of animals. Using a surge protector is recommended on all AC fence energizers. Most AC energizers are not in a watertight case so added protection would be necessary.

Mounting a DC Energizer for outside mountings

DC (Battery/Solar) units need to be mounted as required on a support box or post. The positive (+) and the negative (-) battery leads from the energizer will connect directly to the positive (+) battery terminal and the negative (-) battery terminal. A solar panel (if used) will also connect to the battery positive (+) and negative (-) terminals. Some variation of solar panels will connect differently.

Energizer Ground Rods

Install galvanized ground rod(s) a minimum of 30′ – 40′ away from any other electrical grounds. Use as a rule of thumb—3′ (minimum) of galvanized ground rod for each joule of released output from the energizer. (For example a 1 joule unit would require a 3′ ground rod, a 1.5 joule unit would require 4.5′ of ground rod.) If a 6′ ground rod is used, then additional 6′ rods should be spaced at least 8′ apart in a straight line. If 3′ ground rods are used, then additional 3′ rods should be spaced 4′ apart in a straight line. Make sure to place the energizer ground system in a moist location.

For AC units and large battery units, use insulated galvanized lead-out wire to connect the energizer's ground terminal to the ground rod(s). Shed off about 3 inches of insulation off each end of the lead-out wire. Use a galvanized or stainless steel clamp to connect the end of the lead-out wire to the ground rods ensuring a tight electrical connection. Some small battery units (1 joule or less) have a wiring harness included with them that would allow you to simply use a clip to connect onto the ground rod.

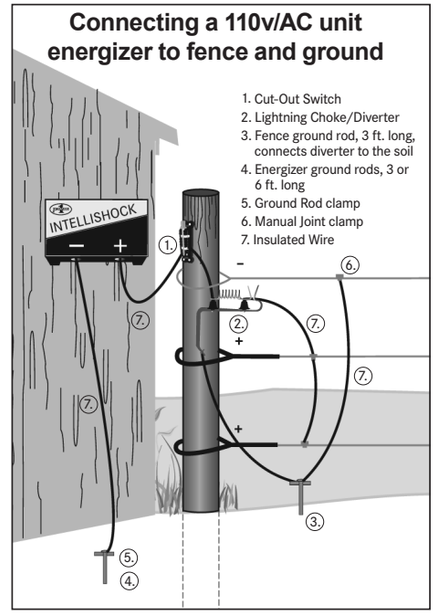
Connecting the fence to a 110v/AC Energizer

Connect from the AC energizer fence terminal to the fence using insulated galvanized lead-out wire. (The same lead-out wire that was used when connecting the ground system.) Lead out wire may be buried or left above ground, however when buried in a high traffic area like gates, it is best to run the insulated wire through conduit. Double insulated lead-out wire is best for permanent installations. In lightning prone areas, connect the lead out wire through a lightning choke/diverter before making the final connection to the fence. Lightning diverters should be connected to their own ground rod separate from any other grounding source including the energizer ground source.

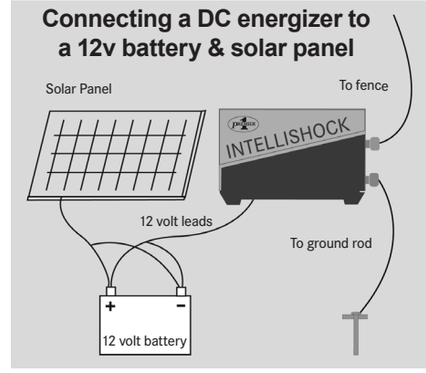
Connecting the fence to a DC Energizer

Large permanent battery/solar units should be connected with lead-out wire like AC units. (See above.) Some small battery units have a wiring harness included with them that would allow you to simply use a clip to connect to the fence.

Connecting a 110v/AC unit energizer to fence and ground



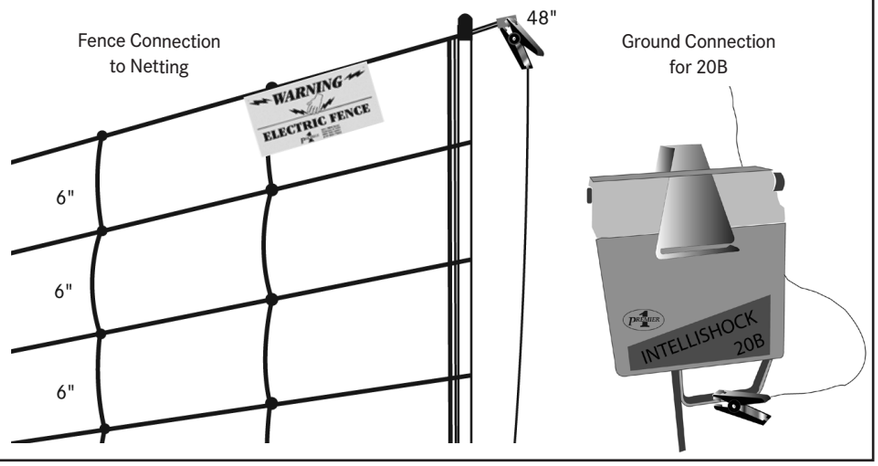
Connecting a DC energizer to a 12v battery & solar panel



Note these Key Points:

1. Keep grounds 30-40 ft away from any other electrical ground source. This includes house ground systems and wells.
2. Use only galvanized lead-out wire and galvanized ground rods. Do not use copper lead-out wire or copper ground rods.
3. Use only insulated wire designed for electric fencing. Do not use wire rated at less than 10,000 volts.
4. Tight electrical connections are always required.
5. When constructing positive/negative fences, re-ground negative wires every 1,200 ft.

Common Installation for Netting



Energizer Data Chart

(For explanation of columns and values see opposite page.)

	Product Number	Price	(1) Max. stored joules	(2) Max. output joules released	(3) Moist soils joules	(4) Dry soils joules	(5) Fence load LED	(6) Min. ground rods(ft)	(7) draw watts/ hour	(8) Batt Charge LED	(9) Hi-lo output	(10c) Batt amp per hr. clean(a)	(10w) Batt amp per hr. weedy(b)	(11c) days/ charge clean(a)	(11w) days/ charge weedy(b)	(12c) Solar panel clean(a)	(12w) Solar panel weedy(b)
6 volt battery																	
IntelliShock 12B	117500	$126	0.14	0.13	0.02	0.04	•	built-in			•	6	6	410	410	n/a	n/a
9 volt battery																	
IntelliShock 20B	117310	$199	0.28	0.27	0.21	0.25	•	built-in		•		10	33	250	75	1	3.0
Kube 250	115120	$168	0.30	0.29	0.16	0.2		built-in				26	26	80	80	3.0	3.0
HotShock B4	117350	$230	0.40	0.35	0.19	0.17	•	built-in		•		32	32	75	75	3.0	3.5
12 volt battery																	
IntelliShock 12B	117500	$126	0.14	0.13	0.02	0.04	•	built-in			•	7	7	350	350	n/a	n/a
Patriot PS15 (solar)	115025	$198	0.20	0.15	0.06	0.15		1				14	14	175	175	built-in	built-in
IntelliShock 20B	117310	$199	0.28	0.27	0.24	0.29	•	built-in		•		10	30	250	75	1	3.0
Kube 250	115120	$168	0.30	0.29	0.26	0.31		built-in				37	37	65	65	3.0	3.0
HotShock B4	117350	$230	0.40	0.35	0.26	0.27	•	built-in		•		43	43	60	60	3.0	3.5
Patriot P5 (DC/AC)	115000	$79	0.7	0.5	0.4	0.2		1.5	4.5			42	42	59	59	6	6
Gallagher B100 (solar)	117000	$361	0.8	0.55	0.5	0.5		2				60	60	40	40	built-in	built-in
IntelliShock 42B	116900	$244	1.4	0.9	0.8	0.3	•	3		•	•	30	100	83	25	4	10 - 15
Patriot P10 (DC/AC)	115010	$97	1.3	1.0	0.8	0.3		3	4.5			87	87	28	28	10	10
HotShock A15	118022	$214	1.6	1.0	1.1	0.3		3		•	•	135	135	18	18	15-20	15-20
IntelliShock 52B	116850	$298	2.4	2.0	2.0	0.4	•	6		•	•	30	200	83	12	4	20 - 30
IntelliShock 55B	116800	$320	2.4	2.0	1.8	0.4	•	6		•	•	35	260	71	9	5	18 - 30
Patriot P20 (DC/AC)	115020	$120	2.7	2.0	1.6	0.4		6	4.5			163	163	15	15	20	20
HotShock A50	118021	$258	4.2	3.0	3.1	0.8		9		•	•	400	390	6	6	40-60	40-60
Patriot P30	115030	$157	4.6	3.0	2.3	0.5		9				210	210	12	12	20-30	20-30
HoriSmart A50	118020	$468	5.0	4.5	2.5	0.65		12		•	•	400	400	6	6	40-60	40-60
IntelliShock 77B	116700	$468	7.0	6.0	3.0	0.6	•	18		•		35	440	71	5	5	40 - 60
110 volt plug-in																	
Patriot P5 (AC/DC)	115000	$79	0.7	0.5	0.4	0.2		1.5	4.5			42	42	59	59	6	6
Patriot P10 (AC/DC)	115010	$97	1.3	1.0	0.8	0.3		3	4.5			87	87	28	28	10	10
Kube 3000	115100	$105	1.5	1.1	0.9	0.8		3	2.5								
HotShock 150	114200	$105	1.5	1.2	1.2	0.4		3	3								
Patriot P20 (AC/DC)	115020	$120	2.7	2.0	1.6	0.4		6	4.5			163	163	15	15	20	20
Kube 4000	115110	$129	3.0	2.3	2.3	1.4		5	4.5								
HotShock 300	113900	$125	3.0	2.4	2.3	0.4		8	4								
IntelliShock 284	113800	$249	3.5	2.8	2.6	1.0	•	5	6								
Patriot P30 (AC/DC)	115030	$157	4.6	3.0	2.3	0.5		9				210	210	12	12	20-30	20-30
Gallagher M600	113710	$309	6.0	4.5	4.7	1.6		13.5	8.5								
HotShock N50	118003	$274	6.0	5.0	3.0	0.5		15	9		•						
HotShock 600	113700	$249	6.0	5.0	4.0	0.5		16	8								
IntelliShock 506	113600	$529	6.5	5.0	4.7	4.5	•	8	22								
HoriSmart N100	118001	$519	8.0	6.0	3.3	1.5		18	12		•						
HoriSmart N140	118000	$564	12.0	8.0	2.6	0.4		24	13		•						
HotShock 1000	113550	$395	15.0	10.0	8.5	0.7		30	20								

*Red numbers are results that stand out from the norm for “similar” energizers.

Explanation of columns and values in chart

1. A popular method of rating energizers that, like miles of fence, is very misleading. Sales people who use this number are either ignorant or duplicitous. More accurate is the output in joules for conditions in your area (columns 2, 3 and 4).

2. Indicates energizer's ability to cope with high levels of green vegetation contacting the energized wires (higher numbers are better). Also misleading, unless the data in columns 3 and 4 are considered. Note the HotShock 300 and IntelliShock 284. Though similar in maximum output, the 284 is 2.5 times better in dry soils. But in moist soils they are very similar. Compare also the 284 and Kube 4000 with the HotShock 600.

3. Predicts probable pulse size for clean wire fences in joules for fences above moist soils (enough for green grass) and typical animals (cattle). Units with larger numbers will energize more miles or cope with more weeds per 1000 ft.

4. Predicts probable pulse size for clean wire fences in dry (but not arid), snow-covered or rocky soils. Units with large numbers can effectively energize more miles of fence in these conditions.

5. When available, these LED lights indicate if fence voltage and energy levels are enough to stop most animals. If not lit, check the fence.

6. Normal total ground rod requirements. More may help in certain conditions.

7. 110v AC input. Indicates expected draw in watts.

8. Has LED lights that indicate when a 12v battery needs to be recharged.

9. Has switch to reduce both output energy and battery input demand.

10. Expected milliampere (mA) drain by energizer from battery per hour at high output levels for clean and weed-laden fences.

    Predicts how large a battery (or solar panel) you need and how often you will need to recharge it. (Large numbers mean larger panels and more frequent recharges.)

    Note that milliampere draw of Kube 250 and Patriot units is the same for both clean and weedy fences. However, for IntelliShock units, when a fence is clean (no green weeds or shorts), the mA draw is low. When a fence is weedy, the mA draw of IntelliShock energizers is higher. Therefore, battery and solar panel requirements (columns 11 and 12) are higher and lower.

    With EzePower dry batteries, all the stored energy (55, 75, 120 or 165 amp hours) is available for use, but they are not rechargeable. A 165 amp hour EzePower battery has 165,000 mA. Thus, this battery might run a 20B energizer for 16,000 hours (660 days) on a totally clean fence, but only 5000 hours (200 days) on a weedy fence.

11. Predicts when a 12v 100 ampere hour ***deep cycle*** battery will need recharging under both clean and weedy conditions. Assumes being drawn down to 40% between recharges. (An equal size vehicle battery must be recharged 3 times more often to prevent damage to battery.)

12. Predicts solar panel size (in watts) advised for each energizer under both clean and weedy fence conditions. The low number of a range assumes 6 average solar insolation hours per day (southern USA or summer in north). The high number assumes only 4 insolation hours per day. Using a larger panel allows a smaller battery to be used and vice versa.

(a) Fence that has no contact with green/wet weeds.
(b) Wires in contact with green weeds 6 in. from soil (causes 7 times more energy drain than wires contacting weeds 30 in. from soil).

What's total fence circuit resistance?

The size of the pulse that travels from an energizer's fence terminal to its earth terminal varies in volts and joules ***according to the total of the resistances in the path between these points.***

These resistances in ohms ( ) include:

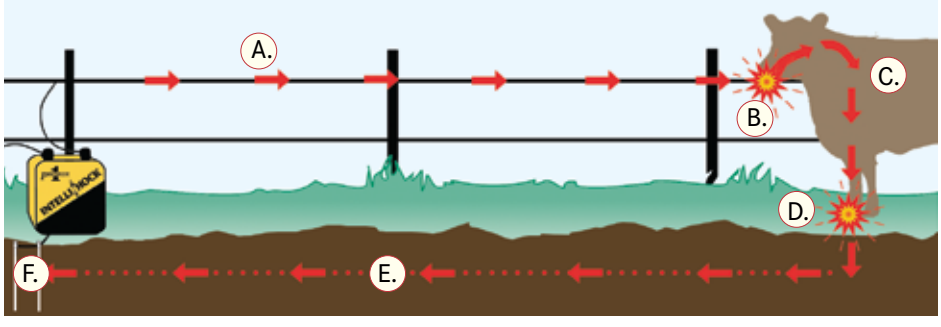
- **A.** Resistance of wire/rope/polywire/tape (100 to 10,000 /mile).
- **B.** Resistance of animal's fur, hair, nose at the point of contact (50 to 2,000).
- **C.** Internal resistance of the animal's body (100 to 500).
- **D.** Resistance at the point of contact with the soil (grass, leaves, dry hooves).
- **E.** Resistance of the soil (20 to 50,000) if it's not a Pos/Neg-wired fence system.
- **F.** Resistance of the ground rod system and the soil around it.
- **G.** Resistance of weeds (25 to 50,000). It is not included in the diagram below. It fits in "parallel" with B, C and D.

The total resistance of a fence varies enormously by the hour, day and week. The primary factor is moisture change in the soil, air, plants and in the animal's nose, hide and feet. These change depending upon dew, rain, type of vegetation, wind, etc. The only constant is the conductor.

Therefore, the resistance of a mile of single-strand, weed-free cattle/deer/horse fence may vary from 600 to 10,000 throughout the season. But an extra mile may add only 10 to either total (because the other factors don't change).

The circuit resistance of 1500 ft of weed-free, temporary electric-netting sheep fence varies from 200 to 10,000 depending on the soil moisture. Again, adding an extra 1500 ft of ElectroNet may add only 50 .

A Pos/Neg fence (alternating hot/ground) is a useful option when the soil and animal resistances exceed 5,000 .

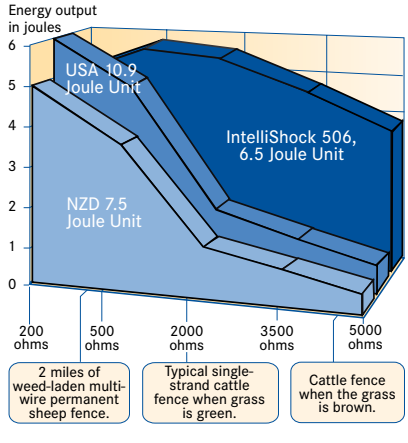


Wide vs. High vs. Low Impedance Energizers

The first fence chargers were high-impedance units. Their maximum effect occurred when the fence was weed-free. They could cope with drier soils better than low-impedance units but were very vulnerable to weed contact. Most were too small in output to be effective against difficult animals.

Low-impedance energizers cope with high weed contact but not with dry soils or poor conductors.

"Wide-impedance" is Premier's term for the capability of some units to perform well in ***both*** *dry and wet soils; with poor and good conductors; and in green and brown grass.*



Output of wide-impedance 5-joule energizer compared with 2 larger low-impedance energizers.

Common Mistakes

1. Buying too small an energizer. Power = pain = a fence that works!
2. Buying on price alone. 85,000 50 amp. pulses per day requires very high quality design.
3. Too short or too small a ground rod. An energizer is only as big as its ground rod allows it to be.
4. Tiny lead-out wires to fence and ground stakes. Never put a tiny pipe on a large pump.
5. Not protecting the system from lightning strikes. Install lightning/choke diverters every 1,000 feet of permanent fence line.
6. Poor wire connections force a powerful energizer to perform like a weak one. The more permanent the fence and the larger the energizer, the better the connections must be. A large energizer has five times the electricity flow rate of normal household current, so connections must be first-rate.

Warning!

All Electric Fencers are potential fire hazards if not properly installed and maintained. Therefore, their use, maximum output, installation and permitted times of operation are often regulated on state or local level, or both. If there is a likelihood of local regulation, we suggest that you contact local authorities before installing your fencer.

Premier Fence Systems learned of an accidental fatality of a very young child which occurred when he came in contact with an electrified fence wire while crawling through wet grass. It appears the fence was correctly installed and functioning properly. The energizer was not large by today's standards (2 joule plug-in unit) and UL approved. The fence wire was standard electroplastic twine and thus a relatively poor conductor compared to steel, copper or aluminum.

We caution parents to keep small children away from electrified fences. Children of all ages should be warned not to play in an area where electrified fences are installed. Individuals of all ages should take care to avoid accidental contact of electrified fences with the head and neck.

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How do I tell if I have adequate ground rods from my permanent fence system?

By seeing if voltage will build up around your ground rods in "worst case" conditions. Follow this procedure.

1. Walk down your fence line at least 500 ft. from the energizer.
2. Insert a galvanized steel wire or rod into the moist soil. Attach one end securely to the live wire(s).
3. Push a second wire into the soil 10 ft. from your ground rod(s).
4. Turn on the fencer. You've temporarily created a dead short on the fence. All the pulse energy will rush out of the fence, into the soil via the wire. Unless you have adequate grounding, it will "pile up" around the ground rods creating voltage.
5. If the existing ground rods are adequate in total length and depth, you should be able to attach a fence voltmeter between the ground rods and the temporary wire and get a reading of less than 300 volts. If more than 300 volts, add more of the ground rods.

How does a lightning choke/diverter work?

It doesn't arrest lightning. Only the soil does that. The "diverter" offers the lightning a diversion path to the soil. It brings the positive and negative wires/ground rods as close together as possible. Lightning, with its extremely high voltages, leaps easily across the gap and into the ground wire thus by-passing the energizer (in most, but not all cases).

What's the minimum voltage for various species?

- 1,500 volts for dogs, pigs and horses.
- 2,000 for sheep and goats.
- 3,000 for deer and furry "critters".

Obviously, if any animal touches an energized wire with its nose or blood-filled ears, it will readily feel pain. But animals with over 3/8" fur or wool can touch an energized 5,000 volt wire and feel nothing at all.

How important is voltage in a fence and fencer?

The higher the voltage (electrical pressure) the further a spark will "leap" from the energized wire through air, hair/fur and into the animal's nervous system. So high voltage is especially vital for furry animals (bear and coyotes), thick-skinned animals (elephants), and hollow-haired animals (deer). Less voltage is required for cattle, pigs and horses since they have less hair and thin skin.

2 Year Warranty!

When you buy an energizer from Premier, you purchase more than an energizer. You also obtain these benefits:

1. If an energizer fails within 2 years of its date of purchase, we will replace the module/unit at our cost.

Your credit card will be charged for the replacement but you will receive full credit when the failed item is back at Premier. Your only cost is shipping the failed item to us.
If the original energizer is over 2 years old, we will repair and/or replace it, but you pay for the repair cost and freight.

Note: *This policy doesn't apply to:*

1. *Failure due to abuse or neglect.*
2. *Patriot energizers. Their warranty(s) via TruTest is for 1 year. It covers lightning damage and defective parts or workmanship. Should a Patriot energizer fail, we will replace the unit, bill you for the cost to do so, then reimburse you after we have been able to examine the failed unit to determine the cause(s).*

2. Free next-day shipment of warranty replacements.

A unit can be shipped by 2 p.m. Central Time to be received the next day. (Calls on Friday after 2 p.m. will ship Monday.)
If you think your energizer has failed, call us at **1-800-282-6631**. We'll help you test your energizer to ensure that it has truly failed. (About 25% of the units we receive back work fine. The fence was at fault instead of the energizer.)

Note: *Patriot and Gallagher energizers are exceptions to this. We'll ship their replacement to you by the same rapid service but you must pay for the cost to do so. Why the difference? Our mark-up on these 2 brands is lower.*

3. Free technical support.

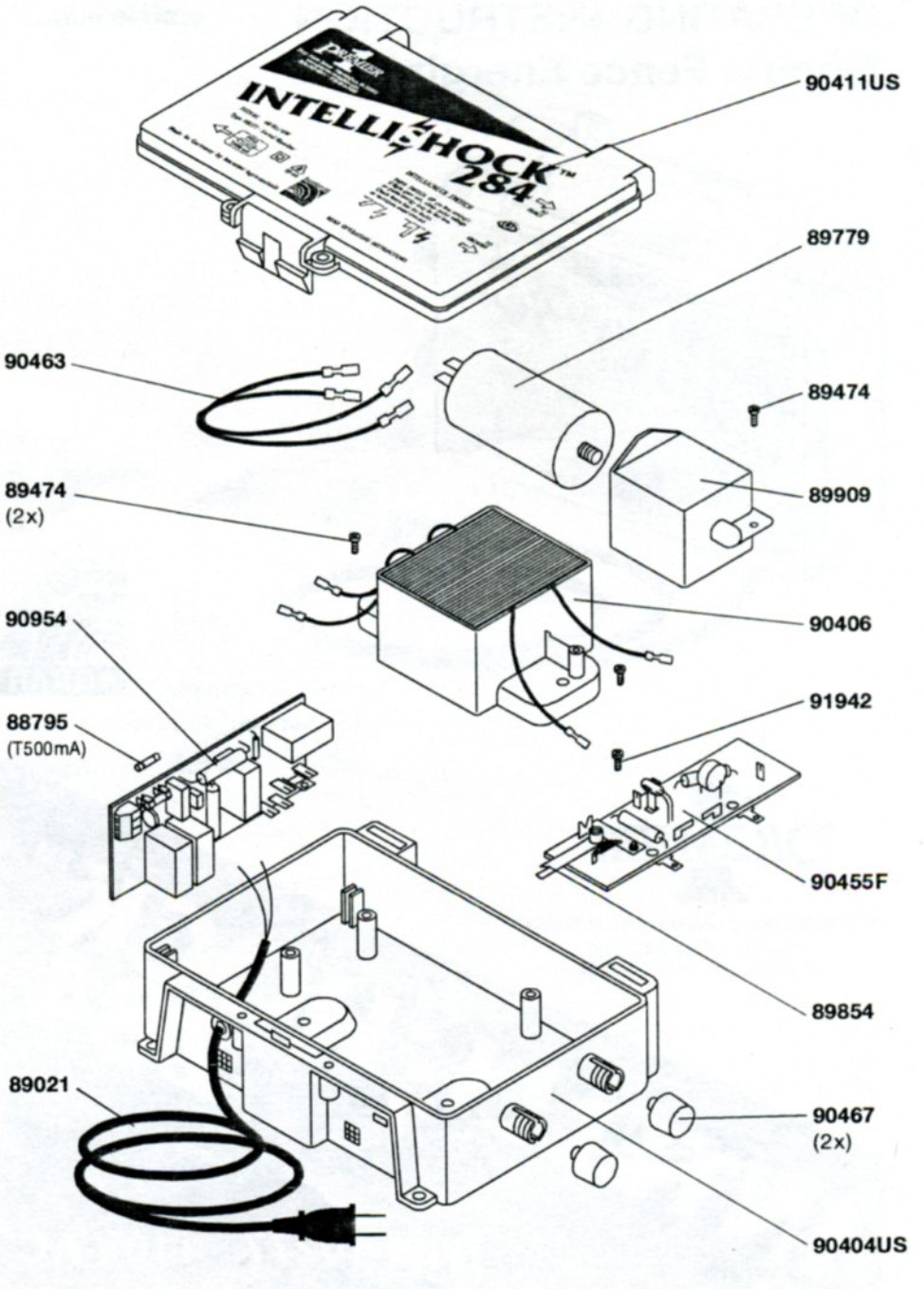
We will provide free advice and support both before you purchase an energizer or fence and afterwards for as long as you wish our help. This applies to energizer repair issues also. If you are not sure how to replace a module, our people will "walk" you step-by-step through the process via the phone.

4. Solar energizer packages.

With larger energizers (over 1 joule), the panel, battery and energizer need to be correctly sized for each situation. We will do this for you at no cost if you call us. (You can then order them online if you wish to save shipping costs!)

5. Five-year assurance against energizer obsolescence.

Premier's "contract" with our customers includes repair or replacement of any non-working units for up to 5 years whether the unit is "obsolete" or not. Who pays for us to do this in years 2 to 5 of the energizer depends upon the applicable warranty.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