Side-by-side Energizer Comparisons

Energizers	Product number	(1) Impedance type	(2) Peak output (in joules)	(3) Joules at 5000Ω	(4) Pulses per minute	(5) Battery Input	(6) Fence load LED	(7) Min. ground rods (ft)
1. AC 110 volt Plug-In								
Kube 4000	115110	wide	2.30	1.24	48			6
IntelliShock 506	113600	wide	5.00	4.00	48		•	15
HotShock 600	113700	low	5.00	0.29	50			16
Gallagher 1200i	119020	low	6.60	0.50	42		•	20
HotShock 1000	113550	low	10.00	0.74	48			30
Gallagher 1800i	119021	low	12.40	0.30	42		•	37
Gallagher 2800i	119022	low	15.50	0.30	42		•	46
2. AC/DC Plug-In or Battery								
HotShock 5	1120051	low	0.50	0.24	38	12v		3
Patriot P5	115000	low	0.50	0.26	40	12v		3
IntelliShock 10	1120101	low	1.00	0.32	38	12v		3
Patriot P10	115010	low	1.00	0.35	40	12v		3
Speedrite 1000	119006	low	1.00	0.35	25–40	12v	•	3
IntelliShock 20	1120201	low	2.00	0.45	38	12v		6
Patriot P20	115020	low	2.00	0.40	40	12v		6
Speedrite 2000	119005	low	2.00	0.39	25–40	12v	•	6
Patriot P30	115030	low	3.00	0.45	40	12v		9
Speedrite 3000	119004	low	3.00	0.45	25–40	12v	•	9
Speedrite 6000	119003	low	6.00	0.59	25–40	12v	•	18
Speedrite 6000(i)	119002	low	6.00	0.59	25–40	12v	•	18
Speedrite 12000(i)	119001	low	12.00	0.60	25–40	12v	•	36
Speedrite 18000(i)	119050	low	18.00	0.86	25–40	12v	•	54
3. DC Battery								
Speedrite AN90	119008	low	0.12	0.09	25–40	6v/12v		built-in
4. All-in-One Solar								
Solar IntelliShock 30	113200	low	0.30	0.16	40	12v		1
Solar IntelliShock 60	113300	low	0.60	0.27	40	12v		1.8
Solar IntelliShock 120	113500	low	1.2	0.37	40	12v		3
Premier PRS 100	114025	low	1.00	0.35	40	12v		3
Premier PRS 100X	114050	low	1.00	0.35	40	12v		3
Premier PRS 200	114052	low	2.00	0.40	40	12v		6
Premier PRS 200X	114070	low	2.00	0.40	40	12v		6

(8) Draw in watts/hr	(9) High-low output	(10c) mA/hr draw Clean (c)	(10w) mA/hr draw Weedy (w)	(11c) Days/charge Clean (c)	(11w) Days/charge Weedy (w)	(12c) Solar panel Clean (c)	(12w) Solar panel Weedy (w)
4.5							
22	•						
8							
6	•						
20							
9	•						
11	•						
1		46	46	54	54	7	7
4.5		42	42	59	59	6	6
1.5		31	90	80	27	10	10
4.5		87	87	28	28	10–20	10–20
2.0	•	90	90	28	28	10–20	10–20
3.3		32	196	78	13	10–20	20–40
4.5		163	163	15	15	20–40	20–40
3.2	•	180	180	14	14	20–40	20–40
4.5		210	210	12	12	20–60	20–60
4.8	•	295	295	8.5	8.5	20–60	20–60
10	•	650	650	4	4	50–70	50–70
10	•	650	650	4	4	50–70	50–70
15	•	1100	1100			90–120	90–120
19	•	1400	1400			120–160	120–160
	•	31	31	80	80	n/a	n/a
		15	29	166	86	built-in	built-in
		20	58	125	43	built-in	built-in
		28	104	89	24	built-in	built-in
		87	87	28	28	built-in	built-in
		87	87	28	28	built-in	built-in
		163	163	15	15	built-in	built-in
		163	163	15	15	mounted-on	mounted-on

Notes...

Red numbers indicate energizers with a "wide" impedance output curve.

The larger the number in column (2) the longer the fence can be, the more weed contact can occur and still have an effective fence. 2 joules will cope with twice as many weeds as a 1 joule unit.

The higher the number in column (3) the better this unit will perform in dry soils and with species that have high electrical resistance (i.e. deer, goats).

The higher the number in column (3) the better this unit is for species with higher internal electrical resistance, such goats, deer and poultry.

Draw in watts per hr in column (8)—Plug-in units use relatively little energy when compared to bulbs. A Patriot P5 uses less than 5 watts per hour. At 13¢ per kwH, that's only 1.5¢ per day.

The Kube 4000, at current prices, is an excellent combination of value and performance for a plug-in unit for short fences—because of its capabilities in both dry and moist soils.

The IntelliShock 506 and HotShock 1000, Speedrite 12000 and Gallagher units are not suitable for horse or domestic pig fences (too much energy).

The AN90 is not large enough in output for poultry or garden fences.

Energizer Chart Data

Explanation of columns and values.

1. Impedance type (wide or low)
A simple way to indicate which units are more capable of responding to challenges of drier soils, snow-covered soils, and pushing energy through animals with high internal electrical resistances (deer, goats, rabbits, poultry and small sheep).

2. Peak output (in joules)
Guide to an energizer's ability to cope with high levels of green vegetation contacting the energized wire. Higher joules are better (for green grass).

3. Joules at 5000 ohms
The ohms refer to total circuit resistance (*see below*). Units with higher joules can energize more fence when soil is dry or snow-covered.

4. Pulses per minute
More is better. Less time between pulses means it's more likely to stop untrained animals.

5. Battery input
This column describes the battery input required by each energizer.

6. Fence load LED lights
Not the same as a simple "on" light. These indicate if voltage and energy levels are enough to stop most animals. If not lit, check the fence for problems.

7. Minimum ground rods (ft)
Normal total ground rod requirements. More may help in certain conditions.

8. Draw in watts/hour
Expected AC draw in watts.

9. High-low output
If there is a switch to reduce output energy and battery input demand.

10. Battery amp draw per hour on clean(c) and weedy(w) fences
Expected milliampere (mA) drain from battery per hour at high output levels for clean or weed-laden fences.

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

Note that mA draw of Patriot units is the same for both clean and weedy fences. For IntelliShock units, when a fence is clean (no green weeds), the mA draw is low. If a fence is weedy, the mA draw of IntelliShock energizers is higher. Thus battery and solar panel requirements (columns 11 and 12) are higher and lower.

Use Deep Cycle (DC) instead of automotive batteries. Why? Automotive batteries can only be drawn down 5% before they lose recharging ability. DC batteries can be drawn down 60%. DC batteries recharge slowly (1 to 2 amp/hr).

Do not go below a 40% charge on a DC battery whether in use or in storage.

11. Days between recharging for clean(c) and weedy(w) fences
Predicts when a 12v 100 amp hr deep cycle battery will need recharging under clean (no weeds) conditions. Assumes being drawn down to 40% between recharges. (An equal size vehicle battery must be recharged 3X more often to prevent damage to battery.)

12. Solar panel for clean(c) and weedy(w) conditions
Predicts solar panel size (in watts) advised for each energizer under clean vs weed-laden fence conditions.

The low number of a range assumes 6 average solar insolation hours per day (southern US 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.

Note regarding 10, 11 and 12: *Clean (c) fences have no contact with green/wet weeds. Wires in contact with green weeds (w) 6" from soil cause 7 times more energy drain than wires contacting weeds 30" from soil.*

What's total fence circuit resistance?

The size of the pulse that travels from an energizer's fence terminal varies in volts and joules according to the sum total of the resistances in the path between the 2 terminals.

These resistances in ohms (Ω) include all of these "numbers":

a. The resistance of wire/rope/polywire/tape (100 to 10,000Ω/mile).
b. The resistance of the animal at the point of contact (50 to 2,000Ω).
c. The internal resistance of the animal's body, hooves, hair (100 to 500Ω).
d. Resistance at the point of contact with the soil (grass, leaves, wet vs dry soil).
e. Resistance of the soil (20 to 50,000Ω) if it's not a Pos/Neg-wired fence system.
f. The resistance of the ground rod system and the soil around it.
g. The resistance of weeds (25 to 50,000Ω). It operates in "parallel" with b, c and d.

The total circuit resistance of a fence varies enormously by the hour, day and week. The key factor is the moisture in the soil, air, plants and the animal's nose, hide and feet. They depend on changes in dew, rain, type of vegetation, wind, etc.

The only constant is the conductor.

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

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

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

What is heavy weed load?
Grass growing up to and onto the conductive strands of the fence (this drains the pulse strength). Green (moist) grass drains a fence; brown (dry) does not. (*Also see p. 109.*)

Does the length of the grass stems reaching the fence make a difference?
A big difference. The longer the stem the less energy leakage will occur.

Why should I care?
More resistance and weed drain = a weaker pulse. Livestock and predators will not be stopped by weak pulses.

Wide-impedance vs low-impedance?
Wide-impedance energizers offer higher pulse strength when the soil is dry and grass is brown.

Low-impedance units excel when soil is moist and grass is green.