# Stun Guns

## An Independent Report

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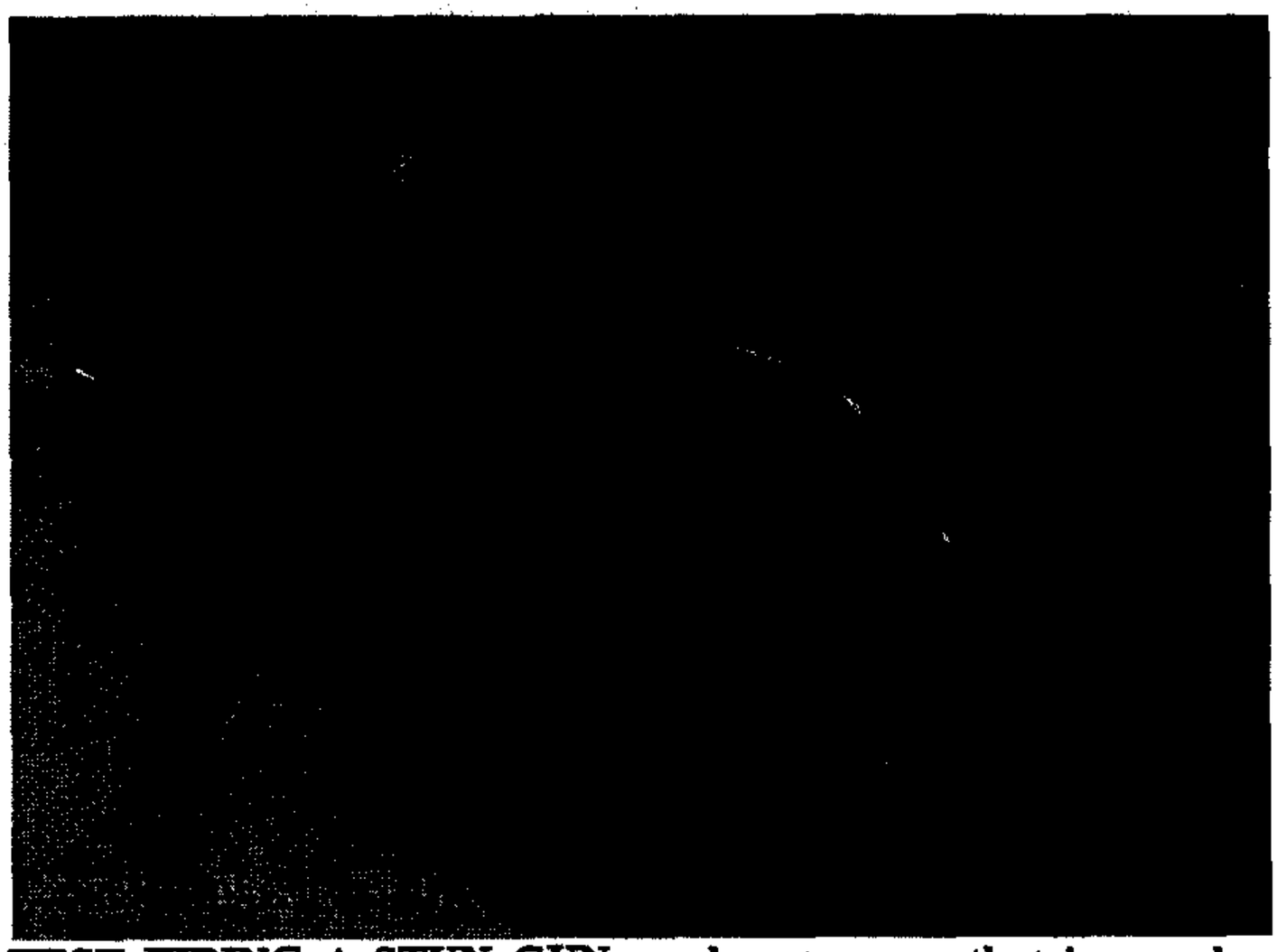
# Stun Guns

*An Independent Report*

**Stun guns that are available to the public** vary considerably in both their electrical output characteristics as well as their safeness[1] . This report gives detailed information by brand and model. Electrical information includes power, amount of energy per pulse, peak voltage, average voltage, peak current, average current, and pulse rate. The relative physiological effects of each model were determined by testing on a human subject.



**TEST FIRING A STUN GUN produces an arc that is seen between the inner electrodes.**

Buying from a reputable retailer may be no guarantee of quality or safety. Because there has been so little information available on the performance of specific models of stun guns, retailers as well as buyers have had few facts on which to base their opinions and purchases. Most buyers do not wish to tests the various models on themselves and there is a dearth of volunteer subjects (particularly those who would volunteer to test 15 different models and be shocked repeatedly with each one). Also, while the medical literature offers several proposed mechanisms by which these devices may produce a temporary immobilization effect, there is no sound data proving which of these mechanisms, or combination of mechanisms, is correct.

Typically the only information the buyer has is the price, the output voltage claimed by the manufacturer, the size of the device and the appearance of a 'demonstration' arc. This study proves that none of these factors alone is an indicator of the performance or safety of the device.

Some stun guns are sold under various brand names and model numbers. The photographs included in this report are useful in identifying a particular device.

The biomedical engineer conducting these tests has 15 years experience in testing the physiological effects of high voltage-high current medical devices as well as designing them to meet FDA standards.

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*Table 1*:

## Electrical Parameters

*Table 1* gives seven electrical parameters for each model tested. All measurements were taken while the stun gun probes were in direct contact with the target. This is the recommended mode of use. Power can be delivered from the stun gun to the target by arcing to the target, however, this is not as efficient as direct contact.

### *Power*

The power delivered by a stun gun varies with the condition under which it is used. For example, the thickness of clothing worn by the assailant, the area to which the stun gun is applied - whether bony, fatty or muscular - effects

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1 Safety as discussed in this report refers to the safety of the user, not of the assailant on whom the stun gun may be used.

the amount of power that the stun gun will put out

The power indicated in column two of *Table 1* is the maximum power that the stun gun will reliably deliver under a particular, reasonable set of circumstances. A change in conditions may reduce this power. The particular set of conditions under which a stun gun will deliver maximum power varies from one model to another. (This is problem is considered in the "Clothing Penetration" column of *Table 2*).

### Effective Voltage

The third column of *Table 1*, "Voltage" is the effective (or, to the engineer, rms) value. This is useful in comparing one device to another regardless of the pulse shape or waveform.

### Peak voltage

Column four, "Peak Voltage" is the highest voltage that appears across the electrodes while maximum power is being delivered to the target. Note that this value is significantly less than the voltage you see in advertisements or on the packaging. The advertised voltage is typically a theoretical voltage that would appear across the probes if they were not in contact with a target and were not so close that an arc would occur between the probes, in other words this is the voltage that is there when you are not using the device on a target! The advertised number is generally nothing more than a fascinating bit of trivia. For example, consider the tens-of-thousands of volts that may be generated when shuffling across a nylon carpet on a low humidity day. When you touch the metal door knob and draw a small arc do you fall to the ground immobilized!

✧✧✧✧✧✧✧✧✧✧✧✧✧✧✧✧✧✧✧✧

*Do not let a manufacturer's claim of high voltage influence your purchase.*

✧✧✧✧✧✧✧✧✧✧✧✧✧✧✧✧✧✧✧✧

### Effective Current

The fifth column, "Current", is the effective (rms) current that flows while maximum power is being delivered to the target.

### Peak Current

Column six, "Peak Current" is the highest current that is delivered through the target under conditions that permit maximum power.

### Energy per pulse

Column 7 of *Table 1*, "Energy/Pulse" is an important parameter to consider. This is the amount of energy that is delivered in each of the very short pulses that the stun gun delivers. This along with the pulse rate in column 8 tells you a great deal about a stun gun.

### Pulse Rate

The last column, "Pulse Rate", is the average number of pulses of energy that the stun gun delivers each second.

It appears that a pulse rate of approx 14 Hz or greater may be adequate. A higher pulse rate is not necessarily advantageous if the energy per pulse is not adequate; for example, the SK7000 has a relatively high pulse rate of 28.6 Hz but a low power of only 80 millijoule per pulse and consequently produces only weak neuromuscular stimulation.

### Conclusions from Table 1

In the final analysis the electrical parameters shown in *Table 1*, while they do give good guidance, they do not give an absolute method of determining performance. This is because, as mentioned earlier, stun guns vary in how much power they deliver under different conditions. Hence the need for actual testing on a human subject.

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*Table 2:*

## Stun Gun Effects

### Cost

The prices shown in column two of *Table 2* are those paid for the test samples. The street price of stun guns varies considerably. The best bargains can sometimes be found at gun shows.

### Peak Voltage Claimed by the Manufacturer

The values given in *Table 2*, column three, are the peak voltages claimed by the manufacturer. While these are frequently the only information that the manufacturer provides, it can readily be seen that they are not a good indicator of performance.

### Clothing Penetration

Column four, "Clothing Penetration", is a general guideline that addresses the ability of the stun gun to deliver energy through the assailant's clothing. The amount of energy delivered to the target will of course vary with the thickness of the clothing as well as the type of material. Even those

rated as poor will penetrate thin layers of clothing.

*Neuromuscular Stimulaton*

"Neuromuscular Stimulation", or stimulation of the nerves and muscles, described in column five, was determined by applying each stun gun for a period of at least five seconds while the degree of stimulation was observed. Each test was repeated at least three times and all tests were made on the same person so that a subjective comparison could be made.

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*As they say,* "DO NOT TRY THIS AT HOME.".

✧✧✧✧✧✧✧✧✧✧✧✧✧✧✧✧✧✧✧✧

The engineer conducting these tests has 15 years experience in testing the physiological effects of high voltage, high current medical devices and is therefore familiar with how to conduct these trials safely, albeit not painlessly.

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## Police vs Civilian Models

The models tested here are 'civilian' or available to the public. Some manufacturers sell models that they make available to only the police.

One of the best known police models is the Taser which is reported to have an energy output of 0.800 joules per pulse. Compare this to the highest value for the models tested here of 0.350 joules - less than half.

The power of the police Taser is approximately 10 watt as compared to about 5 watt maximum for the civilian models tested here. This allows for a considerable safety margin in terms of potential hazard to any person the stun gun might be used on. The Taser is reported by police to be effective 82% of the time in immobilizing suspects.

The Taser is also reported to require a two to three second application to immobilize an assailant. The manufacuters of the models tested here generally recommend three to six seconds

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## Reviews by Model

Among the stun guns reviewed there is considerable variation in performance, size , features, and cost. It is suggested that the reader review each of the models in order to become familiar with stun gun characteristics, both good and bad.

Waveforms are included for the more technically inclined.

☞ **Notice:** *The reader is strongly advised to read the cautions and disclaimers at the end of this report before purchasing or using a stun gun or any electronic self-defense device.*

**Models Reviewed**

*Table 1.* **Stun Guns - Measured Electrical Parameters.**

| Model | Power [watt] | Voltage [volts, rms] | Peak Voltage [kv] | Current [mA, rms] | Peak Current [A] | Energy/Pulse [joules] | Pulse Rate [Hz] |
|---|---|---|---|---|---|---|---|
| O-Mega SS | 5 | 121 | 16.4 | 41 | 5.5 | 0.35 | 14.3 |
| Nova Spirit | 5.3 | 164 | 24.9 | 33 | 5 | 0.28 | 18.9 |
| Myotron Venus | 5.2 | 161 | 23.9 | 32 | 4.8 | 0.25 | 20.8 |
| STN-160 | 3.5 | 242 | 28.7 | 14 | 1.7 | 0.17 | 20 |
| SK1200; Thunder Power | 4.2 | 171 | 25 | 25 | 3.6 | 0.19 | 22.2 |
| SK6900; Thunder 945SP | 2.6 | 136 | 23 | 19 | 3.3 | 0.13 | 20 |
| SK7000; Sigma-7 Model C | 2.4 | 143 | 20.7 | 17 | 1.9 | 0.08 | 28.6 |
| Super Thunder | 2.3 | 156 | 19.6 | 14 | 1.8 | 0.11 | 20 |
| Z-Force-Ultra | 2.9 | 157 | 25.2 | 18 | 3 | 0.1 | 28.6 |
| Z-Force III | 2.4 | 184 | 29.7 | 13 | 2.1 | 0.07 | 28.6 |
| Z-Force I | 1.8 | 124 | 20.4 | 15 | 2.4 | 0.06 | 28.6 |
| STG-1 | 1.1 | 138 | 11 | 8 | 0.6 | 0.07 | 15.6 |
| Pro-007 Personal Protector (This device is not a stun gun.) | 0.14 (assumes 0.67 Hz) | 2 (assumes 0.67 Hz) | 0.31 | 71 (assumes 0.67 Hz) | 10.8 | 0.22 | Single pulse. (assume 0.67 for comparison) |
| Defender II | Unit failed during test. | | | | | | |



*All measurements were made at maximum power.

*Table 2.* **Stun Gun Effects.**

| Model | Cost | Voltage Claimed by Mfr. | Clothing Penetration | Neuromuscular Stimulation | Comments |
|---|---|---|---|---|---|
| O-Mega SS | $149.95 | 120,000 | Fair | **Strongest stimulation.** | |
| Nova Spirit | $89.95 | | Good | Moderate | |
| STN-160 | $94.95 | 160,000 | Excellent | Moderate | Leakage through edge of battery cap. |
| Myotron Venus | $149.75 | | Good | Moderate | |
| SK1200; Thunder Power | $64.95 | 120,000 | Good | Weak. | |
| SK6900; Thunder 945SP | $69.95 | 65,000 | Good | Weak. | Leakage through pin. |
| SK7000; Sigma-7 Model C | $102.37 | 45,000-50,000 | Good | Weak. | |
| Super Thunder | $70.95 | 75,000 | Excellent | Weak. | Leakage from pin. |
| Z-Force-Ultra | $50.00 | 150,000 | Good | Weak. | Very strong leakage from both switches |
| Z-Force III | $69.95 | 100,000 | Good | Minimal. | Leakage at switch and case joint. |
| Z-Force I | $49.95 | 80,000 | Good | Minimal. | Leakage from edge opposite switch. |
| STG-1 | Kit $79.50 | 50-100,000 | | Minimal. | |
| Pro-007 Personal Protector | $34.95 | 400V 76A | Poor | No muscle stimulation. | Causes a burn on the tissue surface. This device is not a stun gun. |
| Defender II | $52.95 | 90,000 | Unit failed during test. | | |

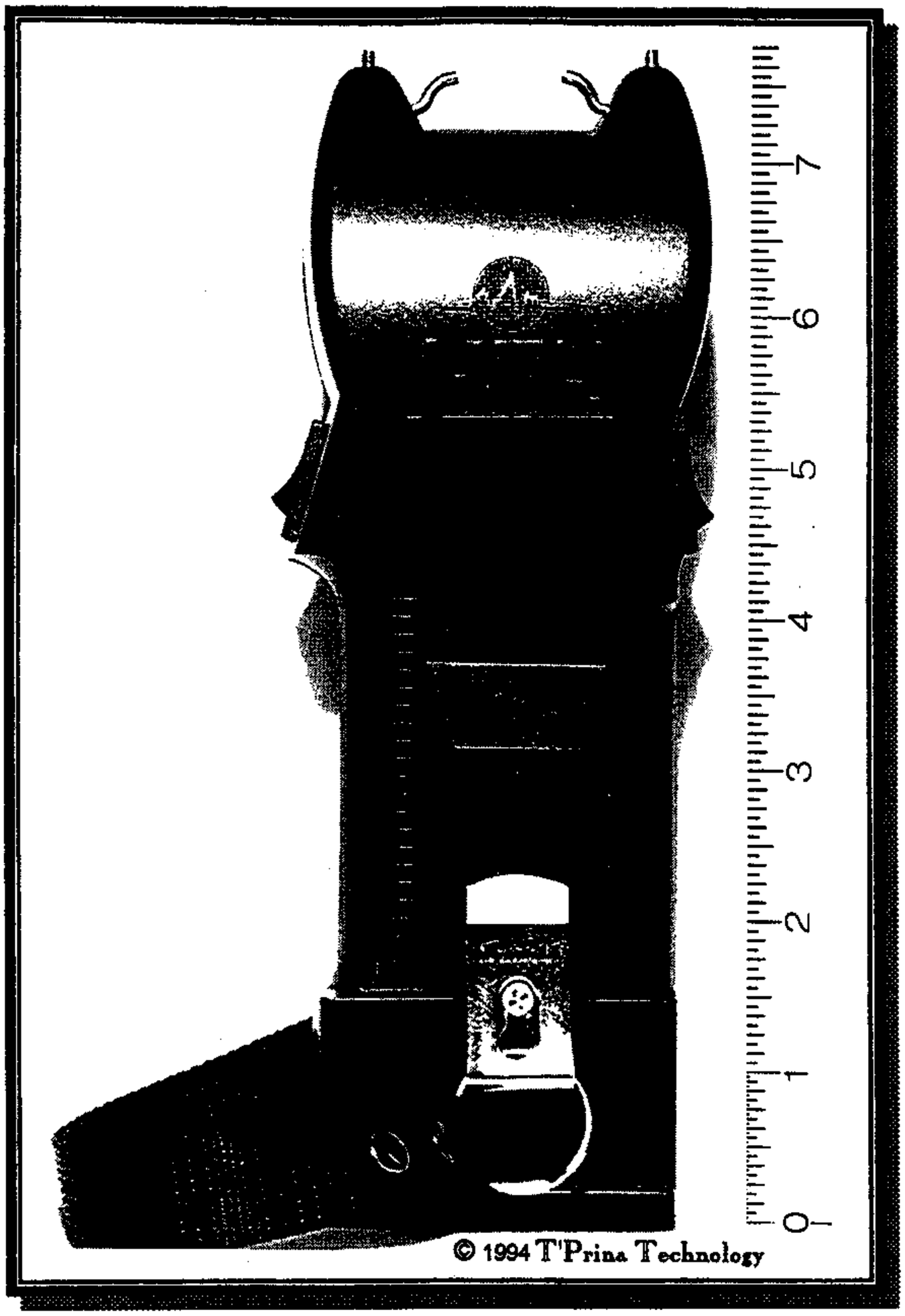
## O-Mega™ Super Stunner

This stun gun clearly has the strongest effect of those tested. Not only did it stand out in effectiveness but it showed no arcing or discernible leakage current to the hand of the user.

The Super Stunner has two switches, an on-off switch and a trigger switch. The on-off switch is useful in that it may prevent the device from being activated accidentally. It has a potential disadvantage in that if it is inadvertently left on for an extended period the battery will be drained. An automatic timeout on this function would be very desirable. The on-off switch, which is not spring loaded, protrudes in such a way that it can easily be pressed to the 'on' position unintentionally while the stun gun is being carried in a purse or pocket.

This is the only model tested to include a battery indicator - a small red LED - that glows when the safety switch is in the 'on' position and the battery ostensibly has sufficient energy remaining. The other stun guns must be activated and arced in order to verify the battery condition, resulting in significant wear on those units with internal spark gaps.

Unfortunately, the battery condition light does not always operate as intended. If the on-off switch is left in the 'on' position and the battery drained to a low level, the battery condition light may still glow indicating that sufficient




Super Stunner

battery energy remains. But, in fact, there may not be enough energy to cause a single spark, let alone enough to discourage an assailant.

The O-Mega Super Stunner has two other potential drawbacks. Firstly it is a fairly large unit and therefore may be inconvenient to carry; though some may consider its size an advantage in that it is easier to get a good grip on. Secondly it is not as good as some of the other stun guns at penetrating very thick layers of clothing.

The distributors of the O-Mega state in the literature that accompanies their product. "A very small percentage of people, however, can withstand this amount of electric shock, so O-Mega cannot absolutely guarantee that their

Stun Guns will render everyone unconscious.". Some of the other distributors are not so forthright in their claims..

The Super Stunner has a belt clip as well as very sturdy strap.

While the manufacturers of three other devices tested claim higher voltages they did not perform nearly as well as the O-Mega Super Stunner.

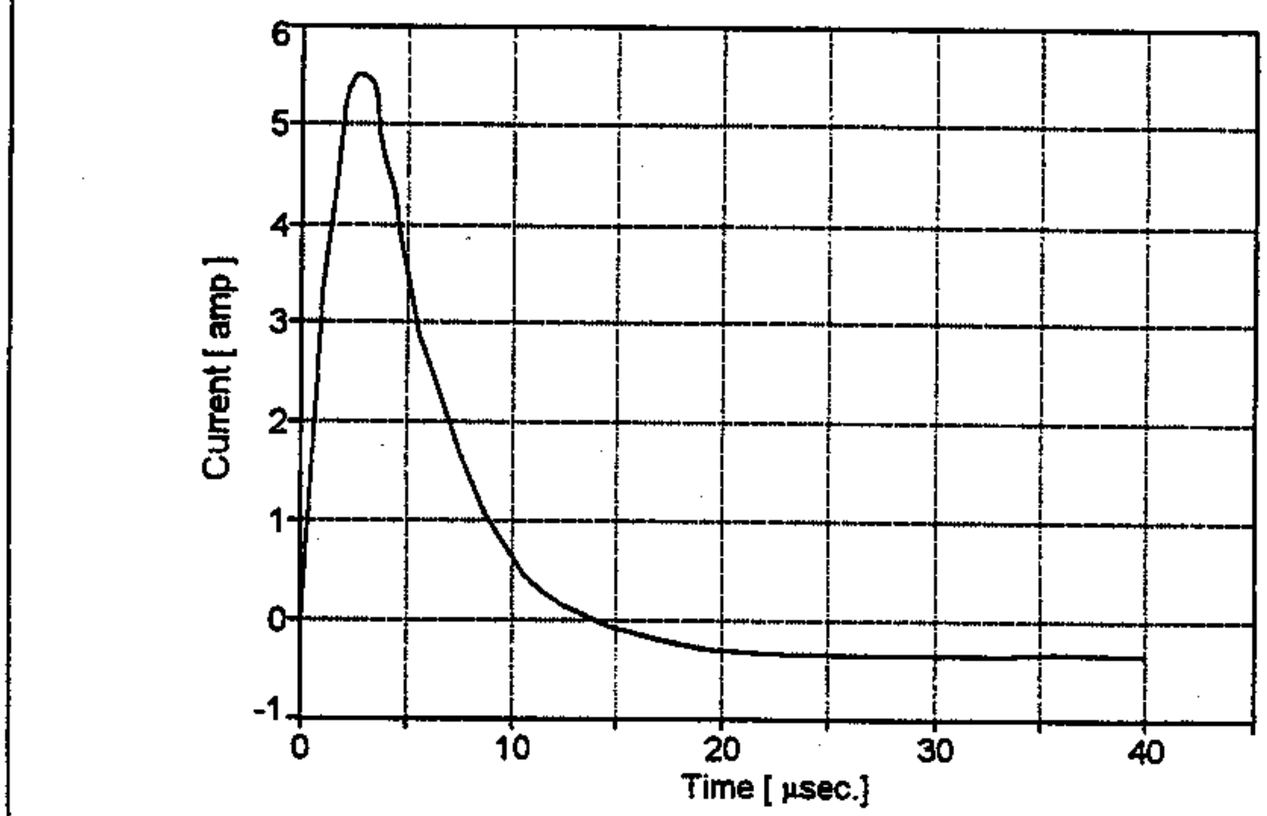
## Batteries

This device uses two 9- volt batteries, e.g. Duracell MN1604.

## Waveform

The waveform to the right shows a single output pulse of the Super Stunner. The pulse is seen to be very short, delivering most of its power in less than ten millionths of a second. Note in *Table 1* that this stun gun has the highest energy per pulse of those tested.

Distributed by O-Mega™ , Network Incorporated, 3544 Overland Avenue, Los Angeles, CA 90034. Made in Taiwan. *No telephone number is given on the packaging or in the enclosed instructions..*



*Nova Technologies, Inc.*

## Nova Spirit

The Nova Owner's Manual does not specify voltage but does claim "an equivalent current of about 3 milliamps" under unspecified conditions. An 'equivalent current' means that the Spirits' output is estimated to be equivalent in current hazard to about 3 milliamps of low frequency (50Hz) sine wave current. The actual output - 33 milliamps measured at maximum power output - is of course not a continuous sine wave but a series of short duration, high voltage pulses.

### Batteries

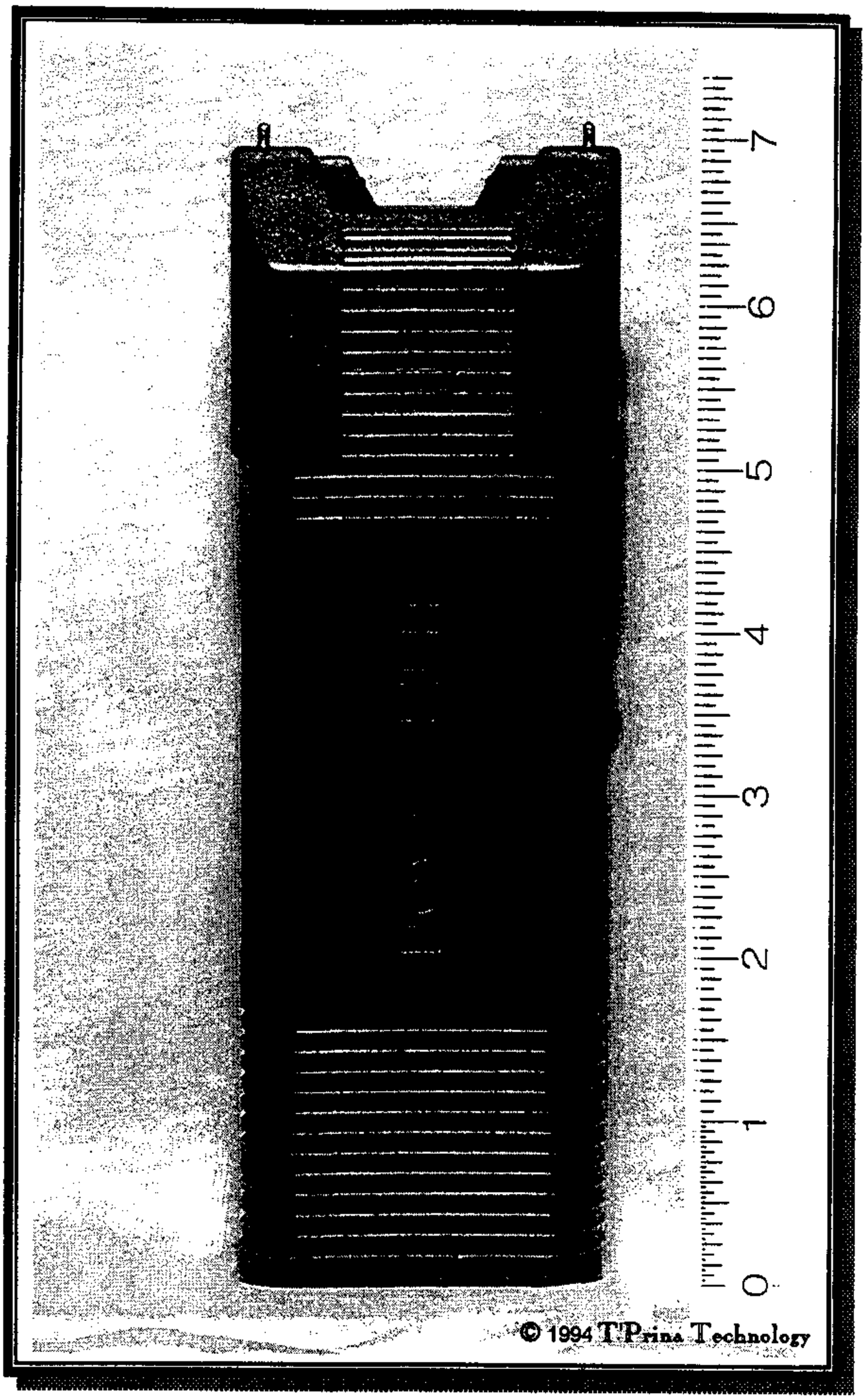
This model requires a special lithium battery pack sold only through Nova Technologies. As with the Myotron Venus, it consists of 3 each 3-volt Duracell Lithium batteries.

### Waveform

The waveforms, as well as the electrical and neuromuscular stimulation characteristics, of the Spirit are virtually identical to that of the Myoton Venus. The differences that can be seen in *Table 1* are insignificant in that they might be accounted for by small variances in battery capacity, internal spark gap condition, and production tolerences.

The Nova Spirit produces a moderate level of neuromuscular stimulation.

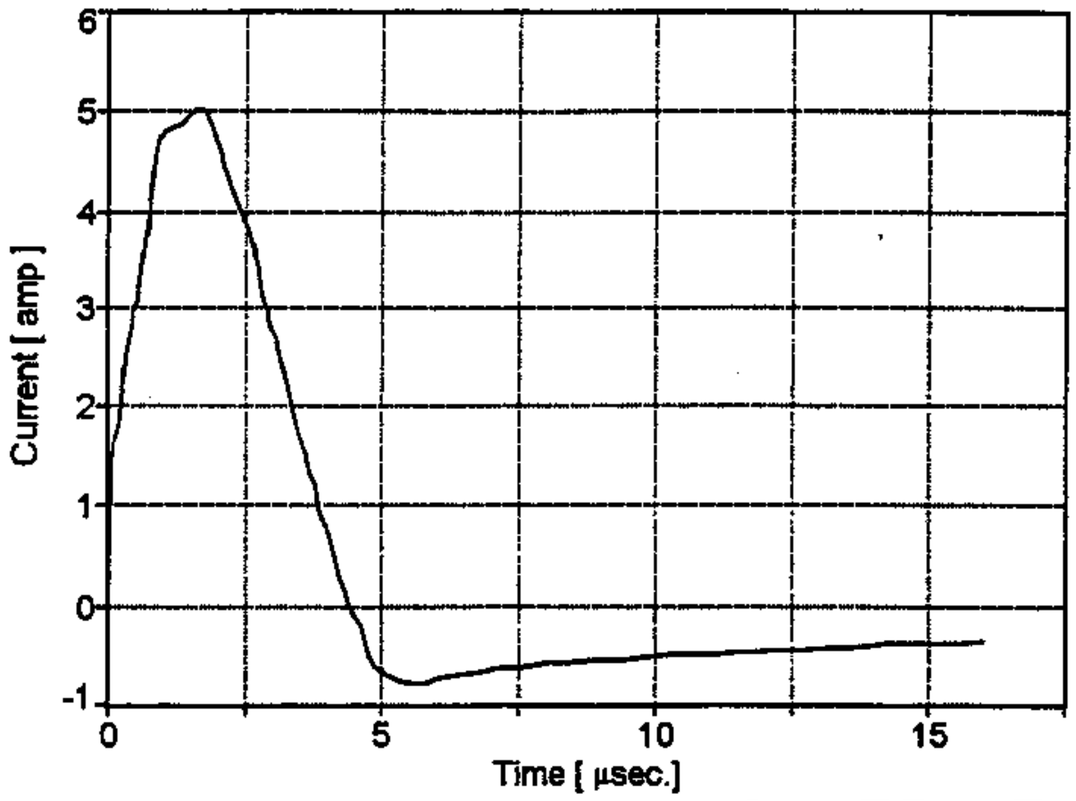
Nova Technologies, Inc., 2120-F West Baker Lane, Austin, TX 78758. *The telephone numbers provided in the literature that*




**Nova Spirit**

*accompanied the Nova Spirit are no longer valid numbers.*

## Nova Spirit






**Compare the waveform of the Nova Spirit with that of the Myotron Venus on page 11.**

*Arianne International*

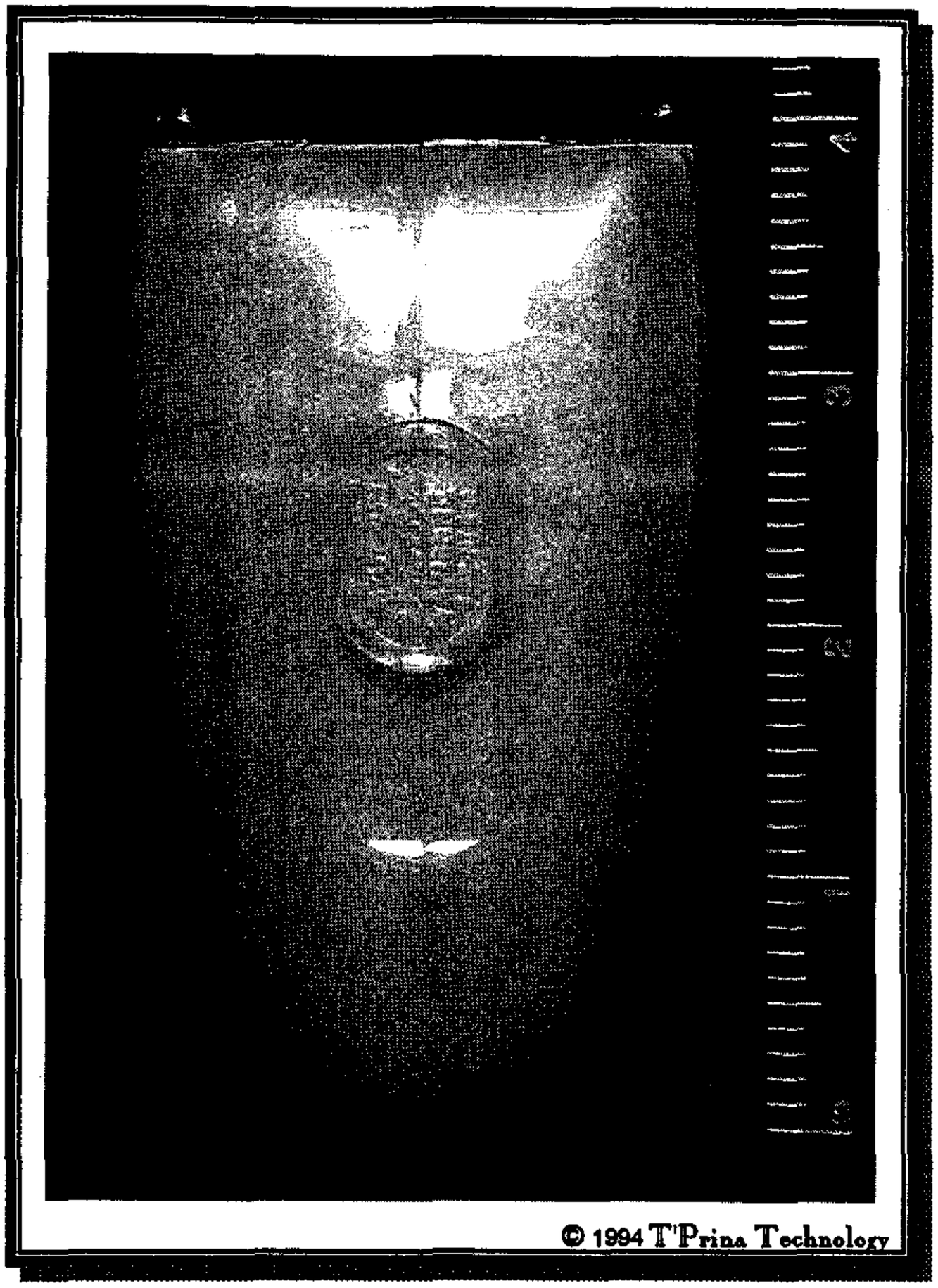
## Myotron™ Venus

While the manufacturer claims the Myotron Venus is not a stun gun, extensive testing was not able to distinguish it from a stun gun.

Their argument is simply one of semantics. They argue this is not a stun 'gun' because it does not shoot a projectile - only the Taser™ which actually shoots two dart-like projectiles with wires attached does - however, the term 'stun gun' as it is commonly used in the medical literature and popular press would clearly include the Myotron Venus.

What makes their 'this is not a stun gun' argument even more peculiar is that extensive electrical and physiological testing was not able to clearly distinguish the output of the Myotron Venus from the Nova Spirit, a device which Arianne recommends in their literature to those who intend to purchase a stun gun. In comparison to the Nova Spirit the pearl colored Myotron is a smaller, more convenient to carry package, designed to appeal primarily to women.

The Myotron Venus is virtually indistinguishable in electrical characteristics and neurostimulation from the Nova Spirit. Nova Technologies has been making stun guns for more than 10 years and the Spirit model for at least 7 years. The differences that can be seen in *Table 1* are insignificant in that they could be accounted for by small variances in battery capacity, spark gap condition, and production tolerances.




**Myotron™ Venus**

### Wrist Strap

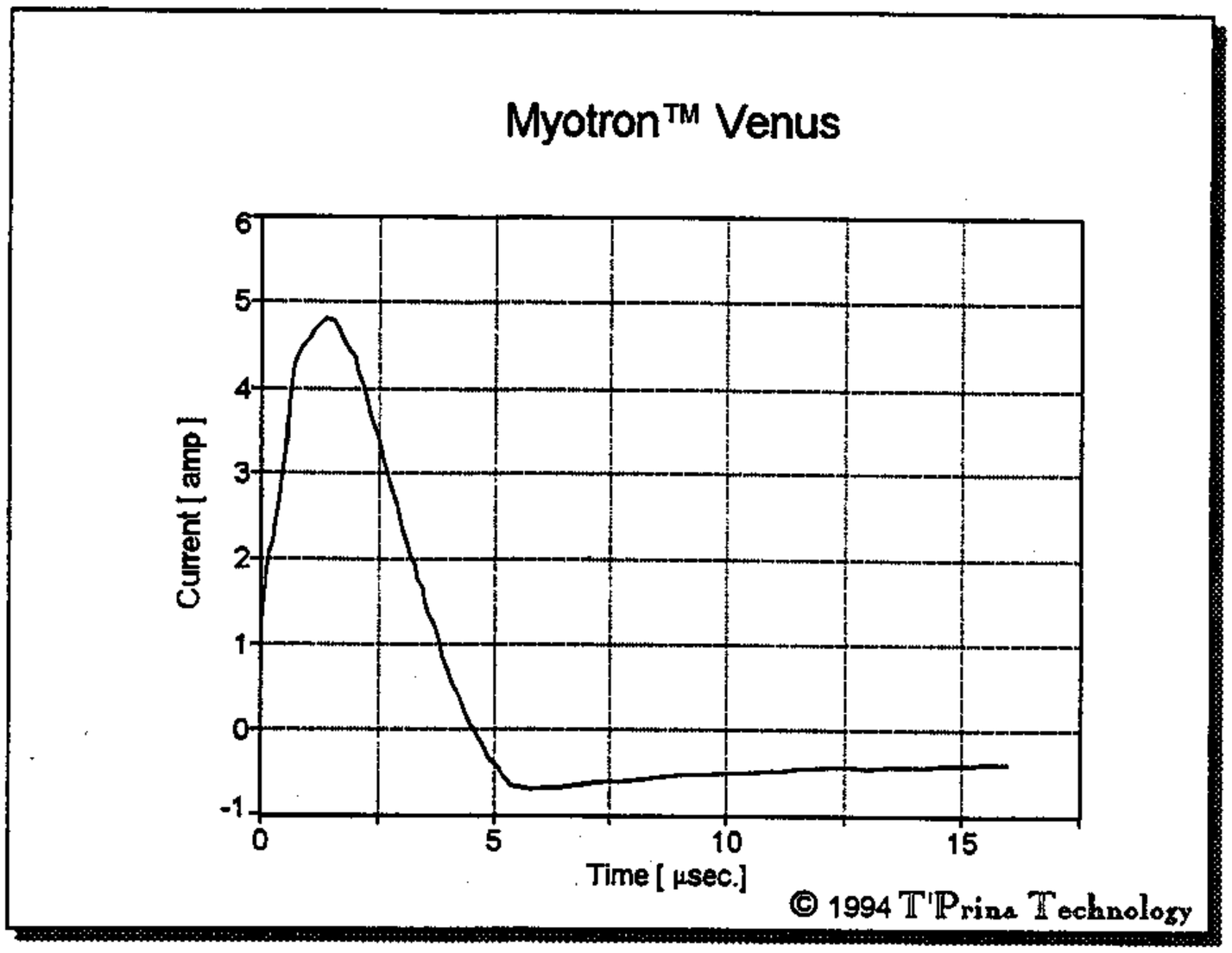
The Myotron television commercial, videotape and brochure all make a strong argument for the advantages of a wrist trap. However, the device arrived without the strap; an enclosed note stated that the strap would arrive later. Three months from the order date the strap had not yet arrived.

### Batteries

The Myotron uses 3 each, 3-volt Duracell Lithium (as does the Nova Spirit) type DL2/3A batteries grouped into a single package that is not intended to be replaced. The DL2/3A are "For pack assembly and memory use only." This may at first thought seem like a mean-spirited way to prevent the user from replacing the batteries. However, a rationale might be that after the device has been used to the extent that a set of lithium batteries has been expended, other components, such as the internal spark gap, would also likely be nearing the

end of their useful life making it necessary to replace the entire unit..

Arianne International, Box 32112, Palm Beach Gardens, FL 333410. *The only phone number provided, 1-800-348-2900 is a marketing service for placing orders only and is not a source of product information. or access to Arianne International.*




**Compare the waveform of the Myotron Venus with that of the Nova Spirit on page 9.**

***King Hope Enterprises, Ltd.***

## STN-160

The STN-160 is a large - 16.5 inches long - baton which according to the manufacturer is designed for police and night watchmen. Although the two probes are at the tip, the baton is 'hot' along its full length above the handle as well as at the tip.

The STN-160 has the highest effective voltage of those tested. It is particularly effective at penetrating thick layers of clothing and causes moderate neuromuscular stimulation .

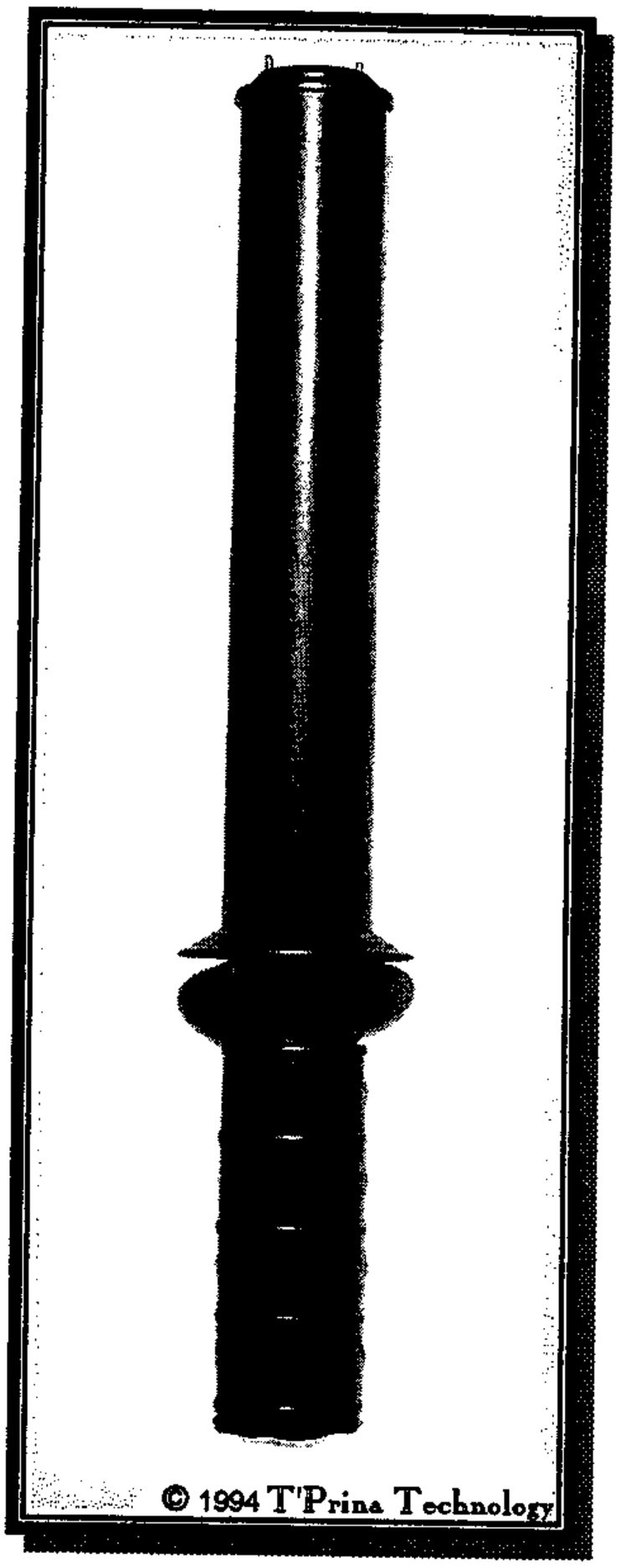
The STN-160 comes with a leather sheath and a wrist strap.

A small amount of leakage current could be felt at the edge of the battery cap which is at the distal end of the handle.

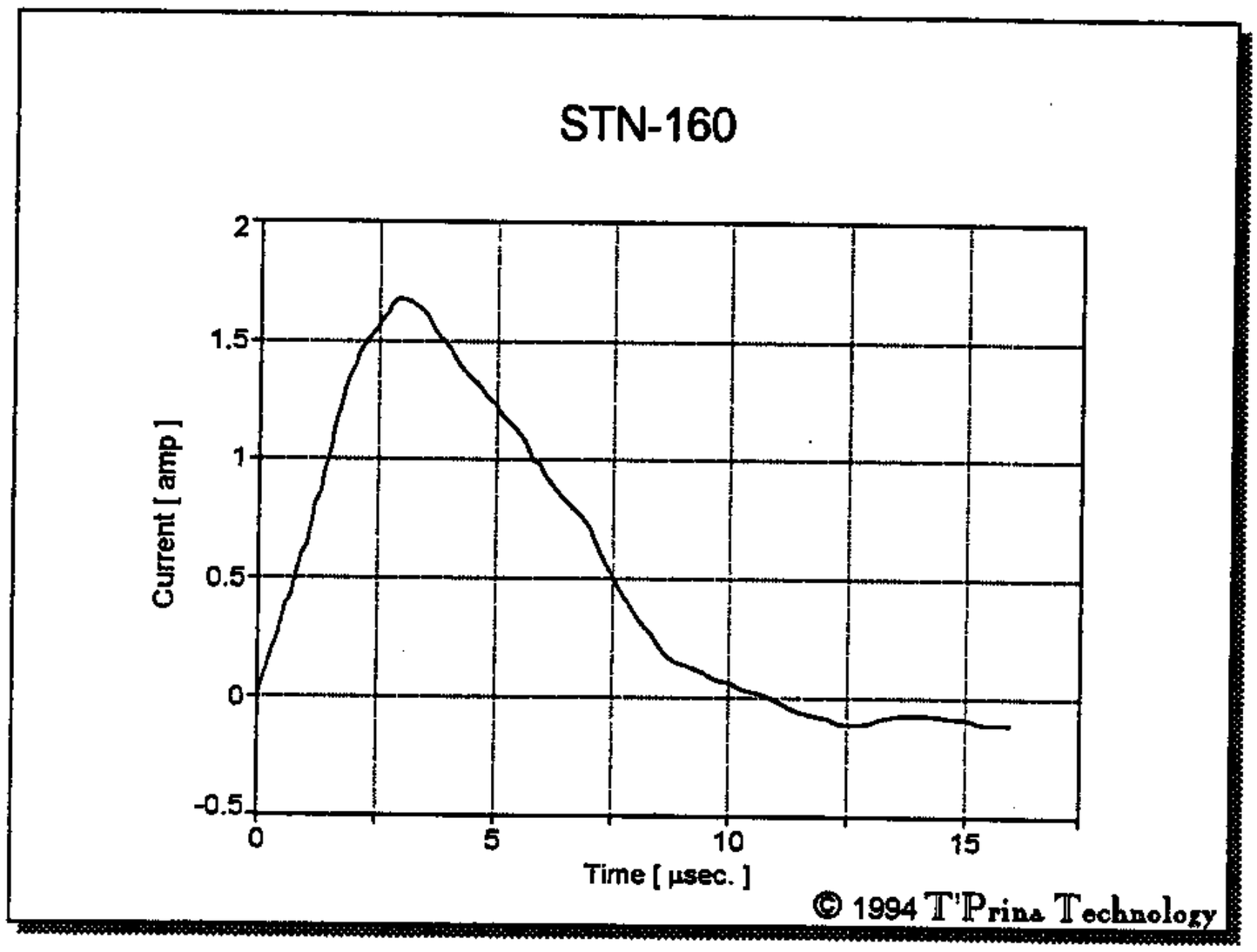
### Batteries

The STN-160 uses 8 AA alkaline batteries stored in the handle.

King Hope Enterprises Ltd., Hong Kong. Made in China. *No telephone number is given on the packaging or in the enclosed instructions.*




**STN-160**
(length 16.5 inches)



*S.K. Electronic Corp.*

## SK1200 / Thunder Power

The SK1200 is a convenient size that fits easily fits into pocket or purse. It includes both a wrist strap and a belt clip.

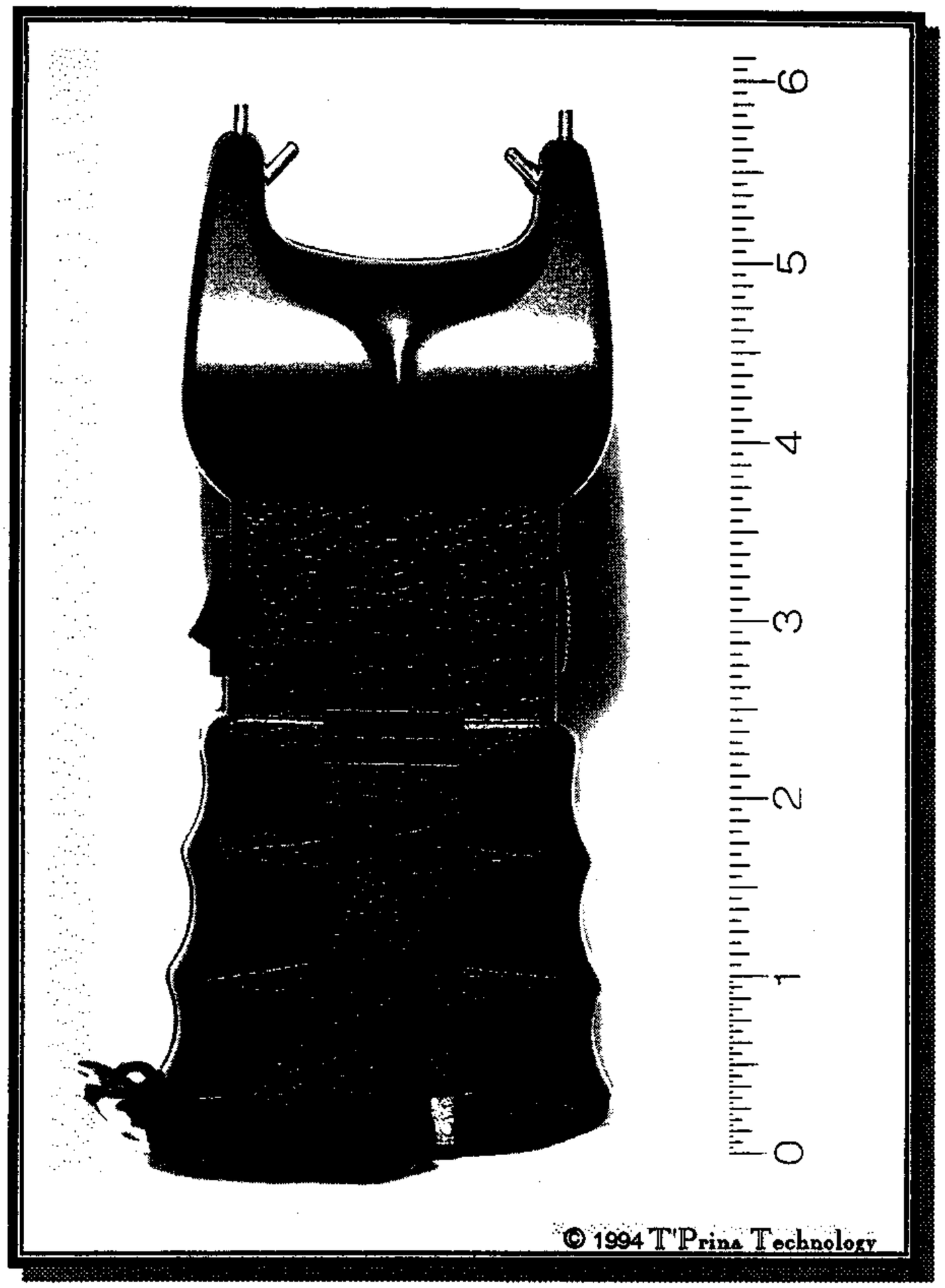
The electrical parameters as well as the waveform at bottom right are seen to be fairly typical with no outstanding characteristics.

Neuromuscular stimulation with this stun gun was weak.

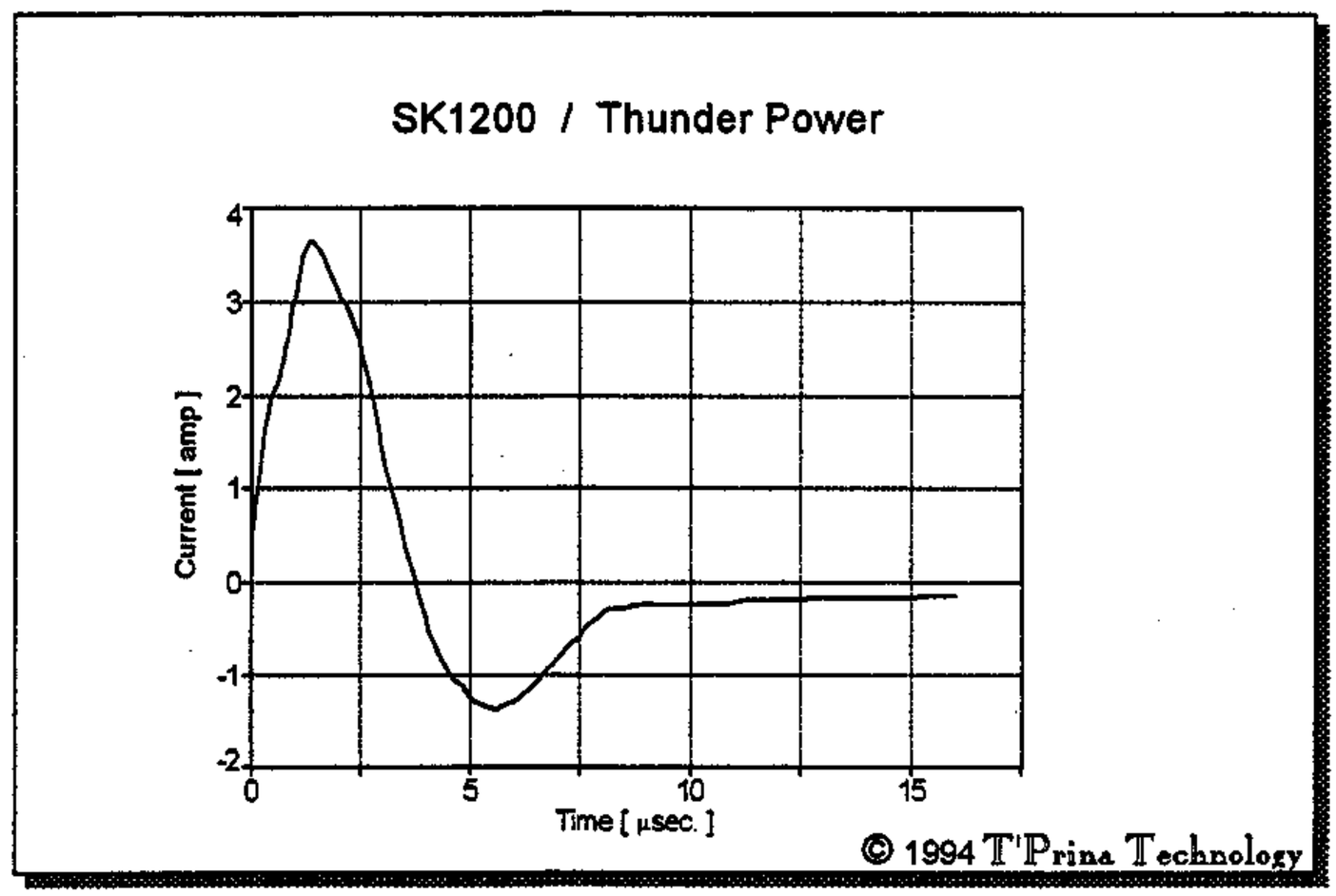
### Batteries

The SK1200 uses a single 9-volt alkaline or rechargeable nickel-cadmium battery.

S.K. Electronics Corp., made in Korea. Distributed by PDI, 9608 Van Nuys Blvd. #104, Panorama City, CA 91402. *No phone number was provided in the accompanying literature.*




**SK1200 / Thunder Power**



***Degen***
***Electro Shield™***
***P.D.I.™***
***S.K. Electronics***

## Thunder 945SP
## SK-6900

The SK-6900 has a wrist strap that when pulled out disables the stun gun.

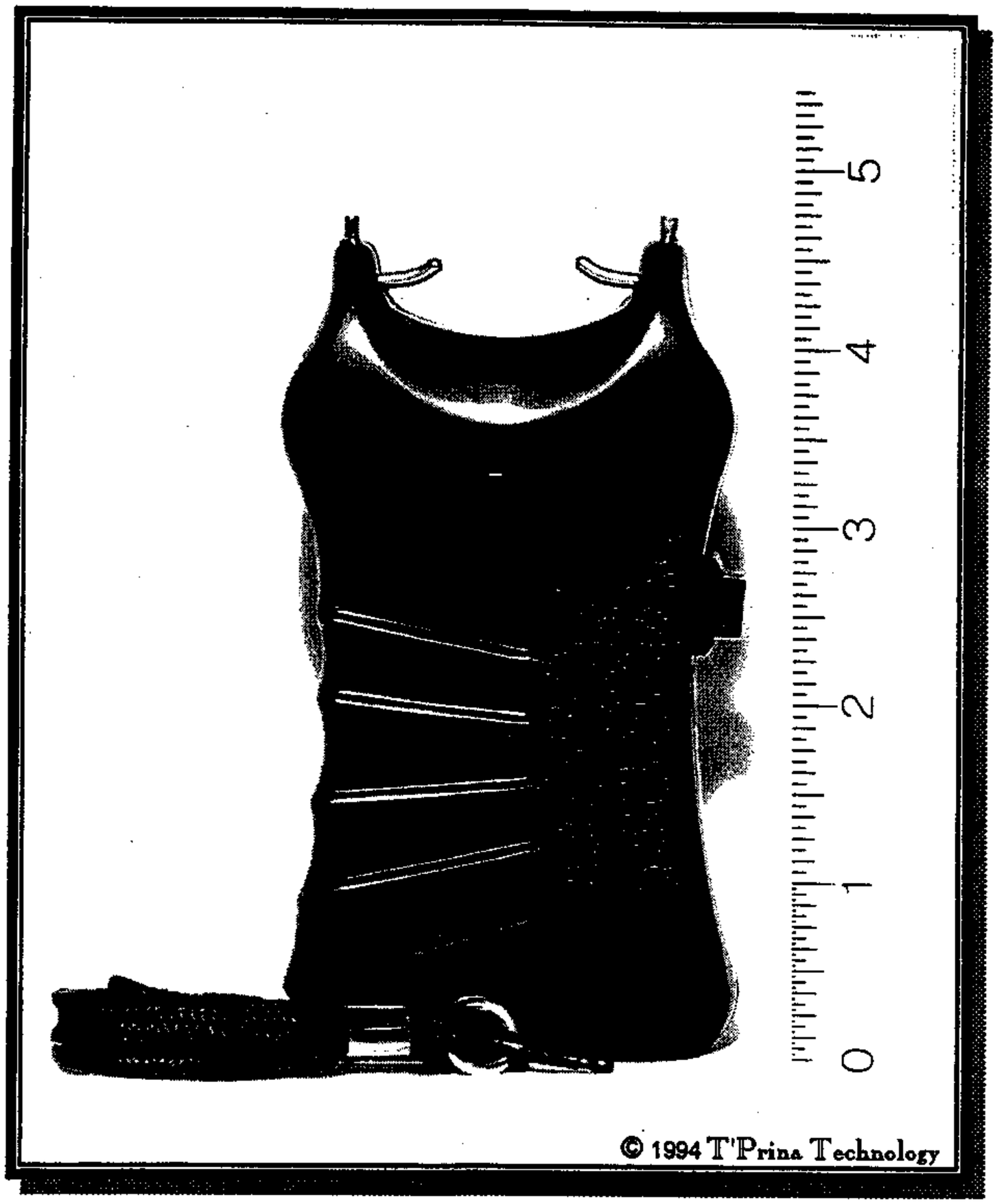
The SK-6900 produces only weak neuromuscular stimulation.

There is some leakage current to the hand of the user in the area of the wrist strap pin.

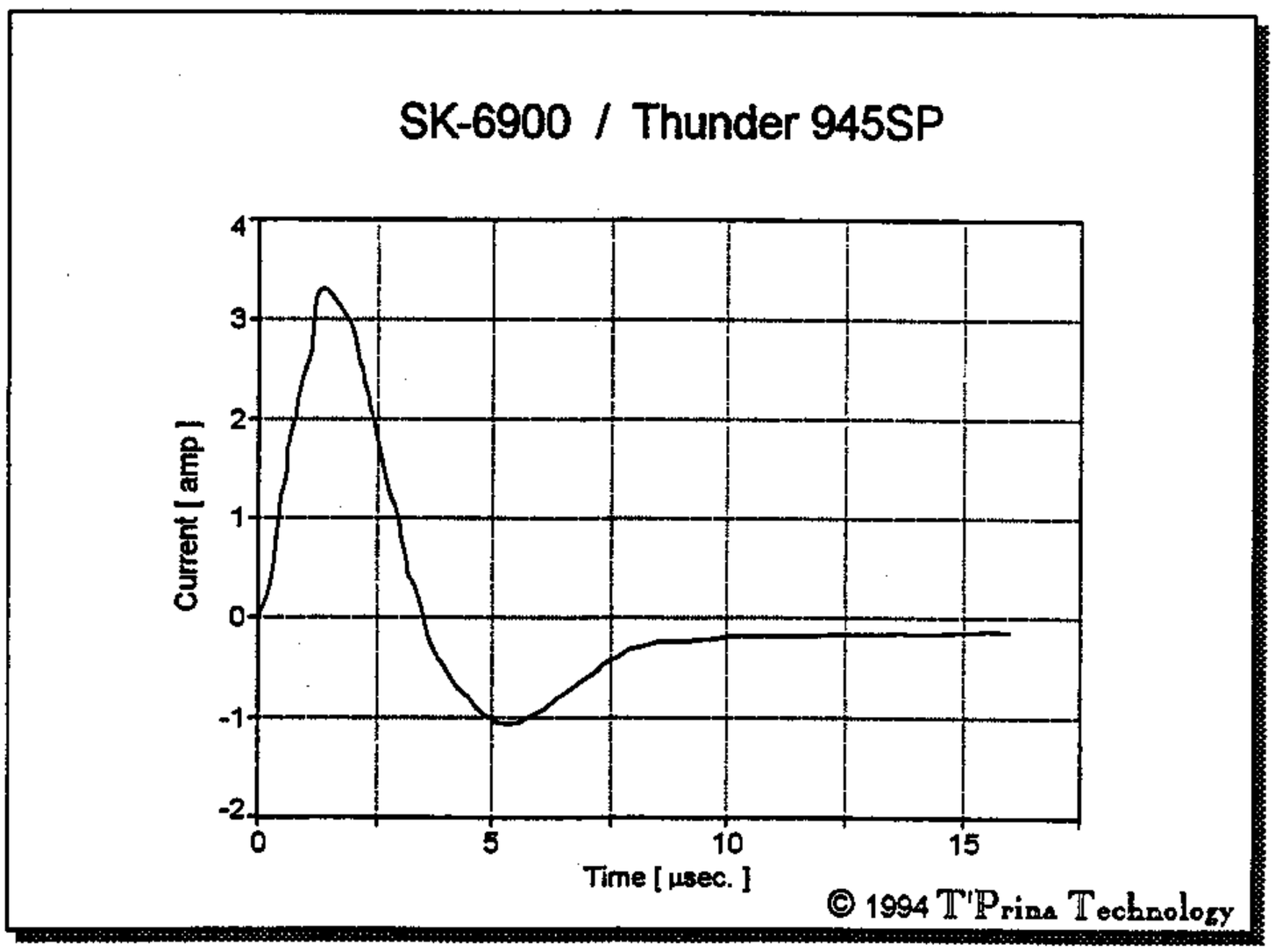
### Batteries

This stun device uses a single 9-volt alkaline or nickel cadmium battery.

Degen, 1800 N. Highland Ave., #600, Los Angeles, CA 90028. *No phone number is provided on the packaging or in the accompanying literature.*




**SK-6900 / Thunder 945SP**



***Sigma-7 products, Inc.***
***S.K. Electronics***

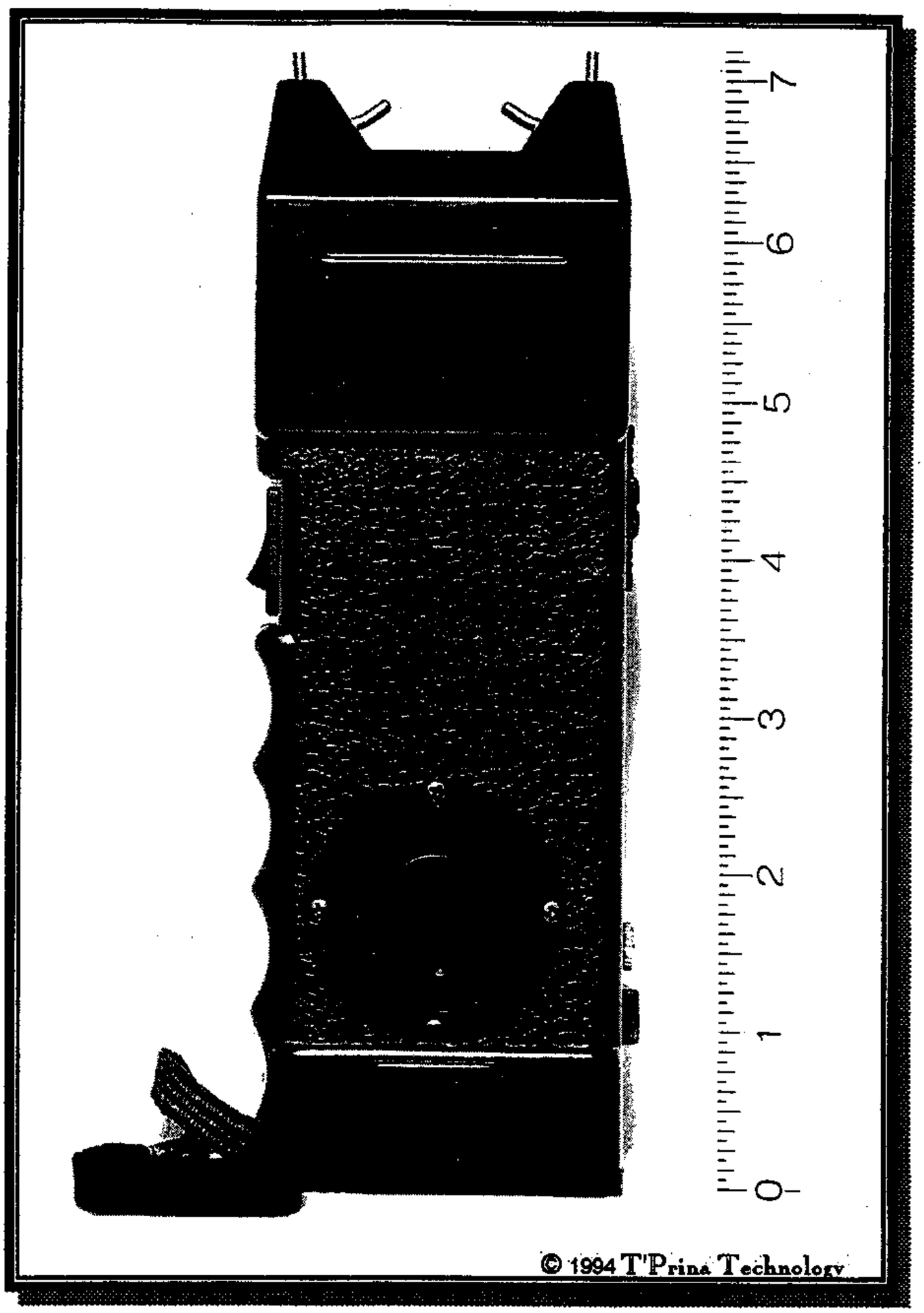
## Sigma-7
## Model C - SK-7000

The Sigma-7 includes a belt clip, wrist strap, strobe light and siren. A three position alarm control switch allows the user to select among: (1.) stun gun with alarm when the activation switch is pressed (2.) alarm off i.e. stun gun only on pressing the activation switch (3.) the siren is activated immediately on selecting this position and the stun gun is becomes active on pressing the activation switch

The strobe light is always activated with the stun gun.

Operation of the Sigma-7 Model C is excessively complex for a defensive device that may be operated in a surprise situation.

There is an external jack for recharging the battery and a jack for an 'accessory alarm' the use of which was not specified in the owners manual.



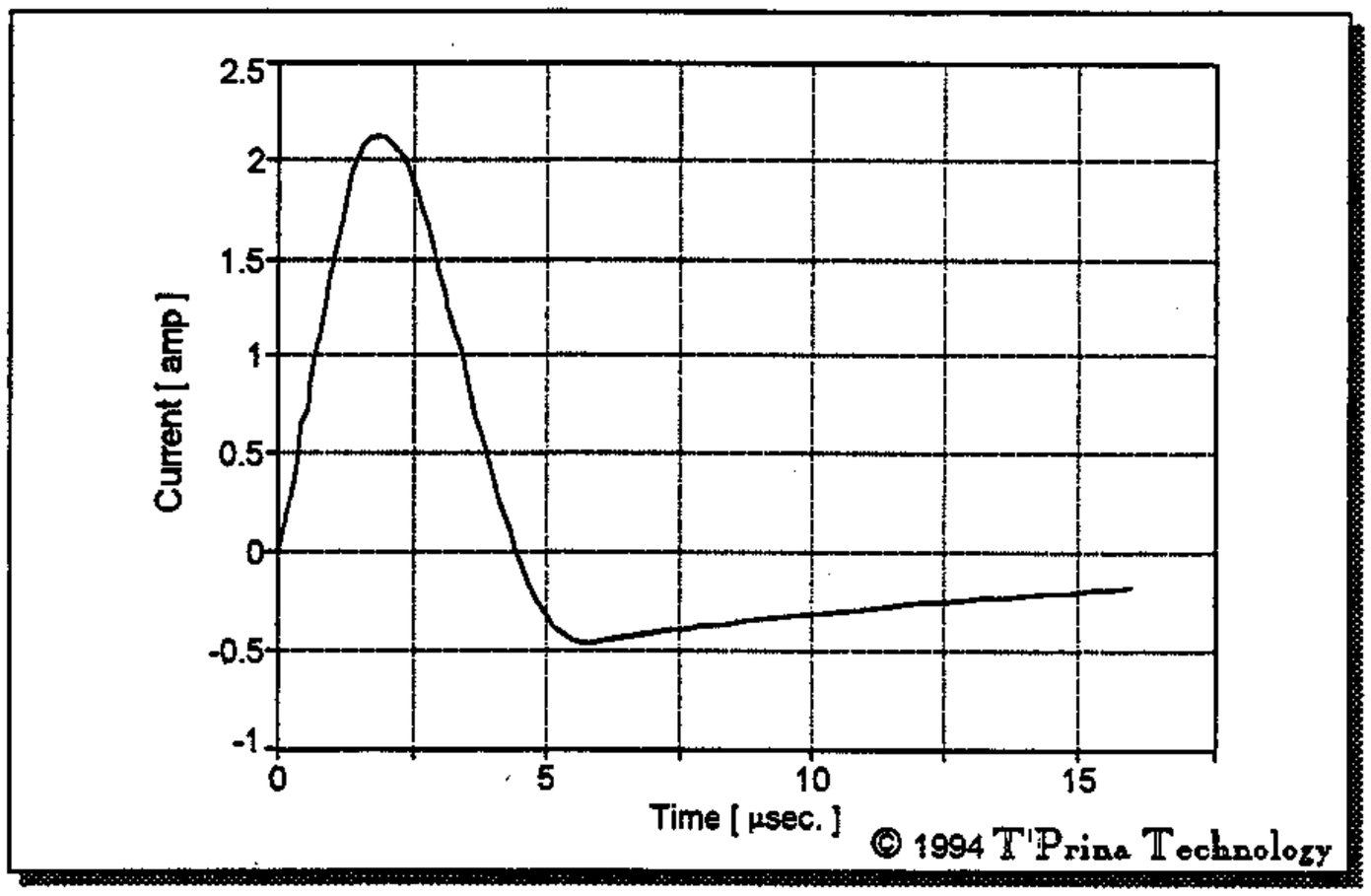

**Sigma-7 Model C / SK-7000**

As shown in *Table 1*, the energy per pulse is very low. Neuromuscular stimulation with the Sigma-7 Model C was weak.

### Batteries

This stun device uses a single 9-volt alkaline or rechargeable (Eveready or G.E.) battery.

Sigma-7 Products, Inc., 2888 Bluff Street #174, Boulder, CO 80301, (303) 444-9319. Made in Korea.



***U.S. Protector ,Inc.***
***Degen***
***PDI***

## Super Thunder

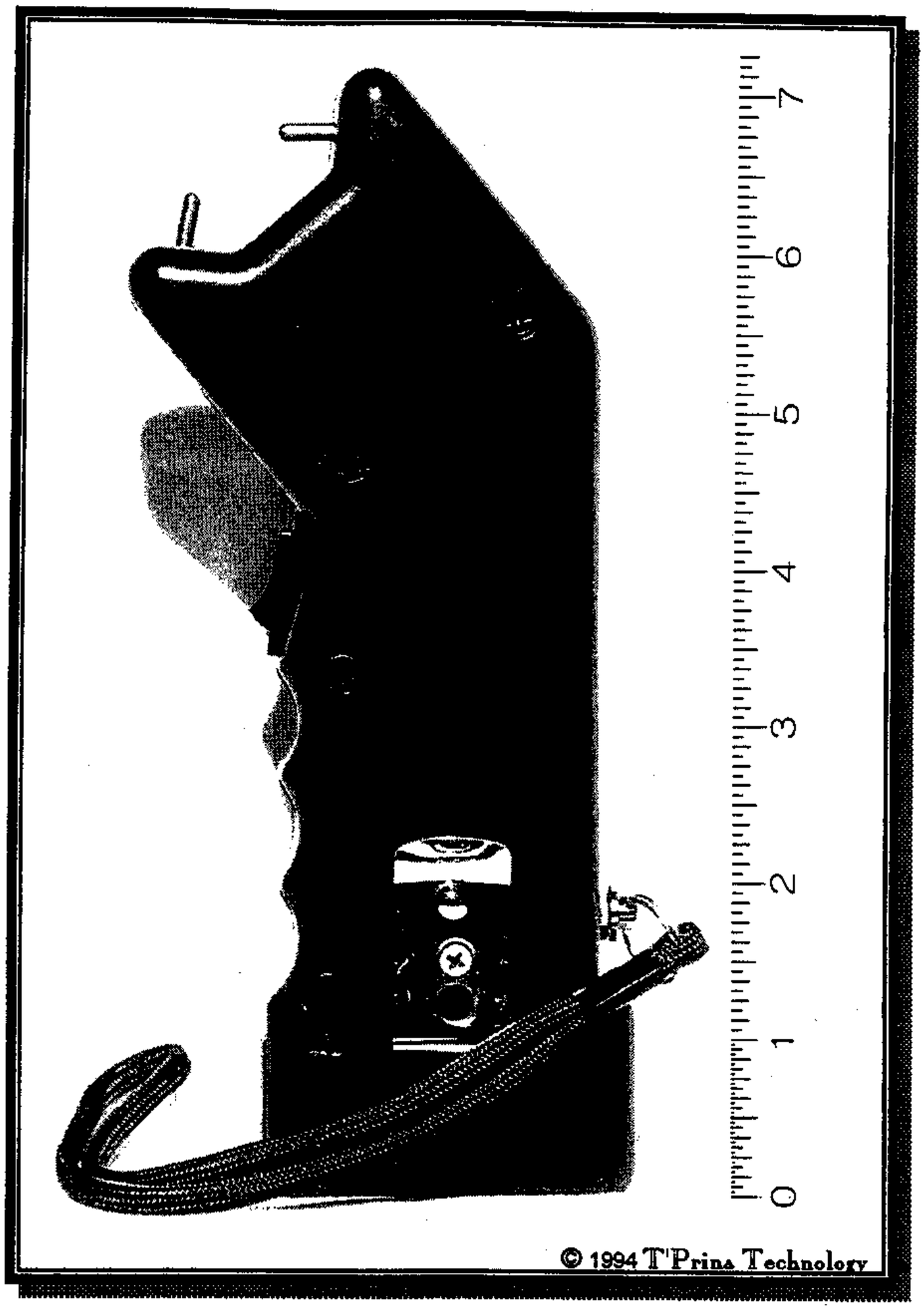
The Super Thunder is an unusually sturdy unit with a metal belt clip and a wrist strap. Removing the wrist strap disables the stun gun.

The Super Thunder is excellent at penetrating clothing but produces only weak neuromuscular stimulation with its' 0.11 joules per pulse.

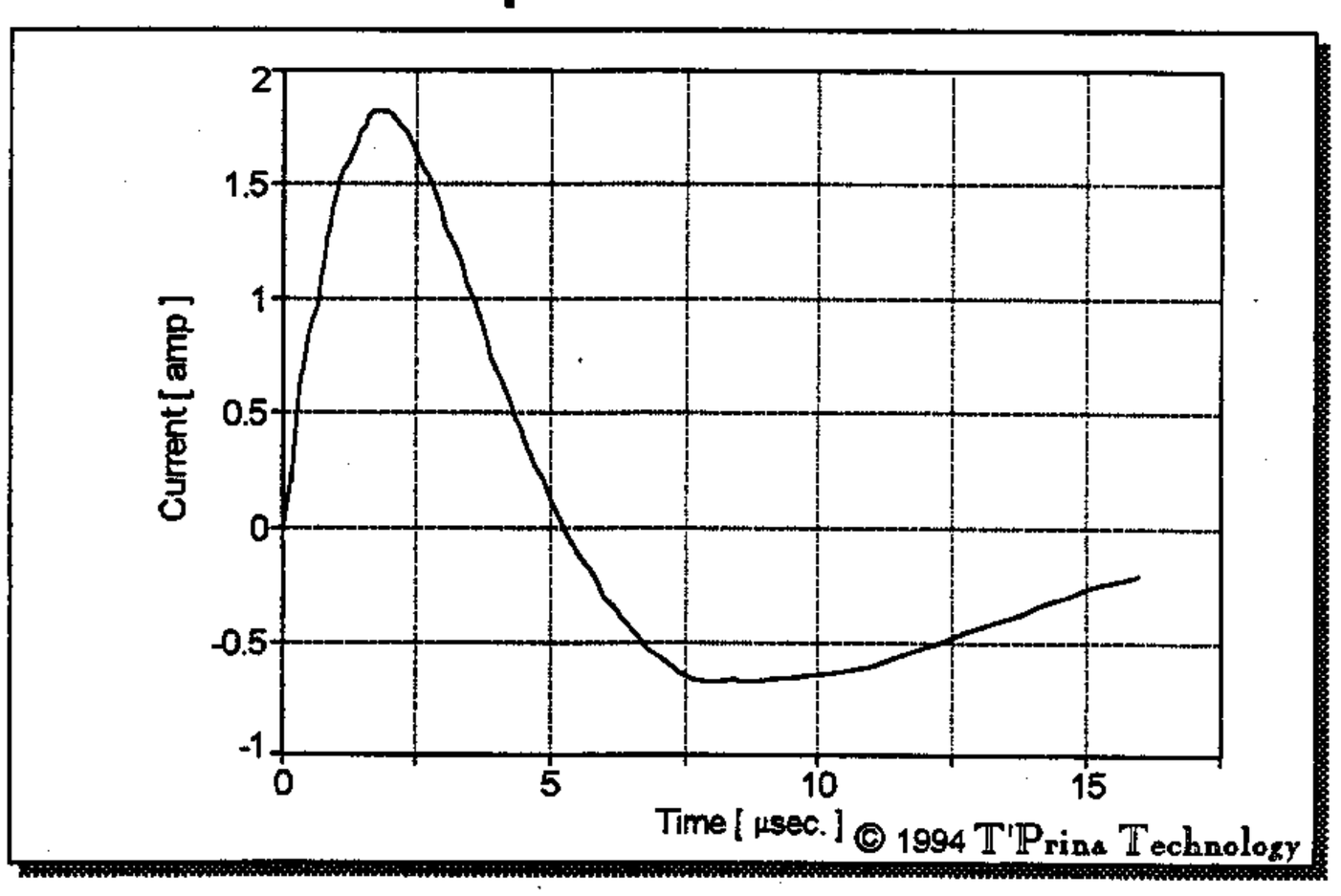
### Batteries

The manufacturer specifies use of only a 9 volt rechargeable or a 9 volt Eveready battery. The battery is easier and faster to change than in most stun guns - it is simply slid into its compartment.

U.S. Protector, Inc.; Degen Panorama City CA 91402; PDI 9608 Van Nuys Blvd. #104, Panorama City, CA 91402. Made in U.S.A.. *No telephone number is provided on the packaging or in the accompanying literature.*




**Super Thunder**



## Z-Force™-Ultra

The Z-force-Ultra was difficult to test due to excessive current leakage from both switches - on/off and activation - to the operators hand. Arcing was observed between the activation switch and the operators finger causing significant pain. This much leakage current and arcing to the hand could be a serious hazard in that it might startle the user causing the stun gun to be dropped. A rubber glove was worn during the remaining tests.

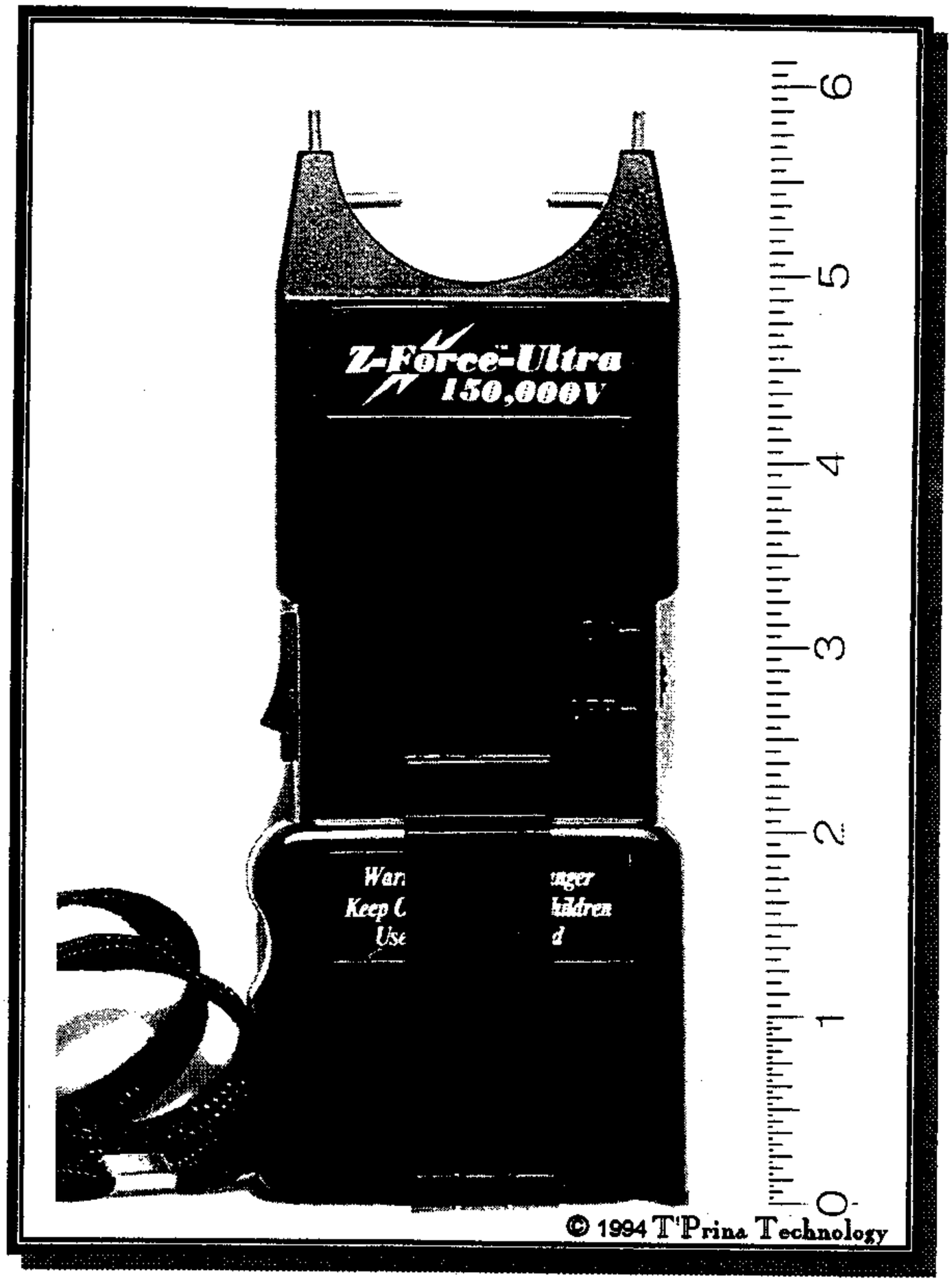
The Ultra has both a belt clip and a wrist strap.

Neuromuscular stimulation with this product was weak.

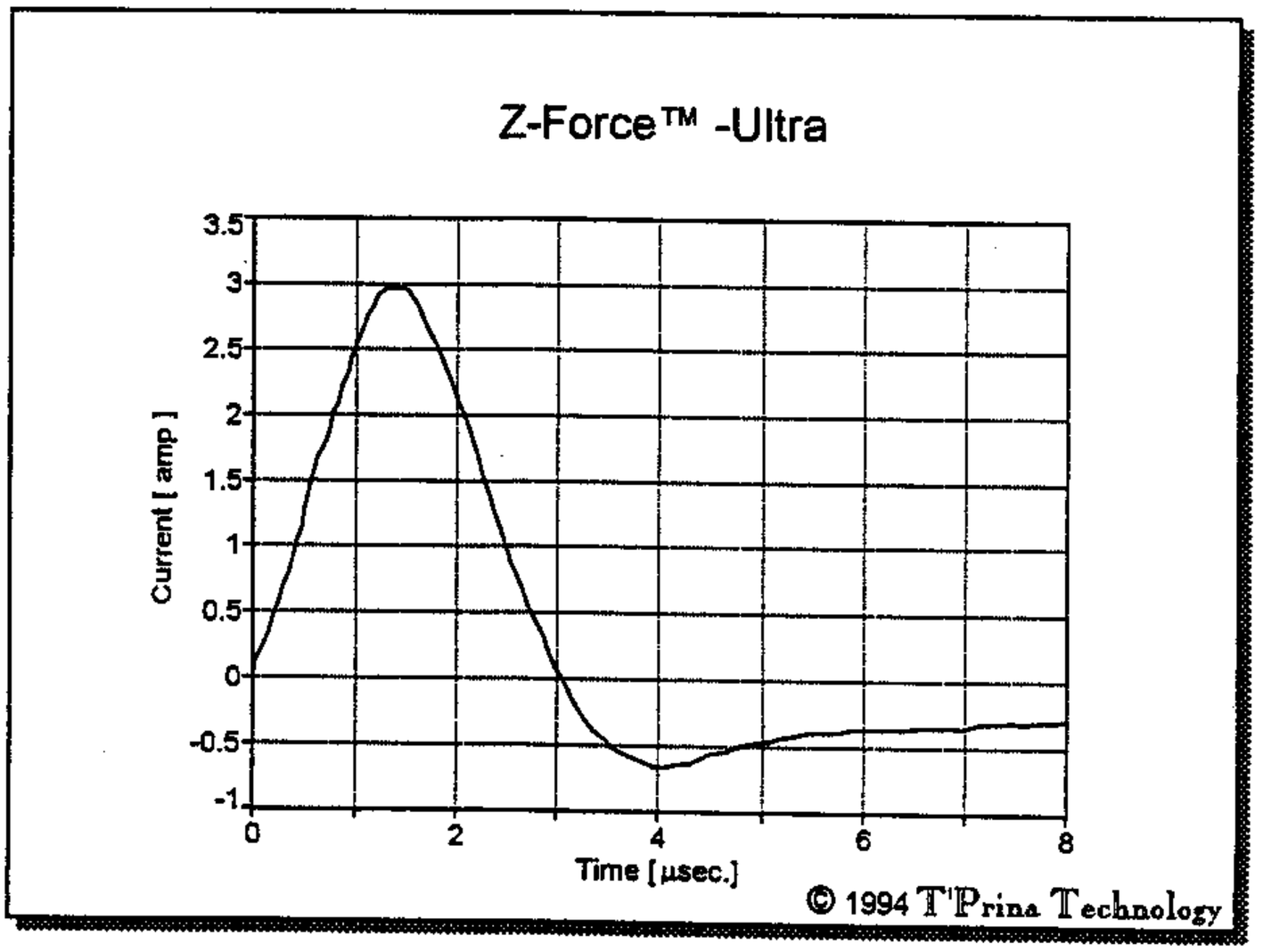
### Batteries

The Z-Force-Ultra uses two 9 volt batteries, e.g. Duracell MN1604.

Z-Force™ -Ultra, Assembled in USA. *No address or phone number is given on the packaging or in the enclosed instructions.*




**Z-Force™ Ultra**



## Z-Force™ III

As with the Ultra model there was excessive current leakage from the stun gun to the user's hand. The leakage from the switch as well as from the case seams was not as strong as with the Ultra model but could be distracting.

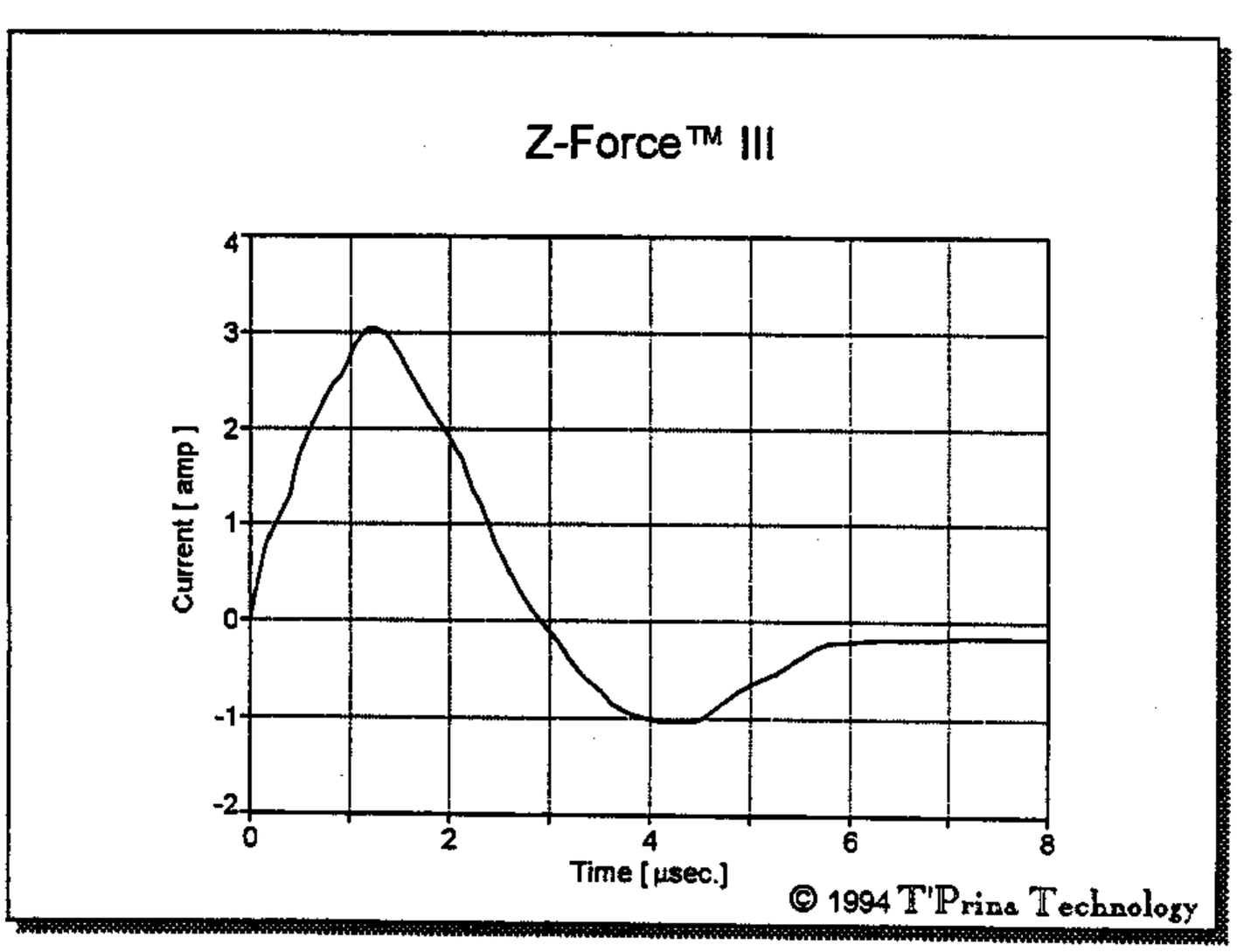
Neuromuscular stimulation was minimal.

### Battery

The Z-Force III uses one 9 volt battery, e.g. Duracell MN1604..

Z-Force™ , Assembled in USA. *No address or phone number is given on the packaging or in the enclosed instructions.*


**Z-Force™ III**



## Z-Force™ I

The Z-Force I showed a small amount of leakage current from the case seam opposite the switch to the user's hand.

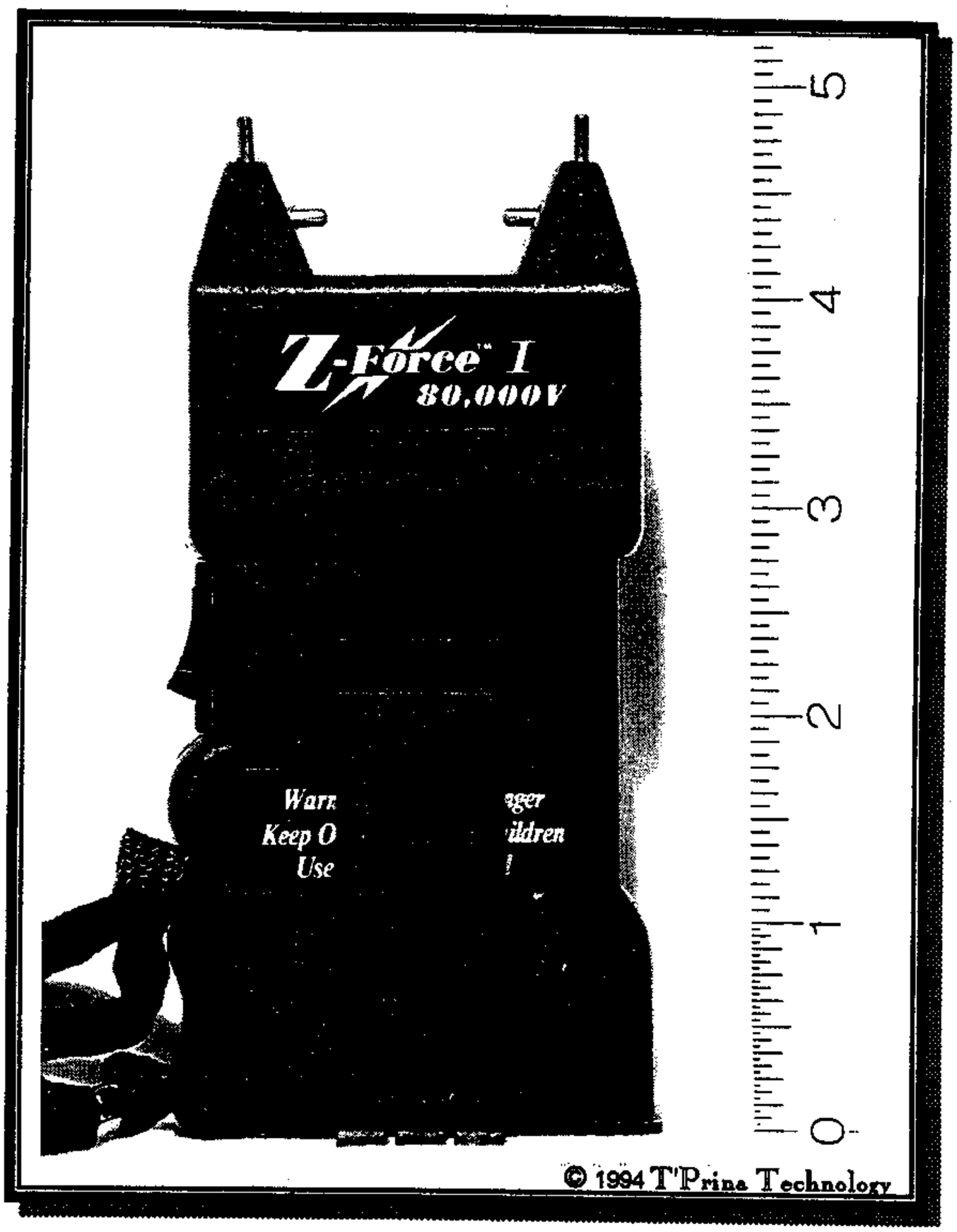
The Z-Force I comes with both a belt clip and a wrist strap.

This device has a high repetition rate - 28.6 cycles per second - but low energy per pulse, 0.06 joules/pulse.

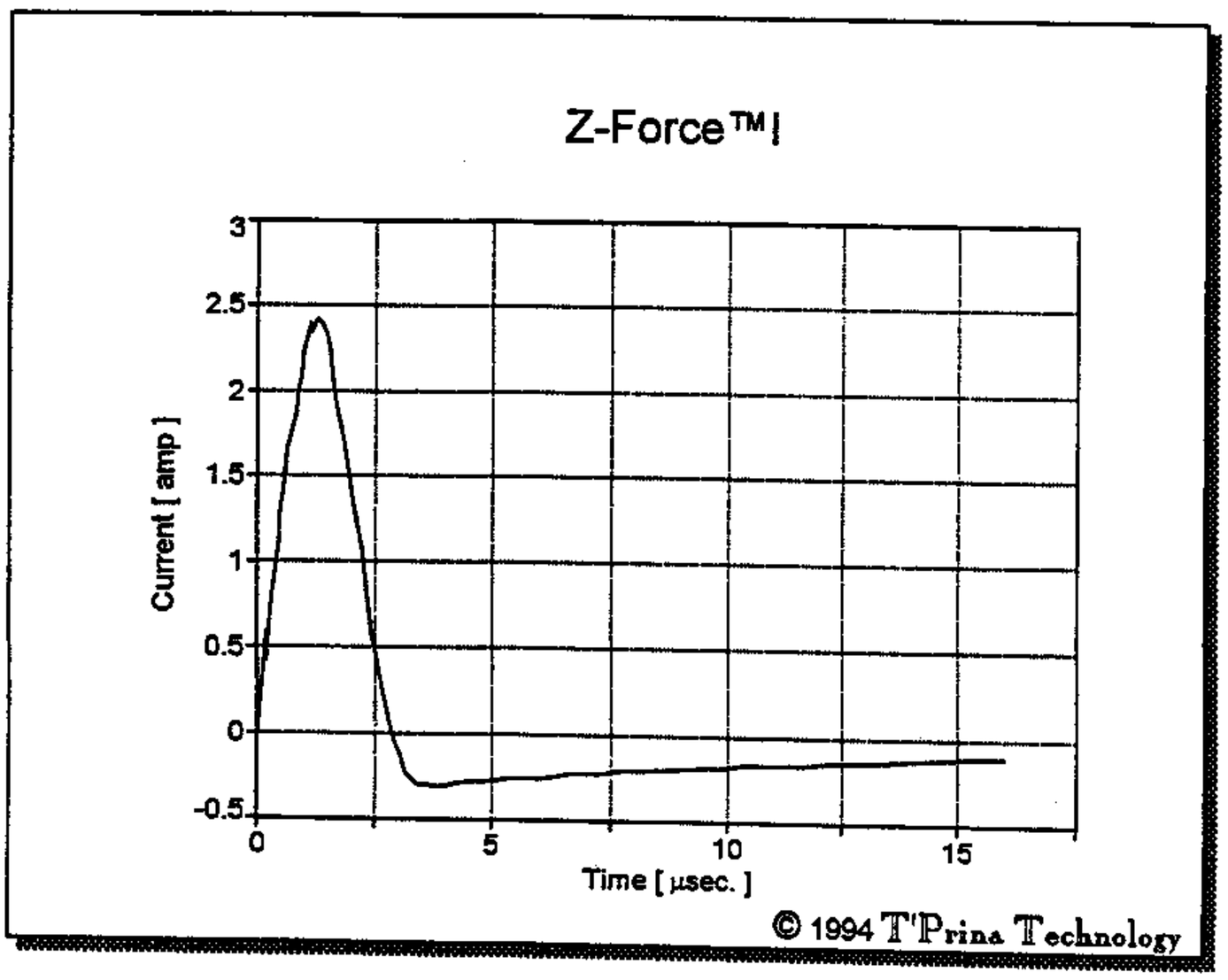
Neuromuscular stimulation was minimal.

**Battery**
The Z-Force I uses one 9 volt battery, e.g. Duracell MN1604..

Z-Force™ , Assembled in USA. *No address or phone number is given on the packaging or in the enclosed instructions.*




Z-Force™ I



## STG-1

The STG-1 was constructed from a kit, the plans for which first appeared in Radio Electronics September, 1986. The kit is well documented and simple to construct.

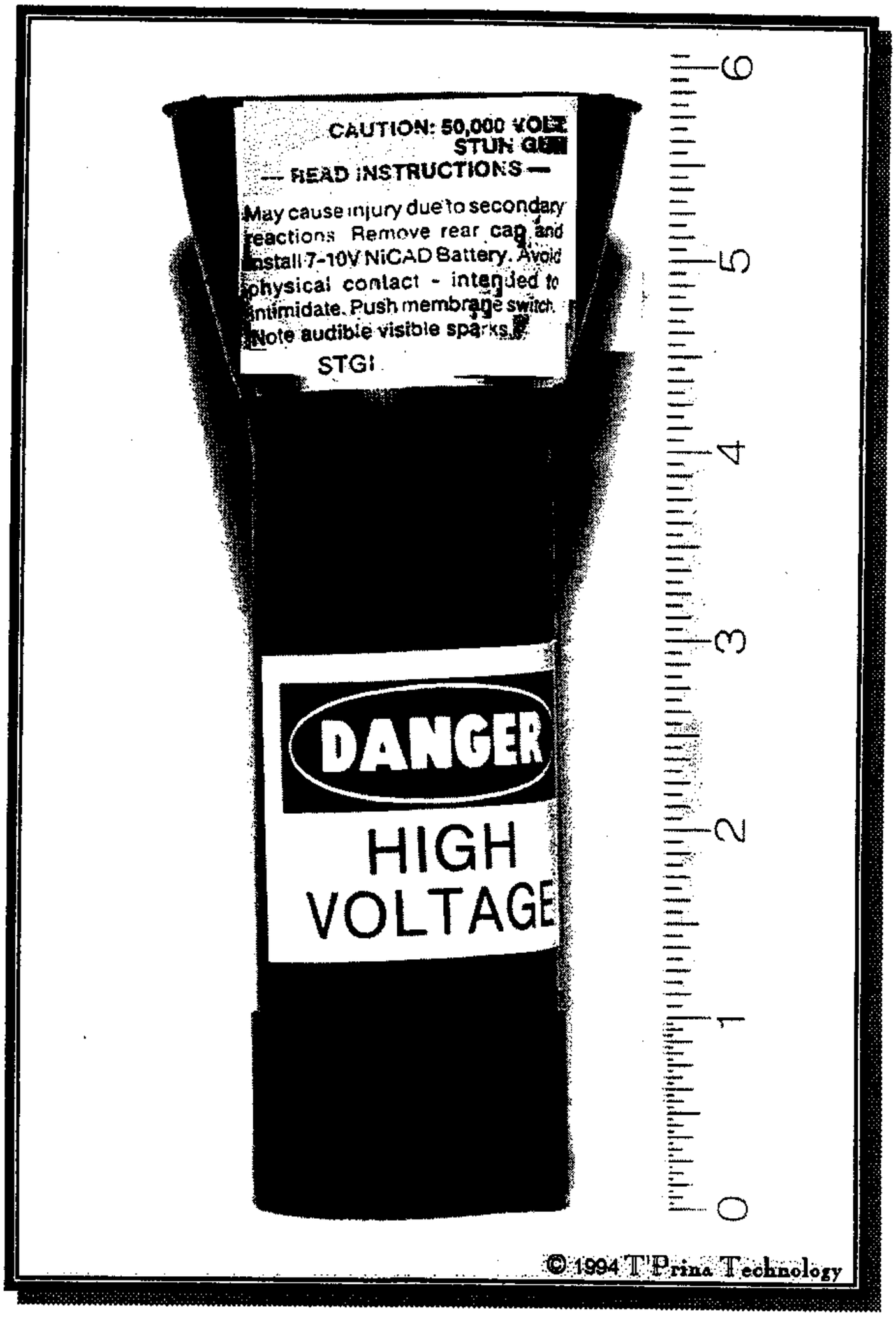
The accompanying literature states under a caution heading, "WE MAKE NO CLAIMS AS TO THE USER'S SAFETY OR STOPPING POWER OF THIS DEVICE.".

This is a very low power (1.1 watt) device that produces only minimal neuromuscular stimulation.

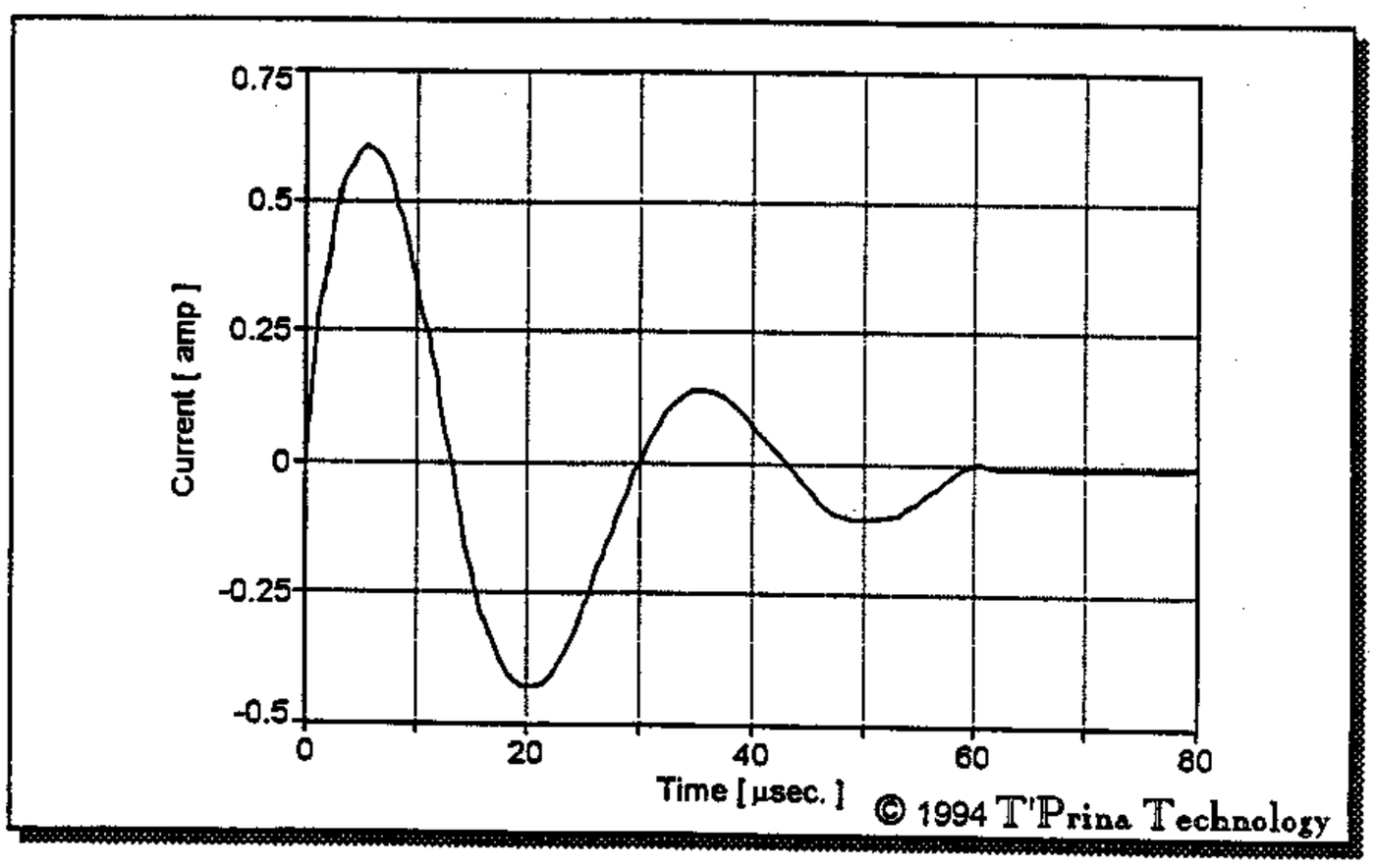
### Batteries

A single 9-volt nickel cadmium or alkaline battery is recommended. and a jack is provided for convenient recharging of the nicad. A charger is not provided with the unit but is available at extra charge

Information Unlimited, Box 716, Amherst, NH 03031, 1-800-221-1705, 603-673-4730.



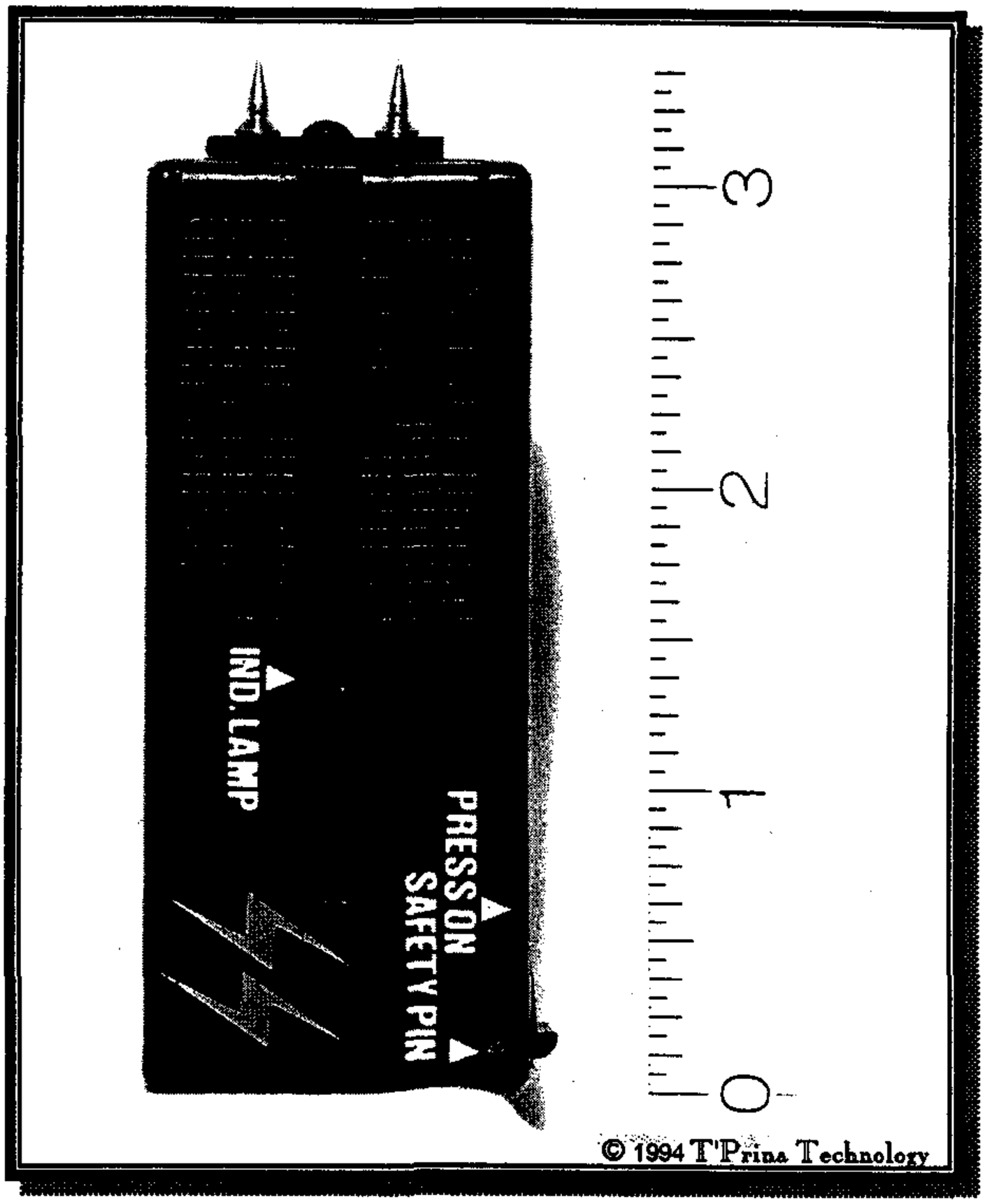

**STG-1 (case only)**



*Saftron*

## Personal Protector Pro-007

Although advertised as a "Micro Stun Gun" and the "World's smallest stun gun!", the Pro-007 is not a stun gun. Stun guns put out a series of high voltage, narrow pulses of enery. The Pro-007 is a high current, low voltage device that puts out a single pulse and does not produce the repeated neuromuscular stimulation characteristic of a stun gun.




**Pro-007 Personal Protector**

To operate the Pro-007 one must first ensure that the rubber cap (not shown in photo) is in position, remove the safety pin, then, hold down the activation button and wait while the unit charges up. When the indicator light is seen to be fully lit the device is ready to be used. It is then applied to the assailant, delivering energy for only a fraction of a second. *The Pro-007 must then be removed from the assailant and recharged before it will deliver more energy.* In other words if you keep the device in contact with the assailant it cannot be recharged and will not deliver more energy. This unexpected operating anomaly is not described in the accompanying instructions.

Stun guns typically have two metal probes that are not sharpened but rather are blunt and not capable of piercing the skin. The Pro-007 has two very sharp points protected by a removable, flexible rubber cap (not shown in the photo). The cap has two holes that, on pressing against the assailant, permits protrusion of the two points. The rigidity of the rubber cap serves to somewhat limit the exposure of the points.

To test this device the user removes the rubber cap, charges the device, touches the two needles to a piece of metal and observes a "sparking action".

The accompanying instructions specify that "... the unit functions with the rubber cap in place to protect the user.". When the rubber cap is removed the Pro-007 will still deliver power to the needles. The needles are of a length and sharpness sufficient to penetrate skin to a depth to draw blood.

The rubber cap ( held in place by friction ) is not securely affixed to the Pro-007; it could inadvertently be removed while being carried in a purse or by being jostled in a scuffle.

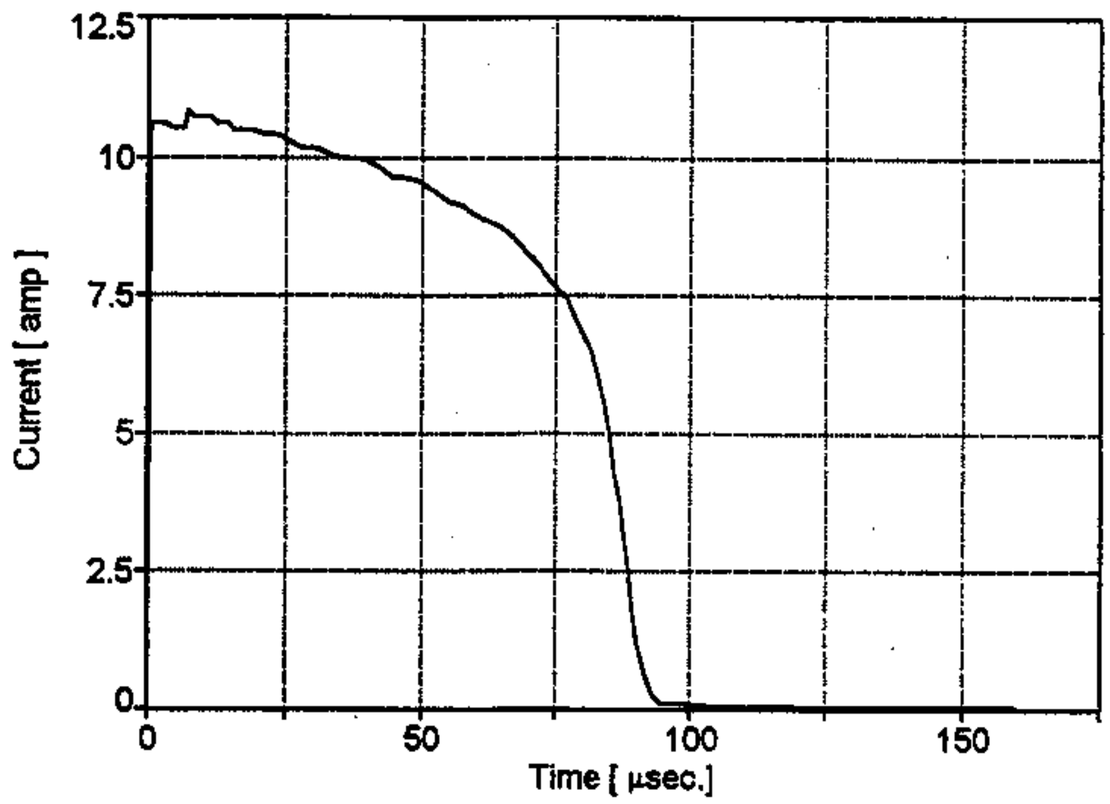
When this device is applied to an assailant no muscle spasms are seen. What you do see and smell is a small plume of smoke from burning flesh. On removal a small area of burned tissue can be seen.

A typical stun gun would require an application in excess of 5 seconds before a burn mark might be seen.

The ability of this 'burn' gun to penetrate clothing is virtually limited to mechanical penetration by the needle points as opposed to electrical arcing such as would occur with a stun gun.

The values shown in *Table 2* for the Pro-007 assume a total recharge-plus-reapplication time of 1.5 second; that is, the maximum power shown is what would be delivered if the user could charge-apply-discharge-remove-recharge in rapid succession with a cycle time of 1.5 second. This is obviously a very optimistic estimate so that the actual power and rms values that you might expect are somewhat less than that shown in *Table 1*.

The safety pin comes with a key ring and attachment device.






## Batteries

The Pro-007 uses two 1.5-volt batteries; it came with 2 Magicell High Duty size N, UM-5.

## Waveform

The pulse shown at the upper right is the single pulse of maximal power delivery that might occur each time the Pro-007 is charged and applied to an assailant. Note that the pulse length is considerably longer than that employed by stun guns which deliver a train of pulses.

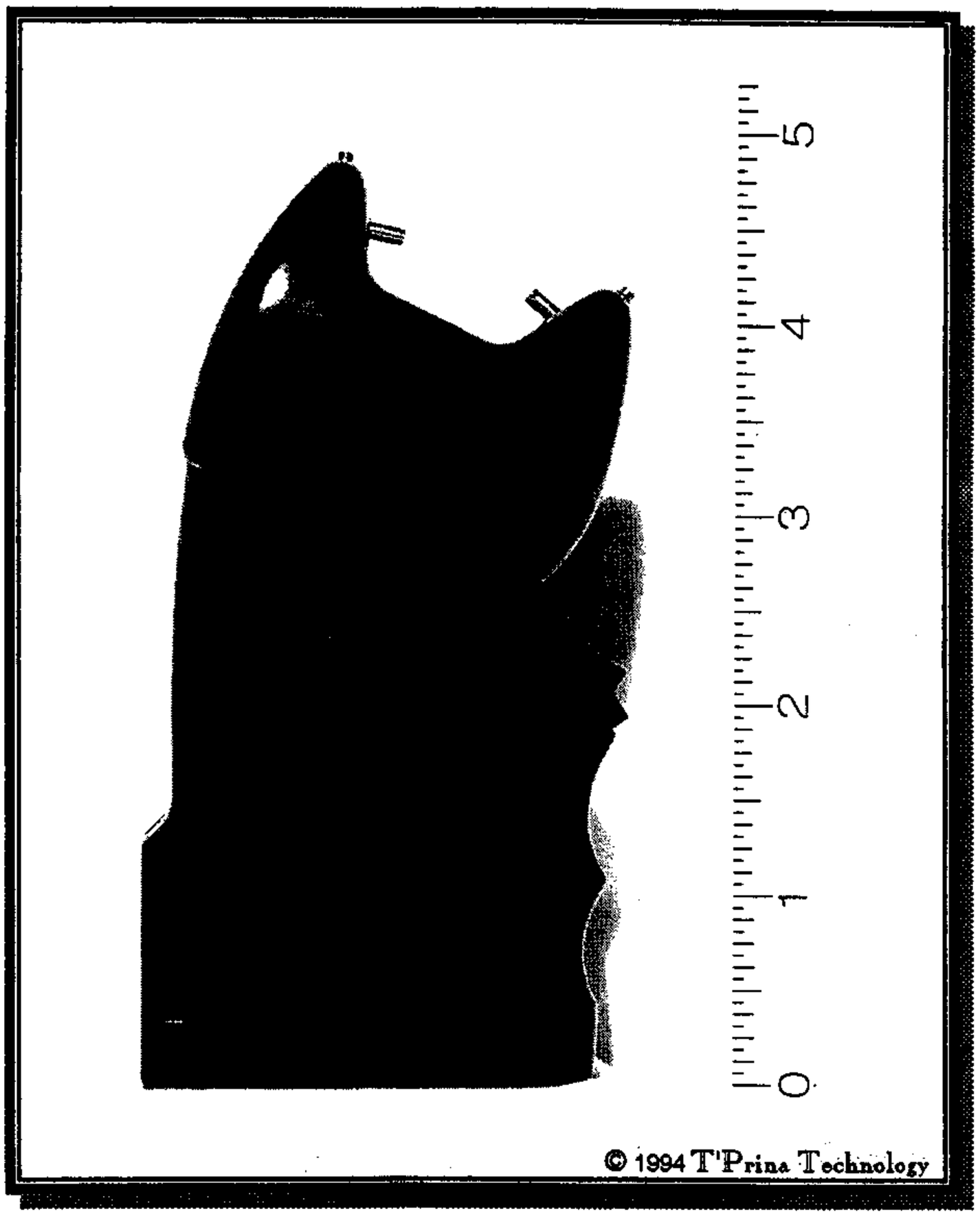
Pro-007, Saftron. Made in Taiwan. *No address or phone number is given on the packaging or in the enclosed instructions.*

***Exotic Electronics***
***PDI***

## Defender II

The Defender II failed at the beginning of the test procedure. After only a few seconds of use the power output was zero.

PDI, 9608 Van Nuys Blvd, #104,Panorama, City, CA 91402. Made in Korea. *No telephone number was provided on the packaging or in the enclosed literature.*




**Defender II**

# Cautions & Disclaimers:

- Keep all stun guns, electro-immobilization devices, and electronic self-defense devices out of the reach of children.

- Do not exceed the manufacturers recommendations for duration of application. Excessive application times may result in serious harm such as burns or suppression of respiration.

- This report does not endorse any manufacturer or product and makes no claims as to the effectiveness of these devices in stopping an assailant. Further, this report makes no claims as to the safety of these devices as regards the user or the person on whom the device may be used.

- The results presented in this report are based on testing only one sample of each model evaluated.

- Check local laws before acquiring a stun gun. Most, but not all, states permit the sale and carrying of stun guns.

- The authors of this report have given their best efforts in making this report as complete and accurate as possible. However, typographical errors as well as errors in content may have occurred. Therefore, this report should be used only as a general guide and not as the ultimate source of information on stun guns, electro-immobilization devices, or electronic self-defense devices.

- T'Prina Technology and the authors of this report shall have neither liability nor responsibility to any entity or person with respect to any loss or damage caused, or alleged to be caused, directly or indirectly by the information contained in this report.

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# T'Prina Technology

A consulting firm that has provided services in medical electronics since 1989.

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- delivering seminars to surgeons and corporate executives on medical instrument technology.
- measuring the effects of medical instruments in terms of electrical energy spread and depth of penetration into tissue.
- expert witness testimony and technical advice in litigation both in U.S. and foreign courts.
- evaluation of stun guns.
- invention of now patented medical instruments

## Considering a stun gun for your Security Service or Police Department ?

If your organization is considering the purchase of a stun gun T'Prina Technology can help you make the right decision by performing unbiased tests of the models that you are reviewing. Many new models of stun guns are introduced on the market every year. Without extensive electrical and physiological testing by an independent expert you have no solid information on which to base your purchase.

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