ELECTRONIC DAZER

Never walk in fear with this one-evening project. It won't kill, but it's an effective way to say "Leave me alone!"

By Rick Duker

THE *ELECTRONIC DAZER* IS A MODERN, PORTABLE, PERSONAL-PROTECTION APPLIANCE. It generates high potential energy to ward off vicious animals or other attackers. It is an aid to help escape from a potentially dangerous situation. The device develops about 2,000 volts. Higher voltages may be attained by adding additional multiplier stages, but it should be noted that those stages will also increase the overall size of the unit.

The Dazer is very compact, being built into a small plastic case. It is powered a single nine-volt battery, either NiCad or alkaline. The high voltage is applied to two electrodes which require only light contact to be effective. When touched with the Dazer, the victim will receive a stunning, but non-lethal jolt of electricity that will usually discourage any further encounters.

The Electronic Dazer is a power supply which consists of a micro-size regenerative amplifier/oscillator coupled to an energy multiplier section. It should not be confused with cheap induction-type cattle prods. The Dazer is more versatile than other high-voltage stun devices currently being sold. Those devices are basically high-voltage, AC generators which jam the nervous system. However, the Dazer may be used for heating and burning applications, or anywhere a high voltage DC supply is required.

WARNING

THIS DEVICE IS NOT A TOY. We present it for educational and experimental purposes only. The circuit develops about 2000 volts at a respectable amperage. It can cause you pain and even damage if you become careless and touch its output terminals. The unit can also damage property as well so use it wisely.

You should never use the device on another person! It may not be against the law to possess such a device in your area, but if you use it on someone you may be deemed liable in a civil and/or criminal action suit. Don't just follow the golden rule after constructing the project, instead just don't do unto anyone.

Included in the article are a number of instructions on how to build, test, and operate the Dazer; all of them must be followed to the letter. Do not deviate from the procedure.

How It Works

Referring to the schematic diagram in Fig. 1, the two power transistors Q1 and Q2, form a regenerative amplifier operating as a power oscillator. When Q1 turns on, Q2 turns on and that shorts the power supply across the primary of T1. That current pulse induces a high voltage in the secondary of T1. As C1 charges, Q1 turns on again and the cycle repeats itself. Therefore, a rapid series of DC pulses are generated and stepped up by T1 to approximately 300 volts at full battery charge. That voltage is rectified and increased by the voltage multiplier section which consists of C2 and C9, and D1 to D8. The final output is approximately 2000 volts. The neon bulb NE1 is used as a charge indicator and indicates that the unit is charged and operating properly.

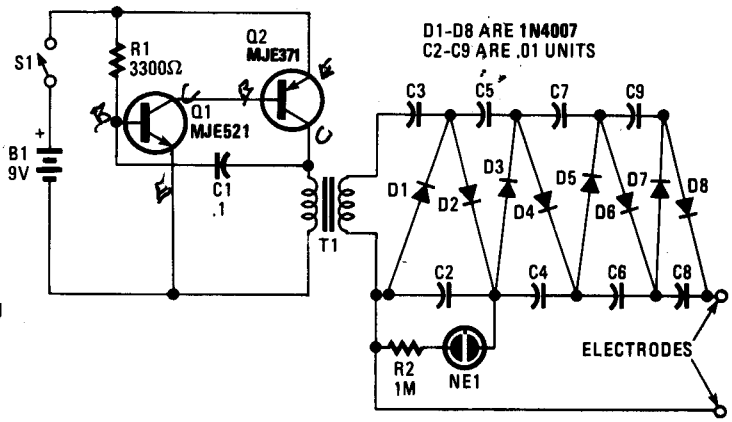

Fig. 1—As you can see, although the Dazer is not complex, it contains enough doubler circuitry to pack quit a punch. The oscillator does nothing more than send sharp current pulses through T1. The back EMF across the secondary winding is then pumped through the multiplier stage to produce the very-high output voltage across the electrodes.

Construction

As with all projects start out by laying out and identifying. If you do not wish to make a printed-circuit board, then you

may use a perf board as long as you remember to keep the leads of all high-voltage components isolated. That is to prevent sparks from arcing across your board. A 4 x 7.5 cm of perfboard is suitable for that purpose.

The first components you should mount are the two transistors Q1, Q2, transformer T1, resistor R1, and neon bulb NE1. Solder them in place (for PC construction) being sure that the transformer and transistors are hooked up correctly. Apply a small amount of adhesive to the base of NE1 to hold it securely in place.

Mount D1 to D8 and C2 to C9 on the board and make all solder connections. Note proper polarity of the diodes. The off-board components come next. Solder in leads for S1, and the output electrodes. Also solder in the battery clip for B1.

Build the enclosure from some nonconductive material such as plastic. Drill holes for S1, NE1, and output electrodes. Be sure that the output electrodes are about a cm or greater apart. Connect the output wires to the electrodes and insert them through holes from inside of case. Thread on the retaining nuts and tighten them securely. Set the circuit board in the case and mount S1, securing with nut. That completes the construction.

PARTS LIST FOR THE ELECTRONIC DAZER

C1—0.1-μF monocapacitor
C2–C9—0.01-μF 400 volt polyester capacitors
D1–D8—1N4007 1-kVolt diode
NE1—Type NE-2 neon bulb
Q1—MJE521 NPN power transistor
Q2—MJE371 PNP power transistor
R1—3,300-ohm ¼-watt resistor
R2—1,000,000-ohm ¼-watt resistor
S1—SPST monetary-contact, pushbutton switch T1—1200 to 8-ohm audio power transformer

ADDITIONAL PARTS AND MATERIALS

9-volt battery clip, 10 × 5 × 2.5-cm plastic case, 7.5 × 4-cm perfboard or PC board, two 9/32 × 1-¼ bolts and nuts for electrodes, adhesive for mounting NE1, circuit board standoffs (optional), hookup wire, solder, etc.

The following are available from Quantum Research, 17919-77th Avenue, Edmonton, Alberta, Canada T5T 2S1:
QV100K1—Complete kit without PCB (includes all above parts except those following the electrodes in the above list) $40.00 (includes postage).
QV100K2—Complete kit with PCB (includes all above parts except those following the electrodes in the above list) $45.00 (includes postage)

Testing

Before inserting the battery and closing the case, a few test measurements should be made to ensure correct operation. With the ground clip connected to the battery, connect a VOM between the positive clip and the positive terminal of the battery. Set the meter for current reading, and press S1. You should measure a current of approximately 300 to 500 mA. NE1 should be glowing.

With a high voltage VOM, you should measure about 2000 volts on the output terminals. Those measurements indicate proper circuit operation. Let the unit run for about one minute. Transistors Q1 and Q2 should be warm, but not hot to the touch. Insert the battery in the holder and close the case. That wraps up the Electronic Dazer.

Good parts layout is the secret to any miniature project. If your layout causes the battery to come too close to the high-voltage components we suggest you insulate it with tape.

Operation and Use

Activate the unit by pressing S1. NE1 will light indicating the dazer is fully charged and ready to use. Notice also that only one pole of NE1 will glow indicating DC voltage present. It is important to remember that the device holds a charge even after S1 is off. To discharge, touch the electrodes to a metal object and note the healthy spark discharge.

The Electronic Dazer was designed as a self-defense weapon for use against vicious dogs or other attacking animals. The device is most effective when the electrodes contact an area of low resistance such as skin or flesh. Those include the snout or mouth since the resistance of those areas are much lower than areas of hair or fur. The electrodes could be pointed to penetrate these areas better. The dazer generates great stopping power. One contact will give a powerful jolt and should discourage any further attacks.

The device can burn and heat materials with low resistance. Those include flesh, moistened paper or wood, etc. That makes the unit potentially hazardous to humans. Remember, the dazer is not a toy but a quality electrical appliance and therefore must be treated accordingly. Use the utmost discretion with this device.

Another use for this device is as a high-voltage DC power supply. It may be constructed as a variable power supply if output taps are taken from various stages of the voltage multiplier section. Remember, always disconnect the battery and fully discharge the capacitors before working with the circuitry. ■