

## Tips & Techniques

### INTERMEDIATE RESISTANCE VALUES

Many times a circuit design calls for a value of resistance not in the commonly available 12 series. A close value may be found in the

24 series, but many dealers don't stock them. (Successive values in the 12 series are related by the factor 1.2, and by 1.1 in the 24 series). Here is a good rule-of-thumb for approximating these less common values. Take the next higher resistance above the desired value and parallel it with another ten times larger. For example, if a 24-series 51-ohm resistor is needed, take a 12-series 56-ohm one and parallel it with a 12-series 560-ohm resistor. Net resistance is 50.9 ohms, or 0.2% off. The error will never be greater than 3.1%, well below the manufacturer's tolerances.

—A.G. Fletcher

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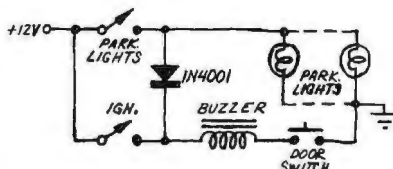


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CIRCLE NO. 28 ON READER SERVICE CARD

### AUTO LIGHTS WARNING BUZZER

Leaving your parking lights on all night can be almost as hard on the car battery as the headlamps. This simple warning system uses the ignition key/door buzzer. Only a diode is required. Install the 50-PIV diode as shown. If the lights are left on when the ignition switch is open, the diode turns the



warning buzzer on. Since most headlight/parking light switches are ganged, you will be alerted when the headlights and/or parking lights are left on.

—Paul Reckling

### CONTINUITY TESTER

When installing a new member of an antenna farm, or trying to do some simple troubleshooting in a car, it is helpful to have a continuity tester to trace leads. An inexpensive door bell and battery can perform this function. Hook up the doorbell at either end of the antenna feedline and place the battery across the various feedlines until the bell is heard. This isolates the desired line. For auto "hot" wires, ground one side of the doorbell and search out the "hot" lead with a test lead attached to the other side of the bell.

—C. W. Hart, Jr.

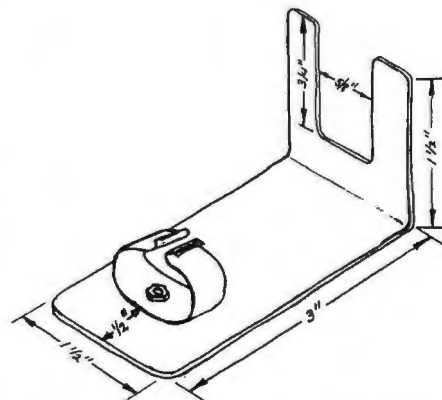
### NO-COST OCTAL PLUGS

If you need an octal plug but all the stores are closed, you can make your own. Take a dead tube with an octal base and carefully remove the glass envelope and metal tube elements. Wires can be connected to existing pin leads, or directly into the pins after they have been cleaned up. Fill the tube base with epoxy cement to provide strain relief.

—Geoffrey Williams

### SOLDERING IRON HOLDER

Soldering irons have a habit of rolling around the workbench, causing accidental burns to insulation and flesh. An easy way to make a holder is to notch and bend a



piece of steel strap as shown. Mount a clip made from springy steel or brass sheet about 1/2-in. (12.5 mm) from the unbent end. To use the stand while soldering, rest the iron on top of the stand. When the job is done, clip the iron into the stand and it will help dissipate residual heat as well as keep the iron stationary.

—Homer Jackson

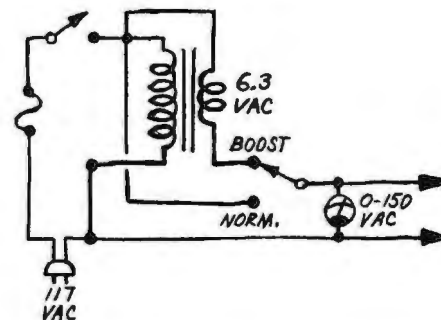
### ADD LIFE TO PILOT LIGHT BULBS

Replacing burnt-out pilot light bulbs in electronic gear can become tedious and expensive. Here's a simple way to extend bulb life many times. Insert a diode rectifier in the bulb voltage supply. Pulsating dc will be supplied to the bulbs, at about half the current previously drawn. The bulbs will operate at lower temperatures and last much longer. Light output will also decrease, but this is seldom a problem. If more brightness is required, use a higher wattage bulb. Even with these bulbs, lifetime will be greatly increased.

—Calvin Graf

### INEXPENSIVE VOLTAGE BOOSTER

At times of peak demand, power companies drop their voltage 5% to stay within safety limits of their equipment. This small voltage drop can be hard on certain appliances—television receivers, small



motors, etc. Using a 6.3-V filament transformer in the circuit below allows you to compensate for low line voltage. In the Boost position, voltage is stepped up about 5.4%. Any device which draws less than the rated current of the transformer may be used. For example, a 3-A transformer can handle 330 W, enough for most color TV receivers. The fuse should have the same current rating as the transformer.

—T.R. Fox