

Fuse Saver



When a beginner tackles his first a.c.-operated project, he may be a little apprehensive about "plugging in" for fear that an error in wiring or a defective component may cause a short circuit—blowing the line fuse, and resulting in a darkened house and much embarrassment.

This easy-to-wire unit can serve not only as a handy "fuse saver" for checking home-built projects, or, later, for tackling service jobs, but also is valuable for keeping a soldering iron warm for ready use without danger of burning out its element through overheating.

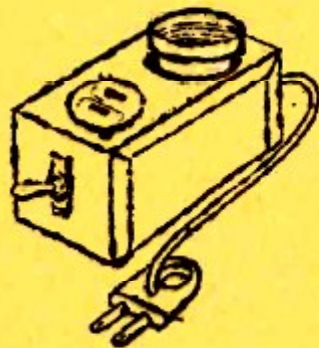
All the components are standard and readily available. Total cost will be only around three or four dollars, but you can cut even this considerably by using a small wooden box (such as a cigar box) in place of the finished aluminum case specified and by substituting a cheap slide switch for the comparatively expensive toggle switch.

"Plugging In." With the wiring completed and checked, install a 50-watt lamp bulb in socket *SO1* and plug a radio or phonograph into the "output" receptacle, *SO2*. Insert the unit's line plug into a regular wall outlet. Turn the radio on with *S1* off. The lamp should get warm but not light. Now close switch *S1*. The lamp should start to cool and the radio should play at normal volume.

To use the completed instrument for checking home-built equipment, or for preliminary checks when servicing, install a lamp bulb with a rating approximating the power requirements of the unit tested. Use a 50- to 100-watt bulb for checking small amplifiers, table model receivers, and so on, and a 150- to 200-watt bulb for checking large amplifiers, TV sets, and small transmitters.

The equipment checked is plugged into *SO2*, *S1* is opened (turned off), and the line plug inserted into the a.c. line. When the equipment is turned on, the bulb should glow, but with less than full brilliance. If the bulb glows with full brightness, there is a short in the equipment which should be cleared up before further tests are made. If the lamp fails to glow, there is an "open" in the equipment's line circuit.

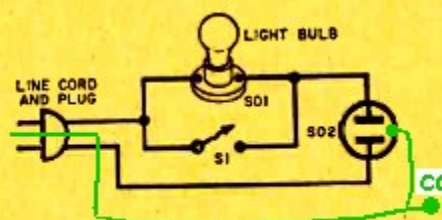
Assuming that the bulb lights to less than full



brightness, *S1* is closed (the lamp will go out) and the equipment can then be operated normally. There may still be a short in the equipment under test (such as a shorted capacitor or tube), but if it does not cause a bright glow in the test lamp, it will not blow a fuse.

Be careful when you use the instrument. Even with *S1* open, you *could* get a bad shock at *SO2*.

How It Works. In operation, the lamp bulb serves as a series current-limiting resistor with the "load" connected to *SO2*. A "dead short" across *SO2* will light the bulb to full brilliance, but will not blow the line fuse (assuming *S1* is open). The switch, *S1*, serves to short out the bulb, applying full line power to the load, once a preliminary check indicates that everything is normal. When used with a soldering iron, the bulb limits standby current to prevent overheating, but permits the iron to heat up almost instantly when *S1* is closed.



PARTS LIST

- S1*—S.p.s.t. toggle switch
- SO1*—Edison-base lamp socket
- SO2*—Chassis-mount female line receptacle
- 1—4" x 2 1/4" x 2 1/4" aluminum box
- 1—Line cord and plug
- 1—Incandescent lamp (see text)
- Misc. rubber grommet, spacers, screws, nuts, wire, solder

