

A Simple 50 amp RV Park Outlet Tester

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Deer Run RV Park

Crossville, TN

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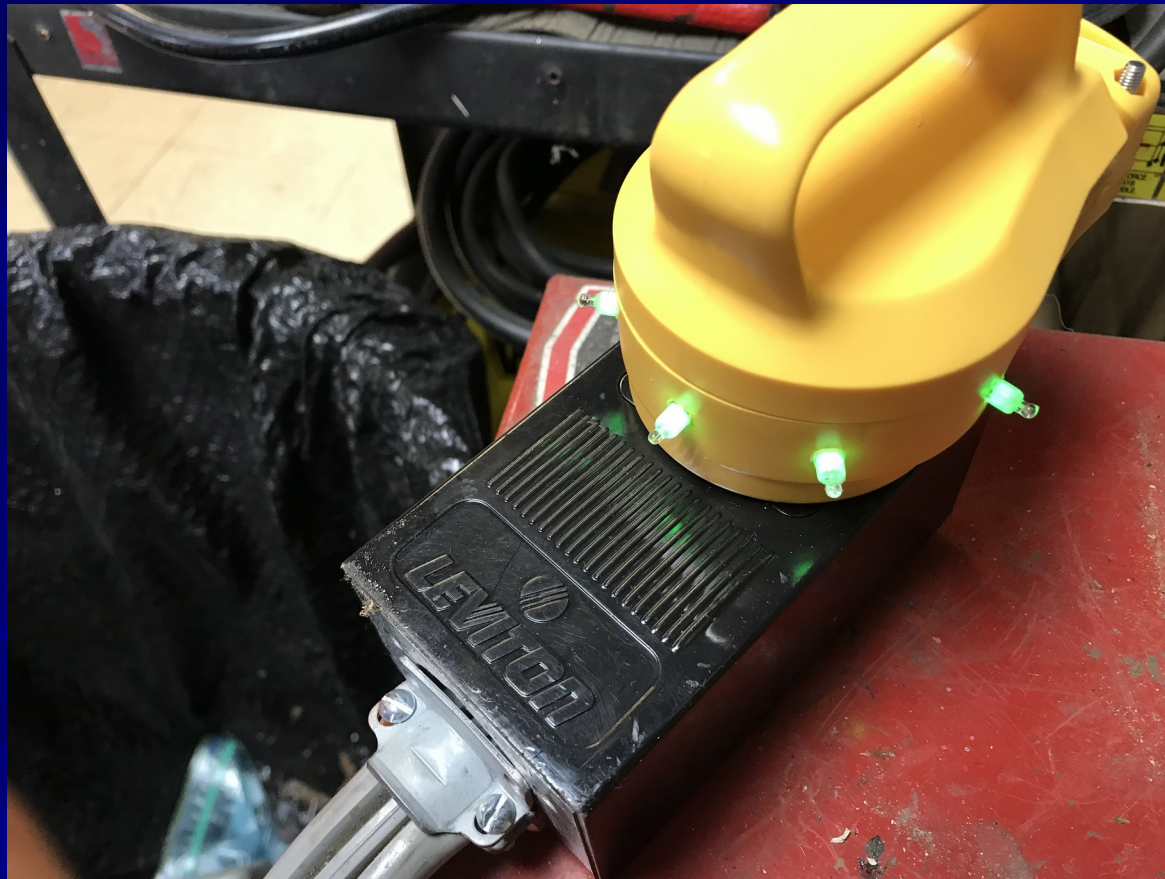
WE START WITH A CAMCO
REPLACEMENT 50 AMP MALE
PLUG THAT MATCHES WITH A 50
AMP RV PARK OUTLET



THE TESTER *FUNCTIONS* SIMILAR TO THE COMMON 3-LIGHT DUPLEX OUTLET TESTER



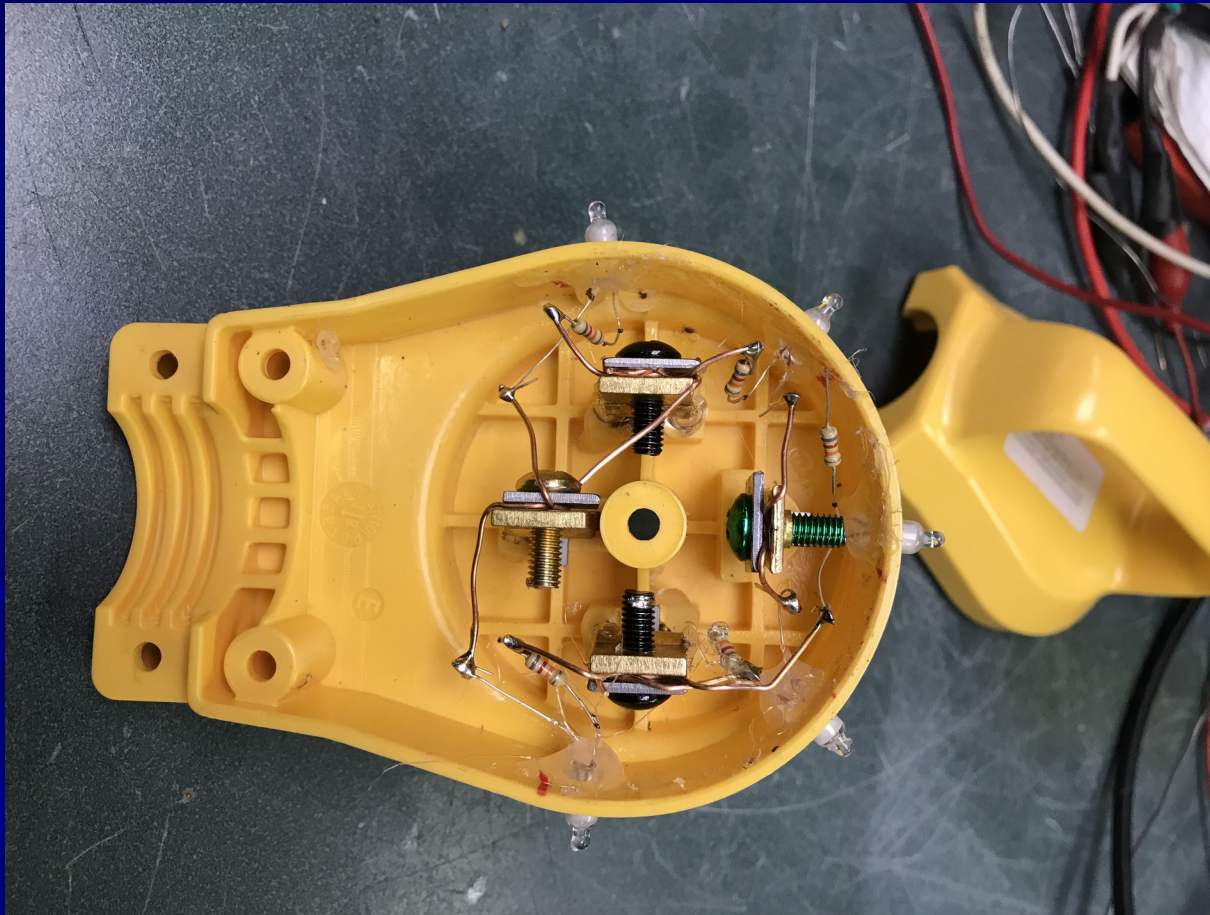
EXCEPT THIS TESTER WORKS
WITH 240 VOLT RV PARK
OUTLETS



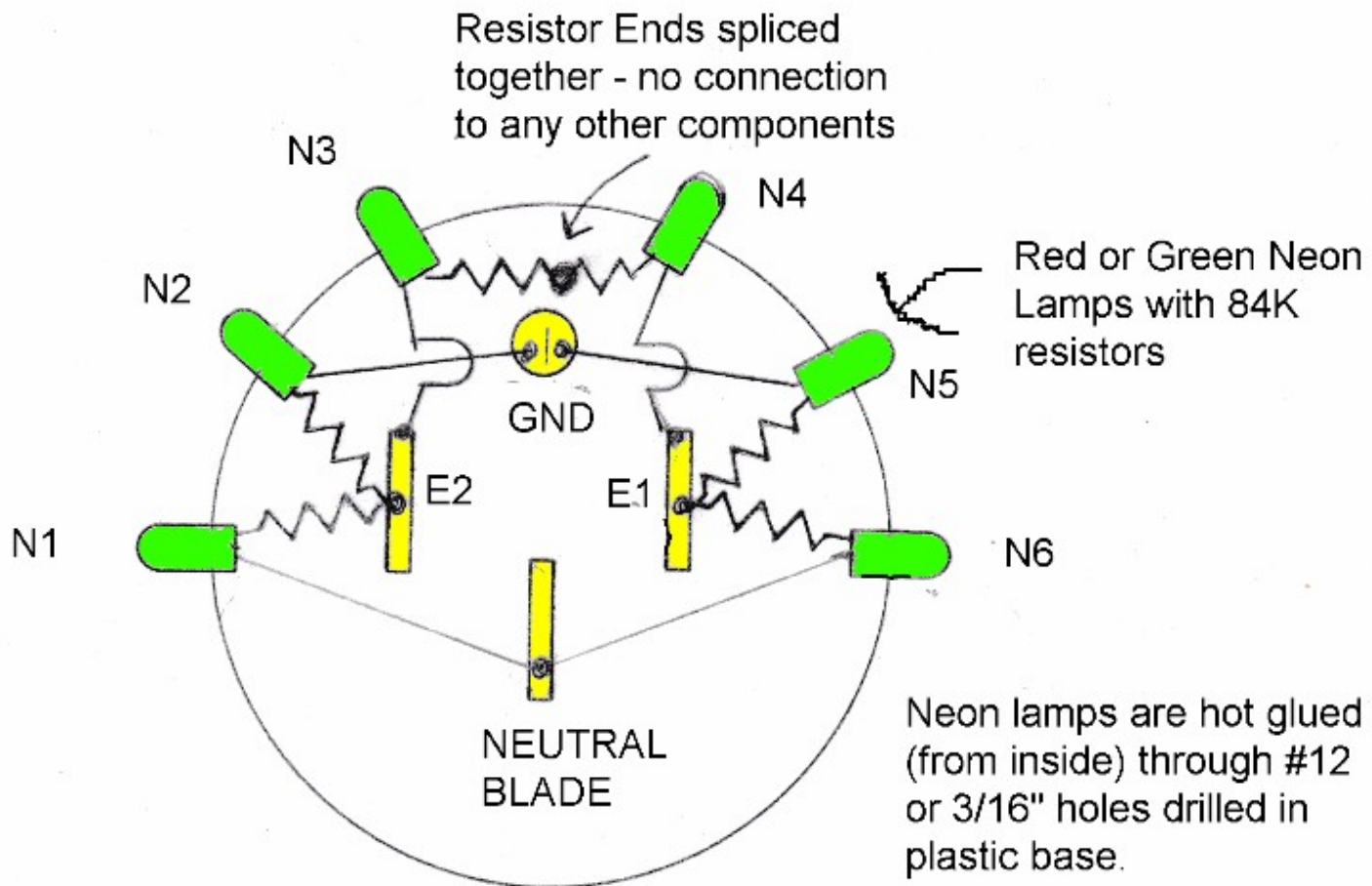
**THERE ARE SIX NEON LAMPS
SITUATED AROUND THE BASE
OF THE CAMCO PLUG**



INSIDE THE NEON LAMPS ARE WIRED TO THE
INDIVIDUAL BLADES OF THE CAMCO PLUG.
THE VOLTAGE DROPPING RESISTORS FOR
THE NEON LAMPS ARE ALREADY ATTACHED



SCHEMATIC DIAGRAM



■ 50 Amp Outlet Tester Construction Step1

- The 50 amp plug is opened. The top is set aside.
- All four of the blades are temporarily removed from the plug base.
- Six 5mm holes are symmetrically drilled around the lower housing as shown in the schematic.
- Neon lamps are inserted in the drilled holes so that approximately $\frac{1}{2}$ of the lamp protrudes out of the base.

50 Amp Outlet Tester Construction Step 2

The wires from the neon lamps are spread apart and the base of the lamp is covered with hot glue. You have a few minutes to adjust the position of the lamp before the glue begins to harden.

After all six lamps are set wait about five minutes to allow the hot glue to fully harden. While the glue is setting, cut four pieces of the provided solid copper wire to a length of 3 inches. Strip off the insulation.

50 Amp Outlet Tester Construction Step 3

Wrap each of screws on the plug blades with a piece of bare copper wire so that they are protruding to the left and right of the blade, tighten the blade screws and replace the blades in the base being sure the two blades with the black screws are in the E1 and E2 position. Hot glue around each blade so that they are held in place while you assemble the tester.

50 Amp Outlet Tester Construction Step 4

Solder the wires from the neon lamps to the pieces of bare copper wire on the blades as shown in the schematic.

Trim off any excess wire. Be sure no wires are touching each other.

Note that N3 and N4 are in series between E1 and E2.

50 Amp Outlet Tester Construction Steps 5

Inspect your work for any mistakes. When you are confident everything is OK put the top piece back on with the original screws. Cover the hole at the cord outlet with tape or fill with a plug of some sort and generous amounts of RTV.

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What Non-Illumined Lights May Indicate

Plug your tester into a 50 amp outlet. All six neon lights should glow. If all six lights glow the outlet is wired correctly – that is, provided your tester is also wired correctly. Note that the tester will not identify a “bootleg” ground and may not properly identify a “false ground”.
(More on this later)

N3 and N4 do not light or are very dim:
The outlet is not wired so that there is 240 volts between E1 and E2. The neutral wire or plug can overheat and damage the power cord and/or plug.

N1 and N6 do not light: There is no neutral. Do not use this outlet.

N2 and N5 do not light: There is no ground. Do not use this outlet.*

* It is *possible* for N2 and N5 to illuminate indicating a “ground” is present when the ground wire that is required to return to the SEP is open. The metal power pedestal “may” be buried deep enough to create a “false ground”. The false ground may allow N2 and N5 to illuminate. A final test is to use an AC volt meter. Turn the 50-50 amp breaker off and connect one probe of the VM to neutral and the other to ground. **There should be NO voltage between the two.**

What Non- Illumined Lights May Indicate

N1 and N2 do not light: There is no power to E2 or the hot and neutral are reversed. The neutral may also be open or missing.

N5 and N6 do not light: There is no power to E1 or the hot and neutral are reversed.

*The two conditions presented on the previous slide are **extremely dangerous** and can destroy any active appliance by providing 240 volts to 120 volt appliances. Your air conditioner, refrigerator, microwave, washer/dryer, TV, water heater and more can be damaged or destroyed.*

What Non-Illumined Lights May Indicate

All six neon lights glow but are very dim:
Voltage to outlet is possibly too low. Use a voltmeter between E2 and neutral – note voltage. Repeat between E1 and neutral. If voltage with no load is below 110 volts use of a high current appliance like an air conditioner will likely cause a further drop in voltage. Damage to the appliance is possible.

Here are some faults this tester WILL NOT identify:

A “Bootleg Ground”

Frequency in Hz

Actual voltage present

“False Ground”

If in doubt always follow up with a voltmeter test. Frequency in Hz is usually not measurable with a simple VOM. In reality it is not something that you will need to measure or worry about.

About a “Bootleg Ground”

From Wikipedia, the free encyclopedia

*In United States building wiring installed with separate neutral and protective ground bonding conductors, a **bootleg ground** (or a false ground) is a connection between the neutral side of a receptacle or light fixture and the ground lug or enclosure of the wiring device. This connects the neutral side of the receptacle to the casing of an appliance or lamp. It can be a hazard because the neutral wire is a current-carrying conductor, which means the casing can become energized. In addition, a fault condition to a bootleg ground will not trip a GFCI breaker or receptacle that is wired from the load side of a GFCI receptacle.*

About a “Bootleg Ground”

There are NO outlet testers currently marketed for testing park outlets that can identify a “bootleg ground”. The metal parts of your RV or Truck should always be checked with a non-contact inductive tester or a voltmeter between a known earth ground, or the surrounding earth ground, and the frame of your RV. Any voltage reading above 5 volts indicates a fault – possibly a “bootleg ground” or a “false ground”, and can be considered dangerous.