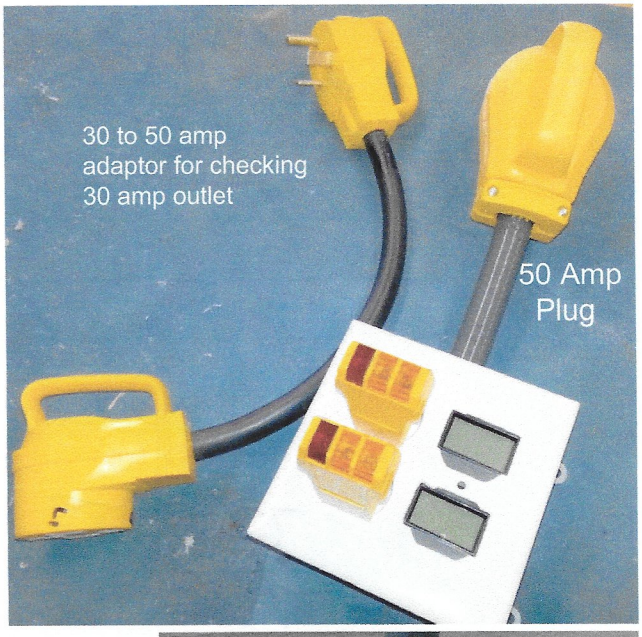
50 Amp & 30 Amp Shore Power Tester

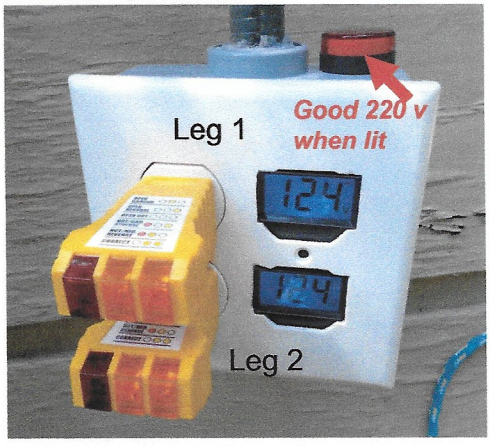
Chuck Bennett

This home made circuit tester will check the power available in a 50 or 30 amp shore power pedestal by just plugging it in. It checks for correct wiring: voltage on each leg, good ground, good neutral, and confirms true 220 volt vs. "fake" 220 volt wiring.. (where both legs are wired to the same phase on the pedestal outlet)

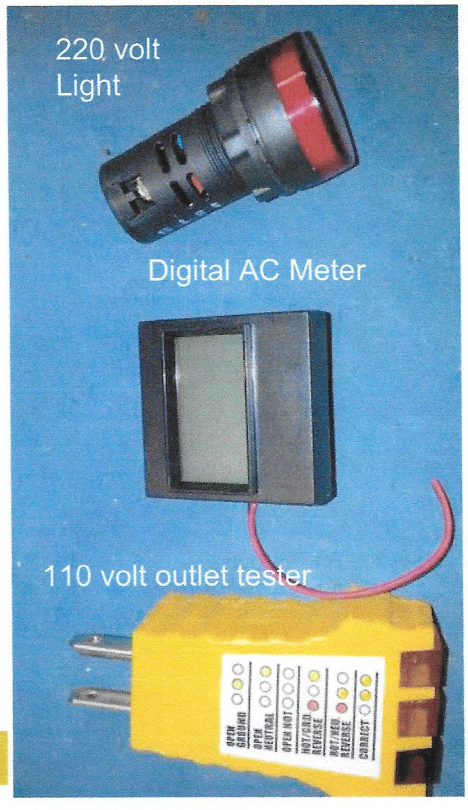


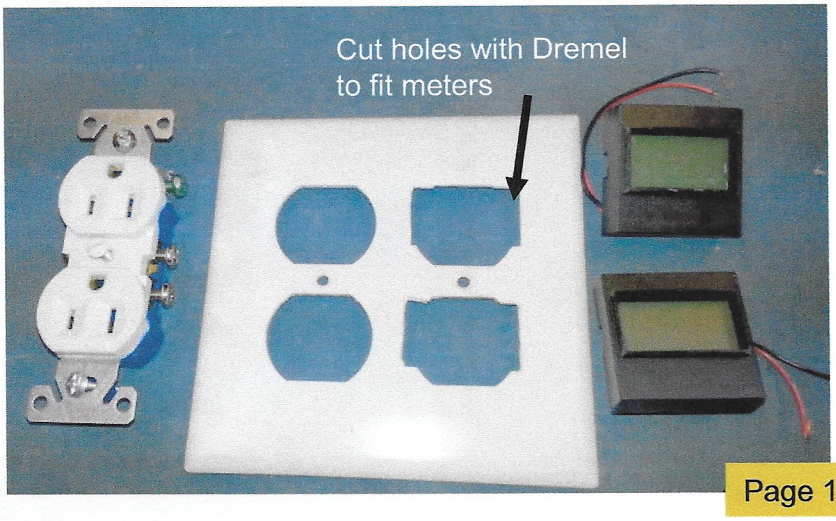
Yes, probably overkill. And I understand one can get the same information with a $10.00 multimeter by poking the leads into the outlet's various holes, but when I am tired or in the rain, this is much quicker, easier, and requires much less thinking. Besides, I enjoy this kind of little project.

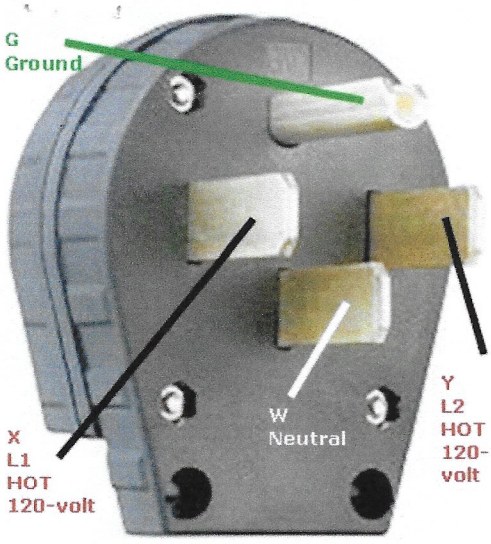
I wired a red 240 volt light across the 2 HOT Legs on the checker's outlet . If the 50 amp pedestal is wired correctly the light will come on. On a FAKE 50-amp service, when only one hot phase is used for both legs going into your RV, there will be no light showing.. and both meters will read the same voltage.



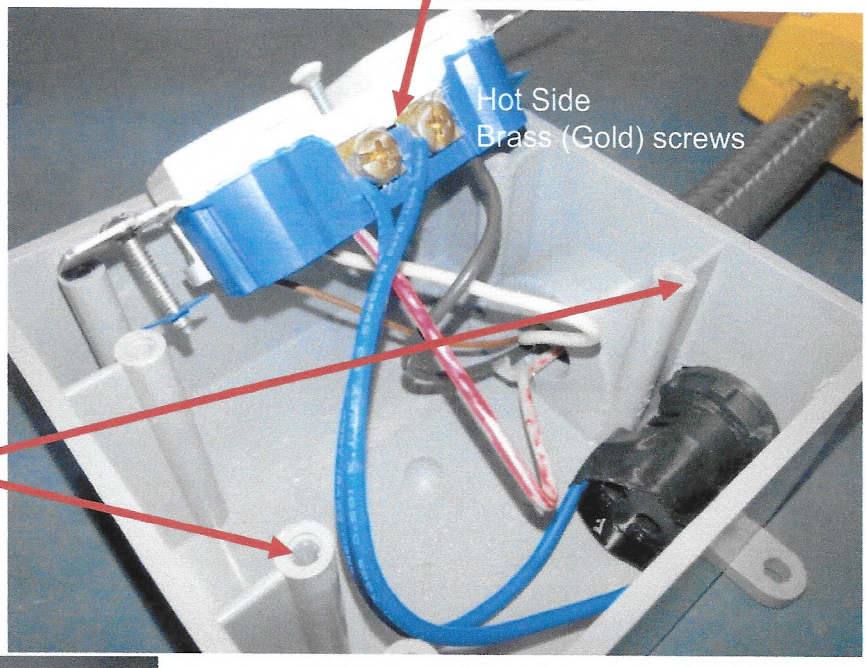
Here are the parts. *I later determined it was easier to use a double gang outlet plate* and modify the right hand set of holes for the small meters to fit in.



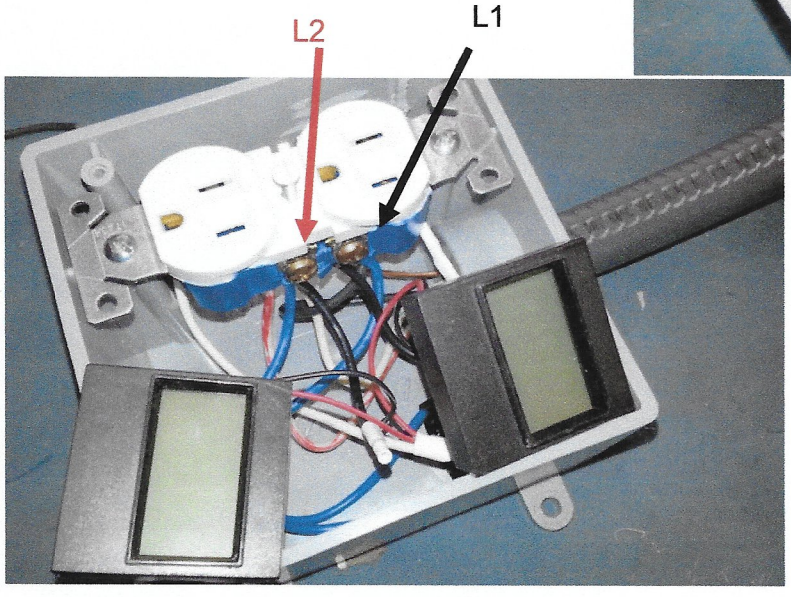




The pilot light (blue wires) is on the right ,and wired across the two hot legs. Break out the brass connection between these two screws at this point on the outlet



A Dremel tool is helpful to grind these out of the way as needed



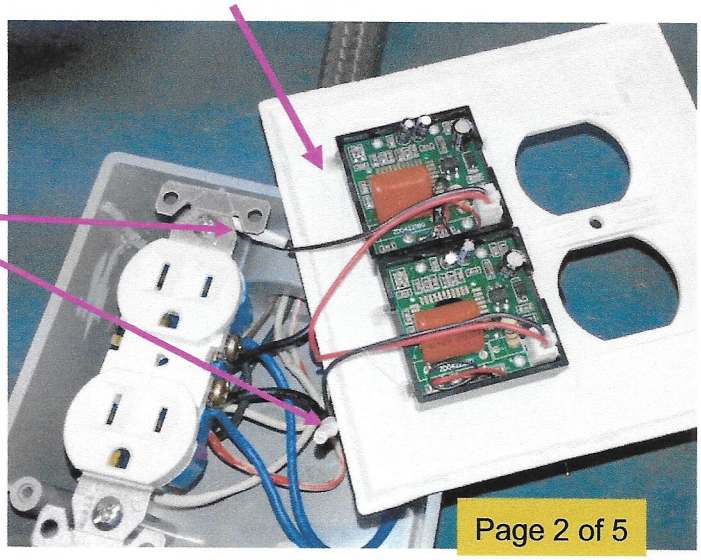
L1 goes to the top outlet & L2 goes to the other one. Use the gold color screws. Put the neutral white wire on one of the silver screws on the opposite side of the outlet. Connect the copper ground wire to the green ground screw on the outlet.

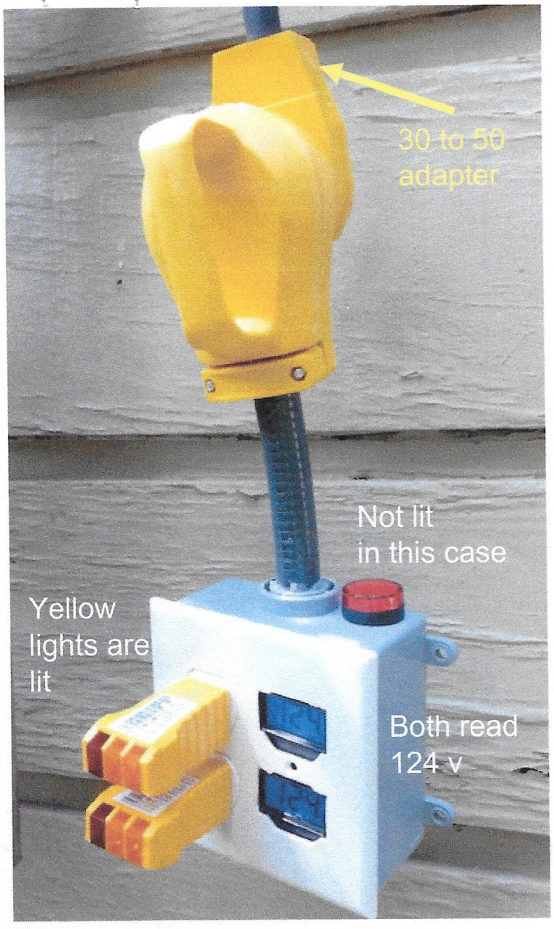
Use the Dremel to carefully resize the outlet holes so that the two meters fit inside the holes. A few drops of hot melt glue around the edges on the backside holds them in place.

The meter wires are very thin and rather short. I lengthened by soldering a black wire on each of the two black meter leads. These go to each of the hot screws on the outlet. I only had white wire to use for each of the red meter leads. These go to the white neutral screws on the outlet. White shrink insulation shown covers the solder connections.

Note: None of the wires used need to be very heavy as they just measure voltage.. and carry very little current.

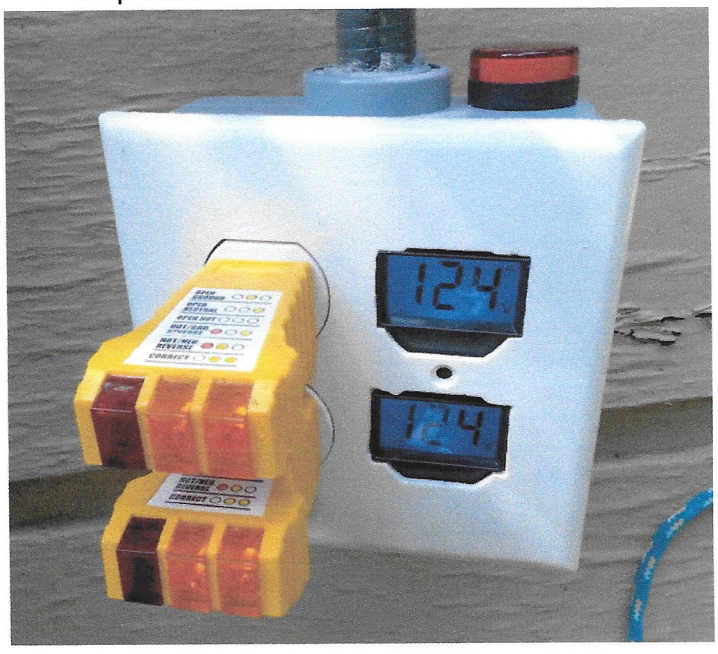
Since the face plate is held on by only the one screw in the middle of the outlet... I used white caulk around the edges of the plate to seal it to the electrical box.





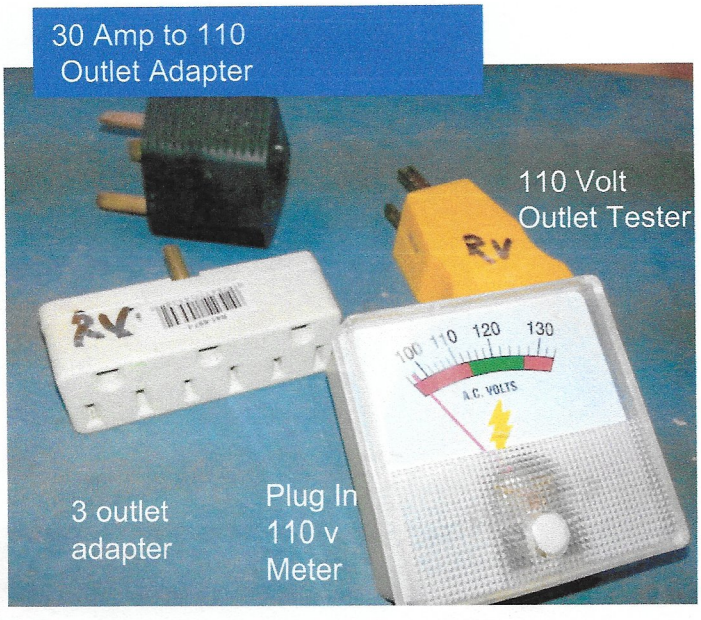
These two pix show the checker with the 30-50 amp adapter plugged into my 30 amp outlet at home. Since the 30 amp outlet only puts out one phase of 120 volts, both meters read the same, as do the yellow circuit testers (yellow lights all lit). The red pilot light on the top IS NOT LIT in this case, due to the same phase output on both legs.

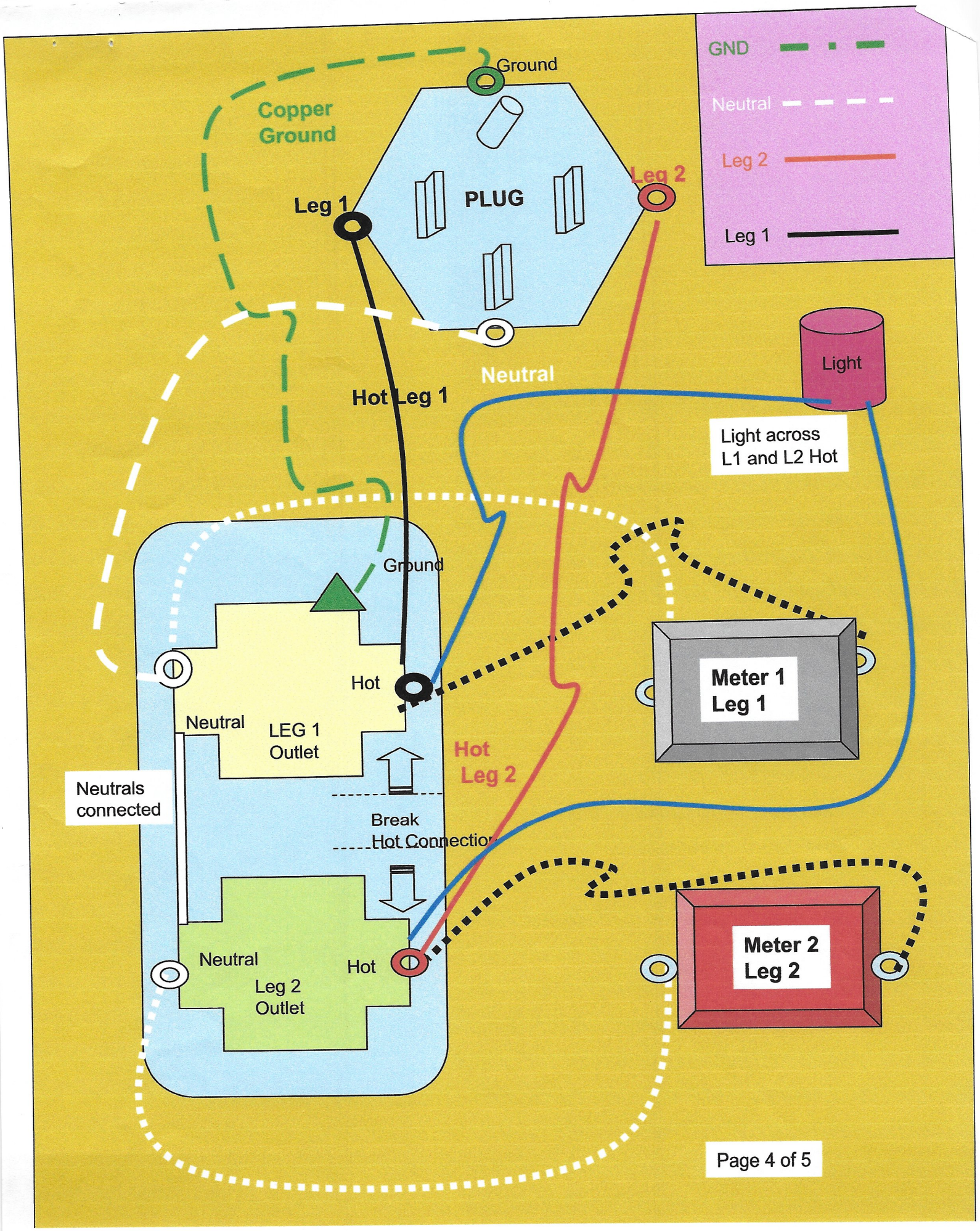
This is also what it would look like if plugged into a "Fake" 50 amp outlet.



Easy "No-wire" 30 Amp Checker

If you are a 30 Amp person, this is even easier..
Just plug things together like this




GND
Neutral
Leg 2
Leg 1
Ground
Copper Ground
PLUG
Leg 1
Leg 2
Hot Leg 1
Neutral
Light
Light across L1 and L2 Hot
Ground
Hot
Neutral
LEG 1 Outlet
Hot Leg 2
Neutrals connected
Break Hot Connection
Meter 1 Leg 1
Meter 2 Leg 2
Neutral
Hot
Leg 2 Outlet

Camco 55255 50 AMP PowerGrip Replacement Plug
Sold by: Amazon.com LLC

Amazon $13.50.. Ok but a bit flimsy .. I added glue around the two halves.... likely better options elsewhere

2 of RioRand LCD Digital Voltmeter AC 80-500V Home Factory 110V 220V Panel Volt Meter High Voltage Monitor 40x40mm
Sold by: RioRand Direct

Very Accurate

$11.50

Amazon – Ships from China (6 weeks or so)

AC 220V Red LED Power Indicator Pilot Single Light Lamp 22mm
Sold by: uxcell

Amazon – Ships from China (6 weeks or so)

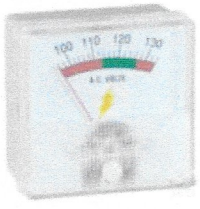
$3.87 a bit bigger then necessary.. a single small neon test light would work as well...

110 volt circuit tester....

Harbor Freight was best option as to price

$4.95

Standard 2 gang electrical box and related from Lowes



AC Voltage Meter

For a 30 amp only checker, this may be found at Amazon or Camping World.

$15.00 to $18.00

Same with this..

15 Amp RV Female to 30 Amp Male Adapter

About $5.00

With thanks to the blog MYRV for some inspiration. I modified his version which you can see HERE

Also to Mr. Gary Elkington of the Yahoo Dynamax forum who built this one using "kill-a-watt" meters