



CHECKING WATTHOUR METER ACCURACY

USING CUSTOMER'S LOAD

This test checks disk speed

1. Select a large appliance with known wattage.
2. Turn it on. Be sure automatic equipment (that may come on during your test) is turned off.
3. Observing the black mark on the meter disk, count any number of revolutions, carefully noting the time in seconds.
4. Use the following formula to compute watts:

$$\frac{3600 \times K h \times \text{Revolutions}}{\text{Time in seconds}} = \text{Watts}$$

3600 = Seconds in one hour
 K h = Watthours per disk revolution and is found on meter nameplate. Example:

The appliance selected is a toaster. The wattage is 1000. The voltage rating is 120. The disk turned 3 revolutions in 39 seconds. The Kh is 3.6.

$$\text{Then } \frac{3600 \times 3.6 \times 3}{39} = \mathbf{996.92 \text{ Watts}}$$

$$\text{Percent registration} = \frac{\text{computed watts} \times 100}{\text{toaster watts}} = \frac{996.92 \times 100}{1000} = \mathbf{99.69\%}$$

The above test is easy to perform and is convincing when done in the presence of the customer. However, to be sure that the watthours represented by the disk revolutions are correctly transferred to register dials, you must know that the register gear ratio is correct.

You could verify it by checking it against other meters of the same type, if you have others. It is shown somewhere on the register. Sometimes as a fraction, i.e. 27 7/9 or as RR 13 8/9. If you don't have others to compare, you may wish to make the test which follows:

CHECKING THE WHOLE METER

This longer test checks dials too

First, a little information to make it easier for you to perform this test:

A reading of 0001 means that 1 kilowatthour (KWH) of electricity has been used. One KWH is 1000 watthours. 1000 watts used one hour, will show usage of 1 KWH. 500 watts used 2 hours will also show usage of 1 KWH. 250 watts used 4 hours will also show usage of 1 KWH. Any combination of watts X hours that equals 1000 will show usage of 1 KWH. With this knowledge, it is simple to make a test in your own shop, that will check the entire meter, including register gears to the dials.

Choose your load, check the wattage and compute the length of time it should take to equal 1000.

1. Use the formula watts X hours = 1000 watthours.
2. Turn it on for the length of time that you computer will equal 1000 watthours.
3. Read the meter. It should show usage of 1KWH.
4. If it differs a little from your calculation, check the voltage on your device. If it is higher than the actual voltage
5. which the meter received, then that could account for a lower reading. If it is lower than the actual voltage, then that could account for a higher reading. If the actual voltage is the same as the loading device, you may wish to replace this meter.

COMPARE WITH ANOTHER METER

You can connect a second meter in series with one having questionable accuracy. If both meters read the same, they are both OK. (How often can two meters be inaccurate by the same amount?) **Note:** if two meters are left in series long enough, the voltage coil load on second meter may add some to the reading of the first meter. It is such a small load, you may not even notice it. It is approximately 1.5 watts. This is so small that it will take at least 667 hours (almost a month!) for it to add 1 KWH. (It will not add anything, unless the disk is already turning due to another load.)

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