Measuring Inductance

What is needed?

For these measurements we need:

- a known reduction transformer (120/240V to 6/12V or whatever you have at hand).
- a potentiometer (I recommend something in the 10K to 100K Ohm linear range)
- a multimeter
- the coil to be tested

All the calculations will be done at 50Hz, which is the standard household AC frequency in NL.

Steps

1. Ordered List ItemWith the multi-meter set to Ohms, measure the resistance between the terminals of the inductor. You will be measuring the real value of the parasitic resistance of the inductor winding. Write it down somewhere.
2. The diagram of the circuit that we are going to use for the test is shown above.
3. Connect the circuit without plugging it to the power outlet.
4. Set the potentiometer to its maximum value (this is good practice, you start by presenting the maximum impedance to the power supply thereby minimizing the current, and move down the impedance from there)
5. Connect the circuit to the power outlet
6. With the multi-meter set to AC voltage measure the Voltage between terminals of both the Resistor (VR) and the inductor (VL).
7. Move the potentiometer until the read of VR equals VL.
8. Turn off the power
9. Disconnect the potentiometer gently so you don't change its value.
10. With the multi-meter set to Ohms measure the value of the potentiometer.
11. If the value read in 10 is more than 10 times bigger than the value read in 1 then discard the inductor resistance in the calculation. Note: If it is not, you will need much more theory, mathematics and calculus to determine L.
12. Using the formula L = R / (6.28 x 60 Hz) you will get an approximate value for L.