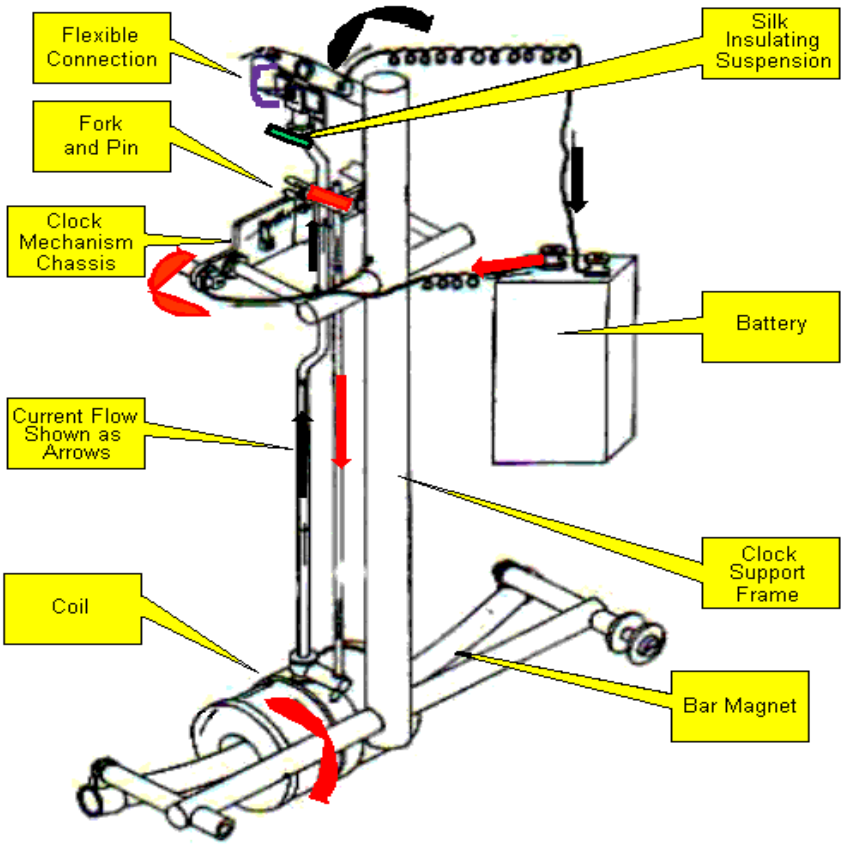
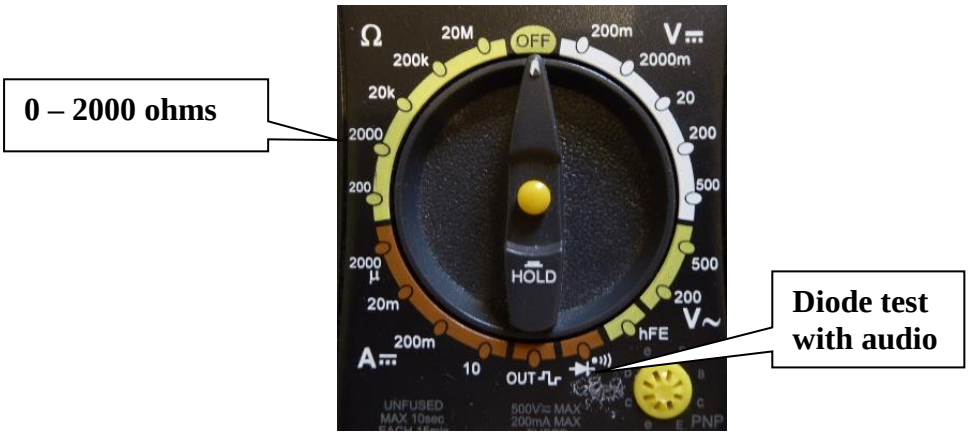
TESTING A BULLE CLOCK FOR ELECTRICAL CONTINUITY.

Bulle clocks have a very simple circuit however it is complicated by the large number of connections which, naturally, have to be clean and sound for efficient passage of current throughout the circuit.



For continuity testing you will need a multimeter which has:
1. the ability to test resistance in the range 0 – 2000 ohms,
2. a diode test setting with an audio beep if there is continuity.



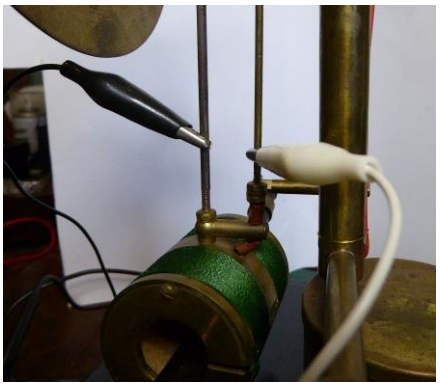
Also you will need 2 small test leads.

Testing Procedure.

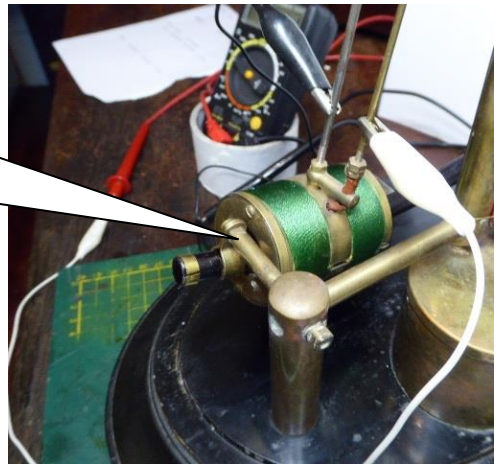
Before testing remove the battery from the clock.

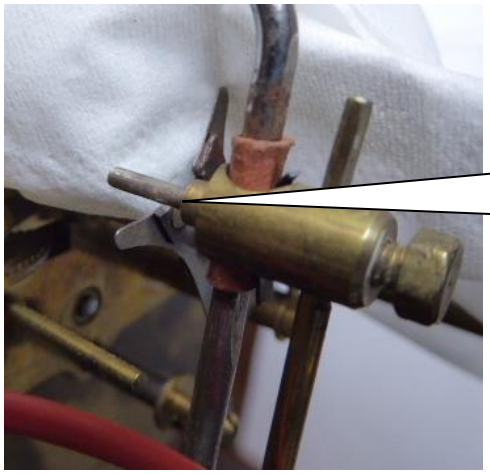
A. Coil Test.

The first test is for the coil, to determine if it is within the normal resistance range for the Bulle coil, **1100 – 1300 ohms**.
Connect a test lead to each of the rods supporting the coil as these are also conductors.



Connect the other ends of the leads to the multimeter probes.
Move the pendulum to one end of the magnet ensuring that the contact pin is not touching the fork anywhere.

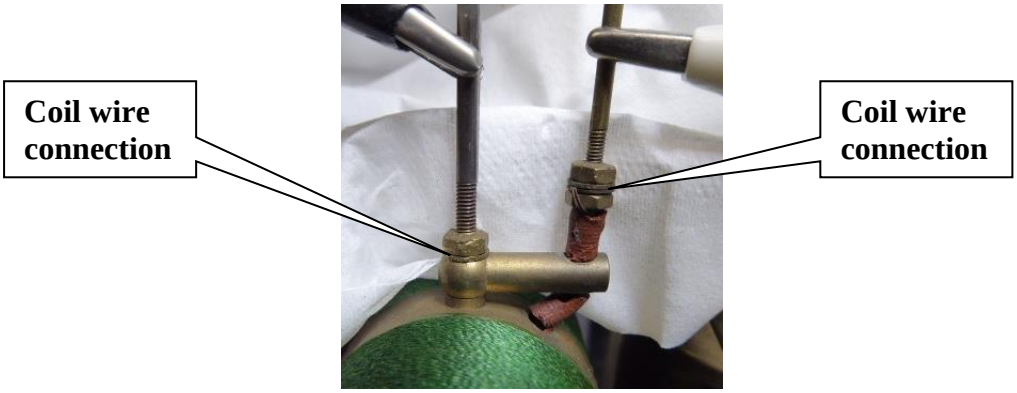




Switch the multimeter to the 2000 ohm range setting. A good coil should be within the resistance range stated above.

If the reading is “1” there is an open circuit in the coil and hence faulty.
If the reading is “000” there is a short circuit and hence faulty.

If found faulty:
1. check the coil connections at bottom of the two rods for soundness.



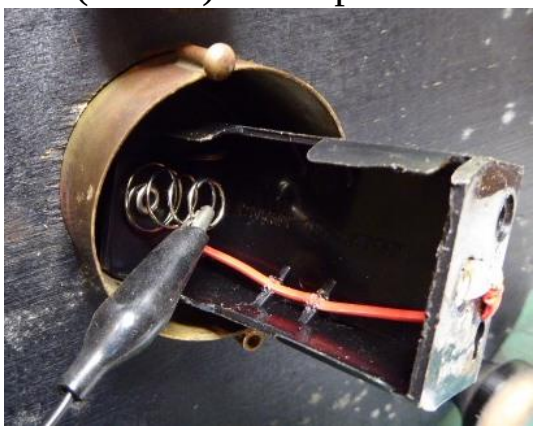
2. the coil must be removed from the casing and closely examined for repair or rewind.

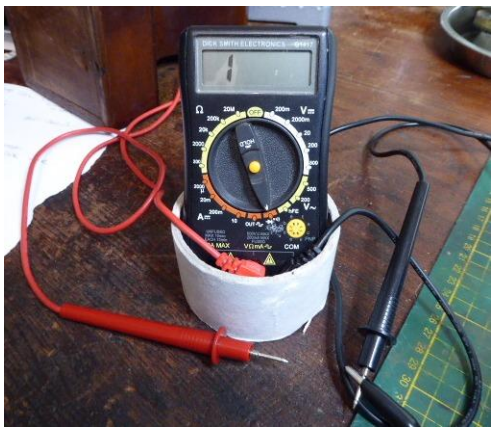
B. Continuity testing of the circuit

For optimal performance the electrical circuit must be free of open or short circuits and have connections free of high resistance.
Again keep the pendulum at one end of the magnet with no pin/fork contact.
To test for continuity a multimeter is used, switched to the diode test setting.

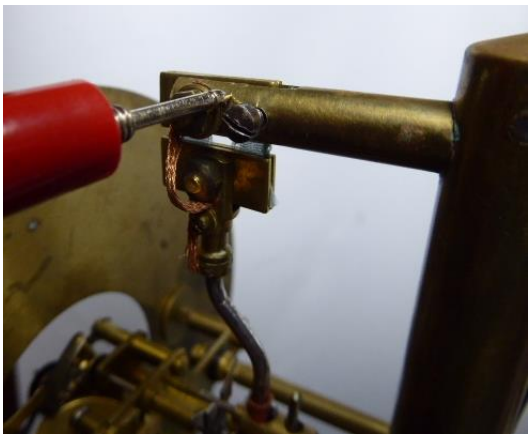
If there is no resistance then the meter will “buzz”.

Now to test the negative side of the circuit connect a lead wire to the negative terminal of the battery holder and the other end of the lead to the negative (black) meter probe.





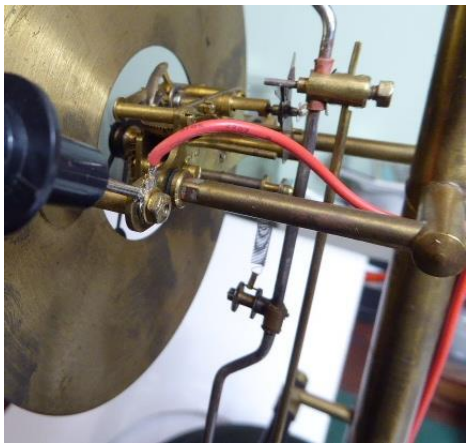
Using the red probe test each point of a connection on the clock frame and pendulum, following the negative side of the circuit right down to the entry to the coil.

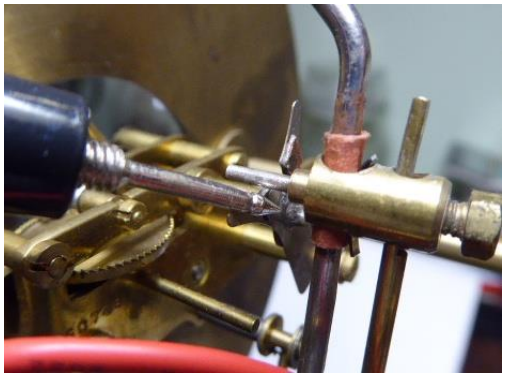


If the meter buzzes at each point then the circuit is good.
If there is no buzz at any one point then there is an open circuit or high resistance there. Examine the connection for fault.

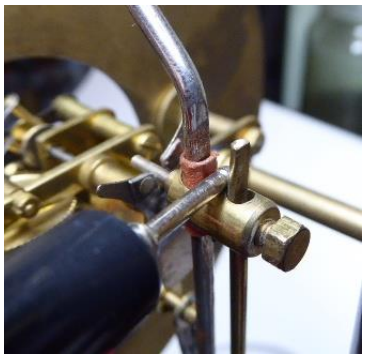
Now for the positive side of the circuit keep the pendulum at one end of the magnet and use the multimeter on the diode test setting.
Connect a lead to the positive battery terminal and the other end to the positive (red) meter probe.

Using the black test probe test each connection point on the clock frame down to the silver contact on the fork.





Release the pendulum to hang freely and place the probe on the silver contact pin holder.



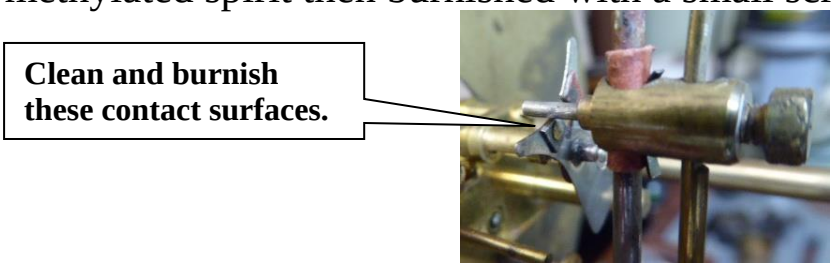
Rock the pendulum backwards and forwards along the magnet. As the contact pin and the fork make contact the meter should buzz if there is continuity.

Continue to test down to the point of entry to the coil.
Again if ever test point gave a buzz then all is fine. If a test point did not buzz check there for a connection fault.

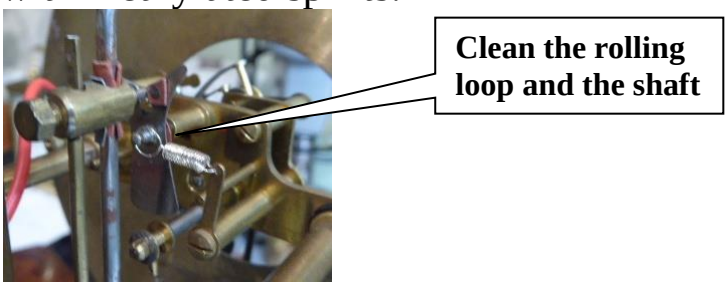
Having completed the coil and circuit continuity tests, and made any repairs to faulty connections the pendulum should swing with a good arc, say 2/3 of the magnet length, on 1.5 Vdc.

If the arc is less than this then check these things.

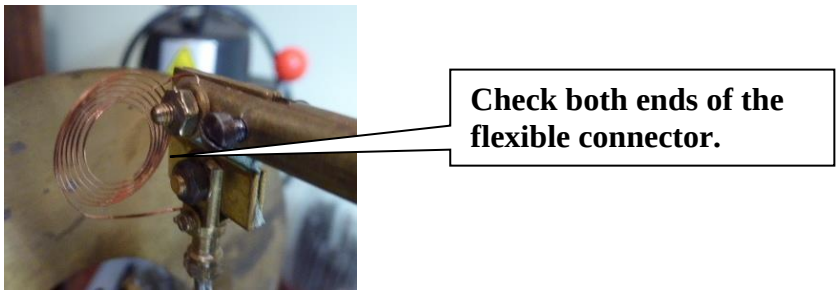
1. dirty contacts at the fork and pin should be cleaned with a cotton bud and methylated spirit then burnished with a small screwdriver shaft.



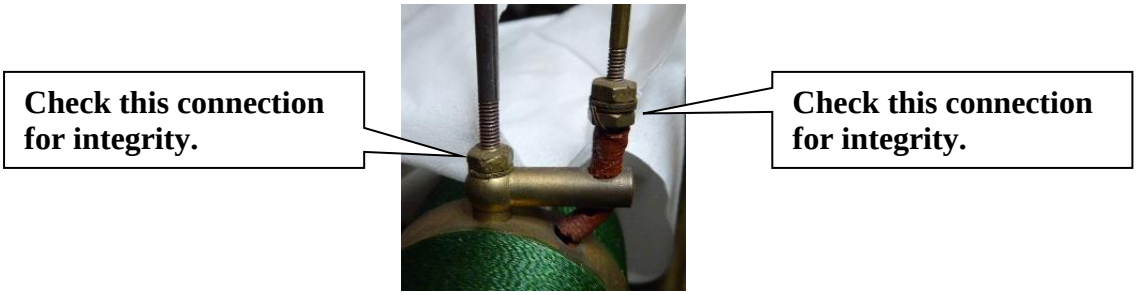
2. dirty contact at the fork shaft and the silver loop continuity spring cleaned with methylated spirits.



3. poor connection at the flexible connector.



4. broken fine wires at the coil connections.



A circuit with a good coil and no wiring or contact faults, will operate with a pendulum arc as stated previously.
If this arc is not achieved with 1.5 Vdc, try 6Vdc. If it then operates correctly then the magnet requires a rejuvenation by re-magnetizing it. This will return the magnet to its original strength and give the necessary reaction between the coil and magnet with an applied 1.5 Vdc.

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15th May 2018.