AVO 8, AVO 8 Mk2, AVO 8 Mk3, AVO 8 Mk4, AVO 8 Mk5 and AVO 8 Mk6.

The **Universal AVOmeter** model 8 was the most ubiquitous multimeter in the AVO range which started life back in 1923, and although it was initially a DC-only instrument many of its features remained almost unaltered right through to the last Model 8 of 2008. In particular the mirror scale, the "smiley" meter scale, the two switches and two terminals. AVO multimeters are renowned for their reliability and robustness, the early incorporation of a mechanically operated cut out linked to the meter movement and the two switch range selection system have endeared these meters to generations of electrical and electronic engineers. By 1965, the company had already created over one million AVOmeters. The firm also produced a range of smaller multimeters, the **AVO Minor** and later the **AVO Multiminor** as well as a number of special instruments such as the **Heavy Duty** model. Production of the iconic model 8 meter ceased in 2008. Though known for their Avometer general purpose multimeters, they made a wide range of test gear including valve testers, oscillators and light meters. You will find more information here about these instruments and other similar models. **AVO** also produced a range of smaller multimeters which are described here.

AVO Model 8 (sometimes referred to as the 8 Mark 1) this original model with replacement movement. working
It was given to me by Richard Fuller, it belonged to his late Father in law.

AVO Model8 MkII s/n 105043-360 complete with leather case and leads working
It was purchased new by my late father. I also have another s/n 142829-c-762 given to me by Ian Griffiths

AVO Model8 MkIII s/n 79168-468 working Given to me by Charles Husband

I now have another s/n 65083-867 which unlike the one above still has the AVO factory seal

AVO Model8 MkIV s/n 52??3 84/4/71 working Given to me by David Bone. (the top RH terminal is a replacement)

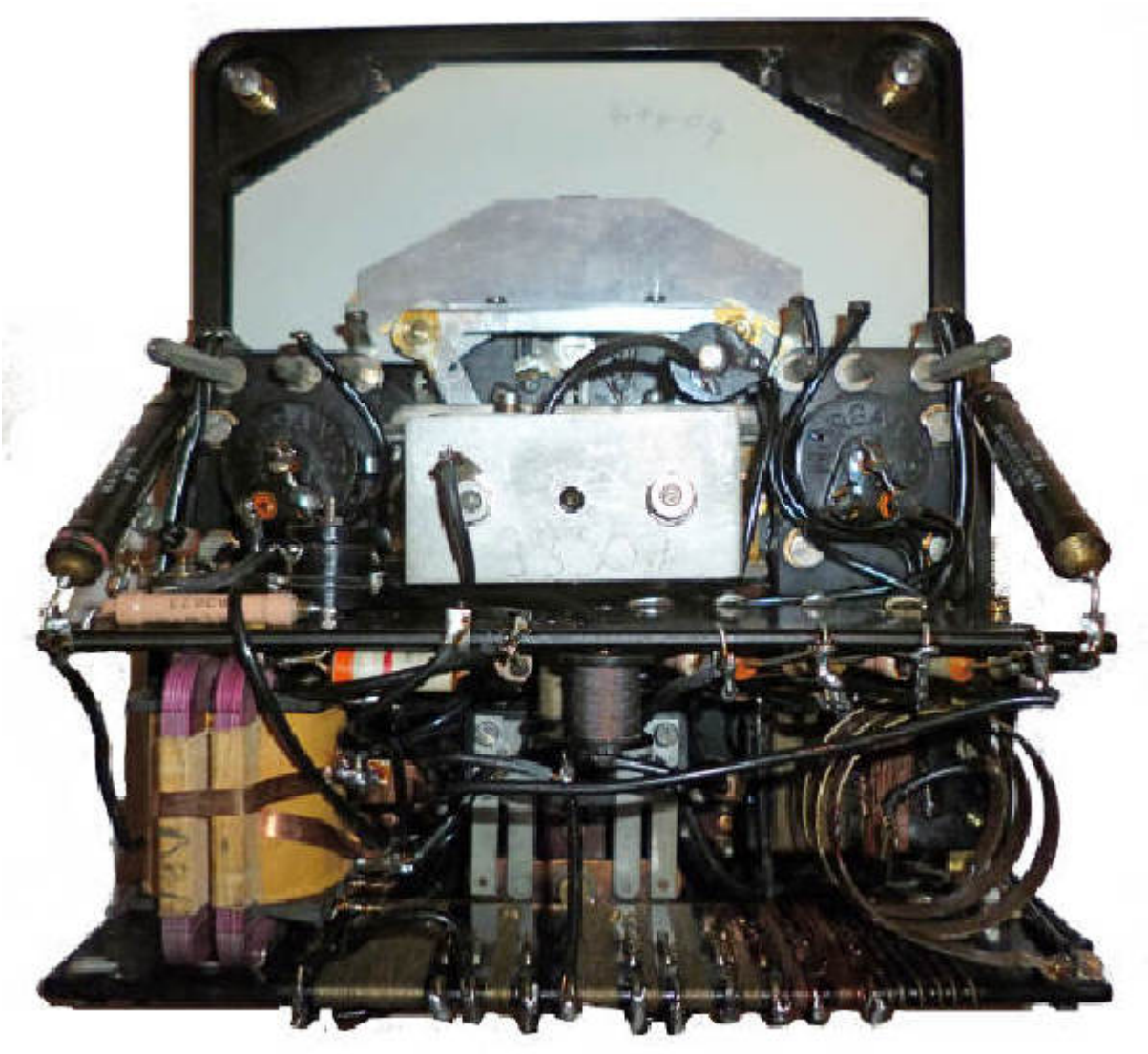
(The model 9 MkIV is electrically the same but has International standard markings on the front panel and scale.)

AVO Model8 MkV s/n 92447 8V/6/73 working Given to me by Ian Griffiths

AVO Model8 MkVI s/n 0005274FE 8VI 12/84 working Given to me by Ian Griffiths

All these models have 37.5 uA movements and are housed in substantial cases. As can be seen the front panel, range selection switches and meter scale markings are substantially the same. The instruction plates on the rear of the instruments are different, the later instruments indicate that they were manufactured by AVO Ltd, Dover, England and that AVO was a member of the Thorn Group for a period. There are other significant differences:
(1) The original model has black terminals of the same type as the Model 7 and model 40 instruments and does not have a 500 Volt DC range.
(2) The battery compartment on the MkIII is fitted with two fuse holders one to hold a spare and the other to protect the instrument.
(3) Germanium diodes rather than a copper oxide rectifier is used for AC measurement.
(4) Several of the purpose wound resistors have been replaced with conventional metal film types.
(5) Most of the purpose wound resistors have been replaced with conventional metal film types and the internal construction is very different in the MkIV instrument.
(6) The early models are housed in black Bakelite cases and the MkIV is in an olive

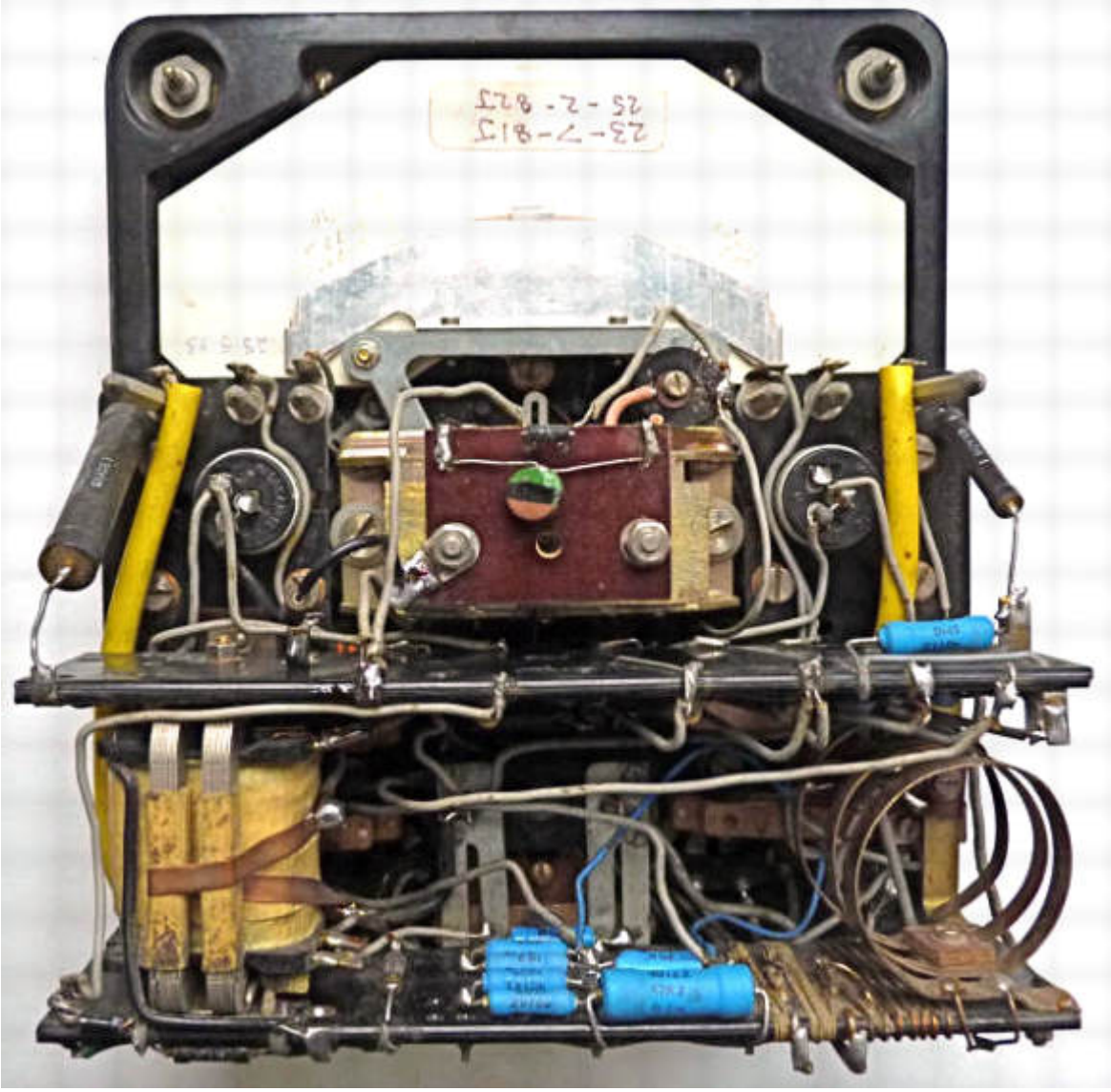
green thermoplastic case. AVO multimeters are renowned for their reliability and robustness, the incorporation of a mechanically operated cut out linked to the meter movement and the two switch range selection system have endeared these meters to generations of electrical and electronic engineers.



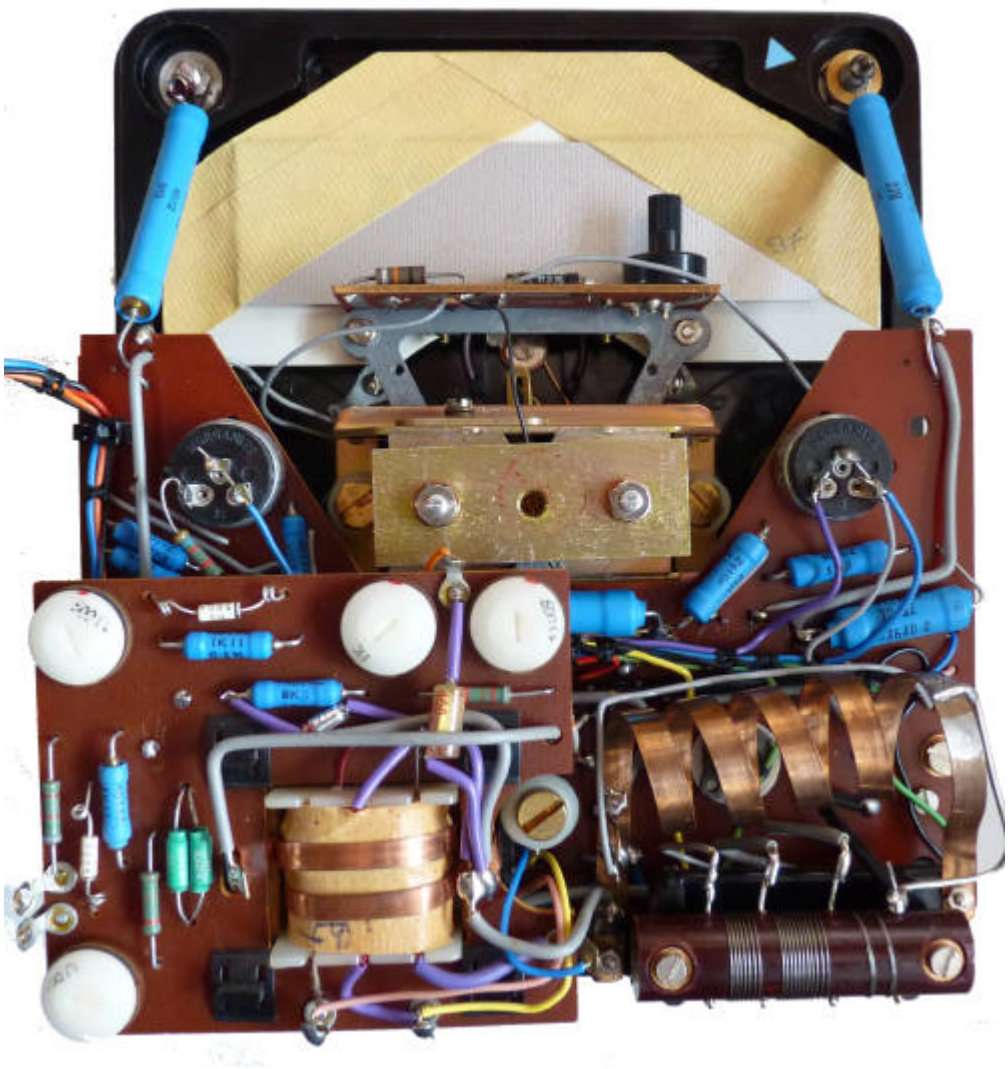
AVO Model8 interior

[The penciled number on the meter magnet reads 33301 and that on the back of the scale plate is 40404]

AVO Model8 MkII interior (the rectifier is not original)

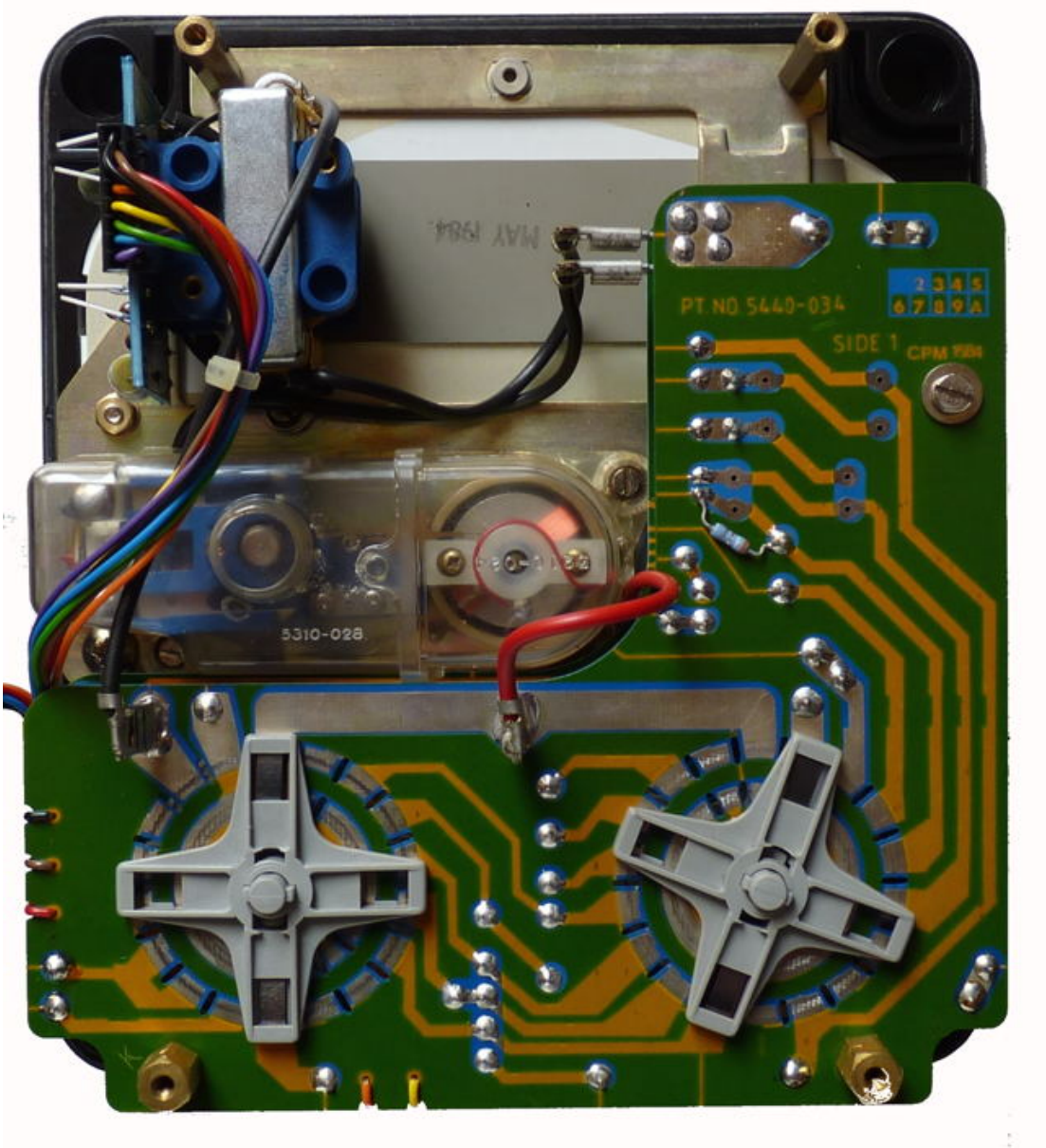


AVO Model8 MkIII interior (see bottom of this page)



AVO Model8 MkIV interior

AVO Model8 MkV interior



AVO Model8 MkVI interior

Not much changed on the inside over the years. Note how the MkIII instrument has been opened and repaired over the years from 1975 to 1983. When this instrument was given to me by Charles Husband the glass had become detached from the casing, the pointer was slightly bent and the batteries of 1990 vintage had leaked and corroded the battery terminals, these were easy enough to rectify and the meter worked on all ranges apart from the resistance ones. I eventually found that there were two problems:

The contacts for the fuse were also corroded and the high resistance prevented the instrument from being zeroed.
The contacts which were meant to be closed on the resistance ranges were dirty and causing erratic readings.

This is the AVO8 that belonged to Richard Fuller's Father in Law. It looks as if the meter has been repaired as the serial number on the scale has been obliterated, the genuine AVO leads are replacements and the instruction manual is that for a MkIII meter. It arrived in this purpose made cardboard box which has kept it in first class condition..

The original AVO meters date from 1923 but the model 8 with auto cut out and decimal scale is a direct descendant of the Model 7:

Model 7-1936
Model 40-1940
Model 8-1951
8 Mk II-1956
8 Mk III-1960
8 Mk IV-1969
8 Mk V-1972 [new internal design]
8 Mk V1-1984
8 Mk VII-1998-2008 when production ceased

Inflation!

In 1953 the original Avometer model 8 cost £23.50 (see advert below) and in 1970 the Mk4 model cost £34.80 and the leather case £5.50. The now no longer manufactured Avometer model 8 Mk7 was £585!!! However you should be able to purchase a reasonable second hand Mk2 or Mk3, have a look at:
http://www.ebay.co.uk/

What is it worth? You should be able to buy a model 8 MkII for £10- 20. Read the comments at the bottom of the page before considering the purchase of one of the later models.

Instructions on rear panel These are often very difficult to read so here you will find Model 8 Mk II - Rear panel text. [kindly supplied an old electronics technician]

How old is it? Most AVO meters can be dated from the last 3 or 4 digits of the serial number under the right hand end of the scale. The serial number on later models have a self adhesive sticker on the right hand side of the case. These define the month and year of manufacture. For example No. 105043-360 would mean that this one which was bought new by my father was made in March 1960 and 79168-468 which was given to me by Charles Husband was made in April 1968.

Batteries Early models of the AVO 8 use the BLR121

Later models use the BLR154 type, both are 15volt and rated at 40mAh.
BLR121 Height: 36mm. Width: 15mm. Length: 26 mm.
BLR154 Height: 34mm. Diam: 15mm.

When Ever Ready stopped manufacture AVO came up with a novel solution in the form of a miniature voltage converter [type VC1] Although these are reputed to be as rare as 'hen's teeth' I have one of these and you can have a look at it HERE

Where do you buy a replacement for the type BLR121 15 volt Battery? http://www.maplin.co.uk/ then search for battery blr121 which cost cost £ 9.99 when I last looked. http://www.cellpacksolutions.com is another source for batteries, they will even make up special batteries to your own specification.

Or if you want to use readily available batteries and have a soldering iron you can wire two 9 volt PP3 batteries in series with a 5v zener diode, insulate the metal cases and slide them in sideways between the contacts for the correct battery. The connecting wires can then be wedged behind the contacts. No guarantee, but it works for someone who visited this page.

Another suggestion Purchase from your local "Pound Shop" a card of assorted button cells and select ten of them (they need not be the same size). Cut a small block of wood 34 mm long and drill an 8mm hole through it. Cut a slot in one end and glue a thick piece of wire into it as a contact. Find a small helical spring (mine was from an old lamp holder) Take a narrow piece of masking tape and tape your

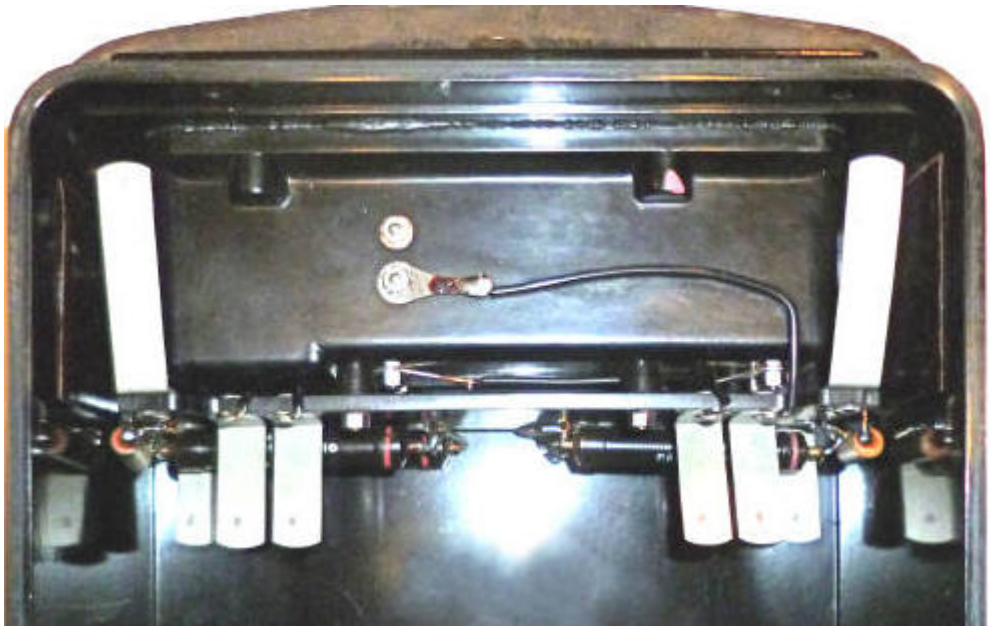
ten cells into two bundles, insert them into the wood block with the spring in between. You can stop the cells from popping out when inserting the block with a thin piece of metal. Alternatively use the plastic casing from a BLR21 and insert a new set of ten cells kept in place with adhesive tape.

Repairs? A small (Father and son) company http://www.algo-sales.co.uk are repair agents for Megger/Avo. Some of their calibration standards are of extremely high quality and manufactured by Sullivan and Cambridge. They also have some spares for old instruments, Avo meters in particular if you ever need any.

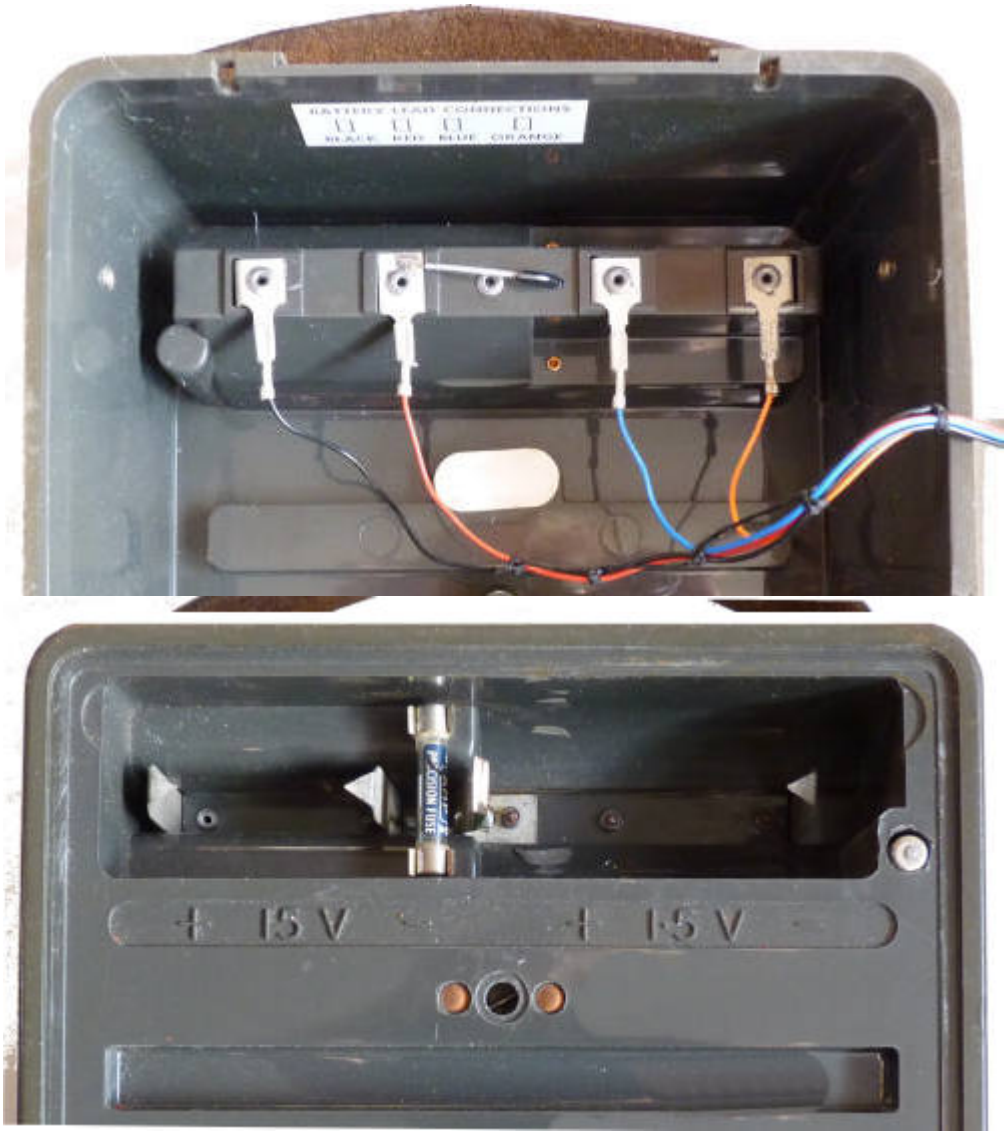
Can I fix it myself?

One problem I have experienced and have been asked about in the past is that the meter works on everything other than the resistance range[s]. If the contacts for the fuse or either battery are corroded the high resistance would prevent the instrument from being zeroed or even reading at all. It may be that the contacts which are meant to be closed on the resistance ranges are dirty and causing erratic readings.

To help understand the circuit I simplified the diagram click here by omitting all the parts that do not come into play on the resistance ranges. Although the diagram is based upon the Mk3 model the earlier and later models are substantially the same. The batteries are housed in the lower part of the case and the connections are made via pillars with pointed ends which mate with leaf springs on the inside of the case [the red lines on the diagram].



AVO Model8 battery and high voltage contact leaf springs. [The four inner ones are for the batteries]



AVO Model8 Mk4 battery compartments and connections to meter.

After checking the contacts which mate with the batteries for corrosion and the fuse and it's holder [not all models have a fuse] I suggest you make sure that contacts between the leaf springs and the pointed pillars are OK. If none of the above work the contacts on the switches or the zero rheostat may be at fault. A piece of thin card soaked in switch cleaner moved back and forth between the switch contacts may solve the problem.

History AVO Ltd. used to be at Avocet House, 92-96 Vauxhall Bridge Road, London, SW1 and was a member of the Metal Industries Group of companies. Though known for their Avometer general purpose multimeter, they made a wide range of test gear including valve testers. The Acton Lane works closed down at about that time - around 1986. The current range of products can bee seen at: http://www.avointl.com/ The firm now called Megger Ltd is based at: Archcliffe Road, Dover, Kent, CT17 9EN, United Kingdom.

circuit diagram Mk2 (jpg file) click here for diagram

circuit diagram Mk3 (jpg file) click here for diagram

circuit diagram Mk4 (pdf file)click here for diagram

instruction manual for Mk2 model (1.1 MB PDF file) click here for manual

instruction manual for Mk4 model (1.1 MB PDF file) click here for manual

instruction manual for Mk5 model (1.1 MB PDF file) click here for manual

For further information have a look at my pages on the model 7 AVO and Test Meter No1 here and here

Click on image for details of instruments and accessories available in 1953

This advertisement is from 1953. The cost then was over twice the the average weekly wage of a male manual worker. The equivalent today [2013] would be over £ 1000!

Here is a list of the main variations of this meter

Avometer Model 8
Avometer Model 8R
Avometer Model 8x
Avometer Model 8s
Avometer Model 8sx
Avometer Model 8sv
Avometer Model 8sv (Special)

Avometer Model 8 (Braille)
Avometer Model 8 Mk 2
Avometer Model 8x Mk 2
Avometer Model 8sx Mk 2
Avometer Model 8 Mk 3
Avometer Model 8x Mk 3
Avometer Model 8sx Mk 3
Avometer Model 8 Mk 4
Avometer Model 8x Mk 4
Avometer Model 8 Mk 5
Avometer Model 8 Mk 6
Avometer Model 8 Mk 7

It is a small World

John Hancock who worked for Instruments to Industry Ltd of 8-18 Wyre street Manchester noted the pencil markings on the rear of the Mark3 scale plate above as probably having been made by himself!
Whilst he repaired a range exotic industrial instruments such as temperature transmitters, a thing with a temperature probe which mechanically adjusted a pressure controlling device like the device on top of a gas bottle. Fed with compressed air it returned a pressure related to the probes temperature. A pressure gauge calibrated in degrees C indicated temperature remotely. But of course there were lots of DMM's Oscilloscopes, Clamp ammeters and AVO's galore. He comments as follows:

Mainly 8 MKII and tropical variants both of which I found had needed great efforts to kill.
MkIII's were thin on the ground which makes me surprised it's a MkIII I think I recognise.
Mk4s were rare and I did not see enough to form an opinion.
Mk5 and up....hmm

Well I used to see lots because they kept coming back. The movements were always giving trouble and if it did not kill itself by the magnet coming loose and trapping the coil, over voltage would wrap the pointer round the end stop due to the cut out being very insensitive. Add to that open circuits in the flexible wiring and baked resistors. Well put it this way, I never wanted to own one. I do however have a couple of MKII's
By the looks of the MKIII it either had repairs or was returned for calibration. The second date is pushing it a bit as it was around then that I jumped ship and went to work at U.M.I.S.T. But there I serviced several AVO's that I had seen in my previous job. The premises were only a few minutes walk apart, so perhaps it came to you and it's previous owner via U.M.I.S.T. (Charles Husband who gave it to me lived in Sheffield which is not so far away). The more I look at the label the more I feel it's my child like J which has certainly changed over these many years.

12/02/2019
00051869