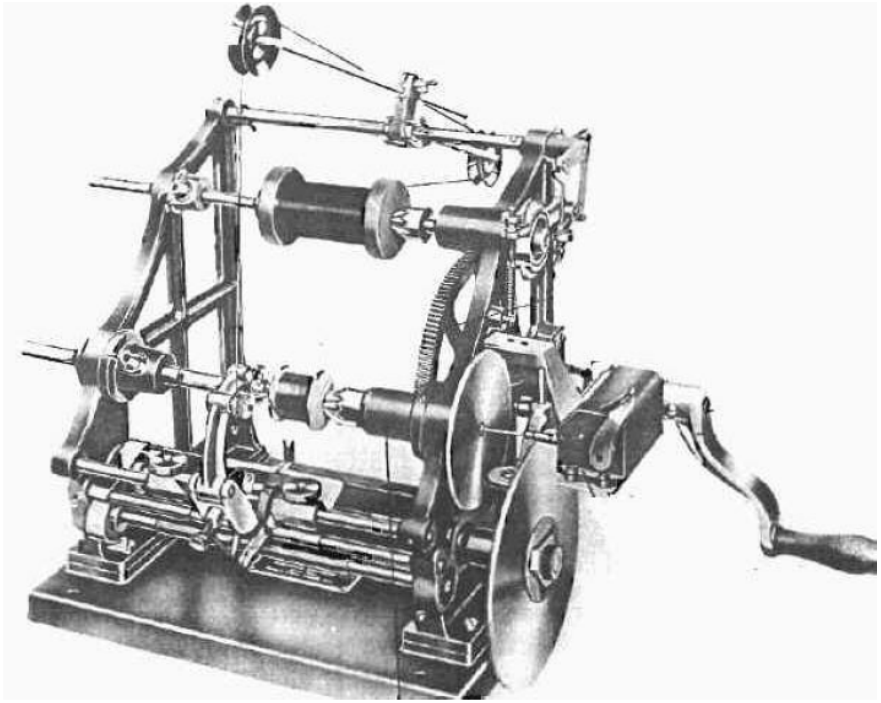
AVO

A short history

Agenda

- Company background and origins
- Company timeline and history
- The Original meter
- The AVO7
- The Introduction of theAVO8
- AVO8 Timeline and versions
- Inside the AVO8
- How old is your meter?
- Other AVO meters you may come across
- Buyers guide
- A selection of other products of interest to the Amateur
- The company today

The Automatic Coil Winder and Electrical Equipment Company



The Douglas No.1 Coil winder

- Company started in the early 20's
- Offices in Douglas St. SW
- First product the No.1 coil winder
- Moved onto wave winders and high capacity winders making 10 or more coils at one time
- They were the machine found in virtually every radio factory at that time

Company Timeline

1923
Company formed as Automatic coil Winder and Electrical Equipment Company of Doulas Street SW

1939
Additional premises at AVOCET House 92 - 96 Vauxhall Bridge Road

1957 Name changed to AVO LTD

1958 Bought Taylor Instruments Ltd

1958 merged with the Metal Industries Group (MIG)

1966
Moved to new premises in Archcliffe Road in Dover where they are still located

Company Timeline

1967
MIG was bought by the Thorn Electrical Industries group who quickly became part of EMI

1970's
Various companies were bought and moved to the Dover site including:
Foster Transformers
Evershed
Megger Instruments
HW Sullivan (Of Orpington)

1987
A management buy out re-named the company Megger Instruments Ltd

1991
Bought by TBG (trading company for the share holder)s and re-named Megger group Ltd

2010
Still trading, wait until the end to find out more!

Donald Macadie and the universal meter

The Avo No.1 36 range meter

- In 1923 they were approached by a GPO engineer called Donald Macadie with an idea for a 'Universal meter'

- He was dissatisfied with needing a separate instrument for each aspect of electrical testing

- He took a prototype to Douglas Street for evaluation

The Original 36 range meter

- The name comes from what it does
  Amps
  Volts
  Ohms

- By 1930 the meter looked little different to the way it looked in 2008

- It had a meter sensitivity of 6mA FSD which is useless for testing HT circuits in valve equipment

The AVO No. 7

A late AVO 7 (1948)

•Introduced in 1936

•The first meter to manage 1000 Ohms per volt due
• to it's more sensitive movement

•Designed with the radio engineer in mind

•Soon it became the standard and was quoted in service manuals and trader sheets

It survived virtually unchanged from 1936 until
The AVO 8 was introduced in 1951

The introduction of the AVO No. 8

•By the late 1940's the AVO 7 was insensitive compared to the competition

•Taylor had introduced a 20,000 Ohms per Volt model

•The loading the 7 caused was especially a problem for TV engineers

•The AVO 8 was introduced to the civilian market in 1951

The extra sensitivity was provided by a new meter movement with 37.5 uA FSD

An AVO 8 Mkii from 1960

Features of the AVO No. 8

- 20,000 Ohms per Volt sensitivity
- A mechanical cutout acting directly on the meter
- More sensitive germanium diode rectifiers
- A dB range
- An EHT range (until the Mk 6)

The stated accuracy is 1% on DC and 2% on AC

An AVO 8 Mkiii from 1966

AVO 8s through the ages

•The design was in production from 1951 to 2008

•1951: AVO 8 introduced
•1956: MK2 introduced, had a 500v range
•1964: MK3 introduced – A fuse now protects the resistance ranges
•1968: the MK4 sees a redesign and for the first time a PCB is used
•1975: MK5 Another redesign with better PCBs and various changes to meet NATO specs. A lighter plastic case replaces bakelite.
•1980 MK6 The 3000v range disappears (safety?)
•1996: Mk7 The final version some extra fusing added to the MK6

An AVO 8 Mk 5 from 1978

The last AVO 8

•The last ever AVO 8 was made in October 2008

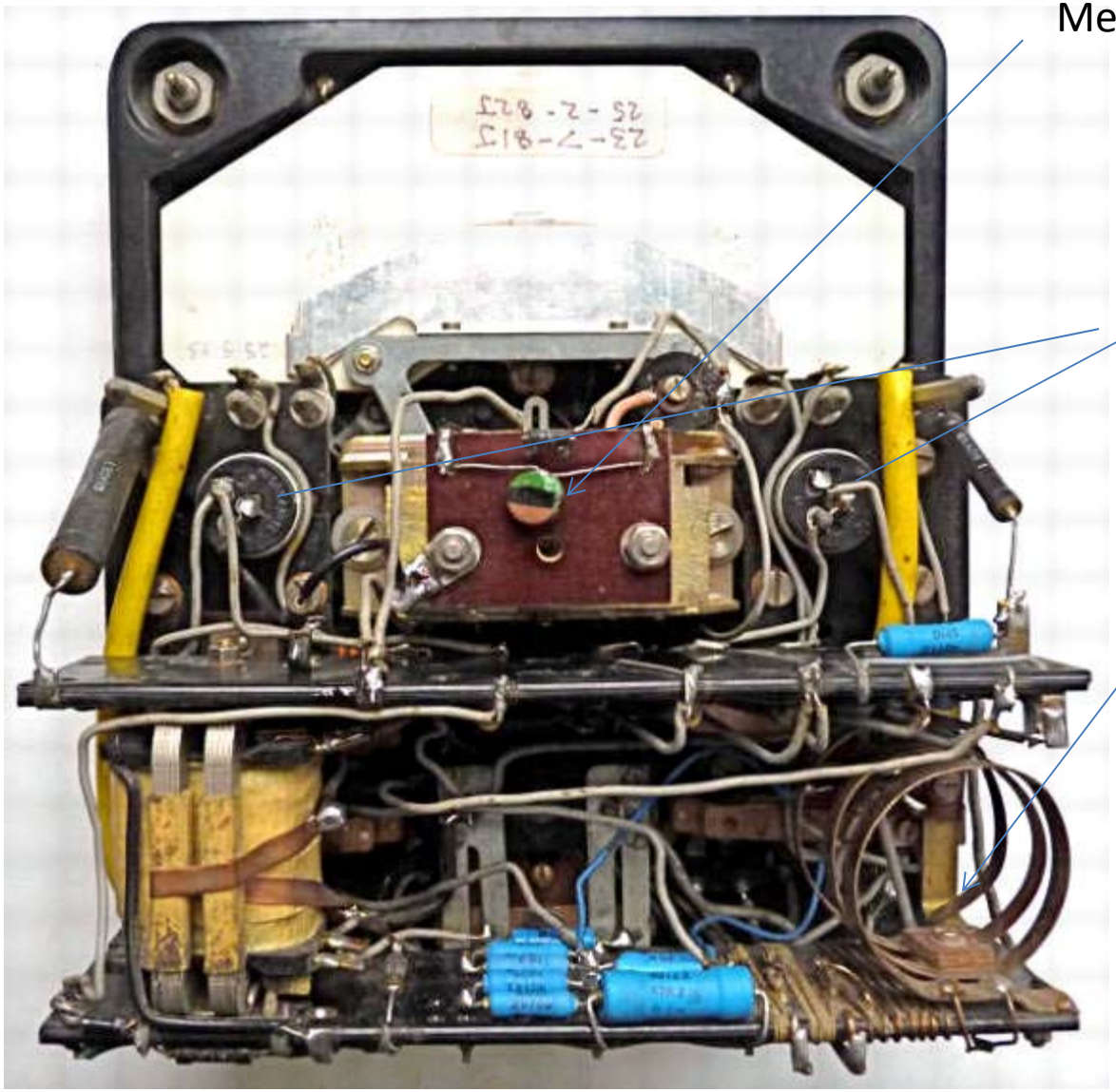
There was sill a demand however the component were becoming hard to source and the meter was increasingly expensive to produce

The price at that time was £925 + VAT from RS components. In 1970 it was around £35 and in 1951 £20

The very last one was given away by Megger the current owners of the brand in a competition in February 2010

The Last Ever AVO 8
Serial Number 6110-610/081208/5166

A look inside an AVO 8 (a MK3)



Meter movement

Zero pots

High Current shunt

How old is your AVO ?

The Previous slides giving the time line gives a general idea of age however it is possible to tell to the month when any AVO product was made.

Up to and including the Mk4 ,
And most other AVO made equipment of that time the last 2 letters of the serial number will tell you the year of manufacture
The previous two digits before that tell you the month

In the MK5 onward there is a label inside the battery compartment telling you the same thing

Serial number plate in a MK5

Number 81135 (meter number)
Model 8V (AVO 8 MK5)
Date code 9/75 (Sept 1975)

Other AVO Meters than you may find

AVO 36 Range (Bakelite and wood cased)

AVO 7 Older unit 1000Ohms/volt

AVO 9 Export version of the 8, not many in the UK

AVO 40 Very early unit with less sensitivity than the 7

AVO 12 designed for auto-electricians

Ruggedised AVO 8 – butch version with less functions

AVO Minor – mini meter 10,000 Ohms /volt

CT471 – Amplified circuit testing meter

AVO 100 More modern Analogue meter made in the far east

Tropicalised versions – Potted and hermetically

Do I want one and what should I look fort?

The AVO 8 (any mark) in good condition is a very good general purpose meter. They remain accurate for many years

As with most things Condition is everything

Has it been obviously dropped? Cracked cases or glass can mean further damage inside. (Mk4 on had a PCB prone to damage)

Does the meter freely move from zero to FSD without sticking?
You cannot swap meter movements between units or even scales as they were hand calibrated

Have a new PP3 battery and an AA battery on you to check whether the volts scales are accurate and a few resistors to check the resistors scales are the same (if a battery is fitted)

Does it have it's leather case and probes? If so it will probably have been looked after

How much should I pay for one?

A Mark 2 or 3 in reasonable condition privately on Ebay or on a non specialised stall at a rally will cost you around £10 to £20

Avoid AVO7s as they are not as sensitive and will load circuits leading to miss-leading readings

The same unit from a dealer will cost £40 to £50

A Mark 4 about £10 more than the above

Mark 5 onward are the newest instruments and are most likely to be in good condition with accessories.
Many are ex-NATO and have been very lightly used.
Expect to spend between £35 and £60 privately and anything up to £100 from a dealer.
A nearly new unit that have been calibrated could be up to £200

Remember these were nearly a £1000 when last available new.

Other Products Popular with radio Amate···

Signal Generators

The AVO all wave Oscillator
1939 -?
0 to 40Mhz (80Mhz on harmonics)
2 x L63 valves and metal rectifier
I paid 2 pounds for mine when I was about 14 and have never had to do anything to it

AVO HF135 0 to 240MHz

Avo Portable Sig Gen

Other Products Popular with radio Amateurs

Valve
Characteristic
meters / testers

Mark iV Valve characteristic meter

These units are highly prized by users
And repairers of valve equipment.
Good examples of the Characteristic meter change hands for £200 to £300 pounds

The CT 160 about £75 in good condition

With either it is important to have a copy of the guide book

I would love to own one!

CT-160 Valve tester

Other Products Popular with radio Amateurs

Test bridge
This instrument is the traditional Wheatstone Bridge, used to measure resistance and capacitance. The single valve is a triode, type L63, in an octal valve holder.

a valve voltmeter, but like the Model 8, it has many functions. One of the modes makes it into a wattmeter, and in that mode it has selectable load impedances. All the range-switching information appears in the two windows at the bottom, back-lit by small lamps inside the instrument. The control knobs have transparent plastic discs attached, with the mode and range information engraved on them in black.

Lesser known items

Exposure meters and Light meters

The name ‘Smethurst’ featured on all the light meters and originated from the inventor of the instrument Philip Smethurst

The Avo Smethurst exposure meter

The company today

Megger.

www. meggernetworks.com

Today the company trades almost exclusively as Megger

The y sell 30 different ranges including over 1,000 products

They are still based in Dover but manufacture also in Texas and Pennsylvania

They sell a wide range of professional test equipment

Mostly it is aimed at the power and telecommunications industry

The multimeter and clampmeter range is still branded AVO as is a PAT tester

AVO

Megger.

www. meggernetworks.com

Avo Training institute

Set up in the mid 60's

Carries out many aspects of electrical training

Engineering
Safety
ISO training
Compliance assessment

Mostly based in the USA

The company today

The last audited annual accounts posted as follows

Turnover: £ 84,384,000
Profit: £ 9,519,000

Number of employees 709

Profit per employee £13.425

Highest paid employee £235,000

Average wage per employee £ 35,000

Megger.

www. meggernetworks.com

To summarize a British success story!