

## UNIVERSAL AVOMETER

## WORKING INSTRUCTIONS

### MODEL 8.

### IMPORTANT

#### GENERAL

To ensure accurate readings, the meter should be used face upwards.

If necessary, set the pointer to instrument zero by means of the screw on the face of the panel.

The lower pair of terminals should be used for all ranges on the switch knobs, the left-hand terminal being common for the 2500V. range also. When in doubt, always use the highest range and work downwards, there being no necessity to disconnect the supply.

Never switch off current or voltage by rotating either switch to a blank position.

The polarity shown at the terminals is correct for normal use, but a movement reversing switch marked "REV. M.C." is provided to facilitate certain tests.

The automatic overload cut-out, if tripped, interrupts the main circuit and except in cases of abnormal overload, it provides complete immunity from damage. If it operates, disconnect the leads from supply, reset the cut-out with the meter horizontal, and clear the fault before reconnecting the leads. Since mechanical shock may cause it to trip, handle the meter carefully.

If the meter is used on circuits in excess of 2500 V., it should be kept at the earthy end of the circuit or alternative precautions taken. The instrument itself has been tested at 6000 V., A.C., but special care should always be taken when testing high voltage circuits. Ensure that the leads are maintained in good condition.

The resistance of the leads is approximately 0.02 ohms per pair.

A copper oxide rectifier is incorporated for A.C. measurements, the calibration being correct for a sinusoidal input or for one of equivalent form factor (1.11).

The decibel scale may be used with any A.C. current or voltage range.

When comparing readings on different ranges, add 8 dB to pointer indication for each increase of 2½ times in the current or voltage range, alternatively 12 dB for each increase of 4 times in the range.

#### D.C. CURRENT & VOLTAGE

Set right-hand switch at "D.C. position and left-hand switch at range required. For 2500 V. set range switch to 1000 V but connect negative lead to appropriate 2500 V. terminal.

All D.C. voltage ranges are 20,000 ohms per volt. (50 µA for full scale deflection).

On D.C. current ranges, a potential drop of approximately 0.5 V occurs at the terminals at full load except for the 50 µA range, which absorbs 125 mV.

#### A.C. CURRENT & VOLTAGE

Set left-hand switch at "A.C. position and right-hand switch at range required. For 2500 V. set range switch to 1000 V but connect negative lead to appropriate 2500 V. terminal.

Voltage ranges from 100 V. upwards are 1000 ohms per volt (1 mA. For full scale deflection). The 25 V., 10 V., and 2.5 V. ranges consume 4, 10 and 40 mA. respectively.

A.C. current ranges require approximately 0.2 V. at terminals for full scale deflection.

#### RESISTANCE

Before testing, the pointer should be adjusted to zero in the following sequence :

- (1) Set left-hand switch at "RESISTANCE."
- (2) Join the leads together.
- (3) On the "Ω" range, adjust to zero by means of the knob marked "ZERO Ω."
- (4) On the "Ω × 100" range, adjust to zero by means of the knob marked "ZERO Ω × 100."
- (5) On the "Ω × 1000" range, adjust to zero by means of the knob marked "ZERO Ω × 1000"

To test a resistance, set the right-hand switch at the range required, the leads being connected across the unknown component. Resistance is read directly on the "Ω" range, but indications should be divided or multiplied by 100 on the other two ranges.

#### BATTERY REPLACEMENT

When it is impossible to obtain satisfactory zero setting, the 1½ V. cell should be replaced immediately in the case of the two lower ranges, and the 15 V battery in the case of the high range

#### EXTENSION OF RESISTANCE RANGES.

Set the switch at "INS" and apply a D.C. voltage between 130 V and 160 V. Adjust pointer zero by means of the knob marked "ZERO Ω × 100". To test, connect unknown in series and multiply pointer indication by 1000.

This 200 megohm range is available also by means of the "Model 8 Resistance Range Extension Unit." This device which is complete with batteries can be used for tests down to 0.025 Ω in conjunction with meter switch when set to "L.R."

Instructions for use are attached to the Unit.

#### CURRENT & VOLTAGE ACCESSORIES

D.C. Multiplier for 10 KV. (at 20,000 ohms per volt.)

A.C. Transformers for 50 A., 100 A., 200 A., and 400A.

**AVO LTD. AVOCET HOUSE. 92/96. VAUXHALL BRIDGE ROAD.  
LONDON. S.W.1**

The AVOMETER instrument is patented in the principal countries throughout the world. British Patent 464867.  
The word "AVOMETER" is our registered Trade Mark. MADE IN ENGLAND

**GENERAL**

To ensure accurate readings, the meter should be used face upwards.

If necessary, set the pointer to instrument zero by means of the screw on the face of the panel.

The lower pair of terminals should be used for all ranges on the switch knobs, the left-hand terminal being common for the 2500 V. range also. When in doubt, always use the highest range and work downwards, there being no necessity to disconnect the supply.

Never switch off current or voltage by rotating either switch to a blank position.

The polarity shown at the terminals is correct for normal use, but a movement reversing switch marked "REV. M.C." is provided to facilitate certain tests.

The automatic overload cut-out, if tripped, interrupts the main circuit and except in cases of abnormal overload, it provides complete immunity from damage. If it operates, disconnect the leads from supply, reset the cut-out with the meter horizontal, and clear the fault before reconnecting the leads. Since mechanical shock may cause it to trip, handle the meter carefully.

If the meter is used on circuits in excess of 2500 V., it should be kept at the earthy end of the circuit or alternative precautions taken. The instrument itself has been tested at 6000 V., A.C., but special care should always be taken when testing high voltage circuits. Ensure that the leads are maintained in good condition.

The resistance of the leads is approximately 0.02 ohms per pair.

Germanium rectifiers are incorporated for A.C. measurements, the calibration being correct for a sinusoidal input or for one of equivalent form factor (1.11).

The decibel scale may be used with any A.C. current or voltage range.

When comparing readings on different ranges, add 8 dB to pointer indication for each increase of 2½ times in the current or voltage range, alternatively 12 dB for each increase of 4 times in the range.

Thermistor temperature compensation is incorporated in this instrument.

**D.C. CURRENT & VOLTAGE**

Set right-hand switch at "D.C. position and left-hand switch at range required. For 2500 V. set range switch to 1000 V but connect negative lead to appropriate 2500 V. terminal.

All D.C. voltage ranges are 20,000 ohms per volt. (50 µA for full scale deflection).

On D.C. current ranges, a potential drop of approximately 0.5 V occurs at the terminals at full load except for the 50 µA range, which absorbs 125 mV.

**A.C. CURRENT & VOLTAGE**

Set left-hand switch at "A.C. position and right-hand switch at range required. For 2500 V. set range switch to 1000 V but connect negative lead to appropriate 2500 V. terminal.

Voltage ranges from 100 V. upwards are 1000 ohms per volt (1 mA. For full scale deflection). The 25 V., 10 V., and 2.5 V. ranges consume 4, 10 and 40 mA. respectively.

A.C. current ranges require approximately 0.2 V. at terminals for full scale deflection.

**RESISTANCE**

Before testing, the pointer should be adjusted to zero in the following sequence :

- (1) Set left-hand switch at "RESISTANCE."
- (2) Join the leads together.
- (3) On the "Ω" range, adjust to zero by means of the knob marked "ZERO Ω."
- (4) On the "Ω + 100" range, adjust to zero by means of the knob marked "ZERO Ω ÷ 100."
- (5) On the "Ω x 100" range, adjust to zero by means of the knob marked "ZERO Ω x 100"

To test a resistance, set the right-hand switch at the range required, the leads being connected across the unknown component. Resistance is read directly on the "Ω" range, but indications should be divided or multiplied by 100 on the other two ranges.

**BATTERY REPLACEMENT**

When it is impossible to obtain satisfactory zero setting, the 1½ V. cell should be replaced immediately in the case of the two lower ranges, and the 15 V battery in the case of the high range

**FUSE**

A 1 A fuse in circuit with the two lowest ohms ranges gives extra protection to the "Ω ÷ 100" range. Fuse and spare are located in the battery compartment.

**EXTENSION OF RESISTANCE RANGES.**

Set the switch at "INS" and apply a D.C. voltage between 130 V and 160 V. Adjust pointer zero by means of the knob marked "ZERO Ω x 100". To test, connect unknown in series and multiply pointer indication by 1000.

This 200 megohm range is available also by means of the "Model 8 Resistance Range Extension Unit." This device which is complete with batteries can be used for tests down to 0.025 Ω in conjunction with meter switch when set to "L.R."

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