



Millikon's oil Drop Apparatus

Millikan's Oil Drop apparatus (ELP.112.138)

The apparatus comprises the following:

THE CONDENSER:

The specially designed condenser consists of two horizontal brass plated 5cm square. The plates are separated by insulating spacers having a separation of 4.5mm. The upper plate perforated at the centre for passage of oil drops into the observation chamber is fitted to the lower plate by 2 ebonite shrouded screws to facilitate opening of the condenser for cleaning. The condenser is provided with two slits, one for viewing the droplets and the other for projection of light.

CONDENSER BOX:

For completely eliminating the disturbances due to air currents the condenser is now housed in a transparent perspex box 9x6x5cms (LxWxH) with a removable lid. A sensitive circular spirit level is fixed to the instrument. The condenser unit is mounted on a pillar, fitted to a massive cast iron base with levelling screws. At the centre of the box lid a hollow cylinder is mounted. The oil is sprayed through the cylinder, which can be closed by a piston. The box is fitted with two terminals, having connections with the condenser plated for H.T. supply.

LAMP HOUSE:

A metal case with a 6V incandescent bulb is mounted on a fixed arm, fitted to the pillar of the instrument. Light is projected to the field of view for illuminating the droplets.

THE TELE-MICROSCOPE:

Instead of a microscope the instrument is now fitted with an extra powerful shorts focus Tele microscope. The magnification of Tele-microscope in respect to its objective is 1, thus making it DIRECT READING i.e the exact distance travelled by the droplets and directly be read on micrometer scale. The Tele-microscope is fitted with achromatic objective, ramsden eye piece and a micrometer scale of 0.1mm. The Tele-microscope is fitted with micrometer screws for its precise adjustment is horizontal and vertical plane.

THE SWITCH:

A specially designed switch for off and on the charge and for reversing the polarity of the condenser plates is fitted on the base. The switch is fitted with four terminals for CONNECTIONS. Finished in Tilden grey and bright chrome the instrument is supplied with instructions for use and complete with atomizer. Oil and 8 extra glass plates. WITHOUT POWER SUPPLY.

ACCESSORIES:

- .01 Regulated power supply 0 to 300 Volts.
- .02 Power supply 0 to 500 volts, with intensity control arrangement.
- .03 Atomiser, for a forceful spray for the best charged droplets.
- .04 Spray oil (water free) no volatile bottle of 150 Gms.

E/M BY THOMSON METHOD (BAR MAGNET METHOD) (ELP.112.139)

One of the most fascinating demonstration of modern physics in the controlled bending of stream of high speed electrons in a magnetic field. Measurement of the ratio of the charge on the electron to its equally minute mass imparts a stimulating sense of achievement.

The apparatus consists of a 3" Cathode Ray Tube. Power Supply Unit to provide H. V. voltage to operate the Cathode Ray Tube and DC Voltage for deflection plates, three wooden stands and a pair of bar magnet.

The tube is mounted on a wooden stand which has a groove cut at its bottom to fit into another stand with platform for placing two bar magnets. Third wooden stand provides a platform for Magnetometer



for measuring the magnetic field along the axis of the tube.

The Power Supply Unit provides all the voltages required to operate the tube. It supplies the positive voltage required to deflect the Electron Beam. This voltages can be varied by the deflection control and can be measured by Voltmeter given on the panel.

The voltages on the deflection plates are interchanged by switch REVERSE so as to deflect the beam either upward or downward.

The DEFLECTION of 1 cm. of the beam is adequate for the experiment. This deflection can be measured with sufficient accuracy on the centimeter scale provided with the apparatus.

The MAGNETIC FIELD required for detection of the Electron Beam is produced by two bar magnets. The field is determined by two bar magnets. The field is determined by noting down the time of oscillation and the deflection of the needle of a small Magnetometer at points along the axis of the tube.

Complete Instruction Manual is provided with the Apparatus experiment.

Specifications :

Input :	230 Volts 50 c/s
E. H. T. :	800 Volts at 10 mA
Deflection Volts :	0 - 50 Volts at 15 mA
L. T. :	6.3 Volts at 2 A
Horizontal Deflection :	By Bar Magnets
Vertical Deflection :	By Internal built-in supply

Complete with wooden stand, Deflection Magnetometer, pair of Bar Magnet.

- (i) Intensity, Focus Control are Provided.
- (ii) Shift : Control Provided.
- (iii) Deflection Voltage : Control Provided.
- (iv) Voltmeter : 0 - 50 V DC.
- (v) Reversing Switch for Plate.
- (vi) Terminals : For Solenoid with Control.