

UCHIDA

133-1110

MILIKAN APPARATUS

MODEL TM-15

Instruction Manual

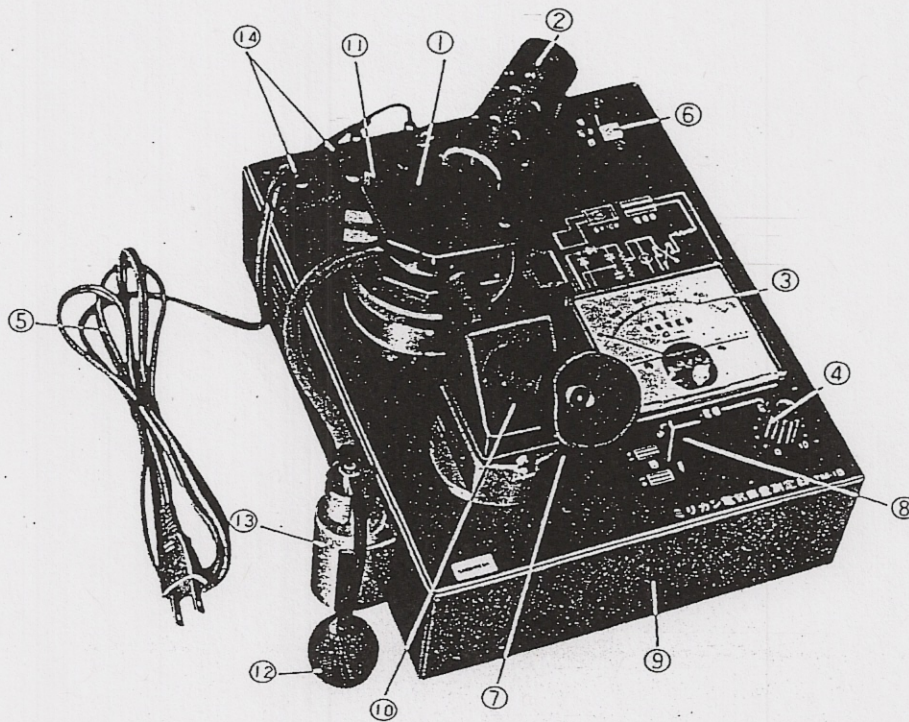


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MILLIKAN APPARATUS  
MODEL TM-15

Instruction Manual

1. Part description



- |    |                             |    |                                  |
|----|-----------------------------|----|----------------------------------|
| 1  | Electrode housing           | 2  | Projector                        |
| 3  | Electrode voltmeter         | 4  | Electrode voltage adjusting knob |
| 5  | AC Power cord               | 6  | Power switch                     |
| 7  | Focus adjusting knob        | 8  | Electrode polarity switch        |
| 9  | Body housing                | 10 | Microscope                       |
| 11 | Electrode housing set screw | 12 | Spray bulb pump                  |
| 13 | Latex container             | 14 | Electrode DC power cord          |



## 2. Specifications

Power requirement	AC 100V 50/60 HZ 20 VA
Electrode power supply	DC 1 500V continuous/variable
Projector	6V 10W
Microscope	30X scale 0.2 mm erect image.
Electrode assembly	Space 5 mm, diameter 44 mm Voltmeter between electrodes grade 2.5
Dimensions	230 W x 260 D x 220 mm H

## 3. Features

- o Latex ball (diameter 1/1000 mm)
- o The direction of movement of latex ball by gravity along matches the direction of gravity.  
(Observed with erect image)
- o Power supply included.
- o Voltage applied to the electrode can be easily switched.
- o Electrode container can be disassembled for adjustment and cleaning.
- o Optimum angle of microscope, projector and electrode container is fixed.
- o The light is shielded around the electrode to permit easy observation.



4. Experiment arrangement

- (1) Set the electrode housing as shown in Fig. 1.

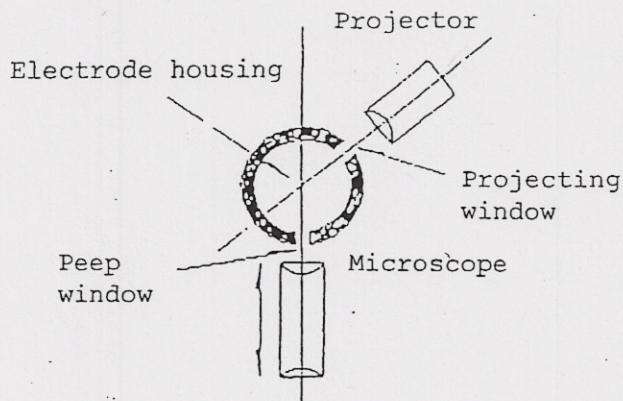


Fig. 1

- (2) When out of focus, the light is adjusted in the following manner.

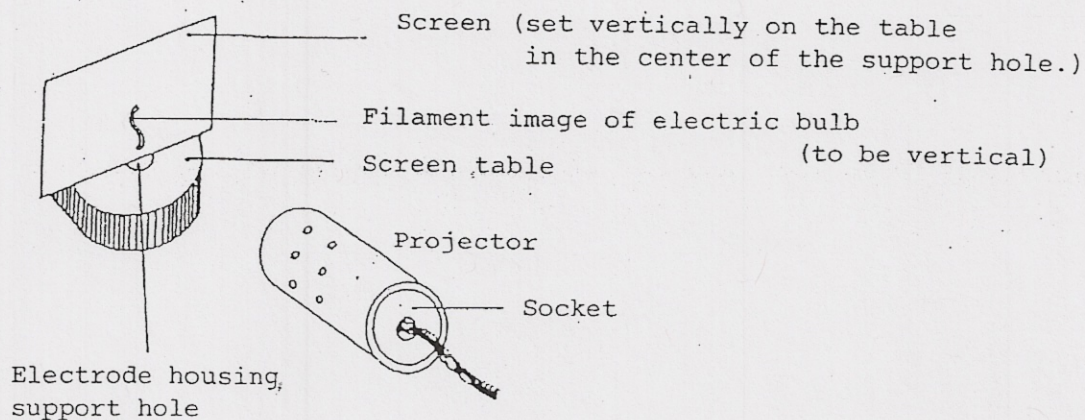


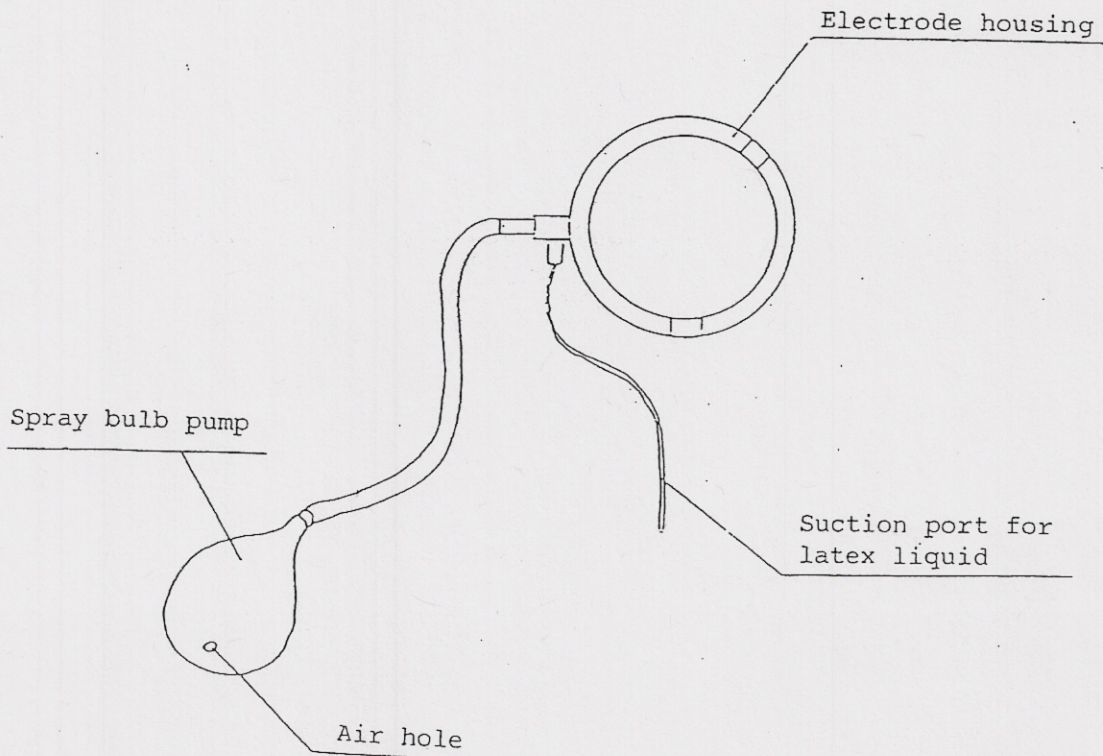
Fig. 2

- o Loosen the set-screw at the top of the electrode housing and remove the housing.
- o Loosen the light socket set screw and move the socket so that an image of the bulb filament is on the screen. (Adjustment was made at the time of assembly. And further adjustment is usually not necessary.)



### (3) How to Operate the MILLIKAN Spray

1. Before using the apparatus, loosen the set-screw of the electrode housing to permit air to escape. Then inject latex liquid in the spray by using the spray bulb pump.
2. To feed the latex liquid, plug the air hole of the spray bulb pump with a finger and squeeze the bulb. Latex liquid will not be injected unless the air hole is plugged.
3. After using the apparatus, clean the spray tubing with water, not latex liquid. If the spray is not cleaned after each use, a hard latex ball will form preventing smooth operation of the spray.
4. Spraying is usually hard for the first few times, start measuring after several test sprays.





(4) Cleaning procedure for the electrode housing

- o Remove the electrode DC power cord from the terminal.
- o Remove the pipe from the latex container.
- o Loosen the set-screw of the electrode housing and remove the housing.
- o Disassemble into electrode boards (above and below) rings.
- o Wipe off any water and latex with soft cloth.
- o Reassemble the housing and set in the designated position.
- o When assembling the intermediate ring, carefully align the objective lense of the microscope with the peep window.

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