

Experiment No: 10

- **Title: Study of Tool Maker's Microscope.**
- **Objectives:**
- After performing this experiment, you should be able to
- • Know the importance of precision measurement,
- • Know how precise measurements can be taken with this instrument,
- • Explain the field of application/working of this instrument, and
- • Understand the principle of working of tool room microscope.

Introduction:

- Engineering microscopes designed to satisfy various measuring needs of tool maker's are known as toolmaker's microscopes.
- A plain toolmaker's microscope is primarily intended for a particular application.
- On the other hand, universal toolmaker's microscope is adaptable to an uncommonly wide range of measuring tasks.
- A toolmaker's microscope is designed for measurements of parts of complex forms, e.g. profile of external threads, tools, templates and gauges It can also be used for measuring center-to-center distance of holes in any planes, as well as the co-ordinate of the outline of a complex template gauges.

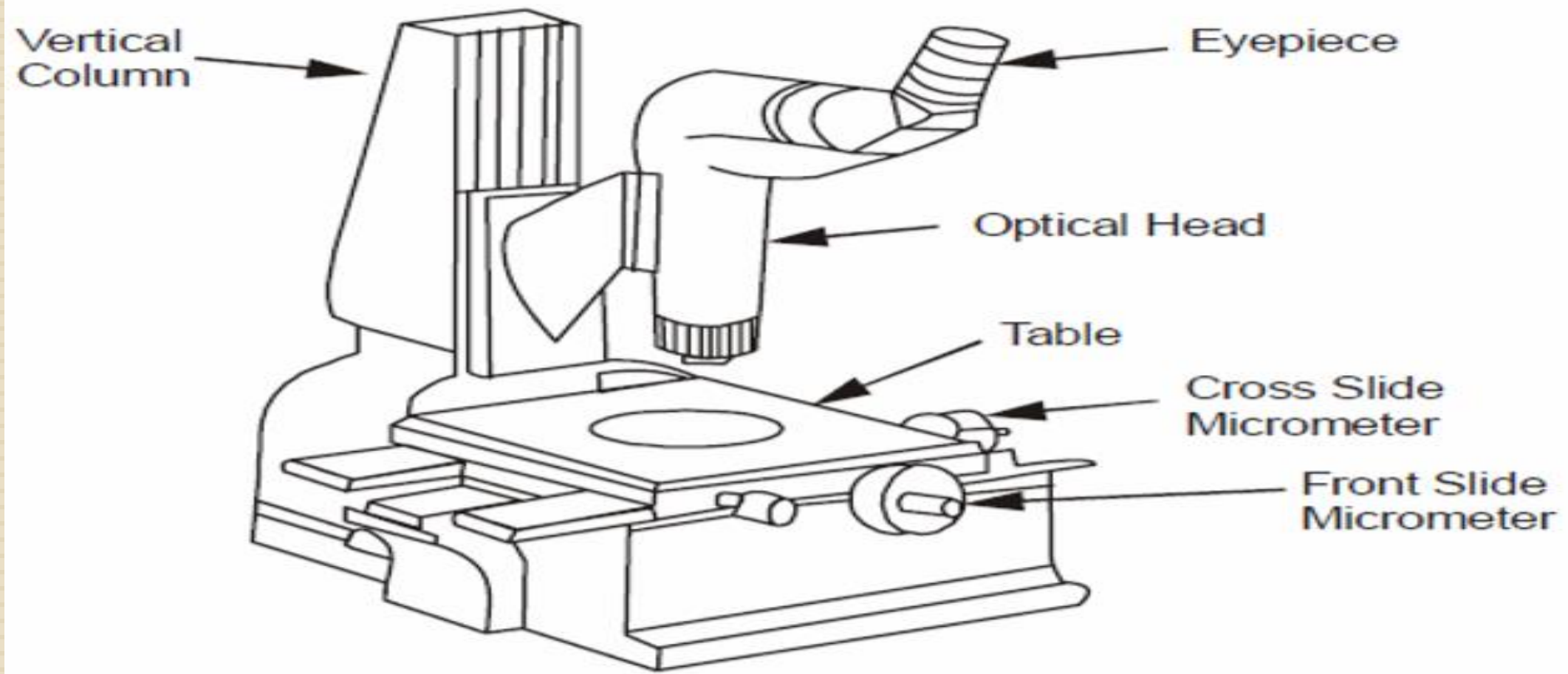


Figure : Tool Room Microscope

BRIEF DESCRIPTION OF INSTRUMENT

- It consists of optical head, which can be adjusted vertically along the ways of the vertical column and can be clamped in any position.
- The working table is secured on a heavy hollow base. The table has a compound slide to give longitudinal and lateral movements actuated by accurate micrometer screws having thimble scales and Vernier.
- At the back of the base is a light source, which provides a horizontal beam of light reflected upwards by 90° towards the table. This beam of light passes through a transparent glass plate on which flat parts to be checked are placed.

- A shadow image of the outline of the contour passes the objective of the optical head and is projected by a combination of three prisms to a ground glass screen.
- Observations are made through the eyepiece of the optical head.
- Cross lines are engraved on the glass screen, which can be rotated through 360, and these lines make the measurements.
- The angle of rotation of screen can be read on the optical head. The eyepiece field of view contains an illuminated circular scale with a division value of one minute. Adjusting optical head tube performs focusing.