

NATIONAL PHYSICAL LABORATORY

STANDARDS DIVISION

Ref: **MOY/SCMI/44** **SPECIFICATION OF ACCURACY**
(Issue 2)

for

AN ENGINEERS' UNIVERSAL MICROSCOPE

Type: A Hilger & Watts small measuring microscope which can be fitted with interchangeable stages to cover a wide variety of applications. Interchangeable objectives are supplied giving magnifications of 15x, 30x and 50x respectively.

LIMITING VALUE OR
MAXIMUM
PERMISSIBLE ERROR

1. GENERAL

- 1.1 The general workmanship and finish shall be in keeping with an instrument of this class.
- 1.2 Each instrument shall be marked with the maker's name or trade mark and an identification number and each unit shall be marked with its appropriate identification letter as designated in the maker's publication.
- 1.3 All stages and adaptable fittings shall be universally interchangeable between any instruments.
- 1.4 The focusing motion of the microscope shall be smooth throughout its range.
- 1.5 The focusing motion of the eyepiece shall be smooth and the focus of the graticule shall be comfortably within the range of adjustment of the eyepiece.

2. MICROSCOPE

- 2.1 The lines on the standard graticule shall be clearly cut, straight and at 90° to each other ±10 mins. of arc.
- 2.2 The rotation of the graticule cell shall be at least 90°.
- 2.3 47½°, 55° and 60° angle form graticule for standard threads shall be clear and accurate ±5mins of arc.

3. THE BASE AND PILLAR

- 3.1 The base shall be free from perceptible rock when placed on an accurately flat surface.
- 3.2 The upper metal surface of the base shall be flat 0.0005 in.

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3.3 The surfaces of the glass work-plate shall be:

Flat

0.0005 in.

Parallel

0.001 in.

3.4 The axis of the pillar shall be inclinable by at least $\pm 10^\circ$ with respect to the perpendicular to the upper surface of the base.

4. **PERFORMANCE**

Measurements made on this Engineers' Microscope shall satisfy the following accuracies:

4.1 Linear motions as controlled by the micrometers

± 0.001 in. per in.

(Applicable to objects placed on the circular glass work-plate, when the latter is fitted in any of its housings, or to objects held between centres when a centres cradle is provided).

4.2 Squareness of co-ordinate motions

0.001 in. per in.

4.3 Rotation of circular stage

± 5 minutes of arc
(± 1 vernier division)

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Director



Superintendent, Standards Division



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