

NATIONAL PHYSICAL LABORATORY

METROLOGY CENTRE

**Ref: MOY/SCMI/23 SPECIFICATION OF ACCURACY
(Issue 5)**

for

AN OPTICAL ROTARY TABLE WITH PROJECTION SCREEN

Type: Optical Rotary Table, 16 inches diameter, fitted with a projection screen graduated to 2 seconds of arc which can be read to 1 second of arc by means of a secondary index.

Made by: Optical Measuring Tools Ltd.

LIMITING VALUE OR MAXIMUM PERMISSIBLE ERROR

1. GENERAL

- 1.1 The general workmanship and finish shall be in keeping with a precision measuring tool of this class.
- 1.2 The table shall be marked with an identification number, and with the maker's name or trade mark.

2. CENTRE PLUG

- 2.1 The parallel and tapered surfaces of the plug shall be hardened and well finished. 800 HV minimum
- 2.2 The parallel and tapered portions shall be straight. 0.001mm (0.000 04 in)
- 2.3 The parallel portion shall be cylindrical. 0.001mm (0.000 04 in)
- 2.4 The parallel and tapered portions shall be concentric. 0.0025 mm (0.0001 in) FIM.
- 2.5 The plug shall have an identification number.

3. TABLE

- 3.1 The upper surface of the table shall be flat, whether the table is clamped or unclamped. 0.008 mm (0.0003 in)
- 3.2 The base of the table shall be flat so as to be quite free from rock when placed on a truly flat surface.
- 3.3 The bearing area of the base shall be adequate. 20% minimum
- 3.4 The upper surface of the table shall be square to the axis of rotation 0.005 mm (0.0002 in) over the table diameter.
- 3.5 The upper surface of the table and the under surface of the base shall be parallel for all relative positions. Maximum lack of parallelism 0.008 mm (0.0003 in) over the table diameter.

LIMITING VALUE OR
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4. **CLAMPING**

The action of clamping the table shall not:-

- (i) cause a change in the table height relative to the base. 0.0025 mm (0.0001 in)
- (ii) give rise to any visible movement of the scale as viewed on the screen.

5. **TAPERED SOCKET**

5.1 The centre plug shall be a good fit in the tapered socket as revealed by a blueing test.

5.2 When the centre plug is fitted in the tapered socket, in any position, its axis shall be concentric with the axis of rotation of the table 0.005 mm (0.0002 in) FIM.

6. **FINE SETTING**

6.1 The fine setting device shall operate smoothly and freely.

7. **SCALES**

7.1 The graduations of the main optical scale and those of the graticule scales shall be clearly cut, and free from blemishes.

7.2 The main and graticule scales shall focus simultaneously on the projection screen.

7.3 The maximum error between any two readings, involving the use of both the main optical scale and the micrometer scales, shall not exceed 10 seconds of arc.

(Signed) *L. W. Nichols*

for Director

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