NATIONAL PHYSICAL LABORATORY

METROLOGY CENTRE

Ref: MOY/SCMI/1 (Issue 6)

SPECIFICATION OF ACCURACY

for

FOR AN OPTICAL ROTARY TABLE

Type: Optical Rotary Table, 10 inches or 16 inches diameter reading direct to 0.5 minute or arc.

Made by: Optical Measuring Tools Ltd.

		LIMITING VALUE OR MAXIMUM PERMISSIBLE ERROR (where one figure is given it is applicable to both sizes of table)
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	This plug shall bear the same identification number as the Table with which it is associated.	
2.2	The parallel and tapered surfaces of the plug shall be hard and well finished.	800 HV minimum
2.3	The parallel and tapered portions shall be straight.	0.001 mm (0.000 04 in)
2.4	The parallel portion shall be cylindrical.	0.001 mm (0.000 04 in)
2.5	The parallel and tapered portions shall be concentric.	0.0025 mm (0.0001 in) FIM
3.	**TABLE**	
3.1	The upper surface of the table shall be flat whether the table be 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.

		LIMITING VALUE OR MAXIMUM PERMISSIBLE ERROR
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 0.01 mm (0.0004 in) over the table diameter.

4. **CLAMPING**

The action of clamping the table shall not: -

(i)	cause a change in table height relative to the base.	0.005 mm (0.0002 in)
(ii)	give rise to any visible movement of the scale as viewed movement of the scale as viewed through the microscope.	

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 rotational 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 graduation lines of the main optical scale and those of the microscope graticule scale shall be clearly cut.	
7.2	The main and graticule scales shall be in clear focus at one setting of the eyepiece.	
7.3	The reading of the exterior setting scale shall be reasonably in phase with that of the main optical scale.	± 0.3 degree.
7.4	The maximum error between any two readings, involving the use of both the main optical scale and the 1-degree graticule scale in the microscope eyepiece, shall not exceed	0.4 minute of arc.

(Signed)

for Director

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