NATIONAL PHYSICAL LABORATORY

STANDARDS DIVISION

Ref: MOY/SCMI/56 (Issue 2) **SPECIFICATION OF ACCURACY**

for

AN OPTICAL DIVIDING HEAD WITH TAILSTOCK AND BASE-PLATE

Type: An Optical Dividing Head and adjustable tailstock mounted on a base-plate measuring 33 x 5½ in.
The Head is fitted with a projection screen.

Made by: Precision Grinding Ltd.

			LIMITING VALUE OR MAXIMUM PERMISSIBLE ERROR
1.	**GENERAL**		
	1.1	The general workmanship and finish shall be in keeping with a measuring tool of this class.	
	1.2	The Dividing Head and base-plate shall be marked with an identification number and the maker's name or trade-mark.	
2.	**BASE-PLATE**		
	2.1	The surface of the base-plate shall be flat	0.0003 in.
	2.2	It shall have an evenly distributed bearing area	30% minimum.
	2.3	The finished bearing edge of the central tee slot shall be straight over its working length	0.0003 in.
3.	**HEADSTOCK**		
	3.1	The base of the headstock shall be sufficiently flat so as to be entirely free from rock when placed on a truly flat surface.	
	3.2	It shall have an evenly distributed bearing area	30% minimum.
	3.3	The centre shall be hard	700 HV approximately.
	3.4	The bearing flanks of the tapered shank of the centre shall be straight	0.0001 in.
	3.5	The centre point shall be concentric with the shank	0.0001 in. i.e. 0.000 2 in. FIM.
	3.6	When the centre is fitted in the taper socket in the head, in any rotational position, the point shall lie on the axis of rotation	0.000 15 in. i.e. 0.0003 in. FIM.
4.	**TIALSTOCK**		
	4.1	The base of the tailstock shall be sufficiently flat so as to be entirely free from rock when placed on a truly flat surface.	

		LIMITING VALUE OR MAXIMUM PERMISSIBLE ERROR
4.2	It shall have an evenly distributed bearing area	30% minimum.
4.3	The centre shall be hard	700 HV approx.
4.4	The flanks of the tapered shank of the centre shall be straight	0.0001 in.
4.5	The centre point shall be concentric with the shank	0.0001 in. i.e. 0.0002 in. FIM.
	Note: The headstock and tailstock centres shall be interchangeable	
4.6	The movement of the tailstock shaft containing the centre shall be parallel with the base-plate and with the finished bearing edge of the central tee slot	0.0005 in. over its total travel.
4.7	The adjustments for aligning the centre point shall function satisfactorily. There shall be no play between the centre shaft and its bush, and the action of clamping the tailstock centre shall not cause the centre point to change its position	0.0003 in.

5. FACE-PLATE

5.1	The surface of the face-plate shall be flat	0.0003 in.
5.2	This surface shall be square to the axis of rotation of the head	0.0003 in. over its diameter.
5.3	The face-plate, when in its mean position in the vertical plane, shall be square to the surface of the base-plate	0.0004 in. over its diameter.
5.4	The face-plate, when it its mean position in the horizontal plane, shall be square to the finished bearing edge of the tee slot in the base-plate	0.0004 in. over its diameter.

6. FINE SETTING AND CLAMPING

6.1	The fine setting device shall operate smoothly and freely.
6.2	The action of clamping the head when it has been set to any chosen reading shall not cause any visible movement of the optical scale.

7. **ACCURACY**

7.1 All scale graduation lines shall be cleanly cut.

7.2 The main circular scale and 54-minute graticule scale shall focus simultaneously on the projection screen.

7.3 The maximum error of indication between any two readings on the optical head shall not exceed 0.3 minute, either plus or minus.

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