

NATIONAL PHYSICAL LABORATORY

STANDARDS DIVISION

Ref: MOY/SCMI/86 SPECIFICATION OF ACCURACY  
(Issue 2)

for

A "MATRIX" 12-INCH CIRCULAR TABLE

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Type: A 12-inch circular rotatable table which can be read directly to 5 seconds of arc by use of a vernier.

Made by: The Coventry Gauge & Tool Co. 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. BASE

- 2.1 The under surface of the base casting shall be free from blow holes and the bearing area shall be adequate 20% minimum.
- 2.2 The under surface shall be flat so that the table is entirely free from rock when supported on a truly flat surface.

3. TABLE

- 3.1 The upper surface of the table shall be flat whether the table be clamped or unclamped 0.0003 in. (0.008 mm).
- 3.2 The upper surface of the table shall be square to the axis of rotation 0.0002 in. (0.005 mm) over the table diameter.
- 3.3 The upper surface of the table and the under surface of the base shall be parallel for all relative positions. 0.0003 in. (0.008 mm) over the table diameter.

4. CLAMPING

- 4.1 The action of clamping the table shall not: -
  - (i) cause a change in the table height relative to the under surface of the base 0.0001 in. (0.0025 mm).
  - (ii) cause any change in rotation 1 vernier division (5 sec of arc).

5. CENTRE PLUG

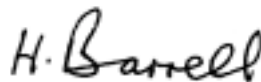
- 5.1 The centre plug shall bear the same identification number as the table with which it is associated.

LIMITING VALUE OR  
MAXIMUM  
PERMISSIBLE ERROR

- |  |  |   |
|--|--|---|
| 5.2                                      | The parallel and tapered surfaces of the plug shall be hard and well finished  | 800 HV minimum.   |
| 5.3                                      | The parallel and tapered portions shall be straight  | 0.000 05 in. (0.0013 mm)<br>over their respective<br>lengths.   |
| 5.4                                      | The parallel portion shall be cylindrical  | 0.000 05 in. (0.0013 mm).                                       |
| 5.5                                      | The parallel and tapered portions shall be concentric  | 0.000 05 in. (0.0013 mm)<br>i.e. 0.0001 in. (0.0025 mm)<br>FIM. |
| <b>6. <u>TAPERED SOCKET IN TABLE</u></b> |  |   |
| 6.1                                      | The centre plug shall be a good fit in the tapered socket as revealed by a "blueing" test.   |   |
| 6.2                                      | When the centre plug is fitted in the taper socket, in any rotational position, its axis shall coincide with the axis of rotation of the table | 0.0001 in. (0.0025 mm)<br>i.e. 0.0002 in. (0.005 mm)<br>FIM.    |
| <b>7. <u>SCALE</u></b>                   |  |   |
| 7.1                                      | The graduation lines on the handwheel and the vernier shall be cleanly cut and free from blemishes   |   |
| <b>8. <u>ACCURACY</u></b>                |  |   |
| 8.1                                      | The maximum error between any two settings shall not exceed  | 1/3 minute of arc.  |

G.B.B.M. SUTHERLAND

Director



Superintendent, Standards Division



October 1960