

NATIONAL PHYSICAL LABORATORY

METROLOGY CENTRE

Ref: **MOY/SCMI/38**      **SPECIFICATION OF ACCURACY**  
**(Issue 5)**

**for**

**A MICROMETER DEPTH GAUGE**

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Type I      A micrometer depth gauge, reading directly to 0.01 mm or 0.001 in, having a range of 0 to 25 mm (1 in).

Type II      As Type 1 but with the addition of interchangeable rods extending the capacity to the following depths: -

0 to 75 mm (3 in)

0 to 150 mm (6 in)

For both types the tip of the measuring spindle may be either rounded or flat.

LIMITING VALUE OR  
MAXIMUM  
PERMISSIBLE ERROR

1. GENERAL

1.1      The workmanship and finish shall be in keeping with an instrument of this class.

1.2      Each instrument shall be marked with an identification number and the maker's trade mark. Extension rods shall bear the same number as the instrument to which they belong.

2. STOCK

2.1      The face of the stock shall be hard      700 HV minimum.

2.2      The face of the stock shall be well finished and flat      62.5 mm (2½ in) Stock:  
0.0025 mm (0.0001 in)  
100 mm (4 in) Stock:  
0.005 mm (0.0002 in)

2.3      All sharp edges shall be removed.

3. MCROMETER

3.1      The micrometer head shall be securely fixed in the stock.

3.2      The micrometer screw shall run smoothly and evenly throughout its range.

3.3      The graduated surfaces shall be non-reflecting.

3.4      The graduation lines shall be clearly cut; their width shall lie between the limits      0.15 mm and 0.2 mm  
(0.006 in and 0.008 in)

3.5      The maximum range of error in the calibration of the micrometer screw shall be in accordance with B.S. 870.

LIMITING VALUE OR  
MAXIMUM  
PERMISSIBLE ERROR

4. CONTACT FACE OF SPINDLE

- 4.1 The sharp edges shall be removed from plane measuring faces.
- 4.2 The measuring face shall be hard 800 HV minimum.
- 4.3 The measuring face shall have a lapped finish. When plane, it shall be flat 0.001 mm (0.00005 in) over its diameter.
- 4.4 The measuring face, when plane, shall be parallel with the measuring face of the stock in all positions
- For Type I  
0.0025 mm (0.0001 in) over diameter of face.
- For Type II  
(i) from 0 to 75 mm (3 in) 0.005 mm (0.0002 in)  
(ii) from 75 mm to 150 mm (3 in to 6 in) 0.008 mm (0.0003 in)

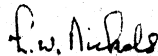
5. ACCURACY OF READING

- 5.1 When tested at 20 °C, the actual projection of the measuring face beyond the surface of the stock shall agree with the reading of the micrometer in all positions
- For Type 1 only  
±0.0025 mm (±0.0001 in)

6. EXTENSION RODS

- 6.1 The contacting faces on each end of the rods shall be hard 800 HV minimum.
- 6.2 When rotated, the measuring tip of the rod shall not vary from its mean axial position by more than 0.025 mm per 25 mm (0.001 in per in)
- 6.3 When each extension rod is inserted in turn in the depth micrometer, the error in the zero reading shall not exceed ±0.005 mm (±0.0002 in)

Note: When notched rods are supplied, the positions of all notches should be such that the above requirement is satisfied.

 (Signed)

for Director

