	STANDARD OPERATING PROCEDURE		
Discovery Labs	SOP No.:	SOP-QC-056-00	Effective Date:	
	Supersedes:	Nil	Next Review Date:	
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TITLE: SCREW GAUGE

1.0 PURPOSE:

To provide a guidance on Screw gauge.

2.0 SCOPE:

This procedure is applicable to the screwgauge in Laboratory.

3.0 RESPONSIBILITY:

3.1   Analyst-QC is responsible to follow this SOP.

3.2   Head-QC/Designee is responsible for ensuring implementation of this SOP.

3.3   Head-QA/Designee is responsible for monitoring overall compliance of this SOP.

4.0 DEFINITIONS:

The screw gauge is an instrument used for measuring accurately the diameter of a thin wire or the thickness of a sheet of metal. It consists of a U-shaped frame fitted with a screwed spindle which is attached to a thimble. Parallel to the axis of the thimble, a screw graduated in mm is engraved.

5.0 PROCEDURE:

5.1 Theory :

5.1.1   If with the wire between plane faces A and B, the edge of the cap lies ahead of Nth division of liner scale.

5.1.2   Then linear scale reading (L.S.R) = N

5.1.3   If nth division of circular scale lies over reference line. Then circular scale reading (C.S.R) = $n \times (L.C)$

Where L.C = Least count of screw gauge.

5.2 Least count calculation:

5.2.1   Only tight the A and B faces without any wire or sheet. The edge of the cap lies ahead of Nth division of linear scale.

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$$L.C = \frac{Pitch}{Number\ of\ divisions\ on\ the\ circular\ scale}$$

5.2.2 Pitch $= \dfrac{Distance\ moved\ by\ the\ screw}{Number\ of\ rotations\ to\ screw}$

5.3 Error:

5.3.1 Zero Error It is a defect in a measuring device Screw Gauge. When jaws of a Screw Gauge are closed, zero of main scale must coincides with the zero scale or circular scale.

5.3.2 There can be two types of zero errors in a micrometer reading

5.3.3 Positive zero error happens when the zero of the circular/auxilary scale places below the zero of the meter scale reading

5.3.4 Negative zero error happens when the zero of the circular/auxilary scale places above the zero of the meter scale reading.

5.4 Main Purpose:

5.4.1 Find the value of one linear scale division (L.S.D.).

5.4.2 Determine the pitch and the least count of the screw gauge and record it stepwise.

5.4.3   Bring the plane face B in contact with plane face A and find the zero error. Do it three times and record them. If there is no zero error, then record 'zero error nil'.

5.4.4 Move the face B away from face A. Place the wire lengthwise over face A and move .the face B towards face A using the ratchet head R. Stop when R turns (slips) without moving the screw.

5.4.5 Note the number of divisions of the linear scale visible and uncovered by the edge of the cap. The reading (N) is called linear scale reading (L.S.R.).

5.4.6 Note the number (n) of the division of the circular scale lying over reference line.

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5.4.7   Repeat steps 5 and 6 after rotating the wire by 90° for measuring diameter in a perpendicular direction.

5.4.8   Repeat steps 4, 5, 6 and 7 for five different positions separated equally throughout the length of the wire. Record the observations in each set in a tabular form.

5.4.9   Find total reading and apply zero correction in each case.

5.4.10 Take mean of different values of diameter.

5.4.11 Measure the length of the wire by stretching it along a half metre scale. Keeping one end of wire at a known mark , note the position of other end. Difference in position of the two ends of the wire gives the length of the wire. Do it three times and record them.

S.No.	Linear Scale Reading	Observed circular scale division	Corrected circular Scale Reading (n ×L.C)	Total Reading (T.R=L.S.R+C.SR)

1.0   FORMATS / ANNEXURE(S):

Request for Reintegration of Chromatograms: QC056-FM117

2.0   CHANGE HISTORY:

Revision No.	Effective Date	Details of Revision	Ref CCF No.
00		New SOP Introduced	----

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