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|---|---|
| **Laboratory** | **Mechanical Measurement & Calibration Laboratory, R & D Centre for Bicycle & Sewing Machine, B-38-39, Phase V, Focal Point, Ludhiana, Punjab** |
| **Accreditation Standard** | **ISO/IEC 17025: 2005** |
| **Certificate Number** | **CC-2808** **Page 1 of 3** |
| **Validity** | **16.08.2018 to 15.08.2020** **Last Amended on -** |

| Sl. | Quantity Measured / Instrument | Range/Frequency | *Calibration Measurement Capability (±) | Remarks |
|---|---|---|---|---|
| | **MECHANICAL CALIBRATION** | | | |
| **I.** | **DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)** | | | |
| **1.** | Vernier Caliper#<br>L.C.: 0.010 mm<br>L.C.: 0.020 mm | <br>0 to 300 mm<br>0 to 600 mm | <br>19.0 μm<br>22 .0 μm | Using Slip Gauge Set & Ring Gauges by Comparison Method IS 3651 |
| **2.** | External Micrometer#<br>L.C.: 0.001 mm | <br>0 to 25 mm<br>0 to 100 mm | <br>2.0 μm<br>2.3 μm | Mic. Check Gauges by Comparison Method IS 2967 |
| **3.** | Thread Plug Gauge# | 1 mm to 100 mm | 4.0 μm | Using ULM & Three Wire Set IS 2334 & 4218 |
| **4.** | Thread Ring Gauge# | 3 mm to 100 mm | 4.0 μm | Using ULM IS 2334 & 4218 |
| **5.** | Plain Plug Gauge# | 2 mm to 100 mm | 4.0 μm | Using ULM IS 3455 |
| **6.** | Plain Ring Gauge# | 3 mm to 100 mm | 4.0 μm | Using ULM IS:3455 |
| **7.** | Dial Indicator#<br>L.C.: 0.001 mm<br>L.C.: 0.010 mm | <br>0 to 10 mm<br>0 to 50 mm | <br>2.6 μm<br>6.3 μm | Using ULM IS:11498 |
| **8.** | Dial Test Indicator#<br>L.C.: 0.001 mm<br>L.C.: 0.010 mm | <br>0 to 0.140 mm<br>0 to 0.800 mm | <br>2.2 μm<br>6.3 μm | Using ULM IS:2092 |
| **9.** | Snap Gauge# | 3 mm to 100 mm | 3.2 μm | Using Slip Gauge Set IS:3455 |

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| **10.** | Slip Gauge Set# | 0.5 mm to 100 mm | (0.17+5.6L)<br>L in meter | Using Gauge Block Comparator IS:2984 |
| **11.** | Straight Edge #<br>Straightness | Up to 500 mm | 15 μm | Using CMM IS 2220 |
| **12.** | Engineer Square#<br>Flatness<br>Perpendicularity | Up to 150 mm | 4.50 μm<br>5.90 μm | Using CMM IS 2103 |
| **13.** | Granite Square#<br>Flatness<br>Perpendicularity | Up to 500 mm | 12.10 μm<br>12.20 μm | Using CMM IS 2103 |
| **14.** | Angle Plate#<br>Flatness<br>Parallelism<br>Perpendicularity | Size 1 to 5 | 12.80 μm<br>13.00 μm<br>12.80 μm | Using CMM IS 6973 |
| **15.** | Caliper Checker# | Up to 600 mm | 9.69 μm | Using CMM by Comparison Method |
| **16.** | Bevel Protractor#<br>L.C.: 5 Minute<br>Angle | 0-180-0° | 3.1 min of arc | Using CMM IS 4239 |
| **17.** | Height Gauge#<br>L.C.: 0.010 mm | 0 to 600 mm | 19.70 μm | Using Caliper/Height Checker by Comparison Method IS 2921 |
| **18.** | Engineering Scale#<br>L.C.: 0.5 mm | 0 to 150 mm | 31.00 μm | Using Universal Measuring Microscope by Comparison Method IS 1481 |

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| **19.** | Radius Gauge# | 1 mm to 25 mm | 11.80 μm | Using Universal Measuring Microscope by Comparison Method IS 5273 |
| **20.** | Screw Pitch Gauge# | 0.35 mm to 6 mm | 4.60 μm | Using Universal Measuring Microscope by Comparison Method IS 4211 |
| **21.** | Feeler Gauge# | 0.03 mm to 1 mm | 2.20 μm | Using Universal Length Measuring Machine by Comparison Method IS 3179 |
| **22.** | Dial Bore Gauge# L.C.: 0.010 mm | Up to 2 mm travel | 6.10 μm | Using Universal Length Measuring Machine by Comparison Method |
| **23.** | Cylindrical/ Measuring Pins# | 1 mm to 20 mm | 1.10 μm | Using Universal Length Measuring Machine by Comparison Method IS 11103 |
| **24.** | Thread Measuring Wire Set# | 0.17 mm to 3.20 mm | 1.10 μm | Using Universal Length Measuring Machine by Comparison Method IS 6311 |

*** Measurement Capability is expressed as an uncertainty (±) at a confidence probability of 95%**
**# The laboratory is also capable for site calibration however, the uncertainty at site depends on the prevailing actual environmental conditions and master equipment used.**

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