

Laboratory Met-Heat Services, 857/2, G.I.D.C. Industrial Estate, Makarpura, Vadodara, Gujarat

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number CC-2220 **Page** 1 of 6

Validity 26.09.2017 to 25.09.2019 **Last Amended on** --

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (\pm)	Remarks
<u>MECHANICAL CALIBRATION</u>				
I. DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)				
1.	Caliper ^s (Vernier/Dial/Digital) L.C.: 10 μ m ^o L.C.: 20 μ m	0 to 1000 mm 0 to 2000 mm	20 μ m 32 μ m	Using Gauge Block Set External Micrometer & Calliper Checker, Length bar, H&G Steel Block
2.	Depth Gauge ^s (Vernier/Dial/Digital) L.C.: 10 μ m L.C.: 20 μ m	0 to 300 mm 0 to 600 mm	10 μ m 17 μ m	Using Depth Micro Checker, Length Bar & Surface Plate
3.	Inside Dial Caliper ^s L.C.: 25 μ m L.C.: 50 μ m	Upto 35 mm >35 mm to 120 mm	22 μ m 41 μ m	Using Gauge Block & Accessories Set
4.	External Micrometer ^s L.C.: 1 μ m L.C.: 10 μ m	Upto 200 mm Upto 1000 mm	4.1 μ m 20 μ m	Using Gauge Blocks Set & Length Bar
5.	Micrometer setting Rod ^s	Upto 175 mm > 200 mm to 575 mm >600 mm to 975 mm	6.3 μ m 10.4 μ m 15.0 μ m	Using Gauge Blocks , Plunger Dial Gauge, Length Bar & Comparator Stand
6.	Height Gauge ^s (Vernier/Dial/Digital) L.C.: 10 μ m ^o L.C. : 20 μ m	Upto 600 mm Upto 1000 mm	15 μ m 29 μ m	Using Caliper Checker, Length Bar & Surface Plate by Comparison Method

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Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (\pm)	Remarks
7.	Internal Micrometer 2-Points Basic Travel of Micrometer L.C. 10 μ m	Upto 50 mm	6.0	Using Digital Dial Gauge Set up by Comparison Method
8.	Overall Length Accuracy with Extension Rod (Stick)	Upto 2000 mm	26.0	Using Gauge Block & Accessory Set & Length Bar by Comparison Method
9.	Depth Micrometer [§] L.C.: 10 μ m	0 to 300 mm	10 μ m	Using Depth Micro Checker & Gauge Block Set
10.	Dial Gauge [§] (Plunger Type) L.C.: 1 μ m L.C.: 2 μ m L.C.: 10 μ m	Upto 50.8 mm Upto 25 mm Upto 100mm	1.8 μ m 2.0 μ m 7.0 μ m	Using Single Axis Measuring Machine by Comparison Method
11.	Dial Gauge [§] (Lever Type) L.C.: 1 μ m L.C.: 2 μ m L.C.: 10 μ m	0 to 0.14 mm 0 to 0.18 mm 0 to 1mm	1.8 μ m 2.2 μ m 3.0 μ m	Using Single Axis Measuring Machine by Comparison Method
12.	Feeler Gauge [§]	Over 0.01 mm to 1 mm	4.9 μ m	Using External Micrometer by Comparison Method

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13.	Plain Plug Gauge [§]	Upto 225 mm	8.2 μ m	Using Gauge Block Set & Dial with Comparator Stand by Comparison Method
14.	Plain Snap / Gap gauge [§]	Over 3 mm to 250 mm	6.2 μ m	Using Gauge Block Set by Comparison Method
15.	Bore Gauge With Dial [§] (For Transmission Accuracy) L.C. : 1.0 μ m [Ⓟ]	Upto 2.0 mm	2.0 μ m	Using Single Axis Measuring Machine by Comparison Method
16.	Pistol Caliper [§] L.C.: 0.1 mm	Upto 70 mm	80 μ m	Using Slip Gauge by Comparison Method
17.	Coating Thickness Gauge [§]	Upto 1200 μ m	15 μ m	Using Master Foils by Comparison Method
18.	Master Foil Of Coating Thickness Gauge [§]	Upto 1200 μ m	4.9 μ m	Using External Micrometer

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19.	Thread Plug Gauge ^{\$} (Effective Diameter)	1 mm to 150 mm	4.0 μ m	Using Single Axis Measuring Machine, Gauge Block & Thread Measuring Wires
20.	Thread Ring Gauge ^{\$} (Effective Diameter)	6 mm to 100 mm	4.2 μ m	Using Single Axis Measuring Machine & Master Ring Gauge
21.	Dial Thickness Gauge ^{\$} L.C.: 10 μ m	Upto 25 mm	8.0 μ m	Using Gauge Block Set
22.	Plain Ring Gauge ^{\$}	Upto 125 mm	5.0 μ m	Using Single Axis Measuring Machine & Master Ring by Comparison Method
23.	Cylindrical Measuring Pin ^{\$}	Upto 20 mm	1.5 μ m	Using Single Axis Measuring Machine by Comparison Method
24.	Steel Scale ^{\$}	Upto 3000 mm	$240 \sqrt{\frac{L}{1000}} \mu$ m (Where L in mm)	Using Scale & Tape Calibrator by Comparison Method
25.	Measuring Tape ^{\$}	Upto 100 m	$240 \sqrt{\frac{L}{1000}} \mu$ m (Where L in mm)	Using Scale & Tape Calibrator by Comparison Method
26.	Bevel Protractor / Angle Protractor ^{\$} L.C.: 5'	upto 360°	4' of arc	Using Angle Gauge by Comparison Method

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27.	Combination Square Set [§] L.C.: 1°	Upto 360°	35' of arc	Using Angle Gauges by Comparison Method
28.	Master Block For Ultrasonic Thickness Gauge [§]	Upto 100 mm	6.3 μ m	Using Digital Outside Micrometer, Gauge Block, Dial & Comparator Stand by Comparison Method
29.	Surface Plate [#]	Upto 3000 mm x 2000 mm	$1.7 \times \sqrt{\frac{L+W}{125}} \mu$ m (Where L & W in mm)	Using Electronic level by Comparison Method
30.	Straight Edge [#] (For Straightness)	Upto 3000 mm	$1.7 \times \sqrt{\frac{L+W}{125}} \mu$ m (Where L & W in mm)	Using Electronic Level by Comparison Method
31.	Digital Ultrasonic Thickness Gauge [§]	0 to 100 mm	75.8 μ m	Using Gauge Block Set by Comparison Method
32.	Radius Gauge [§]	Upto 40 mm	18.0 μ m	Using Video Measuring Machine by Comparison Method
33.	Wire Gauge	Upto 7.62	9.5	Using Video Measuring Machine by Comparison Method
34.	Glass Scale L.C. 10 μ m L. C : 100 μ m	Upto 1 mm Upto 200 mm	6.5 μ m 12.9 μ m	Using Video Measuring Machine by Comparison Method

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35.	Video Measuring Machine [#] L. C. 1 μ m	Upto 200 mm Upto 360 ^o	6.4 μ m 2.38 min arc	Using Precision Glass Scale & Angle Gauge Block by Comparison Method
36.	Electronic Extensometer * L.C.: 0.001 mm	1 mm Traverse 50 mm Gauge Length	6.9 μ m	Using Electronic Probe With DRO by Comparison Method
II. DIMENSION (PRECISION INSTRUMENTS)				
1.	Slip Gauge Set [§]	0.5 mm to 25 mm 25 mm to 50 mm 50 mm to 100 mm	0.16 μ m 0.18 μ m 0.29 μ m	Using Gauge Block Comparator & K Grade Slip Gauge Set by Comparison Method
III. UTM, TENSION CREEP AND TORSION TESTING MACHINE				
1.	Verification of Static Uniaxial Testing Machine * (UTM, CTM, TTM, etc.) Compression Tension	1 kN to 600 kN 0.3 kN to 3 kN 5kN to 50 kN	0.93 % 0.53% 0.53%	Using Class 0/1 Load Cell as per IS : 1828 Part 1 (2015)

* Measurement Capability is expressed as an uncertainty (\pm) at a confidence probability of 95%

[§]Only in Permanent Laboratory

^{*}Only for Site Calibration

[#]The laboratory is also capable for site calibration. However, the uncertainty at site depends on the prevailing actual environmental conditions and master equipment used.

^oLaboratory can also calibrate instruments/devices of coarser resolution / least count within the accredited range using same reference standard/ master equipment under the scope of accreditation.

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