Laboratory	**National Engineering & Calibration Laboratory, WZ-22 Nangli Jalib, B-1, Janak Puri, New Delhi**
Accreditation Standard	**ISO/IEC 17025: 2005**
Certificate Number	**CC-2531** **Page 1 of 6**
Validity	**18.01.2018 to 17.01.2020** **Last Amended on -**

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
	MECHANICAL CALIBRATION			
I.	**DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)**			
1.	Caliper[$] (Digital /Dial /Vernier) L.C.: 0.01mm L.C.: 0.02 mm	 0 to 300 mm 0 to 600 mm	 10.5 μm 15.4 μm	Using Caliper Checker, Long Gauge Blocks & Gauge Blocks
2.	External Micrometer[$] L.C.: 0.001 mm L.C.: 0.01 mm	 0 to 100 mm 100 mm to 150 mm	 1.4 μm 6.1 μm	Using Long Gauge Block & Gauge Blocks
3.	Internal Micrometer[$] (2 Point) L.C.: 0.01 mm	 Up to 150 mm	 7.8 μm	Using Gauge Block & Accessories
4.	Depth Gauge/ Depth Caliper[$] L.C.: 0.02	 Up to 400 mm	 14.6 μm	Using Gauge Blocks/ Long Gauge Blocks & Caliper Checker
5.	Dial Gauge/ Plunger Type Dial [$] L.C.: 0.001 mm L.C.: 0.01 mm	 0 to 5 mm 0 to 25 mm	 1.0 μm 6.9 μm	Using Gauge Block & Comparator Stand
6.	Lever Dial/ Puppy Dial[$] L.C.: 0.001 mm[Φ]	 0 to 1 mm	 0.9 μm	Using Gauge Block & Comparator Stand
7.	Bore Gauge[$] L.C.: 001 mm	 Travel 1 mm	 4.0 μm	Using Gauge Block & Accessories

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Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
8.	Height Gauge (Digital/Dial/Vernier)[$] L.C.: 0.01mm	0 to 600 mm	9.6 μm	Using Gauge Blocks , Long Gauge Blocks, Dial Test Indicator & Caliper Checker
9.	Dial Thickness Gauge[$] L.C.: 0.01mm	0 to 25 mm	7.6 μm	Using Gauge Block
10.	Electronic Probe[$] L.C.: 0.0001 mm	0 to 25 mm	0.6 μm	Using Gauge Block & Comparator Stand
11.	Dial Calibration Tester [$] L.C.: 0.001 mm	0 to 25 mm	1.0 μm	Using Gauge Blocks & Electronic Probe
12.	Snap Gauge / Gap Gauge[$]	1 mm to 100 mm	2 μm	Using Gauge Blocks
13.	Feeler Gauge[$]	0.03 mm to 1mm	2.9 μm	Using Digimatic Micrometer
14.	Standard Thickness Foils[$]	Up to 1.2 mm	2.9 μm	Using Digimatic Micrometer
15.	Plain Plug Gauge / Setting Plug Gauge[$]	1 mm to 100 mm	1.1 μm	Using Gauge Block, Electronic Probe & Comparator Stand
16.	Angle Gauge[$]	Upto 90º	27 "	Using Sine Bar, Gauge Block, Electronic probe
17.	Length bar/ Micrometer Setting Rod, Height Master Gauge/Riser Block[$]	25 mm to 200 mm 200 mm to 600 mm	3.1 μm 7.2 μm	Using Gauge Block, Long Gauge Blocks, Electronic Probe & Comparator Stand

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18.	Caliper Checker/ Step Gauge[$]	0 to 600 mm	7.2 μm	Using Gauge Blocks, Long Gauge Blocks, Electronic Probe & Comparator Stand
19.	Bevel Protector [$] L.C.: 5 min	0° to180°to 0°	2.9 min.	Using Angle Gauge Blocks
20.	Combination Set [$] L.C.: 30'	0° to180°to 0°	18 min.	Using Angle Gauge Blocks
21.	Angle Protector [$] L.C.: 0.1°	0° to180°to 0°	3.5 min.	Using Angle Gauge Blocks
22.	V Blocks[$] Parallelism Symmetry Squareness	Up to 150 mm	 7.2 μm 7.2 μm 3.5 μm	Using Surface Plate, Lever Dial & Mandrel, Master Cylinder
23.	Angle Plate/Box Plate/Engineers Square/Try Square [$] For Parallelism of face Perpendicularity of External Edge Perpendicularity of internal Edge	Up to 300mm	 7.5 μm 4.0 μm 4.0 μm	Using Surface Plate, Gauge Block & Master Cylindrical
24.	Optical Microscope/ Metallurgical Microscope [$]	2X to 200X 200X to 1000X	6 % 21 %	Using Glass Scale
25.	Comparator Stand/ (Flatness of Base)[$]	Up to 300 mm x 300 mm	3 μm	Using Lever Dial Gauge & Stand

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26.	Test Mandrel[$] Variation Runout	Up to 300 mm	11.3 μm 7.4 μm	Using Sine center & Lever Dial Gauge
27.	Test Sieve [$] Aperture Size	3 mm to 150 mm	26.1 μm	Using Digital Caliper
28.	Coating Thickness Gauge[$] L.C.: 0.001 mm	0.01 mm to 0.673 mm	3.4 μm	Using Standard foils
29.	Tape Calibration System[#] L.C.: 0.001 mm	0 to 1000 mm	65 μm	Using Gauge Block & Long Gauge Blocks
30.	Sine Bar/Sine Centre[$] Centre Distance/ Parallelism/ Setting Angle	Up to 300 mm	4.1 μm 1.5 μm 2.1sec	Using Probe, Gauge Block & Angle Gauge, Surface Plate
31.	Surface Plate for Flatness [♣]	4000 mm x 2000 mm	1.75 x $\sqrt{\frac{L+W}{200}}$ Micron where L and W are in mm	Using Spirit Level
32.	Steel Scale[$]	0 to 100 mm	119 μm	Using Tape & Scale Calibration Machine
33.	Measuring Tape[$]	Up to 50 meters	184*√L Micro where L in meter	Using Tape & Scale Calibration Machine

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
34.	Sine Centre$^{\$}$ Centre Distance Parallelism/Setting Angle	Upto 300 mm	 4.1 2.0 2.2 sec	Using Gauge Block, Long Gauge Block, Angle Gauge , Probe & Surface Plate
II.	**DIMENSION (PRECISION INSTRUMENTS)**			
1.	Profile Projector $^{\clubsuit}$ Linear Scale L.C.: 0.001mm Angular Scale L.C.: 1” Magnification	 0 to 200 mm 0 to 360° 10X, 20X, 50X,100	 3.3 µm 70 Sec 0.7 %	 Using Glass Scale Angular Gauge Blocks Glass Scale & Digital Venire Caliper
2.	Single Axis Measuring Machine$^{\clubsuit}$ (LLM/ULM) L.C.: 0.0001 mm	 0 to 100 mm	 0.8 µm	 Using Gauge Blocks, Long Gauge Blocks
III.	**PRESSURE INDICATING DEVICES**			
1.	Negative Pressure Digital /Analog, Vacuum Gauge/ Transmitters$^{\#}$	(-) 0.9 bar to 0 bar	0.0012 bar	Using Digital Pressure Gauge
2.	Pressure Gauge Dig./Analog/ Transducers/ Transmitters/Switch$^{\#}$	0 to 3 bar	0.0035 bar	Using Digital Pressure Gauge
3.	Pressure Gauge Dig./Analog./ Transducers/ Transmitters Switch/ Pressure Switch$^{\#}$	0 to 16 bar	0.035 bar	Using Digital Pressure Gauge

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4.	Pressure Gauge Dig./Analog, Hydraulic[#]	0 to 70 bar	0.212 bar	Using Digital Pressure Gauge
5.	Pressure Gauge Dig/Analog, Hydraulic[#]	0 to 700 bar	0.833 bar	Using Digital Pressure Gauge
6.	Pressure Gauge Dig./Analog Differential/ Magnehalic Gauge/ Transmitter/ Manometer[#]	0 to 100 mbar	0.120 mbar	Using Digital Manometer with Hand Pressure Pump

*** Measurement Capability is expressed as an uncertainty (±) 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.
[Φ] Laboratory 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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