Laboratory	**Precision Engineering Metrology Laboratory, Institute for Machine Tools Technology, A-4, Focal Point, Batala, Punjab**
Accreditation Standard	**ISO/IEC 17025: 2005**
Certificate Number	**CC-2454** **Page 1 of 3**
Validity	**15.11.2017 to 14.11.2019** **Last Amended on 26.12.2017**

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±μm)	Remarks
	MECHANICAL CALIBRATION			
I.	**DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)**			
1.	Form Errors[$] Circularity Cylindericity Straightness	 Upto Dia. 80 mm Upto Length 300 mm Upto Length 300 mm	 0.61 μm 2.90 μm 2.11 μm	Using Form Tester MMQ 30
2.	Surface Roughness[$]	Upto 3 micron Ra	13%	Using Surface Roughness Tester
3.	Outside Micrometer[$] L.C.: 0.001 mm	Upto 0 to 200 mm Upto 200mm to 400 mm Upto 400 mm to 600 mm	4.2 μm 8.0 μm 13.0 μm	Using Slip Gauges
4.	Depth Micrometer [$] L.C.: 0.001 mm	0 to 200 mm	5.2 μm	Using Slip Gauges
5.	Digimatic Caliper [$] L.C.: 0.001mm	0 to 600 mm	16.0 μm	Using Slip Gauges
6.	Vernier Caliper[$] L.C.: 0.020 mm	0 to 600 mm	19.0 μm	Using Slip Gauges
7.	Height Gauge[$] L.C.: 0.001 mm	0 to 600 mm	11.6 μm	Using Caliper Checker
8.	Length Bars, Slip Gauges[$]	0 to 100 mm 100 mm to 300 mm 300 mm to 600 mm	1.8 μm 2.6 μm 3.7 μm	Using ULM, Grade “K” Slip Gauge

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Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±µm)	Remarks
9.	Linear Measuring Scale [$] L.C.: 0.010 mm	0 to 200 mm	8.0 µm	Using Tool Maker Microscope
10.	Plain Plug Gauges[$]	1 mm to 200 mm	2.0 µm	Using ULM
11.	Plain Ring Gauges[$]	3 mm to 200 mm	3.5 µm	Using ULM
12.	Thread Plug Gauge[$] (Effective Diameter)	1 mm to 200 mm	4.2 µm	Using ULM
13.	Thread Ring Gauge[$] (Effective Diameter)	3 mm to 200 mm	3.0 µm	Using ULM
14.	Taper Plain Plug Gauge[$] (Gauge Plain Diameter at Gauge Plain Length)	Upto 200 mm	3.0 µm	Using ULM
15.	Radius Gauge[$]	1.0 mm to 25.0 mm	198.0 µm	Using Tool Maker Microscope
16.	V-Block [$] Flatness Squareness Parallelism	 300 mm x100 mm x 100 mm 300 mm x 100 mm x 100 mm 300 mm x 100 mm x 100 mm	 7.0 µm 6.2 µm 6.0 µm	Using Dial Indicator & Tool Maker Microscope
17.	Dial Gauge [$] L.C.: 0.001 mm	0 to 50 mm	2.0 µm	Using ULM
18.	Micrometer Head [$] L.C.: 0.001 mm	0 to 25 mm	2.0 µm	Using ULM

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Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±µm)	Remarks
19.	Surface Plate[#] (Flatness)	Upto 2500 mm Length x 1600 mm Width	$3.7\sqrt{\frac{L+W}{150}}$ µm (Where L, W is in mm)	Using Electronic Level
II.	**PRESSUE INDICATING DEVICES**			
1.	Pressure Hydrulic Industrial Pressure Gauge[$]	5 kg/cm2 to 60 kg/cm2 >60 kg/cm2 to 700 kg/cm2	2.34% rdg 0.14% rdg	Using Dead Weight Tester & Digital Pressure Gauge
III.	**TORQUE GENERATING DEVICES**			
1.	Torque Torque Wrench[$] (Click Type) Type II / Class	2 Nm to 20 Nm 20 Nm to 540 Nm	4.66% rdg. 2.88% rdg	Using Torque Transducer with Indicator

*** Measurement Capability is expressed as an uncertainty (±) at a confidence probability of 95%**
[$]Only in Permanent Laboratory
[#] 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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