Laboratory	**Multitek Technologies , 201-202, Shri Krishna Complex, Mahesh Apartments, Vasundhara Enclave Main Road, Delhi**			
Accreditation Standard	**ISO/IEC 17025: 2005**			
Certificate Number	**CC-2139**	**Page**	**1 of 25**	
Validity	**19.11.2018 to 18.11.2020**	**Last Amended on**	**21.01.2019**	

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
		MECHANICAL CALIBRATION		
I.	**DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)**			
1.	Digimatic Indicator / Dial Indicator $ (Plunger Type) L.C.: 0.001 mm	 Up to 25 mm Up to 50 mm	 1.2 µm 6.0 µm	 Using Dial Calibration Tester/ULM
2.	Dial Indicator (Lever Type) $ L.C.: 0.001 mm	 2 mm	 1.2 µm	 Using Dial Calibration Tester
3.	Taper Scale$	Up to150 mm	5.3 µm	Using Profile Projector
4.	Feeler Gauge$	0.01 mm to 1 mm	3.1 µm	Using ULM
5.	Length Bar/ Long Gauge Blocks$	25 mm to 625mm	4.5 µm	Using 2 D Height Master, Optical Flat, Electronic comparator and Gauge Blocks
6.	Profile Projector Charts$ (Charpy Impact Charts) Radius Chart Angle Chart Linear Scale L.C.: 0.5 µm	 Upto100 mm Radius 0 to 360° 0 to 215 mm	 14.2 µm 1 min 2.4 µm	 Using Profile Projector

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
7.	Profile Projector[#] Magnification Position (Linear) Angle	 Up to 100X 0-360 mm 0-360°	 0.1% 2.3 µm 64.3 Sec	Using Glass Scales, Angle Graticule (Protractor)/ Angle Gauge Set
8.	Vision Inspection System/ Universal Measuring Microscope[#] Linear Angular	 400mm x 400mm x 100mm 0 to 360°	 1.6 µm 1 min	Using Vision Calibration Gauge, Glass Scale, Gauge Block Set Using Angle Graticule (Protractor)/ Angle Gauges
	Light Microscopes and Reticles[#] Photomicrography Magnification	2000X	0.6%	
	Projection Screen / Video Systems Magnification	2000X	0.6 %	
	Eyepiece Micrometer Scale	25mm	1 µm	
	Magnification of Eyepiece Image	2000X	0.6%	
	Filar Eyepiece Scale and Drum	100mm	1 µm	
	Grain Size Comparison Reticle	25mm	1 µm	
	Ocular Micrometer	20 mm	2.3 µm	

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
10.	Stage Micrometer[$] L.C 1 µm	1 mm	1.0 µm	Using Upright Microscope with Filar Micrometer at Magnification 100x and Video Measurement System
	Sine Bar / Sine Table[$] (Grade A and B) Parallelism of Centers w.r.t. bottom	60mm Height	5.6 µm	Using Lever Type Dial, Surface Plate & Test Mandrel
	Angular Measurement	Up to 45º	13.7 arc Sec	Using Angle Gauge, Gauge Block Set
	Center Distance Between rollers	500mm	4.8 µm	Using 2D Height Master
	Sine Centre[$] Centre Distance Between Rollers	500 mm	4.1 µm	
	Parallelism of center axis to bottom contact plane of rollers	500mm	10.0 µm	
	Angular Measurement	Up to 45º	7.5 arc Sec	
13.	Gauge Block Accessories[$] Holders - Squareness Radius Pieces - Flatness Parallels – Parallelism	300 mm	3.2 µm	Using Electronic Probe with Comparator Stand Optical Flat, Gauge Block

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
14.	Surface Roughness Master / Specimen[$]			Using Surface Roughness Tester
	Ra	10 µm	0.04 µm	
	Ry,(Rmax)	9.3 µm	0.08 µm	
	Rz	1.46 µm	0.08 µm	
15.	Surface Roughness Tester/ Surface Texture Measuring Instrument[#]	Up to 400 µm	0.03 µm	Using Zeiss Three Roughness Reference Specimen, Optical Flat, Step Master
16.	Depth Masters[$]			
	Groove Depth	10 µm	0.04 µm	Using Surface Roughness Tester, Electronic Probe 0.01µm
	Step Height	10 µm	0.61 µm	
17.	Measuring Scale & Tape Calibration Unit[#]	Up to 1000 mm	9.6 µm	Using Gauge Block Set, Long Gauge Block Set
18.	Metric / Steel Scales / Line Standard[$] L.C.0.5 mm	Up to 1000 mm	50 √L µm (Where L is in Meter)	Using Measuring Scale and Tape Calibration Equipment with Optical Viewing and magnifying facility
19.	Measuring Tape / Steel Tape, Woven metallic & glass fiber tape [$] L.C.0.5 mm	Up to 50 meter	50 √L µm (Where L is in Meter)	Using Measuring Scale and Tape Calibration Unit with Optical Viewing with magnifying tension adjustment facility

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
20.	Comparator Stand Flatness[#]	300 mm x 300 mm	1.4µm	Using Electronic Level, Dial Gauge with Robust stand and distance Piece, Screw Jacks
21.	Vernier Height Gauge / Height Gauge Electronic[#] L.C.: 0.01 mm Measuring Error Parallelism of scriber to base	 300 mm 600 mm 1000 mm	 6.6 µm 8.2 µm 12.0 µm 4.30 µm	Using Caliper Checker, Gauge Block Set' Long Gauge Block Set, Surface plate, Granite Square Electronic Comparator
22.	Coating Thickness Meter/Gauge[$] L.C.: 0.1 µm	Up to 1.5 mm	1.8 µm	Using Master Thickness Foils
23.	Thickness Foils[$]	0.01 to 2 mm	1.1 µm	Using Electronic Probe with Comparator Stand, Gauge Block Set 'K' Grade
24.	Bevel Protector / Angle Protector[$] L.C. 1 min • Error of Indication • Straightness of Blade	 0° to 180°	 2.8 min 7.0 µm	Using Angle Gauge, Surface Plate, Height Gauge Gauge Block Set Dial Test Indicator

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
25.	Combination Sets[$] • Error in Protractor reading • Error in Square Head • Error in Center Head	0° to 180°	2.8 min 2.8 min 2.8 min	Using Profile Projector, Angle Gauge, Surface Plate
26.	Inclinometer / Clinometer[$] L.C.: 1 min	0º to 45º	2.8 min	Using Angle Gauge Block, Electronic Level, Tilting Table, Sine Table, and Gauge Block Set.
27.	Spirit Level / Frame Level[$] L.C.: 0.02 mm / m • Bubble Accuracy	±0.100 mm/m	0.01 mm/m	Using Robust Tilting table, Digital Height Gauge, Digital Dial Indicator, Sine Table, Cylindrical Mandrel, Surface Plate
28.	Angle Plate/Precision Angle Plate[#] • Flatness of working faces • Parallelism of opposite face • Squareness of adjacent Faces	Up to 500 mm	6.0 µm 6.0 µm 6.0 µm	Using Precision Level, Dial Indicator, Surface plate Granite Square, Digital Height Gauge

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
29.	Box Angle Plate[#] • Flatness of working face • Parallelism of opposite Faces • Squareness of adjacent faces	Up to 500 mm	6.0 µm 6.0µm 6.0 µm	Using Precision Level, Dial Indicator, Jacks, Surface Plate, Granite Square, Digital Height Gauge
30.	Granite Square[#] • Parallelism of opposite Face • Squareness of adjacent faces	Up to 500 mm	6.0 µm 6.0 µm	Using Precision Level, Dial Indicator, Surface Plate, Granite Square, Digital Height Gauge
31.	Cylindrical Squares[$] Squareness	Up to 600mm	6.0 µm	Using Gauge Block Set, Surface Plate, Dial Test Indicator, Height Transfer Stand, Granite Square
	Straight Edge[#] Straightness of working face	2000 mm x 200 mm	$2.0\sqrt{\frac{L}{150}}$ µm L in mm	
	Parallelism of working face	200mm	1.4 µm	
33.	Surface Plate[#] Flatness deviation	6 m x 6 m	$0.7\sqrt{\frac{(L+W)}{150}}$ µm L & W in m	Using Electronic Level with Software

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
34.	Bench Centre[#] Parallelism Co. Axiality (Alignment of center)	1500 mm	6.3 µm	Using Test Mandrel, Dial Test Indicator, Height Transfer Stand, Electronic Level
35.	Thread Pitch Gauge[$] Pitch Flank Angle	 6.0 mm Up to 60°	 2.6 µm 9.9 min	Using Profile Projector
36.	Test Sieves[$] (Aperture Size)	0.032 to10 mm >10 mm to 150 mm	3.1 µm 10 µm	Using Profile Projector Vernier Caliper
	External Micrometer[$] L.C.: 0.001 mm Micrometer Screw Error	Up to 100 mm Up to 200 mm Up to 500 mm Up to 1000 mm	1.4 µm 3.3 µm 4.3 µm 4.6 µm	
	• Flatness of Anvils		0.6 µm	
	• Parallelism of Anvils •		0.6 µm	
	Internal Micrometer/Stick Micrometer[$] L.C.:0.01 mm • Two Jaw Micrometer	5mm to 30mm	6.7 µm	
	• Stick type micrometer	50mm to 300mm	6.9 µm	

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
39.	Micrometer Head[$] L.C.: 0.0001 mm Deviation of Traverse	Up to 100 mm	1.1 µm	Using Electronic Probe , Gauge Block Set, Optical Flat
40.	Dial Thickness Gauge[$] L.C.:0.001 mm	0 to 25 mm 0 to 10 mm	5.8 µm 1.0 µm	Using Gauge Block Set
41.	Caliper Checker/Step Gauge/Check Master[$] Pitch Block Accuracy (Length)	Up to 1000 mm	12.4 µm	Using Gauge Block Set 'K' Grade, Long Gauge Block, Electronic Probe, Surface Plate / Vertical Single Axis Measuring Machine
42.	Depth Micrometer[$] L.C.: 0.001 mm	100 mm 300mm	1.1 µm 2.7 µm	Using Gauge Block Set, Long Gauge Block Set
43.	Vernier Caliper / Dial Caliper/ Digimatic Caliper[$] L.C.: 0.01 mm	300 mm 600 mm 1000 mm	6.6 µm 8.2 µm 14.5 µm	Using Gauge Block Set, Caliper Checker, Long Gauge Block, Digital Micrometer, Gauge block accessories

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
44.	Vernier Depth Gauge/Depth Gauge[$] L.C.: 0.01 mm Measuring Error	300 mm 600 mm	8.2 µm 8.2 µm	Using Gauge Block Set , Long Gauge Block Set, V Block, Dial Indicator, Surface Plate
45.	Inside Dial Caliper/ Caliper Gauge[$] L.C.: 0.001mm	20 mm to 300 mm	3.50 µm	Using Gauge block set, Long gauge block, Gauge Block Accessories
46.	Snap Gauge/ Dial Snap Gauge[$] Go, NOGO Gap Size	10mm to 100mm	3.0 µm	Using Gauge block '0' Grade
47.	Radius Gauge (Concave and Convex Profiles), Radius Fillet Gauge[$]	0.6 mm to 100 mm	14.2 µm	Using Profile Projector
48.	Angle Gauge[$] Error of Angle	6 sec to 60°	61 sec	Using Sine Bar, Gauge Block Set, Electronic Comparator, Surface Plate
49.	Dial Calibration Tester[$] L.C.:. 0.0001 mm Drum accuracy	Up to 25 mm	1.5 µm	Using Gauge Block Set, Electronic Comparator / Single Axis Measuring Machine

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
50.	Bore Gauge[$] L.C 0.001 mm	0 to150mm (up to 3 mm Travel)	4.1µm	Using ULM, Micrometer
51.	(3 Point) Micrometer[$] L.C.: 0.001mm	5 mm to 100 mm	2.70 µm	Using Master Ring Set
52.	Plain Plug Gauge Diameter at Four Positions[$]	1 mm to 100 mm	2.6µm	Using Gauge Block Set - '0' Grade, Electronic Comparator / ULM
	V Block[#] Parallelism (Top face, V axis/side face)		6.4 µm	
	Symmetry		6.4 µm	
	Matching tolerance (Height / V Axis)		6.4 µm	
	Squareness		6.4 µm	
54.	Three Wire Set / Thread Measuring[$] Cylinder Diameter	Up to 6 mm	1.4µm	Using ULM
55.	Measuring Pin[$]	0.1 mm to 20 mm	1.2 µm	Using ULM
56.	3D Coordinate Measuring Machine (CMM) [#] Length Measuring Error	1m x 1m x 1m	$3.5\sqrt{(8*\frac{L}{900})}$ µm Where L is in mm	Using Test Sphere, Calibration Ball, Gauge Block Set &Ceramic Step Gauge with Multi Angle Support

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
57.	Optical Flat & Optical Parallel[$] Flatness Parallelism between both faces	100 mm	0.25 µm	Using Monochromatic Light Source, Master Flat, Electronic Comparator, Gauge Block
58.	Gauge Block Set[$]	Up to 25 mm 25 mm to 50 mm 50 mm to 100 mm	0.16 µm 0.18 µm 0.20 µm	Using Gauge Block Comparator & Gauge Block 'K' Grade
59.	Electronic Probe[$] L.C.: 0.01 µm	Up to 100 mm Up to 50 mm Up to 10mm	2.08 µm 1.15 µm 1.10 µm	Using Gauge Block with Comparator Stand, Optical Flat
60.	Gauge Block Comparator[#] L.C.: 0.01 µm	0.5 mm to 100 mm	0.15 µm	Using Reference Gauge Blocks et as per EAL – G21
61.	Micrometer Setting Rod[$] Gauge Length	500 mm	4.30 µm	Using Gauge Block Set, Surface Plate, Electronic Comparator
62.	Universal Length Measuring Machine[#] L.C.:0.0001 mm	300 mm	0.85 µm	Using Gauge Block Set, Long Gauge Block, Optical Flat

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
63.	Vertical Single Axis Measuring Machine/ 2D Height Master# L.C.:0.0001 mm	1000 mm	1.8 µm	Using Gauge Block Set, Long Gauge Block, Optical Flat
64.	Pistol Caliper$ L.C.: 0.01mm	Up to 65mm	6.0µm	Using Gauge Block Set
65.	Depth Micro Checker$ L.C.: 0.001mm	Up to 1000 mm	3.5 µm	Using Gauge Block, Long Gauge Block Set & Electronic Comparator
66.	Engineer's Square/ Tri Square/ Right Angle# (Flatness of Block Edge, Flatness of Working Faces of Stock, Parallelism of Blade edge, Squareness of External Square, Squareness of Internal Square)	Up to 500 mm	6.2 µm	Using Precision Level, Dial Indicator, Surface Plate, Granite Square, Digital Height Gauge, Gauge Block

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
67.	Block Square[#] Parallelism between working faces Squareness between working faces	Up to 500 mm	12.8 µm 6.9 µm	Using Precision Level, Dial Indicator, Surface Plate, Granite Square, Digital Height Gauge
68.	Gear Tooth Caliper[$] Error External Jaws	Up to 100 mm	6.6 µm	Using Gauge Block Set
	Engineer's Parallel[#] • Thickness and width variation		1.7 µm	
	• Parallelism		1.6 µm	
	• Equality of Pair		2.2 µm	
	Form Gauge[$] • Linear		2.9 µm	
	• Radius		2.9 µm	
	• Angle		1 min	
71.	Plain Ring Gauge[$]	150 mm	1.9 µm	Using Single Axis Measuring Machine/ULM
	Surface Profiler/ Contour Profiler[#] • Radius error in Master	Up to100 mm	3.2 µm	
	• Length	Up to 100 mm	0.2 µm	
	• Angle	Up to 90º	14.4 Sec	

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
73.	Taper Plug Gauge[$] • Half Taper Angle	Up to100 mm (Taper Length)	14.4 sec	Using Sine Center, Surface Plate, Gauge Block, Electronic Probe L.C.0.1 µm
	• Roundness		1.4 µm	
	• Straightness of Taper		1.4 µm	
74.	Master Cylinder[$] Roundness of Cylinder	300 mm Height	0.3 µm	Using Roundness Tester / Form Tester
75.	Roundness Master-Hemi- Sphere[$] Roundness	Upto100 mm	0.3 µm	Using Roundness Tester
76.	Roundness Masters – Magnification master / Flick Standard[$] • Roundness Flick Depth	100 mm	0.3 µm	Using Roundness Tester
	Roundness Tester[#] Spindle Rotational Accuracy		0.1 µm	
	Pickup Magnification		0.6 µm	

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
78.	Form Tester# Spindle Rotational Accuracy	Up to 300 mm (Travel)	0.1 µm	Using Cylindrical Standards, Glass Hemisphere, Cylindrical Square, Flick Standard
	Pickup magnification		0.3 µm	
	Straightness Horizontal Arm		0.4 µm	
	Straightness Vertical Arm		0.4 µm	
79.	Pie Tape$ • Calibration of Vernier Scale (Diameter Scale) • Circumferential Scale • Calibration of Main Scale (Diameter Scale)	Up to 1100 mm	50√L µm (where L is in mm)	Using Profile Projector, Measuring Scale and Tape Calibration Unit with Optical Viewing
80.	Height Master/ Height Setting Micrometer# L.C. : 1µm (Mean Height Error)	600 mm	5.9 µm	Using Gauge Block Set 'K' Grade, Long gauge block, Electronic, Probe, Surface Plate / 2D Height Gauge

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
81.	Floating Carriage Micrometer / Diameter Measuring Machine[#] L.C.: 0.0001mm • Micrometer Head • Alignment of centers to base • Parallelism of micrometer face to line of centers	Up to 100 mm Centre Distance	1.2 µm	Using Gauge Block, Electronic Comparator, Test Mandrel, Surface Plate, Cylindrical Masters set, Sylvac Probe
	Test Mandrel[$] (Straight) • Variation in Diameter	500 mm (Length) x 75mm Dia.	5.1 µm	
	• Total Runout		7.0 µm	
	Test Mandrel[$] (Taper) • Variation in Diameter		4.7 µm	
	• Total Runout		7.0 µm	
	• Taper Angle		5 min	
	• Straightness of Taper		4.8 µm	
84.	Electronic Level[$] L.C.: 0.001 µm/m (Error in level reading)	±10 mm/m	3 µm/m	Using Robust Tilting table with Electronic Probe

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
II.	**MOBILE FORCE MEASURING SYSTEM**			
1.	Push-Pull Gauge[$]	0 to 10 N 10 to 1000 N	1.20 % 0.29 %	Using Newtonian Weights
III.	**WEIGHING SCALE AND BALANCE**			
1.	Weighing Balances[#] L.C.: 0.1 mg & Coarser L.C.:0.1 g & Coarser L.C.:100 mg & Coarser L.C.:1 g & Coarser L.C.:10 g & Coarser	 0 to 200 g 0 to5 kg 0 to 35 kg 0 to 100 kg 0 to 200 kg	 0.2 mg 5 mg 250 mg 2 g 10 g	Using Standard weights of Class E2 as per OIML R – 76-1 Using Standard weights F2 Class as per OIML R – 76-1
IV.	**WEIGHTS**			
	M1 Class and Coarser[$] (Conventional Mass)	1 mg 2 mg 5 mg 10 mg 20 mg 50 mg 100 mg 200 mg 500 mg 200 g	0.1mg 0.1 mg 0.1 mg 0.1 mg 0.1 mg 0.1 mg 0.1 mg 0.1 mg 0.1 mg 0.2 mg	Using Standard Weights of Accuracy Class E2 Using Precision Balances Readability= 0.1 mg based on OIML R 111-1
	M1 Class and Coarser[$] (Conventional Mass)	500 g	0.2 mg	Using Standard Weights of Accuracy Class E2 Using Precision Balances Readability= 10 mg based on OIML R 111-1

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
	F2 Class & Coarser[$]	1 g 2 g 5 g 10 g 20 g 50 g 100 g	0.1 mg 0.1 mg 0.1 mg 0.1 mg 0.1 mg 0.1 mg 0.1 mg	Using Standard Weights of Accuracy Class E2 Using Precision Balances Readability= 0.1 mg based on OIML R 111-1
	M1 Class and Coarser[$] (Conventional Mass)	1 kg 2 kg	0.02 g 0.04 g	Using Standard Weights of Accuracy Class F2 & Precision Balances L. C.: 10 mg based on OIML R 111
		5 kg 10 kg 20 kg	0.1 g 0.1 g 0.3 g	Using Standard Weights of Accuracy Class F2 & Precision Balances L. C.: 0.1 g
		50 kg	4.6 g	Using Standard Weights of Accuracy Class F2 & Precision Balances L. C.: 5 g
V.	**ACOUSTIC**			
1.	Sound Level Meter[$]	94 dB 114 dB	0.93 dB 1.5 dB	Using Sound Level Calibrator

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
VI.	**PRESSURE INDICATING DEVICES**			
1.	Digital Vacuum Gauge # (Negative Pressure)	(-) 0.9 to 0 bar	0.011 bar	Using Digital Pressure Gauge by Comparison Method as per DKD R-6-1
2.	Pressure Gauge # (Pneumatic)	0 to 35 bar	0.06 bar	Using Digital Pressure Gauge by Comparison Method as per DKD R-6-1
3.	Pressure Gauge # (Hydraulic)	0 bar to 300 bar 300 bar to 1000 bar	0.34 bar 0.82 bar	Using Digital Pressure Gauge by Comparison Method as per DKD R-6-1
VII.	**HARDNESS TESTING MACHINE**			
1.	Micro Vickers/ Vickers Hardness Testing Machine #	HV 0.2 HV 0.3 HV 1.0 HV 5 HV 10 HV 30	3.3% 3.0% 1.9% 1.9% 1.9% 1.4%	Using Indirect Verification and Standard Blocks as per IS: 1501-2013 Part-2 ASTM E 384 by Indirect Verification
2.	Rockwell Hardness Testing Machine #	HRA HRB HRC HR 15 N	0.45 HRA 0.8 HRB 0.44 HRC 0.73 HR15 N	Using Indirect Verification & Standard Blocks as per IS : 1586 (Part -2) 2018 ASTM E 18 by Indirect Verification

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
3.	Brinell Hardness Testing Machine ♯	HBW 2.5/187.5 HBW 5/750 HBW 10/3000	3.53% 1.2% 1.27%	Using Standard Blocks as per IS : 1500-2013 Part -2 ASTM E 10 by Indirect Verification
4.	BALL (Diameter) $ (Rockwell, Brinell- Steel/ Carbide)	0.625,2.5,5,10 mm	3.1 µm	Using Micrometer
	Diamond Cone Indentor$ Angle	120 º±0.35º	0.37º	Using Profile Projector
	Tip Radius	0.2 ±0.015 mm	20 µm	Fillar Microscope
6.	Vicker / Microvickers Indentor Calibration$ Angel between opposite face	C.C. 136º±0.5º	0.39º	Using Profile Projector (L.C.: 0.1º) as per IS 1501-2013
VIII.	**DUROMETER**			
1.	Verification & Calibration Of Shore A & D Hardness Tester / Durometer$	Shore A 0 to 100 Shore D 0 to 100	1.39 Shore A 1.03 Shore D	Using Shore Hardness Calibrator as per ASTM D 2240-15

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
IX.	**TORQUE GENERATING DEVICES**			
1.	Hand Operated Torque Driver[$] (Type-I)	0.18 to 0.9 Nm	1.9%	
	Torque Wrench / Torque Tool[$] - Torque Indicator Type I (A-F)	0.4 to 1000 Nm	2.0 %	
	Torque Setting Type II (A-F)	0.4 to 1000 Nm	1.5 %	
X.	**TORQUE MEASURING DEVICES**			
1.	Torque meter, Torque Sensor / Transducer with Indicator in Torque Units only[$]	4 Nm to 2000 Nm	0.50 %	Using Standard Newtonian Weight and Beam in Torque calibration Rig
XI.	**ACCELERATION AND SPEED**			
1.	Tachometer, Tachometer Calibrator, Stroboscope, RPM Meter[$] (Contact) (Non Contact)	20 rpm to 5000 rpm 5000 rpm to 50000 rpm	0.28% 0.28%	Using Digital Tachometer

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
		THEMAL CALIBRATION		
I.	**TEMPERATURE**			
1.	RTD / Thermocouple With or Without Indicator/Temperature Controller[$] Transmitter With Sensor[$] Data Logger Temperature Gauge[$] Liquid –In-Glass Thermometer[$]	(-) 80 °C to 50 °C	0.20 °C	Using RTD (PT-100) 4 wire Sensor, 6½ Digital Multimeter & Using Liquid Temperature Bath by Comparison Method
2.	RTD's Thermocouples With & Without Indicator / Temperature Controller[#] Transmitter With Sensor[#] Data Logger Temperature Gauge[#]	50 °C to 200 °C >200 °C to 650 °C 200 °C to 1200 °C	1.1 °C 1. 7°C 2.5 °C	Using RTD (PT-100) 4 wire Sensor, Thermocouple, 6 ½ Digital Multimeter Using Dry Block Calibrator by Comparison Method

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
3.	Non-Contact Type Thermometer[$] (Infrared Thermometer/ Digital Pyrometer)	30°C to 350°C >350°C to 800°C >800°C to 1250°C	2.6 ° C 4.2 ° C 6.1 ° C	Using Standard Infrared Radiation Pyrometer & Black Body Furnace by Comparison Method
4.	Temperature Indicator of Muffle Furnace Dry Block Furnace[#] (Single Specified Position)	300 °C to 1200 °C	2.4° C	Using RTD Thermocouple with 6 ½ Digital Mutimeter Single Specified Position (Single Point Calibration)
5.	Temperature Indicator of Liquid Bath Freezer Dry Block Furnace Incubator(Non Medical) Bod Incubator, Autoclave Non Medical) Freezer Refrigerator Oven Vaccum Oven Environmental Chamber[#]	(-) 80 °C to 200 °C	1.1 °C	Using RTD, Thermocouple and 6 ½ Digital Multimeter (Single Point Calibration)

Sl.	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability (±)	Remarks
6.	Freezer[#] Oven Environment Chamber Vacuum Oven Cold Room[#]	(-) 80 °C to 50 °C >50 °C to 250 °C	2.4 °C 2.8 °C	Using RTD with Data Logger by max nine Sensor by Special Mapping (Multi Points Calibration)
7.	Muffle Furnace Industrial Furnace Dry Block Furnace[#]	>250°C to 1200°C	4.4 °C	Using Maximum nine K – Type Thermocouple with Data Logger by Mapping (Multipoint Calibration)
II.	**SPECIFIC HEAT AND HUMIDITY**			
1.	RH Indicator With or Without RH Probe, Thermo Hygrometer Data Logger With RH Sensor[#]	15 % RH to 95% RH @ 25 °C 10 °C to 50 °C @ 50 % RH	1.1% RH 0.70 °C	Using RH Sensor with Indicator & Humidity Generator (Single Point Calibration)
2.	Relative Humidity Indicator Of Environmental Chamber[#]	15 % RH to 95% RH @ 25 °C	3.2%RH	Using RH Indicator with Data Logger & Max nine Sensor by Special Mapping (Multi Points Calibration)

*** 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.

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