Laboratory	**Unique Instruments & Mfrs. Pvt. Ltd., No. 423, Peenya Industrial Area, IV Phase, 3rd Main, 11th Cross, Bangalore, Karnataka**		
Accreditation Standard	**ISO/IEC 17025: 2005**		
Discipline	**Mechanical Calibration**	**Issue Date**	**02.01.2015**
Certificate Number	**C-0073**	**Valid Until**	**01.01.2017**
Last Amended on	**07.08.2015**	**Page**	**1 of 12**

	Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
I.	**DIMENSION**			
1.	**GAUGE BLOCKS** [$]	0.5 mm to 25 mm Above 25 mm to 50 mm Above 50 mm to 100 mm	0.20 µm 0.23 µm 0.38 µm	Using Gauge block calibrator & Gr. 'K' Master by Comparison Method
2.	**LONG GAUGE BLOCKS** [$]	125 mm to 500 mm Above 500 mm to 1000 mm	6.4 µm 5.8 µm	Using Electronic Comparator & Reference Gauge Blocks by Comparison Method
3.	**VERNIER CALIPERS** [$] **L.C. 0.02 mm**	0 to 600 mm 0 to 1500 mm 0 to 2000 mm	15.1 µm 18.0 µm 20.0 µm	Using Gauge Blocks Grade "0"& "1" by Comparison Method
4.	**DIAL/DIGITAL CALIPERS** [$] **L.C. 0.01 mm**	0 to 300 mm 0 to 600 mm 0 to 1000 mm	8.0 µm 10.2 µm 12.0 µm	Using Gauge Blocks Grade "0"& "1" by Comparison Method
5.	**VERNIER CALIPERS** [$] **L.C. 0.05 mm**	0 to 1000 mm	37.9 µm	Using gauge Blocks Grade "0"& "1" by Comparison Method
6.	**VERNIER/DIAL/ DIGITAL DEPTH GAUGES** [$]			
	L.C. 0.01 mm	0 to 600 mm	10.0 µm	Using gauge Blocks Grade "0"& "1" by Comparison Method
	L.C. 0.02 mm	0 to 300 mm 0 to 600 mm	15.2 µm 16.0 µm	

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	Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
7.	**VERNIER HEIGHT GAUGES $**	0 to 300 mm	16.2 µm	Using Gauge Blocks Grade "0"& "1" by Comparison Method
	L.C. 0.02 mm	0 to 600 mm	14.6 µm	
		0 to 1000 mm	16.0 µm	
8.	**DIAL / DIGITAL HEIGHT GAUGES $**	0 to 300 mm	8.2 µm	Using gauge Blocks Grade "0"& "1" by Comparison Method
	L.C. 0.01 mm	0 to 600 mm	16.5 µm	
		0 to 1000 mm	14.0 µm	
9.	**EXTERNAL / DEPTH / INSIDE MICROMETER $**	0 to 100mm	5.0 µm	Using Gauge Blocks Grade "0" by Comparison Method
	L.C. 0.01 mm	100 mm to 250 mm	6.5µm	
		250 mm to 500 mm	7.5µm	
		500 mm to 1000 mm	13.5µm	
	EXTERNAL MICROMETER $	0 to 25 mm	2.0 µm	
	L.C. 0.001 mm	0 to 100 mm	2.2 µm	
		100 mm to 500 mm	4.1 µm	
10.	**STICK MICROMETER WITH EXTENSION RODS $**	Upto 500 mm	15.0 µm	Using Electronic Comparator & Master Gauge blocks by Comparison Method
		501 mm to 1000 mm	16.8 µm	
11.	**SETTING RODS LENGTH MEASUREMENT $**	Upto 500 mm	3.1 µm	Using Electronic Comparator & Master Gauge blocks by Comparison Method (UIMPL/WI/008)
		501 mm to 1000 mm	6.4 µm	

	Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
12.	**PITCH MICROMETER** $ **L.C. 0.01 mm**	0 to 100 mm	8.0 µm	Using Setting Thread Plug Gauge Master & Gauge Blocks Grade "0" by Comparison Method UIMPL/WI/076
13.	**PITCH MICROMETER ANVILS** $	60° and 55°	6.9'	Using Profile projector by Direct Method UIMPL/WI/076
14.	**3 POINT MICROMETER** $ **L.C. 0.001 mmΦ**	0 to 200 mm	6.0 µm	Using Setting Ring Gauges by Comparison Method (UIMPL/WI/044)
15.	**BORE GAUGE** $ **(Transmission Only)**	1 mm (For movement Upto 1.0 mm)	4.0 µm	Using ULMS by Direct Method (UIMPL/WI/035)
16.	**DIAL COMPARATORS** $			
	MILLIMESS	0.05 mm	2.63 µm	Using ULMS by Direct Method UIMPL/WI/066
	SUPRAMESS	0.05 mm	1.20 µm	
	MICROKATOR **L.C. 1 µm**	0.05 mm	1.20 µm	

	Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
17.	**THREAD PLUG GAUGE** $	M1 - 10 mm M11 - 150 mm M151 - 300 mm	3.3 µm 3.0 µm 3.3 µm	Using ULMS as per IS 2334-1975 & IS 4218-1976
18.	**THREAD RING GAUGE** $	M3 - 150 mm M151 - 300 mm	2.9 µm 3.0 µm	Using ULMS by Direct Method as per IS 2334-1975 & IS 4218-1976
19.	**PLAIN PLUG/PIN GAUGE/THREAD MEASURING WIRES** $	Upto 100 mm 100 mm to 300 mm	2.5 µm 2.7 µm	Using ULMS by Direct Method as per IS 6137-1983, IS 6244-1980 & IS 11103-1984
20.	**PLAIN RING GAUGE** $	3 mm to 100 mm 101 mm to 300 mm	3.3 µm 3.3 µm	Using ULMS by Direct Method as per IS 3485-1983
21.	**DIAL GAUGES** $ **(ANALOG/DIGITAL) PLUNGER TYPE**			
	L.C. 1.0 µm	0 to 100 mm	3.8 µm	Using ULMS and Dial calibration Tester by Comparison/Direct Method
	L.C. 2.0 µm	0 to 1 mm	3.0 µm	
	L.C. 10.0 µm	0 to 25 mm	5.0 µm	
22.	**DIAL GAUGES** $ **(Lever Type)**			
	L.C. 1.0 µm Φ	0 to 0.2 mm	2.63 µm	Using ULMS and Dial calibration Tester by Comparison/Direct Method
	L.C: 10.0 µm	0 to 2 mm	4.4 µm	

	Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
23.	**DIAL GAUGE CALIBRATOR & MICRO METER HEAD $**			
	L.C. 0.1 µm ϕ	0 to 50 mm	2.4 µm	Using ULMS by Direct Method UIMPL/WI/007
24.	**HEIGHT MASTER $**	0 to 300 mm 0 to 600 mm	6.4 µm 6.4 µm	Using Gauge Blocks & Electronic Comparator by Comparison Method
25.	**SINE BAR $**	300 mm	Angle-4"	Using Gauge Blocks & Angle gauge by Comparison Method
26.	**SPIRIT LEVEL$**	0.02 mm/m	7.1 µm/m	Using Electronic Level & 1 meter bridge by Comparison Method
27.	**ELECTRONIC LEVEL $**	0.001 mm/m	10.1 µm/m	Using Gauge Blocks & Sine bar by Direct method
28.	**INCLINO METER $**	± 45°	45.1"	Using Angle gauge by Comparison Method UIMPL/WI/077
29.	**THREAD PITCH GAUGE $**			
	Pitch	Upto 6 mm	8.8 µm	Using Profile projector by Direct Method
	Angle	60°	2.8' arc	

	Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
30.	**BEVEL PROTRACTOR /COMBINATION SET** $			
	L.C. 5'	0 to 360°	3.8'	Using Angle Gauges by Comparison Method
	L.C. 1°	0 to 180°	3.0'	
31.	**SURFACE PLATE** #	2000 mm x 3000 mm		Using Electronic level by Direct Method
	100 mm Bridge		$0.95\sqrt{\frac{L+W}{100}}$ µm	
	150 mm Bridge		$1.24\sqrt{\frac{L+W}{150}}$ µm	
32.	**V – BLOCK** $	300 mm x 100 mm x 100 mm		Using Electronic Comparator & Cylindrical pin by Direct Method
	Perpendicularity		7.04 µm	
	Parallelism		5.3 µm	
	Symmetricity		3.4 µm	
33.	**HEIGHT MESASURING SYSTEMS** #	Upto 1000 mm	5.6 µm	Using Gauge Blocks Grade '0' by Comparison Method UIMPL/WI/045
34.	**ANGLE GAUGE** $	Upto 45°	12"	Using Gauge Blocks & Sine bar By Direct Method
35.	**STEEL BALL/CERAMIC SPHERE** $ **(Diameter only)**	Dia 50 mm	2.63 µm	Using ULMS by Direct Method UIMPL/WI/060

	Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
36.	**OPTICAL PARALLEL$ (Parallelism)**	Thickness Upto 25 mm	2.45 µm	Using Master Flat & ULMS by Direct Method
37.	**OPTICAL FLAT $ (Flatness)**	Dia. Upto 50 mm	0.41 µm	Using Master Flat & Monochromatic Check lite by Direct Method
38.	**FEELER GAUGE / CALIBRATION FOILS $**	Upto 10 mm	2.7 µm	Using ULMS by Direct Method UIMPL/WI/034
39.	**TAPER RING GAUGE $** **Major Diameter** **Angle**	 200 mm 15°	 6.03 µm 26"	 Using CMM by Direct Method
40.	**TAPER PLUG GAUGE $** **Major Diameter** **Angle**	 200 mm 15°	 6.03 µm 28"	 Using CMM by Direct Method
41.	**TAPER THREAD PLUG GAUGE $**	Upto 25 mm 25 mm to 150 mm	2.6 µm 3.8 µm	Using ULMS by Comparison Method
42.	**TAPER THREAD RING GAUGE $**	3 mm to 25 mm 25 mm to 150 mm	2.6 µm 4.0 µm	Using ULMS by Comparison Method
43.	**SNAP GAUGES $**	Upto 100 mm 100 mm to 200 mm	2.0 µm 3.3 µm	Using Gauge Blocks Grade '0' by Comparison Method

	Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
44.	**DIAL SNAP GAUGES** [$] **L.C. 0.001 mm**	0 to 100 mm 100 mm to 250 mm 250 mm to 500 mm	3.0 µm 4.0 µm 5.0 µm	Using Gauge Blocks Grade '0' by Comparison Method
45.	**RADIUS GAUGES** [$]	Upto R 100 mm	8.6 µm	Using Profile projector by Direct Method
46.	**PARALLELS** [$]	250 mm	3.0 µm	Using Electronic Comparator by Direct Method
47.	**CALIPER CHECKER** [$]	0 to 300 mm 0 to 600 mm 0 to 1000 mm	6.4 µm 6.4 µm 6.4 µm	Using gauge Blocks & Electronic comparator by Comparison Method IMPL/WI/047
48.	**ANGLE PLATE** [$]	600 mm	6.0 µm	Using CMM by Direct Method
49.	**LEG CALIPER** [$] **L.C. 0.01 mm**	5 mm to 150 mm	9.0 µm	Using Gauge Blocks & Accessories by Comparison Method UIMPL/WI/068
50.	**STEEL SCALE** [$] **L.C. 1.0 mm**	0 to 1000 mm	580 µm	Using Profile Projector by Comparison Method

	Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
51.	**SINE CENTRE** [$]			Using Gauge Blocks & Angle gauge by Comparison method
	Angle	Upto 600 mm	10"	
	Parallelism		3.0 µm	
	Radial run out		3.0 µm	
52.	**DIAL THICKNESS GAUGE** [$]			
	L.C. 0.01 mm	0 to 10 mm	7.4 µm	Using Gauge Block by Comparison Method
53.	**DIAL PISTOL CALIPER** [$]			
	L.C. 0.02 mm	0 to 50 mm	12 µm	Using Gauge Blocks Grade '0' & '1' by Comparison Method UIMPL/WI/081
54.	**TEST SIEVES** [$]	0.03 mm to 1.0 mm	8.2 µm	Using Profile Projector & Gauge Block by Direct Method
		1.0 mm to 100 mm	10.0 µm	
55.	**ELECTRONIC COMPARATOR** [$]			
	L.C. 0.1 µm	0.2 mm	1.45 µm	Using Gauge Blocks Grade '0' by Comparison Method
	L.C. 1.0 µm	0 to 10 mm	2.0 µm	
56.	**GLASS SCALE** [$]			
	L.C. 0.10 mm	0 to 200 mm	58.6 µm	Using Profile projector by Comparison Method UIMPL/WI/074

	Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
57.	**COATING THICKNESS GAUGE** [$]			
	L.C. 0.1 µm	0 to 1 mm	4.8 µm	Using Calibration Foils by Direct Method UIMPL/WI/011
58.	**ROUGHNESS MASTER** [$]			
	(Ra)	Upto 3 µm	6.8 % rdg	Using Surface Roughness Tester by Comparison Method
		3 µm to 10 µm	6.8 % rdg	
59.	**ROUGHNESS TESTER** [$]	Ra/Rz/Rt/Rmax	Upto 100 µm	Using Surface Roughness Master by Comparison Method
			5.55 % rdg	
60.	**GRANITE SQUARE** [$]			
	Perpendicularity	Upto 1000 mm	6.2 µm	Using CMM by Direct Method
	Flatness	Upto 1000 mm	6.0 µm	
61.	**ULMS** [#]			
	L.C. 0.0001 mm	Upto 300 mm	0.9 µm	Using Gauge Blocks by Comparison Method UIMPL/WI/037
62.	**STRIGHT EDGE** [$]	Upto 1000 mm	6.0 µm	Using CMM by Direct Method
63.	**DEPTH MICROMETER CHECKER** [$]	0 to 300 mm	3.0 µm	Using Gauge Blocks & Electronic comparator by Comparison Method

	Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
64.	**PROFILE PROJECTOR #**	X: 300 mm		Using Gauge Blocks &
	Linear	Y: 200 mm	5.0 µm	Angle gauges
	Angle	Upto 360º	55"	UIMPL/WI/038
65.	**VIDEO MEASURING SYSTEM #**			
	Length	Upto 400 mm	5.5 µm	Using Gauge Blocks
	Angle		30"	Grade '0' & Angle gauges
				UIMPL/WI/089
66.	**V-ANVIL MICROMETER $**			
	L.C. 0.001 mm	1 mm to 25 mm	5.0 µm	Using Cylindrical Measuring Pin Gauges by Comparison Method UIMPL/WI/094
67.	**FLOW CUP $**	Dia 1.51 mm to 3.00 mm	10.0 µm	Using Profile Projector by
	Orifice Size Dia			Direct Method
				UIMPL/WI/099
68.	**COMPARATOR STAND $**	300 mm X 400 mm &	6.0 µm	Using Electronic
	Flatness	Ø150 mm		Comparator by Direct Method
69.	**HEGMAN GAUGE $**	0 to 100 µm	2.8 µm	Using Electronic
	Depth Measurement			Comparator by
				Direct method
				UIMPL/WI/097
70.	**CYLINDRICAL SETTING MASTER $**	0 to 150 mm	3.0 µm	Using Electronic
	Diameter only			Comparator &
				Gauge blocks by
				Comparison Method
				UIMPL/WI/098

	Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (±)	Remarks
71.	**CYLINDRICAL MANDREL$**			
	Cylindricity	Upto 600 mm	5.3 µm	Using CMM by Direct method UIMPL/WI/084
	Concetricity		5.3 µm	
72.	**CMM ♣**	1000 mm X 1000 mm X 780 mm	6.8 µm	Using Gauge Blocks Grade '0' by Comparison Method
II.	**PRESSURE & VACUUM**			
1.	**INDUSTRIAL PRESSURE GAUGES $**			
	a. Pneumatic	0 to 20 bar	0.14 bar	Using Digital Pressure Indicator DPI 610 with Internal Sensor & DPI Internal Pneumatic Pump
	b. Hydraulic	0 to 700 bar	4.9 bar	Using Digital Pressure Indicator DPI 610 with Internal Sensor & DPI Eternal Hydraulic Pump (Water Based)
III.	**TORQUE**			
1.	**TORQUE TOOLS $ (Wrench /Screw Driver) Type I/ Class B,C,D,E) & Type II/ Class A,B,D,E)**	0.5 Nm to 50 Nm 50 Nm to 200 Nm 200 Nm to 800 Nm	3.22 % rdg 1.27 % rdg 3.35 % rdg	Using Digital Indicator with Transducer & Torque Calibrator System

*** 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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