Laboratory	**Mitutoyo south Asia Pvt. Ltd., Calibration Laboratory, C-122, Okhla Industrial Area, Phase-I, New Delhi**		
Accreditation Standard	**ISO/IEC 17025:2005**		
Discipline	**Mechanical Calibration**	**Issue Date**	**03.02.2016**
Certificate Number	**C-0349**	**Valid Until**	**02.02.2018**
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Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (±)	Remarks
I. DIMENSION			
1. (a) DIAL GAUGE $ (PLUNGER TYPE)			
L.C.: 0.01 mm	Upto 100 mm	2.8 µm	Using I-Checker,Dial Calibration Tester by Comparison Method based on JIS B-7503
L.C.: 0.001 mm	Upto 50 mm	1.0 µm	
L.C.: 0.0005 mm	Upto 30 mm	0.6 µm	
(b) DIAL GAUGE $ (LEVER TYPE)			
L.C.: 0.001/0.002 mm	0 to 0.14 mm	0.6 µm	Using I-Checker, Dial Calibration Tester by Comparison Method based on JIS B-7533
L.C.: 0.01 mm	0 to 1.5 mm	0.6 µm	
2. LINEAR GAUGE $			
L.C.: 0.001 mm	Upto 100 mm	1.0 µm	Using I-Checker, Dial Calibration Tester by Comparison Method based on JIS B-7503
L.C.: 0.0005 mm	Upto 100 mm	0.8 µm	
L.C.: 0.0001 mm	Upto 100 mm	0.7 µm	
3. EXTERNAL MICROMETER $			
L.C.: 0.0001 mm	Upto 25 mm	±(0.36 + 0.46L) µm	Using Gauge Block Set (Grade-k),Standard Bar by Comparison Method based on JIS B-7502
L.C.: 0.001 mm	Upto 75 mm	±(0.8 + 1.3L) µm	
L.C.: 0.001 mm	Upto 500 mm	±(0.8 + 1.3L) µm	
L.C.: 0.001 mm	Upto 1000 mm	±(2.6 + 0.6L) µm	
L.C.: 0.01 mm	Upto 150 mm	±(2.6 + 0.6L) µm	
L.C.: 0.01 mm	Upto 500 mm	±(2.7 + 0.6L) µm	
L.C.: 0.01 mm	Upto 2000 mm	±(2.7 + 0.6L) µm (Where L is in meter for all)	
4. CALIPERS $			
L.C.: 0.01 mm Φ	Upto 1000 mm	±(6.0 + 3.7 x 10^{-3}L) µm (Where L is in mm)	Caliper Checker/High accuracy Check-Master Gauge Block Set(Grade –k) by Comparison Method based on JIS B-7507

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5. HEIGHT GAUGES $			
L.C.: 0.01 mm Φ	Upto 1000 mm	±(3.9 + 5.5 x 10^{-3}L)µm (Where L is in mm)	Check Master, Surface Plate by Comparison method based on JIS B-7517
6. LINEAR HEIGHT GAUGES $			
L.C.: 0.0001 mm Φ	Upto 600 mm	±(1.3 + 1.28x 10^{-3}L) µm (Where L is in mm)	Check Master, Gauge Block Set Grade-K/ Surface Plate by Comparison Method based on JIS B-7517/Mitutoyo std.
7. DEPTH MICROMETER $			
L.C.: 0.001 mm Φ	Upto 150 mm	3.6 µm	Depth Micro-checker by Comparison method based on JIS B-7544
L.C.: 0.001 mm	Upto 300 mm	4.1 µm	
8. DEPTH GAUGE $			
L.C.: 0.01 mm	Upto 150 mm	5.8 µm	Depth Micro-Checker by Comparison Method based on JIS B-7518
L.C.: 0.01 mm	Upto 300 mm	6.4 µm	
9. BORE DIAL GAUGE $ (Upto 1.2 mm travels only)			
L.C.: 0.001 mm Φ	Upto 1.2 mm	1.6 µm	I-Checker/Dial Calibration Tester by Comparison Method based on JIS B-7515
10. FEELER GAUGE $	Upto 1 mm	0.9 µm	Using QuantuMike by Comparison Method based on JIS B-7524
11. STANDARD BAR $	Upto 600 mm	±(3.9+ 5.5 x 10^{-3}L) µm (Where L is in mm)	Linear Height Gage/ Gauge Block Set by Comparison method based on IS-7014

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12. HEIGHT MASTER $ BLOCK PITCH ERROR FEEDING ERROR L.C.:0.001 mm	Upto 310 mm	±(0.9+ 2.4L/900)µm (Where L is in mm) ±0.8µm	High accuracy check master/Gauge Block Set by Comparison Method based on JIS B-7517/Mitutoyo std.
13. V-ANVIL MICROMETER $ L.C.: 0.001 mm Φ	Upto 25 mm	1.1 µm	Pin Gauge/Std. Ball by Comparison Method based on JIS B-7502
14. INSIDE MICROMETER $ L.C.: 0.001 mm	Upto 50 mm	1.6 µm	Gauge block set/caliper checker/check master by Comparison Method based on JIS B-7507/Mitutoyo std.
15. DIGIMATIC HEAD $ L.C.: 0.001 mm	Upto 50 mm	2.4 µm	Gauge block set (grade-k) by Comparison Method based on JIS B-7502/Mitutoyo std.
16. DIALTHICKNESS GAUGE $ L.C.: 0.001 mm Φ	Upto 20 mm	0.9 µm	Gauge block set (grade-k) by Comparison method based on JIS B-7502
17. CALIPER GAUGE $ L.C.: 0.01 mm	Upto 120 mm	3.0 µm	Caliper Checker & Gauge block set (grade-k) by Comparison method based on JIS B-7517/IS-7014

	Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (±)	Remarks
18.	**SURFACE ROUGHNESS TESTER #** **L.C.: 0.0001 µm**	Ra, Ry, Rz	6.2 %	Surface Roughness Standard by Comparison method based on JIS B-0651
19.	**SURFACE ROUGHNESS SPICIMEN $**	Ra, Rz, Ry, (Upto 5 µm)	6.4 %	Roughness Tester by Comparison method based on JIS B-0659
20.	**CALIPER CHECKER/ CHECK MASTER $**	Upto 600 mm	±(0.9+ 1.15L/900) µm (Where L is in mm)	Gauge block set/Check Master / Surface Plate by Comparison Method based on JIS B-7517/IS-7014
21.	**DEPTH MICROCHECKER $**	Upto 300 mm	±(0.9+ 1.15L/900) µm (Where L is in mm)	Gauge block set/High accuracy check master by Comparison Method based on JIS B-7544
22.	**DIAL CALIBRATION TESTER $ (I-CHECKER)**	Upto 100 mm	±(0.08 + $3.6x10^{-3}$L) µm (Where L is in mm)	Gauge Block set by Comparison Method based on JIS B-7502/JIS B-7533/Mitutoyo std.
23.	**COATING THICKNESS GAUGE/ FOILS $**	Upto 5 mm	1.1 µm	QuantuMike by Comparison Method based
24.	**BEVEL PROTRACTOR $**	Upto 180 °	2.5 ’	Angle Gauge by Comparison Method based on JIS B-7432
25.	**GAUGE BLOCK SET $**	0.5 mm to100 mm	±(0.05+0.6L) µm (Where L is in meter)	GBCD-250 by Comparison Method based on JIS B-7506/EA Guideline

	Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (±)	Remarks
26.	**µ-CHECKER** [$]	0 to1500 µm	±0.1 µm	I-Checker by Comparison Method based on JIS B-7533/Mitutoyo std
27.	**GAUGE BLOCK** [$] **CALIBRATOR AT RESOLUTION L.C.: 0.01 µm**	Upto 100 mm	±(0.03+0.1L) µm (Where L is in meter)	Gauge Block Set of GBCD Calibration by Comparison Method based on EUROMET/CG - 02/v.01
28.	**I-CHECKER / DIAL CALIBRATION TESTER** [♣]	Upto 100 mm	±(0.08 + $3.6x10^{-3}$L) µm (Where L is in mm)	Gauge Block set by Comparison Method based on JIS B-7502/JIS B-7533/Mitutoyo std.
29.	**PROFILE PROJECTOR** [♣] **L.C.: 0.001mm (X-Y Axes)**	Upto 300 mm (X-Y Axes) Magnification (10X,20X,50X,100X) Angular Accuracy	±2.5µm 0.01% ±1.15’ or 69”	Read Glass Scale/Std. scale by Comparison method based on JIS B-7184
30.	**MEASURING MICROSCOPE** [♣] **L.C.: 0.0005 mm (X-Y Axes)**	Upto 200 mm	±2.6 µm	Read Glass Scale/Std. scale by Comparison Method based on JIS B-7153
31.	**CONTRACER** [♣] **L.C.: 0.0001mm (X & Z Axes)**	Straightness of Drive Unit X –Axis Measurement Z-Axis Measurement	±0.5 µm ±2.1 µm ±0.2 µm	Optical Flat X-Axis Master Gauge Blocks by Comparison Method based on JIS B-Mitutoyo std.

	Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (±)	Remarks
32.	**VEDIO MEASUREING MACHINE ♣ L.C.: 0.0001mm (X,Y,Z-Axes)**	X-Axis Measurement (200 mm) Y-Axis Measurement (200 mm) Z-Axis Measurement (200 mm)	3.3 µm 3.2 µm 1.83 µm	Glass Scale/Gauge block set by Comparison Method based on JIS B-7440
33.	**CMM ♣ L.C.: 0.0001mm (X,Y,Z-Axes)**	X, Y & Z-Axis Measurement Upto1000 mm	$\pm(1.5 + 2 \times 10^{-3}L)$µm (Where L is in mm)	High accuracy Check-master by Comparison Method based on ISO10360-2(2001) (Volumetric)
34.	**ROUNDNESS TESTING MACHINES ♣ L.C.: 0.001 µm**	Straightness of R Axis Roundness Measurement Parallelism of column Stylus Displacement	±0.05 µm ±0.11 µm ±0.11 µm ±0.21 µm	Hemi Sphere/Std Cylinder/optical flat by Comparison Method based on JIS B-7451
35.	**LINEAR HEIGHT GAUGE ♣ L.C.: 0.0001 mm Φ**	Upto 600 mm	$\pm(1.5 + 1.28 \times 10^{-3}L)$ µm (Where L is in mm for all)	High accuracy check master by Comparison Method based on JIS B-7517/Mitutoyo std.
36.	**GAUGE BLOCK CALIBRATOR ♣**	Upto 100 mm	±(0.03+0.1L) µm (Where L is in meter)	Gauge Block Set of GBCD Calibration by Comparison Method based on JIS B-7506/EA Guideline

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Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (±)	Remarks
II. FORCE			
1. FORCE ♣ (VICKERS HARDNESS)	HV 0.3 (2.942 N) HV 1 (9.807 N) HV 10 (98.07 N) HV 20 (196.14 N) HV 30 (294.2 N)	0.92 % 0.92 % 1.15 % 1.15 % 1.15 %	Using Load Cell as per ISO 6507-2 (2005)
III. HARDNESS			
1. HARDNESS VICKERS ♣	HV 0.3 HV 1 HV 10 HV 20 HV 30	±3.66 % ±1.9 % ±2.47 % ±2.43 % ±1.13 %	Using Std. Hardness Test Blocks as per ISO 6507-2 (2005)
2. HARDNESS ROCKWELL ♣	HRB HRC	±0.75 HRB ±0.45 HRC	Using Std. Hardness Test Blocks as per ISO 6508-2 (2005)

*** Measurement Capability is expressed as an uncertainty (±) at a confidence probability of 95%**
$Only in Permanent Laboratory
♣Only for Site Calibration
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.
 # 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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