

Laboratory	Alcalab Private Limited, 3rd Floor, Ashiana Trade Centre, Adityapur, Jamshedpur, Jharkhand		
Accreditation Standard	ISO/IEC 17025:2005		
Discipline	Mechanical Calibration	Issue Date	24.09.2015
Certificate Number	C-0053	Valid Until	23.09.2017
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Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (\pm)	Remarks
I. DIMENSIONS			
1. SLIP GAUGE[§]	0.5 mm to 25 mm > 25 mm to 50 mm > 50 mm to 75 mm > 75 mm to 100 mm	0.25 μ m 0.34 μ m 0.46 μ m 0.58 μ m	Using Slip Gauge (K-Grade) & Double Probe Comparator
2. TEST SIEVE[§]			Using Profile Projector & Digimatic Calipers
Wiremess	0.032 mm to 5.00 mm 5.00 mm to 50 mm	6.30 μ m 13.00 μ m	
Perforated	1 mm to 125 mm	41.00 μ m	
3. HEIGHT MASTER[§]			
L.C. :0.001 mm	5 mm to 310 mm	4.7 μ m	Using Slip Gauge, Length Bars, Lever Dial Gauge
4. RISER BLOCK[§]	100 mm to 300 mm	4.7 μ m	Using Slip Gauge, Length Bars, Lever Dial Gauge
5. SLIP GAUGE ACCESSORIES SET[§]	Flatness and Parallelism	0.40 μ m	Using Slip Gauge (K-Grade), Double Probe Comparator & Optical Flat
6. COMPARATOR STAND[§]			
(Flatness Of Base)	Upto 50 mm > 50 mm to 400 mm	2.00 μ m 6.00 μ m	Using Plunger Dial Gauge (Millimess)
7. DIAL CALIBRATION TESTER[§]			
L.C. :0.0001 mm^Φ	0 to 25 mm	0.4 μ m	Using Inductive Probe & Slip Gauge
8. STEEL SCALE[§]	0 to 1000 mm	300 μ m	Using Scale Calibrator & Length Bar

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9. STEEL MEASURING TAPE ^{\$}	0 to 50 m	$405 \sqrt{\frac{L}{1000}} \mu\text{m}$ L in mm	Using Tape Calibration Set-up & Eye Piece
10. EXTERNAL MICROMETER ^{\$} (Analog, Digital & Electronic) L.C. : 0.001 mm	0 to 50 mm > 50 mm to 100 mm > 100 mm to 500 mm	1.7 μm 2.9 μm 5.0 μm	Using Slip Gauge & Length Bar
11. FLANGE MICROMETER ^{\$} (Digital & Electronic) L.C. : 0.001 mm	0 to 50 mm > 50 mm to 300 mm	1.7 μm 5.0 μm	Using Slip Gauge & Length Bar
12. EXTERNAL MICROMETER ^{\$} L.C. : 0.01 mm	0 to 300 mm > 300 mm to 1000 mm	6.0 μm 29.0 μm	Using Slip Gauge & Length Bars
13. FLANGE MICROMETER ^{\$} L.C. : 0.01 mm	0 to 300 mm	7.0 μm	Using Slip Gauge & Length Bars
14. SCREW THREAD MICROMETER ^{\$} (For Metric Thread) L. C. : 0.01 mm	M4 to M60	6.00 μm	Using Slip Gauge & Length Bars

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15. INSIDE MICROMETER^{\$} (Digital & Electronic) L. C. : 0.001 mm ^{Φ}	25 mm to 50 mm 50 mm to 600 mm	7.1 μ m 10.0 μ m	Using Height Master, Length Bar & Plunger Dial Gauge
16. INSIDE MICROMETER^{\$} L.C. : 0.01 mm	5 mm to 50 mm	5.0 μ m	Using Slip Gauge Accessories Set & Slip Gauge
17. DEPTH MICROMETER^{\$} (Digital & Electronic) L.C. : 0.001 mm ^{Φ}	0 to 300 mm	7.10 μ m	Using Slip Gauge
18. RADIUS GAUGE^{\$}	1 mm to 25 mm	28.0 μ m	Using Profile Projector
19. THREAD PITCH^{\$} GAUGE PITCH ANGLE	0.6 mm to 7 mm 55 ⁰ & 60 ⁰	5.00 μ m 5' of arc	Using Profile Projector
20. FEELER GAUGE^{\$}	0.03 mm to 1 mm	3.0 μ m	Using Digimatic Micrometer
21. TAPER GAUGE^{\$} (Width Marked at Different Depths)	1 mm to 15 mm 15 mm to 30 mm	3.0 μ m 30.0 μ m	Using Profile Projector
22. ADJUSTABLE SNAP GAUGE / LIMIT SNAP GAUGE^{\$}	5 mm to 100 mm > 100 mm to 300 mm	3.0 μ m 5.0 μ m	Using Slip Gauge & Length Bars

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23. PLAIN PLUG GAUGE ^s	3 mm to 100 mm > 100 to 300 mm	3.0 μ m 5.4 μ m	Using Slip Gauge, Comparator Stand & Plunger Dial Gauge
24. MEASURING PINS ^s	0.1 to 20 mm	2.0 μ m	Using Slip Gauge, Comparator Stand
25. PLAIN CYLINDRICAL STANDARD ^s	> 1 mm to 100 mm	2.0 μ m	Using Inductive Probe & Comparator Stand
26. PLAIN RING GAUGE ^s	5 mm to 100 mm > 100 mm to 300 mm	3.0 μ m 5.0 μ m	Using Length Measuring Machine / Slip Gauge Accessories set
27. THREAD PLUG GAUGE ^s	M3 to M100 3-48TPI to 1/4"-20 TPI UNC	4.5 μ m 4.5 μ m 3.7 μ m 3.5' 5.0 μ m	Using Floating Carriage Dia. Measuring M/c & Profile Projector
28. TAPER THREAD PLUG GAUGE ^s (Pitch Dia)	3.175 mm to 101.60 mm (1/8" to 4") (BSPT NPT)	6.0 μ m	Using Floating Carriage Dia. Measuring Machine & Profile Projector
29. PARALLEL THREAD RING GAUGE ^s (Pitch Dia)	M6 to M100 1/8-48TPI to 1/4"-20 TPI UNC	4.5 μ m	Using Length Measuring Machine
30. TAPER THREAD RING GAUGE ^s (Pitch Dia)	3.175 mm to 95.25 mm (1/8" to 3 3/4 ") (BSPT, NPT)	6.0 μ m	Using Length Measuring Machine

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31. VERNIER / DIAL / DIGITAL HEIGHT GAUGE ^{\$} L.C. 0.001 mm ^Φ L.C. 0.01 mm ^Φ	0 to 600 mm 0 to 1000 mm	10.0 μ m 25.0 μ m	Using Slip Gauge & Length Bar
32. VERNIER / DIAL / DIGITAL DEPTH GAUGE ^{\$} L.C. : 0.01 mm ^Φ	Upto 600 mm	20.0 μ m	Using Slip Gauge & Length Bar
33. VERNIER / DIAL / DIGITAL CALIPER ^{\$} L.C. : 0.01 mm ^Φ	0 to 600 mm 0 to 1000 mm	20 μ m 25 μ m	Using Slip Gauge & Length Bar
34. DIAL BORE GAUGE ^{\$} (for 1 mm Plunger movement)	10 mm to 250 mm	4.0 μ m	Using Height Master
35. PLUNGER TYPE DIAL GAUGE ^{\$} L.C. : 0.001 mm ^Φ L.C. : 0.01 mm	0 to 1 mm >1 mm to 10 mm 0 to 25 mm 0 to 50 mm	1.0 μ m 3.0 μ m 6.0 μ m 10.0 μ m	Using Electronic Dial Calibration Tester Using Mechanical Dial Calibration Tester & Slip Gauge
36. LEVER TYPE DIAL GAUGE ^{\$} L.C. : 0.001 mm ^Φ L.C. : 0.01 mm	0 to 0.2 mm 0 to 1.4 mm	1.6 μ m 5.5 μ m	Using Length Measuring Machine Height Master

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37. DIAL THICKNESS GAUGE ^{\$} L.C. : 0.01 mm	0 to 50 mm	10.0 μ m	Using Slip Gauge
38. DIAL CALIPER GAUGE ^{\$} L.C. : 0.10 mm	0 to 50 mm	85.0 μ m	Using Slip Gauge
39. TEST FOILS ^{\$}	0 to 2000 μ m	2.0 μ m	Using Digimatic External Micrometer
40. COATING THICKNESS GAUGE ^{\$}	0 to 2000 μ m	2.5 μ m	Using Test Foil
41. VERNIER / DIAL / DIGITAL & GEAR TOOTH CALIPERS ^{\$} L.C. : 0.01 mm ^Ø	0 to 60 mm	20.0 μ m	Using Slip Gauge
42. BEVEL PROTRACTORS ^{\$} L.C. : 5 minute of arc	0 to 180 ⁰	3.1' of arc	Using Slip Gauge & Sine Bar
43. SPIRIT LEVEL ^{\$} (Sensitivity upto 300 mm Base length)	0.02 mm / meter	2.40"	Using Electronic Level & Tilting Table
44. ANGLE PROTRACTOR ^{\$} L.C. : 1 ⁰ of arc	0 ⁰ to 90 ⁰	35' of arc	Using Profile Projector
45. COMBINATION SET ^{\$} L.C. : 1 ⁰ of arc	0 ⁰ to 90 ⁰	35' of arc	Using Profile Projector

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46. VEE BLOCK ^{\$} Parallelity Squareness Angle of V-Grove	Upto 200 mm x 100 mm x 100 mm V Angle 90 ⁰	5.0 μ m 5' of arc	Using Dial Gauge, Plain Cylinder & Height Master
47. TRY SQUARE ^{\$} (Squareness)	50 mm to 450 mm	11.0 μ m	Using Cylindrical Square & Slip Gauge
48. ANGLE PLATE / BOX ANGLE PLATE ^{\$} (Squareness)	100 mm to 450 mm	11.0 μ m	Using Cylindrical Square & Slip Gauge
49. CYLINDRICAL SQUARE ^{\$} (Squareness Straightness)	100 mm to 450 mm	5.0 μ m 3.4 μ m	Millimess (L.C. 0.001 mm)
50. MASTER STEP GAUGE ^{\$} (Caliper Checker, Inside Micrometer Checker & Depth Micrometer Checker)	0 to 600 mm	6.0 μ m	Using Slip Gauge, Lever Type Dial Gauge & Length Bars
51. PROFILE PROJECTOR [#] Linear L.C. : 0.001 mm Angular L.C. : 36 second Magnification	0 to 200 mm 0 to 300 mm 0 to 360 ⁰ 10 X to 100 X	3.8 μ m 5.0 μ m 1.9' 0.22%	Using Slip Gauge, Angle Gauge & Glass Scale
52. SURFACE PLATE [#]	Upto 3000 mm x 3000 mm	$1.22 \sqrt{\frac{L+W}{125}}$ L & W in mm	Using Electronic Level

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53. SLIP GAUGE CALIBRATOR [#] L.C. : 0.01 μ m	0 to 100 mm	0.16 μ m	Using Slip Gauge (K Grade) (As per EAL G 21)
54. DIGIMATIC DIAL INDICATOR ^{\$} L.C. : 0.001 mm	0 to 25 mm	3.0 μ m	Using Slip Gauge (K Grade)
55. INDUCTIVE PROBE ^{\$} L.C. : 0.01 μ m	0 to 1 mm	0.15 μ m	Using Slip Gauge (K Grade)
56. STEEL SCALE CALIBRATOR ^{\$}	1000 mm	20.2 μ m	Using Length Bar
57. WORKING STANDARD FOR STEEL TAPE ^{\$}	5 m	$130\sqrt{\frac{L}{1000}}$ μ m L is in mm	Using Steel Scale Calibrator
58. DIGIMATIC / 2D HEIGHT GAUGE [#] L.C. : 0.001 mm Φ L.C. : 0.001 mm	0 to 600 mm 0 to 1000 mm	10.0 μ m 25.0 μ m	Using Slip Gauge & Length Bar
II. PRECISION INSTRUMENTS			
1. LENGTH MEASURING MACHINE ^{\$} L.C. : 0.1 μ m	0 to 100 mm	1.0 μ m	Using Slip Gauge (K Grade)

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III. ACCOUSTICS			
1. SOUND LEVEL METER / CALIBRATOR^{\$}	94 dB 114 dB	1.45 dB 1.45 dB	Using Sound Level Calibrator
IV. ACCELERATION & SPEED			
1. SPEED (RPM)[‡] (Non Contact)	100 rpm to 40000 rpm	1.12% to 0.7%	Using Digital Tachometer
V. MASS			
1. WEIGHTS^{\$} (Accuracy Class) M1 & Coarser	1 mg 2 mg 5 mg 10 mg 20 mg 50 mg 100 mg 200 mg 500 mg 1 g 2 g 5 g 10 g 20 g 50 g 100 g 200 g	0.013 mg 0.013 mg 0.013 mg 0.013 mg 0.013 mg 0.013 mg 0.013 mg 0.013 mg 0.015 mg 0.015 mg 0.015 mg 0.025 mg 0.025 mg 0.25 mg 0.25 mg 5.9 mg	Using E1 Class Standard Weights and Mass Comparators (Readability 0.001 mg upto 5.1 g and 0.01 mg upto 22 g ; 0.1 mg upto 200 g) as per OIML R-111

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Weights^{\$} (Accuracy Class M2 & Coarser)	500 g	15 mg	Using F1 Class Standard Weights and Mass Comparator (Readability 10 mg upto 5 kg, 1 g for upto 8.0 kg and 2 g for 8 kg to 20 kg) as per OIML R -111
	1 kg	15 mg	
	2 kg	15 mg	
	5 kg	20 mg	
	10 kg	1.8 g	
20 kg	2.0 g		
2. ELECTRONIC WEIGHING BALANCE[#]			
Readability:0.001 mg to 0.01 mg Readability: 0.1 mg to 1 mg Readability: 1 mg to 10 mg Readability :1 g to 5 g	Upto 20 g	0.35 mg	Using E1 Class Standard Weights
	>20g upto 200 g	0.35 mg	Using F1 Class Standard Weights Using F1 Class Standard Weights
	>200 g to 5 kg	13.9 mg	
	>5 kg to 20 kg	2.5 g	
>20 kg to 30 kg	5.8 g		
VI. VOLUME			
1. BURETTE PIPETTE AND OTHER GLASSWARE^{\$}	>1 ml to 2 ml	0.19 ml	Using Standard Weights E1 and F1 Class with Digital Balance (readability 0.001 mg upto 5 g, 0.01 mg upto 20 g & 10 mg Upto 5 kg) as per ISO4787 (P-6)
	>2 ml to 100 ml	0.19 ml	
	>100 ml to 200 ml	1.7 ml	
	>200 ml to 1000 ml	5.99 ml	
VII. DENSITY			
1. HYDROMETER AND DENSITY OF LIQUID^{\$}	0.600 g/ml to 1.000 g/ml 1.0 g/ml to 2.0 g/ml	0.0016 g/ml 0.0112 g/ml	Using Standard Hydrometers and Liquids by Comparison Method as per IS 3104
VIII. TORQUE			
1. TORQUE WRENCH^{\$} (DIAL, TRIP TORQUE TYPE,CLASS V)	20 Nm to 1000 Nm	2.07% rdg	Using Torque Wrench Calibrator As per ISO 6789

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IX. PRESSURE & VACUUM			
1. DIAL / DIGITAL PRESSURE GAUGE & PRESSURE CALIBRATOR[§]	0 to 700 bar	0.20% rdg	Using Digital Pressure Indicator with Pump as per DKD R- 6-1
2. HYDRAULIC DIAL/ DIGITAL PRESSURE GAUGE[§]	5 kg/cm ² to 35 kg/cm ² 30 kg/cm ² to 1000 kg/cm ²	0.20% rdg 0.25% rdg	Using Hydraulic Dead Weight Tester as per DKD R- 6-1
3. VACUUM[#] (Dial/Digital) GAUGE, SWITCH TRANSMITTER & TRANSDUCER	(-) 0.85 bar to 0 bar	0.30% rdg	Using Digital Vacuum Indicator with Pump as per DKD R- 6-1
4. PRESSURE SWITCH, TRANSMITTER & TRANSDUCER[§]	0 to 10 bar	0.15 % rdg	Using Digital Pressure Indicator with Pump as per DKD R- 6-1
5. PRESSURE (Dial/Digital) GAUGE, SWITCH TRANSMITTER & TRANSDUCER^{#0}	0 to 600 bar	0.21 % rdg	Using Digital Pressure Indicator with Pump as per DKD R- 6-1

* Measurement Capability is expressed as an uncertainty (\pm) 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.

⁰ 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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