National Accreditation Board for Testing and Calibration Laboratories

CERTIFICATE OF ACCREDITATION

HI-TECH CALIBRATION & TESTING LLP

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

GALA NO.: 60, ROYAL INDUSTRIAL HUB, VILLAGE: VALWADA, UMBERGAON, VALSAD, GUJARAT, INDIA

in the field of

CALIBRATION

Certificate Number: CC-2478

Issue Date: 14/12/2023 **Valid Until:** 03/01/2025

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.
(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Entity: HI-TECH CALIBRATION & TESTING LLP

Signed for and on behalf of NABL

N. Venkateswaran
Chief Executive Officer

SCOPE OF ACCREDITATION

Laboratory Name : HI-TECH CALIBRATION & TESTING LLP, GALA NO.: 60, ROYAL INDUSTRIAL HUB, VILLAGE: VALWADA, UMBERGAON, VALSAD, GUJARAT, INDIA

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S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
99	MECHANICAL-ACCELERATION AND SPEED	Speed Indicator/ RPM Meter, RPM of Rotating Equipment (Contact Type)	Using Contact Type Tachometer By Direct Method	1000 RPM to 12000 RPM	0.31 %
100	MECHANICAL-ACCELERATION AND SPEED	Speed Indicator/ RPM Meter, RPM of Rotating Equipment (Contact Type)	Using Contact type Tachometer by Direct method	6 rpm to 1000 rpm	10.1%
101	MECHANICAL-ACCELERATION AND SPEED	Speed Indicator/ RPM Meter/ Centrifuge	Using Digital Tachometer for Measure RPM by Direct method	100 rpm to 10000 rpm	0.62%
102	MECHANICAL-ACCELERATION AND SPEED	Speed Indicator/ RPM Meter/ Centrifuge	Using Digital Tachometer for Measure RPM by Direct method	10000 rpm to 99500 rpm	0.06%

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103	MECHANICAL-ACCELERATION AND SPEED	Speed Indicator/ RPM Meter/ Centrifuge	Using Digital Tachometer for Measure RPM by Direct method	6 rpm to 100 rpm	6.04%
104	MECHANICAL-ACCELERATION AND SPEED	Tachometer (Contact Type) RPM Measure	Using Contact Type Tachometer with VFD Source by Comparison method	1000 rpm to 12000 rpm	0.31%
105	MECHANICAL-ACCELERATION AND SPEED	Tachometer (Contact Type) RPM measure	Using Contact Type Tachometer with VFD Source by Comparison method	6 rpm to 1000 rpm	10.10%
106	MECHANICAL-ACCELERATION AND SPEED	Tachometer (Non Contact Type) RPM Measure	Using Digital Tachometer with VFD Source by Comparison method	100 rpm to 10000 rpm	0.62%
107	MECHANICAL-ACCELERATION AND SPEED	Tachometer (Non Contact Type) RPM Measure	Using Digital Tachometer with VFD Source by Comparison method	10000 rpm to 99500 rpm	0.06%
108	MECHANICAL-ACCELERATION AND SPEED	Tachometer (Non Contact Type) RPM measure	Using Digital Tachometer with VFD Source by Comparison method	6 rpm to 100 rpm	6.04%
109	MECHANICAL-ACCELERATION AND SPEED	Vibration Meter Acceleration Measure	Using Vibration Meter with Shaker by Comparison method	0.5 m/s^2 (pk) to 30 m/s^2 (pk)	10.26%

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110	MECHANICAL-ACCELERATION AND SPEED	Vibration Meter Velocity Measure	Using Vibration Meter with Shaker by Comparison method	0.5 mm/s (pk) to 30 mm/s (pk)	10.26%
111	MECHANICAL-ACOUSTICS	Sound Level Meter @ 1 kHz	Using Sound Level Calibrator by Direct Method	114 dB	0.8 dB
112	MECHANICAL-ACOUSTICS	Sound Level Meter @ 1 kHz	Using Sound Level Calibrator by Direct Method	94 dB	0.9 dB
113	MECHANICAL-DENSITY AND VISCOSITY	Density of Liquid	Using Precision Weighing Balance as per OIML G14 Gravimetric method	600 kg/m³ to 2000 kg/m³	0.075%
114	MECHANICAL-DENSITY AND VISCOSITY	Density of Solid	Using Precision Weighing Balance as per OIML G14 Gravimetric method	500 kg/m³ to 15000 kg/m³	0.075%
115	MECHANICAL-DENSITY AND VISCOSITY	Hydrometer (Density Hydrometer, Brix Hydrometer, Brume Hydrometer, Twaddle Hydrometer, Sp. gr. Hydrometer, Lactometer, Alcoholmeter)	Using Standard Hydrometer and Liquid of known densities by Comparison method	(0.600 g/ml to 2.000 g/ml) @ 20°C	0.0013g/ml
116	MECHANICAL-DENSITY AND VISCOSITY	Viscosity Cup (Orifice Diameter: 1 mm to 6 mm)	Using Viscosity Standard Oil by Direct method	Up to cts to 1800 cts	0.87%

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117	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Angle Gauge	Using Sine bar and Slip gauge set by Direct method	0° arc to 90° arc to 0° arc	0.004°arc
118	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Bevel Protector Resolution: 1 minute	Using Angle Gauge or Vision measuring machine by Direct method	0° to 90° to 0°	5.6 minutes ofarc
119	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Bore Gauge (For transmission accuracy check only)	Using Universal Length Measuring Machine by Direct method	Up to 1 mm	3.6µm
120	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Caliper (Vernier,Dial,Electronics) L.C: 0.01 mm & Coarser	Using Caliper Checker / Length Bars / Slip Gauges by Direct method	0 to 1000 mm	16µm
121	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Caliper (Vernier,Dial,Electronics) L.C: 0.01 mm & Coarser	Using Caliper Checker / Length Bars / Slip gauge set by Direct method	0 to 300 mm	0.006mm

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122	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Clinometer, Inclinometer, Gunners Quadrant	Using Sine bar and Slip gauge set or Angle Gauge by Direct method	0° to 90°- 0°	0.004° of arc
123	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Coating Thickness Meter	Using Master foil by Direct method	Up to 2 mm	4.71µm
124	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Combination Set/ Set Degree Protector Resolution 1° and coarser	Using Angle gauges by Direct method	0° to 90° to 0°	45minute of arc
125	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Cube Mold, C.D.Gauge	Used Digital Vernier Caliper and Vision measuring Machine by Direct method	Linear: Upto 750 mm; Angular: 0° to 90° to 0°	Linear: 0.010mm; Angular: 0.004°
126	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Depth Gauge (Vernier,Dial,Electronics) L.C: 0.01 mm & Coarser	Using Slip Gauge Set by Direct method	0 to 450 mm	23.1µm

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127	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Depth Micrometer L.C: 0.01 mm	Using Caliper Checker and Holding Fixture by Direct method	0 to 300 mm	12µm
128	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Dial Calibration Tester L.C: 0.0002 mm	Using Slip Gauge Set and Electronic Probe with DRO by Direct method	0 to 25 mm	1.2µm
129	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Dial Gauge / Indicator (Plunger) L.C: 0.001 mm	Using Universal Length Measuring Machine by Direct method	0 to 50 mm	5.90µm
130	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Dial Snap Gauge / Plane Snap Gauge	Using Slip Gauge set & Length Bar by Direct method	0 to 200 mm	3.4µm
131	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Dial Snap Gauge / Plane Snap Gauge	Using Slip Gauge set & Length Bar by Direct method	200 mm to 600 mm	6.0µm

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132	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Dial Thickness Gauge L.C: 0.001 mm	Using Standard foil and Slip Gauge Set by Direct method	0 to 1 mm	1.2µm
133	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Dial Thickness Gauge L.C: 0.01 mm	Using Slip Gauge Set by Direct method	0 to 10 mm	33.2µm
134	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Electronic Probe with DRO L.C: 0.0001 mm	Using Slip Gauge Set by Direct method	0 to 0.2 mm	1.1µm
135	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Electronic Probe with DRO L.C: 0.001 mm	Using Slip Gauge Set by Direct method	0 to 2 mm	2.10µm
136	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Elongation Gauge	Using Digital Vernier Caliper or VMM by Direct method	0 to 600 mm	0.011mm

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137	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer L.C: 0.001 mm	Using Slip Gauge Set & Length Bars by Direct method	0 to 600 mm	12.6µm
138	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer L.C: 0.01 mm & Coarser	Using Slip Gauge Set & Length Bars by Direct method	>150 mm to 300 mm	7µm
139	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer L.C: 0.01 mm & Coarser	Using Slip Gauge Set & Length Bars by Direct method	>300 mm to 600 mm	12µm
140	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer L.C: 0.01 mm & Coarser	Using Slip Gauge Set & Length Bars by Direct method	0 to 150 mm	5µm
141	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	External Micrometer L.C: 0.01 mm & Coarser	Using Slip Gauge Set & Length Bars by Direct method	600 mm to 1000 mm	19µm

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142	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Feeler Gauge	Using ULM by Direct method	0 to 2 mm	2µm
143	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Flanking Gauge, Elongation Index Length Gauge	Using Video Measuring Machine by Direct method	Linear: Up to 100 mm, Dia	0.003mm
144	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Height Gauge (Vernier,Dial,Electronics) L.C: 0.01 mm & Coarser	Using Caliper Checker/Length Bars/Slip Gauges by Direct method	0 to 1000 mm	20.5µm
145	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Inside Dial Caliper Two Point L.C: 0.001 mm	Using Caliper Checker / Length Bars by Direct method	10 mm to 150 mm	7.0µm
146	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Internal Micrometer Two Point L.C: 0.01 mm & Coarse (with interchangeable Sticks)	Using Slip gauge set / Length bar with Accessories & Electronic probe with DRO by Direct method	5 mm to 2100 mm	0.65xSQRT(L)µm, where L in mm

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147	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Lever Type Dial Gauge L.C: 0.001 mm	Using Universal Length Measuring Machine by Comparison method	Up to 2 mm	4.6µm
148	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	LVDT Scale / Laser Sensor / Proximity Sensor with Indicator / Displacement Sensor L.C.=0.0001 mm & Coarser	Using Glass Scale or Slip gauge Set by Direct method	0 to 300 mm	0.002mm
149	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Measuring Pins	Using Universal Length Measuring Machine by Direct method	0.17 mm to 20 mm	1µm
150	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Measuring Scale L.C: 0.5 mm & Coarser	Using Scale and Tap calibrator by Direct method	Up to 1000 mm	289xSQRT(L)µm, where L in m
151	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Measuring Tape / Pie Tape L.C: 1 mm	Using Scale and Tape Calibrator by Direct method	0 to 50 m	142xSQRT(L)µm, where L in m

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152	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Micro meter setting standard / Long Gauge Block	Using Slip gauge set / Length bar & Electronic Probe with DRO by Direct method	25 mm to 600 mm	8.7µm
153	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Micro meter setting standard / Long Gauge Block	Using Slip gauge set / Length bar & Electronic Probe with DRO by Direct method	600 mm to 1000 mm	10µm
154	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Pistol Caliper Gauge L.C: 0.01 mm	Using Slip Gauge Set by Direct method	0 to 150 mm	58µm
155	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Plane / Master Ring Gauge	Using Universal Length Measuring Machine, Master Plug gauge by Direct method	3.0 mm to 100 mm	2.0µm
156	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Plane Plug Gauge	Using Universal Length Measuring Machine or Vision measuring machine by Direct method	0 to 100 mm	3.0µm

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157	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Plated Wire Gauges or Wet Film Thickness Gauge	Using Video Measuring Machine by Direct method	0.19 mm to 8.0 mm	0.7µm
158	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Precision Ball	Using Universal Length Measuring Machine or Vision measuring machine by Direct method	0 to 50 mm	6.7µm
159	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Radius Gauge	Using Vision Measuring Machine with Software by Direct method	0.6 mm to 25 mm	9.63µm
160	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Rockwell Diamond Cone Indenter	Using Video Measuring Machine by Direct method	Up to 5 mm (penetration d	7µm / 8minute
161	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Screw Pitch Gauge	Using Video measuring Machine by Direct Method	0.4 mm to 7 mm	7.0µm

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162	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Shims (Foils) of Coating Thickness Gauge	Using Universal Length Measuring Machine by Direct method	Up to 2 mm	2.4µm
163	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Sine bar, Linear, Angular	Using Angle Gauge, Slip gauge and Video measuring machine by Direct method	Linear: Up to 200 mm / Up	7.2µm / 8.0minute of arc
164	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Spirit Level/Frame Level/ Electronic Level L.C: 0.01 mm/m Auto/Dumpy level	Using Electronic Level Surface Profile with Tilting Setup by Comparison method	0.1 mm/m to Any Base Length	0.18µm/m
165	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Surface Plate Granite / Cast Iron	Using Electronic Level by Direct method	Up to 1000 x 2000 mm	1.5x(SQRT(L+W)/125)µm where L & W in m
166	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Taper Scale	Using Vision Measuring Machine by Direct method	0 to 60 mm	58µm

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167	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Template	Using Vision Measuring Machine by Direct method	Up to 300 mm	7µm
168	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Test Sieve	Using Vision Measuring Machine by Direct method	32 µm to 4 mm	6.6µm
169	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Test Sieve	Using Digital Caliper by Direct method	4 mm to 125 mm	97.8µm
170	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Thread Measuring Wire	Using Universal Length Measuring Machine by Direct method	0.17 µm to 7.35 µm	1µm
171	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Thread Plug Gauge Major & Effective Diameter Only	Using Universal Length Measuring Machine with Thread measuring wire by Direct method	0 to 100 mm	4.0µm

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172	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Thread Ring Gauge Minor & Effective Diameter Only	Using Universal Length Measuring Machine with Setting Ring Gauge by Direct method	Up to M100 mm (2.5 mm pitch only)	2.4µm
173	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Ultrasonic Thickness Gauge L.C: 0.01 mm and Coarser	Using Slip gauge set and Length bar by Direct method	5 mm to 100 mm	86.0µm
174	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Weld Gauge, Hi-Lo Gauge	Using Vision Measuring Machine by Direct method	Depth: Up to 50 mm, Angle	Depth: 100.3 µm, Angle: 8.01minute
175	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Length Bar / Long Gauge Block	Using Slip Gauge set & Electronic probe with DRO by Direct method	>600 mm to 1000 mm	10µm
176	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Length Bar / Long Gauge Block	Using Slip gauge set & Electronic probe with DRO by Direct method	25 mm to 600 mm	8.7µm

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177	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Profile Projector, Optical Microscope, Tool Maker Microscope, Magnification	Using Linier Glass Scale, Digital Vernier Caliper, Slip gauge set by Direct method	Magnification: Up to 1000	2.6%
178	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Profile Projector, Optical Microscope, Tool Maker Microscope, Vision Measuring Machine Linear (L.C: 0.0001 mm)	Using Glass Scale, Linear Glass Graticule by Direct method	Linear: 0 to 200 mm	linear: 0.5µm
179	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Profile Projector, Optical Microscope, Vision Measuring Machine Angular (L.C: 1 minute and coarser)	Using Angle Gauge, Angular Graticule by Direct method	Angular: 0° to 360°	1s of arc
180	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Scale and Tape Calibration Machine L.C: 0.0001 mm	Using Slip gauge set and Length bar by Direct method	Up to 1000 mm	2.0µm
181	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Universal Length Measuring Machine L.C: 0.0001 mm	Using Slip gauge set and Length bar by Direct method	Up to 100 mm	0.7µm
182	MECHANICAL-DUROMETER	Force Verification Shore A	Using Durometer Calibrator as per ASTM D2240-5:2010 by Direct method	0 Shore A to 100 Shore A	1.75Shore A

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183	MECHANICAL-DUROMETER	Force Verification Shore D	Using Durometer Calibrator as per ASTM D2240-05:2010 by Direct method	0 Shore D to 100 Shore D	1.74Shore D
184	MECHANICAL-MOBILE FORCE MEASURING SYSTEM	Push Pull Gauge, Force Gauge, Spring Balance	Using Newton Weights or Load Cell with Indicator as per VDI/VDE 2624:2008 by Direct method	0 N to 500 N	1.74N
185	MECHANICAL-PRESSURE INDICATING DEVICES	Hydraulic Pressure Gauge (Digital / Dial) / Transmitters and Switch	Using Digital Pressure Gauge & Hydraulic Pressure Pump by Comparison method as per DKD R-6-1	0 to 700 bar	0.65bar
186	MECHANICAL-PRESSURE INDICATING DEVICES	Hydraulic Pressure Gauge (Digital / Dial) / Pressure Transmitters and Switch	Using Digital Pressure Gauge & Hydraulic Pressure Pump by Comparison method as per DKD R-6-1	0 to 70 bar	0.11bar
187	MECHANICAL-PRESSURE INDICATING DEVICES	Hydraulic Pressure Gauge (Digital/Dial)	Using Digital Pressure Gauge & Hydraulic Pressure Pump by Comparison method as per DKD R-6-1	0 to 7 bar	0.004bar

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188	MECHANICAL-PRESSURE INDICATING DEVICES	Negative Pressure Gauge (Digital / Dial)/ High Vacuum Transmitters/ McLeod Gauge/ Pirani Gauge	Using Pirani Gauge with Vacuum Pump & Digital Vacuum Gauge by Comparison method (DKD R-6-01)	-0.98 bar to 0 bar	0.006bar
189	MECHANICAL-PRESSURE INDICATING DEVICES	Pneumatic absolute Pressure Gauge (Digital / Dial)/ Transmitters/ Magnehelic/ Switch Manometer/ Barometer	Using Digital Pressure Gauge, Pneumatic Pressure & Vacuum Pump by Comparison method (DKD-R6-01)	0.3 bar to 2 bar	0.0004bar
190	MECHANICAL-PRESSURE INDICATING DEVICES	Pneumatic Pressure Gauge (Digital / Dial)/ Transmitters/Magnehelic / Switch	Using Digital Pressure Gauge & Pneumatic Pressure Pump by Comparison method as per DKD R-6-1	0 bar to 7 bar	0.011bar
191	MECHANICAL-PRESSURE INDICATING DEVICES	Pneumatic Pressure Gauge (Digital / Dial)/ Transmitters/ Magnehelic/ Manometer	Using Digital Pressure Gauge, Pneumatic Pressure & Vacuum Pump by Comparison method (DKD-R-6-01)	0 mbar to 19.51 mbar	0.174mbar
192	MECHANICAL-TORQUE GENERATING DEVICES	Torque Wrench Type-I Class (A,B,C,D,E) Type-II Class (A,B,C,D,E,F,G)	Using Digital Torque Calibrator system with Torque Transducers based on IS 16906 : 2018 by Direct method	1 Nm to 2000 Nm	1.23%

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193	MECHANICAL-VOLUME	Measuring & Volumetric Glass Wear - Burette, Pipette, Beaker, Density Bottle, Cylinder, Flask	Using E2 Class Standard Weights and Digital Balance up to 2 kg with d=0.001g by Gravimetric method	>1000 ml to 2000 ml	0.18ml
194	MECHANICAL-VOLUME	Measuring of Volumetric Glass ware - Burette, Pipette, Beaker, Density Bottle, Cylinder, Flask	Using E1 and E2 Standard Weights & Digital Balance of Readability 1mg to 22 g d=0.001 mg and up to 105 g, d= 0.01 mg by Gravimetric method	> 1 ml to 20 ml	0.2 µl
195	MECHANICAL-VOLUME	Measuring of Volumetric Glassware - Burette, Pipette, Beaker, Density Bottle, Cylinder, Flask	Using E1 and E2 Class Standard Weights & Digital Balance of Readability up to 200 g with d=0.01mg up to 2 kg with d=0.001g by Gravimetric method	> 100 ml to 1000 ml	0.15ml
196	MECHANICAL-VOLUME	Measuring of Volumetric Glassware - Burette, Pipette, Beaker, Density Bottle, Cylinder, Flask	Using E1 or E2 Class Standard Weights & Digital Balance of Readability 1mg to 22 g with d=0.001 mg and up to 105 g, d= 0.01 mg by Gravimetric method	>20 ml to 100 ml	0.010ml

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197	MECHANICAL-VOLUME	Single/Multi Channel Piston Micro Pipettes	Using E1 Class standard mass & Electronic balance (d=0.001 mg) by Gravimetric method Based as per ISO 8655 Part 6:2022	>1 µl to 10 µl	0.2µl
198	MECHANICAL-VOLUME	Single/Multi Channel Piston Micro Pipettes	Using E1 Class standard mass & Electronic balance (d=0.001 mg) by Gravimetric method as per ISO 8655 Part 6:2022	>10 µl to 1000 µl	3.7µl
199	MECHANICAL-WEIGHING SCALE AND BALANCE	Weighing Balance d=10 mg Class I & Coarser	Using E2 Class Standard Weights based on OIML R-76-1	> 2 kg to 10 kg	0.03g
200	MECHANICAL-WEIGHING SCALE AND BALANCE	Weighing Balance d=100 mg Class I & Coarser	Using E2 Class Standard Weights based on OIML R-76-1	> 10 kg to 30 kg	100mg
201	MECHANICAL-WEIGHING SCALE AND BALANCE	Weighing Balance with readability d=0.001 mg Class I & Coarser	Using E1 Class standard weights based on OIML R-76-1	1 mg to 22 g	0.01mg
202	MECHANICAL-WEIGHING SCALE AND BALANCE	Weighing Balance with Readability d=0.001g Class I & Coarser	Using E1 & E2 Class Standard mass based on OIML R-76-1	1 mg to 2000 g	0.001g

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203	MECHANICAL-WEIGHING SCALE AND BALANCE	Weighing Balance with readability d=0.01 mg Class I & Coarser	Using E1 Class standard weights based on OIML R-76-1	> 22 g to 200 g	0.10mg
204	MECHANICAL-WEIGHTS	Weights E2-Class and Coarser	Using E1 Class Standard mass & Digital Balance of Readability: 1 mg to 220 g, d=0.01 mg based on ABBA method as per OIML R-111-1:2004	100 g	0.04mg
205	MECHANICAL-WEIGHTS	Weights E2-Class and Coarser	Using E1 Class Standard mass & Digital Balance of Readability: 1 mg to 220 g, d=0.01 mg based on ABBA method as per OIML R-111-1:2004	200 g	0.05mg
206	MECHANICAL-WEIGHTS	Weights E2-Class and Coarser	Using E1 Class Standard mass & Digital Balance of Readability: 1 mg to 22 g, d=0.001 mg,1 mg to 220 g, d=0.01 mg based on ABBA method as per OIML R-111-1:2004	50 g	0.04mg

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207	MECHANICAL-WEIGHTS	Weights Of E2 -Class and Coarser	Using E1 Class Standard mass & Digital Balance of Readability: 1 mg to 22 g, d=0.001 mg based on ABBA method as per OIML R-111-1:2004	50 mg	0.002mg
208	MECHANICAL-WEIGHTS	Weights of E2 Class and Coarser	Using E1 Class Standard mass & Digital Balance of Readability: 1 mg to 22 g, d=0.001 mg based on ABBA method as per OIML R-111-1:2004	1 g	0.005mg
209	MECHANICAL-WEIGHTS	Weights Of E2 Class and Coarser	Using E1 Class Standard mass & Digital Balance of Readability: 1 mg to 22 g, d=0.001 mg based on ABBA method as per OIML R-111-1:2004	10 mg	0.002mg

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210	MECHANICAL-WEIGHTS	Weights of E2 class and Coarser	Using E1 Class Standard mass & Digital Balance of Readability: 1mg to 22g, d=0.001 mg based on ABBA Method as per OIML R-111-1:2004	100 mg	0.002mg
211	MECHANICAL-WEIGHTS	Weights of E2 class and Coarser	Using E1 Class Standard mass & Digital Balance of Readability: 1 mg to 22 g, d=0.001 mg based on ABBA method as per OIML R-111-1:2004	2 g	0.005mg
212	MECHANICAL-WEIGHTS	Weights of E2 Class and Coarser	Using E1 Class Standard mass & Digital Balance of Readability: 1 mg to 22 g, d=0.001 mg based on ABBA method as per OIML R-111-1:2004	2 mg	0.002mg

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213	MECHANICAL-WEIGHTS	Weights of E2 class and Coarser	Using E1 Class Standard mass & Digital Balance of Readability: 1 mg to 22 g, d=0.001 mg based on ABBA method as per OIML R-111-1:2004	500 mg	0.003mg
214	MECHANICAL-WEIGHTS	Weights Of E2-Class and Coarser	Using E1 Class Standard mass & Digital Balance of Readability: 1 mg to 22 g, d=0.001 mg based on ABBA method as per OIML R-111-1:2004	1 mg	0.002mg
215	MECHANICAL-WEIGHTS	Weights of E2-Class and Coarser	Using E1 Class Standard mass & Digital Balance of Readability: 1 mg to 22 g, d=0.001 mg based on ABBA method as per OIML R-111-1:2004	10 g	0.008mg

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216	MECHANICAL-WEIGHTS	Weights of E2-Class and Coarser	Using E1 Class Standard mass & Digital Balance of Readability: 1 mg to 22 g, d=0.001 mg based on ABBA method as per OIML R-111-1:2004	20 g	0.009mg
217	MECHANICAL-WEIGHTS	Weights of E2-Class and Coarser	Using E1 Class Standard mass & Digital Balance of Readability: 1 mg to 22 g, d=0.001 mg based on ABBA method as per OIML R-111-1:2004	20 mg	0.002mg
218	MECHANICAL-WEIGHTS	Weights of E2-class and Coarser	Using E1 Class Standard mass & Digital Balance of Readability: 1 mg to 22 g, d=0.001 mg based on ABBA method as per OIML R-111-1:2004	200 mg	0.003mg

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219	MECHANICAL-WEIGHTS	Weights of E2-Class and Coarser	Using E1 Class Standard mass & Digital Balance of Readability: 1 mg to 22 g, d=0.001 mg based on ABBA method as per OIML R-111-1:2004	5 g	0.006mg
220	MECHANICAL-WEIGHTS	Weights Of E2-Class and Coarser	Using E1 Class Standard mass & Digital Balance of Readability: 1 mg to 22 g, d=0.001 mg based on ABBA method as per OIML R-111-1:2004	5 mg	0.002mg
221	MECHANICAL-WEIGHTS	Weights of F1-Class and Coarser	Using E2 Class Standard mass & Digital Balance of Readability: up to 2000 g, d=0.001 g Based on ABBA method as per OIML R-111-1:2004	2 kg	0.003g

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222	MECHANICAL-WEIGHTS	Weights of F1-Class and Coarser	Using E2 Class Standard mass & Digital Balance of Readability: up to 10 kg, d=0.01 g and upto 30 kg, d=0.1 g based on ABBA method as per OIML R-111-1:2004	20 kg	0.15g
223	MECHANICAL-WEIGHTS	Weights of F2-Class and Coarser	Using E2 Class Standard mass & Digital Balance of Readability: up to 2000 g, d=0.001 g based on ABBA method as per OIML R-111-1:2004	1 kg	0.002g
224	MECHANICAL-WEIGHTS	Weights of F2-Class and Coarser	Using E2 Class Standard mass & Digital Balance of Readability: up to 10 kg, d=0.01 g and up to 30 kg, d=0.1 g based on ABBA method as per OIML R-111-1:2004	10 kg	0.02g

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225	MECHANICAL-WEIGHTS	Weights of F2-Class and Coarser	Using E2 Class Standard mass & Digital Balance of Readability: up to 10 kg, d=0.01 g and upto 30 kg, d=0.1 g based on ABBA method as per OIML R-111-1:2004	5 kg	0.01g
226	MECHANICAL-WEIGHTS	Weights of F2-Class and Coarser	Using E2 Class Standard mass & Digital Balance of Readability: up to 2000 g, d=0.001 g, based on ABBA method as per OIML R-111-1:2004	500 g	0.001g

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38	MECHANICAL-ACCELERATION AND SPEED	Speed Indicator/ RPM Meter, RPM of Rotating Equipment (Contact Type)	Using Contact Type Tachometer By Direct Method	1000 RPM to 12000 RPM	0.31 %
39	MECHANICAL-ACCELERATION AND SPEED	Speed Indicator/ RPM Meter, RPM of Rotating Equipment (Contact Type)	Using Contact type Tachometer by Direct method	6 rpm to 1000 rpm	10.1%

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40	MECHANICAL-ACCELERATION AND SPEED	Speed Indicator/ RPM Meter/ Centrifuge	Using Digital Tachometer for Measure RPM by Direct method	100 rpm to 10000 rpm	0.62%
41	MECHANICAL-ACCELERATION AND SPEED	Speed Indicator/ RPM Meter/ Centrifuge	Using Digital Tachometer for Measure RPM by Direct method	10000 rpm to 99500 rpm	0.06%
42	MECHANICAL-ACCELERATION AND SPEED	Speed Indicator/ RPM Meter/ Centrifuge	Using Digital Tachometer for Measure RPM by Direct method	6 rpm to 100 rpm	6.04%
43	MECHANICAL-ACCELERATION AND SPEED	Tachometer (Contact Type) RPM Measure	Using Contact Type Tachometer with VFD Source by Comparison method	1000 rpm to 12000 rpm	0.31%
44	MECHANICAL-ACCELERATION AND SPEED	Tachometer (Contact Type) RPM measure	Using Contact Type Tachometer with VFD Source by Comparison method	6 rpm to 1000 rpm	10.10%
45	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Elongation Gauge	Using Digital Vernier Caliper or VMM by Direct method	0 to 600 mm	0.011mm

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46	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	LVDT Scale / Laser Sensor / Proximity Sensor with Indicator / Displacement Sensor L.C.=0.0001 mm & Coarser	Using Glass Scale or Slip gauge Set by Direct method	0 to 300 mm	0.002mm
47	MECHANICAL-DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)	Surface Plate Granite / Cast Iron	Using Electronic Level by Direct method	Up to 1000 x 2000 mm	1.5x(SQRT(L+W)/125)µm where L & W in m
48	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Profile Projector, Optical Microscope, Tool Maker Microscope, Magnification	Using Linier Glass Scale, Digital Vernier Caliper, Slip gauge set by Direct method	Magnification: Up to 1000	2.6%
49	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Profile Projector, Optical Microscope, Tool Maker Microscope, Vision Measuring Machine Linear (L.C: 0.0001 mm)	Using Glass Scale, Linear Glass Graticule by Direct method	Linear: 0 to 200 mm	linear: 0.5µm
50	MECHANICAL-DIMENSION (PRECISION INSTRUMENTS)	Profile Projector, Optical Microscope, Vision Measuring Machine Angular (L.C: 1 minute and coarser)	Using Angle Gauge, Angular Graticule by Direct method	Angular: 0° to 360°	1s of arc

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S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
51	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Rockwell Hardness Tester	Using Standard Hardness Block as per IS 1586:2015 or ASTM-E18-15:2015 by Indirect Verification method	Scale to HRA	1.4HRA
52	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Rockwell Hardness Tester	Using Standard Hardness Block as per IS 1586:2015 or ASTM-E18-15:2015 by Indirect Verification method	Scale to HRC	1.6HRC
53	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Rockwell Hardness Tester	Using Standard Hardness Block as per IS 1586:2015 or ASTM-E18-15:2015 by Indirect Verification method	Scale to HRN	1.6HR 15N
54	MECHANICAL-HARDNESS TESTING MACHINES	Verification of Rockwell Hardness Tester	Using Standard Hardness Block as per IS 1586:2015 or ASTM-E18-15:2015 by Indirect Verification method	Scale to HRB	1.4HRBW
55	MECHANICAL-PRESSURE INDICATING DEVICES	Hydraulic Pressure Gauge (Digital/Dial) and Switch	Using Digital Pressure Gauge & Hydraulic Pressure Pump by Comparison method (DKD R-01)	0 to 7 bar	0.0013bar

SCOPE OF ACCREDITATION

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56	MECHANICAL-PRESSURE INDICATING DEVICES	Hydraulic Pressure Gauge (Digital/Dial) and Switch	Using Digital Pressure Gauge & Hydraulic Pressure Pump by Comparison method (DKD R6-01)	0 to 70 bar	0.10bar
57	MECHANICAL-PRESSURE INDICATING DEVICES	Hydraulic Pressure Gauge (Digital/Dial) and Switch	Using Digital Pressure Gauge & Hydraulic Pump by Comparison method (DKD R6-01)	0 to 700 bar	0.70bar
58	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Verification Of Uniaxial Testing Machine (Universal, Tensile-Compression Testing Machine) Compression	Using S-Type / Using Load Cell with Indicator as per IS 1828-1:2015 by Direct method	5 kN to 1000 kN	0.90%
59	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Verification of Uniaxial Testing Machine (Universal, Tensile-Compression Testing Machine) Tension	Using S-type / Uniaxial Load cell with Indicator as per IS 1828-1:2015 by Direct method	>50 N to 50 kN	0.4%
60	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Verification of Uniaxial Testing Machine (Universal/Tensile-Compression Testing Machine) Compression	Using Uniaxial Load Cell with Indicator as per IS 1828-1:2015 by Direct method	1000 kN to 2000 kN	0.9%

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61	MECHANICAL-UTM, TENSION CREEP AND TORSION TESTING MACHINE	Verification of Uniaxial Testing Machine (Universal/Tensile-Compression Testing Machine) Tension	Using S-type / Uniaxial Load cell with Indicator as per IS 1828-1:2015 by Direct method	50 kN to 100 kN	0.4%
62	MECHANICAL-WEIGHING SCALE AND BALANCE	Weighing Balance d=.20 g class 2 & Coarser	Using F1 class Standard Weights based on OIML R-76-1	> 30 kg to 150 kg	0.013kg
63	MECHANICAL-WEIGHING SCALE AND BALANCE	Weighing Balance d=10 mg Class I & Coarser	Using E2 Class Standard Weights based on OIML R-76-1	> 2 kg to 10 kg	0.03g
64	MECHANICAL-WEIGHING SCALE AND BALANCE	Weighing Balance d=100 mg Class I & Coarser	Using E2 Class Standard Weights based on OIML R-76-1	> 10 kg to 30 kg	100mg
65	MECHANICAL-WEIGHING SCALE AND BALANCE	Weighing Balance with readability d=0.001 mg Class I & Coarser	Using E1 Class standard weights based on OIML R-76-1	1 mg to 22 g	0.01mg
66	MECHANICAL-WEIGHING SCALE AND BALANCE	Weighing Balance with Readability d=0.001g Class I & Coarser	Using E1 & E2 Class Standard mass based on OIML R-76-1	1 mg to 2000 g	0.001g
67	MECHANICAL-WEIGHING SCALE AND BALANCE	Weighing Balance with readability d=0.01 mg Class I & Coarser	Using E1 Class standard weights based on OIML R-76-1	> 22 g to 200 g	0.10mg

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68	MECHANICAL-WEIGHING SCALE AND BALANCE	Weighing Balance with Readability d=1 g Class I & Coarser	Using F1 class Standard Weights based on OIML R-76-1	150 kg to 300 kg	0.1kg