

Laboratory

Simco Calibration Laboratory, 10-3-74/27, Plot No. 151, Street No. 3,  
Teacher's Colony, East Marredpally, Secunderabad, Telangana

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number

CC-2806

Page 1 of 12

Validity

16.08.2018 to 15.08.2020

Last Amended on -

	Quantity Measured / Instrument	Range/Frequency	*Calibration Measurement Capability ( $\pm$ )	Remarks
<b><u>MECHANICAL CALIBRATION</u></b>				
<b>I.</b>	<b>PRESSURE INDICATING DEVICES</b>			
1.	Vacuum Gauges, Vacuum Indicators, Vacuum Transmitters, Vacuum Switches, Digital Vacuum Indicators <sup>#</sup>	(-)0.95 to 0 bar	0.0016 bar	Using Digital Test Gauge and Comparison Test Pump by Comparison Method
2.	Pressure Gauges, Pressure Transmitters, Pressure Switches, Digital Pressure Indicators, Pressure Transducers <sup>#</sup>	0 to 3 bar	0.0043bar	Using Digital Test Gauge and Comparison Test Pump by Comparison Method
3.	Pressure Gauges, Pressure Transmitters, Pressure Switches, Digital Pressure Indicators, Pressure Transducers <sup>#</sup>	0 to 30 bar	0.0383bar	Using Digital Test Gauge and Comparison Test Pump by Comparison Method
4.	Pressure Gauges, Pressure Transmitters, Pressure Switches, Digital Pressure Indicators, Pressure Transducers <sup>#</sup>	0 to 300 bar	0.36 bar	Using Digital Test Gauge and Comparison Test Pump by Comparison Method
5.	Pressure Gauges, Pressure Transmitters, Pressure Switches, Digital Pressure Indicators, Pressure Transducers <sup>#</sup>	0 to 700 bar	0.84 bar	Using Digital Test Gauge and Comparison Test Pump by Comparison Method

**Dheeraj Chawla**  
Convenor

**Avijit Das**  
Program Manager

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Certificate Number

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Page

2 of 12

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6	Differential Pressure Gauges, Magnehelic Gauges, Digital Manometers, Differential Pressure Transmitters <sup>#</sup>	0 to 196 mbar	0.17 mbar	Using Digital Manometer by Comparison Method
7.	Absolute Pressure, Barometer Pressure <sup>\$</sup>	500 to 945mbar	200 Pa	Using Digital Barometer By Comparison Method
II.	<b>ACCELERATION AND SPEED</b>			
1.	Speed(rpm) & Contact Tachometer <sup>#</sup>	10 to 10,000 rpm	4.5 rpm	Using Contact Tachometer by Comparison Method
2.	Speed(rpm) & Non-Contact Tachometer <sup>#</sup>	30 to 99,950 rpm	6 rpm	Using Non-Contact Tachometer by Comparison Method
III.	<b>ACCOUSTICS</b>			
1.	Sound Level Meters, dB meters <sup>\$</sup>	94 & 114Db 1 kHz	0.41 dB	Using Sound Level Calibrator by Comparison Method

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Page

3 of 12

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<b>IV.</b>	<b>WEIGHTS</b>			
<b>1.</b>	Conventional Mass Calibration of E2 Class Weights and Coarser <sup>\$</sup>	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	0.0012 mg 0.0012 mg 0.0012 mg 0.0012 mg 0.0012 mg 0.0012 mg 0.0012 mg 0.0012 mg 0.0012 mg 0.0046 mg 0.0058 mg 0.02 mg 0.02 mg 0.02 mg 0.02 mg 0.05 mg 0.1 mg	Using Standard Weights of E1 Class (1 mg to 200 g) and weighing balance(s) With LC(s) of 0.0001mg(1 mg to 2 g) With LC(s) of 0.01mg(5 g to 100g) 0.1 mg (200g) by Substitution method with ABBA cycle as per OIML R 111-1
	Calibration of F1 Class Weights and Coarser <sup>\$</sup>	500 g 1 kg	1 mg 1 mg	Substitution method with ABBA cycle as per OIML R 111-1
	Calibration of F2 Class Weights and Coarser <sup>\$</sup>	2 kg	0.01 g	Using Standard Weights of E <sub>2</sub> Class (1 mg to 20 kg) And weighing balances With LC(s) of 0.001g (500g & 1 kg)
	Calibration of M1 Class Weights and Coarser <sup>\$</sup>	5 kg 10 kg 20 kg	0.1 g 0.1 g 0.2 g	With LC(s) of 0.01g (2kg) & 0.2g(20kg)

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Certificate Number

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Page 4 of 12

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<b>V.</b>	<b>VOLUME</b>			
1.	Micro-pipette <sup>§</sup> (Piston operated pipette)	1 $\mu$ l to 10 $\mu$ l >10 $\mu$ l to 100 $\mu$ l >100 $\mu$ l to 1000 $\mu$ l >1 ml to 10 ml	0.06 $\mu$ l 0.07 $\mu$ l 0.13 $\mu$ l 1.16 $\mu$ l	Gravimetric method as per ISO 8655-6: 2002 & ISO 20461 : 2000. Reference Temperature : 27 °C
2.	Laboratory Glassware <sup>§</sup> (Volumetric Instruments) – Burette, Pipette, Measuring Cylinder, Syringe, Flask Graduated Jar, Beaker	100 $\mu$ l to 1000 $\mu$ l >1 ml to 100 ml >100 ml to 500 ml >500 ml to 1000 ml >1000 ml to 2500 ml >2500 ml to 5000 ml	0.17 $\mu$ l 0.7 $\mu$ l 0.23 ml 4.6 ml 9.3 ml 14 ml	Gravimetric method as per IS/ISO 4787 : 2010 & ISO 20461 : 2000. Reference Temperature : 27 °C
<b>VI.</b>	<b>WEIGHING SCALE AND BALANCE</b>			
1.	Weighing Balance <sup>*</sup> (Electronic)	1 mg to 2g 5g to 200g 500 g to 1 kg 2 kg to 20 kg 50 kg to 100 kg 200 kg	0.0053 mg 0.08 mg 0.004 g 0.20 g 1.2 kg 3.0 kg	Using Standard Weight(s) of E <sub>1</sub> class (1mg to 200g), E <sub>2</sub> class (1mg to 20kg), F <sub>1</sub> class (1kg to 20kg), M class (10kg to 20kg) Methods as per OIML R 76-1

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Certificate Number

CC-2806

Page

5 of 12

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<b>VII.</b>	<b>DIMENSION (BASIC MEASURING INSTRUMENT, GAUGE ETC.)</b>			
<b>1.</b>	External Micrometer <sup>s</sup> (Mech/Electronic/ Digital) LC : 1 $\mu$ m LC : 10 $\mu$ m	0 to 100mm 100 to 300mm  0 to 100mm 100 to 300mm 300 to 600mm	1.0 $\mu$ m 2.6 $\mu$ m  4.6 $\mu$ m 9.0 $\mu$ m 12.0 $\mu$ m	Using Slip Gauge/Length Bars  By Comparison based on IS 2967
<b>2.</b>	Caliper <sup>s</sup> (Vernier/Dial/Digital) LC : 10 $\mu$ m	0 to 600mm 0 to 1000mm	7.5 $\mu$ m 10.0 $\mu$ m	Using Slip Gauge/Length Bars Set/ Caliper Checker By Comparison based on IS 3651
<b>3.</b>	Dial Gauge <sup>s</sup> – Plunger Type (Digital/Dial) LC : 1 $\mu$ m LC : 10 $\mu$ m	0 to 25mm 0 to 50mm	1.0 $\mu$ m 6.1 $\mu$ m	Using Dial Calibration Tester and Electronic Comparator with P25 Probe By Comparison based on IS 2092
<b>4.</b>	Dial Gauge <sup>s</sup> – Lever Type (Digital/Dial) LC : 1 $\mu$ m LC : 10 $\mu$ m	0 to 1mm 0 to 1mm	1.0 $\mu$ m 5.9 $\mu$ m	Using Dial Calibration Tester and Electronic Comparator with P25 Probe By Comparison based on IS 11498

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Certificate Number

CC-2806

Page 6 of 12

Validity

16.08.2018 to 15.08.2020

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5.	Bore Gauge <sup>s</sup> (Digital/Dial) LC : 1 $\mu$ m	Travel:2mm Dial:10-250mm	2.9 $\mu$ m	Using Dial Calibration Tester and Digital Dial By Comparison based on IS Standard JIS B7515
6.	Height Gauge <sup>s</sup> (Vernier/Dial/Digital) LC : 10 $\mu$ m	0 to 300mm 0 to 600mm 0 to 1000mm	10.0 $\mu$ m 10.0 $\mu$ m 9.5 $\mu$ m	Using Slip Gauge/Length Bars Set/ Caliper Checker By Comparison based on IS 2921
7.	Depth Micrometer <sup>s</sup> LC : 10 $\mu$ m	0 to 300mm	3.9 $\mu$ m	Using Slip Gauge/Length Bars Set By Comparison Method
8.	Dial Thickness Gauge <sup>s</sup> LC : 1 $\mu$ m LC : 10 $\mu$ m	0 to 12mm 0 to 25mm	0.6 $\mu$ m 5.8 $\mu$ m	Using Slip Gauges By Comparison based on IS 2092
9.	Pistol Caliper <sup>s</sup> LC : 100 $\mu$ m	0 to 50mm	58.0 $\mu$ m	Using Slip Gauges By Comparison Method
10.	Internal/Stick Micrometer <sup>s</sup> LC : 10 $\mu$ m	50 to 63 mm Extension Rod upto 100mm Extension Rod 200-300mm	3.5 $\mu$ m 3.9 $\mu$ m 4.0 $\mu$ m	Using Slip Gauge/Length Bars Set/ Digimatic Indicator By Comparison Method IS 2966

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Certificate Number

CC-2806

Page 7 of 12

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16.08.2018 to 15.08.2020

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11.	Feeler Gauge <sup>s</sup>	0.01 to 1mm	1.5 $\mu$ m	Using Digital Micrometer By Comparison based on IS 3179
12.	Plain Plug Gauge <sup>s</sup>	$\varnothing$ 2 to $\varnothing$ 125mm	1.5 $\mu$ m	Using Slip Gauge, Electronic Comparator with P25 Probe & Comparator Stand By Comparison based on IS 3455
13.	Thread Plug Gauge <sup>s</sup>	$\varnothing$ 1 to $\varnothing$ 75mm	1.6 $\mu$ m	Using Digital Micrometer & 3 Wire Set Comparison based on IS 2334, IS 4218
14.	Depth Gauge <sup>s</sup> LC : 10 $\mu$ m	0 to 300mm	8.0 $\mu$ m	Using Slip Gauge/Length Bars Set By Comparison based on IS 4213
15.	Thickness Foil <sup>s</sup>	0.01 to 3mm	1.0 $\mu$ m	Using Electronic Comparator with P25 Probe & Comparator Stand By Comparison Method
16.	Bevel Protractor <sup>s</sup> LC : 1 Arc min	$\pm$ 0-90 $^{\circ}$ C	4.6 ArcMin	Using Slip Gauges, Sine Bar & Granite Square By Comparison based on IS 4239
17.	Clinometer <sup>s</sup> LC : 1 Arc min	$\pm$ 45 $^{\circ}$ C	50 ArcSec	Using Slip Gauges, Sine Bar By Comparison based on IS 4239

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Certificate Number

CC-2806

Page

8 of 12

Validity

16.08.2018 to 15.08.2020

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18.	Micrometer Setting Standard <sup>s</sup>	25 mm to 100mm 100mm to 300mm 300mm to 600mm	1.4 $\mu$ m 2.5 $\mu$ m 3.9 $\mu$ m	Using Electronic Comparator with P25 Probe, Slip Gauges & Length Bar set By Comparison Method
19.	Engineer's Square <sup>s</sup>	Upto 300mm	5.2 $\mu$ m	Using Slip Gauge and Granite Square By Comparison based on IS 2103
20.	Steel Scale <sup>s</sup> LC :0.5mm	Upto 2000mm	40 $\mu$ m	Using Tape & Scale Measuring Machine By Comparison based on IS 1481
21.	Measuring Tape/Pie Tape <sup>s</sup> LC : 1mm	Upto 30 meters	$(40\sqrt{(L/1000)})$ L in mm	Using Tape & Scale Measuring Machine By Comparison based on IS 1269
22.	Snap Gauge <sup>s</sup> (Fixed/Adjustable)	2 mm to 125mm	0.7 $\mu$ m	Using Slip Gauge & Length Bar Set By Comparison based on IS 3477 & IS 8023
23.	Straight Edge <sup>s</sup>	Upto 1000mm	5.7 $\mu$ m	Using Slip Gauge & Length Bar Set & Digital dial gauge By Comparison based on IS 2220 & IS 12937

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Certificate Number

CC-2806

Page

9 of 12

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24.	Test Sieves <sup>s</sup>	3 mm to 10mm	19.00 $\mu$ m	Using Digimatic Caliper By Comparison based on IS 460(Part-2)
25.	Inside Dial/ Leg Caliper <sup>s</sup>	$\varnothing$ 10 mm to 00mm	7.1 $\mu$ m	Using Length Bar set and caliper Checker By Comparison Method
26.	Dial Calibration Tester <sup>s</sup> LC : 0.1 $\mu$ m	0 to 25mm	0.8 $\mu$ m	Using Electronic Comparator with P25 Probe By Comparison based on IS 9483
27.	Electronic Probe <sup>s</sup> Resolution : 0.1 $\mu$ m	0 to 25mm	0.6 $\mu$ m	Using Electronic Comparator with P25 Probe and Gauge Blocks By Comparison Method
28.	Ultrasonic Thickness Gauge <sup>s</sup> LC : 100 $\mu$ m	Upto 200mm	71.5 $\mu$ m	Using Slip Gauge & Length Bar Set By Comparison based on IS 15468

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**Certificate Number** CC-2806

**Page** 10 of 12

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### THERMAL CALIBRATION

#### I. TEMPERATURE

1.	Temperature/Liquid	(-) 80 °C to 0 °C	0.2 °C	Using SSPRT with Digital Temperature Indicator, Cryostatic Bath, Micro Oil Bath by Comparison Method
	In Glass	0 °C to 50 °C	0.2 °C	
	Thermometers. <sup>\$</sup>	50 °C to 250 °C	0.2 °C	
2.	RTD Sensor	(-) 80 °C to 0 °C	0.2 °C	Using SSPRT with Digital Temperature Indicator, Cryostatic Bath, Micro Oil Bath, Dry Temperature Calibrator, High Temperature Calibrator & Standard Thermocouple, 6 ½ DMM by Comparison Method
	with/without	0 °C to 50 °C	0.2 °C	
	Indicator,	50 °C to 250 °C	0.2 °C	
	Thermocouple	250 °C to 400 °C	0.3 °C	
	Sensor with/without	400 °C to 1200 °C	1.6 °C	
	Indicator,			
	Temperature			
	Indicator with			
	Sensor,			
	Thermometer with			
Sensor Temperature				
Controller with				
Sensor, Temperature				
Gauges, Capillary				
Thermometer, Bi-				
Metallic temperature,				
Temperature				
Transmitter,				
Temperature				
Switches, Data				
Logger, Recorders. <sup>\$</sup>				

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3.	Infra Red Thermometers, Pyrometers. <sup>§</sup> ( $\epsilon = 0.95$ )	50 °C to 500 °C	1.3 °C	Using IR Thermometer, RTD with Temperature Indicator and Black Body Source by Comparison Method
4.	Indicator of Temperature Baths, Dry Block Calibrators. <sup>§</sup>	(-) 30 °C to 300 °C 300 °C to 1200 °C	0.25 °C 2.0 °C	Using RTD/TC sensors with Temperature Indicators by Comparison Method
5.	RTD Sensor with/without Indicator, Thermocouple Sensor with/without Indicator, Temperature Indicator with Sensor, Thermometer with Sensor, Temperature Controller with Sensor, Temperature Gauges, Temperature Transmitter, Temperature Switches, Data Logger, Recorders. <sup>#</sup>	(-) 30 °C to 100 °C 50 °C to 400 °C 400 °C to 1200 °C	0.2 °C 0.2 °C 1.6 °C	Using SSPRT with Digital Temperature Indicator, Cryostatic Bath, Micro Oil Bath, Dry Temperature Calibrator, High Temperature Calibrator & Standard Thermocouple, Universal Calibrator by Comparison Method.

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**Page** 12 of 12

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6.	Baths, Freezers, Oven Incubators, Furnaces, Environment Chambers, Autoclaves, Temperature Enclosures Multi Position Mapping <sup>#</sup>	(-) 80 °C to 400 °C 400 °C to 1200 °C	1.5 °C 4.35 °C	Using Multi Channel data Logger with RTD Sensors/ Multi channel Data Logger with Thermocouple by Comparison Method.

## II. SPECIFIC HEAT & HUMIDITY

1.	Digital/Analog Thermo Hygrometers, Thermo Hygrometers, Data Logger, Digital/Analog Hygrometer, R.H Sensor with Transmitter <sup>§</sup>	10% RH to 95% RH @25 °C to 40 °C 10 °C to 60 °C @50% RH	1.57% RH 0.38 °C	Using Standard Temperature/ Humidity Meter with Humidity Generator by Comparison Method
2.	Humidity Chambers, Environmental Chambers <sup>#</sup>	20% RH to 97% RH @25 °C 50 °C to 60 °C @50% RH	3% RH	Using Humidity Data Logger/Data Logger with Temperature & Humidity Probes by Comparison Method

\*Measurement Capability is expressed as an uncertainty ( $\pm$ ) at a confidence probability of 95%

<sup>§</sup>Only in Permanent Laboratory

\*Only for Site Calibration

<sup>#</sup>The laboratory is also capable for site calibration however, the uncertainty at site depends on the prevailing actual environmental conditions and master equipment used.

Dheeraj Chawla  
Convenor

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