Laboratory	**S. V. Engineering Centre, Plot No. E-3, Sanjay Colony, Sector – 23, Faridabad, Haryana**		
Accreditation Standard	**ISO/IEC 17025:2005**		
Discipline	**Mechanical Calibration**	**Issue Date**	**11.02.2016**
Certificate Number	**C-0080**	**Valid Until**	**10.02.2018**
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Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (±)	Remarks
I. DIMENSION			
1. VERNIER CALIPER[$]			
L.C. 0.01 mm	Upto 300 mm Upto 1000 mm Upto 2000 mm	7.4 μm 12.0 μm 15.0 μm	Using Caliper Checker Length Bar & Gauge Blocks
2. EXTERNAL MICROMETER[$]			
L.C. 0.001 mm	0 to 100 mm 100 mm to 300 mm 300 mm to 500 mm	1.0 μm 1.3 μm 4.0 μm	Using Gauge Blocks/ Optical Flat Length bars
L.C. 0.01 mm	500 mm to 1500 mm	15.0 μm	Using Gauge Blocks Length Bar
3. INTERNAL MICROMETER[$]			
L.C. 0.001 mm	5 mm to 50 mm 50 mm to 600 mm	6.2 μm 7.0 μm	Using Caliper Checker & Gauge Blocks
4. (i) LENGTH STANDARDS/ LENGTH BAR / MICROMETER SETTING RODS[$]	Upto 500 mm	2.2 μm	Using Gauge Blocks Electronic Probe & Length Bar
(ii) SETTING RODS	500 mm to 1500 mm	12.0 μm	
(iii) LEVEL CALIBRATOR (Centre Distance)	Upto 500 mm	2.7 μm	On CMM

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Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (±)	Remarks
5. (i) DEPTH MICROMETER$ L.C. 0.001 mm	0 to 300 mm	3.1 μm	Using Gauge Blocks
(ii) MICROMETER HEAD$ L.C. 0.2 μmΦ	0 to 50 mm	0.4 μm	Using Gauge Block, Electronic Probe, Comparator Standard
6. (i) HEIGHT MICROMETER/ CHECK MASTE$ L.C. 0.001 mm	Upto 600 mm	1.8 μm	Using Gauge Blocks & Electronic Probe
(ii) EXTENSIOMETER$	0 to 150 mm	1.8 μm	
(iii) DEPTH/ INSIDE MICRO CHECKER$	0 to 300 mm	1.8 μm	
7. RISER BLOCK$	Upto 300 mm	1.3 μm	Using Gauge Blocks & Electronic Probe
8. HEIGHT GAUGE$ L.C. : 0.01 mmΦ	Upto 600 mm Upto 1000 mm	8.0 μm 9.0 μm	Using Gauge Blocks Electronic Probe/ Length Bar
L.C. : 0.01 mm	Upto 1500 mm	9.5 μm	
9. DEPTH GAUGE/ DEPTH VERNIER$ L.C. 0.01 mm	Upto 500 mm	15.0 μm	Using Gauge Blocks

	Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (±)	Remarks
10.	**THREAD PITCH MICROMETER$** **L.C. 0.001 mm**	0.7 mm to 2.5 mm	4.6 μm	Using Standard Wear Check Plug
11.	**DIAL GAUGE/PLUNGER/ LEVER TYPE DIAL$** **L.C. 0.001 mmΦ**	Upto 25 mm	2.0 μm	Using Dial Calibration Tester / Gauge Blocks
12.	**DIAL SNAP GAUGE$**	Upto 200 mm	1.1 μm	Using Gauge Blocks
13.	**BORE GAUGE$**			
(i)	**(2 Points)**	Travel 2 mm only	2.5μm	Using Dial Calibration Tester/ Gauge Blocks
(ii)	**(3 Points)**	Upto 100 mm	2.5μm	Using Master Ring Gauge
14.	**PLAIN CYLINDRICAL$**			
	(i)PLUG GAUGE/ MANDREL	Upto 100 mm Upto 500 mm	0.7 μm 1.3 μm	Using Gauge Blocks & Electronic Probe
	(ii) CYLINDRICAL PINS	Upto 500 mm	3.2 μm	On CMM
	(iii) MEASURING PRISM			
	(iv) SETTING MASTER WIRES			
15.	**COMPARATOR STAND$**	200 mm x 200 mm Base Upto 500 x 500 mm	2.5 μm 2.5 μm	Using Gauge Block/ Dial Gauge / Height Gauge Spirit Level 10 μm/m

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16.	**V BLOCK$**			
	(Parallelism/	Upto 150 mm	7.2 μm	Using Gauge Blocks Cylindrical Square, Mandrel
	Flatness,	Upto 150 mm	7.2 μm	
	Squareness		9.0 s	
	Angle of 'V'	Upto 200 mm	4.0 μm	On CMM
			4.0 s	
17.	**CYLINDER SQUARE**	Upto 450 mm	6.0 μm/m	Using Gauge Blocks, Cylindrical Square
	ANGLE PLATE			
	BOX PLATE	Upto 700 mm	3.0 μm	CMM
	ENGINEER SQUARE$			
18.	**MEASURING SCALE$**			
	L.C. 0.5 mm	0 to 1000 mm	50.0 μm	Using Scale & Tape Calibrator
19.	**MEASURING TAPE/ PI TAPE/COUNT METER$**	Upto 50 m	50 μm/m	Using Scale & Tape Calibrator
20.	**GLASS SCALE**			
	GLASS GRATICULE SCALE$			
	L.C. 0.01 mm Φ	Upto 150 mm	2.0 μm	Using Profile Projector
21.	**STANDARD FOILS SET$**	Upto 1 mm	1.4 μm	Using Gauge Blocks / Comparator
22.	**INSIDE DIAL CALIPER$**			
	L.C. 0.010 mmΦ	5 mm to 95 mm	8.0 μm	Using Caliper Checker

	Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (±)	Remarks
23.	**COATING THICKNESS METER$**			
	L.C. 0.001 mm	0.01 mm to 1.0 mm	2.5 μm	Using Standard Foils
24.	**SLIP GAUGE ACCESSORIES$**	0 to 300 mm	2.0 μm	Using Gauge Block/ Electronic Probe
25.	**PLAIN SNAP GAUGE$**	Upto 200 mm	1.0 μm	Using Gauge Blocks
		200 mm to 400 mm	4.0 μm	
		Upto 500 mm	4.0 μm	CMM
26.	**PLAIN RING GAUGE$**	2 mm to 100 mm	1 μm	Using LMM, Gauge Blocks & Electronic Probe
		100 mm to 400 mm	3 μm	
		2 mm to 500 mm	$\frac{1.5 + L}{300}$ μm, L is in mm	CMM
27.	**FEELER GAUGE$**	Upto 1 mm	1.4 μm	Using Micrometer
28.	**THREAD PLUG GAUGE**	1 mm to 100 mm	4.5 μm	Using Floating Carriage with Cylinder Setting Master, Standard Wires.
	SPLINE PLUG GAUGE$	Upto 500 mm	$\frac{1.5 + L}{300}$ μm, L in mm	On CMM, Standard Pin

	Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (±)	Remarks
29.	**TAPER THREAD PLUG GAUGE$**	Upto 100 mm	4.5 μm	Using Floating Carriage, Measuring Wires, Measuring Prisms.
30.	**DIAL THICKNESS GAUGE$**			
	L.C. 0.001 mm	0 to 25 mm	1.0 μm	Using Gauge Blocks
31.	**THREAD/ RING GAUGE / TAPER THREAD RING GAUGE**	Upto 100 mm	1.0 μm	Using LMM Machine
	SPLINE RING GAUGE$	Upto 500 mm	$\frac{1.5+L}{300}$ μm L is in mm	Using CMM, Standard Pin.
32.	**PLAIN TAPER GAUGE$ (Plug / Ring)**	0 to 180˚	20 s	Using Sine Bar & Standard Pins Gauge Blocks
		Upto 500 mm	20 s	CMM
33.	**BEVEL PROTRACTOR$**			
	L.C.: 5'	0 -180˚- 0˚	3.0 min	Using Standard Angle Gauge Block
			5.0 s	On CMM
34(i	**SINE BAR$ (Parallism/Flatness/ Centre Distance)**	Upto 500 mm	20 s 2.0 μm	Using Gauge Block Electronic Probe
(ii)	**SINE CENTRE$**	Upto 500 mm Angle	3.2μm 20 s	Angle Gauge/ CMM On CMM

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	Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (±)	Remarks
35.	**COMBINATION SET$** **L.C. 30 min/1º**	0 -180˚- 0˚	35.0 min	Using Sine Bar, Gauge Blocks & Angle Gauge
36.	**CLINOMETER/ INCLINOMETER$** **L.C. 1'**	0 -180˚- 0˚	40 s	Using Sine Bar/ Gauge Blocks
37.	**LEVEL / ELECTRONIC LEVEL$** **(Sensitivity 0.001mm/m)**	0 to 5 mm/m	0.7 s	Using Level Calibrator C/C 500 mm
38.	**ANGLE GAUGE$**	Upto 90˚	20 s	Using Sine Bar & Gauge Blocks, Electronic Probe, On CMM
		Upto 170˚	20 s	
39.	**GAUGE BLOCKS$**	0.5 mm to 10 mm 10 mm to 25 mm 25 mm to 50 mm 50 mm to 100 mm	0.083 μm 0.094 μm 0.130 μm 0.180 μm	Using Gauge Block Comparator/ Gauge Block
40.	**CALIPER CHECKER/ STEP GAUGE$**	Upto 600 mm (Using Gauge Blocks) Upto 1000 mm (Using Length Bars)	2.1 μm 4.4 μm	Using Gauge Blocks, Length Bars & Electronic Probe
		Upto 600 mm	4.0 μm	On CMM
41.	**DIAL CALIBRATION TESTER$** **L.C. : 0.0001 mmΦ**	0 to 25 mm	0.22 μm	Using Gauge Blocks

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42.	**ELECTRONIC PROBE$** **L.C. 0.01μm / 0.1μmΦ**	0 to 25 mm	0.12 μm	Using Gauge Blocks Comparator
43.	**SURFACE PLATE#** **(Flatness)**	Upto 6000 x 2000 mm	1.3 (L+W/100) ½ μm L/W in mm	Using Level
44.	**STRAIGHT EDGE#** **(Straightness)**	Length Upto 2000 mm Width 20 mm to 70 mm	1.9 (L/ 100) ½ μm L – Length in mm	Using Level
			3.9 μm	On CMM
45.	**BENCH CENTRE#** **Co axiality, Parallelism**	Upto 1500 mm	4.4 μm	Using Level & Standard Mandrels , Lever Type Dial Gauge
46.	**GAUGE BLOCK COMPARATOR#** **L.C. 0.01μm**	Upto 100 mm	0.05 μm	Using Standard Gauge Blocks '00'Grade M10
47.	**3 D CO-ORDINATE MEASURING MACHINE#**	1 x1x1m	6xL (μm) where L is in m	Using Step Gauge & Std Angle Fixture, Hemisphere
48.	**MACHINE TOOLS / CNC/VMC#** **(X,Y,Z axis)**	Upto 3 m	(7xL) μm where L is in m	Using Master Cylinder Dial & Gauge Blocks Length Bars

Quantity Measured / Instrument	Range/ Frequency	* Calibration Measurement Capability (±)	Remarks
49. LENGTH MEASURING MACHINE#			
L.C. 0.1 µm	Upto 100 mm Upto 500 mm	0.7 µm 1.0 µm	Using Gauge Blocks
50. SURFACE FINISH TESTER#			
L.C 0.01µm	Upto Ra 5 µm Rmax: 15 µm	6.0 %	Using Surface Roughness Master Optical flat /Step gauge
51. SCALE / TAPE CALIBRATION UNIT#	0 to 1000 mm	42 µm/m	Using Gauge Blocks/ Length Bar
52. AIR GAUGE UNITS#			
L.C.: 0.0005 mm **L.C.: 0.0010 mm** **L.C.: 0.0020 mm** **L.C.: 0.0050 mm**	0.020 mm 0.040 mm 0.060 mm 0.080 mm	1.5µm	Using Plain Plug And Ring Gauge A, B, C
53. ROUNDNESS TESTER♣			
Radius/Axial/ Straightness	Upto 300 mm x350 h mm	0.15 µm 4.0 µm	Using Gauge Blocks, Master Cylinder, Hemisphere.
II. PRESSURE AND VACUUM			
1. PRESSURE GAUGE ANALOG /DIGITAL PRESSURE SWITCHES#	0 to 30 bar 30 bar to 700 bar	0.075 bar 0.58 bar	Using Digital Pressure Gauge by DKD –R-6-1

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III.	**TORQUE**			
1.	**TORQUE WRENCHES / TORQUE DRIVER[$]**	0 to 0.5 Nm 0.5 Nm to 1.5 Nm 1.5 Nm to 5 Nm >5 Nm to 20 Nm 20 Nm to 340 Nm	1.90 % 0.95 % 0.47 % 0.18 % 1.08 %	Using Torque Wrench Tester
IV.	**FORCE**			
1.	**PUSH PULL GAUGE / FORCE GAUGE SPRING BALANCE[$]**	10 N to 200 N	0.57 %	Using Weights
V.	**HARDNESS**			
1.	**RUBBER HARDNESS TESTER[$]**	100 Shore A 100 Shore D	0.072 N 0.35 N	Using Rubber Hardness Tester Calibrator
2.	**RUBBER HARDNESS TESTER CALIBRATOR[$]**	100 Shore A 100 Shore D	0.06 N 0.13 N	Using Weights

*** 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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