



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

Cornerstone Metrology Service Inc.

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CALIBRATION

Valid to: February 13, 2011

Certificate Number: AC - 1376

I. Electromagnetic – DC/LF

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
DC Voltage - Source	0 to 330 mV 330 mV to 3.3 V (3.3 to 33) V (33 to 330) V (330 to 1 020) V	5 $\mu$ V/V + 1 $\mu$ V 4 $\mu$ V/V + 3 $\mu$ V 4 $\mu$ V/V + 30 $\mu$ V 4.5 $\mu$ V/V + 300 $\mu$ V 4.5 $\mu$ V/V + 900 $\mu$ V	Fluke 5500A	CMSCP-032, GIDEP or OEM
DC Current - Source	0 to 3.3 mA (3.3 to 33) mA (33 to 330) mA 330 mA to 2.2 A (2.2 to 11) A	130 $\mu$ A/A + 50 nA 100 $\mu$ A/A + 250 nA 100 $\mu$ A/A + 3.3 $\mu$ A 300 $\mu$ A/A + 44 $\mu$ A 600 $\mu$ A/A + 330 $\mu$ A		
AC Voltage - Source	<b>(1 to 33) mV</b> (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 500) kHz <b>(33 to 330) mV</b> (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 500) kHz <b>330 mV to 3.3 V</b> (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 500) kHz	3.5 mA/A + 20 $\mu$ V 1.5 mA/A + 20 $\mu$ V 2 mA/A + 20 $\mu$ V 2.5 mA/A + 20 $\mu$ V 3.5 mA/A + 33 $\mu$ V 10 mA/A + 60 $\mu$ V  2.5 mV/V + 50 $\mu$ V 500 $\mu$ V/V + 20 $\mu$ V 1 mV/V + 20 $\mu$ V 1.6 mV/V + 40 $\mu$ V 2.4 mV/V + 170 $\mu$ V 7 mV/V + 330 $\mu$ V  1.5 mV/V + 250 $\mu$ V 300 $\mu$ V/V + 60 $\mu$ V 800 $\mu$ V/V + 60 $\mu$ V 1.4 mV/V + 300 $\mu$ V 2.4 mV/V + 1.7 mV 5 mV/V + 3.3 mV		



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AC Voltage – Source (cont.)	<b>(3.3 to 33) V</b> (10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz <b>(33 to 330) V</b> 45 Hz to 1 kHz (1 to 10) kHz (10 to 20) kHz <b>(330 to 1 020) V</b> 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	1.5 mV/V + 2.5 mV 400 μV/V + 600 μV 800 μV/V + 2.6 mV 1.9 mV/V + 5 mV 2.4 mV/V + 17 mV  500 μV/V + 6.6 mV 800 μV/V + 15 mV 900 μV/V + 33 mV  500 μV/V + 80 mV 2 mV/V + 100 mV 2 mV/V + 500 mV		
AC Current - Source	<b>(30 to 330) μA</b> (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz <b>330 μA to 3.3 mA</b> (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz <b>(3.3 to 33) mA</b> (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz <b>(33 to 330) mA</b> (10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz <b>330 mA to 2.2 A</b> (10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz <b>(2.2 to 11) A</b> (45 to 65) Hz (65 to 500) Hz 500 Hz to 1 kHz	2.5 mA/A + 150 nA 1.3 mA/A + 150 nA 1.3 mA/A + 250 nA 4 mA/A + 150 nA 12.5 mA/A + 150 nA  2 mA/A + 300 nA 1 mA/A + 300 nA 1 mA/A + 300 nA 2 mA/A + 300 nA 6 mA/A + 300 nA  2 mA/A + 3 μA 1 mA/A + 3 μA 900 μA/A + 3 μA 2 mA/A + 3 μA 6 mA/A + 3 μA  2 mA/A + 20 μA 1 mA/A + 20 μA 900 μA/A + 20 μA 2 mA/A + 50 μA 6 mA/A + 100 μA  2 mA/A + 300 μA 1 mA/A + 300 μA 7.5 mA/A + 300 μA  600 μA/A + 2 mA 1 mA/A + 2 mA 3.3 mA/A + 2 mA	Fluke 5500A	CMSCP-032, GIDEP or OEM



PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
DC Power – Source 33 mV to 1 020 V	(3.3 to 9) mA (9 to 33) mA (33 to 90) mA (90 to 330) mA (330 to 900) mA 900 mA to 2.2 A (2.2 to 4.5) A (4.5 to 11) A	0.04 % of Watts output 0.03 % of Watts output 0.04 % of Watts output 0.03 % of Watts output 0.08 % of Watts output 0.06 % of Watts output 0.12 % of Watts output 0.09 % of Watts output		
AC Power – Source (45 to 65) Hz	<b>(3.3 to 9) mA</b> (33 to 330) mV 330 mV to 1 020 V <b>(9 to 33) mA</b> (33 to 330) mV 330 mV to 1 020 V <b>(33 to 90) mA</b> (33 to 330) mV 330 mV to 1 020 V <b>(90 to 330) mA</b> (33 to 330) mV 330 mV to 1 020 V <b>(330 to 900) mA</b> (33 to 330) mV 330 mV to 1 020 V <b>900 mA to 1.5 A</b> (33 to 330) mV 330 mV to 1 020 V <b>(1.5 to 4.5) A</b> (33 to 330) mV 330 mV to 1 020 V <b>(4.5 to 11) A</b> (33 to 330) mV 330 mV to 1 020 V	0.4 % of Watts output 0.25 % of Watts output 0.25 % of Watts output 0.15 % of Watts output 0.35 % of Watts output 0.25 % of Watts output 0.25 % of Watts output 0.15 % of Watts output 0.25 % of Watts output 0.15 % of Watts output 0.35 % of Watts output 0.25 % of Watts output 0.25 % of Watts output 0.15 % of Watts output 0.35 % of Watts output 0.2 % of Watts output 0.25 % of Watts output 0.15 % of Watts output	Fluke 5500A	CMSCP-032, GIDEP or OEM
Resistance - Source	0 to 11 Ω (11 to 33) Ω (33 to 330) Ω 330 Ω to 3.3 kΩ (3.3 to 33) kΩ (33 to 110) kΩ (110 to 330) kΩ 330 kΩ to 3.3 MΩ (3.3 to 11) MΩ (11 to 33) MΩ (33 to 110) MΩ (110 to 330) MΩ	120 μΩ/Ω + 8 mΩ 120 μΩ/Ω + 15 mΩ 90 μΩ/Ω + 15 mΩ 90 μΩ/Ω + 60 mΩ 90 μΩ/Ω + 600 mΩ 110 μΩ/Ω + 6 Ω 120 μΩ/Ω + 6 Ω 150 μΩ/Ω + 55 Ω 600 μΩ/Ω + 550 Ω 1 mΩ/Ω + 550 Ω 5 mΩ/Ω + 5.5 kΩ 5 mΩ/Ω + 16.5 kΩ		

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Capacitance – Source				
50 Hz to 1 kHz	330 pF to 11 nF	5 mF/F + 10 pF		
50 Hz to 1 kHz	(11 to 110) nF	2.5 mF/F + 100 pF		
50 Hz to 1 kHz	(110 to 330) nF	2.5 mF/F + 300 pF		
50 Hz to 1 kHz	330 nF to 1.1 μF	2.5 mF/F + 1 nF		
50 Hz to 1 kHz	(1.1 to 3.3) μF	3.5 mF/F + 3 nF		
(50 to 400) Hz	(3.3 to 11) μF	3.5 mF/F + 10 nF		
(50 to 400) Hz	(11 to 33) μF	4 mF/F + 30 nF		
(50 to 200) Hz	(33 to 110) μF	5 mF/F + 100 nF		
(50 to 100) Hz	(110 to 330) μF	7 mF/F + 300 nF		
(50 to 100) Hz	330 μF to 1.1 mF	10 mF/F + 300 nF		
Electrical Simulation of Thermocouple Indicators *				
Type B	(600 to 800) °C	0.44 °C		
	(800 to 1 000) °C	0.34 °C		
	(1 000 to 1 550) °C	0.3 °C		
	(1 550 to 1 820) °C	0.33 °C		
Type C	(0 to 150) °C	0.3 °C		
	9150 TO 650) °C	0.26 °C		
	(650 TO 1 000) °C	0.31 °C		
	(1 000 TO 1 800) °C	0.5 °C	5500A	CMSCP-032, GIDEP or OEM
	(1 800 TO 2 316) °C	0.84 °C		
Type E	(-250 to -100) °C	0.5 °C		
	(-100 to -25) °C	0.16 °C		
	(-25 to 350) °C	0.14 °C		
	(350 to 650) °C	0.16 °C		
	(650 to 1 000) °C	0.21 °C		
Type J	(-210 to -100) °C	0.27 °C		
	(-100 to -30) °C	0.16 °C		
	(-30 to 150) °C	0.14 °C		
	(150 to 760) °C	0.17 °C		
	(760 to 1 200) °C	0.23 °C		
Type K	(-200 to -100) °C	0.33 °C		
	(-100 to -25) °C	0.18 °C		
	(-25 to 120) °C	0.16 °C		
	(120 to 1 000) °C	0.26 °C		
	(1 000 to 1 372) °C	0.4 °C		
Type L	(-200 to -100) °C	0.37 °C		
	(-100 to 800) °C	0.26 °C		



	(800 to 900) °C	0.17 °C		
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Electrical Simulation of Thermocouple Indicators * (cont.) Type N	(-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 410) °C (410 to 1 300) °C	0.4 °C 0.22 °C 0.19 °C 0.18 °C 0.27 °C		
Type R	(0 to 250) °C (250 to 400) °C (400 to 1 000) °C (1 000 to 1 767) °C	0.57 °C 0.36 °C 0.34 °C 0.40 °C		
Type S	(0 to 250) °C (250 to 1 000) °C (1 000 to 1 400) °C (1 400 to 1 767) °C	0.47 °C 0.36 °C 0.37 °C 0.46 °C		
Type T	(-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	0.63 °C 0.25 °C 0.17 °C 0.15 °C	5500A	CMSCP-032, GIDEP or OEM
Type U	(0 to 600) °C	0.27 °C		
Electrical Simulation of RTDs				
Pt 395, 100 Ω	(-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 400) °C (400 to 630) °C (630 to 800) °C	0.05 °C 0.05 °C 0.07 °C 0.09 °C 0.1 °C 0.12 °C 0.23 °C		
Pt 3926, 100 Ω	(-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 300) °C	0.05 °C 0.05 °C 0.07 °C 0.09 °C		



	(300 to 400) °C (400 to 630) °C	0.1 °C 0.12 °C		
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Electrical Simulation of RTDs (cont.) Pt 3916, 100 Ω	(-200 to -190) °C (-190 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 260) °C (260 to 300) °C (300 to 400) °C (400 to 600) °C (600 to 630) °C	0.25 °C 0.04 °C 0.05 °C 0.06 °C 0.07 °C 0.08 °C 0.09 °C 0.1 °C 0.23 °C	5500A	CMSCP-032, GIDEP or OEM
Pt 385, 200 Ω	(-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 260) °C (260 to 300) °C (300 to 400) °C (400 to 600) °C (600 to 630) °C	0.04 °C 0.04 °C 0.04 °C 0.05 °C 0.12 °C 0.13 °C 0.14 °C 0.16 °C		
Pt 385, 500 Ω	(-200 to -80) °C (-80 to 0) °C	0.04 °C 0.05 °C		



Pt 385, 1 k $\Omega$	(0 to 100) °C	0.05 °C		
	(100 to 260) °C	0.06 °C		
	(260 to 300) °C	0.08 °C		
	(300 to 400) °C	0.08 °C		
	(400 to 600) °C	0.09 °C		
	(600 to 630) °C	0.11 °C		
PtNi 385, 120 $\Omega$	(-200 to -80) °C	0.03 °C		
	(-80 to 0) °C	0.03 °C		
	(0 to 100) °C	0.04 °C		
	(100 to 260) °C	0.05 °C		
	(260 to 300) °C	0.06 °C		
	(300 to 400) °C	0.07 °C		
	(400 to 600) °C	0.07 °C		
	(600 to 630) °C	0.23 °C		
Cu 427, 10 $\Omega$	(-80 to 0) °C	0.08 °C		
	(0 to 100) °C	0.08 °C		
	(100 to 260) °C	0.14 °C		
	(-100 to 260) °C	0.3 °C		

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Oscilloscopes				
Amplitude – DC				
50 $\Omega$	(0 to 2.2) V	0.25 % + 100 $\mu$ V		
1 M $\Omega$	(0 to 33) V	0.25 % + 100 $\mu$ V		
Amplitude – Square Wave				
50 $\Omega$	1.8 mV to 2.2 V p-p	0.25 % + 100 $\mu$ V		
1 M $\Omega$	1.8 mV to 105 V p-p	0.25 % + 100 $\mu$ V		
Leveled Sine Wave (ref 50 kHz)	50 kHz reference	2 % + 200 $\mu$ V	Fluke 5500A - SC300	CMSCP-032, GIDEP or OEM
Amplitude	50 kHz to 100 MHz	3.5 % + 300 $\mu$ V		
	(100 to 300) MHz	4 % + 300 $\mu$ V		
Flatness	50 kHz to 100 MHz	1.5 % + 100 $\mu$ V		
	(100 to 300) MHz	2 % + 100 $\mu$ V		
Time Marker	5 s to 100 $\mu$ s	(25 + 1 000 <i>t</i> ) $\mu$ s/s		
	50 ms to 2 $\mu$ s	(25 + 15 000 <i>t</i> ) $\mu$ s/s		
	1 $\mu$ s to 2 ns	25 $\mu$ s/s		

Rise Time	≤ 300 ps	+0/-100 ps		
Flatness	100 kHz to 1.04 GHz	0.05 dB	HP 8657A	
Phase - Source	(10 to 65) Hz	0.4 °	Fluke 5500A - SC300	
	(65 to 500) Hz	1.5 °		
500 Hz to 1 kHz	5 °			
(1 to 5) kHz	6 °			
Frequency - Source	(5 to 10) kHz	10 °		
	0.01 Hz to 1.2 kHz	25 μHz/Hz + 1 mHz		
	(1.2 to 10) kHz	25 μHz/Hz + 1 mHz		
10 kHz to 2 MHz	25 μHz/Hz + 15 mHz			
Insulation Tester DC and AC	Up to 40 kV and 1 000 A	1.12 %	Fluke 45 with HV Probe and Decade Resistors	CMSCP-065, GIDEP or OEM
Power Supplies, Hypot Testers, Welders DC and AC *	Up to 40 kV And 1000A	1 %	Fluke 45 or HP 34401 With Shunts and Decade Resistors	CMSCP-040, GIDEP or OEM
Conductivity	All	1 %	Conductivity Standards	CMSCP-060, GIDEP or OEM

## II. Time & Frequency

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Stopwatches & Timers *	All Analog and Digital	Stopwatches 0.002 % Timers 0.006 %	Quartz Standard Stop Watch	CMSCP-049, GIDEP or OEM
Tachometers	Up to 100 000 RPM	0.51 % 1.17 %	HP200CD Wide Range Oscillator, Fluke 45, Digital Photo Tachometer	CMSCP-038, GIDEP or OEM
Photo Type Mechanical Type				

## III. Thermodynamic

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Ovens, Environmental Chambers, Freezers *	(0 to 2 501) °F (5 to 95) %RH	2.89 °F 2 %RH	Data Logger Thermocouple Calibrator Digital Psychrometer	CMSCP-013, AMS 2750D, GIDEP or OEM

Hygrometers, Hygrothermographs	(5 to 95) %RH	1 %	Environmental Chamber and Salt Solutions	CMSCP-033.1, NBS Technical Note Vol 81A No. 1, GIDEP or OEM
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#### IV. Mechanical

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Rockwell Hardness Testers *	Standard, Superficial, and All Scale	1 point	Hardness Standards A,B,C,E,N,T and Digital Load Checker	CMSCP-004, ASTM E-18
Micro Hardness Testers *	Vickers and Knoop	2 microns	Hardness Standards Vickers, Knoop Glass Scale	CMSCP-004, ASTM E-384
Brinell Hardness Testers *	Brinell	0.05 mm	Hardness Standards Brinell Load Cell Measure Scope	CMSCP-004, ASTM E-10
Durometer and Shore Hardness Tester *	Types A, D, M	0.725 point	Gage Blocks Digital Force Gage Fixture	CMSCP-043, ASTM D2240

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Force Gages *	(0 to 500) g 500 g to 5 kg (5 to 25) kg  (0 to 500) lb (500 to 10 000) lb	2.9 mg 20.4 mg 501 mg  2.6 g 0.17 %	Class F Weights Load Cells	CMSCP-015, NIST Handbook 44, GIDEP or OEM
Scales and Balances *	(0 to 500) g 500 g to 5 kg (5 to 25) kg  (0 to 500) lb	2.9 mg 20.4 mg 501 mg  2.6 g	Class F Weights	
Surface Roughness Gages and Specimens *	(10 to 120) $\mu$ in	3.13 $\mu$ in	Hommel Surface Tester	CMSCP-021, GIDEP or OEM
Mass	(0 to 500) g 500 g to 5 kg (5 to 25) kg	2.9 mg 20.4 mg 501 mg	Class F Weights	CMSCP-056, NIST Handbood 105-1, OEM



Torque Tools *	0.1 in-oz to 1 200 ft-lb	1%	Waters Torque Watch Calibrator Digital Torque Calibrator Load Cells	CMSCP-025, ASME B107.14M, GGG-W-686e, GIDEP or OEM
Torque Calibrators	0.1 in-oz to 1 200 ft-lb	0.5%	Torque Arms Class F Weights	CMSCP-025, ASME B107.14M, GGG-W-686e, GIDEP or OEM
Pressure and Vacuum Gages *	Up to 20 psi Up to 10 000 psi Up to 10 000 psi Up to 25 in Hg	0.00003 % 0.054 % 0.11 % 0.00007 %	Smart Manometer Omega Dro/ Transducer Dead Weight Tester Smart Manometer .	CMSCP-035, GIDEP or OEM

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Surface Plates *	12" x 12" and Larger Grades B, A, & AA	12.5 µin per sq ft	Autocollimator Repeat-o-meter	CMSCP-001, and GGG-P-463C
Bench Micrometers *	Up to 72"	9.24 µin/in	Grade 1 Gage Blocks Optical Parallels Laser	CMSCP-002, GIDEP or OEM
Linear Measuring Machines *	Up to 72"	9.02 µin/in		
Optical Comparators, Profile Projectors *	(5 to 60) in Screen X & Y Travel to 12 in	7.6 µin/in 8.7 µin/in	Glass Scales Magnification Scales Magnification Pins Precision Balls	CMSCP-003, GIDEP or OEM
Indicators *	(0 to 6) in	11.6 µin/in 30.6 µin/in 58.6 µin/in 289 µin/in 578 µin/in	Calibration Tester MAC-10 Calibrator Grade 2 Gage Blocks Surface Plate	CMSCP-005, A-A-2348, GIDEP or OEM
Calipers *	Up to 72 in	116 µin/in	Grade 2 Gage Blocks Ring Gages Surface Plate	CMSCP-006
Micrometers *	Up to 60 in	58 µin/in 58.2 µin/in 59.2 µin/in	Grade 2 Gage Blocks Ring Gages Surface Plate	CMSCP-007,



Point Ball Pitch Dial Head		57.8 $\mu\text{in/in}$ 57.9 $\mu\text{in/in}$ 116 $\mu\text{in/in}$ 59 $\mu\text{in/in}$ 61.2 $\mu\text{in/in}$	Optical Parallels Ball Gages  Heidenhein MT25	GGG-C-105c, OEM
Cylindrical Squares  Steel Magnetic Combination	(2 to 12) in	34.5 $\mu\text{in/in}$ 17 $\mu\text{in/in}$ 17 $\mu\text{in/in}$	Surface Plate Test Indicator Angle Plate Cylindrical Square	CMSCP-008, GGG-S-656e' OEM

## V. Dimensional

PARAMETER / EQUIPMENT	RANGE	BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Levels, Digital Protractors, and Inclinometers	(0 to 360) °	0.28 arc sec	Grade 2 Gage Blocks Surface Plate Sine Bar Autocollimator Angle Blocks	CMSCP-009, GIDEP or OEM
Optical Flats and Optical Parallels  Flatness Parallelism	(1 to 6) in (0 to 1) in	2.1 $\mu\text{in}$ 3.5 $\mu\text{in}$	6" Master Flat Optical Vernier Gage Block Comparator	CMSCP-010, GIDEP or OEM
Height Gages, Analog *  0.0005 in Resolution 0.001 in Resolution	(0 to 60) in	289 $\mu\text{in}$ 577.5 $\mu\text{in}$	Grade 2 Gage Blocks Surface Plate	CMSCP-011, GIDEP or OEM
Height Gages, Digital *  0.0005 in Resolution Height Squareness	(0 to 60) in	31.7 $\mu\text{in/in}$ 27.9 $\mu\text{in/in}$	Grade 2 Gage Blocks Surface Plate Test Indicator	CMSCP-011.5, GIDEP or OEM

Height Master * 0.00001 in Resolution 0.0001 in Resolution	(0 to 60) in	16.5 μin/12 in 61.4 μin/12 in	Grade 2 Gage Blocks Surface Plate Electronic Amplifier with Probe	CMSCP-012, GIDEP or OEM
Riser Blocks	10 in and 12 in	20.74 μin/12 in		
Block Stacks	(0 to 48) in	13.68 μin/12 in		
Electronic Gage, Dimensional Comparator *  0.000001 in Resolution 0.000005 in Resolution 0.00001 in Resolution	(0 to 6) in	5.3 μin 6 μin 7.8 μin	Grade 2 Gage Blocks Surface Plate	CMSCP-014, GIDEP or OEM
Toolmaker's Microscope, Video Scope *  0.00005 in Resolution 0.000010 in Resolution	(0 to 12) in Travel X, Y, and Z	71.18 μin/12 in 5.49 μin/12 in	Glass Scales Laser	CMSCP-016, GIDEP and OEM

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Autocollimator	(0 to 60) arc min	0.29 arc sec	Autocollimator Optical Wedge	CMSCP-022, GIDEP and OEM
Rotary Table, Dividing Heads, Ultradex *  Rotary Tilt	(0 to 60) ° (0 to 90) °	0.5 arc sec 1 arc sec	Autocollimator 12 Sided Polygon (30 degree)	CMSCP-024, GIDEP and OEM
Coordinate Measuring Machines *	(0 to 72) in  (0 to 30) ft	29 μin/in  28.9 μin/in	Granite Square Grade 2 Gage Blocks Ball Bar  Laser	CMSCP-026, ASME B89.4.1, OEM
Thread Wires	(0 to 1) in	7.6 μin	Light Wave Micrometer Microkator Master Wires	CMSCP-027, GGG-W-366b, ASME B89.1.17, OEM
Ring Gages, Bore Gage Rings	(0.062 to 12) in	7.1 μin/in 6.51 μin/in	I.D. Comparator	CMSCP-028, ASME B89.1.6M, OEM

			Mahr Measurement Machine	
Plug Gages, Deltronic Gages, and Disk Gages	(0.005 to 8) in	9.43 $\mu\text{in/in}$	Bench Micrometer Mahr Measurement Machine	CMSCP-030, AGD Standard, OEM
Gear Wires	(0.005 to 1) in diameter	7.64 $\mu\text{in}$	Bench Micrometer Mahr Measurement Machine Grade 2 Gage Blocks	CMSCP-041, GGG-W-366b, OEM
Thread Ring Gages (TPI = Threads Per Inch) (UN = Unified National F = Fine, C = Coarse)	#2 to 1 inch rings Class 2A & 3A UNF & UNC TPI	51.5 $\mu\text{in/in}$	Master Thread Setting Plugs	CMSCP-042, ASME B1.2, OEM
Angle Blocks	(0 to 45) °	0.49 arc sec	Autocollimator Grade A Master Angle Blocks	CMSCP-044, GIDEP or OEM
Thread Plug Gages	#2 to 10 in (4 to 100) TPI	12.4 $\mu\text{in/in}$	Bench Micrometer Mahr Measurement Machine Grade 2 Gage Blocks Grade A Thread Wire Set	CMSCP-045, ASME B1.2, OEM
Thread Ring Setting Master	#2 to 10 in (4 to 100) TPI	12.4 $\mu\text{in/in}$	Bench Micrometer Mahr Measurement Machine Grade 2 Gage Blocks	CMSCP-046, ASME B1.2, OEM4

<b>PARAMETER / EQUIPMENT</b>	<b>RANGE</b>	<b>BEST MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(+)]</b>	<b>REFERENCE STANDARD OR EQUIPMENT</b>	<b>METHOD(S)</b>
Calibration Testers	(0 to 2) in	6.1 $\mu\text{in/in}$	Laser Grade 2 Gage Blocks Electronic Amplifier with Probe	CMSCP-047, GIDEP or OEM
Indicator Calibrators	(0 to 2) in	29.4 $\mu\text{in/in}$		
Gage Blocks	(0.01 to 0.1) in (0.1 to 4) in (4 to 20) in	(3.5 + 1.1L) $\mu\text{in}$ (2.5 + 1.1L) $\mu\text{in}$ (10.5 + 0.5L) $\mu\text{in}$	Laser Comparator. Grades 1 and 2 Gage Blocks Optical Flat	CMSCP-050, GGG-G-15c, ASME B89.1.2M, OEM
Crimp Tools	All	58.1 $\mu\text{in}$	Pin Gages Point Micrometer	CMSCP-054, GIDEP or OEM
Repeat-O-Meters, Repeat Reading Gages	All	14.2 $\mu\text{in/in}$	Grade 2 Gage Blocks Surface Plate	CMSCP-057, OEM
Sunnen Gage Setting Fixtures *	(0 to 4) in	58 $\mu\text{in/in}$	Grade 2 Gage Blocks Optical Parallels	CMSCP-058, GIDEP or OEM
Sunnen Gages *	(0.375 to 4) in	30 $\mu\text{in/in}$	Ring Gages	CMSCP-059, GIDEP or OEM

Granite and Ceramic Squares	(2 to 24) in	14 $\mu\text{in}$	Autocollimator Parallel Mirror Surface Plate Optical Square	CMSCP-061, GIDEP or OEM
Straight Edges	(6 to 60) in	13.4 $\mu\text{in/in}$	Autocollimator Parallel Mirror Surface Plate Electronic Amplifier with Probe	CMSCP-071, GIDEP or OEM
Parallels	(6 to 60) in	14 $\mu\text{in/in}$		
Penta Prism, Optical Square	90 °	0.37 arc sec	Autocollimator Parallel Mirror Surface Plate	CMSCP-071, GIDEP or OEM

**Notes:**

1. *Best Measurement Uncertainties (Expanded Uncertainties) are based on approximately a 95% confidence interval, using a coverage of  $k=2$ .*
2. *This laboratory's capabilities include in-laboratory and (field) on-site calibration services. Since field conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected in the field (on-site) than what is reported on the accredited scope.*
3. *Parameters identified with an asterisk (\*) are available for field (on-site) calibration.*
4. *Best Measurement Capabilities displayed as percentage (%) are percent of reading unless indicated otherwise.*
5. *The use of (t) signifies an expression of Time in seconds.*
6. *The use of (L) signifies an expression of Length in inches.*
7. *This scope is part of and must be included with the Certificate of Accreditation No AC - 1376.*




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Vice President

