Thermo-Temp INCORPORATED
813-A Woodcrest Drive · Houston, Texas · 77018-2127
(713)695-1939 · Fax: (713)695-3001
http://www.thermotemp.com

Certificate Of Calibration

Calibrated for :P & B Testing
6645 West Tidwell
Houston Texas,77092

Report No:	122791	Calibration Interval:	1 Year
PO. No.:	86666	Calibration Date:	05/01/2024
Company No:	28	Calibration Due Date:	05/01/2025
Description:	Detroit Brinell	Serial No:	28
Model No:	LONG STROKE	Manufacturer:	Detroit
Temperature:	70°F	Humidity :	46.00 %RH
Cal. Procedure:	CP-02		

The standards used in this certification have measurement traceability to the International System of Units (SI), through National Metrology Institutes (NIST, PTB, NIM). The certifications were performed I.A.W Thermo-Temp, Inc. Quality Manual. The work instruction used for this calibration is indicated above. The certification was performed in accordance with one or more of the following specifications: ASTM E10-08, ASTM E103, ASTM E110. All uncertainties calculated in accordance with ASTM E10-08 are only a reference for the customer, and not considered an Accredited report. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor K = 2, providing a level of confidence of approximately 95 %. The results of this certification apply to only the equipment listed on this report, and do not carry any implication regarding long-term stability of the instrument.

Asset Requirements:

STANDARDS USED FOR CALIBRATION				
Manufacturer	Serial Number	Model Number	Calibration Due	Report Number
Sun-Tec	230105-14	HBW		230105-14
Sun-Tec	231102-68	HBW		231102-68
Sun-Tec	20121459	SBS-20	08/25/2024	124423
Morehouse Instrument	70281 / HD115	3000 KGF	08/10/2024	114810
Starrett	08423494	796XRL-1	08/23/2024	124343

NOTES:

CALIBRATION RESULTS
AS FOUND/AS LEFT CONDITION

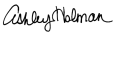
INDIRECT METHOD - TESTBLOCK 1									
Test Block				ACTUAL READINGS(mm)					AVERAGE
HBW	BALL	FORCE	INDENTATION						
179.00	10.00	3000.00	4.49	4.50	4.50	4.49			4.50
	REPEATABILITY(mm)			TEST BLOCK		4.49	ERROR		0.01
	0.01						TOLERANCE		5.37
	Tolerance	5.40		ACTUAL READINGS(HBW)					AVERAGE
	UNCERTAINTIES			178.54	178.54	179.38			178.82
	mm	HBW		TEST BLOCK		179.00	ERROR		0.18
	0.0183	1.5088							

Buck Snider

INDIRECT METHOD - TESTBLOCK 2									
Test Block				ACTUAL READINGS(mm)					AVERAGE
HBW	BALL	FORCE	INDENTATION						
420.00	10.00	3000.00	2.98	3.01	3.01	3.02			3.01
	REPEATABILITY(mm)			TEST BLOCK		2.98	ERROR		0.03
	0.01						TOLERANCE		12.60
	Tolerance	12.60		ACTUAL READINGS(HBW)					AVERAGE
	UNCERTAINTIES			411.82	411.82	409.03			410.89
	mm	HBW		TEST BLOCK		420.00	ERROR		9.11
	0.0146	4.2305							

DIRECT METHOD							
APPLIED LOAD IN KGF	INDENTER BALL SIZE IN mm	ACTUAL READINGS IN mm					AVERAGE
3000.000	10.00	0.3400	0.3400	0.3400			0.340
= 0.342		Proving Ring		0.3420	Error		-0.002

INDENTER BALL VERIFICATION (Batch ID#083012-RB)						
INDENTER BALL SIZE IN mm	ACTUAL READINGS IN mm					AVERAGE
10.0000	9.9990	9.9980	9.9980			9.9983

Calibration Performed By:			Certificate Authorized By:		
Jeromy Holman	Technician		Ashley Holman	5/2/2024	
Name	Title	Signature	Quality Control	Date	Signature