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## Certificate Of Calibration

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

Report No:	94995	Calibration Interval:	1 Year
PO. No.:	85615	Calibration Date:	06/02/2021
Company No:	28	Calibration Due Date:	06/02/2022
Description:	Detroit Brinell	Serial No:	28
Model No:	LONG STROKE	Manufacturer:	Detroit
Temperature:	74°F	Humidity :	50.00 %RH
Cal. Procedure:	FCP-5, Rev 2		

The standards used in this certification have measurement traceability to the International System of Units (SI). 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.

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Asset Requirements: 0

### STANDARDS USED FOR CALIBRATION

Manufacturer	Serial Number	Model Number	Calibration Due	Report Number
Sun-Tec	210127-9	HBW		210127-9
Sun-Tec	180925-21	HBW		180925-21
Sun-Tec	20121459	SBS-20	08/05/2021	92673
Morehouse Instrument	70282	3000 KGF	10/02/2021	81096
Starrett	UFK012	10MM	12/10/2023	73192

NOTES:

### CALIBRATION RESULTS AS FOUND/AS LEFT CONDITION

INDIRECT METHOD - TESTBLOCK 1									
Test Block				ACTUAL READINGS(mm)					AVERAGE
HBW	BALL	FORCE	INDENTATION						
222.00	10.00	3000.00	4.06	4.06	4.07	4.07			4.07
REPEATABILITY(mm)				TEST BLOCK	4.06	ERROR			0.01
0.01				TOLERANCE			6.66		
Tolerance		6.70		ACTUAL READINGS(HBW)					AVERAGE
UNCERTAINTIES				221.75	220.61	220.61			220.99
mm		HBW		TEST BLOCK		222.00	ERROR		1.01
0.0146		1.6815							

INDIRECT METHOD - TESTBLOCK 2										
Test Block				ACTUAL READINGS(mm)					AVERAGE	
HBW	BALL	FORCE	INDENTATION							
404.00	10.00	3000.00	3.04	3.05	3.05	3.05			3.05	
REPEATABILITY(mm)				TEST BLOCK		3.04		ERROR		0.01
0.00								TOLERANCE		12.12
Tolerance		12.10		ACTUAL READINGS(HBW)					AVERAGE	
UNCERTAINTIES				400.83	400.83	400.83			400.83	
mm		HBW		TEST BLOCK		404.00		ERROR		3.17
0.0130		3.5410								

DIRECT METHOD								
APPLIED LOAD IN KGF		INDENTER BALL SIZE IN mm		ACTUAL READINGS IN mm			AVERAGE	
3000.000		10.00		0.3410	0.3410	0.3410	0.341	
= 0.341				Proving Ring		0.3410	Error	0.000

INDENTER BALL VERIFICATION (Batch ID#083012-RB)						
INDENTER BALL SIZE IN mm	ACTUAL READINGS IN mm					AVERAGE
10.0000	9.9970	9.9980	9.9970			9.9973

Calibration Performed By:			Certificate Authorized By:		
Jeromy Holman	Technician		Kevin Green	6/3/2021	
Name	Title	Signature	Field Services Manager	Date	Signature