



PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Laboratory of:

Tri State Scale Systems, Inc.

191 Ontario Street, Frankfort, IL 60423

(Hereinafter called the Organization) and hereby declares that Organization is accredited in accordance with the recognized International Standard:

ISO/IEC 17025:2005

This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (as outlined by the joint ISO-ILAC-IAF Communiqué dated January 2009):

Calibration of Dimensional, Electrical, Mass, Force and Weighing Devices, Mechanical, Thermodynamic and Time & Frequency
(As detailed in the supplement)

Accreditation claims for such testing and/or calibration services shall only be made from addresses referenced within this certificate. This Accreditation is granted subject to the system rules governing the Accreditation referred to above, and the Organization hereby covenants with the Accreditation body's duty to observe and comply with the said rules.

For PJLA:

Initial Accreditation Date:

June 7, 2005

Issue Date:

July 1, 2016

Expiration Date:

July 31, 2018

Accreditation No.:

59187

Certificate No.:

L16-286

Tracy Szerszen
President/Operations Manager

Perry Johnson Laboratory
Accreditation, Inc. (PJLA)
755 W. Big Beaver, Suite 1325
Troy, Michigan 48084

The validity of this certificate is maintained through ongoing assessments based on a continuous accreditation cycle. The validity of this certificate should be confirmed through the PJLA website: www.pjilabs.com



Certificate of Accreditation: Supplement

Tri State Scale Systems, Inc.

191 Ontario Street, Frankfort, IL 60423
 Robert Schoenau Phone: 815-464-0099

Accreditation is granted to the facility to perform the following calibrations:

Dimensional

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Calipers: Outside ^{FO}	0.05 in to 36 in	(110 + 19L) μ m	Mitutoyo Gauge Blocks Mitutoyo Linear Standards
Calipers: Inside ^{FO}	0.5 in to 2 in	620 μ m	Mitutoyo/Ring Master Ring Gauge
Height Gauges ^{FO}	0.005 in to 24 in	(225 + 32L) μ m	Mitutoyo Gauge Blocks Mitutoyo Linear Standards
Micrometer: Outside ^{FO}	0.005 in to 24 in	(49 + 37L) μ m	Mitutoyo Gauge Blocks Mitutoyo Linear Standards
Micrometer: Inside ^{FO}	0.5 in to 2 in	98 μ m	Mitutoyo/Ring Master Ring Gauge
Indicators ^{FO}	0.05 in to 2 in	580 μ m	Mitutoyo Gauge Blocks
Pin Gauges ^{FO}	0.011 in to 1 in	85 μ m	Mitutoyo 293-761-30
Rules ^{FO}	Up to 39 in	(9 400 + 930L) μ m	Mitutoyo Gauge Blocks Mitutoyo Linear Standards
Tapes ^{FO}	Up to 360 in	(32 000+ 193L) μ m	Mitutoyo Gauge Blocks Mitutoyo Linear Standards

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Temperature Calibration Indication and Control Equipment used with Thermocouple Type E ^O	-230 °C to 1 000 °C	0.60 °C	Electrical Simulation of Thermocouple Output Omega CL-27
Temperature Calibration I Indication and Control Equipment used with Thermocouple Type J ^O	-210 °C to 1 000 °C	0.62 °C	
Temperature Calibration Indication and Control Equipment used with Thermocouple Type K ^O	-200 °C to 1 371 °C	0.67 °C	
Temperature Calibration Indication and Control Equipment used with Thermocouple Type T ^O	-200 °C to 400 °C	0.69 °C	



Certificate of Accreditation: Supplement

Tri State Scale Systems, Inc.

191 Ontario Street, Frankfort, IL 60423
Robert Schoenau Phone: 815-464-0099

Accreditation is granted to the facility to perform the following calibrations:

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Temperature Calibration Indication and Control Equipment used with RTD 100 Ω Pt 385 ^o	-200 $^{\circ}$ C to 850 $^{\circ}$ C	0.66 $^{\circ}$ C	Electrical Simulation of RTD Output Omega CL-27
Temperature Calibration Indication and Control Equipment used with RTD 1 000 Ω Pt 385 ^o	-200 $^{\circ}$ C to 850 $^{\circ}$ C	0.61 $^{\circ}$ C	

Mass, Force, and Weighing Devices

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Analytical Balances ^o	1 mg to 200 g Res = 0.1 mg	$(5.7 \times 10^{-5} + 1.6 \times 10^{-5}$ Wt) g	Class 1 Weight
Precision Balances ^o	1 g to 10 000 g Res = 0.01 g	$(6.5 \times 10^{-3} + 2.0 \times 10^{-5}$ Wt) g	
High Capacity Balances ^o	5 g to 75 000 g Res = 1 g	$(4.8 \times 10^{-2} + 1.9 \times 10^{-5}$ Wt) g	Class F Weights
Bench Scales ^o	0.005 lb to 500 lb Res = 0.001 lb	$(1.3 \times 10^{-4} + 1.8 \times 10^{-5}$ Wt) lb	
Floor, Tank, Crane Scales ^o	1 lb to 20 000 lb Res = 0.1 lb	$(1.8 \times 10^{-2} + 2.2 \times 10^{-4}$ Wt) lb	
Vehicle Scales ^o	100 lb to 200 000 lb Res = 20 lb	$(12 + 2.5 \times 10^{-4}$ Wt) lb	
Rail Scales ^o	200 lb to 200 000 lb Res = 50 lb	$(54 + 1.2 \times 10^{-4}$ Wt) lb	
Class F Test Weights ^F	50 mg	0.09 mg	Class 1 Weights Mettler Toledo AT 400
	100 mg	0.11 mg	
	200 mg	0.11 mg	
	500 mg	0.11 mg	
	1 g	0.11 mg	
	2 g	0.12 mg	
	3 g	0.13 mg	
	5 g	0.16 mg	
	10 g	0.26 mg	
	20 g	0.48 mg	
	50 g	1.2 mg	
	100 g	2.3 mg	
200 g	4.6 mg		



Certificate of Accreditation: Supplement

Tri State Scale Systems, Inc.

191 Ontario Street, Frankfort, IL 60423
Robert Schoenau Phone: 815-464-0099

Accreditation is granted to the facility to perform the following calibrations:

Mass, Force, and Weighing Devices

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Class F Test Weights ^F	500 g	15 mg	Class 1 Weights Sartorius FB6CCE
	1 kg	27 mg	
	2 kg	53 mg	
	3 kg	80 mg	
	5 kg	130 mg	
	10 kg	250 mg	Class 1 Weights Sartorius ISI10
	20 kg	430 mg	
	0.001 lb	2.9×10^{-7} lb	Class 2 Weights Mettler Toledo AT400
	0.002 lb	3.1×10^{-7} lb	
	0.005 lb	4.0×10^{-7} lb	
	0.01 lb	5.1×10^{-7} lb	
	0.02 lb	6.8×10^{-7} lb	
	0.05 lb	1.7×10^{-6} lb	
	0.1 lb	3.6×10^{-6} lb	
	0.2 lb	7.1×10^{-6} lb	
	0.5 lb	1.8×10^{-5} lb	
	1 lb	3.6×10^{-5} lb	
	2 lb	6.1×10^{-5} lb	
	3 lb	8.7×10^{-5} lb	
	5 lb	1.5×10^{-4} lb	
10 lb	2.8×10^{-4} lb		
20 lb	4.2×10^{-4} lb	Class 2 Weights Sartorius ISI10	
25 lb	5.0×10^{-4} lb		
50 lb	1.3×10^{-3} lb	Class 2 Weights GSE 455	
100 lb	2.3×10^{-3} lb		
500 lb	4.7×10^{-3} lb		

Mechanical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Indirect Verification of Rockwell Hardness Testers HRB ^O	30 HRB to 44 HRB	2.2 HRB	ASTM E 18 and Calibrated Rockwell Hardness Test Blocks
	44 HRB to 70 HRB	1.7 HRB	
	70 HRB to 100 HRB	1.6 HRB	
Indirect Verification of Rockwell Hardness Testers HRC ^O	20 HRC to 39 HRC	1.4 HRC	



Certificate of Accreditation: Supplement

Tri State Scale Systems, Inc.

191 Ontario Street, Frankfort, IL 60423
Robert Schoenau Phone: 815-464-0099

Accreditation is granted to the facility to perform the following calibrations:

Mechanical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Indirect Verification of Rockwell Hardness Testers HRC ^O	39 HRC to 60 HRC	1.4 HRC	ASTM E 18 and Calibrated Rockwell Hardness Test Blocks
	60 HRC to 70 HRC	0.86 HRC	
Pressure Gauges Transducers and Transmitters ^{FO}	-14.5 psi to 300 psi	0.35 psi	Druck DPI 610
	300 psi to 3 000 psi	1.2 psi	Druck DPI 705 PDCR 2200-2273 PDCR 2200-A145.
Force Gauge: Tension ^{FO}	0.5 lbf to 250 lbf	$(7.70 \times 10^{-2} + 7.70 \times 10^{-3} F)$ lbf	Class F Weights
Force Gauge: Compression ^{FO}	10 lbf to 10 000 lbf	$(2.50 + 1.80 \times 10^{-3} F)$ lbf	RL 9000 TWM-10k Load Cell
Torque Wrenches / Drivers ^{FO}	25 lbf•ft to 250 lbf•ft	1.7 lbf•ft	Futek TDF 600
	250 lbf•ft to 500 lbf•ft	2.3 lbf•ft	
Flow Indicators ^O	0.001 89 m ³ /m to 0.378 5 m ³ /m (0.5 gal/min to 100 gal/min)	0.24 % of Reading	Cole Parmer, Scale calibrated with Class F weights

Thermodynamic

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Thermometers ^{FO} Liquid in Glass	0 °C to 300 °C	1.1 °C	CL27, RTD Probe, Ice Bath
Digital Thermometer ^{FO}	0 °C to 300 °C	1.2 °C	CL27, RTD Probe, Dry Block, Ice Bath
Relative Humidity ^{FO}	10 % RH to 95 % RH	1.1 % RH	Omega RH 10

Time & Frequency

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Timers/Stopwatches ^{FO}	10 860 s to 86 400 s	0.7 s	Cole Parmer stopwatch
Digital/Mechanical Tachometer Direct or Reflective Pickup ^{FO}	20 rpm to 3 000 rpm	$(9.63 \times 10^{-2} + 3.37 \times 10^{-4} R)$ rpm	Indirect Verification Ametek 1965
	3 000 rpm to 5 000 rpm	$(1.50 + 1.90 \times 10^{-4} R)$ rpm	



Certificate of Accreditation: Supplement

Tri State Scale Systems, Inc.

191 Ontario Street, Frankfort, IL 60423
Robert Schoenau Phone: 815-464-0099

Accreditation is granted to the facility to perform the following calibrations:

1. The CMC (Calibration and Measurement Capability) stated for calibrations included on this scope of accreditation represents the smallest measurement uncertainty attainable by the laboratory when performing a more or less routine calibration of a nearly ideal device under nearly ideal conditions. It is typically expressed at a confidence level of 95 % using a coverage factor k (usually equal to 2). The actual measurement uncertainty associated with a specific calibration performed by the laboratory will typically be larger than the CMC for the same calibration since capability and performance of the device being calibrated and the conditions related to the calibration may reasonably be expected to deviate from ideal to some degree.
2. The laboratories range of calibration capability for all disciplines for which they are accredited is the interval from the smallest calibrated standard to the largest calibrated standard used in performing the calibration. The low end of this range must be an attainable value for which the laboratory has or has access to the standard referenced. Verification of an indicated value of zero in the absence of a standard is common practice in the procedure for many calibrations but by its definition it does not constitute calibration of zero capacity.
3. The presence of a superscript O means that the laboratory performs calibration of the indicated parameter onsite at customer locations. Example: Outside Micrometer^O would mean that the laboratory performs this calibration onsite at the customer's location.
4. The presence of a superscript FO means that the laboratory performs calibration of the indicated parameter both at its fixed location and onsite at customer locations. Example: Outside Micrometer^{FO} would mean that the laboratory performs this calibration at its fixed location and onsite at customer locations.
5. Measurement uncertainties obtained for calibrations performed at customer sites can be expected to be larger than the measurement uncertainties obtained at the laboratories fixed location for similar calibrations. This is due to the effects of transportation of the standards and equipment and upon environmental conditions at the customer site which are typically not controlled as closely as at the laboratories fixed location.
6. The term L represents measured length in inches.
7. The term R represents rate of revolution in rpm.
8. The term F represents applied force in units appropriate to the uncertainty statement.
9. The term S represents elapsed time in seconds.
10. The term Wt represents weight in pounds or grams (including SI multiple and submultiple units) appropriate to the uncertainty statement.