



Receipt Date: March 20, 2017
Cal. Date: March 20, 2017
Report Date: March 20, 2017

Report No.: 337431
Set Serial No.: None
Barcode: 200960

Calibration Certificate

ANDERSON INDUSTRIAL SCALES
4627 ROY LAKE RD
NISSWA, MN 56468-0629
Contact: James Johnson
Phone: 218-963-3960
PO Number: NONE
Procedure: NIST SOP 8
Technician ID: 11

Item(s) Submitted: 1-2500 lb & 1-3000 lb Weight Cart
Manufacturer: Anderson
Weight Type: NA
Equipment ID: None
Condition: Excellent
Temperature: 20.8 °C
Pressure: 741.2 mmHg
Relative Humidity: 49.1 %

Nominal Value	Serial No.	CM Correction (g)		NIST HB105-8 Tolerance		k	U (g)
		As Found	As Left	As Found	As Left		
2500 lb		935	15	*	Meets	2.06	60.
3000 lb		-68	-68	Meets	Meets	2.07	60.

* Weight(s) as found exceed NIST HB105-8 Class F tolerance.

The resulting tolerance class of the weight is determined by combining the correction of the weight and the uncertainty of the measurement. The corrections given above correlate to a conventional mass scale versus 8.0 g/cm³ density and an air density of 1.2 mg/cm³ at 20 °C. The items listed above have been calibrated using the Standards of the State of Minnesota which are currently in control. These standards are traceable to the SI through NIST. Calibration processes were monitored and found to be in control. All of the tolerances and specifications were evaluated according to NIST Handbook 105-8 (2003). Uncertainty calculations contain the components in NIST SOP 8 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (k) calculated at the approximate 95.45 % confidence level. Results apply to items identified in this report only.

Pete Whebbe

Pete Whebbe
Metrologist

Reviewed by:

Erik Alfvin

Erik Alfvin
Metrologist

Page 1 of 1

4 WM-16-698 Filed 03/29/2017 Pages: 12
Calibration report
Anderson Industrial Scales, Inc.

Receipt Date: March 22, 2017 Report No.: 337456
 Cal. Date: March 22, 2017 Set Serial No.: None
 Report Date: March 22, 2017 Barcode: 200963


Calibration Certificate

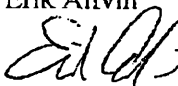
ANDERSON INDUSTRIAL SCALES
 4627 ROY LAKE RD
 NISSWA, MN 56468-0629
 Contact: James Johnson
 Phone: 218-963-3960
 PO Number: NONE
 Procedure: NIST SOP 8
 Technician ID: 11

Item(s) Submitted: Cast Cube Weights
 Manufacturer: Assorted
 Weight Type: II
 Equipment ID: None
 Condition: Good
 Temperature: 20.6 °C
 Pressure: 750.3 mmHg
 Relative Humidity: 50.9 %

Nominal Value	Serial No.	CM Correction (g)		NIST HB105-1 Class		k	U (g)
		As Found	As Left	As Found	As Left		
1000 lb		-27.2	-27.2	F	F	2.01	1.5
1000 lb		-34.2	-34.2	F	F	2.01	1.5
1000 lb		17.8	17.8	F	F	2.01	1.5
1000 lb		-0.2	-0.2	F	F	2.01	1.5
1000 lb		10.8	10.8	F	F	2.01	1.5
1000 lb		-10.2	-10.2	F	F	2.01	1.5
1000 lb		-2.2	-2.2	F	F	2.01	1.5
1000 lb		-36.2	-36.2	F	F	2.01	1.5
1000 lb		-21.2	-21.2	F	F	2.01	1.5
1000 lb		10.8	10.8	F	F	2.01	1.5

The resulting tolerance class of the weight is determined by combining the correction of the weight and the uncertainty of the measurement. The corrections given above correlate to a conventional mass scale versus 8.0 g/cm³ density and an air density of 1.2 mg/cm³ at 20 °C. The items listed above have been calibrated using the Standards of the State of Minnesota which are currently in control. These standards are traceable to the SI through NIST. Calibration processes were monitored and found to be in control. All of the tolerances and specifications were evaluated according to NIST Handbook 105-1 (1990). Uncertainty calculations contain the components in NIST SOP 8 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (k) calculated at the approximate 95.45 % confidence level. Results apply to items identified in this report only.

Pete Whebbe

 Metrologist

Reviewed by:
 Erik Alfvin

 Metrologist

Receipt Date: March 20, 2017 Report No.: 337432
 Cal. Date: March 20, 2017 Set Serial No.: None
 Report Date: March 20, 2017 Barcode: 200959

Calibration Certificate

ANDERSON INDUSTRIAL SCALES
 4627 ROY LAKE RD
 NISSWA, MN 56468-0629
 Contact: James Johnson
 Phone: 218-963-3960
 PO Number: NONE
 Procedure: NIST SOP 8
 Technician ID: 11

Item(s) Submitted: Cast Cube Weights
 Manufacturer: Rice Lake
 Weight Type: II
 Equipment ID: None
 Condition: Good
 Temperature: 20.6 °C
 Pressure: 741.2 mmHg
 Relative Humidity: 49.3 %

Nominal Value	Serial No.	CM Correction (g)		NIST HB105-1 Class		k	U (g)
		As Found	As Left	As Found	As Left		
1000 lb		3.8	3.8	F	F	2.01	1.5
1000 lb		27.8	27.8	F	F	2.01	1.5
1000 lb		2.8	2.8	F	F	2.01	1.5
1000 lb		32.8	32.8	F	F	2.01	1.5
1000 lb		11.8	11.8	F	F	2.01	1.5
1000 lb		28.8	28.8	F	F	2.01	1.5
1000 lb		15.8	15.8	F	F	2.01	1.5
1000 lb		14.8	14.8	F	F	2.01	1.5
1000 lb		33.8	33.8	F	F	2.01	1.5
1000 lb		38.8	38.8	F	F	2.01	1.5
1000 lb		16.8	16.8	F	F	2.01	1.5
1000 lb		21.8	21.8	F	F	2.01	1.5
1000 lb		25.8	25.8	F	F	2.01	1.5
1000 lb		34.8	34.8	F	F	2.01	1.5

The resulting tolerance class of the weight is determined by combining the correction of the weight and the uncertainty of the measurement. The corrections given above correlate to a conventional mass scale versus 8.0 g/cm³ density and an air density of 1.2 mg/cm³ at 20 °C. The items listed above have been calibrated using the Standards of the State of Minnesota which are currently in control. These standards are traceable to the SI through NIST. Calibration processes were monitored and found to be in control. All of the tolerances and specifications were evaluated according to NIST Handbook 105-1 (1990). Uncertainty calculations contain the components in NIST SOP 8 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (k) calculated at the approximate 95.45 % confidence level. Results apply to items identified in this report only.

Pete Whebbe

Metrologist



Reviewed by:

Erik Alfvén

Metrologist



Receipt Date: March 20, 2017
 Cal. Date: March 20, 2017
 Report Date: March 20, 2017

Report No.: 337433
 Set Serial No.: NONE
 Barcode: 200962

Calibration Certificate

ANDERSON INDUSTRIAL SCALES
 4627 ROY LAKE RD
 NISSWA, MN 56468-0629
 Contact: James Johnson
 Phone: 218-963-3960
 PO Number: NONE
 Procedure: NIST SOP 8
 Technician ID: 11

Item(s) Submitted: Cast Hand Weights
 Manufacturer: Rice Lake & Asst
 Weight Type: II
 Equipment ID: None
 Condition: Good
 Temperature: 21.1 °C
 Pressure: 740.7 mmHg
 Relative Humidity: 49.9 %

Nominal Value	Serial No.	CM Correction (mg)		NIST HB105-1 Class		k	U (mg)
		As Found	As Left	As Found	As Left		
50 lb		440	440	F	F	2.01	56
50 lb		-910	-910	F	F	2.01	56
50 lb		-340	-340	F	F	2.01	56
50 lb		-1740	-1740	F	F	2.01	56
50 lb		-390	-390	F	F	2.01	56
50 lb		-1010	-1010	F	F	2.01	56
50 lb		-450	-450	F	F	2.01	56
50 lb		-220	-220	F	F	2.01	56
50 lb		120	120	F	F	2.01	56
50 lb		-10	-10	F	F	2.01	56
50 lb		-1680	-1680	F	F	2.01	56
50 lb		-580	-580	F	F	2.01	56
50 lb		-1100	-1100	F	F	2.01	56
50 lb		-660	-660	F	F	2.01	56
50 lb		0	0	F	F	2.01	56
50 lb		-190	-190	F	F	2.01	56
50 lb		-880	-880	F	F	2.01	56
50 lb		-590	-590	F	F	2.01	56
50 lb		-580	-580	F	F	2.01	56
50 lb		-1410	-1410	F	F	2.01	56
50 lb		370	370	F	F	2.01	56
50 lb		-660	200	F	F	2.01	56
50 lb		1230	1230	F	F	2.01	56
50 lb		1170	1170	F	F	2.01	56
50 lb		640	640	F	F	2.01	56
50 lb		380	380	F	F	2.01	56
50 lb		-410	-410	F	F	2.01	56
50 lb		550	550	F	F	2.01	56
50 lb		620	620	F	F	2.01	56
50 lb		330	330	F	F	2.01	56

Receipt Date: March 20, 2017
Cal. Date: March 20, 2017
Report Date: March 20, 2017

Report No.: 337434
Set Serial No.: 1 thru 20
Barcode: 200961

Calibration Certificate

ANDERSON INDUSTRIAL SCALES
4627 ROY LAKE RD
NISSWA, MN 56468-0629
Contact: James Johnson
Phone: 218-963-3960
PO Number: NONE
Procedure: NIST SOP 8
Technician ID: 11

Item(s) Submitted: Cast Hand Weights
Manufacturer: Fairbanks
Weight Type: II
Equipment ID: None
Condition: Excellent
Temperature: 20.9 °C
Pressure: 741.2 mmHg
Relative Humidity: 49.6 %

Nominal Value	Serial No.	CM Correction (mg)		NIST HB105-1 Class		k	U (mg)
		As Found	As Left	As Found	As Left		
50 lb	1	90	90	F	F	2.01	56
50 lb	2	-2250	70	*	F	2.01	56
50 lb	3	-550	-550	F	F	2.01	56
50 lb	4	-1010	-1010	F	F	2.01	56
50 lb	5	-1070	-1070	F	F	2.01	56
50 lb	6	-360	-360	F	F	2.01	56
50 lb	7	-1170	-1170	F	F	2.01	56
50 lb	8	-1460	-1460	F	F	2.01	56
50 lb	9	-240	-240	F	F	2.01	56
50 lb	10	-1920	-1920	F	F	2.01	56
50 lb	11	-1270	-1270	F	F	2.01	56
50 lb	12	-550	-550	F	F	2.01	56
50 lb	13	-1020	-1020	F	F	2.01	56
50 lb	14	-1150	-1150	F	F	2.01	56
50 lb	15	-1330	-1330	F	F	2.01	56
50 lb	16	80	80	F	F	2.01	56
50 lb	17	-1370	-1370	F	F	2.01	56
50 lb	18	-2000	-2000	F	F	2.01	56
50 lb	19	-820	-820	F	F	2.01	56
50 lb	20	-660	-660	F	F	2.01	56

* Weight(s) as found exceed NIST Class F Tolerance.

The resulting tolerance class of the weight is determined by combining the correction of the weight and the uncertainty of the measurement. The corrections given above correlate to a conventional mass scale versus 8.0 g/cm³ density and an air density of 1.2 mg/cm³ at 20 °C. The items listed above have been calibrated using the Standards of the State of Minnesota which are currently in control. These standards are traceable to the SI through NIST. Calibration processes were monitored and found to be in control. All of the tolerances and specifications were evaluated according to NIST Handbook 105-1 (1990). Uncertainty calculations contain the components in NIST SOP 8 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (k) calculated at the approximate 95.45 % confidence level. Results apply to items identified in this report only.

Pete Whebbe

Pete Whebbe
Metrologist

Reviewed by:

Erik Alfvin
Erik Alfvin
Metrologist

Page 1 of 1



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Receipt Date: March 20, 2017
Cal. Date: March 20, 2017
Report Date: March 20, 2017

Report No.: 337433
Set Serial No.: NONE
Barcode: 200962

Continued

Calibration Certificate

ANDERSON INDUSTRIAL SCALES
4627 ROY LAKE RD
NISSWA, MN 56468-0629
Contact: James Johnson
Phone: 218-963-3960
PO Number: NONE
Procedure: NIST SOP 8
Technician ID: 11

Item(s) Submitted: Cast Hand Weights
Manufacturer: Rice Lake & Asst
Weight Type: II
Equipment ID: None
Condition: Good
Temperature: 21.1 °C
Pressure: 740.7 mmHg
Relative Humidity: 49.9 %

Nominal Value	Serial No.	CM Correction (mg)		NIST HB105-1 Class		k	U (mg)
		As Found	As Left	As Found	As Left		
50 lb		-570	-570	F	F	2.01	56
50 lb		760	760	F	F	2.01	56
50 lb		1480	1480	F	F	2.01	56
50 lb		730	730	F	F	2.01	56
50 lb		620	620	F	F	2.01	56
50 lb		-480	-480	F	F	2.01	56
50 lb		-80	-80	F	F	2.01	56
50 lb		-500	-500	F	F	2.01	56
50 lb		940	940	F	F	2.01	56
50 lb		1270	1270	F	F	2.01	56
25 lb		-1481	259	*	F	2.01	52
25 lb		59	59	F	F	2.01	52
25 lb		459	459	F	F	2.01	52
25 lb		-1461	199	*	F	2.01	52

* Weight(s) as found exceed NIST HB105-1 Class F tolerance.

The resulting tolerance class of the weight is determined by combining the correction of the weight and the uncertainty of the measurement. The corrections given above correlate to a conventional mass scale versus 8.0 g/cm³ density and an air density of 1.2 mg/cm³ at 20 °C. The items listed above have been calibrated using the Standards of the State of Minnesota which are currently in control. These standards are traceable to the SI through NIST. Calibration processes were monitored and found to be in control. All of the tolerances and specifications were evaluated according to NIST Handbook 105-1 (1990). Uncertainty calculations contain the components in NIST SOP 8 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (k) calculated at the approximate 95.45 % confidence level. Results apply to items identified in this report only.

Pete Whebbe

Pete J. Whebbe
Metrologist

Reviewed by:

Mark Nicollet

Mark Nicollet
Quality Manager

Receipt Date: March 20, 2017
 Cal. Date: March 21, 2017
 Report Date: March 21, 2017

Report No.: 337436
 Set Serial No.: SET 1, 56801
 Barcode: 019789

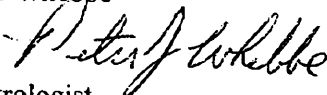
Calibration Certificate


ANDERSON INDUSTRIAL SCALES
 4627 ROY LAKE RD
 NISSWA, MN 56468-0629
 Contact: James Johnson
 Phone: 218-963-3960
 PO Number: NONE
 Procedure: NIST SOP 8
 Technician ID: 11

Item(s) Submitted: 30 lb Weight Kit
 Manufacturer: Rice Lake
 Weight Type: I & II
 Equipment ID: None
 Condition: Good
 Temperature: 19.2 °C
 Pressure: 744.9 mmHg
 Relative Humidity: 52.2 %

Nominal Value	Serial No.	CM Correction (mg)		NIST HB105-1 Class		k	U (mg)
		As Found	As Left	As Found	As Left		
10 lb		100	100	F	F	2.01	12
5 lb		91.4	91.4	F	F	2.01	6.0
2 lb		26.8	26.8	F	F	2.02	3.1
2 lb		36.0	36.0	F	F	2.02	3.1
1 lb		18.9	18.9	F	F	2.01	1.6
0.5 lb		15.5	15.5	F	F	2.02	1.3
0.2 lb		7.05	7.05	F	F	2.02	0.22
0.2 lb		7.68	7.68	F	F	2.02	0.22
0.1 lb		4.05	4.05	F	F	2.02	0.14
0.05 lb		1.72	1.72	F	F	2.02	0.11
0.02 lb		0.388	0.388	F	F	2.02	0.066
0.02 lb		0.123	0.123	F	F	2.02	0.066
0.01 lb		0.634	0.634	F	F	2.02	0.052
0.005 lb		0.621	0.621	F	F	2.02	0.073
0.002 lb		0.156	0.156	F	F	2.02	0.047
0.002 lb		-0.147	-0.147	F	F	2.02	0.047
0.001 lb		0.308	0.308	F	F	2.02	0.041

The resulting tolerance class of the weight is determined by combining the correction of the weight and the uncertainty of the measurement. The corrections given above correlate to a conventional mass scale versus 8.0 g/cm³ density and an air density of 1.2 mg/cm³ at 20 °C. The items listed above have been calibrated using the Standards of the State of Minnesota which are currently in control. These standards are traceable to the SI through NIST. Calibration processes were monitored and found to be in control. All of the tolerances and specifications were evaluated according to NIST Handbook 105-1 (1990). Uncertainty calculations contain the components in NIST SOP 8 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (k) calculated at the approximate 95.45 % confidence level. Results apply to items identified in this report only.

Pete Whebbe

 Metrologist

Reviewed by:
 Erik Alfvén

 Metrologist

Receipt Date: March 20, 2017
 Cal. Date: March 21, 2017
 Report Date: March 21, 2017

Report No.: 337437
 Set Serial No.: SET 2; 56468
 Barcode: 019790


Calibration Certificate


ANDERSON INDUSTRIAL SCALES
 4627 ROY LAKE RD
 NISSWA, MN 56468-0629
 Contact: James Johnson
 Phone: 218-963-3960
 PO Number: NONE
 Procedure: NIST SOP 8
 Technician ID: 11

Item(s) Submitted: 30 lb Weight Kit
 Manufacturer: Rice Lake
 Weight Type: I & II
 Equipment ID: None
 Condition: Good
 Temperature: 18.8 °C
 Pressure: 745.8 mmHg
 Relative Humidity: 48.1 %

Nominal Value	Serial No.	CM Correction (mg)		NIST HB105-1 Class		k	U (mg)
		As Found	As Left	As Found	As Left		
10 lb		130	130	F	F	2.01	12
5 lb		48.4	48.4	F	F	2.01	6.0
2 lb		12.4	12.4	F	F	2.02	3.1
2 lb		28.0	28.0	F	F	2.02	3.1
1 lb		23.2	23.2	F	F	2.01	1.6
0.5 lb		4.6	4.6	F	F	2.02	1.3
0.2 lb		4.75	4.75	F	F	2.02	0.22
0.2 lb		2.29	2.29	F	F	2.02	0.22
0.1 lb		4.55	4.55	F	F	2.02	0.14
0.05 lb		0.45	0.45	F	F	2.02	0.11
0.02 lb		0.313	0.313	F	F	2.02	0.066
0.02 lb		0.760	0.760	F	F	2.02	0.066
0.01 lb		1.036	1.036	F	F	2.02	0.052
0.005 lb		0.389	0.389	F	F	2.02	0.073
0.002 lb		0.229	0.229	F	F	2.02	0.047
0.002 lb		0.126	0.126	F	F	2.02	0.047
0.001 lb		0.529	0.529	F	F	2.02	0.041

The resulting tolerance class of the weight is determined by combining the correction of the weight and the uncertainty of the measurement. The corrections given above correlate to a conventional mass scale versus 8.0 g/cm³ density and an air density of 1.2 mg/cm³ at 20 °C. The items listed above have been calibrated using the Standards of the State of Minnesota which are currently in control. These standards are traceable to the SI through NIST. Calibration processes were monitored and found to be in control. All of the tolerances and specifications were evaluated according to NIST Handbook 105-1 (1990). Uncertainty calculations contain the components in NIST SOP 8 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (k) calculated at the approximate 95.45 % confidence level. Results apply to items identified in this report only.

Pete Whebbe

 Metrologist

Reviewed by:
 Erik Alfvin

 Metrologist

Receipt Date: March 20, 2017
 Cal. Date: March 20, 2017
 Report Date: March 20, 2017

Report No.: 337435
 Set Serial No.: Set 5
 Barcode: 019787

Calibration Certificate

ANDERSON INDUSTRIAL SCALES
 4627 ROY LAKE RD
 NISSWA, MN 56468-0629
 Contact: James Johnson
 Phone: 218-963-3960
 PO Number: NONE
 Procedure: NIST SOP 8
 Technician ID: 11

Item(s) Submitted: Satin Stainless Metric Weight Kit
 Manufacturer: Rice Lake
 Weight Type: I & II
 Equipment ID: None
 Condition: Good
 Temperature: 18.9 °C
 Pressure: 740.6 mmHg
 Relative Humidity: 56.3 %

Nominal Value	Serial No.	CM Correction (mg)		ASTM E617 Class		k	U (mg)
		As Found	As Left	As Found	As Left		
1000 g		33.5	33.5	5	5	2.03	2.5
500 g		19.3	19.3	5	5	2.02	2.0
200 g		7.01	7.01	5	5	2.02	0.55
200 g		7.16	7.16	5	5	2.02	0.55
100 g		0.70	0.70	4	4	2.02	0.25
50 g		0.41	0.41	4	4	2.03	0.16
20 g		1.35	1.35	5	5	2.03	0.11
20 g		0.49	0.49	4	4	2.03	0.11
10 g		0.349	0.349	4	4	2.03	0.072
5 g		0.330	0.330	5	5	2.03	0.054
2 g		0.490	0.490	5	5	2.03	0.048
2 g		0.314	0.314	5	5	2.03	0.048
1 g		0.166	0.166	5	5	2.03	0.039

Receipt Date: March 20, 2017
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Report No.: 337435
 Set Serial No.: Set 5
 Barcode: 019787

Continued,
 337435
 Set 5
 019787

Calibration Certificate

ANDERSON INDUSTRIAL SCALES
 4627 ROY LAKE RD
 NISSWA, MN 56468-0629
 Contact: James Johnson
 Phone: 218-963-3960
 PO Number: NONE
 Procedure: NIST SOP 8
 Technician ID: 11

Item(s) Submitted: Satin Stainless Metric Weight Kit
 Manufacturer: Rice Lake
 Weight Type: 1 & II
 Equipment ID: None
 Condition: Good
 Temperature: 18.9 °C
 Pressure: 740.6 mmHg
 Relative Humidity: 56.3 %

Nominal Value	Serial No.	CM Correction (mg)		ASTM E617 Class		k	U (mg)
		As Found	As Left	As Found	As Left		
0.5 g		0.123	0.123	4	4	2.06	0.021
0.2 g		0.228	0.228	5	5	2.06	0.016
0.2 g		0.178	0.178	5	5	2.06	0.016
0.1 g		0.103	0.103	5	5	2.06	0.015
0.05 g		0.103	0.103	5	5	2.06	0.011
-0.02 g		0.0645	0.0645	5	5	2.06	0.0092
0.02 g		0.0425	0.0425	4	4	2.06	0.0092
0.01 g		-0.0076	-0.0076	4	4	2.05	0.0086
0.005 g		0.0321	0.0321	4	4	2.11	0.0074
0.002 g		-0.0124	-0.0124	4	4	2.11	0.0068

The resulting tolerance class of the weight is determined by combining the correction of the weight and the uncertainty of the measurement. The corrections given above correlate to a conventional mass scale versus 8.0 g/cm³ density and an air density of 1.2 mg/cm³ at 20 °C. The items listed above have been calibrated using the Standards of the State of Minnesota which are currently in control. These standards are traceable to the SI through NIST. Calibration processes were monitored and found to be in control. All of the tolerances and specifications were evaluated according to ASTM E617 (2013). Uncertainty calculations contain the components in NIST SOP 8 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (k) calculated at the approximate 95.45 % confidence level. Results apply to

Pete Whebbe

Pete Whebbe
 Metrologist

Reviewed by:

Mark Nicollet

Mark Nicollet
 Quality Manager



Receipt Date: March 20, 2017
 Cal. Date: March 21, 2017
 Report Date: March 21, 2017

Report No.: 337438
 Set Serial No.: None
 Barcode: 202013


Calibration Certificate

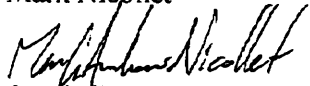
ANDERSON INDUSTRIAL SCALES
 4627 ROY LAKE RD
 NISSWA, MN 56468-0629
 Contact: James Johnson
 Phone: 218-963-3960
 PO Number: NONE
 Procedure: NIST SOP 8
 Technician ID: 11

Item(s) Submitted: Cast Hand Weights
 Manufacturer: Rice Lake
 Weight Type: II
 Equipment ID: None
 Condition: Excellent
 Temperature: 20.0 °C
 Pressure: 746.8 mmHg
 Relative Humidity: 48.4 %

Nominal Value	Serial No.	CM Correction (mg)		ASTM E617 Class		k	U (mg)
		As Found	As Left	As Found	As Left		
10000 g		641	641	6	6	2.09	38
5000 g		235	235	5	5	2.05	13

The resulting tolerance class of the weight is determined by combining the correction of the weight and the uncertainty of the measurement. The corrections given above correlate to a conventional mass scale versus 8.0 g/cm³ density and an air density of 1.2 mg/cm³ at 20 °C. The items listed above have been calibrated using the Standards of the State of Minnesota which are currently in control. These standards are traceable to the SI through NIST. Calibration processes were monitored and found to be in control. All of the tolerances and specifications were evaluated according to ASTM E617 (2013). Uncertainty calculations contain the components in NIST SOP 8 and conform to the ISO/IEC Guide to the Expression of Uncertainty in Measurement (2008), including coverage factors (k) calculated at the approximate 95.45 % confidence level. Results apply to items identified in this report only.

Pete Whebbe

 Metrologist

Reviewed by:
 Mark Nicollet

 Quality Manager



Accredited by the National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under lab code 105003. This report may not be used to claim product endorsement by NVLAP or any other government agency, and may not be reproduced, except in full, without written approval from the laboratory.

United States Department of Commerce

National Institute of Standards and Technology

Certificate of Metrological Traceability For:

Minnesota

This laboratory has demonstrated evidence of an unbroken chain of metrological traceability of its standards to the international system of units (SI), documented measurement uncertainties, uses documented measurement procedures, successfully completed training and proficiency tests, documented calibration intervals, submitted a quality management system, and demonstrated suitable measurement assurance for the Scope listed on this certificate.


The Office of Weights and Measures Program assesses laboratories to NIST Handbook 143 - Program Handbook for State Weights and Measures Laboratories and ISO/IEC 17025:2005.

Scope

Mass Echelon I 10 kg to 1 mg	Mass Echelon III 50 kg to 1 mg 5000 lb to 0.001 lb	Volume Gravimetric, I 20 L to 10 mL 100 gal to 0.25 qt
Mass Echelon II 50 kg to 1 mg 1000 lb to 0.001 lb 4 oz to 0.03125 oz	Volume Transfer, II 1500 gal to 5 gal 100 gal to 25 gal LPG	
	Weight Carts 10 000 lb to 2000 lb	
	Wheel Load Weighers 20 000 lb to 2000 lb	
	Railroad Test Cars 110 000 lb to 80 000 lb	



2017


Georgia L. Harris, Acting Chief
NIST Office of Weights and Measures

Effective Dates: 2017-01-01 to 2017-12-31

Amended: 2016-12-31

Scope modified for 2017.