

# Calibration Certificate of Mass

Calibration Date: July 26, 2017

Certificate Number: 2017-010-1

**Submitted By:** FSCP Area 60  
254 E 14 th St  
Wahoo, NE 68066

**Point of Contact:** Todd Blaske  
Ph. 402-430-5732  
**email:** www.nda.gov  
**PO Number:**

**Test Item:** 31 lb weight kit  
**Serial Number:** 14A9  
**Manufacture:** Tromner  
**Condition:** Good (some wear)

**Artifact(s) Description:**

**Date Received:** July 20, 2017  
**ID / Asset Number:** N/A  
**Class Specification:** NIST Class F  
**Material:** SS

**Reference Standards Used:**

**Procedure Used:**

**Equipment Used:**

NSL lb standards  
Rice Lake NSL-WK

NIST HB 6969, SOP 8  
**Metrologist:**  
JPL

Sartorius CC 1201 Sartorius CCE6  
Mettler AT 106

**Environmental Cond.** Temp: 22.8 °C Pressure: 763.27 mmHg Relative Humidity: 49 %

**Pertinent Information**

- The artifact(s) listed in this document have been found and/or left within the maximum permissible error for the specification stated above, except as noted. An artifact is considered in-compliance when the correction plus the measurement uncertainty is equal to or less than the maximum permissible error. RED print indicates an out-of-compliance reading.
- All corrections stated in this report correlate to a "Conventional Mass" (CM), also known as "apparent mass", scale verses 8.0 g/cm<sup>3</sup> reference mass density and an air density of 1.2 mg/cm<sup>3</sup> at 20 °C.

**Traceability Statement**

The artifact(s) described in this certificate have been compared to the Standards of the State of Nebraska. The Standards of the State of Nebraska are traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST) and are part of a comprehensive measurement assurance program for ensuring continued accuracy and measurement traceability within the level of uncertainty reported by this laboratory. The calibration number for this certificate is the only unique calibration number to be used in referencing measurement traceability for the artifact(s) described in this certificate.

**Uncertainty Statement**

The combined standard uncertainty includes uncertainties reported for the standard, uncertainties associated with the measurement process, uncertainties for any observed deviations from reference values which are less than surveillance limits and the standard uncertainty for any uncorrected errors associated with air buoyance corrections. The combined standard uncertainty is multiplied by a coverage factor (*k*), to give the expanded uncertainty, which defines an interval with a 95.45 percent level of confidence. The expanded uncertainty presented in this report is consistent with the *Guide to the Expression of Uncertainty in Measurement (2008, revised 2012)*. Some components of the calibration can be evaluated through a Type A evaluation, or the method of evaluation of uncertainty by the statistical analysis (standard deviation) from the observations taken. Magnetic testing has not been performed, therefore, there are no components for the effects of it in the uncertainty budget.

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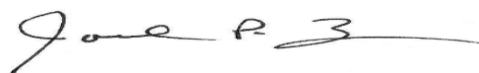
### Calibration Results

Nominal Mass	Serial Number / ID	As Found Conventional Mass Correction (g)	Adjusted (Y/N)	As Left Conventional Mass Correction (g)	Uncertainty ± (g)	(k) factor	NIST Class F MPE ± (g)	Assumed Density (g/cm <sup>3</sup> )
2 lb	1	-0.058	n	-0.058	0.011	2	0.091	7.84
2 lb	2	-0.016	n	-0.016	0.011	2	0.091	7.84
2 lb	3	-0.060	n	-0.060	0.011	2	0.091	7.84
2 lb	4	-0.024	n	-0.024	0.011	2	0.091	7.84
2 lb	5	-0.041	n	-0.041	0.011	2	0.091	7.84
2 lb	6	-0.028	n	-0.028	0.011	2	0.091	7.84
2 lb	7	-0.014	n	-0.014	0.011	2	0.091	7.84
2 lb	8	-0.028	n	-0.028	0.011	2	0.091	7.84
2 lb	9	-0.057	n	-0.057	0.011	2	0.091	7.84
2 lb	10	0.002	n	0.002	0.011	2	0.091	7.84
2 lb	11	-0.018	n	-0.018	0.011	2	0.091	7.84
2 lb	12	-0.040	n	-0.040	0.011	2	0.091	7.84
2 lb	13	-0.057	n	-0.057	0.011	2	0.091	7.84
2 lb	14	-0.036	n	-0.036	0.011	2	0.091	7.84
1 lb	15	-0.0157	n	-0.0157	0.0083	2	0.07	7.84
1 lb	16	-0.0250	n	-0.0250	0.0083	2	0.07	7.84
8 oz		0.0139	n	0.0139	0.0054	2	0.045	7.94
4 oz		0.0092	n	0.0092	0.0028	2	0.023	7.84
2 oz		-0.0003	n	-0.0003	0.0013	2	0.011	7.84
1 oz		-0.00008	n	-0.00008	0.00064	2	0.0054	7.84
1/2 oz		-0.00018	n	-0.00018	0.00035	2.001	0.0028	7.84
1/4 oz		0.00082	n	0.00082	0.00021	2	0.0017	7.84
1/8 oz		-0.00056	n	-0.00056	0.00016	2	0.0013	7.84
1/16 oz		0.00051	n	0.00051	0.00013	2	0.0011	7.84
1/16 oz	*	0.00064	n	0.00064	0.00013	2	0.0011	7.84
0.3 lb		-0.0086	n	-0.0086	0.0032	2	0.027	7.84
0.2 lb		-0.0032	n	-0.0032	0.0022	2	0.018	7.84
0.1 lb		-0.0027	n	-0.0027	0.0011	2	0.0091	7.84
0.05 lb		0.00194	n	0.00194	0.00054	2	0.0045	7.84
0.03 lb		-0.00212	n	-0.00212	0.00032	2	0.0027	7.84
0.02 lb		0.00045	n	0.00045	0.00022	2	0.0018	7.84
0.01 lb		-0.00070	n	-0.00070	0.00018	2	0.0015	7.84
0.005 lb		0.00002	n	0.00002	0.00015	2	0.0012	2.7
0.003 lb		-0.00060	n	-0.00060	0.00012	2	0.00099	2.7
0.002 lb		-0.00048	n	-0.00048	0.00011	2	0.00087	2.7
0.001 lb		0.000181	n	0.000181	0.000083	2	0.0007	2.7
0.001 lb	*	-0.000189	n	-0.000189	0.000083	2	0.0007	2.7

#### Conversion Factors

1 ounce (avoirdupois) (oz) = 28.349 52 g

1 pound (avoirdupois) (lb) = 453.592 37 g exactly



Joel P. Lavicky Metrologist

7/31/2017

Date of Issue

The results in this certificate only applies to those item specifically listed in this certificate. This certificate cannot be considered complete unless it contains all pages. This document may not be reproduced except in full, without the written consent of the Nebraska Standards Laboratory.

## Calibration Certificate of Mass

**Calibration Date:** July 24, 2017

**Certificate Number:** 2017-010-3

**Submitted By:** FSCP Area 60  
254 E 14 th St  
Wahoo, NE 68066

**Point of Contact:** Todd Blaske  
Ph. 402-430-5732  
**email:** [www.nda.gov](http://www.nda.gov)  
**PO Number:**

<b>Test Item:</b> 1-4 kg, 2-15 lb, 20-25 lb weights	<b>Artifact(s) Description:</b>	<b>Date Received:</b> July 20, 2017
<b>Serial Number:</b> see below		<b>ID / Asset Number:</b> N/A
<b>Manufacture:</b> Tromner		<b>Class Specification:</b> NIST Class F
<b>Condition:</b> Good (some wear)		<b>Material:</b> SS & CI

**Reference Standards Used:**

**Procedure Used:**

**Equipment Used:**

NSL lb standards  
Rice Lake NSL-WK

NIST HB 6969, SOP 8  
**Metrologist:**  
JPL

Sartorius CC100005  
Mettler KA30-3

**Environmental Cond.**    **Temp:** 22.8 °C    **Pressure:** 763.651 mmHg    **Relative Humidity:** 50.5 %

**Pertinent Information**

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- All corrections stated in this report correlate to a "Conventional Mass" (CM), also known as "apparent mass", scale verses 8.0 g/cm<sup>3</sup> reference mass density and an air density of 1.2 mg/cm<sup>3</sup> at 20 °C.

**Traceability Statement**

The artifact(s) described in this certificate have been compared to the Standards of the State of Nebraska. The Standards of the State of Nebraska are traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST) and are part of a comprehensive measurement assurance program for ensuring continued accuracy and measurement traceability within the level of uncertainty reported by this laboratory. The calibration number for this certificate is the only unique calibration number to be used in referencing measurement traceability for the artifact(s) described in this certificate.

**Uncertainty Statement**

The combined standard uncertainty includes uncertainties reported for the standard, uncertainties associated with the measurement process, uncertainties for any observed deviations from reference values which are less than surveillance limits and the standard uncertainty for any uncorrected errors associated with air buoyance corrections. The combined standard uncertainty is multiplied by a coverage factor (*k*), to give the expanded uncertainty, which defines an interval with a 95.45 percent level of confidence. The expanded uncertainty presented in this report is consistent with the *Guide to the Expression of Uncertainty in Measurement (2008, revised 2012)*. Some components of the calibration can be evaluated through a Type A evaluation, or the method of evaluation of uncertainty by the statistical analysis (standard deviation) from the observations taken. Magnetic testing has not been performed, therefore, there are no components for the effects of it in the uncertainty budget.

Calibration Date: July 24, 2017

Certificate Number: 2017-010-3

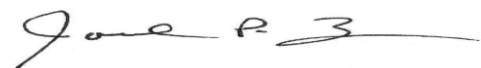
### Calibration Results

Nominal Mass	Serial Number / ID	As Found Conventional Mass Correction (g)	Adjusted (Y/N)	As Left Conventional Mass Correction (g)	Uncertainty ± (g)	(k) factor	NIST Class F MPE ± (g)	Assumed Density (g/cm <sup>3</sup> )
4 kg	WM-8	0.058	n	0.058	0.048	2	0.4	7.84
15 lb	WM15-15	0.741	y	0.390	0.081	2	0.68	7.2
15 lb	WM15-16	0.794	y	0.421	0.081	2	0.68	7.2
25 lb	WM25-25	1.94	y	0.36	0.14	2	1.1	7.2
25 lb	WM25-32	1.62	y	0.84	0.14	2	1.1	7.2
25 lb	WM25-36	1.74	y	0.36	0.14	2	1.1	7.2
25 lb	WM25-51	0.47	n	0.47	0.14	2	1.1	7.2
25 lb	WM25-52	1.65	y	0.31	0.14	2	1.1	7.2
25 lb	WM25-53	2.08	y	0.07	0.14	2	1.1	7.2
25 lb	WM25-40	0.94	n	0.94	0.14	2	1.1	7.2
25 lb	WM25-105	2.10	y	0.13	0.14	2	1.1	7.2
25 lb	WM25-107	1.88	y	0.94	0.14	2	1.1	7.2
25 lb	WM25-108	2.07	y	0.66	0.14	2	1.1	7.2
25 lb	WM25-109	1.55	y	0.53	0.14	2	1.1	7.2
25 lb	WM25-111	1.21	y	-0.62	0.14	2	1.1	7.2
25 lb	WM25-112	1.46	y	-0.09	0.14	2	1.1	7.2
25 lb	WM25-120	1.17	y	-0.60	0.14	2	1.1	7.2
25 lb	WM25-123	1.74	y	0.27	0.14	2	1.1	7.2
25 lb	WM25-126	0.79	n	0.79	0.14	2	1.1	7.2
25 lb	WM25-128	2.42	y	0.39	0.14	2	1.1	7.2
25 lb	WM25-129	1.55	y	0.85	0.14	2	1.1	7.2
25 lb	WM25-130	1.08	y	0.06	0.14	2	1.1	7.2
25 lb	WM25-134	1.40	y	0.36	0.14	2	1.1	7.2

#### Conversion Factors

1 ounce (avoirdupois) (oz) = 28.349 52 g

1 pound (avoirdupois) (lb) = 453.592 37 g exactly



Joel P. Lavicky Metrologist

8/1/2017

Date of Issue

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Calibration Date: 7/21/2017

**Certificate of Calibration  
of Volume Transfer**

Certificate Number: 2017-010-4

**Items Submitted:**

Quantity	Nominal Volume	Manufacturer	Type
2	5 gal	Seraphin	3" Neck Test Measure

**Submitted By:** FSCP Area 60  
254 E 14 th st.  
Wahoo, NE 68066

**POC:** Todd Blaske  
402-430-5732  
[www.nda.gov](http://www.nda.gov)

**Test Results**

Nominal Volume	Serial Number	Material	Cubical Coefficient of Expansion (°F)	As Found Volume Delivered @ 60 °F	As left Volume Delivered @ 60 °F	Uncertainty (U)	(k)
5 gal	06-01161	SS	0.0000265	5.00172 gal	5.00172 gal	0.00065 gal	2.05
5 gal	06-01165	SS	0.0000265	5.00114 gal	5.00114 gal	0.00065 gal	2.05

The data in this report only applies to those items specifically listed on this report.

Volume delivered at 60°F after a 30 second pour and 10 second drain for test measures. For provers and a 30 second drain time would apply.

**Conversion Factors:**

1 gal = 231 in<sup>3</sup>  
1 gal = 3.785 412 E-03 m<sup>3</sup>

**Traceability Statement:**

The artifact(s) described in this report have been compared to the Standards of the State of Nebraska. The Standards of the State of Nebraska are traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST) and are part of a comprehensive measurement assurance program for ensuring continued accuracy and measurement traceability within the level of uncertainty reported by this laboratory. The calibration number for this report is the only unique calibration number to be used in referencing measurement traceability for the artifact(s) described in this report.

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**Pertinent Information:**

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**Condition of Item(s) Submitted for Calibration:**

Minor wear

**Laboratory Reference Standard Used:**

5 gallon Slicker Plate Standard S/N NE1586

**Treatment of Item(s) before Calibration:**

Item(s) were tested as found

**Procedure Used:**

NISTIR 7383 (2017), SOP 19

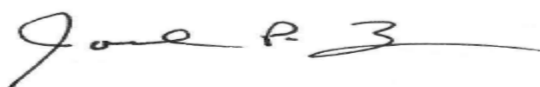
**Environmental conditions at time of calibration:**

Temp °C	25.9	Humidity %	43.5
Pressure mmHg	759.71		

**Water temperature at time of calibration:**

67.11 °F

**Date Submitted:** 7/20/2017



Joel P. Lavicky, Metrologist

7/21/2017

Date:

Calibration Date: 7/21/2017

**Certificate of Calibration  
of Volume Transfer**

Certificate Number: 2017-010-5

**Items Submitted:**

Quantity	Nominal Volume	Manufacturer	Type
3	5 gal	Seraphin	Special J bottom drain prover

Submitted By: FSCP Area 60  
254 E 14 th st.  
Wahoo, NE 68066

POC: Todd Blaske  
402-430-5732  
[www.nda.gov](http://www.nda.gov)

**Test Results**

Nominal Volume	Serial Number	Material	Cubical Coefficient of Expansion (°F)	As Found Volume Delivered @ 60 °F	As left Volume Delivered @ 60 °F	Uncertainty (U)	(k)
5 gal	05-41610-3	SS	0.0000265	5.00085 gal	5.00085 gal	0.00065 gal	2.05
5 gal	05-41610-08	SS	0.0000265	4.99949 gal	4.99949 gal	0.00065 gal	2.05
5 gal	05-41610-15	SS	0.0000265	4.99974 gal	4.99974 gal	0.00065 gal	2.05

The data in this report only applies to those items specifically listed on this report.

Volume delivered at 60°F after a 30 second pour and 10 second drain for test measures. For provers and a 30 second drain time would apply.

**Conversion Factors:**

1 gal = 231 in<sup>3</sup>  
1 gal = 3.785 412 E-03 m<sup>3</sup>

**Traceability Statement:**

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**Condition of Item(s) Submitted for Calibration:**

Minor wear

**Laboratory Reference Standard Used:**

5 gallon Slicker Plate Standard S/N NE1586

**Treatment of Item(s) before Calibration:**

Item(s) were tested as found

**Procedure Used:**

NISTIR 7383 (2017), SOP 19

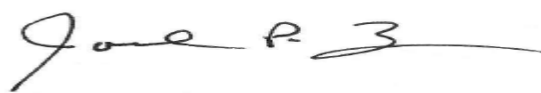
**Environmental conditions at time of calibration:**

Temp °C	25.9	Humidity %	43.5
Pressure mmHg	759.71		

**Water temperature at time of calibration:**

67.27 °F

Date Submitted: 7/20/2017



Joel P. Lavicky, Metrologist

7/21/2017

Date:

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