

Office of Weights and Measures
Metrology Laboratory

Office: 118 West Capitol Avenue, Pierre, SD 57501
 Lab: 1100 Otter Rd, Bldg D, Sturgis, SD 57785
 Lab: 605-347-7541, Office: 605-773-3697, Cell: 605-280-4572
 Email: ron.peterson@state.sd.us <https://dps.sd.gov/inspections/weights-measures>

CALIBRATION CERTIFICATE

Capital Scale Company (Big Red)	SA# 61	Certificate number: MP4463	
Physical Address:	Billing Address:		
3021 Valley Forge Street	3021 Valley Forge Street		
Bismarck, ND 58503	Bismarck, ND 58503		
Contact: Travis Will		Received Date: 01/21/2024	
Phone: 701-255-1556		Certificate Issued: 01/22/2024	

Artifacts Submitted and Summary of Results:



Quantity	Artifact	Total Pieces	Recvd in Tol	Adjusted	Rejected	As Left In Tolerance
2	2000 lb Weight Carts	2	2	1	0	2
16	1000 lb Weights	16	16	3	0	16
20	50 lb Weights	20	17	3	0	20
1	Avoirdupois kit	20	20	0	0	20
1	Metric kit	14	14	0	0	14

Uncertainty Statement: The combined standard uncertainty includes the standard uncertainty reported for the standard and the standard uncertainty for the measurement process. The combined standard uncertainty is multiplied by a coverage factor to provide an expanded uncertainty which defines an interval having a level of confidence of approximately 95 percent. The expanded uncertainty presented in this report is consistent with the 2008 ISO/IEC Guide to the Expression of Uncertainty in Measurement. The expanded uncertainty is not to be confused with a tolerance limit for the user during application. For weight carts, factors included on the inspection checklist have not been included in the calibration uncertainty. However, factors on the checklist may contribute measurement errors that are significant if not properly maintained during use.

Conformity Statement: The artifacts submitted for this calibration are calibrated to NIST Handbook 105-1 (1990 or 2019), NIST Handbook 105-8 (2019), NIST Handbook 105-3 (2010), or ASTM E617 (2018), Standard Specification for Laboratory Weights and Precision Mass Standards specifications. The reported test values relate only to the observations made at the time and conditions of the test. Artifacts fully comply with all requirements (both specifications and tolerances) of the applicable documentary standard unless otherwise stated. Stated expanded uncertainties are less than one-third of the specified tolerances (maximum permissible errors, m.p.e.) for mass calibrations and less than the specified tolerances for volume calibrations. The correction value plus or minus the expanded uncertainty is within the stated tolerances. It is the decision rule of the SD State Metrology Laboratory that any cast weights determined to have a correction within 66 % of the upper tolerance or 50 % of the lower tolerance will be adjusted closer to zero mass correction, even if the mass correction originally met the applicable tolerance.

Traceability Statement: The Standards of the SD Metrology Laboratory used for comparison are traceable to the International System of Units (SI) through the National Institute of Standards and Technology. The laboratory certificate number identified above is the unique report number to be used in referencing measurement traceability for artifacts identified in this report only.

This document does not represent or imply endorsement by NIST Office of Weights and Measures or any agency of the State and/or national governments. This report may not be reproduced, except in full without the written approval of this laboratory. The client must not use this

 Dwight R Johnson, Metrologist	01/22/2024	 Ron E Peterson, Reviewer	01/22/2024
--	------------	---	------------



South Dakota Department of Public Safety
 Office of Weights and Measures
 Metrology Lab
 Lab: 1100 Otter Rd, Bldg D Sturgis, SD 57785 Phone: 605-347-7541
 Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697



CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale Company (Big Red)**
 Calibration Date: **01/22/2024**

Certificate Number: **MP4463**

Environmental conditions at time of test:

Temperature: 21 °C Humidity: 48 % Pressure: 664 mmhg

Test method used: SOP 33 Calibrations of Weight Carts, May 2019

Test equipment used: Recently calibrated weights and a Mettler SLS510 Load Cell with IND570 Indicator.
 Vaisala PT301

Condition of Carts: Used but in good condition

Manufacturer: Unk

SN: Unk

Nominal (lb)	AS Found (lb)	As Found (g)	As Left (lb)	As Left (g)	Uncertainty (lb)	k	Tolerance (lb)	Condition as Left
2000	0.55	248.85	0.02	11.35	0.11	2.01	0.70	Adjusted

Notes:

The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory.

The above weight cart was allowed to come to environmental equilibrium in the laboratory prior to calibration. The weight cart was adjusted if needed and as noted above to as close as practical to zero error. All fluid levels must be maintained as close to reference levels as possible during use. Any maintenance, repairs or damage to weight cart or its components will likely result in an out-of-tolerance condition; therefore, maintenance or replacement of components such as batteries, tires, filters, etc. will require recalibration of the weight cart prior to subsequent use.

Conformity Assessment:

The weight cart identified on this calibration certificate complies with NIST Handbook 105-8, 2019 specifications and tolerances. Additional details regarding the assessment are included in the associated checklist that is an integral part of this calibration certificate. The weight cart was found (or adjusted) to within the specified tolerances.

The above weight cart was compared with standards of the State of South Dakota, which are traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST) and have current calibration values. The assigned certificate number provides documented evidence for measurement traceability.

Ron E Peterson, Metrologist
 Ver 20231221

01/22/2024

Dwight R Johnson, Reviewer

01/22/2024



Inspection Checklist for Weight Cart

Calibrated for: Capital Scale Company (Big Red) Certificate number: MP4463
Calibration Date: 01/22/2024

Manufacturer: Date of Manufacture:
Model Number: ID/SN Number:

<input checked="" type="checkbox"/>	Nominal Mass of Weight Cart	<input type="text" value="2000 lbs"/>	Suitably marked: Yes/No	<input type="text" value="Yes"/>
<input checked="" type="checkbox"/>	Powered by:	Electric/generator <input checked="" type="checkbox"/>	Diesel	<input type="text"/>
<input checked="" type="checkbox"/>	Fluid Levels:	Engine Oil <input type="text"/>	Gasoline	<input type="text"/>
		Hydraulic Fluid <input type="text"/>	Sealed: Yes/No	<input type="text"/>
		Battery <input checked="" type="checkbox"/>	Sealed: Yes/No	<input type="text" value="Yes"/>
		Liquid Fuel <input type="text"/>	Reference Line Present: Yes/No	<input type="text"/>
<input checked="" type="checkbox"/>	Fluid drain tubes extend beyond the body of the cart: Yes/No		<input type="text" value="Yes"/>	
<input checked="" type="checkbox"/>	Number of axles:	<input type="text" value="2"/>		
<input checked="" type="checkbox"/>	Number /Size of Tires	<input type="text" value="16.25x5x11.25"/>		
<input checked="" type="checkbox"/>	Sealed wheel bearings: Yes/No	<input type="text" value="Yes"/>		
<input checked="" type="checkbox"/>	Drain holes present in locations where water may accumulate: Yes/No		<input type="text" value="Yes"/>	
<input checked="" type="checkbox"/>	Weight restraint railing permanently fixed and solid: Yes/No		<input type="text" value="Yes"/>	
<input checked="" type="checkbox"/>	Adjusting cavity accessible: Yes/No	<input type="text" value="Yes"/>	Approximate capacity:(lbs)	<input type="text" value="20"/>
<input checked="" type="checkbox"/>	Adjusting cavity sealed: Yes/No	<input type="text" value="Yes"/>		
<input checked="" type="checkbox"/>	Service brakes functioning properly: Yes/No		<input type="text" value="Yes"/>	
<input checked="" type="checkbox"/>	Parking brakes functioning properly: Yes/No		<input type="text" value="Yes"/>	
<input type="checkbox"/>	Remote control functioning properly: Yes/No		<input type="text"/>	

General condition at time of calibration (note any accumulated dirt/debris, damage, loose parts, or evidence of tampering or unauthorized entry of seals).

List and report any repair and maintenance performed, parts replaced, etc., Leaks repaired, new battery, carburetor, exhaust system, wheels changed, welding performed, etc. Include any comments or changes since the last calibration.

Ron E Peterson *Dwight R Johnson*
Ron E Peterson, Metrologist 01/22/2024 Dwight R Johnson, Reviewer 01/22/2024
Ver 20231221



South Dakota Department of Public Safety
 Office of Weights and Measures
 Metrology Lab
 Lab: 1100 Otter Rd, Bldg D Sturgis, SD 57785 Phone: 605-347-7541
 Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697



CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale Company (Big Red)**
 Calibration Date: **01/22/2024**

Certificate Number: **MP4463**

Environmental conditions at time of test:

Temperature: 21 °C Humidity: 46 % Pressure: 665 mmhg

Test method used: SOP 33 Calibrations of Weight Carts, May 2019

Test equipment used: Recently calibrated weights and a Mettler SLS510 Load Cell with IND570 Indicator.
 Vaisala PT301

Condition of Carts: Used but in good condition

Manufacturer: Unk **SN:** 541094

Nominal (lb)	AS Found (lb)	As Found (g)	As Left (lb)	As Left (g)	Uncertainty (lb)	k	Tolerance (lb)	Condition as Left
2000	-0.14	-64.31	-0.14	-64.31	0.11	2.01	0.70	In-Tolerance

Notes:

The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory.

The above weight cart was allowed to come to environmental equilibrium in the laboratory prior to calibration. The weight cart was adjusted if needed and as noted above to as close as practical to zero error. All fluid levels must be maintained as close to reference levels as possible during use. Any maintenance, repairs or damage to weight cart or its components will likely result in an out-of-tolerance condition; therefore, maintenance or replacement of components such as batteries, tires, filters, etc. will require recalibration of the weight cart prior to subsequent use.

Conformity Assessment:

The weight cart identified on this calibration certificate complies with NIST Handbook 105-8, 2019 specifications and tolerances. Additional details regarding the assessment are included in the associated checklist that is an integral part of this calibration certificate. The weight cart was found (or adjusted) to within the specified tolerances.

The above weight cart was compared with standards of the State of South Dakota, which are traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST) and have current calibration values. The assigned certificate number provides documented evidence for measurement traceability.

Ron E Peterson, Metrologist

01/22/2024

Dwight R Johnson, Reviewer

01/22/2024

Ver 20231221



South Dakota Department of Public Safety
 Office of Weights and Measures
 Metrology Lab
 Lab: 1100 Otter Rd, Bldg D Sturgis, SD 57785 Phone: 605-347-7541
 Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697



Inspection Checklist for Weight Cart

Calibrated for: Capital Scale Company (Big Red) Certificate number: MP4463
 Calibration Date: 01/22/2024

Manufacturer: Date of Manufacture:
 Model Number: ID/SN Number:

<input checked="" type="checkbox"/>	Nominal Mass of Weight Cart	2000 lbs	Suitably marked: Yes/No	<input type="text" value="Yes"/>
<input checked="" type="checkbox"/>	Powered by:	Electric/generator <input checked="" type="checkbox"/>	Diesel	<input type="text"/>
<input checked="" type="checkbox"/>	Fluid Levels:	Engine Oil <input type="text"/>	Gasoline	<input type="text"/>
		Hydraulic Fluid <input type="text"/>	Sealed: Yes/No	<input type="text"/>
		Battery <input checked="" type="checkbox"/>	Sealed: Yes/No	<input type="text" value="Yes"/>
		Liquid Fuel <input type="text"/>	Reference Line Present: Yes/No	<input type="text"/>
<input checked="" type="checkbox"/>	Fluid drain tubes extend beyond the body of the cart: Yes/No		<input type="text" value="Yes"/>	
<input checked="" type="checkbox"/>	Number of axles:	<input type="text" value="2"/>		
<input checked="" type="checkbox"/>	Number /Size of Tires	<input type="text" value="16.25x5x11.25"/>		
<input checked="" type="checkbox"/>	Sealed wheel bearings: Yes/No	<input type="text" value="Yes"/>		
<input checked="" type="checkbox"/>	Drain holes present in locations where water may accumulate: Yes/No		<input type="text" value="Yes"/>	
<input checked="" type="checkbox"/>	Weight restraint railing permanently fixed and solid: Yes/No		<input type="text" value="Yes"/>	
<input checked="" type="checkbox"/>	Adjusting cavity accessible: Yes/No	<input type="text" value="Yes"/>	Approximate capacity:(lbs)	<input type="text" value="20"/>
<input checked="" type="checkbox"/>	Adjusting cavity sealed: Yes/No	<input type="text" value="Yes"/>		
<input checked="" type="checkbox"/>	Service brakes functioning properly: Yes/No		<input type="text" value="Yes"/>	
<input checked="" type="checkbox"/>	Parking brakes functioning properly: Yes/No		<input type="text" value="Yes"/>	
<input type="checkbox"/>	Remote control functioning properly: Yes/No		<input type="text"/>	

General condition at time of calibration (note any accumulated dirt/debris, damage, loose parts, or evidence of tampering or unauthorized entry of seals).

List and report any repair and maintenance performed, parts replaced, etc., Leaks repaired, new battery, carburetor, exhaust system, wheels changed, welding performed, etc. Include any comments or changes since the last calibration.

Ron E Peterson

Dwight R Johnson

Ron E Peterson, Metrologist 01/22/2024 Dwight R Johnson, Reviewer 01/22/2024
 Ver Ver 20231221



South Dakota Department of Public Safety
Office of Weights and Measures
Metrology Lab
Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541
Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697



CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale Company (Big Red)** Certificate number: **MP4463**
Calibration Date: **01/22/2024** Purchase Order Number: **0**
Environmental conditions at time of test:

Temperature: 20.4 °C Humidity: 46 % Pressure: 664 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, May 2019
Test equipment used: Lab standards traceable to the SI, an XPE604KMC balance, and a Vaisala PTU301
Condition of Weights: Cleaned and painted

Artifact(s): 16 - 1000 lb weights

Nominal	SN/ID	Correction as Found		Correction as Left		ASTM E 617 Class 6 Tolerance (g)	Uncertainty		Condition As Left
		lb	g	lb	g		g	k	
1000 lb	13.10	-0.01	-3.7	-0.01	-3.7	45	5.1	2.0	In-Tolerance
1000 lb	13.11	-0.03	-12.5	-0.03	-12.5	45	5.1	2.0	In-Tolerance
1000 lb	13.12	-0.04	-18.0	-0.04	-18.0	45	5.1	2.0	In-Tolerance
1000 lb	13.13	-0.03	-12.1	-0.03	-12.1	45	5.1	2.0	In-Tolerance
1000 lb	13.18	-0.05	-21.4	-0.05	-21.4	45	5.1	2.0	In-Tolerance
1000 lb	13.19	-0.03	-12.8	-0.03	-12.8	45	5.1	2.0	In-Tolerance
1000 lb	13.20	-0.04	-17.8	-0.04	-17.8	45	5.1	2.0	In-Tolerance
1000 lb	13.21	-0.06	-28.8	0.00	0.2	45	5.1	2.0	Adjusted
1000 lb	13.22	-0.05	-22.1	-0.05	-22.1	45	5.1	2.0	In-Tolerance
1000 lb	13.23	-0.05	-22.6	0.00	0.1	45	5.1	2.0	Adjusted
1000 lb	13.24	-0.05	-21.4	-0.05	-21.4	45	5.1	2.0	In-Tolerance
1000 lb	13.25	-0.02	-7.5	-0.02	-7.5	45	5.1	2.0	In-Tolerance
1000 lb	13.26	-0.05	-24.8	0.00	0.1	45	5.1	2.0	Adjusted
1000 lb	13.27	-0.04	-17.6	-0.04	-17.6	45	5.1	2.0	In-Tolerance
1000 lb	13.28	-0.02	-9.6	-0.02	-9.6	45	5.1	2.0	In-Tolerance
1000 lb	13.29	-0.05	-22.1	-0.05	-22.1	45	5.1	2.0	In-Tolerance

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.
The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory. These weights were not screened for magnetism or checked for density, and effects of magnetism or density are not included in the uncertainties.

Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Dwight R Johnson

Ron E Peterson

Dwight R Johnson, Metrologist 01/22/2024 Ron E Peterson, Reviewer 01/22/2024



South Dakota Department of Public Safety
Office of Weights and Measures
Metrology Lab
Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541
Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697



CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale Company (Big Red)** Certificate number: **MP4463**
 Calibration Date: **01/22/2024** Purchase Order Number:

Environmental conditions at time of test:

Temperature: 40.4 °C Humidity: 49 % Pressure: 664 mmHg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, May 2019

Test equipment used: Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301

Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **20 50 lb weights** **SN Big Red**

Nominal	SN/ID	Correction as Found	Correction as Left	NIST Class F	Uncertainty	k	Condition As Left
		mg	mg	Tolerance (mg)	mg		
50 lb	3	-1198	-1198	2300	200	2.03	In-Tolerance
50 lb	9	-593	-593	2300	200	2.03	In-Tolerance
50 lb	19	-963	-963	2300	200	2.03	In-Tolerance
50 lb	20	-1118	-1118	2300	200	2.03	In-Tolerance
50 lb	32	517	517	2300	200	2.03	In-Tolerance
50 lb	42	-363	-363	2300	200	2.03	In-Tolerance
50 lb	43	-2313	-3	2300	200	2.03	Adjusted
50 lb	44	-958	-958	2300	200	2.03	In-Tolerance
50 lb	45	-1028	-1028	2300	200	2.03	In-Tolerance
50 lb	51	-688	-688	2300	200	2.03	In-Tolerance
50 lb	60	-718	-718	2300	200	2.03	In-Tolerance
50 lb	11B	-843	-843	2300	200	2.03	In-Tolerance
50 lb	11C	402	402	2300	200	2.03	In-Tolerance
50 lb	A	-1093	-1093	2300	200	2.03	In-Tolerance
50 lb	B	302	302	2300	200	2.03	In-Tolerance
50 lb	K	-673	-673	2300	200	2.03	In-Tolerance
50 lb	L	-588	-588	2300	200	2.03	In-Tolerance
50 lb	N	12	12	2300	200	2.03	In-Tolerance
50 lb	R	-2218	7	2300	200	2.03	Adjusted
50 lb	X	-2828	2	2300	200	2.03	Adjusted

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.
 The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory. These weights were not screened for magnetism or checked for density, and effects of magnetism or density are not included in the uncertainties.

Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist 01/22/2024 Dwight R Johnson, Reviewer 01/22/2024



South Dakota Department of Public Safety
Office of Weights and Measures
Metrology Lab
Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541
Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697



CALIBRATION CERTIFICATE

Calibrated for: Capital Scale Company (Big Red) **Certificate number:** MP4463
Calibration Date: 01/22/2024 **Purchase Order Number:**

Environmental conditions at time of test:

Temperature: 21 °C **Humidity:** 46 % **Pressure:** 665 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, May 2019

Test equipment used: Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301

Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **20 piece Avoirdupois Kit** SN **010813A**

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
5 lb	1	68	68	230	20	2.05	In-Tolerance
5 lb	2	63	63	230	20	2.05	In-Tolerance
5 lb	3	62	62	230	20	2.05	In-Tolerance
5 lb	4	58	58	230	20	2.05	In-Tolerance
5 lb	5	60	60	230	20	2.05	In-Tolerance
1 lb	1	22.5	22.5	70	6.1	2.05	In-Tolerance
1 lb	2	22.5	22.5	70	6.1	2.05	In-Tolerance
1 lb	3	24.5	24.5	70	6.1	2.05	In-Tolerance
1 lb	4	17.5	17.5	70	6.1	2.05	In-Tolerance
1 lb	5	27.5	27.5	70	6.1	2.05	In-Tolerance
8 oz		21.2	21.2	45	4.0	2.04	In-Tolerance
4 oz		9.4	9.4	23	2.0	2.04	In-Tolerance
2 oz		3.69	3.69	11	0.95	2.05	In-Tolerance
1 oz		1.67	1.67	5.4	0.48	2.03	In-Tolerance
0.5 oz		0.96	0.96	2.8	0.25	2.05	In-Tolerance
0.25 oz		0.41	0.41	1.7	0.15	2.03	In-Tolerance
0.125 oz		0.60	0.60	1.3	0.12	2.03	In-Tolerance
0.0625 oz		0.168	0.168	1.1	0.095	2.04	In-Tolerance
0.03125 oz		0.208	0.208	0.87	0.077	2.03	In-Tolerance
0.03125 oz	.	0.313	0.313	0.87	0.077	2.03	In-Tolerance

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.
 The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory. These weights were not screened for magnetism or checked for density, and effects of magnetism or density are not included in the uncertainties.

Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson

Dwight R Johnson

Ron E Peterson, Metrologist 01/22/2024 Dwight R Johnson, Reviewer 01/22/2024



South Dakota Department of Public Safety
 Office of Weights and Measures
 Metrology Lab
 Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541
 Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697



CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale Company (Big Red)** Certificate number: **MP4463**
 Calibration Date: **01/22/2024** Purchase Order Number:

Environmental conditions at time of test:

Temperature: 21 °C Humidity: 46 % Pressure: 664 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, May 2019

Test equipment used: Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301

Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **14 piece Metric Kit** SN **11905E**

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
2 kg		47	47	200	17	2.05	In-Tolerance
1 kg		34.0	34.0	100	8.7	2.05	In-Tolerance
500 g		27.5	27.5	70	6.1	2.05	In-Tolerance
200 g		13.1	13.1	40	3.4	2.05	In-Tolerance
200 g		18.3	18.3	40	3.4	2.05	In-Tolerance
100 g		9.8	9.8	20	1.7	2.05	In-Tolerance
50 g		5.16	5.16	10	0.86	2.05	In-Tolerance
20 g		2.75	2.75	4	0.35	2.05	In-Tolerance
20 g		0.91	0.91	4	0.35	2.05	In-Tolerance
10 g		0.39	0.39	2	0.17	2.05	In-Tolerance
5 g		0.62	0.62	1.5	0.13	2.05	In-Tolerance
2 g		0.696	0.696	1.1	0.095	2.05	In-Tolerance
2 g		0.136	0.136	1.1	0.095	2.05	In-Tolerance
1 g		0.327	0.327	0.9	0.078	2.05	In-Tolerance

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.
 The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory. These weights were not screened for magnetism or checked for density, and effects of magnetism or density are not included in the uncertainties.

Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist 01/22/2024 Dwight R Johnson, Reviewer 01/22/2024

Office of Weights and Measures
Metrology Laboratory

Office: 118 West Capitol Avenue, Pierre, SD 57501
 Lab: 1100 Otter Rd, Bldg D, Sturgis, SD 57785
 Lab: 605-347-7541, Office: 605-773-3697, Cell: 605-280-4572
 Email: ron.peterson@state.sd.us <https://dps.sd.gov/inspections/weights-measures>

CALIBRATION CERTIFICATE

Capital Scale Company (Shop Weights)	SA# 61	Certificate number: MP4464	
Physical Address:	Billing Address:		
3021 Valley Forge Street	3021 Valley Forge Street		
Bismarck, ND 58503	Bismarck, ND 58503		
Contact: Travis Will		Received Date: 01/21/2024	
Phone: 701-255-1556		Certificate Issued: 01/22/2024	

Artifacts Submitted and Summary of Results:

Quantity	Artifact	Total Pieces	Recvd in Tol	Adjusted	Rejected	As Left In Tolerance
20	50 lb Weights	20	20	2	0	20

Uncertainty Statement: The combined standard uncertainty includes the standard uncertainty reported for the standard and the standard uncertainty for the measurement process. The combined standard uncertainty is multiplied by a coverage factor to provide an expanded uncertainty which defines an interval having a level of confidence of approximately 95 percent. The expanded uncertainty presented in this report is consistent with the 2008 ISO/IEC Guide to the Expression of Uncertainty in Measurement. The expanded uncertainty is not to be confused with a tolerance limit for the user during application. For weight carts, factors included on the inspection checklist have not been included in the calibration uncertainty. However, factors on the checklist may contribute measurement errors that are significant if not properly maintained during use.

Conformity Statement: The artifacts submitted for this calibration are calibrated to NIST Handbook 105-1 (1990 or 2019), NIST Handbook 105-8 (2019), NIST Handbook 105-3 (2010), or ASTM E617 (2018), Standard Specification for Laboratory Weights and Precision Mass Standards specifications. The reported test values relate only to the observations made at the time and conditions of the test. Artifacts fully comply with all requirements (both specifications and tolerances) of the applicable documentary standard unless otherwise stated. Stated expanded uncertainties are less than one-third of the specified tolerances (maximum permissible errors, m.p.e.) for mass calibrations and less than the specified tolerances for volume calibrations. The correction value plus or minus the expanded uncertainty is within the stated tolerances. It is the decision rule of the SD State Metrology Laboratory that any cast weights determined to have a correction within 66 % of the upper tolerance or 50 % of the lower tolerance will be adjusted closer to zero mass correction, even if the mass correction originally met the applicable tolerance.

Traceability Statement: The Standards of the SD Metrology Laboratory used for comparison are traceable to the International System of Units (SI) through the National Institute of Standards and Technology. The laboratory certificate number identified above is the unique report number to be used in referencing measurement traceability for artifacts identified in this report only.

This document does not represent or imply endorsement by NIST Office of Weights and Measures or any agency of the State and/or national governments. This report may not be reproduced, except in full without the written approval of this laboratory. The client must not use this



Dwight R Johnson, Metrologist

01/22/2024



Ron E Peterson, Reviewer

01/22/2024



South Dakota Department of Public Safety
Office of Weights and Measures
Metrology Lab
Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541
Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697



CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale Company (Shop Weights)** Certificate number: **MP4464**
Calibration Date: **01/22/2024** Purchase Order Number:

Environmental conditions at time of test:

Temperature: 20 °C Humidity: 45 % Pressure: 664 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, May 2019

Test equipment used: Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301

Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **20 50 lb weights** SN Shop Weights

Nominal	SN/ID	Correction as Found	Correction as Left	NIST Class F	Uncertainty	k	Condition As Left
		mg	mg	Tolerance (mg)	mg		
50 lb	70	-698	-698	2300	200	2.03	In-Tolerance
50 lb	44	337	337	2300	200	2.03	In-Tolerance
50 lb	25	-1228	7	2300	200	2.03	Adjusted
50 lb	07	-923	-923	2300	200	2.03	In-Tolerance
50 lb	23	-733	-733	2300	200	2.03	In-Tolerance
50 lb	26	-1113	-1113	2300	200	2.03	In-Tolerance
50 lb	62	-1038	-1038	2300	200	2.03	In-Tolerance
50 lb	73	-1913	-3	2300	200	2.03	Adjusted
50 lb	06	-83	-83	2300	200	2.03	In-Tolerance
50 lb	47	-348	-348	2300	200	2.03	In-Tolerance
50 lb	02	-278	-278	2300	200	2.03	In-Tolerance
50 lb	16	-1073	-1073	2300	200	2.03	In-Tolerance
50 lb	53	-418	-418	2300	200	2.03	In-Tolerance
50 lb	34	-398	-398	2300	200	2.03	In-Tolerance
50 lb	72	-593	-593	2300	200	2.03	In-Tolerance
50 lb	69	-913	-913	2300	200	2.03	In-Tolerance
50 lb	22	482	482	2300	200	2.03	In-Tolerance
50 lb	52	-988	-988	2300	200	2.03	In-Tolerance
50 lb	63	-1128	-1128	2300	200	2.03	In-Tolerance
50 lb	76	-238	-238	2300	200	2.03	In-Tolerance

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service. The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory. These weights were not screened for magnetism or checked for density, and effects of magnetism or density are not included in the uncertainties.

Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist 01/22/2024 Dwight R Johnson, Reviewer 01/22/2024

**Office of Weights and Measures
 Metrology Laboratory**

Office: 118 West Capitol Avenue, Pierre, SD 57501
 Lab: 1100 Otter Rd, Bldg D, Sturgis, SD 57785
 Lab: 605-347-7541, Office: 605-773-3697, Cell: 605-280-4572
 Email: ron.peterson@state.sd.us <https://dps.sd.gov/inspections/weights-measures>

CALIBRATION CERTIFICATE

Capital Scale Company (Trailer Weights)	SA# 61	Certificate number:	MP4465
Physical Address:	Billing Address:		
3021 Valley Forge Street	3021 Valley Forge Street		
Bismarck, ND 58503	Bismarck, ND 58503		

Contact: Travis Will	Received Date: 01/21/2024
Phone: 701-255-1556	Certificate Issued: 01/22/2024



Artifacts Submitted and Summary of Results:						
Quantity	Artifact	Total Pieces	Recvd in Tol	Adjusted	Rejected	As Left In Tolerance
4	1000 lb Weights	4	4	1	0	4
30	50 lb Weights	30	23	15	0	30

Uncertainty Statement: The combined standard uncertainty includes the standard uncertainty reported for the standard and the standard uncertainty for the measurement process. The combined standard uncertainty is multiplied by a coverage factor k to provide an expanded uncertainty which defines an interval having a level of confidence of approximately 95 percent. The expanded uncertainty presented in this report is consistent with the 2008 ISO/IEC Guide to the Expression of Uncertainty in Measurement. The expanded uncertainty is not to be confused with a tolerance limit for the user during application. For weight carts, factors included on the inspection checklist have not been included in the calibration uncertainty. However, factors on the checklist may contribute measurement errors that are significant if not properly maintained during use.

Conformity Statement:
 The artifacts submitted for this calibration are calibrated to NIST Handbook 105-1 (1990 or 2019), NIST Handbook 105-8 (2019), NIST Handbook 105-3 (2010), or ASTM E617 (2018), Standard Specification for Laboratory Weights and Precision Mass Standards specifications. The reported test values relate only to the observations made at the time and conditions of the test. Artifacts fully comply with all requirements (both specifications and tolerances) of the applicable documentary standard unless otherwise stated. Stated expanded uncertainties are less than one-third of the specified tolerances (maximum permissible errors, m.p.e.) for mass calibrations and less than the specified tolerances for volume calibrations. The correction value plus or minus the expanded uncertainty is within the stated tolerances. It is the decision rule of the SD State Metrology Laboratory that any cast weights determined to have a correction within 66 % of the upper tolerance or 50 % of the lower tolerance will be adjusted closer to zero mass correction, even if the mass correction originally met the applicable tolerance.

Traceability Statement:
 The Standards of the SD Metrology Laboratory used for comparison are traceable to the International System of Units (SI) through the National Institute of Standards and Technology. The laboratory certificate number identified above is the unique report number to be used in referencing measurement traceability for artifacts identified in this report only.

This document does not represent or imply endorsement by NIST Office of Weights and Measures or any agency of the State and/or national governments. This report may not be reproduced, except in full without the written approval of this laboratory. The client must not use this

 Dwight R Johnson, Metrologist	01/22/2024	 Ron E Peterson, Reviewer	01/22/2024
--	------------	---	------------



CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale Company (Trailer Weights)** Certificate number: **MP4465**
 Calibration Date: **01/22/2024** Purchase Order Number: **0**

Environmental conditions at time of test:

Temperature: 20 °C Humidity: 45 % Pressure: 664 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, May 2019

Test equipment used: Lab standards traceable to the SI, an XPE604KMC balance, and a Vaisala PTU301


Condition of Weights: Cleaned and painted


Artifact(s): **4 - 1000 lb weights**

Nominal	SN/ID	Correction as Found		Correction as Left		ASTM E 617 Class 6 Tolerance (g)	Uncertainty		Condition As Left
		lb	g	lb	g		g	k	
1000 lb	13.14	-0.07	-32.1	0.00	-0.1	45	5.1	2.0	Adjusted
1000 lb	13.15	-0.04	-16.5	-0.04	-16.5	45	5.1	2.0	In-Tolerance
1000 lb	13.16	-0.02	-8.9	-0.02	-8.9	45	5.1	2.0	In-Tolerance
1000 lb	13.17	0.00	1.2	0.00	1.2	45	5.1	2.0	In-Tolerance

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.
 The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory. These weights were not screened for magnetism or checked for density, and effects of magnetism or density are not included in the uncertainties.

Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight


 Dwight R Johnson, Metrologist


 Ron E Peterson, Reviewer

01/22/2024

01/22/2024



South Dakota Department of Public Safety
Office of Weights and Measures
Metrology Lab
Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541
Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697



CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale Company (Trailer Weights)** Certificate number: **MP4465**
 Calibration Date: **01/22/2024** Purchase Order Number:

Environmental conditions at time of test:
Temperature: 21 °C **Humidity: 46 %** **Pressure: 665 mmHg**

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, May 2019
 Test equipment used: Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301
 Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **15 50 lb weights** **SN Trailer Weights**

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
50 lb	08	-2133	7	2300	200	2.03	Adjusted
50 lb	10	-2738	12	2300	200	2.03	Adjusted
50 lb	11	-903	-903	2300	200	2.03	In-Tolerance
50 lb	16	-2023	2	2300	200	2.03	Adjusted
50 lb	27	-1668	17	2300	200	2.03	Adjusted
50 lb	30	-1783	-3	2300	200	2.03	Adjusted
50 lb	31	-1108	-1108	2300	200	2.03	In-Tolerance
50 lb	35	-658	-658	2300	200	2.03	In-Tolerance
50 lb	39	-390733	7	2300	200	2.03	Adjusted
50 lb	39	-993	-993	2300	200	2.03	In-Tolerance
50 lb	41	-1713	7	2300	200	2.03	Adjusted
50 lb	46	-1218	-3	2300	200	2.03	Adjusted
50 lb	48	-1053	-1053	2300	200	2.03	In-Tolerance
50 lb	49	-1248	22	2300	200	2.03	Adjusted
50 lb	50	-2463	2	2300	200	2.03	Adjusted

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.
 The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory. These weights were not screened for magnetism or checked for density, and effects of magnetism or density are not included in the uncertainties.

Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Dwight R. Johnson

Ron E Peterson

Dwight R Johnson, Metrologist 01/22/2024 Ron E Peterson, Reviewer 01/22/2024



South Dakota Department of Public Safety
 Office of Weights and Measures
 Metrology Lab
 Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541
 Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697



CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale Company (Trailer Weights)** Certificate number: **MP4465**
 Calibration Date: **01/22/2024** Purchase Order Number:

Environmental conditions at time of test:
 Temperature: **21 °C** Humidity: **46 %** Pressure: **665 mmhg**

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, May 2019
 Test equipment used: Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301
 Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **15 50 lb weights** SN Trailer Weights

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
50 lb	54	-928	-928	2300	200	2.03	In-Tolerance
50 lb	55	-518	-518	2300	200	2.03	In-Tolerance
50 lb	61	-858	-858	2300	200	2.03	In-Tolerance
50 lb	64	-1083	-1083	2300	200	2.03	In-Tolerance
50 lb	70	-322878	2	2300	200	2.03	Adjusted
50 lb	75	-893	-893	2300	200	2.03	In-Tolerance
50 lb	C	-763	-763	2300	200	2.03	In-Tolerance
50 lb	F	-2293	7	2300	200	2.03	Adjusted
50 lb	G	1177	1177	2300	200	2.03	In-Tolerance
50 lb	H	-1223	2	2300	200	2.03	Adjusted
50 lb	K	-1923	-8	2300	200	2.03	Adjusted
50 lb	M	-1013	-1013	2300	200	2.03	In-Tolerance
50 lb	R	-11388	12	2300	200	2.03	Adjusted
50 lb	T	-1033	-1033	2300	200	2.03	In-Tolerance
50 lb	Z	-1038	-1038	2300	200	2.03	In-Tolerance

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.
 The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory. These weights were not screened for magnetism or checked for density, and effects of magnetism or density are not included in the uncertainties.

Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Dwight R. Johnson

Ron E. Peterson

Dwight R Johnson, Metrologist 01/22/2024 Ron E Peterson, Reviewer 01/22/2024



South Dakota Department of Public Safety

Office of Weights and Measures

Metrology Lab

Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541

Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697



CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale Company (Trailer Weights)**

Certificate number: **MP4465**

Calibration Date: **01/22/2024**

Purchase Order Number:

Environmental conditions at time of test:

Temperature: 21 °C

Humidity: 46 %

Pressure: 664 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, May 2019

Test equipment used: Lab standards traceable to the SI, Mettler XPR64003LD5C, XPR5003SC, Mettler AX206, Vaisala PTU301

Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **23 piece Avoirdupois Kit**

SN 11905C

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
5 lb	1	-36	-36	230	20	2.05	In-Tolerance
5 lb	2	11	11	230	20	2.05	In-Tolerance
5 lb	3	10	10	230	20	2.05	In-Tolerance
5 lb	4	61	61	230	20	2.05	In-Tolerance
5 lb	5	70	70	230	20	2.05	In-Tolerance
1 lb	1	-21.6	-21.6	70	6.1	2.05	In-Tolerance
1 lb	2	-11.6	-11.6	70	6.1	2.05	In-Tolerance
1 lb	3	-23.6	-23.6	70	6.1	2.05	In-Tolerance
1 lb	4	-16.6	-16.6	70	6.1	2.05	In-Tolerance
1 lb	5	-8.6	-8.6	70	6.1	2.05	In-Tolerance
8 oz		21.2	21.2	45	4.0	2.04	In-Tolerance
4 oz		4.7	4.7	23	2.0	2.04	In-Tolerance
2 oz		5.28	5.28	11	0.95	2.05	In-Tolerance
1 oz		1.65	1.65	5.4	0.48	2.03	In-Tolerance
0.5 oz		-0.85	-0.85	2.8	0.25	2.05	In-Tolerance
0.25 oz		0.36	0.36	1.7	0.15	2.03	In-Tolerance
0.125 oz		0.81	0.81	1.3	0.12	2.03	In-Tolerance
0.1 lb		0.07	0.07	9.1	0.79	2.05	In-Tolerance
0.05 lb		2.34	2.34	4.5	0.39	2.05	In-Tolerance
0.05 lb		0.49	0.49	4.5	0.39	2.05	In-Tolerance
0.02 lb		0.00	0.00	1.8	0.16	2.05	In-Tolerance
0.02 lb		-0.47	-0.47	1.8	0.16	2.05	In-Tolerance
0.01 lb		-0.90	-0.90	1.5	0.13	2.04	In-Tolerance

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.

The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory. These weights were not screened for magnetism or checked for density, and effects of magnetism or density are not included in the uncertainties.

Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist

01/22/2024

Dwight R Johnson, Reviewer

01/22/2024

Office of Weights and Measures
Metrology Laboratory

Office: 118 West Capitol Avenue, Pierre, SD 57501
 Lab: 1100 Otter Rd, Bldg D, Sturgis, SD 57785
 Lab: 605-347-7541, Office: 605-773-3697, Cell: 605-280-4572
 Email: ron.peterson@state.sd.us <https://dps.sd.gov/inspections/weights-measures>

CALIBRATION CERTIFICATE

Capital Scale	SA# 61	Certificate number: M25009
Physical Address:	Billing Address:	
3021 Valley Forge St	3021 Valley Forge St	
Bismarck, ND 58503	Bismarck, ND 58503	
Contact: Travis Will		Received Date: 09/30/2024
Phone: 701-255-1556		Certificate Issued: 10/01/2024

Artifacts Submitted and Summary of Results:

Quantity	Artifact	Total Pieces	Recvd in Tol	Adjusted	Rejected	As Left In Tolerance
2	2000 lb weight carts	2	1	1	0	2
16	1000 lb weights	16	16	4	0	16
20	50 lb weights	20	0	20	0	20
1	Metric kit	14	14	0	0	14
1	Avoirdupois kit	20	20	0	0	20

Uncertainty Statement: The combined standard uncertainty includes the standard uncertainty reported for the standard and the standard uncertainty for the measurement process. The combined standard uncertainty is multiplied by a coverage factor to provide an expanded uncertainty which defines an interval having a level of confidence of approximately 95 percent. The expanded uncertainty presented in this report is consistent with the 2008 ISO/IEC Guide to the Expression of Uncertainty in Measurement. The expanded uncertainty is not to be confused with a tolerance limit for the user during application. For weight carts, factors included on the inspection checklist have not been included in the calibration uncertainty. However, factors on the checklist may contribute measurement errors that are significant if not properly maintained during use.

Conformity Statement:
 The artifacts submitted for this calibration are calibrated to NIST Handbook 105-1 (1990 or 2019), NIST Handbook 105-8 (2019), NIST Handbook 105-3 (2010), or ASTM E617 (2023), Standard Specification for Laboratory Weights and Precision Mass Standards specifications. The reported test values relate only to the observations made at the time and conditions of the test. Artifacts fully comply with all requirements (both specifications and tolerances) of the applicable documentary standard unless otherwise stated. Stated expanded uncertainties are less than one-third of the specified tolerances (maximum permissible errors, m.p.e.) for mass calibrations and less than the specified tolerances for volume calibrations. The correction value plus or minus the expanded uncertainty is within the stated tolerances. It is the decision rule of the SD State Metrology Laboratory that any cast weights determined to have a correction within 66 % of the upper tolerance or 50 % of the lower tolerance will be adjusted closer to zero mass correction, even if the mass correction originally met the applicable tolerance.

Traceability Statement:
 The Standards of the SD Metrology Laboratory used for comparison are traceable to the International System of Units (SI) through the National Institute of Standards and Technology. The laboratory certificate number identified above is the unique report number to be used in referencing measurement traceability for artifacts identified in this report only.

This document does not represent or imply endorsement by NIST Office of Weights and Measures or any agency of the State and/or national governments. This report may not be reproduced, except in full without the written approval of this laboratory. The client must not use this

 Ron E Peterson, Metrologist	10/01/2024	 Dwight R Johnson, Reviewer
	10/01/2024	



South Dakota Department of Public Safety
 Office of Weights and Measures
 Metrology Lab
 Lab: 1100 Otter Rd, Bldg D Sturgis, SD 57785 Phone: 605-347-7541
 Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697



CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale** Certificate Number: **M25009**
 Calibration Date: **09/30/2024**

Environmental conditions at time of test:

Temperature: 21.44 °C Humidity: 48.26 % Pressure: 674.52 mmhg

Test method used: SOP 33 Calibrations of Weight Carts, May 2019

Test equipment used: Recently calibrated weights and a Mettler SL5510 Load Cell with IND570 Indicator.
 Vaisala PT301

Condition of Carts: Used but in good condition

Manufacturer: Unk SN: 16037

Nominal (lb)	AS Found (lb)	As Found (g)	As Left (lb)	As Left (g)	Uncertainty (lb)	k	Tolerance (lb)	Condition as Left
2000	-9.47	-4299.10	-0.07	-30.19	0.12	2.01	0.70	Adjusted

Notes:

The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory.

The above weight cart was allowed to come to environmental equilibrium in the laboratory prior to calibration. The weight cart was adjusted if needed and as noted above to as close as practical to zero error. All fluid levels must be maintained as close to reference levels as possible during use. Any maintenance, repairs or damage to weight cart or its components will likely result in an out-of-tolerance condition; therefore, maintenance or replacement of components such as batteries, tires, filters, etc. will require recalibration of the weight cart prior to subsequent use.

Conformity Assessment:

The weight cart identified on this calibration certificate complies with NIST Handbook 105-8, 2019 specifications and tolerances. Additional details regarding the assessment are included in the associated checklist that is an integral part of this calibration certificate. The weight cart was found (or adjusted) to within the specified tolerances.

The above weight cart was compared with standards of the State of South Dakota, which are traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST) and have current calibration values. The assigned certificate number provides documented evidence for measurement traceability.

Ron E Peterson, Metrologist

09/30/2024

Dwight R Johnson, Reviewer

09/30/2024

Ver 20240214



South Dakota Department of Public Safety
Office of Weights and Measures
Metrology Lab
Lab: 1100 Otter Rd, Bldg D Sturgis, SD 57785 Phone: 605-347-7541
Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697



Inspection Checklist for Weight Cart

Calibrated for: Capital Scale Certificate number: M25009
Calibration Date: 10/01/2024

Manufacturer: Unk Date of Manufacture: 2016
Model Number: 2016-1 ID/SN Number: 16037

<input checked="" type="checkbox"/>	Nominal Mass of Weight Cart	2000 lbs	Suitably marked: Yes/No	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Powered by:	Electric/generator <input checked="" type="checkbox"/>	Diesel <input type="checkbox"/>	Gasoline <input type="checkbox"/>
	Fluid Levels:	Engine Oil <input type="checkbox"/>		
		Hydraulic Fluid <input type="checkbox"/>	Sealed: Yes/No	<input type="checkbox"/>
		Battery <input checked="" type="checkbox"/>	Sealed: Yes/No	<input checked="" type="checkbox"/>
		Liquid Fuel <input type="checkbox"/>	Reference Line Present: Yes/No	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Fluid drain tubes extend beyond the body of the cart: Yes/No			<input type="checkbox"/>
<input checked="" type="checkbox"/>	Number of axles:	2		
<input checked="" type="checkbox"/>	Number /Size of Tires	15x5x11.25		
<input checked="" type="checkbox"/>	Sealed wheel bearings: Yes/No	Yes		
<input checked="" type="checkbox"/>	Drain holes present in locations where water may accumulate: Yes/No			<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Weight restraint railing permanently fixed and solid: Yes/No			<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Adjusting cavity accessible: Yes/No	Yes	Approximate capacity:(lbs)	50
<input checked="" type="checkbox"/>	Adjusting cavity sealed: Yes/No	Yes		
<input checked="" type="checkbox"/>	Service brakes functioning properly: Yes/No			<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Parking brakes functioning properly: Yes/No			<input checked="" type="checkbox"/>
	Remote control functioning properly: Yes/No			<input type="checkbox"/>

General condition at time of calibration (note any accumulated dirt/debris, damage, loose parts, or evidence of tampering or unauthorized entry of seals).

List and report any repair and maintenance performed, parts replaced, etc., Leaks repaired, new battery, carburetor, exhaust system, wheels changed, welding performed, etc. Include any comments or changes since the last calibration.

Batteries replaced

Ron E Peterson

Dwight R Johnson

Ron E Peterson, Metrologist 09/30/2024 Dwight R Johnson, Reviewer 09/30/2024
Ver Ver 20240214



South Dakota Department of Public Safety
Office of Weights and Measures
Metrology Lab
Lab: 1100 Otter Rd, Bldg D Sturgis, SD 57785 Phone: 605-347-7541
Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697



CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale**
Calibration Date: **09/30/2024**

Certificate Number: **M25009**

Environmental conditions at time of test:

Temperature: 20.75 °C Humidity: 50.5 % Pressure: 674.6 mmhg

Test method used: SOP 33 Calibrations of Weight Carts, May 2019

Test equipment used: Recently calibrated weights and a Mettler SLS510 Load Cell with IND570 Indicator.
Vaisala PT301

Condition of Carts: Used but in good condition

Manufacturer: Unk **SN:** 16039

Nominal (lb)	AS Found (lb)	As Found (g)	As Left (lb)	As Left (g)	Uncertainty (lb)	k	Tolerance (lb)	Condition as Left
2000	-0.10	-45.40	-0.10	-45.40	0.12	2.01	0.70	In-Tolerance

Notes:

The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory.

The above weight cart was allowed to come to environmental equilibrium in the laboratory prior to calibration. The weight cart was adjusted if needed and as noted above to as close as practical to zero error. All fluid levels must be maintained as close to reference levels as possible during use. Any maintenance, repairs or damage to weight cart or its components will likely result in an out-of-tolerance condition; therefore, maintenance or replacement of components such as batteries, tires, filters, etc. will require recalibration of the weight cart prior to subsequent use.

Conformity Assessment:

The weight cart identified on this calibration certificate complies with NIST Handbook 105-8, 2019 specifications and tolerances. Additional details regarding the assessment are included in the associated checklist that is an integral part of this calibration certificate. The weight cart was found (or adjusted) to within the specified tolerances.

The above weight cart was compared with standards of the State of South Dakota, which are traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST) and have current calibration values. The assigned certificate number provides documented evidence for measurement traceability.

Ron E Peterson, Metrologist

09/30/2024

Dwight R Johnson, Reviewer

09/30/2024

Ver 20240214



South Dakota Department of Public Safety
 Office of Weights and Measures
 Metrology Lab
 Lab: 1100 Otter Rd, Bldg D Sturgis, SD 57785 Phone: 605-347-7541
 Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697



Inspection Checklist for Weight Cart

Calibrated for: Capital Scale Certificate number: M25009
 Calibration Date: 10/01/2024

Manufacturer: **Unk** Date of Manufacture: **2016**
 Model Number: **2016-2** ID/SN Number: **16039**

<input checked="" type="checkbox"/>	Nominal Mass of Weight Cart	2000 lbs	Suitably marked: Yes/No	<input checked="" type="checkbox"/> Yes
<input checked="" type="checkbox"/>	Powered by:	Electric/generator <input checked="" type="checkbox"/>	Diesel <input type="checkbox"/>	Gasoline <input type="checkbox"/>
<input type="checkbox"/>	Fluid Levels:	Engine Oil <input type="checkbox"/>		Sealed: Yes/No <input type="checkbox"/>
		Hydraulic Fluid <input type="checkbox"/>		Sealed: Yes/No <input checked="" type="checkbox"/> Yes
		Battery <input checked="" type="checkbox"/>		Reference Line Present: Yes/No <input type="checkbox"/>
		Liquid Fuel <input type="checkbox"/>		
<input checked="" type="checkbox"/>	Fluid drain tubes extend beyond the body of the cart: Yes/No		<input type="checkbox"/>	
<input checked="" type="checkbox"/>	Number of axles:	2		
<input checked="" type="checkbox"/>	Number /Size of Tires	15x5x11.25		
<input checked="" type="checkbox"/>	Sealed wheel bearings: Yes/No	Yes		
<input checked="" type="checkbox"/>	Drain holes present in locations where water may accumulate: Yes/No		<input checked="" type="checkbox"/> Yes	
<input checked="" type="checkbox"/>	Weight restraint railing permanently fixed and solid: Yes/No		<input checked="" type="checkbox"/> Yes	
<input checked="" type="checkbox"/>	Adjusting cavity accessible: Yes/No	<input checked="" type="checkbox"/> Yes	Approximate capacity:(lbs)	50
<input checked="" type="checkbox"/>	Adjusting cavity sealed: Yes/No	<input checked="" type="checkbox"/> Yes		
<input checked="" type="checkbox"/>	Service brakes functioning properly: Yes/No	<input checked="" type="checkbox"/> Yes		
<input checked="" type="checkbox"/>	Parking brakes functioning properly: Yes/No	<input checked="" type="checkbox"/> Yes		
<input type="checkbox"/>	Remote control functioning properly: Yes/No	<input type="checkbox"/>		

General condition at time of calibration (note any accumulated dirt/debris, damage, loose parts, or evidence of tampering or unauthorized entry of seals).

List and report any repair and maintenance performed, parts replaced, etc., Leaks repaired, new battery, carburetor, exhaust system, wheels changed, welding performed, etc. Include any comments or changes since the last calibration.

Ron E Peterson

Dwight R Johnson

Ron E Peterson, Metrologist 09/30/2024 Dwight R Johnson, Reviewer 09/30/2024

Ver Ver 20240214



South Dakota Department of Public Safety
Office of Weights and Measures
Metrology Lab
Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541
Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697



CALIBRATION CERTIFICATE

Calibrated for: **Capital Scale**

Certificate number: **M25009**

Calibration Date: **09/30/2024**

Purchase Order Number: **0**

Environmental conditions at time of test:

Serial#

Temperature: **21.1 °C**

Humidity: **50.8 %**

Pressure: **674.48 mmhg**

Test method used: **SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, May 2019**

Test equipment used: **Lab standards traceable to the SI, an XPE604KMC balance, and a Vaisala PTU301**

Condition of Weights: **Cleaned and painted**

Artifact(s): 16 - 1000 lb weights

Nominal	SN/ID	Correction as Found		Correction as Left		ASTM E 617 Class 6 Tolerance (g)	Uncertainty		Condition As Left
		lb	g	lb	g		g	k	
1000 lb	10.2	-0.05	-23.5	0.00	0.0	45	4.7	2.0	Adjusted
1000 lb	10.4	-0.04	-18.6	-0.04	-18.6	45	4.7	2.0	In-Tolerance
1000 lb	10.7	-0.03	-12.6	-0.03	-12.6	45	4.7	2.0	In-Tolerance
1000 lb	13.1	-0.08	-35.3	0.00	0.0	45	4.7	2.0	Adjusted
1000 lb	13.2	-0.06	-27.1	0.00	-0.1	45	4.7	2.0	Adjusted
1000 lb	13.3	-0.03	-15.2	-0.03	-15.2	45	4.7	2.0	In-Tolerance
1000 lb	13.4	-0.02	-7.6	-0.02	-7.6	45	4.7	2.0	In-Tolerance
1000 lb	13.5	-0.03	-11.8	-0.03	-11.8	45	4.7	2.0	In-Tolerance
1000 lb	13.5	-0.02	-7.1	-0.02	-7.1	45	4.7	2.0	In-Tolerance
1000 lb	13.6	-0.04	-19.4	-0.04	-19.4	45	4.7	2.0	In-Tolerance
1000 lb	13.7	-0.08	-37.9	0.00	0.1	45	4.7	2.0	Adjusted
1000 lb	13.9	-0.03	-12.9	-0.03	-12.9	45	4.7	2.0	In-Tolerance
1000 lb	16.1	-0.01	-4.6	-0.01	-4.6	45	4.7	2.0	In-Tolerance
1000 lb	16.3	-0.01	-5.3	-0.01	-5.3	45	4.7	2.0	In-Tolerance
1000 lb	16.5	-0.05	-22.3	-0.05	-22.3	45	4.7	2.0	In-Tolerance
1000 lb	16.6	-0.02	-8.3	-0.02	-8.3	45	4.7	2.0	In-Tolerance

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.
The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory. These weights were not screened for magnetism or checked for density, and effects of magnetism or density are not included in the uncertainties.

Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist 09/30/2024 Dwight R Johnson, Reviewer 09/30/2024



South Dakota Department of Public Safety
Office of Weights and Measures
Metrology Lab
Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541
Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697



CALIBRATION CERTIFICATE

Calibrated for: Capital Scale

Certificate number: M25009

Calibration Date: 10/01/2024

Purchase Order Number:

Environmental conditions at time of test:

Serial#

Temperature: 21.5 °C

Humidity: 48.2 %

Pressure: 674 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, May 2019

Test equipment used: Lab standards traceable to the SI, XPR64003LD5C, XPR5003SC, XPR226CDR, XPR36C, Vaisala PTU301

Condition of Weights: Cleaned and painted

Artifact(s): 20 50 lb weights

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
50 lb	0	-5243	-3	2300	200	2.02	Adjusted
50 lb	1	-9663	-3	2300	200	2.02	Adjusted
50 lb	3	-9373	7	2300	200	2.02	Adjusted
50 lb	7	-6853	-3	2300	200	2.02	Adjusted
50 lb	11	-9053	2	2300	200	2.02	Adjusted
50 lb	12	-6148	-3	2300	200	2.02	Adjusted
50 lb	17	-129703	2	2300	200	2.02	Adjusted
50 lb	28	-6173	2	2300	200	2.02	Adjusted
50 lb	38	-6488	-3	2300	200	2.02	Adjusted
50 lb	56	-2353	2	2300	200	2.02	Adjusted
50 lb	59	-9398	-8	2300	200	2.02	Adjusted
50 lb	65	-8588	-8	2300	200	2.02	Adjusted
50 lb	67	-9213	-3	2300	200	2.02	Adjusted
50 lb	68	-10108	2	2300	200	2.02	Adjusted
50 lb	78	-3263	-3	2300	200	2.02	Adjusted
50 lb	79	-9468	2	2300	200	2.02	Adjusted
50 lb	U	-10003	-3	2300	200	2.02	Adjusted
50 lb	W	-4593	7	2300	200	2.02	Adjusted
50 lb	X	-5328	-8	2300	200	2.02	Adjusted
50 lb	Y	-3738	2	2300	200	2.02	Adjusted

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.

The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory. These weights were not screened for magnetism or checked for density, and effects of magnetism or density are not included in the uncertainties.

Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist

10/01/2024

Dwight R Johnson, Reviewer

10/01/2024



CALIBRATION CERTIFICATE

Calibrated for: Capital Scale Certificate number: M25009
Calibration Date: 10/01/2024 Purchase Order Number:
Environmental conditions at time of test: Serial# F308

Temperature: 21.1 °C Humidity: 45.5 % Pressure: 675.6 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, May 2019
Test equipment used: Lab standards traceable to the SI, XPR64003LD5C, XPR5003SC, XPR226CDR, XPR36C, Vaisala PTU301
Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **14 piece Metric Kit** **SN F308**

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	<i>k</i>	Condition As Left
2 kg		34	34	200	17	2.04	In-Tolerance
1 kg		29.0	29.0	100	8.7	2.04	In-Tolerance
500 g		7.5	7.5	70	6.1	2.04	In-Tolerance
200 g		10.6	10.6	40	3.4	2.04	In-Tolerance
200 g		13.4	13.4	40	3.4	2.04	In-Tolerance
100 g		6.8	6.8	20	1.7	2.04	In-Tolerance
50 g		2.08	2.08	10	0.86	2.04	In-Tolerance
20 g		1.37	1.37	4	0.34	2.04	In-Tolerance
20 g		0.61	0.61	4	0.34	2.04	In-Tolerance
10 g		0.80	0.80	2	0.17	2.04	In-Tolerance
5 g		0.16	0.16	1.5	0.13	2.04	In-Tolerance
2 g		0.936	0.936	1.1	0.095	2.04	In-Tolerance
2 g		0.716	0.716	1.1	0.095	2.04	In-Tolerance
1 g		0.272	0.272	0.9	0.078	2.04	In-Tolerance

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.
The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory. These weights were not screened for magnetism or checked for density, and effects of magnetism or density are not included in the uncertainties.

Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson, Metrologist 10/01/2024 Dwight R Johnson, Reviewer 10/01/2024



South Dakota Department of Public Safety
Office of Weights and Measures
Metrology Lab
Lab: 1100 Otter Rd, Bldg. D Sturgis, SD 57785 Phone: 605-347-7541
Office: 118 West Capitol Avenue Pierre, SD 57501 Phone: 605-773-3697



CALIBRATION CERTIFICATE

Calibrated for: Capital Scale **Certificate number:** M25009
Calibration Date: 10/01/2024 **Purchase Order Number:**

Environmental conditions at time of test: Serial# 1190SD

Temperature: 21.1 °C Humidity: 45.5 % Pressure: 675.6 mmhg

Test method used: SOP 8 Medium Accuracy Calibrations of Mass Standards by Modified Substitution, May 2019
Test equipment used: Lab standards traceable to the SI, XPR64003LD5C, XPR5003SC, XPR226CDR, XPR36C, Vaisala PTU301

Condition of Weights: Suitable for use. No significant wear or damage

Artifact(s): **20 piece Avoirdupois Kit** SN 1190SD

Nominal	SN/ID	Correction as Found mg	Correction as Left mg	NIST Class F Tolerance (mg)	Uncertainty mg	k	Condition As Left
5 lb	1	37	37	230	20	2.04	In-Tolerance
5 lb	2	101	101	230	20	2.04	In-Tolerance
5 lb	3	129	129	230	20	2.04	In-Tolerance
5 lb	4	16	16	230	20	2.04	In-Tolerance
5 lb	5	46	46	230	20	2.04	In-Tolerance
1 lb	1	30.5	30.5	70	6.1	2.04	In-Tolerance
1 lb	2	12.5	12.5	70	6.1	2.04	In-Tolerance
1 lb	3	16.5	16.5	70	6.1	2.04	In-Tolerance
1 lb	4	29.5	29.5	70	6.1	2.04	In-Tolerance
1 lb	5	35.5	35.5	70	6.1	2.04	In-Tolerance
8 oz		6.2	6.2	45	4.0	2.04	In-Tolerance
4 oz		3.8	3.8	23	2.0	2.03	In-Tolerance
2 oz		2.23	2.23	11	0.95	2.04	In-Tolerance
1 oz		2.27	2.27	5.4	0.48	2.03	In-Tolerance
0.5 oz		1.31	1.31	2.8	0.25	2.04	In-Tolerance
0.25 oz		1.19	1.19	1.7	0.15	2.03	In-Tolerance
0.125 oz		0.29	0.29	1.3	0.12	2.03	In-Tolerance
0.0625 oz		0.558	0.558	1.1	0.095	2.03	In-Tolerance
0.03125 oz		0.323	0.323	0.87	0.077	2.03	In-Tolerance
0.03125 oz		0.301	0.301	0.87	0.077	2.03	In-Tolerance

* Adjusted artifacts are in tolerance. Rejected and Condemned artifacts were tagged and must be placed out of service.
The values reported relate only to those observations made at the time and conditions of the test. This calibration certificate, so numbered, may not be reproduced, except in full, without approval of the laboratory. These weights were not screened for magnetism or checked for density, and effects of magnetism or density are not included in the uncertainties.

Treatment of artifacts prior to testing: Thermal equilibrium was obtained by placing the artifacts in the lab overnight

Ron E Peterson

Dwight R Johnson

Ron E Peterson, Metrologist 10/01/2024 Dwight R Johnson, Reviewer 10/01/2024