



Steve Troxler  
Commissioner

**North Carolina Department of Agriculture  
and Consumer Services**  
*Standards Division*  
Standards Laboratory

Stephen Benjamin  
Director

## NC Standards Laboratory Calibration Certificate

<b>Submitted by:</b> Porter Scales 1721 Lake Wheeler Rd. Raleigh, NC 27603	<b>Date of Test:</b> 4/24/2017 <b>Test Number:</b> NC1704-172-W <b>P.O. Number:</b> 17148 <b>Page Number:</b> 1 of 3
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<b>General Description:</b> Twenty-four (24) individual weights <b>Set Serial Number:</b> None <b>Manufacturer:</b> Unknown <b>Material:</b> Cast Iron
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Item(s) Tested and Approved:						
# of Items	Nominal	Description	Tolerance	Measurement Uncertainty	<i>k</i> Coverage Factor	Serial Number(s) (Listed alphabetically)
24	500 lb	Weights	NIST Class F	3900 mg	2.03	IS3100, IS3101, WB500, WB501, WB502, WB503, WB504, WB505, WB506, WB507, WB508, WB509, WB510, WB511, WB512, WB513, WB514, WB515, WB516, WB517, WB518, WB519, WB520, WB521

**Tolerance:** At the time of test, the above weights fall within the tolerance listed. Compliance to design specifications only applies to the tolerance class listed above.



NVLAP Lab Code 200495-0

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# NC Standards Laboratory Calibration Certificate

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**Traceability:** This certificate has been issued under the authority of the North Carolina Department of Agriculture & Consumer Services, Standards Division, pursuant to Chapters 81A and 119 of the General Statutes of the State of North Carolina. The items described above have been compared with the standards of the State of North Carolina, and are traceable to the National Institute of Standards and Technology, NIST via the test number above, and to the SI via NIST. All tests were performed at the North Carolina Standards Laboratory, 4040 District Drive, Raleigh, North Carolina 27607. Environmental conditions are maintained at a temperature of 18 °C to 27 °C and a relative humidity of 50 % ± 10 %.

**Test Data:** Actual test results for this calibration are reported on the attached NCDA&CS Standards Laboratory Test Data Sheet Supplement for NC Test Number NC1704-172-W. The complete report must include both this certificate and the data sheet supplement. The reported test results apply only to the items listed above.

**Uncertainty Statement:** The measurement uncertainty is calculated according to JCGM 100:2008, GUM 1995 with minor corrections, First edition, September 2008, "Evaluation of measurement data – Guide to the expression of uncertainty in measurement." The uncertainty reported is  $k$  (refer to the table above for  $k$  value) times the root sum square of the type A and B uncertainties, which represents a confidence level of 95.45 %. Uncertainty components evaluated include balance standard deviations, mass standard uncertainties, drift uncertainties, sensitivity uncertainties, bias, and absence of air buoyancy corrections.

**Magnetism:** These weights have not been tested for magnetic properties. Since the effects are difficult to quantify, no magnetism components are included in the uncertainty budget. Weights are screened for magnetism only if erratic balance behavior is observed during calibration. If a significant magnetic field is found, the weight is rejected.

## Condition of Item(s) Upon Receipt:

Good	Artifacts display some wear or other degradation.
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## Test Method Used:

NC SOP 8, *Medium Accuracy Calibration of Mass Standards by Modified Substitution (August 2016 Ed)*, based on NISTIR 6969, "Selected Laboratory and Measurement Practices and Procedures to Support Basic Mass Calibrations (2014 Ed)" - SOP No. 8, *Medium Accuracy Calibration of Mass Standards by Modified Substitution (June 2015 Ed)*.

\*Any deviations from or additions to the SOP have been reviewed and approved for use by laboratory management. These deviations are documented and filed in the laboratory files.



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# NC Standards Laboratory Calibration Certificate

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**Standards Used:**

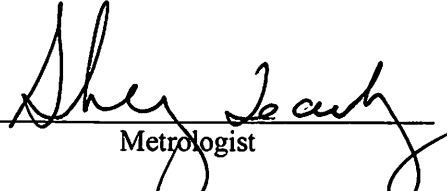
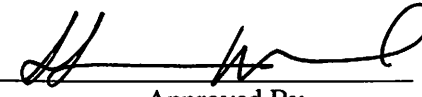
Standards are continuously monitored by a measurement control program. Artifacts are recalibrated if drift, damage, wear or other detrimental condition is noted. Balances are used for comparisons only. No calibration is required.

Working Standard	Working Standard Set Serial Number	Working Standard Test Number	Working Standard Calibration Date	Balance Used
NCSN500A	NCSN 500A	NC1612-066-PC	12-21-2016	KC500 - 500 lb

**Next Appointment Scheduled for:**

4/25/2018
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We would appreciate feedback on your recent experience with our laboratory. Please complete our short online survey at [www.ncagr.com/standard/survey](http://www.ncagr.com/standard/survey).


4/25/17
  
 Metrologist Date Approved By



Laboratory Manager: Sharon Woodard    Quality Manager: Robert Rogers  
 Metrologists: Van Hyder, Ashley Lessard, Sherry Teachey, Nicholas Cercone

**Original Certificate has the NCDA Seal Embossed Above**

**NVLAP**  
 NVLAP Lab Code 200495-0

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**NCDA&CS Standards Laboratory Test Data Sheet Supplement for the Test Number Listed Below**



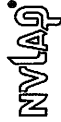
Company Name: Porter Scales  
 Address: 1721 Lake Wheeler Rd.  
 City, State, Zip: Raleigh, NC 27603  
 General Description: Twenty-four (24) individual weights  
 Representative: Tommy Albright  
 Set Serial Number: None  
 Material: Cast Iron  
 Condition of Weights: Good

NC Test No: NC1704-172-W  
 Purchase Order No: 17148  
 Date Scheduled: April 21, 2017  
 Date Received: April 24, 2017  
 Date Tested: April 24, 2017  
 Date Returned: April 25, 2017  
 Next Appointment: April 25, 2018

Environmental Conditions at Time of Test		
	Beginning	Ending
Temperature (°C)	20.7	21.4
Relative Humidity (%)	54	57
Barometric Pressure (mmHg)	745.4	743.6

Line No	Weight Information		Tolerance Information		Balance Readings			Approximate Error				Uncertainty	Working Standard	Wk Std Cal Date	Balance Used	Standard Correction
	Serial Number	Nominal Mass	Tolerance Class	Full Tolerance	Before Adjustment	After Adjustment	As Found	In Tol?	As Left	In Tolerance?						
1	IS3100	500 lb	NIST Class F	23 g	11.5 g	---	14800 mg	Appd	14800 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
2	IS3101	500 lb	NIST Class F	23 g	-0.9 g	---	2400 mg	Appd	2400 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
3	WB500	500 lb	NIST Class F	23 g	-0.5 g	---	2800 mg	Appd	2800 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
4	WB501	500 lb	NIST Class F	23 g	-5.7 g	---	-2400 mg	Appd	-2400 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
5	WB502	500 lb	NIST Class F	23 g	1.6 g	---	4900 mg	Appd	4900 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
6	WB503	500 lb	NIST Class F	23 g	-3.9 g	---	-600 mg	Appd	-600 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
7	WB504	500 lb	NIST Class F	23 g	9.0 g	---	12300 mg	Appd	12300 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
8	WB505	500 lb	NIST Class F	23 g	6.3 g	---	9600 mg	Appd	9600 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
9	WB506	500 lb	NIST Class F	23 g	3.1 g	---	6400 mg	Appd	6400 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
10	WB507	500 lb	NIST Class F	23 g	-24.7 g	-1.3 g	-21400 mg	ADJ	2000 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
11	WB508	500 lb	NIST Class F	23 g	10.3 g	---	13600 mg	Appd	13600 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
12	WB509	500 lb	NIST Class F	23 g	-7.1 g	---	-3800 mg	Appd	-3800 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
13	WB510	500 lb	NIST Class F	23 g	-3.4 g	---	-100 mg	Appd	-100 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
14	WB511	500 lb	NIST Class F	23 g	-1.4 g	---	1900 mg	Appd	1900 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
15	WB512	500 lb	NIST Class F	23 g	3.9 g	---	7200 mg	Appd	7200 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
16	WB513	500 lb	NIST Class F	23 g	-13.3 g	---	-10000 mg	Appd	-10000 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
17	WB514	500 lb	NIST Class F	23 g	1.5 g	---	4800 mg	Appd	4800 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
18	WB515	500 lb	NIST Class F	23 g	15.5 g	---	18800 mg	Appd	18800 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
19	WB516	500 lb	NIST Class F	23 g	-10.6 g	---	-7300 mg	Appd	-7300 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
20	WB517	500 lb	NIST Class F	23 g	7.7 g	---	11000 mg	Appd	11000 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
21	WB518	500 lb	NIST Class F	23 g	8.6 g	---	11900 mg	Appd	11900 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
22	WB519	500 lb	NIST Class F	23 g	5.3 g	---	8600 mg	Appd	8600 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
23	WB520	500 lb	NIST Class F	23 g	17.2 g	-1.3 g	20500 mg	ADJ	2000 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	
24	WB521	500 lb	NIST Class F	23 g	7.6 g	---	10900 mg	Appd	10900 mg	Approved	3900 mg	NCSN500A	12-21-2016	KC500 - 500 lb	3344.18 mg	

**NCD&CS Standards Laboratory Test Data Sheet Supplement for the Test Number Listed Below**



NVLAP Lab Code 200485-0

**Company Name:** Porter Scales  
**Address:** 1721 Lake Wheeler Rd.  
 Raleigh, NC 27603  
**City, State, Zip:** Raleigh, NC 27603  
**General Description:** Twenty-four (24) individual weights  
**Manufacturer:** Unknown  
**Phone:** (919) 828-1750  
**Representative:** Tommy Albright  
**Return Via:** p/u  
**Set Serial Number:** None  
**Ship Charges:** \$0.00  
**Material:** Cast Iron  
**Condition of Weights:** Good

**NC Test No:** NC1704-172-W  
**Purchase Order No:** 17148  
**Date Scheduled:** April 21, 2017  
**Date Received:** April 24, 2017  
**Date Tested:** April 24, 2017  
**Date Returned:** April 25, 2017  
**Next Appointment:** April 25, 2018

Environmental Conditions at Time of Test	
Beginning	Ending
Temperature (°C)	20.7
Relative Humidity (%)	54
Barometric Pressure (mmHg)	745.4
	743.6

**Approximate Error**

Line No	Weight Information		Tolerance Information		Balance Readings		As Found	In Tol?	As Left	In Tolerance?	Uncertainty	Working Standard	Wk Std Cal Date	Balance Used	Standard Correction	
	Serial Number	Nominal Mass	Tolerance Class	Full Tolerance	Before Adjustment	After Adjustment										
25					?		mg	?	mg	?	mg					mg
26					?		mg	?	mg	?	mg					mg

The "As Found" value for the weight reflects the condition of the weights as they were delivered for test. This condition does not necessarily represent the "As Used" condition of the weights if they have been cleaned, painted, or damaged in shipment.

These weights have not been tested for magnetic properties. Since the effects are difficult to quantify, no magnetism components are included in the uncertainty budget. Weights are screened for magnetism only if erratic balance behavior is observed during calibration. If a significant magnetic field is found, the weight is rejected.

This data sheet has been issued under the authority of the North Carolina Department of Agriculture & Consumer Services, Standards Division, pursuant to Chapters 81A and 119 of the General Statutes of the State of North Carolina.

Date	Metrologist	Work Completed	
		Received & tested weights	Returned weights
4/24/2017			
4/25/2017			

<b>Weights Approved</b>	24
<b>Weights Adjusted</b>	2
<b>Weights Rejected</b>	0

**METROLOGIST:** *Sherry Seibert*      Date: 4/25/17  
**RECEIVED BY:** *Quinn Ruggin*      Date: 4/25/17  
**RETURNED BY:** \_\_\_\_\_