

The Way to Weigh

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City of Portland

Water Pollution Control Laboratory



The Goal

- Improve the care and feeding of your balance
- Discuss proper weighing technique
- Enhance documentation and other QA/QC systems

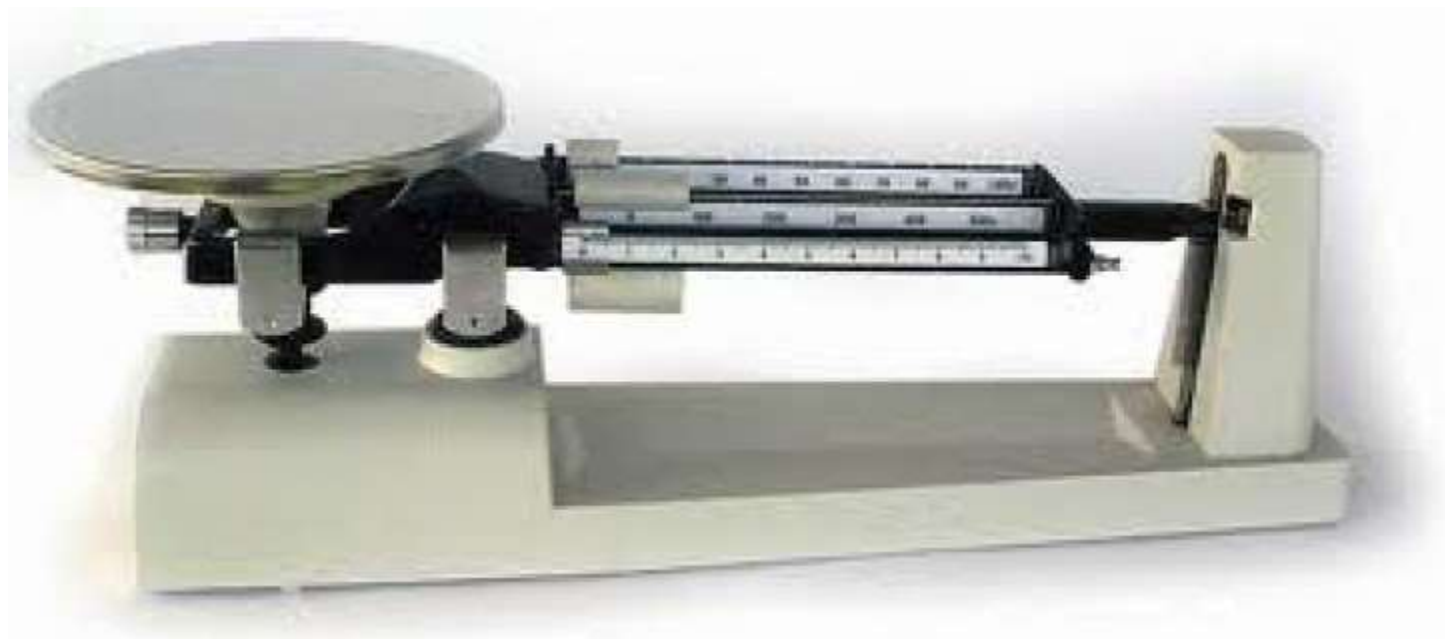


What kind of balance do you use?











Find the best
home for your
balance

- Level counter, preferably fixed
- Free of drafts and vibrations
- Housekeeping







More on housekeeping

- Moisture is the enemy of the metal balance pan
- Chemicals absorb moisture
- Samples are often soggy
- So clean the balance immediately after use
- Wipe up spills when they occur
- And just in case, clean the balance pan before use



Cleaning supplies



Balance the
balance



Calibrate the balance

- Make sure the balance pan is clean
- Minimize drafts
- Tare
- Calibrate



Weigh the weights

- weights cover expected weighing range
- check at the beginning of each day of use
- keep weights protected from debris and damage









Weigh the weights

- Carefully place the weight on the pan
- To avoid metal-to-metal contact, place acid-free tissue paper on the pan before taring
- What's a good weight?

Good weight?

- Weights come with tolerances—what the weight should weigh
- These may be more sensitive than the balance
- Establish an acceptance range based on the balance and use
- EPA SOP EQ-03-07

Report of Calibration

Firm: City of Portland Environmental Services
Address: 6543 N Burlington Ave
City/State/Zip: Portland, OR 97203

Test Completed: 02/20/17
Submitted By: Jenifer Shackelford
Traceable Number: 20170231

Test Item: 100g to 5mg Weight Set
SN: 71391

Manufacturer: Troemner

Laboratory Environment at time of test

Temperature °C	Pressure mmHg	Humidity %RH
21.650	748.04	48.33

Conventional Mass - Mass in Atmosphere

Nominal Value	As Found Value (g)	As Found Correction* (mg)	As Left Value (g)	As Left Correction* (mg)	Uncertainty (mg)	Tolerance (mg)
100g	100.000358	0.358	100.000204	0.204	0.024	0.25
50g	50.000131	0.131	50.000003	0.003	0.016	0.12
10g	10.000038	0.038	10.000038	0.038	0.013	0.074
1g	0.9999970	-0.030	0.9999970	-0.030	0.0065	0.054
100mg	0.0999922	-0.078	0.0999922	-0.078	0.0028	0.025

*Correction is the difference between the conventional mass value of a weight and its nominal value.

Comments:
The 100g and 50g weights were out of tolerance plus As Found. They were cleaned and were within NBS Class S tolerances As Left. All other weights were received in good condition and were within NBS Class S tolerances As Found.

Note: Weight set SN 71391 contains weights from 100g to 5mg. The weights listed above were calibrated as requested by the customer.

page 2 of 2

Quality Control Services, Inc.
Metrology Laboratory Manager
E-mail: dthompson@qc-services.com

Date: 02/20/17
Signature: David S. Thompson

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Minimize uncertainty

- Cool items appropriately (if they have been heated)
- Be quick but not hurried
- Avoid touching what you're weighing with bare hands
- Proper weighing dish
- Beware of static
 - * clean up bits that jump out
 - * investigate a static-suppressing brush
 - * add solvent to the chemical while on the balance





CAUTION Radiation from polonium is dangerous if the solid material is ingested or inhaled. Do not touch strip under grid. Keep away from children. See instructions. Replace after: *MAY 2007*

MODEL NO. 3C500

NRD LLC, GRAND ISLAND, NEW YORK 14072

staticmaster

Weigh the item (finally)

- Have information recording device available
- Weight boat, weigh paper, aluminum dish, etc for chemicals
- Place the item in the center of the balance pan
- Tare the receptacle
- Add stuff



QA/QC is your friend

- Record your weight checks
- Provides proof that you checked
- May point out issues with the balance or weights or personnel

City of Portland WPCU
Daily Balance Calibration
Solids Balance


Balance Name/Model: Sartorius, Analytical, Model CPA2248
Balance Serial #: 24151051 Room #: 142

Date	Initials	Weight 0.1000 g	Weight 1.0000 g	Weight 10.0000 g	Weight 50.0000 g	Weight 100.0000 g
02-09-17	NJ-rem	0.1000	1.0000	10.0001	50.0000	100.0000
2-10-17	RK-Recal	0.1000	1.0001	10.0000	50.0000	99.9998
2-11-17	RK-Recal	0.0999	1.0001	10.0000	49.9999	99.9999
2/12/17	NJ-RECAL	0.1000	1.0000	10.0000	50.0000	99.9998
2/13/17	JM-Recal	0.1000	1.0001	10.0000	49.9999	99.9999
2/14/17	KD-Recal	0.1000	1.0000	10.0000	49.9999	99.9998
2/15/17	RK-Recal	0.1000	1.0001	10.0000	49.9999	99.9999
2/16/17	RK-Recal	0.1000	1.0001	10.0001	50.0001	99.9998
2-17-17	uu	0.0999	1.0000	10.0000	49.9999	99.9998

64876

Standard Operating Procedures

- Balance manual
- Procedure for day-of-use weight checks
- Good weighing practices



ISD Procedure Template

Number: 560-TM-018-01 **Approved By: (signature)**
Effective Date: October 1, 2004 **Name:** Joe Hennessy
Expiration Date: October 1, 2009 **Title:** Chief, ISD

Responsible Office: 560 Information Systems Division (ISD) **Asset Type:** Template
Title: Procedure Template **PAL Number:** 3.5.2.4

GUIDANCE: This template can be used to define a procedure. The above header must be changed to the actual procedure. Change include Name (ISD Procedure Template) should be "ISD procedure file". Also change Number, Date, Asset Type, Title, and PAL Number. See attached example procedure in this package.

Purpose: **GUIDANCE:** State the purpose of the procedure.

Scope: **GUIDANCE:** State the scope of the procedure. The scope is defined as range of operation for the procedure, i.e. what will be the extent of treatment, activity, or influence of the procedure's use.

Roles and Responsibilities: **GUIDANCE:** List the primary role title of the person who performs activities within the procedure along with their responsibilities. If there are additional roles involved, list them here for each Role Title.
[Role Title] (Role title should be in bold text)
 Description of responsibility
 Description of another responsibility

[Role Title] (Role title should be in bold text)
 Description of responsibility
 Description of another responsibility

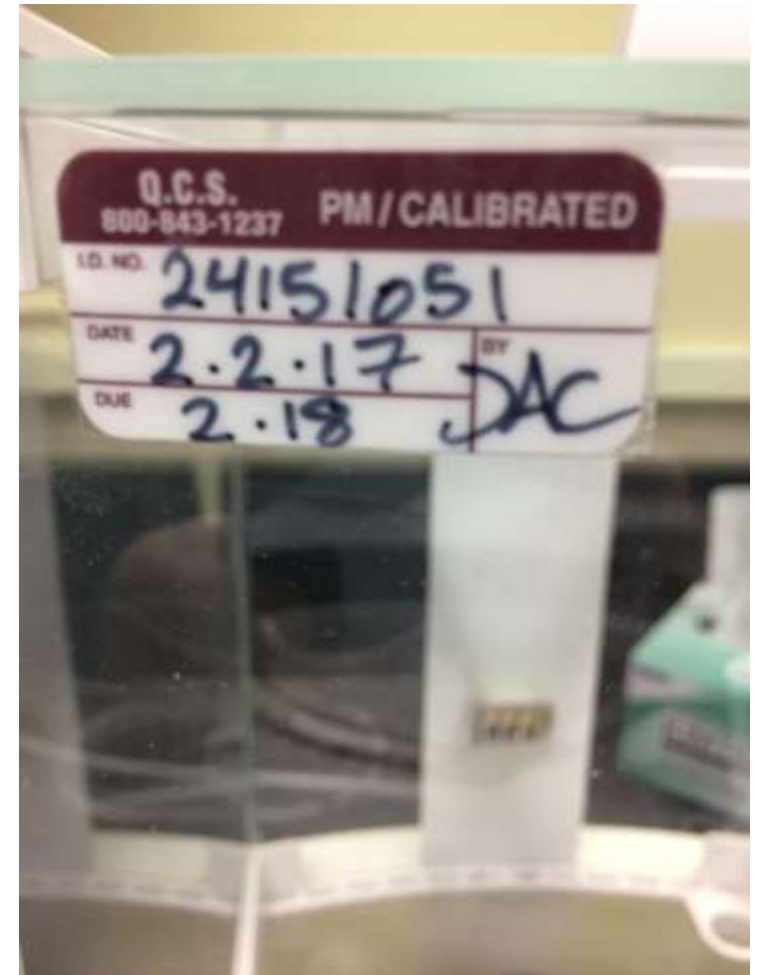
Step-Action Table: **GUIDANCE:** List the steps and role(s) responsible for performing each step. State whether these steps should be performed in sequential, parallel, or iterative order. If certain steps are performed under special circumstances, list those exceptions. The "Role" column may be omitted if the same role performs all of the steps.

Step	Action	Role
Step #	Description of action performed	Role performing action
Step #	Description of action performed	Role performing action

Procedure Template, Version 1.0 page 1 September 8, 2004
 Check the Process Asset Library at <http://tda.jsc.nasa.gov/asset/560000/560000018> to obtain the latest version.
 NOTE: Words or phrases shown in **bold** contain links to additional information.
 Guidance & talking information is shown in **italics** with grey background.

Advanced Placement

- Professional balance servicing—annual
- Weight calibration—annual
- Training log



Thank you for listening!

