

AQR: Balance Calibration Checks and Maintenance

Introduction The balances in the laboratory must be periodically checked to ensure that they are operating satisfactorily. Satisfactory operation of the balances is achieved through

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- maintenance
 - calibration
 - calibration checks
 - repair
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Definitions The following are terms that are related to balance calibration checks and operation.

- *accuracy* – The degree of agreement of the measurement with the true value of the quantity measured.
 - *capacity* – The maximum weight load of the balance as specified by the manufacturer.
 - *NIST traceable weight* – Any weight traceable to SI units.
 - *readability* – The value of the smallest unit of weight that can be read without estimation.
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Records Each balance in the laboratory must have log books recording calibration checks and maintenance. These logs should include the following information:

- manufacturer
- model number
- serial number
- date of calibration checks
- analyst performing the check
- weights used
- observed mass of weights

Logs may be discarded after one accreditation cycle.

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Routine maintenance

Routine maintenance of balances will consist of analysts cleaning and leveling the equipment as needed.

Routine maintenance need not be recorded in the log book.

Calibration

Annual calibration and maintenance will be performed by an approved vendor. An approved vendor consists of a service supplier accredited to ISO/IEC 17025 by an accrediting body that is signatory to the IAAC or ILAC.

Records of maintenance and calibration will be kept in the appropriate log books for a minimum of one accreditation cycle.

Calibration check

The calibration of each balance must be checked using weights traceable to SI units.

Refer to the individual procedure manuals for specific information.

Allowable error

The allowable error for a NIST traceable weight is ± 5 in the smallest unit that can be read on the balance (for example, ± 0.005 g for a milligram balance).

EXCEPTION: If a balance does not read to ± 1 unit, then the allowable error is ± 5 times the smallest division (for example, ± 2.5 grams for a balance with a readability of 0.5 g/division).

Outside range

If the observed mass of the NIST traceable weight is outside of the allowable range, the balance must be **immediately** removed from use. The balance will be recalibrated by an approved vendor.

Repair

Repair of balances will be performed by an approved vendor.

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Relocating balances

Any balance which is relocated must be leveled and have the calibration checked prior to use at the new location.

References

The following references were used in this document.

- *Instruction Manual for Precision Advanced Electronic Balances, GT Series.* Ohaus.
 - *1998 Annual Book of ASTM Standards, General Methods and Instrumentation.* ASTM. Section E 898-88. pp. 541-544.
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