Calibration Test Weights

A calibration test weight is a certified mass used to verify or adjust a scale. Weights are graded by ASTM E617 (Class 0 to 7) or OIML R111 (E1 to M3), and the working rule is that the weight's tolerance should be no more than one third of the balance's permitted error at that load.

Which weight class for which instrument

Application	Typical capacity	Typical readability	Notes
Analytical balances (0.1 mg)	1 mg – 200 g	ASTM Class 1	OIML E2 equivalent
Precision balances (0.001–0.01 g)	1 g – 2 kg	ASTM Class 2	OIML F1 equivalent
Bench and counting scales	100 g – 20 kg	ASTM Class 3–4	OIML F2/M1 equivalent
Floor, crane and industrial scales	5 – 50 lb+	ASTM Class 5–6	Cast iron / stainless field weights

Certification and compliance

- Authorized A&D Weighing dealer. Sold as an authorized dealer since 1998, so every unit carries the full manufacturer warranty and factory firmware — not grey-market stock.
- NIST-traceable calibration certificate. Any instrument can ship with a calibration certificate produced in our Cypress, Texas lab using mass standards traceable to NIST, with as-found and as-left values recorded.
- ASTM E617 / OIML R111 test weights. Verification weights are supplied in ASTM Class 1–6 or OIML E2–M3 tolerances, sized so the standard's tolerance stays inside one third of the scale's smallest division.
- In-house repair & on-site service. Factory-trained technicians repair, adjust and re-certify weighing equipment in our own Texas workshop and on-site across the Houston metro.

Specification checklist

- One-third rule. Weight tolerance ≤ 1/3 of the balance's permitted error at that load.
- Material. Stainless for Class 1–4; cast iron is acceptable for field-class industrial verification.
- Nominal value. Verify near full capacity, plus a mid-scale point for linearity.
- Certificate. NIST-traceable, with as-found and as-left values for regulated use.
- Recertification interval. Annually for working standards; sooner if handled frequently.

Frequently asked questions

What class calibration weight do I need?

Choose a class whose tolerance is no more than one third of your balance's permitted error at the test load — typically ASTM Class 1 for analytical balances, Class 2 for precision balances, and Class 3–6 for bench and industrial scales.

What is the difference between ASTM and OIML weight classes?

They are parallel systems. ASTM E617 runs Class 0 through 7; OIML R111 runs E1 through M3. Rough equivalents: ASTM 1 ≈ OIML E2, ASTM 2 ≈ F1, ASTM 4 ≈ F2, ASTM 5 ≈ M1.

How often do test weights need recertification?

Annually for weights in regular use, and immediately after any drop, corrosion or bare-hand contact on a Class 1–3 weight.

Can I calibrate a scale without certified weights?

You can adjust it, but the result is not traceable and will not satisfy an auditor, a state inspector or a quality system. Verification requires a certified mass.

Terminology

Accuracy	How close a displayed weight is to the sample's true mass. Accuracy is limited by readability, repeatability and linearity together, so a scale can never be more accurate than its specification sheet's worst of those three figures.
ASTM E617	The American standard that defines tolerance classes for mass standards. Class 1 weights are the tightest commonly used for laboratory balances, Class 2 for 0.01 g balances, and Classes 4 and 6 for industrial platform and crane scales.
Calibration	Adjusting a scale's span so it reads a certified test weight correctly, documented with as-found and as-left values. Distinct from verification, which records a reading without changing anything.
Capacity	The maximum mass a scale is rated to weigh. Usable capacity is the rated capacity minus every container, fixture or platform that sits on the pan, because tare does not add capacity back.
Division (d)	The smallest increment the display can change by, also called readability or scale interval. A 1200 g x 0.01 g balance has a 0.01 g division and 120,000 divisions across its range.
Linearity	The maximum deviation from a straight line between zero and full capacity, expressed in divisions. A balance can be perfectly repeatable and still be non-linear, which is why calibration is checked at more than one point.
NIST Handbook 105-1	The United States specification for field standard mass standards, and the source of the widely used rule that a test weight's tolerance should not exceed one third of the scale's smallest division.
OIML R76 / R111	The international recommendations for non-automatic weighing instruments (R76) and for weights of classes E1 to M3 (R111). They are the international counterparts to NIST Handbook 44 and ASTM E617.

EK1200i.com — authorized A&D Weighing dealer since 1998. Calibration, repair and application support from Cypress, Texas.
Call 832-290-3120 · info@mnmscales.com · https://ek1200i.com/calibration-weights