

PROCEDURE FOR CALIBRATING, STANDARDIZING OR CHECKING EQUIPMENT

Revised 06/16

PROCEDURE #46

Equipment Checked: Scales (Balances)

Reference Documents: NIST Handbook 44, AASHTO M231, ASTM E617, ASTM C138

Purpose: To provide instructions for checking the accuracy of scales to be used in area and project labs. All scales shall be checked annually.

Inspection Equipment: Suggested standard weights (checked against calibrated scale) 100g, 200g, 5kg, 10kg, 20kg.

Tolerance: The allowable tolerance throughout the range checked shall be equal to or less than 0.1% of the test load. The allowable tolerance for Platform scales used to determine fresh concrete unit weight shall be equal to or less than 0.3% of the test load.

Procedure:

1. Set up the scale in a location away from drafts or excessive air movement.
2. Level the scale, and if weighing under water, observe that the apparatus is free of any obstruction that may affect its movement.
3. Perform Span Check:

Place the verification weights in the center of the scale. Record the weight to readability of the scale.

Confirm repeatability by placing one of the weights on the scale a second time to obtain the same weight. Confirm that the reading returns to zero when the weights are removed.

- For weighing devices with a capacity of up to 1,000 grams, the suggested verification weights are 100g and 200g. External scale calibration weight shall be 200g.
- For 12kg weighing devices, suggested verification weights of 5kg and 10kg. External scale calibration weight shall be 10kg.
- For 30kg weighing devices, suggested verification weights of 10kg, and 20kg. External scale calibration weight shall be 20kg.
- For platform weighing devices used for standard density determination, the suggested verification weights are 10kg and 20kg.

Note: It is desirable to perform additional checks on scales for accuracy after they have been installed in construction field lab. Not all verification weights are required for additional field checks.

4. Perform Cornerload Check:

Place the weight in the center of the scale and re-zero the scale.

Place the weight in the four locations (Front/Back, Left/Right) as indicated on the Calibration Sheet. Record the weight of each reading.

- For 12kg and 30kg weighing devices use verification weight of 5kg.
5. If any readings indicate out of tolerance, perform external scale calibration, if applicable, as per scale instruction Manual and repeat steps 3 and 4, or remove the scale from service until it can be recalibrated.
 6. Record results on Balance or Scale Calibration Sheet.