

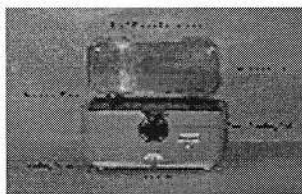
THE CLASS A PRESCRIPTION BALANCE

The Class A Prescription Balance is the balance most commonly used by pharmacists; in fact, all pharmacies are required by law to have one in the prescription department. It is a 2 pan torsion balance which requires the use of external weights for measurements exceeding 1 g.

The balance has a sensitivity requirement of 6 mg, with no load and with a load of 10 g on each pan. Most have a maximum capacity of 120 g and bear a statement to that effect. When no information is given, the capacity is assumed to be at least 15 g. No less than 120 mg may be weighed on the balance to maintain an error of $\leq 5\%$.

The Class A Prescription Balance is manufactured to meet the requirements of the National Bureau of Standards (NBS). In general, the balance must have the following:

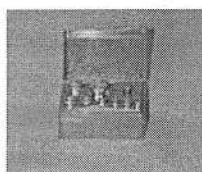
- A metal identification plate indicating the serial number, model number, sensitivity, and maximum capacity of the balance (on back or side of balance).
- Removable weighing pans which are of equal weight, and free of dirt and corrosion.
- A device, usually leveling screws, which may be used for leveling the balance.
- A lid to protect the balance from dust and permit draft-free weighing.
- A mechanical beam (oscillation) arrest to allow the operator to add or remove weight without jarring the damaging the balance.
- A graduated beam, equipped with a rider, or direct reading dial capable of measuring 1 g in 0.01 g increments. The beam or dial must have a "Stop" at the zero point. (Note: most balances are calibrated in grams and grains. Take care to read the appropriate scale!).
- An appropriate index and pointer to determine rests points.



Class A Prescription Balance

The Class B Prescription Balance is not available in the pharmaceuticals lab but may be encountered in practice. It has a sensitivity requirement of 30 mg and at least weighable quantity of 648 mg to maintain an error of $\leq 5\%$. If a Class B balance is present in the pharmacy, it must be clearly marked as such to avoid being mistaken for a Class A balance.

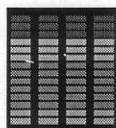
Balance Weights: A proper set of metric weights (Class C or better) is essential for prescription compounding. These sets usually contain cylindrical weights ranging from 1-50 g and fractional weights of 10-500 mg. Weights should be stored in a special box and must be **handled with forceps, NOT with the fingers** to prevent soiling and erosion of the weights. Apothecary weight sets are also available and are convenient to use when the prescription is written in the Apothecary system.



Weight Set

Operating a Class A Prescription Balance:

In order to obtain an accurate weight of components on the prescription balance, appropriate techniques must be used. The following steps should always be taken to insure accuracy. Click on a picture in order to see a larger view of that picture.



	<p>1. Arrest the balance by turning the arrest knob. Level the balance (front to back) by turning the leveling screw feet all the way into the balance and then moving them the same direction until the 4 sides of the balance are equidistant from the bench.</p>
	<p>2. Set the internal weights to zero. This is done by turning the calibrated dial to zero.</p>
	<p>3. Place one weigh boat on each weighing pan. The small weigh boats will hold up to 2 g., while the larger weigh boats will hold up to 20 g.</p>
	<p>4. <u>Unlock</u> the balance by releasing the arrest knob and note the rest point of the pointer on the index. If the pointer does <u>not</u> rest at the center of the index, then it will be necessary to level the balance left to right.</p>
	<p>5. Level the balance (left to right) by adjusting the leveling screw feet. Arrest the balance each time. To shift the pointer left, grasp both the screw feet between the thumbs and forefingers and rotate so that thumbs move inward. To shift the pointer to the right, rotate both screw feet so that forefingers move toward back of the balance. Continue adjusting the screw feet slowly until the pointer rests at the center of the index or swings equal distances to the right and left of the center.</p>
	<p>6. Arrest the balance and place the required weights on the right pan. Place the material to be weighed on the left pan.</p>
	<p>7. Release the balance and note the shift of the pointer on the index. If the pointer shifts left, too much of the substance is on the pan and a portion should be removed. If it shifts right, there is too little of the substance and more should be added. Using a spatula, remove or add material. Arrest the balance each time before a transfer is made.</p>

Once you are satisfied that you have made an accurate measurement, double check to make sure that you have weighed the correct substance (check the label) and that you have used the correct weights (internal and external).

Precautions:

- **Always use weigh boats on both pans** to protect the pans from abrasions, eliminate the need for repeated washing, and reduce loss to porous surfaces (this is especially important when weighing small quantities). The boats should be of reasonable size, giving a maximum weighing area **without touching any part of the balance except the pan**. A clean boat should be used for each new ingredient to prevent contamination of components. It is imperative that the balance be adjusted after a weigh boat has been placed on each pan. Small weigh boats taken from the same box can vary in weight by as much as 30 mg, and the larger boats can vary by as much as 200 mg. If the zero point is not established after the boats are placed on the pans, a great error can be incurred when weighing your substance.
- **Always arrest the balance** (i.e. lock the pans in place) **before adding or removing weight from either pan**. Although the balance is noted for its durability, repeated jarring of the balance will ultimately damage the balance and reduce its accuracy.
- **Always clean the balance, close the lid, and arrest the pans before storing** the balance between uses. This simple step will prolong the functional life span of the balance.

