A&D Weighing

FINDING THE RIGHT BALANCE

For Your Lab or Industrial Application

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Balances are crucial in laboratory and industrial applications where high accuracy is a must. Certain sectors call for the use of specific kinds of balances to get the job done. However, choosing the correct balance for your day-to-day operations is merely the first step in your purchasing decision.

When making a purchase decision, users have to consider many factors including budget, readability, capacity, calibration, accuracy, workspace environmental conditions, additional features, and accessories. While many balances today have a long list of added features and functions, buying additional features (that may only be used occasionally) instead of focusing on metrological performance could result in unreliable results.

As an award-winning manufacturer of industrial and laboratory balances, scales, and weighing systems, A&D Weighing is here to break down the different types and specifications that every buyer should keep in mind when purchasing their next lab or industrial balances.

Choosing The Right Kind of Balance

There are several kinds of balances out on the market today. These are the four most common:

1. Analytical Balances
2. Precision Balances
3. Microbalances
4. Ultra-Microbalances

Analytical balances are often used for differential weighing, sample management, formulation weighing, density measurement, pipette calibration, and interval weighing, typically while connected to a computer with special software. They have readabilities between 0.01 mg (0.00001 g) and 1 mg (0.001 g). For small analytical measurements, get a balance with a capacity range of 1g to 250g. Larger scale applications will need units with a 250g to 500g capacity. For a complete selection of units, check out A&D's *Analytical Balance section*.

Precision balances are meant for GMP, formulation weighing, sample management, weighing, dynamic weighing, ISO and other quality management systems, and interval weighing assisted by a computer with special software. These balances will feature readability ranges of 1mg (0.001 g) and 1g. Smaller units will have capacity ranges of 1g to 35,000g while larger units are built to handle 35,000g to 70,000g. Head over to A&D Weighing's *Precision Balance section* to view a wide range of models.

Microbalances are used for stent weighing, pesticide analysis, elemental analysis of glass, pipette calibration, and particulate matter weighing. Readability specifications for this type of balance range between 1µg (0.000001 g) and 0.01 mg (0.00001 g). There are units with capacity ranges of 0g to 25g for small applications and 25g to 50g for larger scale applications. View a full selection of *microbalances over at A&D Weighing's website*.

Ultra-Microbalance are designed to be used in particulate matter weighing, drying, ashing or incineration, coating measurement, and spillage quantity checking. These types of balances feature a readability of 0.1µg (0.0000001 g) and a capacity of approximately 5g.

Features to Look For

Capacity

One of the first things to consider when purchasing a balance is the unit's capacity limits. Take note of the heaviest and lightest net weights of the samples or materials that you handle. Use this information to choose a balance with a capacity that matches these weights with a little additional room, just in case.

Be wary of how much additional capacity you consider getting though. Getting a balance with too much extra capacity will likely be more expensive. If you only weigh items as heavy as 100g, there would be no need to to get a balance capable of 300g.

Readability

Also known as increment size, resolution, or division size, readability is the smallest detectable weight change that a balance is capable of indicating. Say for example the balance you are looking at has a readability of 1µg (0.001 mg). This means that the display on the unit will increase in increments of 1µg. Looking for a high resolution balances? *Check out the MC Series Mass Comparators.*

Calibration

Balance calibration can either be performed manually or automatically. During manual or external calibration, users enter a special calibration mode on the balance and place a certified weight standard on top to check for proper configuration. Automatic calibration, on the other hand, relies on the unit's built-in features to achieve the same results.

With manual calibration, balance owners need to remember to have their calibration weights re-calibrated by a third-party service at least once a year. This is because calibration masses never stay the same with repeated use; normal wear, fingerprints, scratches, and corrosion by contaminants in the atmosphere all contribute to this change.

The internal calibration features found within some balance models definitely add convenience and save time. However, keep in mind that this feature does add to the cost of a unit. A lot of balances with this feature are also capable of external calibration. Interested in a balance with internal calibration? Browse through the *FZ-i Precision Balance* and *GX Precision Balance* models on A&D.

Environmental Conditions

Location and environment are key factors when it comes to balances. Take a look around your workspace and ask yourself the following questions:

1. Is this a hazardous area?
2. Are you in a dry or wet environment?
3. Are my samples or materials dry or wet?
4. Will my balance be situated near a vent or air conditioning unit?
5. What is the temperature inside the room?
6. Is there a road or other sources of vibration close by?

For some balance types, like the Analytical and Microbalances, the smallest changes can affect readings due to the higher resolutions of this model. Observe your work environment and use those details to help you pick out a balance with the right features. For example, if your balance will be situated near a window or air conditioning unit, consider getting a device with automatic recalibration to remove any errors brought about by temperature change. If you are weighing plastic components and other conductive parts, think about getting a deionizer accessory to remove any static charge or get a balance like the *A&D BM Series models* that feature a built-in deionizer. This is especially useful whenever electrostatic samples are involved.

Weighing in a Hazardous Environment or Flammable Liquids?

Staying safe when weighing volatile liquids commonly found in labs, such as benzene, other hydrocarbons or oil-based paints, calls for an intrinsically safe balance. These are listed as "FM Approved" in North America and as ATEX elsewhere around the globe. When the need is for safe weighing, consider the *EK-EP Series* of intrinsically safe compact balances.

Functionality and Accessories

Weighing animals? If so, you'll probably need a balance with dynamic weighing (Animal) mode which is found in most A&D balances including the GX Precision Balances with Internal Calibration. For heavier capacities, it's still possible to get the precision of a balance with the capacity of a scale with A&D's high capacity balances such as the GF-K Industrial Balance and GX-K Industrial Balance.

Does your industry require you to weigh in grams, ounces, cubic zirconia, milligrams, or troy ounces? Be sure the balances you are looking at can provide you with measurements in your preferred unit.

If you need to measure parts, consider getting a balance that offers checkweighing functionalities that will enable you to count pieces inside a container and will let you know when you fulfill your specifications.

In case you need to print your results, you will need to purchase a balance with a compatible printer like the or the *AD-1192 Compact Printer*. If you'd like to store your weighing data onto a computer, take advantage data logging software; A&D's version is called WinCT and is free, just download it from *http://www.andweighing.com/software-downloads* . Some providers will also offer density determination kits and covers as optional accessories. Keep in mind, accessories will vary from balance to balance, so take extra time to go through all the available product information

Certification

Commercial industries such as food production, jewelry, pharmaceuticals, and cosmetics, among others are required to use balances with special certification given by the National Conference on Weights and Measurements (NCWM). These types of balances are referred to as either "Legal for Trade" or "NTEP certified".

In the United States, any person or business that buys, sells, or charges based on weight is required to use an NTEP certified balance to ensure that everything adheres to government standards. A&D offers a wide range of Legal for Trade balances such as the *GF-N series, FX-iN series, EKi series, and EWi series models*.

A&D Weighing has been providing industry-leading precision weighing and measurement equipment to laboratories across the world for over 40 years. At A&D Weighing, you can rest easy knowing that each piece of equipment passes through the highest of quality standards at ISO 9001 certified facilities.

To view A&D Weighing's a complete line of Industrial and Laboratory Weighing Balances and accessories visit our website today and we'll provide you with worry-free and convenient warranty services for guaranteed product performance and quality satisfaction.

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