Cole-Parmer®

Balance/Scale Selection Guide

Get the balance or scale you want with the features you need!

coleparmer.com

Get the balance you want with the features you need!

We offer the widest selection of balances and scales from the top manufacturers. Our offering includes analytical balances, toploading balances, spring and hanging scales, bench and floor scales, and even calibration masses and weights.

Balance manufacturers include:

Cole-Parmer, Mettler Toledo, Ohaus, Adam Equipment, Sartorius, A&D Weighing

and more...

Terms to know when choosing Laboratory Balances

Accuracy
The degree to which sample weight conforms to a standard (calibration mass). Accuracy is a function of reproducibility and linearity.

Capacity
The maximum weight the balance can accommodate. The weight of any container or dish should also be considered when calculating capacity.

Check Weighing
A function that compares the current balance load to a predetermined mass and indicates the load as being below, above, or within an allowable range.

GLP/GMP Printout Capability
Program that provides a specific set of information on the balance and the sample weight, so as to conform to good laboratory/manufacturing practices.

Linearity
The maximum amount a weight reading may deviate from a straight line between zero and the maximum capacity of the balance.

Mass Unit Conversion
Feature that lets you toggle between two or more weighing units.

Moisture Determination
Balance function that calculates percent moisture by comparing the initial sample weight to the weight after drying.

Net Weight
Weight of the load on the pan minus the container (tare) weight.

NTEP Certified
A term that designates those balances having National Type Evaluation Program (NTEP) approved status for sale into legal-for-trade applications.

Readability
Smallest increment of weight a balance will display.

Repeatability
The degree of agreement between repeated measurements of the same mass, on the same balance, under the same conditions.

Tare Weight
Weight of a container, dish or package that should not be taken into account when weighing a sample.

Features and Options for Optimal Balance Performance

Internal vs. External Calibration

Internal calibration is a feature where the balance can automatically perform its own calibration and can sometimes be set to calibrate at user-defined intervals. External calibration is completed manually using an external mass standards placed on the balance weighing pan. Internal calibration is more ideal if conditions vary such as temperature, humidity, movements, etc., or if manual calibrations are not able to be performed. Internal calibration will take care of any changes due to environmental factors (drift). However, this does not excuse a user from regularly calibrating the balance with a certified weight to prove traceability of measurement. External calibration requires optimal settings and due diligence to maintain both the balance and the weights for optimal calibration performance.

Value of a Draft Shield

Draft shields are often used with analytical balances and precision weighing instruments to reduce the effects of drafts and air currents on your sample. You may also purchase a separate draft shield to surround your entire weighing instrument. Never weigh your samples near fans or vents or heavily-trafficked areas of the lab.

Size of Weighing Surface

The size of your weighing pan or surface also plays a role in the performance of your scale. The larger the weighing surface area, the more susceptible your balance or scale is to drafts. Square weighing pans have more surface area than round pans. Always select the smallest pan size that fits the material being weighed.

Value of Balance Tables

Vibration forces may also affect your readings on your balance, so consider weighing on an antivibration table or platform to minimize the effects of vibration.

Advantages of Touch Screen Interfaces

If you need precision, accuracy, saved data for audits, or want a balance you can customize with features that can make your weighing much easier with just a touch, then consider a touch-screen balance. Some of the features can include, but are not limited to, a capacitive touchscreen for easy use; customizable menu screen to match your everyday needs; touchless feature to minimize contamination; statistics working mode to automatically calculate and quickly analyze data from a series of measurements; a built-in memory to automatically record measurements, preview, copy and archive data; easy-to-adjust filter settings depending on your working environment and more.

Types of Heating Elements in Moisture Balances

- Halogen lamp heating elements are suited for applications that require accelerated temperature regulation during sample drying. However halogen lamps heat and cool quickly sometimes causing the sample to scorch.
- Infrared heating lamps are an economical alternative to halogen-lamp models. Infrared lamps take longer to heat, so they are optimal for samples prone to scorching due to rapid temperature changes.
- Quartz heating elements look similar to the heating element in your oven at home. Heat is transferred from a coil wire to a material which distributes the heat providing consistent heating.

IP Ratings

The International Protection (IP) rating system provides a means of classifying the degrees of protection from solid objects and liquids afforded by electrical equipment and enclosures. Degrees of protection are listed as IP followed by a two-digit number. The first digit shows the protection level against solid objects. The second number shows the extent to which an object is protected against liquids. In both cases, the lower number signifies a lower degree of protection.

View our blog post about international protection ratings.

Conditions that may Affect the Precision and Accuracy of Your Balance

Humidity and temperature of the environment (climate control)

Variables such as humidity, temperature, and air pressure can impact weighing accuracy. Use a temperature and humidity gauge to ensure the room has the optimal environment for weighing; check the user manual for recommended parameters. If unpacking a balance for the first time, it will need to sit in the room for several hours to reach room temperature before use. Plan accordingly.

Temperature difference applies not only to the balance's environment but also to the sample, the glassware, and anyone's hands that are working with the balance. Hot and cold can affect the accuracy of the results, so samples, glassware or plasticware, and hands need to be at the correct temperatures. Cool samples before using and place all samples in the center of the balance.

Cleanliness

A clean balance is critical for weighing accuracy. Inspect and clean the balance before each use. A flannel cloth or soft brush is ideal for dusting and light cleaning. Use a non-abrasive cleaner to clean any light spills. Use a dry flannel cloth to clean glass parts (mild cleanser may be applied if it does not contain any abrasive substances). For heavier spills, refer to the balance manual for proper cleaning techniques. Certain cleaning agents may be required for specific substances. Set a maintenance schedule to deep clean the balance for optimal use and lifetime.

Airflow within the environment

If adding a new balance for the first time, ensure the balance is positioned correctly in the laboratory or room. Determine where the airflow circulates in the room and place the balance away from drafty areas such as below air vents or near open doors. If you experience fluctuating readings when using your balance or scale, or measurements are going up and down, you may be susceptible to drafts caused by airflow. When weighing small items or when accurate measurements are critical, use a draft shield.

Balance operator

Did you know that the miniscule weight of fingerprints, oils, lotions, and moisture can affect the weight on a balance? Use tweezers and gloves to add samples or items to the weighing platform.

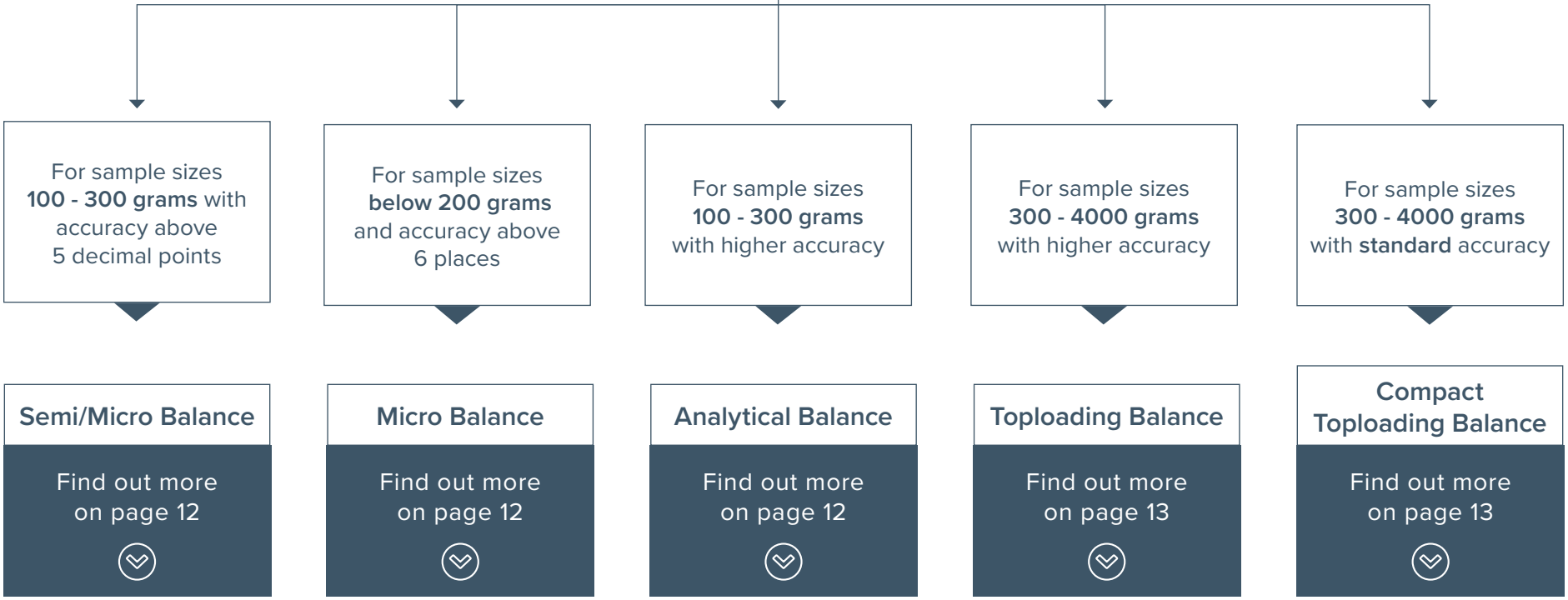
Vibrations in the environment

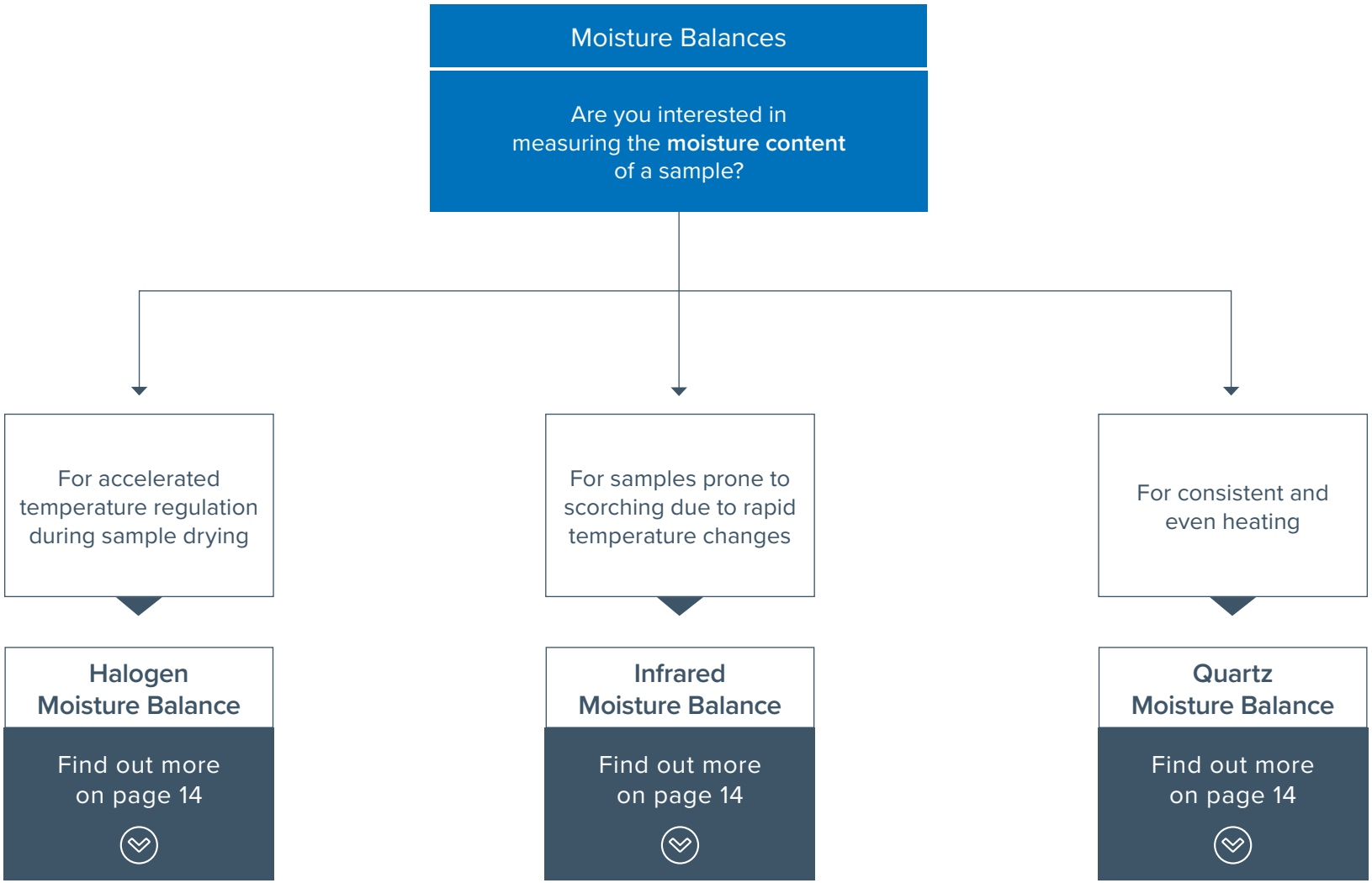
Place the balance on a sturdy table or benchtop away from high-traffic areas such as hallways, elevators, meeting rooms, stairways, or doors. Even the slightest movement or vibration from a heavy foot may affect the accuracy. If this placement is not possible, an antivibration table should be considered for extra stability. An antivibration table is a solid-built table that decreases vibrations. It is always a good reminder not to lean on the table that holds the balance. This can cause instability to the table and balance.

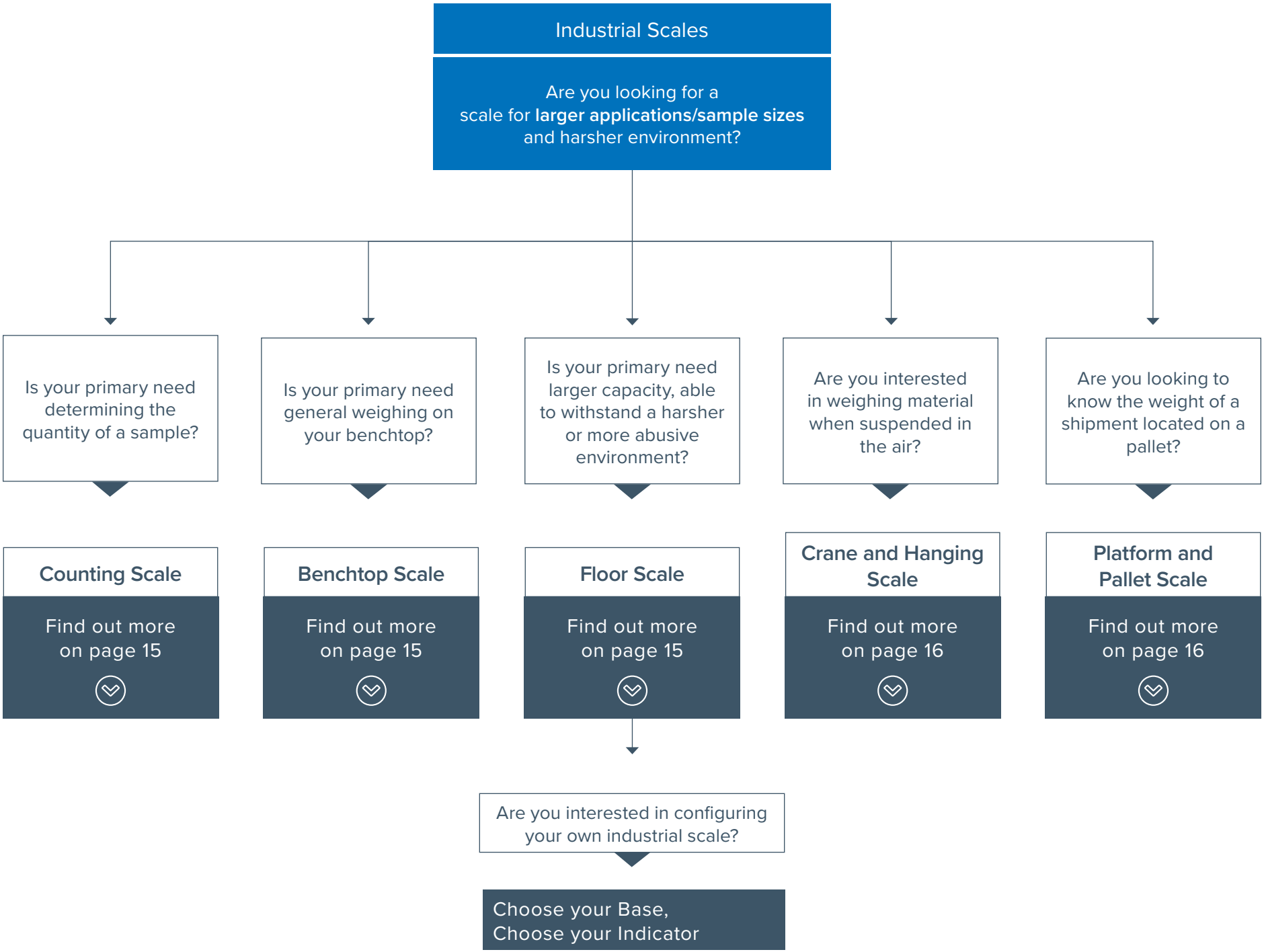
Selection Guide

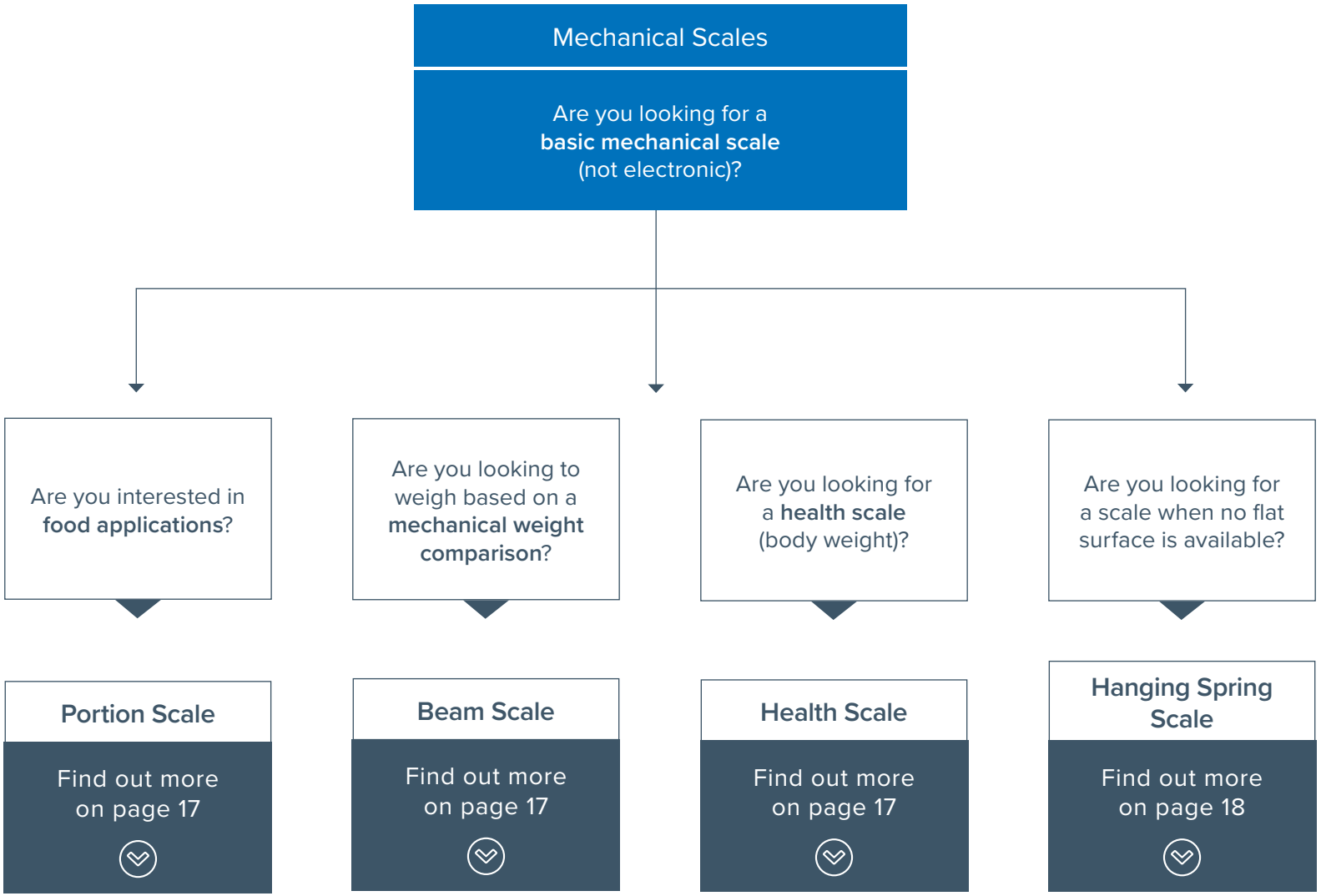
Precision, Portable and Toploading Balances

Are you looking for a balance for **small samples** but with a **high level of precision** to multiple decimal points?






Industrial Scales
Are you looking for a scale for larger applications/sample sizes and harsher environment?
Is your primary need determining the quantity of a sample?
Is your primary need general weighing on your benchtop?
Is your primary need larger capacity, able to withstand a harsher or more abusive environment?
Are you interested in weighing material when suspended in the air?
Are you looking to know the weight of a shipment located on a pallet?
Counting Scale
Find out more on page 15
Benchtop Scale
Find out more on page 15
Floor Scale
Find out more on page 15
Crane and Hanging Scale
Find out more on page 16
Platform and Pallet Scale
Find out more on page 16
Are you interested in configuring your own industrial scale?
Choose your Base, Choose your Indicator


Mechanical Scales
Are you looking for a **basic mechanical scale** (not electronic)?
Are you interested in **food applications**?
Are you looking to weigh based on a **mechanical weight comparison**?
Are you looking for a **health scale** (body weight)?
Are you looking for a scale when no flat surface is available?
Portion Scale
Find out more on page 17
Beam Scale
Find out more on page 17
Health Scale
Find out more on page 17
Hanging Spring Scale
Find out more on page 18

Get the Right Balance

Precision Balances

Precision Balances are precise with readability to 0.01 g (5 decimal places) making them ideal for universities, pharmaceutical and high-precision manufacturing applications.

Semi and Micro Analytical Balances

Exceptional precision and sensitivity

Micro balances are used in a wide array of applications where small levels in weight variation can make a big difference. These instruments are often found in product testing and quality assurance labs, to ensure that exacting production standards are being met. Laboratory researchers use micro balances for checking uniformity in critical components. Micro balances are capable of making a precise measurement of weight of an object of relatively small mass, in the order of a million parts of a gram.

MTB-900 Series
Micro Balance

Learn more

Analytical Balances

High precision and accuracy

We offer models with many options for your needs including internal or external calibration; see-through enclosures to prevent dust, air or other external factors that may affect the balances reading; built-in RS-232 for connectivity to computers or printers; and stability filters when you need to compensate for vibrations, drafts or temperature changes.

LB-200 Series
Analytical Balance

Learn more

Portable and Toploading

Portable and toploading balances for general laboratory weighing with readability from zero to three decimal places.

Portable Balances

Take measurements in the lab or the field

Ideal for lab work, educational and industrial applications. Portable balances are typically battery powered for operation almost anywhere. External calibration allows for verification and adjustment with weights.

PB-100 Series
Portable Toploading Balance

Learn more

Toploading Balances

Solid material weighing

Ideal for when an accuracy of 0.1 g is satisfactory. Toploading balances are precision balances with a higher capacity than that of an analytical balance. Balances do not typically have a draft shield and samples are placed directly onto the scale.

LB-400 Series
Toploading Balance

Learn more

Moisture Balances

Moisture balances are designed to precisely verify relative moisture and dry mass content in small samples of various substances, as well as determine the mass of weighed objects. The machine takes note of initial weight and then after the drying process it notates the decrease in moisture and shows the weight change on the moisture analyzer display.

Halogen

Halogen lamp heating elements are suited for applications that require accelerated temperature regulation during sample drying. However halogen lamps heat and cool quickly sometimes causing the sample to scorch.

Infrared

Infrared heating lamps are an economical alternative to halogen-lamp models. Infrared lamps take longer to heat, so they are optimal for samples prone to scorching due to rapid temperature changes.

Quartz

Quartz heating elements look similar to the heating element in your oven at home. Heat is transferred from a coil wire to a material which distributes the heat providing consistent heating.

MB-200 Series Halogen Moisture Balance

MB-800 Series Infrared Moisture Balance

Learn more

Learn more

Learn more

Industrial Scales

Industrial scales are designed to handle heavy-duty work loads and built to withstand high usage and harsher environmental conditions.

Counting Scales

Quick and easy weighing

Counting scales are accurate and durable, and even portable. These scales offer fast parts counting wherever you need it. Counting scales are great for inventory, prepackaging, and other counting operations.

CS-200 Series Plus
Counting Scale

Learn more

Bench and Floor Scales

Large variety of options

Bench and floor scales have a higher weighing capacity than toploading balances. While most scales are designed as complete units, bench and floor scales are sold as systems and feature a configuration where the platform is separated from the weighing indicator via a cord which measures at least five feet. They are available with a variety of platform sizes and capacities.

Are you interested in configuring your own bench or floor scale?

Choose your Base
Choose your Indicator

IPS-400 Series
Industrial Bench Scale

Learn more

Compact Benchtop Scales

Portable, compact design

Compact bench scales are designed for smaller spaces since they take up a minimal amount of room. They are used in a variety of industrial and commercial environments and are accurate and durable.

7000 Series Compact
Bench Scale

Learn more

Crane and Hanging Scales

Easy to measure suspended loads

Crane and hanging scales are ideal for commercial and industrial uses. Use a crane scale for measuring very heavy objects. Hanging scales are ideal for weighing items sold by weight. We have a variety of crane and hanging scales in different weight ranges for your needs.

IHS Crane Scale

Learn more

Platform and Pallet Scales

Durable scales for heavy-duty weighing

Platform and pallet scales are floor scales for weighing needs in industrial and commercial applications. They are ideal for freight consolidators, forwarders, processing plants, resellers, shipping and receiving departments. We offer a variety of platform and pallet scales with features to meet your needs.

Stainless Steel Weighing Platform Scale

Learn more

Mechanical Scales

Mechanical balances are traditional balances that are typically used in the classroom as they can stand up to student use. These balances can be used to accurately weigh a wide variety of materials. Different types of mechanical balances are available including heavy-duty dual-beam, overhead, pull- and dial-type hanging, and spring scales. Mechanical scales do not require a power supply.

Portion Scales

Ideal for foodservice weighing environments

Portion scales provide accurate weight measurements, making it easy to have exact weight portions. Ideal for the food industry in areas like kitchens, sandwich shops, restaurants, etc.

Compact Mechanical Portion Control Food Scale

Learn more

Beam Scales

Easy to use

Beam scales are traditional weighing scales for performing mass measurements. Some beam scales have two pans or platforms for comparative weighing. Another option is a triple beam scale where each beam has a movable counter weight that acts as the known mass.

Overhead Mechanical Balance

Learn more

Health Scales

Fast and accurate body weight readings

Health scales and bath scales deliver fast, accurate body weight readings up to 660 lbs (300 kg). Ideal for use in homes, bathrooms, offices, locker rooms, and more. Available with analog dial, digital display, or mechanical balance beam; some scales also offer RS-232 interface and height measurements.

High-capacity Bath Scale

Learn more

Mechanical Scales

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Hanging Spring Scales

Ideal for educational purposes

A spring scale is one of the most basic tools used to measure the weight of an object. In its simplest form, it is a spring attached at one end and a pointer on a scale at the other. The lower end often has a hook to attach the object to be weighed. An economical choice for general weighing, force experiments, and action-reaction demonstrations.

Learn more

Hanging Spring Scale

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