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# HOW TO CHOOSE A TABLET COUNTER

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This White Paper discusses the various types of tablet counters—from electronic vibratory, to slat, to rotary wheel—including the advantages and disadvantages of each. Knowing these differences**,** can help you make a technology selection that you can count on for a long time.

Like many equipment purchases, selecting a tablet counter starts by asking a simple question: "What am I trying to accomplish? What results are needed to label the project a success?"

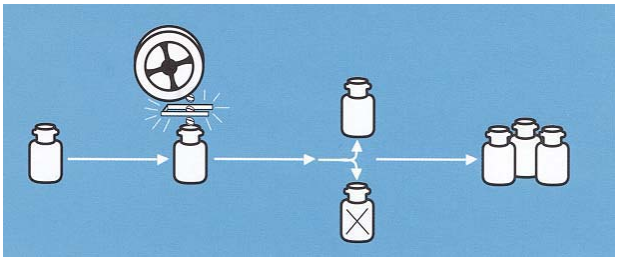
Although the ultimate answer might be "X number of units per month," no tablet counter should be chosen purely on the basis of speed ratings. A variety of factors weigh into the selection process, including the size and shape of the tablet, the condition of the tablet, the neck diameter of the bottle, whether the packaging line will be running a single product or multiple product lines, and other operational factors like user-friendliness.

## The Categories

The most common counter types are vibratory, slat and rotary wheel. Electronic vibratory counters utilize a bulk hopper that feeds channeled, vibrating trays. Those trays align products into a single file and direct them past a scanning eye and into the bottle.

On a slat counter, hoppers feed rows of slats. Each slat contains a predetermined number of tablet-shaped cavities. Tablets fall into the cavities and then, as the unit rotates, the slats empty into chutes that feed bottles below.

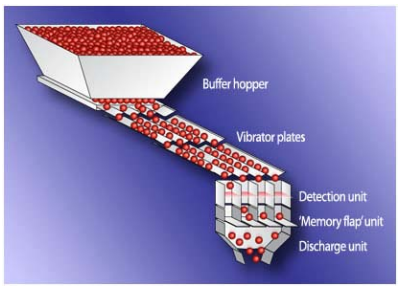
On a rotary wheel counter, tablets fall into individual cavities on a counting wheel, which turns and deposits the pills into bottles. Each servo-controlled wheel is dedicated to a single bottle. A scanning eye just before the bottle ensures the proper number of tablets enter the bottle.



**Rotary Wheel Counter**

## Changeover and Flexibility

Although the types of units differ in many ways, a primary divergence centers on their flexibility. Vibratory systems inherently offer greater flexibility. Because they are not specifically tailored to each tablet shape and size, they can handle a variety of tablets with little to no changeover. Assuming the bottle neck diameter remains the same, vibratory counters usually require no change parts.




**Tablet Hopper**

Not needing change parts is a major benefit for the manufacturer. Not only does it save money (no need to pay for parts), it saves time—improving changeover efficiency and allowing a manufacturer to be more responsive to the market. A contract packer, for example, can begin packing literally the same day it strikes a deal because it doesn't need to order different slats or bottle change parts to accommodate a new tablet or container size. This is especially relevant to the generic industry, which handles a wider range of products with shorter times-to-market than the branded industry.

Slat counters require slat changeover every time a manufacturer wants to change pill count. Rotary machines offer more flexibility than slat counters because the operator can change counts using a touchscreen—the servo-driven wheel simply turns until the sensor detects the bottle has been properly filled. However, rotary wheel systems still require bottle change parts. Neither system is ideal for manufacturers running multiple products on the same line.

In addition to handling a variety of shapes and sizes, vibratory counters capably handle dimensional variances. Pressed tablets can vary in size by 1-2 millimeters, which can create problems for the customized cavities of slat fillers. Vibratory counters actually count the products, slat counters count the slats. If, for whatever reason a tablet fails to fill the cavity of a slat filler, the process continues, meaning increased potential for improperly filled bottles.

Some slat counter suppliers have added sensors to detect that all slats and, therefore bottles**,** fill properly. The machine tracks and rejects short-count bottles. Without a sensor, slat counters require a dedicated operator to watch for empty pockets and throw in an extra tablet as needed.

Where slat and rotary fillers hold an advantage over vibratory systems is speed. Products move only so quickly along vibratory plates. The maximum speed for vibratory units is about 200 bottles per minute on a quad (4 head counter) system. A dual-slat filler can do double that count, although fill rates vary depending on the desired number of doses per bottle. For high-count bottles (200 and above), the speed drops drastically.

Slat and rotary fillers provide an advantage for lines dedicated to single or long-run products.

**Other Key Differences**

Counters are generally equipped with sensors to insure accurate counts. Most electronic vibratory counters utilize two-dimensional infrared technology—the two dimensions being the length of time it takes the tablet to pass and the amount of light being blocked. Two-dimensional systems have proven successful, although some manufacturers are rolling out three-dimensional infrared technology with a second light source.

Electrostatic counters use radio frequency to measure moisture content of the tablet. Dust can cause some infrared systems to think they're seeing tablets when they're not, though many are equipped with dust compensation systems to eliminate such problems. Dust doesn't effect electrostatic measurement because it's not visual. The drawback to electrostatic measurement is that systems first need to be "trained" on the moisture signature for any new product, and, even then, moisture content varies from batch to batch, impacting accuracy.

**Final Points to Consider**

- Make sure the interface is user-intuitive so that operators will be comfortable using the equipment.
- Vibratory counters are generally easier to clean. It takes 30-40 minutes to wash and reset a double counter, where a slat counter can take up to two hours and require painstaking work to take apart and wash each slat individually.
- Vibratory systems provide gentler product handling than slat counters, reducing breakage of non-coated tablets.
- Make sure you understand your production needs and focus on how many skids you can produce in a day rather than how many bottles per minute.

Knowing the above differences, as well as others, between counting systems and having a clear understanding of what you are trying to accomplish will lead to the right tablet counter for your application.

To have one of our sales engineers help you assess your needs, please contact:

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**Model Cremer CF-1220D**

## Model Cremer CF-1220 Quad



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