

# EYE/ESCAPEMENT COUNTING VS. WEIGH COUNTING

## EYE/ESCAPEMENT COUNTING ADVANTAGES

### 1. **ACCURACY**

For small runs of up to 25 parts, eye counting can be more accurate. Since the eye will detect the part as it leaves the feed apparatus, parts in free fall do not need to be reckoned with and "over" fills of more than one piece are less likely. With escapement counting, 100% accuracy may be guaranteed.

### 2. **FUNNELING**

Since the parts enter the bag or box (container) on a one-by-one basis, special funneling is generally not required.

## EYE/ESCAPEMENT COUNTING DISADVANTAGES

1. **COST**: Each part must have its own engineered bowl for proper orientation to be "seen" by the eye or lined up on the escapement track. In applications with a wide variety of parts, sizes, and shapes, several engineered bowls may be required. Escapement counters are usually 30% – 50% more than eye counters because of the tooling for the escapement track.

### 2. **ACCURACY**

Eye counters are not 100% accurate. Two parts can be counted as one, if there is not a sufficient differentiation gap; incomplete parts, scraps of metal, etc., can be seen as a "part." (This is not true of an escapement counter.)

### 3. **SPEED**

For counting more than 25 parts in a container, the per cycle speed declines radically. For 1000 parts through an eye counter, you could expect no more than 1-3 cycles per minute. Escapement counters are physically limited to about 25 parts per cycle, at speeds of 15 to 20 per minute. For 1 to 5 parts, expect speeds to 40 per minute.

### 4. **VERIFICATION**

Once the eye counter has completed a cycle, there is no way to determine the actual count. If two parts are counted as one, if the eye efficiency has declined from improper set-up or "sight" obstruction, if scrap parts are counted, if parts miss the container, the only quality control possible is visual re-inspection and check weighing. While this is also technically true for an escapement counter, the design allows 100% accuracy without verification except in cases of scrap, partials or irregular shapes.

## WEIGH COUNTING DISADVANTAGES

1. **OVERFILLS**

For small amounts, especially less than 10 parts per cycle, the "over" factor is prohibitive for expensive parts or when exact precision is required. You would not want one or two parts "over" every 5 cycles on average, if there are only supposed to be 10 parts in a container; since one part represents 10% of the container count in this example, the one "over" every 5 cycles = +2% of the inventory (at 100 parts, this factor is reduced to +2/10%).

2. **FUNNELING**

Special funneling is sometimes required, since the parts are presented to the container in bulk rather than one by one.

## **WEIGH COUNTING ADVANTAGES**

1. **SPEED**

With the proper selection of feeding apparatus, usually a standard vibratory bowl with minimal tooling, you can count 1000 parts as fast as 15 cycles per minute. With two bowls and load cells, this speed can be doubled.

2. **FLEXIBILITY**

A wide range of part sizes and shapes can be handled by the same weigh counter. No special tooling or orientation apparatus is required.

3. **COST**

Same reason as "B."

4. **VERIFICATION**

Since the final count is determined before the parts are presented to the container, the scale operates as its own checking mechanism. "Low" counts are determined before the weigh bucket releases, causing the scale to re-initiate the feed cycle to bring the total to the acceptable range. Therefore, "low" counts are impossible. "High" counts can be detected and adjustments made during operation. \*

5. You can also record each cycle through the serial port to a printer or data collection device. In some cases, customer shipments may be accompanied by a simple report detailing total parts and container standard deviation.

Actionpac has over 25 years experience in automated parts counting. Our first unit, used to count gold pins for military connectors, is still in use today. During this time, Actionpac has engineered innovative solutions to problems in automated counting and filling.

\*With the optional Actionpac reject mechanism, "high" counts can be eliminated. ("High" and "low" parameters are defined by the user).