

EXPERIENCE WITH LONG GOODS WEIGHER

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Our experience with long goods weighers has led us to certain basic principles of design which we have tried to adhere to.

Broken down into basic components of our weigher, the most important of these principles are as follows:

1. A conveying mechanism with a single point entrance which will feed a multiple of weigh stations at a rate corresponding to the amount of each individual station is using.
2. A volumetric bulk pre-weight which can give a high percent of the final weight consistently and with a minimum loss of time by dumping all at once into the weigh bucket.
3. A dribble feed mechanism which takes product directly from the main stream, segregates the strands and places one strand at a time into the weigh bucket. The dribble should have an instantaneous cutoff to stop the feed as soon as the final weight is sensed. The dribble exit should be placed as close to the weigh bucket as possible in order to reduce material in suspension which is one of the basic causes of an inaccurate weigher.
4. The scale or weighing device should be sensitive and accurate as well as fast. The speed of a scale is its ability to come to equilibrium quickly.

All phases of the feeding mechanism should be capable of handling a variety of products of different shapes and different qualities. Our actual production experience has included the successful weighing and packaging of the following shapes of long goods:

Macaroni, perciatelli and bucatini which are round products with a hole in them.

Spaghetti, spaghettoni, vermicelli and capellini which are round solid shapes.

Linguini and linguini fine which are semi-round or oval solids.

Fettucelle and Fettuce which are half-inch wide flat noodle-like products.

The results we have obtained do not vary much with shape, but do vary with quality. Although we have built the weigher to handle all qualities, including products with partial heads and bent products, we have found a smooth straight product goes faster and gives greater accuracy.

All our experience has been with bronze die products, but we feel sure a Teflon product would work faster and better because of its smoothness.

The data on the table included shows the variation in weights for different operating speeds. This data was taken during a production run of spaghettoni of rather poor quality. However, we feel you should know the results for actual production runs under less than ideal conditions. Notice that for a mean value plus or minus 1/8 of an ounce the percent of weights which fall into that class is reduced from 94% at 26 packages per minute to 79% at 44 packages per minute. Also notice that extreme values are added as the machine goes faster. All these runs were made without changing the set point of the scales. It is interesting to note that the mean or average weight becomes heavier as the speed increases. This is because the increased dribble flow causes more material to be held in suspension after the cutoff causing an average heavier weight.