

For Solids and Liquids

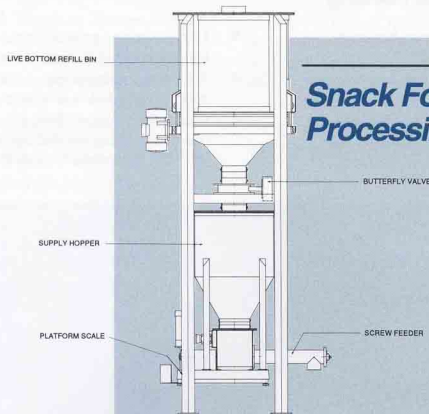
LOSS-IN-WEIGHT and BATCH WEIGHING SYSTEMS



Vibra Screw Inc.

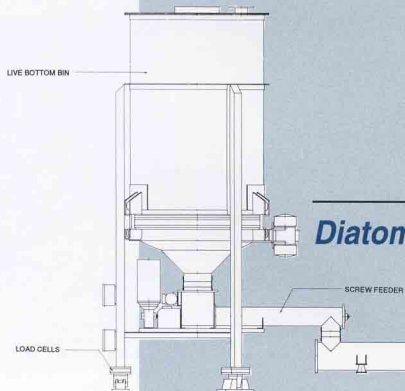
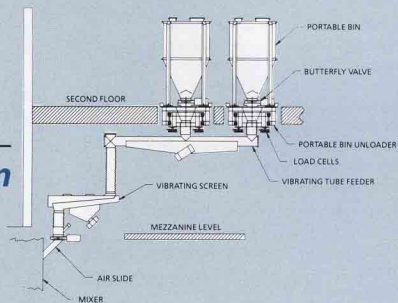
Typical Vibra Screw

LOSS-IN-WEIGHT CONTINUOUS WEIGH FEEDING and BATCH WEIGHING SYSTEMS

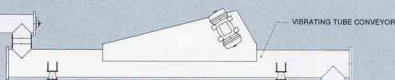


Snack Food Ingredient Processing System

Ordnance Mix System



Diatomaceous Earth Handling System



THE SYSTEMS APPROACH

Your Loss-In-Weight or Batching System

The Vibra Screw approach to weighing combines the latest in electronics technology with more than 35 years of experience in handling bulk materials. The result is a carefully engineered total solution for your particular needs, backed by a performance guarantee to insure your complete satisfaction.

Proper weighing demands a full understanding of the physical properties of materials and their characteristics in motion. Too often, suppliers are skilled only in the electronics aspect of the system and neglect the material handling consideration or leave it to others. Vibra Screw is unique in industry, combining its own mechanical and electrical designs.

Electronic Controls Boost Accuracy

To keep up with the rapidly expanding microprocessor technology, Vibra Screw equips its Loss-In-Weight and Batching systems with appropriate, state-of-the-art controllers from several high visibility U.S. manufacturers.

All controllers supplied incorporate user-friendly, menu-driven software. Membrane keypads and easy-to-read displays support a revolutionary concept of deciphering actual weight from plant electrical noise.

Controllers provide continuous rate control for both solids and liquids with up to four load cells. And, all controllers meet worldwide metrology standards.

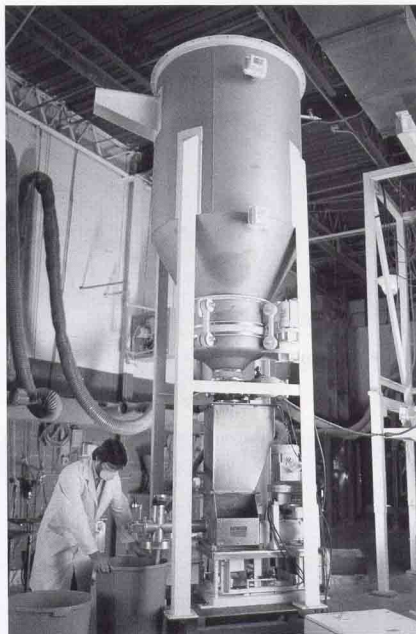


Materials Testing to Back Your Equipment Decision

To support its complete responsibility approach, Vibra Screw calls upon a database of more than 10,000 material handling tests and the finest in-house test facility in the industry.

The Vibra Screw Test Center is fully equipped with all of our many products to demonstrate the best individual unit or the complete processing system to handle your unique material.

Your Vibra Screw Loss-In-Weight and Batch Weighing equipment will work from day one because of the thorough consideration and years of experience that preceded it.



Highest Accuracy In All Batching Operations

A Batch Weighing System is similar in design to a continuous Loss-In-Weight feeder. Batch applications do not, however, require that material be continuously fed with high feed accuracy. They do require that the desired weight of material at the end of the feed cycle is accurate.

Controlled discharge from storage and non-pulsating feeding of materials are critical for a successful batching system. Vibra Screw's wide range of controlled vibration feeders and material flow aid devices permits superior accuracy in both loss-in-weight and gain-in-weight batching over a wide range of capacities.



One of three loss-in-weight liquid batching bins for the manufacture of rocket propellants. High viscosity liquid is dispensed in 500 lb increments to a batch mixer. Thirteen other bins deliver up to two tons of dry ingredients each. Average accuracy of all Vibra Screw equipment is 0.05% of desired batch size.

LOAD CELLS

Strain gauge type
150% full scale overload
Operating temperature,
-40°F to +150°F (-22°C to +132°C)
Repeatability 0.02% full scale.

SANITARY APPLICATIONS

Standard: All internal seams continuously welded.
All welds ground smooth.
Internal surfaces polished, #4 finish.
Food grade gaskets and sleeves.

Optional: All specifications as above except:
Guard covers, etc. held with thumb screws or quick clamps.
Special TENN motors.
Special structural modifications for easy cleaning.

PRESSURE APPLICATIONS

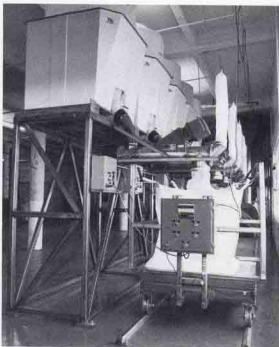
Feeders can be constructed for pressure applications up to 15 psig.

HIGH TEMPERATURE APPLICATIONS

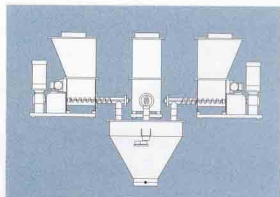
Special construction of feeders permits use at temperatures up to 350°F (177°C).

The selection of mechanical designs for a particular material is based on our historical database, followed, when necessary, by actual testing in our laboratories.

Figures 1-3 illustrate three typical batch weighing configurations.

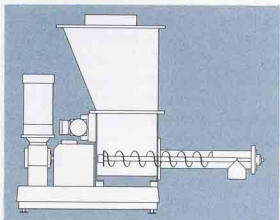


Gain-In-Weight batching system for prepared mixes. Five dispensing bins with two-speed Vibrating Tube Feeders deliver ingredients to a scale-mounted semi-bulk bag (IBC) that moves from feeder to feeder on a track. Each ingredient is weighed into the IBC, and the feed is automatically cut off when the desired weight is reached.



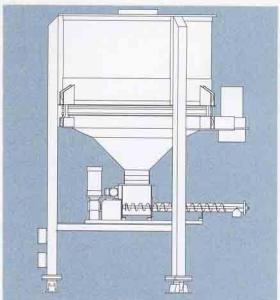
Low-Capacity Gain-In-Weight Batching

Fig. 1 --Vibra Screw Batch Weighing systems may be employed on batches as low as one pound. Here, live load to tare weight ratio is kept at a minimum to insure maximum accuracy vs load cell resolution.



Mid-Capacity Batching

Fig. 2 --These systems may be designed around loss-in-weight or gain-in-weight feeding for batches up to several hundred pounds. System configuration is determined based on batch size, material characteristics, and desired accuracy.



High-Capacity Batching

Fig. 3 --Vibra Screw regularly designs and ships batching systems for batch sizes in excess of several thousand pounds. Systems often include load cell-mounted bulk bins and feeders.

LOSS-IN-WEIGHT CONTINUOUS WEIGH FEEDING

Loss-In-Weight Feeding... How Does It Work?

A Loss-In-Weight feeding system includes a supply hopper or tank, a metering feeder or pump, a supporting scale system, and a microprocessor controller. The system electronically balances tare weight so the controller senses only the weight of the material in the supply hopper.

The diagram at right describes how it works. At time zero, the hopper is full (high weight), and the operator enters the set point or desired feed rate into the controller.

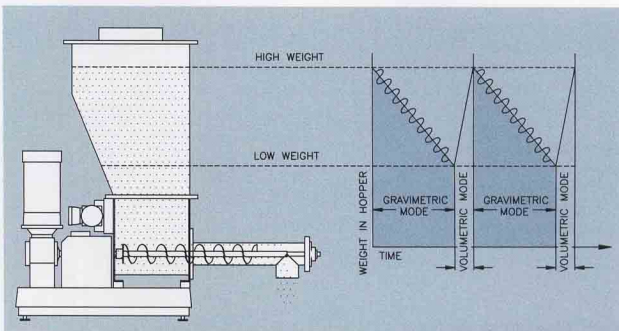
As time and discharge advance, the actual sensed "loss-in-weight" follows the decreasing scheduled weight ramp whose slope is a direct representation of the desired weight of delivered material per unit of time (set point). The controller makes frequent comparisons of sensed vs. desired rate and alters the feeder's output, keeping it at set point.

Once the sensed weight reaches the hopper refill level (low weight), the controller locks the feed system into volumetric control. The hopper is recharged, and the loss-in-weight cycle repeats.

The controller rate disturbance mode protects against any outside weight disturbance that might cause an upset and provides the unique ability to manually load the hopper at any time without disturbing the feed process.

Advantages of Loss-In-Weight Feeding

- Handles floodable, hot and difficult materials.
- Unaffected by dust and material accumulation.
- Works well at low feed rates.
- Entire system is weighed. No errors from belt tensioning and tracking.
- Uses only one process input for reduced error in operation.
- No transportation lag — entire weight is sensed at all times.
- Feed accuracy can always be checked during normal operation, without the need for sampling.



Sanitary design
Loss-In-Weight Feeder

System Specifications

CONTACT MATERIALS

Carbon Steel
304 Stainless Steel
316 Stainless Steel
Your Specifications

EXTERNAL MATERIALS

Carbon Steel

COATINGS

Standard External: Machinery Blue Enamel

Optional External:

Epoxy Paints
Corrosion Resistance Paints
Your Specifications

Standard Internal:

Machinery Blue Enamel
for carbon steel contact surfaces.
Stainless and alloys, uncoated.

Optional Internal:

Epoxy Paints
Teflon Coating (DuPont) as specified

Polyurethane
Your Specifications

DRIVES

Variable Speed DC 115/230/1/50 or 60
Variable Speed AC 230/460/3/50 or 60

OPTIONS

Explosion proof, special TENV motors, etc.
Various supply voltages.

CONTROLS

Vary by system application

LOSS-IN-WEIGHT and BATCH WEIGH FEEDING

Weigh Feeding with a difference

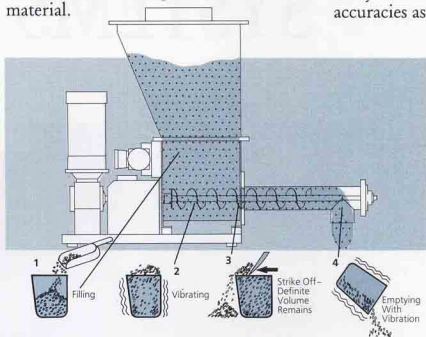
Vibra Screw is the only Weigh Feeder equipment supplier to offer a controlled vibration feeder design. This means minimal loss of accuracy during the volumetric refill cycle and unprecedented accuracy in the gravimetric mode where the weight signal is much more stable than in other designs.

Thousands of Vibra Screw feeders have proven over the years that gentle vibration to assist flow and even density variations provides extremely accurate and repeatable feed of even the most difficult dry bulk materials. There is no need for paddles and internal agitators that are less effective, complicate the design, and degrade the product.

How Controlled Vibration Improves Your Operation

The operating principle of a vibrated screw feeder can be compared with the repetitive filling and emptying of cups. Most accurate filling occurs when the cup is filled with material (1), vibrated to obtain uniform density (2), and the excess struck off (3).

On emptying (4), vibrating the cup likewise ensures complete release of the material.



In **Batch Weighing**, vibration also greatly reduces feed pulsation. At discharge, it produces a precise cutoff of flow at the end of the batch cycle without material overrun. Irregular free-fall of material overrun is the greatest source of batching error.

The vibrated feeder eliminates this and greatly enhances accuracy.

In the vibrated screw feeder, the same process occurs. Material fills the screw flights in the trough area (1), is vibrated to a uniform density (2) and is struck off (3) as it enters the metering tube. Vibration of the metering tube and screw (4) ensures complete release of material at the discharge end.

Successive weighing of material samples will show *volumetric* accuracies of $\pm 1\%$. The Loss-In-Weight controller easily refines this, providing *gravimetric* accuracies as great as $\pm 1/4\%$.

This means *volumetric* refill cycle accuracies that compare with other design's *gravimetric* accuracies and *gravimetric* cycle performance that exceeds all other Loss-In-Weight equipment being sold today.

The Vibra Screw Guarantee

No time limits. No conditions.

If your Vibra Screw equipment doesn't perform in the service for which it was sold, we'll refund your money.

Ask any other equipment manufacturer to put that in writing.

A Bulk Bag Unloader and Screw Feeder constructed in a Loss-In-Weight design discharge 2,000 pound bags of carbon black

