

**Acrison®**

# *Batch/Dump Weighing Systems*

*for reliable and accurate  
batch weighing applications*

**Model 403B (D) Series**



---

*Quality built, total performance products to satisfy your  
dry solids metering/handling needs.*

---

# Model 403(D) Series Batch/Dump Weighing Systems

with **BATCH-LOK**® for disturbance-free operation

## Introduction

The Model 403B(D) Batch/Dump Weighing System basically consists of a hopper (for dry solids) or a tank (for liquids) integrally mounted onto an Acriston "Overhead" type weighing (scale) system, specifically designed for highly reliable and accurate batch-weighing applications.

For dry solids applications, product is typically fed into the scale-mounted hopper (weigh hopper) by an Acriston Volumetric Feeder (see page 3). When it is required to batch weigh more than one product in a single weigh hopper, each material is individually (sequentially) batched, since only one ingredient can be batch weighed at a time.

Regardless of the physical handling characteristics of the dry solid ingredient, Acriston's wealth of experience in this very specialized industry, in combination with the totally digital system capability of the various Model 403B(D) Batch/Dump Weighing Systems, provides a truly viable solution for your batch weighing requirements.

Model 403B(D) Batch/Dump Weighing Systems boast a permanently calibrated, non-load cell based, high resolution, lever weighing network encompassing a totally rugged industrial design. These remarkably precise weighing systems are also

unaffected by temperature extremes, typical in-plant vibrations, and are calibration and adjustment-free (please see page 4 for additional information).

The various Acriston controllers available for use with Model 403B(D) Batch/Dump Weighing Systems include a unique and proprietary feature — **Batch-Lok** — which ensures accurate batch weighing should the weighing system detect an abnormal disturbance during the batch weighing cycle.

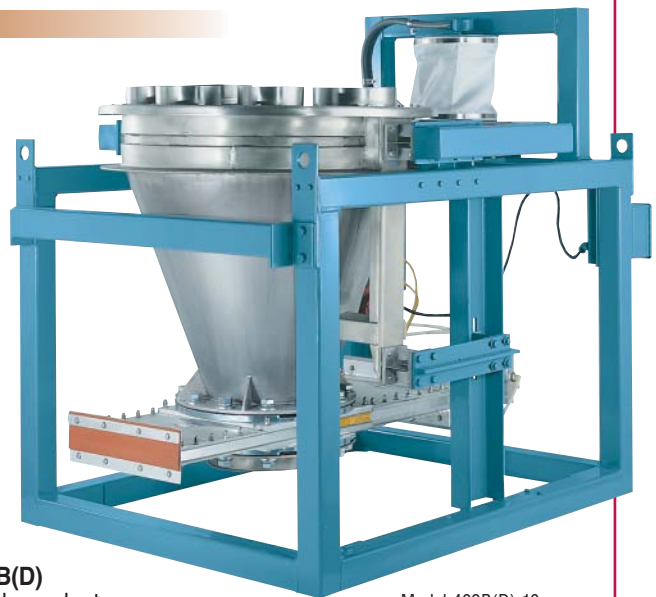
Also available is an assortment of control schemes — from a simple single ingredient batch weighing controller to a multi-ingredient batch weighing control system.

The many variations and overall capabilities of the various Model 403B(D) Batch Weighing Systems are too numerous to outline in a basic brochure. Let our staff of experienced application engineers recommend the equipment that will best satisfy your specific requirements.

Beyond our engineering staff, our award-winning, fully equipped Customer Demonstration Facilities are available to physically test and/or demonstrate our various batch weighing capabilities.

## Highest Performance, Quality, Longevity and Value

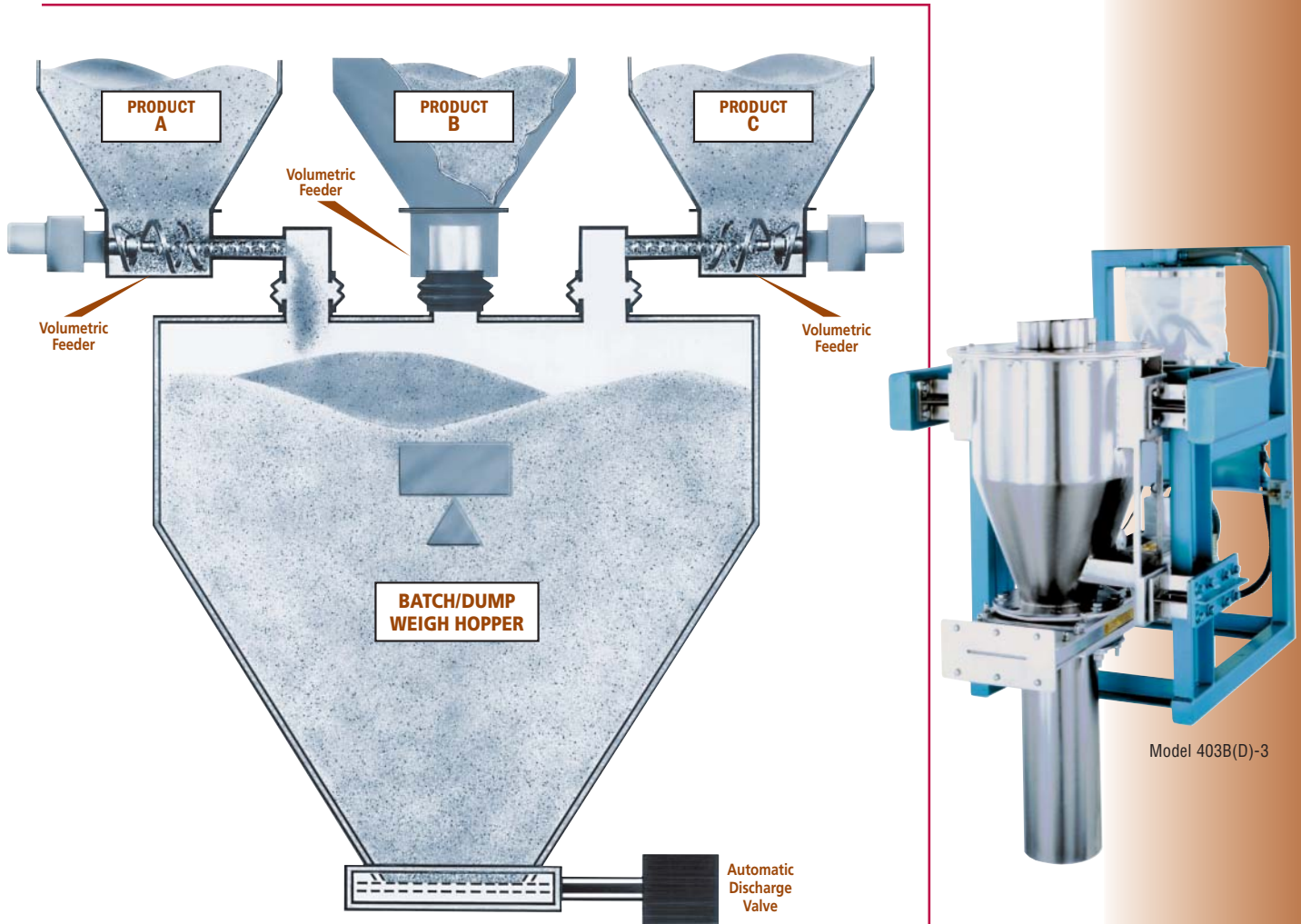
- **Batch Size (weight):** 250 grams to tons per batch.
- **Batch Accuracy:**  $\pm 0.1$  to 0.5 percent or better (error) at two sigma, based on a given number of consecutive batch weighments. To ensure this accuracy, the batch weight must not be more than one-thirtieth the scale capacity.
- **Batch Weight Range (standard):** 30:1 turn-down from the scale capacity.
- **Scale Resolution:** one part in 1,048,576.
- **Ambient Temperature Operating Range:**  $-10^{\circ}$  to  $140^{\circ}\text{F}$ .
- **Scale Design:** High resolution, frictionless, counterbalanced lever network utilizing stainless steel flexures for all pivotal connections. The non-load cell based weighing system is extremely rugged and durable, and is both calibration and adjustment-free. See page 4 for details.
- **Batch Frequency:** Depends on application; consult Acriston.
- **Metering Mechanisms for feeding dry solids into a Model 403B(D) Weigh Hopper:** A wide range of models is available. Selection is dependent upon the physical handling characteristics of the product or products.



Model 403B(D)-10

# Model 403(D) Batch/Dump Weighing Systems for Dry Solids

**A typical multi-ingredient Model 403B(D) “Batch/Dump” Weighing System utilizing Acrison volumetric feeders to meter dry solid products into the Weigh Hopper**



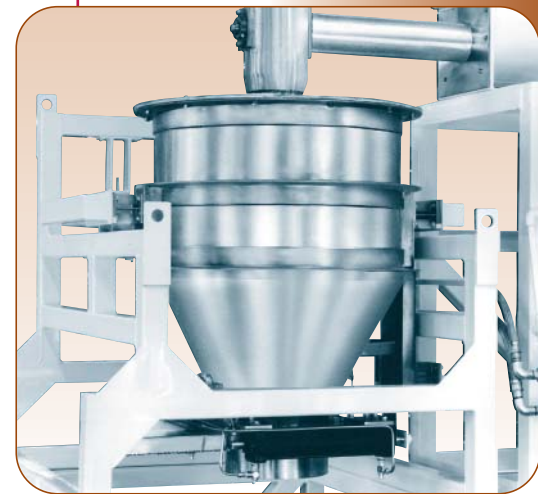
## Selection

- **Batch/Dump** (single ingredient) – metering into a Model 403B(D) Weigh Hopper to a preset weight, and then discharge the entire contents on command.
- **Batch/Dump** (multi-ingredient) – metering (sequentially) into a Model 403B(D) Weigh Hopper to individually preset weights and then, discharge the entire contents on command.

With a “Batch/Dump” arrangement, the total weight or amount of a given batch is normally encompassed within the weigh hopper. Therefore, the weigh hopper must be designed to hold the entire amount of the largest desired total batch, unless multiple batches are preferred.

*For the various Acrison volumetric feeders that may be used in conjunction with Model 403B(D) “Dump” Weighing Systems, please reference Bulletins 270, 712, and Data Specs 1-200-0479, 1-200-0481, 1-200-0480, 1-200-0525.*

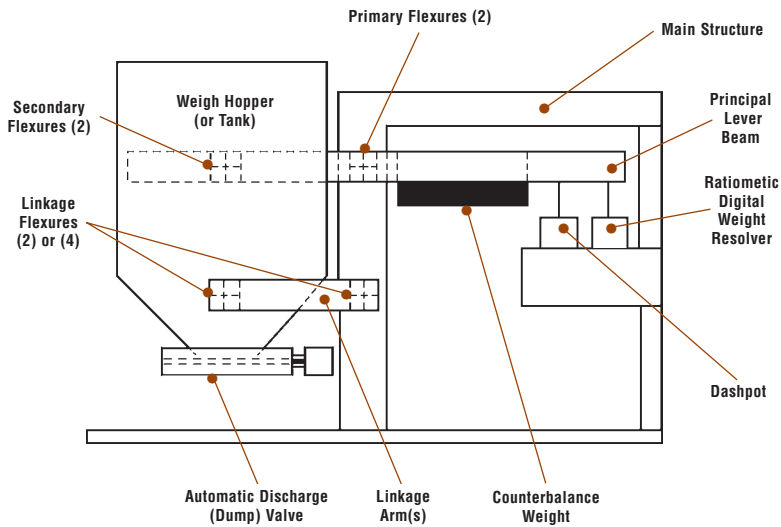
**NOTE:** For a liquid system, the dry solids weigh hopper is replaced with a weigh tank and the dry solids feeders (metering into the Batch/Dump Hopper) are replaced with either valves or pumps.



Model 403B(D)-20

# Model 403(D) Series Batch/Dump Weighing Systems

## All-Flexure Weighing System with Acrison's exclusive Ratiometric® Digital Weight Resolver



DRY SOLIDS SYSTEM ILLUSTRATED

**NOTE:** For liquid units, the dry solids weigh hopper is replaced with a tank.

Acrison's "overhead" type weighing mechanism, used with Model 403B[D] Batch/Dump Weighing Systems, is a frictionless, mechanically counterbalanced, modified parallelogram type lever network (scale), utilizing Acrison designed and manufactured flexures for all connecting (pivotal) requirements. These novel, time-proven stainless steel flexures provide optimum structural rigidity of the lever network, both in the horizontal and vertical planes.

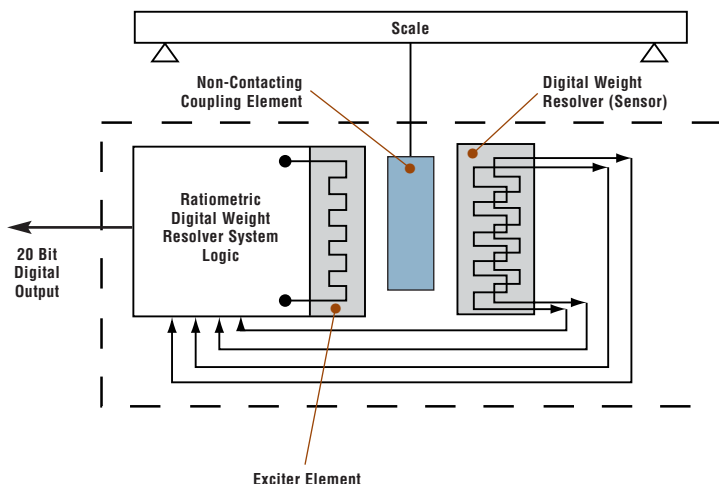
As noted in the illustration, two *primary flexures* connect the principal lever beam to the main support structure, with two *secondary flexures* connecting the actual weigh hopper (or tank) to the principal lever beam. A single or dual linkage assembly, utilizing either two or four flexures, connects the lower portion of the weigh hopper (or tank) to the main structure.

The permanently calibrated, non-load cell Model 403B(D) Weighing System is simple, very durable, and extremely precise in producing unexcelled resolution. As weight is added to, or subtracted from, the weigh hopper (or weigh tank), the lever network "moves" in an extremely precise relationship to that weight. In turn, this movement is sensed by Acrison's Ratiometric Digital Weight Resolver, instantaneously converting this movement into an equally precise signal directly proportional to weight.

In differing from the common variety of load cell based batch weighing systems, the physical sensing element of Acrison's Ratiometric Weight Resolver does not attach to the lever (or scale) network and therefore, cannot be damaged by any amount of overload, shock and/or abuse that the weighing system may experience. In addition, the Model 403B(D) Weighing System does not require calibration or adjustment.

**The entire weighing mechanism, including the weight sensing system, is completely calibration and adjustment free, and guaranteed for five years.**

## Ratiometric® Digital Weight Resolver System



Acrison's Ratiometric Digital Weight (Resolver) Sensing System, used with all Acrison weigh feeders, computes the linear movement of the frictionless lever mechanism (scale) into a true binary coded, serially transmitted data stream, having a discrete resolution of 20 bits (or the ability to sense 1 part in 1,048,576). This highly precise and advanced electronic displacement measuring technique basically consists of a sensing element and its computational logic.

The physical sensing element is composed of a series of windings collated on a common element that are equally affected by environmental changes and therefore, self-compensating. In addition, because the computational logic of the Ratiometric Digital Weight Sensing System compares relative measurements, rather than absolute values, its input power source can vary up to  $\pm 30\%$  without affecting the output. Also, all non-weight data, both cyclic and random in nature that may be super-imposed on the actual data, are cancelled-out.

The Ratiometric Digital Weight Sensing System is linear to within 0.01 percent, repeatable to 0.005 percent, possesses long term stability of 0.005 percent (10,000 hours) and carries a 40,000 hour MTBF.

Acrison's Ratiometric Weight Sensing System is FM (Factory Mutual) Approved and Listed for operation in hazardous environments...Classes I, II and III; Divisions 1 and 2; Groups C, D, E, F and G. This weight sensing system also complies with European hazardous area classifications EEx ia IIB T4 and EEx d [ia] IIB T6.

# Weigh Feeder Controllers and Control Systems

Acrison weigh feeder controllers are recognized worldwide for their innovative, flexible designs and highly dependable performance. Available with a number of different keyboard/displays, including color touchscreens, these controllers operate Acrison weigh feeders in the continuous or batching mode, control volumetrically or gravimetrically, and include provisions for master/slave and ratio/proportioning operation. Their many unique features provide optimum operational flexibility, and allow a wide variety of packaging possibilities.

In addition, Acrison controllers include provisions for an exceptionally broad range of I/O interfacing options (i.e., analog, frequency, digital, BCD, Modem, serial and network I/O). Acrison also offers AD 2000, a Supervisory Control System (software) for the control and monitoring of up to 32 Acrison controllers.

(Design Specifications 1-200-0602 and 1-200-0627)

## SBC-2000® Weigh Feeder Controller

The SBC-2000 Weigh Feeder Controller has been designed as a single, small module for use in a variety of applications, particularly those that require central computer control and minimal hardware, and which do not necessarily require a local user interface or keyboard/display. The technologically advanced design of the SBC-2000 provides very broad operational flexibility; it is also available with various keyboard/displays.

(Design Specifications 1-200-0601)

## MD-II 2000® Weigh Feeder Controller

The MD-II 2000 Weigh Feeder Controller has been designed for use with any of Acrison's various model weigh feeders in a variety of applications. As standard, the MD-II 2000 is furnished with a graphic display capable of displaying messages in a choice of languages. Optionally, it is available with a color touchscreen/display.

(Bulletin 949 and Design Specifications 1-200-113)

## MD-II MFC® Weigh Feeder Controller

The MD-II MFC is a state-of-the-art Multi-Feeder Controller offering unequalled ease of operation by means of a unique "operator friendly" graphic color touchscreen display. Capable of controlling up to 16 Acrison feeders, the MD-II MFC provides rapid feeder and screen updates and recipe storage and retrieval, all of which are selectable and operable from the controller's touchscreen/display (available in several different sizes).

(Design Specifications 949 and 1-200-342)

Acrison Weigh Feeder Controllers carry standard certification to UL, CSA and CE specifications.



## Discover the difference!

We cordially invite you to witness a test in Acrison's state-of-the-art Customer Demonstration Facilities handling your actual product(s) with the specific equipment we recommend for the application. Usually, there is no cost or obligation for this service. Discover the difference in technology, quality and performance of Acrison equipment.



## Acrison products...

- Models 101 and 130 Volumetric Feeders
- Models V101 and V130 Volumetric Feeders
- Model 1015 Volumetric Feeder Series
- Model 105 Volumetric Feeder Series
- Model W105 Volumetric Feeder Series
- Model 120 Volumetric Feeder
- Model 140 Volumetric Feeder Series
- Model 170 Volumetric Feeder Series
- Model 200 Series of Weigh Belt Feeders
- Model 203B Series of Weigh Auger Feeders
- Model 270 Series of In-Line Weigh Feeders
- Models 402, 404, A405, 406 and 407 Series ("Weight-Loss-Differential") Weigh Feeders
- Model Series 403 ("Weight-Loss-Differential") Weigh Feeders
- Model 403B (D) Batch/Dump Weighing Systems
- Model 404BZ (BU) Bulk Bag Unloader Batch Weigher
- Models 350 and 301 Continuous Blenders and Blending Systems
- Multiple Auger Bin Dischargers and Multiple Auger Bin Discharger Hoppering Systems
- Multiple Auger Bin Discharger Feeders
- Vibratory Bin Dischargers
- Model 500 Series of Polyelectrolyte Preparation Systems
- Water and Waste Water Treatment Systems
- Volumetric and Gravimetric Feeder Controllers and Control Systems
- Accessory Equipment for Acrison Products
- Systems Engineering

"Visibly Different... Measurably Better"

# Acrison®

20 Empire Blvd.  
Moonachie, NJ 07074 USA  
201-440-8300 • Fax: 201-440-4939  
Email: [informail@acrison.com](mailto:informail@acrison.com)  
Website: [www.acrison.com](http://www.acrison.com)



**acrison, INC.**

Copyright 2003—Acrison, Inc.—all rights reserved.  
Acrison is a Registered Trademark of Acrison, Inc., Moonachie, New Jersey  
© Registered Acrison Trademarks  
Domestic and Foreign Patents issued and pending.