Acrison®

Weigh Feeders

'Weight-Loss'

Models 402 and 404 Series, 405, 406 and 408

For Dry Solid Materials and Liquids

Advanced Materials-Handling Technologies Combined with Strong Mechanical Designs for Superior Metering Performance and Operational Reliability.

Acrison®

Weigh Feeders

'Weight-Loss'

Models 402 and 404 Series, 405, 406 and 408

For Dry Solids and Liquids

Proven in thousands of installations worldwide, Acrison's various model 'Weight-Loss' Weigh Feeders provide superior operational performance, unexcelled reliability, minimal maintenance requirements, and unrivaled longevity.

Model 402-170-2

Time-Proven, Dependable Weighing Technology

Uniquely capable of accurately and reliably metering an exceptionally broad variety of dry solid materials at feed rates ranging from a fraction of a pound upwards to thousands of pounds per hour, Acrison's robustly built Models 402 and 404 Series, 405, 406 and 408 'Weight-Loss' Weigh Feeders are unsurpassed in their overall performance capabilities.

Having been specifically designed for 'weight-loss' weigh feeding applications, the weighing systems of these particular model weigh feeders boast an extremely strong track record for sustained accuracy and operational stability.

The Model 402 and 404 Series, 405, 406 and 408 Weighing Systems, upon which various metering mechanisms mount, consist of technologically advanced dynamic lever weighing mechanisms, well-known for their durability and ability to remain precise without the need for recalibration and/or adjustment.

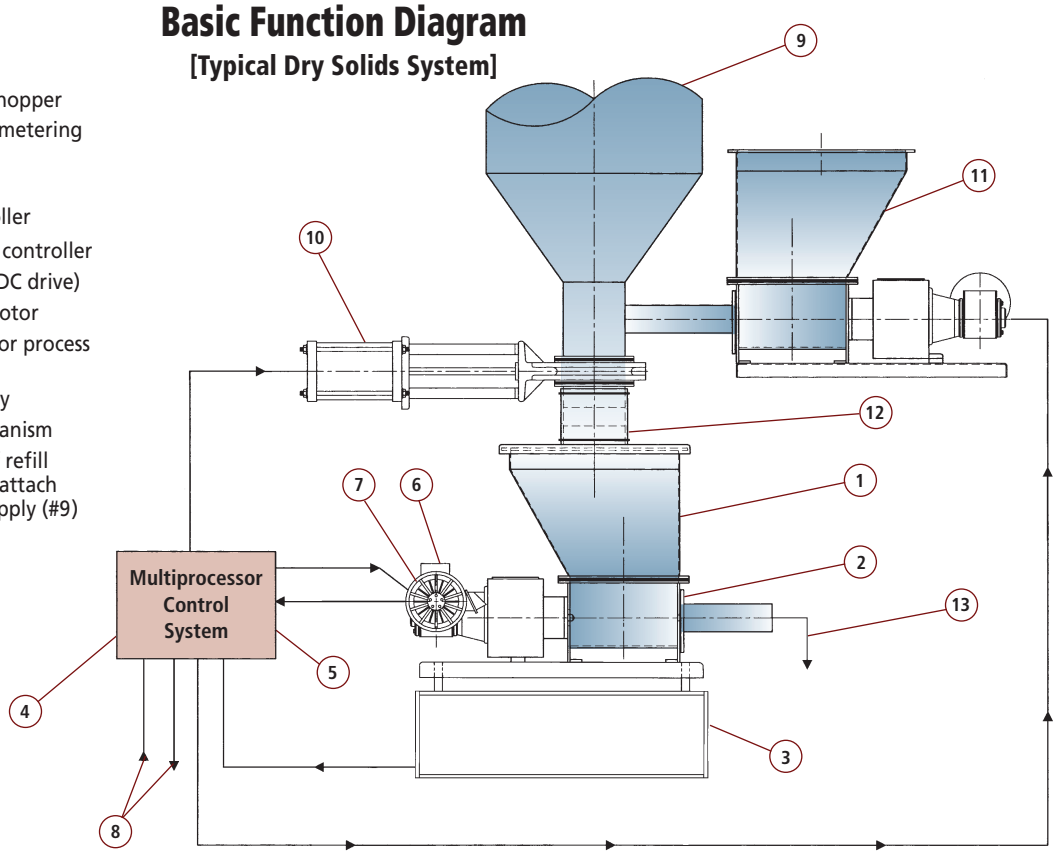
High resolution weight sensing is produced by Acrison's unique Ratiometric Digital Weight Resolver (not a load cell), instantaneously generating an unamplified, non-integrated real-time weight signal that is serially transmitted to the weigh feeder's multiprocessor controller for all controlling functions (please reference page 5 for more information).

For Continuous or Batch Weigh Feeding Applications

Basic Function Diagram

[Typical Dry Solids System]

1. Weigh feeder supply hopper
2. Dry solids auger type metering mechanism
3. Weighing system
4. Multiprocessor controller
5. Variable speed motor controller
6. Digital speed sensor (DC drive)
7. Variable speed gearmotor
8. Input/output signals for process control interfacing
9. Product storage supply
10. Automatic refill mechanism
11. Refill feeder in lieu of refill mechanism - can also attach to product storage supply (#9)
12. Flexible connection
13. Weighed output



Principles of Operation

As product discharges (feeds) from the scale-mounted metering mechanism, Acrison's ultra-high resolution Ratiometric Digital Weight Resolver continuously transmits precise 'loss-of-weight' data to the feeder's controller on a 'real-time' basis (no signal lag). In turn, the controller instantaneously calculates the rate at which product is discharging (feeding) and compares that rate to the feed rate selection.

Simultaneously, the variable speed drive of the metering mechanism is continuously modulated to maintain the feed output precisely at the selected feed rate. Response of the metering mechanism is also instantaneous, thereby producing optimum metering performance, both short and long-term.

Unlike weigh feeders that utilize one or more load cells for sensing weight, the weight signal of Acrison weigh feeders is not integrated (averaged) or in any way manipulated for stabilization purposes; it is inherently stable for direct use by the feeder's control system. Integration of the weight signal, while giving the impression of good stability, can severely hamper a feeder's ability to respond quickly to changes in its output (weight), compromising metering accuracy.

Easily capable of withstanding the harshest industrial environments, Acrison's time-proven, rugged duty weighing systems are unsurpassed in precision, durability, reliability and longevity. In addition, they are also permanently calibrated and virtually maintenance-free.

The 'weight-loss' principle for continuous weigh feeding requires periodic refilling of the feeder's supply hopper (or tank for liquid applications) as an operational requirement, which is usually a completely automatic function.

The maximum number of refills (e.g., per hour) is determined by the user-specified maximum feed rate and the size of the feeder's supply hopper. The number of refills within a given period of time must remain within operational parameters that will ensure weigh feeding integrity (i.e., operating under 'weight-loss' control the vast majority of the time).

All Acrison 'Weight-Loss' Weigh Feeder control systems also include 'Acri-Lok'®, an Acrison innovation that ensures accurate product delivery should the feeder's weighing system sense an abnormal disturbance during operation.

Continuous metering accuracy typically ranges between +/- 0.25 to 1 percent or better (error) at two sigma, based on a given number of consecutive one minute weighments.

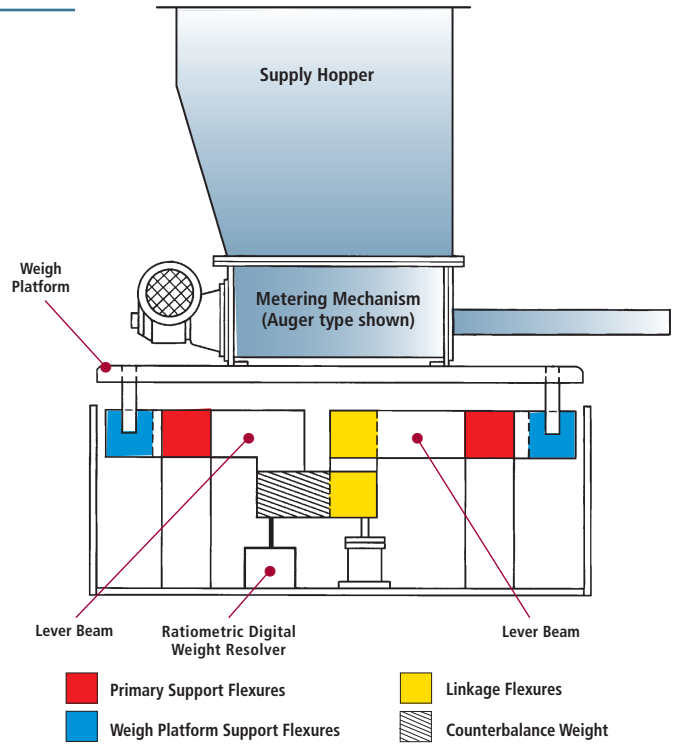
Standard Design Features

- **Continuous or batch weighing on a 'Weight-Loss' basis – Acrison's 'weight-loss' operational concepts and equipment designs combine advanced weighing technologies with the most versatile dry solids metering/handling mechanisms and leading-edge controls to provide an unsurpassed level of overall performance.**
- **Accuracy –** All Acrison continuous weigh feeders typically provide metering accuracies ranging between ± 0.25 to 1 percent or better (error), at two sigma, based on a given number of consecutive one minute weighments. Batch accuracies typically range between ± 0.1 to 0.5 percent or better (error), at two sigma, based on a given number of consecutive weighments.
- **No response lag –** The metering mechanisms of Acrison 'weight-loss' weigh feeders respond *instantaneously* upon command to alter the feed output. This critical operational function is made possible because the weight signal produced by the weighing system functions on a '*real-time*' basis, totally unlike load cell based weighing systems, which signal requires integration for stabililization purposes. And integration of the weight signal delays (slows) its response to changes in weight, and in turn, delays feed rate corrections, impairing the accuracy of the weighed output.
- **Feed range –** As standard, all Acrison 'weight-loss' weigh feeders are capable of an overall feed range of 100:1
- **Feed output capacity –** Depending upon the model and size, the overall feed rate output capability for Acrison's various model 'weight-loss' weigh feeders described in this Bulletin ranges from less than one pound up to approximately 20,000 pounds per hour.
- **Weighing Systems –** Acrison's various weighing systems are the most accurate, durable and reliable in the industry. Their technologically advanced, high-resolution, frictionless, counterbalanced lever weighing mechanisms have been specifically designed with an uncommonly high service factor for use in the typically adverse industrial environments.

  Also, once calibrated (factory completed), these weighing systems do not require any type of mechanical recalibration or adjustment. In fact, such provisions do not exist; they are permanently calibrated.
- **Ratiometric Digital Weight Resolver –** Acrison's Ratiometric Digital Weight Sensing System utilizes synchro-resolver technology and innovative electronics to produce a digital weight signal having extraordinary performance specifications. Please see page 5 for additional information.
- **No rezeroing –** Acrison's 'weight-loss' principle of operation does not require a 'scale zero' reference point; thus, rezeroing the weighing system is never required.
- **Acri-Lok® –** All Acrison 'weight-loss' weigh feeders include a unique operational feature... *Acri-Lok*... developed by Acrison to ensure accurate metering whenever the weighing system is disturbed in any manner that would adversely affect the accuracy of the metered output.
- **Batch-Lok® –** In addition to *Acri-Lok*, should an abnormal disturbance be detected by the weighing system of an Acrison 'weight-loss' weigh feeder operating in a batching mode, a supplementary feature... *Batch-Lok*... is provided to ensure the highest possible degree of batch accuracy.
- **Automatic refilling –** All Acrison 'weight-loss' weigh feeder control systems provide for automatic refilling of the feeder's integral supply hopper (or tank). When automatically refilled, the controller initiates a refill command upon sensing low hopper (or tank) level.

  During the refill period, the feeding mechanism operates in a volumetric mode, returning to gravimetric control after refill and when the controller senses a normal 'weight-loss' condition. In addition, Acrison 'weight-loss' controllers include a number of very effective operational features specifically designed to ensure optimum metering accuracy during all phases of refill (when the feeder is not in gravimetric control).
- **Unaffected by typical in-plant vibration and dust –** The novel mechanical design of Acrison weighing mechanisms inherently provides excellent resistance to in-plant vibrations without the need to integrate the actual weight signal for stability purposes. Also, based on the 'weight-loss' principle of operation, dust accumulation onto any part of the weigh feeder will not adversely affect metering performance.
- **Totally enclosed product zone –** Product remains totally confined, thus assuring a clean dust-tight operation.
- **Silent operation –** All Acrison weigh feeders are virtually silent when operating.
- **Ambient operating temperature –** All Acrison weigh feeders will operate within an ambient temperature range of -20 to 150 degrees Fahrenheit.
- **Product temperature –** As standard, Acrison 'weight-loss' weigh feeders will handle products that range from -20 to 150 degrees Fahrenheit in temperature.
- **Longeviety is exceptional**

Weighing System



NOTE: For liquid feeders, the dry solids supply hopper is replaced with a tank and the dry solids metering mechanism with a pump.

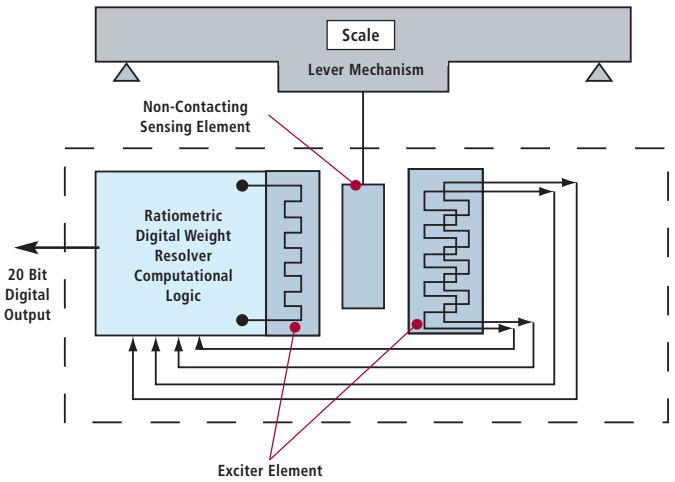
Technologically advanced, high resolution, counterbalanced Weighing Mechanisms

The weighing systems used with Acrison 'Weight-Loss' Weigh Feeders are strong, industrial-duty lever mechanisms utilizing performance-proven stainless steel flexures for all pivotal connections. These frictionless weighing systems (scales), designed and manufactured by Acrison, also include counterbalance provisions to 'offset' the weight of the metering mechanisms mounted on them, which greatly enhances weighing sensitivity for highest levels of metering performance. They are, in themselves, precision 'scales' that produce unamplified weight-sensing resolution of better than one part in over a million.

Operationally, as weight is added or removed from the scale-mounted metering mechanism and its supply hopper (or tank for liquid feeders), the lever network 'moves' in an extremely precise relationship to that weight. This movement (or displacement) is sensed by Acrison's Ratiometric Digital Weight Resolver and instantaneously converted into an unamplified, non-integrated, real-time signal directly proportional to weight.

The entire weighing mechanism, including the Ratiometric Digital Weight Resolver, is completely calibration and adjustment-free, and guaranteed for five years.

Ratiometric® Digital Weight Resolver System



Acrison's Ratiometric Digital Weight Resolver, used with all Acrison Weigh Feeders, computes movement of the weighing mechanism into a serially transmitted data stream having a discrete resolution of 20 bits (or the ability to sense 1 part in 1,048,576). This extraordinarily precise displacement measurement technique basically consists of a power supply, a sensing element, and computational logic. The Ratiometric System compares relative measurements rather than absolute values, and its power source can vary as much as +/- 30% without affecting performance. The Ratiometric Weight Resolver System is linear to within 0.01% and repeatable to 0.005%.

One of the unique features of the Ratiometric System relates to the manner in which 'movement' of the weighing mechanism is sensed, whereby the physical sensing element does not attach to (or contact) the lever weighing network. This novel design eliminates the possibility of damaging the Weight Sensor should the weighing system experience any type of shock or overload, regardless of the magnitude. And this includes the continual 'impacts' associated with refilling a 'weight-loss' feeder, especially larger units.

The Ratiometric 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, and also complies with hazardous area classifications ATEX 3D or IECEX (Zone 22), 3G (Zone 2) and 2D (Zone 21).

Model 406 and 408 Weigh Feeders

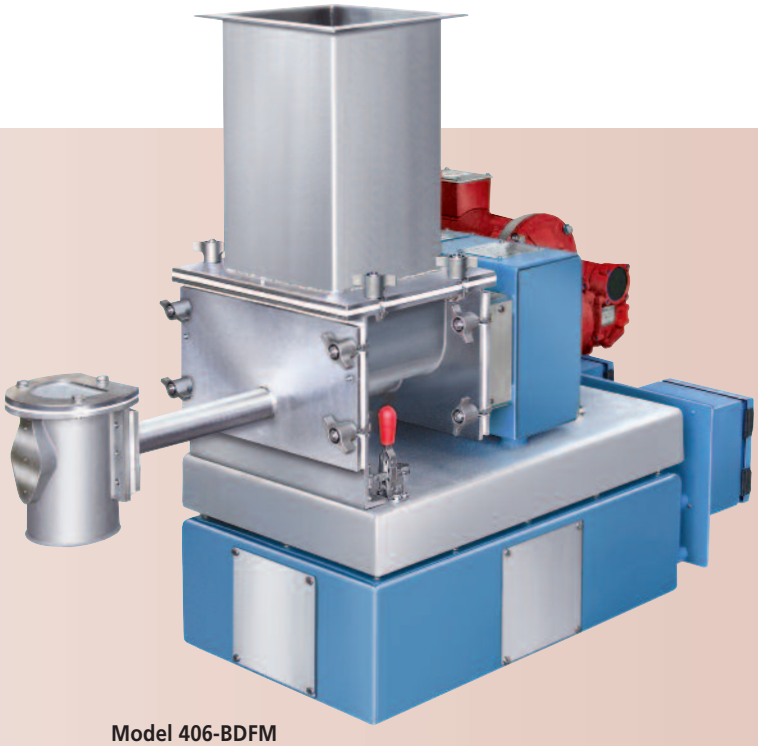
'Weight-Loss'

The Weigh Feeder Models shown in the following Chart combine either a Model 406 or 408 Weighing System with the indicated Dry Solids Metering Mechanisms.

Maximum feed rate capacities are based on the largest size metering augers and hoppers that are available with the indicated Metering Mechanisms in conjunction with the recommended maximum number of refills (i.e., refills per hour) that will ensure optimum overall weigh feeder performance.

Model Weigh Feeder	Metering Mechanism	Feed Rate Range	Max Hopper Size (cubic feet)
406-101-0	**Model 101-0** Reference Specifications 1-200-0479	1 pound to about 25 cubic feet/hour	3
406-170-00	**Model 170-00** Reference Specifications 1-200-0525	1 pound to about 6 cubic feet/hour	1
406-BDFM	**Model BDFM** Reference Specifications 1-200-0087	0.5 pounds to about 3 cubic feet/hour	0.4
408-101-1	**Model 101-1** Reference Specifications 1-200-0479	5 pounds to about 40 cubic feet/hour	5
408-105	**Model 105** Reference Specifications 1-200-0480	8 pounds to about 14 cubic feet/hour	2
408-170-0	**Model 170** Reference Specifications 1-200-0525	5 pounds to about 15 cubic feet/hour	2

Model 406-101-0



Model 406-BDFM

Model 406-170-00

Model 408-101-0

Model 408-105

Model 405 Weigh Feeders

'Weight-Loss'

The Weigh Feeder Models shown in the following Chart combine the Model 405 Weighing System with the indicated Dry Solids Metering Mechanisms.

Maximum feed rate capacities are based on the largest size metering augers and hoppers that are available with the indicated Metering Mechanisms in conjunction with the recommended maximum number of refills (i.e., refills per hour) that will ensure optimum overall weigh feeder performance.

Model Weigh Feeder	Metering Mechanism	Feed Rate Range	Max Hopper Size (cubic feet)
405-101	**Model E101** Reference Specifications 1-200-0479	10 pounds to about 60 cubic feet/hour	8
405-105	**Model 105** Reference Specifications 1-200-0480	10 pounds to about 14 cubic feet/hour	3
405-105X	**Model 105X** Reference Specifications 1-200-0480	10 pounds to about 60 cubic feet/hour	6
405-170-0	**Model 170-0** Reference Specifications 1-200-0525	10 pounds to about 19 cubic feet/hour	4
405-BDF-1	**Model BDF-1** Reference Specifications 1-200-0087	5 pounds to about 15 cubic feet/hour	2
405-1015	**Model 1015** Reference Specifications 1-200-0481	10 pounds to about 19 cubic feet/hour	3
405-1015X	**Model 1015X** Reference Specifications 1-200-0481	20 pounds to about 60 cubic feet/hour	8
405-V-101	**Model V-101** Fiberglass Feeder Reference Specifications 1-200-346	0.2 to about 25 cubic feet/hour	3
405-B14	**Model B14** Belt Feeder - Special Applications	20 pounds to about 40 cubic feet/hour	5
405-VT5	**Model VT5** Vibratory Tray Feeder - Special Applications	0.6 to about 25 cubic feet/hour	3

Model 405-170-0

Model 405-B14
(Belt Feeder)
For friable products.

Model 405-BDF-1

Model 402 and 402X Weigh Feeders

'Weight-Loss'

The Weigh Feeder Models shown in the following Chart combine either a Model 402 or 402X Weighing System with the indicated Dry Solids Metering Mechanisms.

Maximum feed rate capacities are based on the largest size metering augers and hoppers that are available with the indicated Metering Mechanisms in conjunction with the recommended maximum number of refills (i.e., refills per hour) that will ensure optimum overall weigh feeder performance.

Model Weigh Feeder	Metering Mechanism	Feed Rate Range	Max Hopper Size (cubic feet)
402-105Z	**Model 105Z** Reference Specifications 1-200-0480	20 pounds to about 60 cubic feet/hour	8
402-170-1 and 402-170-1-2	**Models 170-1 and 170-1-2** Reference Specifications 1-200-0525	20 pounds to about 45 cubic feet/hour	6
402-1015Z	**Model 1015Z** Reference Specifications 1-200-0481	15 pounds to about 60 cubic feet/hour	8
402-130	**Model 130** Reference Specifications 1-200-0479	30 pounds to about 150 cubic feet/hour	20
402-V130	**Model V-130** Fiberglass Feeder Reference Specifications 1-200-346	0.5 to about 45 cubic feet per hour	6
402-B21	**Model B21** Belt Feeder - Special Applications	30 pounds to about 150 cubic feet/hour	20
402-905-18	**Model 905-18** Reference Specifications 1-200-0804	1 cubic foot to about 45 cubic feet/hour	6
402-VT6	**Model VT6** Vibratory Tray Feeder - Special Applications	1 cubic foot to about 150 cubic feet/hour	20
402X-BDF-1.5	**Model BDF-1.5** Reference Specifications 1-200-0087 (Single Common Drive)	20 pounds to about 58 cubic feet/hour	12
402X-BDFX-1.5	**Model BDFX-1.5** Reference Specifications 1-200-0087 (Individual Drives)	20 pounds to about 93 cubic feet/hour	12
402X-BDFX-1.5-2	**Model BDFX-1.5-2** Reference Specifications 1-200-0087 (Individual Drives)	20 pounds to about 93 cubic feet/hour	12
402X-170-2 and 402X-170-2-2	**Models 170-2 and 170-2-2** Reference Specifications 1-200-0525	20 pounds to about 118 cubic feet/hour	20

Model 402-170-1

Model 402-1015Z

Model 402-905-18
(Strand Feeder)

Model 402X-BDFX-1.5-2

Model 404X and 404Z Weigh Feeders

'Weight-Loss'

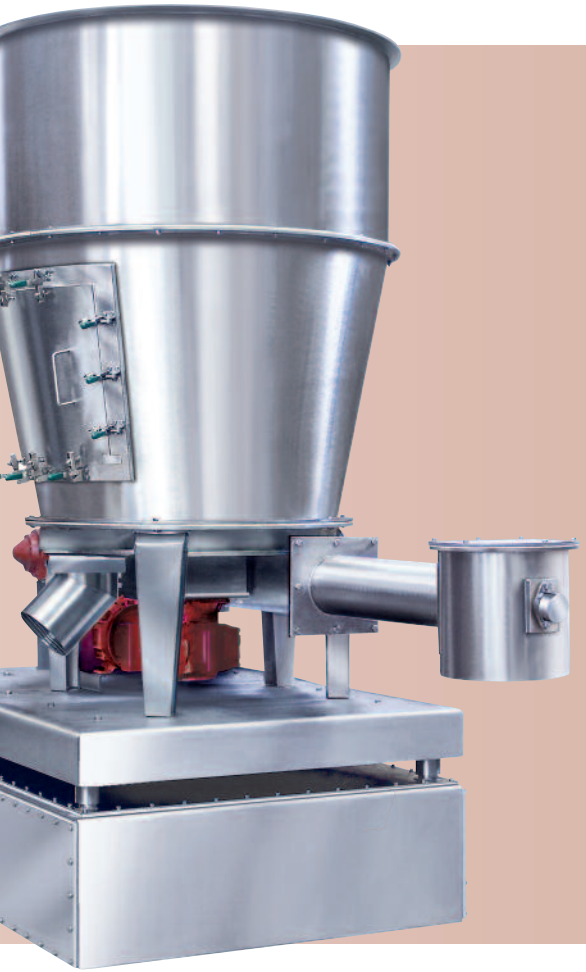
The Weigh Feeder Models shown in the following Chart combine either a Model 404X or 404Z Weighing System with the indicated Dry Solids Metering Mechanisms.

Maximum feed rate capacities are based on the largest size metering augers and hoppers that are available with the indicated Metering Mechanisms in conjunction with the recommended maximum number of refills (i.e., refills per hour) that will ensure optimum overall weigh feeder performance.

Model Weigh Feeder	Metering Mechanism	Feed Rate Range	Max Hopper Size (cubic feet)
404X-140-1	**Model 140-1** Reference Specifications 1-200-0480	60 pounds to about 300 cubic feet/hour	40
404X-170-3	**Model 170-3** Reference Specifications 1-200-0525	60 pounds to about 240 cubic feet/hour	40
404X-BDF-2	**Model BDF-2** Reference Bulletin 712	90 pounds to about 150 cubic feet/hour	20
404X-BDF-2.5	**Model BDF-2.5** Reference Bulletin 712	120 pounds to about 150 cubic feet/hour	20
404X-BDF-2.5-1	**Model BDF-2.5-1** Reference Bulletin 712	120 pounds to about 240 cubic feet/hour	30
404Z-BDF-3	**Model BDF-3** Reference Bulletin 712	150 pounds to about 320 cubic feet/hour	50
404Z-BDF-3-1	**Model BDF-3-1** Reference Bulletin 712	150 pounds to about 400 cubic feet/hour	50
404Z-170-4	**Model 170-4** Reference Specifications 1-200-0525	240 pounds to about 600 cubic feet/hour	80

Model 404Z-170-4

Model 404X-BDF-2



Model 404X-BDF-2.5

Model 402-170-1-2

Model 402X-BDF-1.5

Model 404X-BDF-2.5

Model SBC-3000 Weigh Feeder Controllers and Control Systems

Model SBC-3000 Weigh Feeder Controllers encompass leading-edge technologies and functional algorithms that provide unexcelled weigh feeder performance to satisfy the most demanding process requirements across a very broad range of applications. And with an unprecedented number of standard and optional features, accessories, and interfacing capabilities (including native Ethernet and Profibus connectivity), these controllers also provide unparalleled versatility, ease of use, and operational reliability. In particular, they are ideally suited for those applications that require central computer control with minimal hardware.

Model SBC-3000-DSP Controller

The Model SBC-3000-DSP Controller operates a single Acrison Weigh Feeder. Its design integrates a Model SBC-3000-CM Control Module with a bright, state-of-the-art TFT color graphics display measuring 7" diagonally. The assembly, designed for panel mounting, is dust-tight/water-tight.

Model SBC-3000-CM Controller

The Model SBC-3000-CM Controller operates a single Acrison Weigh Feeder. It consists of a single circuit board (module) designed for applications that utilize a central computer, PLC or DCS for monitoring and control, which do not require a local operator interface. The Model SBC-3000-CM Controller is typically supplied in a card rack, the size of which depends upon how many SBC-3000-CM Controllers will be required for a given application. A local Keyboard/Display unit is available as an option.

Equipment Specifications 1-200-0091.

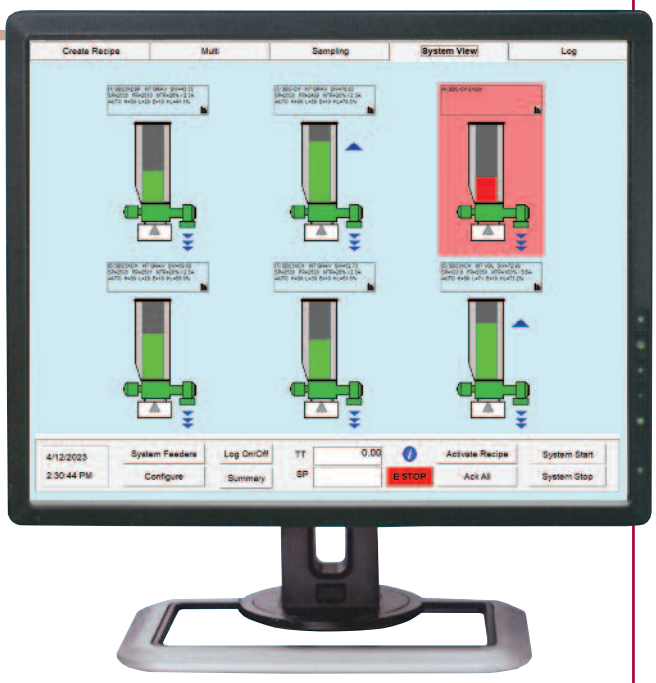
Multi-Feeder Supervisory Control System (Acri-Data®)

Operation of the Models SBC-3000-DSP and SBC-3000-CM Controllers can be monitored and controlled by Acrison's ***Acri-Data Multi-Feeder Supervisory Control System***. It is most commonly utilized in conjunction with Model SBC-3000-CM Controllers.

Operating with a 17 or 21 inch color touchscreen, Acri-Data is capable of supervising the operation and control of up to 20 Acrison Weigh Feeders while displaying real-time data and screen updates. It is also capable of master/slave and ratio-proportioning operation, unlimited recipe and storage and retrieval, trending, event and alarm logging, automatic shut-down configurability and more.

Acri-Data is hosted on a Microsoft Windows® operating platform (e.g., panel-mounted embedded PC, or a desktop/laptop PC). A user's PLC or DCS can also serve as a host for any of the above Weigh Feeder Controllers.

Equipment Specifications 1-200-0627.



All Acrison controllers are certified to UL, CSA and EC 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.

Empire Boulevard Facility
Moonachie, NJ USA

Joseph Street Facility
Moonachie, NJ USA

Acrison products...

- Models 101 and 130 Volumetric Feeder Series
- Models V-101 and V-130 Volumetric Feeders
- Model 1015 Volumetric Feeder Series
- Model 105 Volumetric Feeder Series
- Model W-105 Volumetric Feeder Series
- Model 120 Volumetric Feeder
- Model 140 Volumetric Feeder Series
- Model 170 Volumetric Feeder Series
- Model 905-18 Volumetric Feeder
- Bin Discharger Feeders
- Model 200 Weigh Belt Feeder Series
- Model 203B Weigh Auger Feeder Series
- Model 270 In-Line Weigh Feeder Series
- Models 402 and 404 Series, 405, 406, 407X, 408 and 410 'Weight-Loss' Weigh Feeders
- Model Series 403 'Weight-Loss' 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
- Vibratory Bin Discharger Hoppering Systems
- Model 170-BD-30 Bin Discharger
- Model 800 Series Bulk Bag Unloaders
- Models 500, 515, 530, and 580 Polyelectrolyte Preparation Systems
- Water and Waste Water Treatment Systems
- Volumetric and Gravimetric Feeder Controllers and Control Systems
- Silo Systems
- Accessory Equipment for Acrison Products
- Systems Engineering

"Visibly Different... Measurably Better"

Acrison®, Inc.

20 Empire Blvd., Moonachie, NJ 07074
201-440-8300 • Fax: 201-440-4939
Toll Free: 800-4ACRISON
Email: informail@acrison.com
www.acrison.com

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