Acrison®

"In-Line" WEIGH FEEDERS

Model 270 Series

For Dry Solids

High Performance Weigh Feeding of Dry Solids Materials

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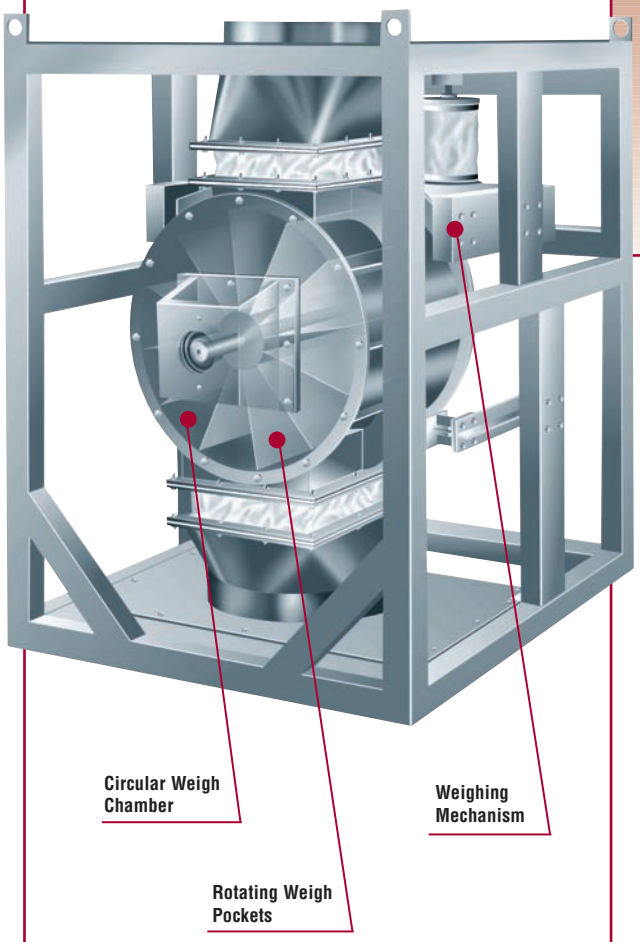
"In-Line" WEIGH FEEDERS Model 270 Series



Model 270 Weigh Feeders completely confine the product being metered from inlet to outlet. In addition, side panels completely enclose the entire feeder and its weighing mechanism, prohibiting airborne dust from affecting weigh feeder performance. Portions of the side panels are clear plastic to allow visual observation of the weigh feeder system.

Model 270 Weigh Feeders offer processors an economical, precise and reliable method for accurately metering dry solid ingredients at moderate to high rates in a compact, *"in-line"* vertical configuration.

Operation

Developed in direct response to user needs, the Model 270 Series of Weigh Feeders provide accurate and dependable performance in a totally dust-tight, vertical in-line configuration. With their compact design and only one moving part, these novel weigh feeders typically require less installed space than most other type heavy-duty weigh feeders having similar throughput capacities.

In operation, a circular weigh chamber, housing a series of rotating "weigh pockets", is mounted onto an ultra high resolution Acrison weighing system. A separate variable output metering device (or prefeeder), typically a rotary valve or screw type metering mechanism, attached directly to product supply, feeds material into the top inlet of the weigh feeder within which the slowly rotating constant speed "weigh pockets" continuously weigh the product. Material is then discharged through the bottom outlet of the weigh feeder, which is directly (vertically) in-line with its inlet.

As material is fed into the weigh chamber, a weight signal is produced, which is instantaneously calculated into a continuous feed rate by the weigh feeder's controller. Based on this calculation, the controller modulates the speed of the prefeeder so that its output precisely matches the selected feed rate, resulting in an accurate, continuous and uniform flow of material.

Model 270 Series Weigh Feeders utilize Acrison's exclusive counterbalanced weighing system, equipped with Acrison's Ratiometric Digital Weight Resolver for superior weight sensing and trouble-free long-term operation. Also, because of the counterbalanced design of the weighing system, only the net weight of the material within the feeder's weigh chamber is actually weighed. In turn, optimum weight sensing resolution is realized, producing the highest possible degree of metering accuracy.

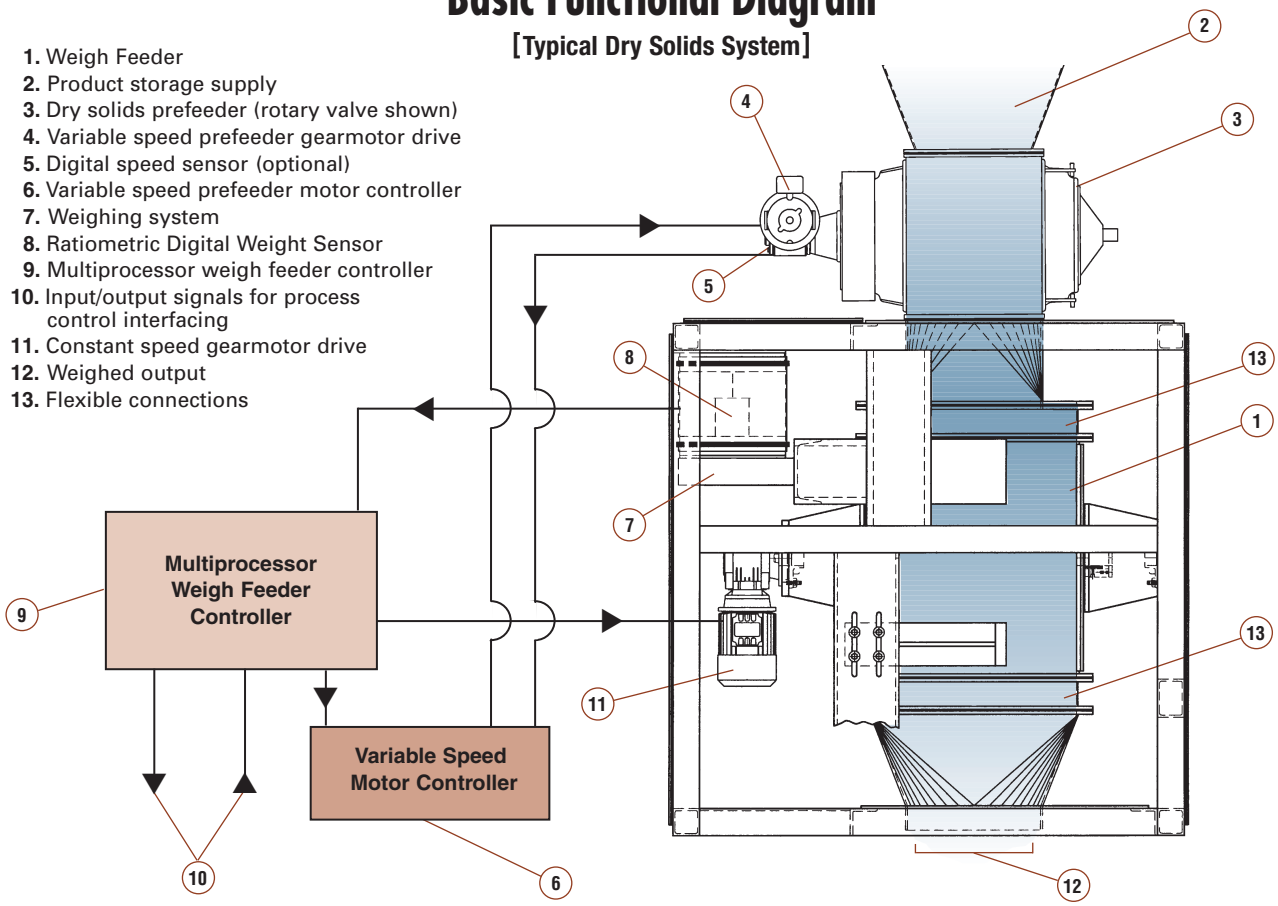
Acrison weighing systems are virtually maintenance-free mechanisms, well known throughout the many processing industries for their robust construction, operational dependability and exceptional longevity, and that they do not use a load cell(s) for sensing weight. In addition, these weighing systems are permanently calibrated, adjustment-free, and carry an industry-leading unconditional five-year warranty.

Model 270 Series of "In-Line" Weigh Feeders

Basic Functional Diagram

[Typical Dry Solids System]

1. Weigh Feeder
2. Product storage supply
3. Dry solids prefeeder (rotary valve shown)
4. Variable speed prefeeder gearmotor drive
5. Digital speed sensor (optional)
6. Variable speed prefeeder motor controller
7. Weighing system
8. Ratiometric Digital Weight Sensor
9. Multiprocessor weigh feeder controller
10. Input/output signals for process control interfacing
11. Constant speed gearmotor drive
12. Weighed output
13. Flexible connections



Standard features...

- Designed with an exceptionally durable, ultra high resolution, mechanically counterbalanced, "non-load cell" dynamic weighing system.
- Provides total product confinement.
- Completely dust-tight from product inlet to outlet.
- The weigh feeder has only one moving part.
- Feed rate turn-down ratio is 15:1 from the feeder's maximum feed rate capacity.
- Both the weighing system and metering mechanism are virtually maintenance-free.
- All product contact surfaces are constructed of 304 stainless steel.
- Overall feed rate capability ranges from 50 to 7355 cubic feet per hour.
- Maximum product temperature to 220˚F (116˚C).
- Ambient temperature operating range is -10 to 140˚F (-23˚ to 60˚C).
- Minimum space requirements.
- Silent when operating.
- Power requirements are either 115/1/60 or 230/460/3/60.

Optional features...

- Various materials of construction.
- Quick-disconnect construction (certain models).
- Sanitary construction typically to satisfy FDA/USDA requirements.

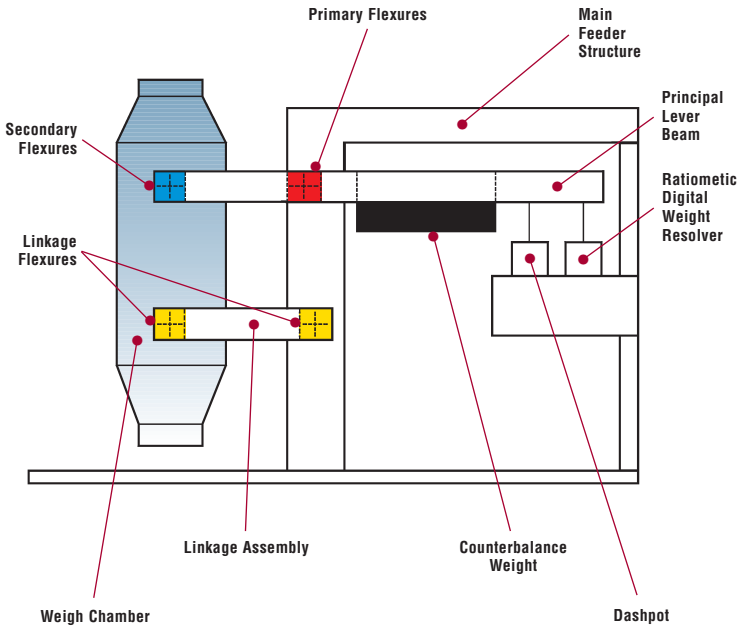
MODEL 270 SERIES OF WEIGH FEEDERS

	MODELS				
	270-0	270-1	270-2	270-3	270-4
Inlet Diameter (inches)	6 5/8	10 3/4	12 3/4	15	20
Outlet Diameter (inches)	6 5/8	10 3/4	12 3/4	18	20
Rotor Diameter (inches)	10	14	18	24	30
Motor (hp)	1/4	1/3	1/2	3/4	1
Max. Feed Rate (cu. ft./hr.)	240	695	1550	3240	7355
Height (inches)	44	47	50	60	73
Footprint (inches)	45 x 24 7/8	50 1/2 x 35 5/8	52 1/2 x 38 5/8	60 1/2 x 45 1/2	67 1/2 x 46 1/2
Approx. Weight (lbs.)	900	1250	1500	1850	3200

Metering accuracy typically ranges between ±0.25 and 1 percent or better (error) at two sigma, based on a given number of consecutive one minute weighments.

Model 270 Series of "In-Line" Weigh Feeders

Model 270 "Overhead" Weighing System



Functional Operation

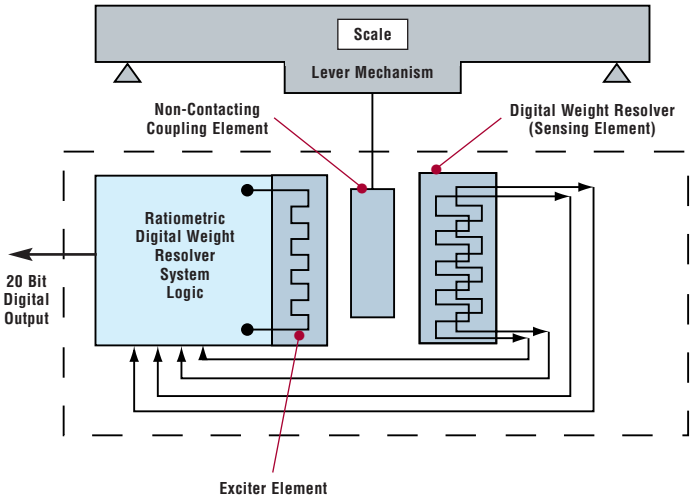
Model 270 Weigh Feeders utilize an Acrison designed and manufactured ***"Overhead"*** type Weighing System. The basic weighing system is a uniquely configured, modified parallelogram lever network utilizing stainless steel flexures, also designed and manufactured by Acrison, for all pivotal connections. This technologically advanced lever weighing system is frictionless in operation, extremely stable, and very precise in its ability to sense weight; it is also ruggedly constructed for exceptionally long life. In addition, the weighing system is counterbalanced so that only the net weight of the material in the rotary weighing mechanism is weighed.

As noted in the illustration, two *Primary Flexures*, one on each side connect the *Principal Lever Beam* to the *Main Feeder Structure*. Two *Secondary Flexures*, also one on each side, connect the upper portion of the *Weigh Chamber* to the *Principal Lever Beam*. A *Linkage Assembly*, using two additional *Flexures*, connects the lower portion of the *Weigh Chamber* to the *Main Feeder Structure*. These novel stainless steel *Flexures* provide optimum structural rigidity of the *Lever Network* both in the horizontal and vertical planes, thereby ensuring permanence of weight sensing calibration and accuracy.

Operationally, as product is fed into the Weigh Chamber, the Lever Network "moves" in an extremely precise relationship to that weight. This movement is precisely and continuously sensed by Acrison's Ratiometric Digital Weight Resolver, instantly converting it into an equally precise weight signal directly proportional to weight.

In differing from the common variety of load cell type weighing systems, the physical weight sensing element of Acrison's Ratiometric Digital Weight Resolver is not attached to any part of the Lever Network and therefore, cannot be damaged by any amount of overload, shock and/or abuse that the Weighing System may experience. In addition, the entire Weighing Mechanism of the Weigh Feeder, including its Flexures and Ratiometric Weight Sensing System, is completely calibration and adjustment-free, and unconditionally guaranteed for five years.

Ratiometric® Digital Weight Resolver System (RDWR)



Acrison's exclusive Ratiometric Digital Weight Resolver (RDWR) System, used with all Acrison weigh feeders, computes the linear movement of the 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 component 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 RDWR System compares relative measurements, rather than absolute values, its input power source can vary up to ±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 RDWR 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.

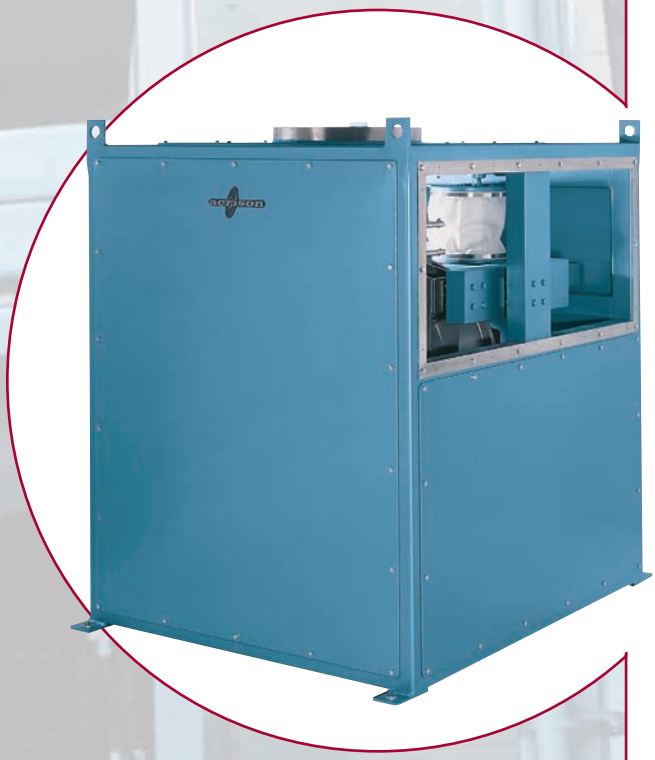
Acrison's RDWR System is FM (Factory Mutual) Approved and Listed for operation in hazardous environments… Classes I, II and III; Divisions 1 and 2; Groups C, D, E, F and G. This weight sensing system also complies with European hazardous area classifications EEx ia IIB T4 and EEx d [ia] IIB T6.

Model 270 Series of "In-Line" Weigh Feeders

Model 270-2
(shown with dust-tight panels removed)

Model 270-3
(shown with dust-tight panels removed)

Model 270-4
(shown with dust-tight panels removed)



Model 270-3

Model 270 Series of "In-Line" Weigh Feeders

With its compact design, small footprint and minimal height requirements, the Model 270 Series of Weigh Feeders require far less "installed space" than weigh belts or weight-loss type weigh feeders (or flow meters) having similar throughput capacities. This unique device is designed with only one moving part that continuously weighs and discharges dry solid materials in a totally dust-tight assembly (the entire feeder and weighing mechanism are completely enclosed).

Model 270-3
Typical Installation

Weigh Feeder Controllers and Control Systems

Acrison Weigh Feeder Controllers and Control Systems are universally recognized for their design superiority, unparalleled versatility, ease-of-use and operational reliability. From basic single weigh feeder controllers to complex multi-feeder supervisory control systems, the technologically advanced designs of these devices, including their cutting-edge software routines, provide users with unexcelled weigh feeder performance to satisfy the most demanding metering requirements across a broad spectrum of applications. With a wide range of options, accessories and interfacing capabilities, these controllers and control systems are also available in a number of different packaging configurations.

Acrison Weigh Feeder Controllers

Acrison Weigh Feeder Controllers will operate in either a continuous or batch mode, gravimetrically or volumetrically, and/or in a master/slave or ratio proportioning mode. They are available with a variety of keyboard or graphic touch-screen color displays in various languages and can be provided with recipe storage capabilities as well as with a wide range of I/O interfacing options (i.e., analog, digital, modem, infrared, wireless, serial and network I/O).

For decades, Acrison Weigh Feeder Controllers have provided state-of-the-art performance for thousands of users worldwide. Leading edge products such as the Models C-702, BC-702, SBC-2000® and MD-II Family of Controllers, including the MD-II MFC® (Multi-Feeder Controller) and the Acri-Data® Supervisory System Controller, have gained universal acceptance throughout all sectors of the Processing Industries, and are highly recognized for their versatility and reliability.

SBC-2000 Weigh Feeder Control Module

Acrison's ongoing investment in research and development continues to result in the evolution of the Company's Controls and Control Systems' capabilities with the launch of the technologically advanced Model SBC-2000 Weigh Feeder Control Module. This new, small and powerful module, encompassing the latest in microcomputer logic and functional algorithms, provides an unprecedented number of standard and optional features, along with broad-scope flexibility for single and multi-feeder control requirements in a compact and cost-effective assembly, particularly those applications that require central computer control, minimal hardware and which do not necessarily require a local user interface or keyboard/display. The advanced SBC-2000 Weigh Feeder Controller can be supplied with various display options if so required.

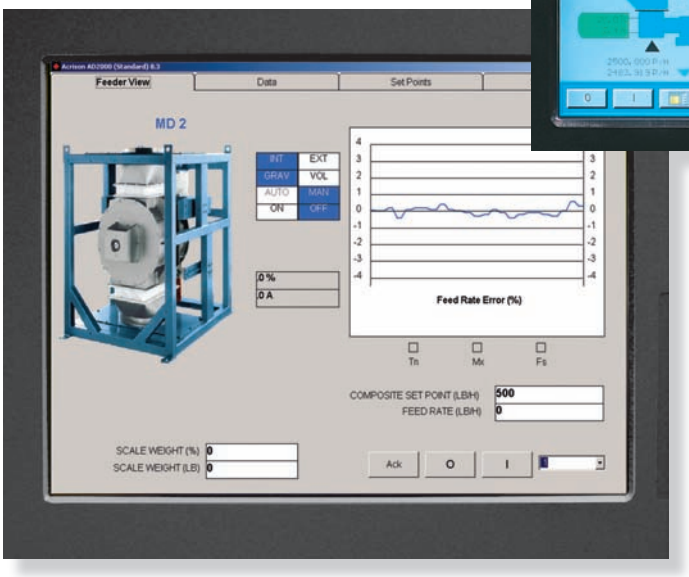
Multiple Weigh Feeder Control Systems

Model SBC-2000 Controller Modules, when configured for multi-feeder operation, offer unprecedented ease-of-operation, maximum user flexibility and outstanding performance capabilities. When SBC-2000 Modules are combined with Acrison's Acri-Data Supervisory Control and Software package, it is possible to operate and monitor up to 20 Acrison weigh feeders, while providing rapid data and screen updates, including recipe storage and retrieval, all of which are selectable and operable from the Acri-Data display.

Reference Design Specifications 1-200-113, 1-200-342, 1-200-0601, 1-200-602, 1-200-627 and 1-200-642 and Bulletin 949.

Single Feeder Keyboard Display

Single Feeder Color Touchscreen Display



Acri-Data Color Touchscreen Display

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.

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
- Bin Discharger Feeders
- 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
- 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

Empire Boulevard Facility
Moonachie, NJ USA

Trafford Park Facility
Manchester, UK

Joseph Street Facility
Moonachie, NJ USA

"Visibly Different... Measurably Better"

Acrison®

20 Empire Blvd.
Moonachie, NJ 07074 USA
201-440-8300 • Fax: 201-440-4939
Email: informail@acrison.com
Website: www.acrison.com

acrison® INC.

302-0562/B/2-06/7006