Syntron®
Heavy-Duty Feeders
Syntron Material Handling
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Two powerful industry leading brands—Link-Belt® and Syntron®—have come together under a new company name, Syntron Material Handling, LLC, for one goal – better engineered products.

Established in May 2014, Syntron Material Handling (SMH) was built out of the legacies of Link-Belt Company and Syntron Company, formerly owned by FMC Technologies. Today, our 300 skilled employees have a combined 4,212 years of industry knowledge that they put into the SMH product every day. We are dedicated to providing customers with complete material handling solutions.

Let Syntron Material Handling’s knowledgeable team help your business with conveying, feeding, screening, elevating, vibratory flow aids, and mining controls of bulk product. Whether optimizing existing systems or starting from the ground-up on new and customized plants or mines, our dedicated staff will provide you with the most efficient and cost-effective solutions.

“Our company structure will be very exciting and fast-paced as we charter our new path. The positive attitudes and skills of our employees, the strength of our products, and our long-term customer relationships are our foundation for success.” said CEO Andy Blanchard.

An international leader for innovative solutions, Syntron Material Handling can improve the technology customers are already using. The Link-Belt® expertise and equipment have been instrumental in developing some of the world’s largest belt conveyors. The Syntron® feeders are instrumental to supplying energy sources and material handling efforts across the globe.

Levine Leichtman Capital Partners, the new owner of Syntron Material Handling, is committed to the success and growth of the company by investing in engineering capabilities, manufacturing efficiency, and customer service.

Although we may have a new name, we still have the same dedicated employees and industry leading engineered products that make us a market leader.

Syntron Material Handling operates two manufacturing facilities in the USA and China.

All of our products are produced to OSHA/MSHA standards and ISO Standard 9001:2008. We are a charter member of CEMA, and active members of NSSGA, NMA, SME, FEMA, and PMMI.

Call us today for all your material handling needs.

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Saltillo, Mississippi 38866
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Fax: 662.869.7493
800.356.4898
orders@syntronmh.com

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Changshu Export Processing Zone
Changshu, Jiangsu, China 215513
Phone: +86 0512.52299002
Fax: +86 0512.52297228
orders@syntronmh.com
At Syntron Material Handling, we understand that good, reliable equipment – operating at peak performance – is crucial to your bottom line. That’s why we’re committed to giving our customers value – before, during and after the sale.

Syntron® Material Handling is based on the most rugged, reliable, and durable vibratory equipment available – Syntron vibrating feeders, conveyors, screens, and bin vibrators. To begin with, we’ll help you select the right equipment, considering all the variables of your application in order to maximize production and reduce costs.

Once you’re up and running, our Syntron Services Team will keep you on top and moving ahead. We’re on call – at the factory or in the field – wherever and whenever you need us for parts, service, inspection and training.

Dependable equipment is critical to your operation, and your success is critical to our success. At Syntron Material Handling, your satisfaction is our number one priority. You can rely on us.

www.syntronmh.com
**Syntron® Heavy-Duty Vibrating Feeders**

Syntron® Vibrating Feeders for heavy industry are ideal for feeding a wide variety of bulk materials from storage piles, hoppers, bins and silos. Rugged and dependable, Syntron® heavy-duty feeders are backed by years of service with proven performance in the mining, aggregates, glass, cement, chemical, wood products and steel industries.

Syntron Vibrating Feeders are designed to increase bulk handling productivity with high feed rates to improve cost-per-ton efficiency. Electromagnetic and electromechanical models are available with capacity ranges from 25 to 4,000 tons per hour. Feeder selection should consider the production requirements, material characteristics, and operating environment.

Syntron® Vibrating Feeders are sub-resonant tuned, two-mass, spring-connected systems. These features enable Syntron® feeders to work consistently under material damping and other varying headload conditions with negligible changes in trough stroke. Sub-resonant tuning maintains stroke consistency and speed stability, thus delivering higher capacities at controlled feed rates.

Precise, sub-resonant tuning is a key characteristic of both types of Syntron® vibrating feeders. Electromagnetic models are tuned through careful calculation of the number and thickness of the special leaf springs required to accomplish the desired tuning ratio. Electromechanical models are tuned by adjusting the operating speed to obtain the exact tuning ratio. Low sub-resonant tuning utilized by Syntron®’s two-mass feeders make them the most stable and consistent feeders available in today’s market.

Dependable, flexible control sets Syntron® vibrating feeders apart from other feeding and conveying machinery. Material feed rates are controlled and easily adjusted with Syntron® feeder controls; a wide range of standard and special models is available. Control devices can also be supplied for integration into systems that use external signals from automatic sensing devices. In addition, control arrangements are available for selecting and sequencing a group of feeders.
Syntron® Electromagnetic Feeders

Heavy-Duty Electromagnetic Feeders

With thousands of units installed over the past 60 years, Syntron® Heavy-Duty Electromagnetic Feeders are the most recognized name in the industry. With ten different models having capacities ranging from 25 to 1,600 tons per hour, these feeders are capable of handling a variety of materials from fine powder to large, coarse particles.

Syntron® Electromagnetic Feeders are two-mass sub-resonant tuned. When the natural frequency of a feeder is greater than the operating frequency (3600 VPM), the feeder is sub-resonant tuned, which makes the unit consistent and stable under changing headloads. The units can be supplied in various configurations including multiple-drive units for especially long or wide pans and above-deck drive units for applications where space under the trough is insufficient for the standard below-deck unit.

Utilizing the EVF control, Syntron® Electromagnetic Feeders will accept a three-phase input voltage while operating with a rectified ac sine wave to the feeder. This provides for three-phase load balancing to your plant electrical system and reduces the VA load required by the feeder. The units provide easily adjustable feed rates with an instantaneous response. (For more information on electromagnetic controls, see pages 14-16.)
Syntron® Electromagnetic High Performance Feeder Features

- **Dust-tight and maintenance-free drive units:** Feeders have no mechanical parts to wear out, such as cams, eccentrics, belts and bearings - thus eliminating the need for lubrication.

- **Two-mass, spring-connected, sub-resonant tuned:** All movement is confined to the heavy-duty leaf springs which provide millions of cycles of service.

- **Stroke generated by electromagnetic field produced by coil.**

- **High Frequency:** 3600 VPM at 60 Hz or 50 Hz with EVF Control for maximum feed rate.

- **Stroke -.080 inches:** New "HP" units operate at .080" at 3600 VPM to provide 40% more output than traditional units at .060"

- **Troughs:** Engineered weldments designed to withstand the high acceleration and impact forces associated with vibratory feeding applications.

- **Bolt-in replacement trough liners:** Wide range of materials to best fit your applications are available including T-1A, AR-400, AR-500, Stainless Steel, UHMW Plastic, Rubber, Ceramic and Carbide Overlay.

Syntron® Electromagnetic Feeders are ideal for use in a stationary operation such as a tunnel system from a surge pile. They are usually controlled from a remote point to provide the desired feed rate. In this application, a model FH-22 feeds limestone to a belt conveyor.
# Electromagnetic Feeder Specifications

## MODEL FH-22-HP (up to 180) tph

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Based on feeder with 10° down slope, below-deck drive unit, installed with proper hopper transition and skirt board arrangement, feeding sand weighing 100 pounds per cubic foot. 240/480/600 Volt 60 Hz single-phase. 230/400/415 Volt 50 Hz single-phase. Above-deck and base mounting drive units are available.

Please request a certified drawing for installation.

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Based on feeder with 10° down slope, below-deck drive unit, installed with proper hopper transition and skirt board arrangement, feeding sand weighing 100 pounds per cubic foot. 240/480/600 Volt 60 Hz single-phase. 230/400/415 Volt 50 Hz single-phase. Above-deck and base mounting drive units are available.

Please request a certified drawing for installation.

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<td>457</td>
<td>984</td>
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Many other trough sizes are available. Capacities vary depending on drive unit location, material characteristics, material density, trough length and width, trough liner type, feeder installation, skirt boards and hopper transitions. Cad drawings are available. Please call Syntron Material Handling for expert help with your application.
MODEL F-380-HP (up to 500) tph

---|---|---|---|---|---|---|---
24 x 60 | 250 | 18 amps | EVF-15D | 1370 | 621 | 1400 | 635
30 x 60 | 500 | 18 amps | EVF-15D | 1400 | 635 | 1450 | 657
36 x 48 | 500 | 18 amps | EVF-15D | 1400 | 635 | 1450 | 657

*Based on feeder with 10° down slope, below-deck drive unit, installed with proper hopper transition and skirt board arrangement, feeding sand weighing 100 pounds per cubic foot. 240/480/600 Volt 60 Hz single-phase. 230/400/415 Volt 50 Hz single-phase. Above-deck and base mounting drive units are available.

MODEL F-480-HP (up to 1100) tph

---|---|---|---|---|---|---|---
42 x 84 | 1100 | 31.5 amps | EVF-25D | 4100 | 1859 | 4200 | 1905
48 x 72 | 1100 | 31.5 amps | EVF-25D | 4000 | 1814 | 4100 | 1859

*Based on feeder with 10° down slope, below-deck drive unit, installed with proper hopper transition and skirt board arrangement, feeding sand weighing 100 pounds per cubic foot. 480/600 Volt 60 Hz single-phase. 400/415 Volt 50 Hz single-phase. Above-deck and base mounting drive units are available.

Many other trough sizes are available. Capacities vary depending on drive unit location, material characteristics, material density, trough length and width, trough liner type, feeder installation, skirt boards and hopper transitions. Cad drawings are available. Please call Syntron Material Handling for expert help with your application.
## Electromagnetic Feeder Specifications

### MODEL F-660

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<td>15½</td>
<td>69</td>
<td>63½</td>
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---|---|---|---|---|---|---|---|
60 x 90 | 1000 | 31.5 amps | EVF-25D | 9200 | 4173 | 9300 | 4218 |

> Based on feeder with 10° down slope, below-deck drive unit, installed with proper hopper transition and skirt board arrangement, feeding sand weighing 100 pounds per cubic foot. 480/600 Volt 60 Hz single-phase. 400/415 Volt 50 Hz single-phase. Above-deck and base mounting drive units are available.

Please request a certified drawing for installation.

### MODEL F-88

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<tr>
<td>72</td>
<td>1829</td>
<td>96</td>
<td>8</td>
<td>49½/16</td>
<td>145½/16</td>
<td>87</td>
<td>51½</td>
<td>40½/32</td>
<td>48½/32</td>
<td>22½/32</td>
<td>103½/16</td>
<td>19¾</td>
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</table>

---|---|---|---|---|---|---|---|
72 x 96 | 1600 | 70 amps | EVF-60D | 11400 | 5170 | 12000 | 5443 |

> Based on feeder with 10° down slope, below-deck drive unit, installed with proper hopper transition and skirt board arrangement, feeding sand weighing 100 pounds per cubic foot. 480/600 Volt 60 Hz single-phase. 400/415 Volt 50 Hz single-phase. Above-deck and base mounting drive units are available.

Please request a certified drawing for installation.

Many other trough sizes are available. Capacities vary depending on drive unit location, material characteristics, material density, trough length and width, trough liner type, feeder installation, skirt boards and hopper transitions. Cad drawings are available. Please call Syntron Material Handling for expert help with your application.
Electromagnetic Feeder Troughs

Syntron® Electromagnetic Feeder models FH-22 through F-88 can be furnished with standard flat-bottom troughs, special flat-bottom troughs or belt-centering discharge troughs.

Drive units can be positioned either above or below the trough. A below-deck drive unit is most commonly used, but above-deck drive units can be supplied for installations where there is insufficient space below the trough. However, an above-deck drive unit may reduce feeder capacity slightly.

Several trough options are available for special applications. Syntron® extra-long feeder troughs can be supplied with either below-deck or above-deck multiple electromagnetic drive units. Extra-long feeder troughs provide many advantages in conveying materials over long distances; unlike belt conveyors, there are no idlers or pulley drive units to wear, lubricate, or replace. Long tubular troughs can convey pure, clean materials without atmospheric contamination and safely convey dusty, poisonous materials without endangering processing personnel.

Other trough options include:

- Syntron® vibrating inspection tables feed material forward at a smooth, controlled rate of flow. This enables an operator to remove material that does not meet specification.
- Syntron® “spreader” feeders spread a wide, even layer of material with a diagonal discharge trough or diagonal-slotted trough.

Other Trough Options Include:

- Covered Trough with Dust Seals
- Open Trough with Dust Seals
- Screening Feeders
- Diagonal Discharge Trough
- Belt-Centering Discharge Trough

Trough Liner Options Include:

- T-1A
- AR-400
- AR-500
- Stainless Steel
- UHMW Plastic
- Rubber
- Ceramic
- Carbide Overlay
Multiple-Drive Electromagnetic Feeders

Syntron® Electromagnetic drive units can be combined to create feeders ideally suited for special applications. Multiple-drive units, positioned one behind the other, result in a long, vibrating conveyor. When an especially wide material layer is desired, multiple-drive units can be placed side by side on extra wide feeder troughs. The number of drive units required is determined by the trough width and length.

Dual-twin drive units – two sets of twin drive units, one set placed behind the other – provide both increased capacity and the ability to handle exceptionally heavy loads.

The material flow rate of all multiple-drive unit models can be easily regulated. A special control permits adjustment of all drive units simultaneously to control the flow rate of the entire feeder.

A selection of some of the available multiple-drive unit configurations.
Syntron®
Heavy-Duty
Electromagnetic
Feeder Controls

Provide for adjustable and consistent material flow

EVF Series Controls are optimized for efficient operation and allow for a full range of material flow with a 10:1 turn-down ratio on electromagnetic feeders. The newly designed EVF line of feeder controls operate with single- or three-phase input providing half-wave (RC) output and are configured with custom firmware thus allowing for reduced power consumption.

Additional features of the new EVF product offering include precise voltage regulation, expanded DC control signals and PC communication, and improved diagnostic capability. Please reference the chart below for model offerings or call one of our applications specialists at 1-800-356-4898 for additional information.

**EVF Series Control**

<table>
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<th>Control Model</th>
<th>Input Voltage</th>
<th>Hz</th>
<th>Control Input</th>
<th>Intermittent Contacts</th>
<th>DC Signal Input</th>
<th>Manual Control</th>
<th>Output RC</th>
<th>Voltage Regulation</th>
<th>Soft Start</th>
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<td>● ●</td>
<td>30 Nema 1</td>
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<td>Keypad</td>
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● Standard in the model listed
### Electromagnetic Feeder Control Dimensions

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<tr>
<th>Model</th>
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<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
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<th>J</th>
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#### Savings before startup include:
- Smaller transformers
- Smaller conductors (cables or wires)
- Smaller breakers
- Easier to install in MCC
- Less filtration and line conditioning required for other plant equipment
- Reduces the need for Power Factor Correction Equipment
- Easier to integrate with the latest technology for reduction in controls installation

#### Savings after startup include:
- Over a 50% reduction in energy consumed
- Better diagnostic capabilities to reduce maintenance time
- 100% voltage regulation for consistent production rates

---

**Return on investment!**

Utilizing PWM technology with custom firmware and an additional rectifier decreases the amount of amperage being drawn off of the power line by approximately 85%. This design reduces the KW consumption of an electromagnetic feeder by more than half. Power grid installation costs are significantly reduced with lower current capacity requirements. When compared to traditional means of powering electromagnetic equipment, the EVF design practically eliminates the reactive power losses resulting in a reduction of up to 80%in KVA requirement. “The EVF Controls virtually pay for themselves when installed.”

**Cutting edge technology**

**Reduced energy consumption**
Standard Electronic Feeder Control

Electronic Control accepts a variable DC current or voltage signal from an external source and uses it to vary the feed rate.

Two-Rate Automatic Scale

Perfect for batch weighing or bagging operations. External scale switches connected to control automatically signal primary fast material flow, secondary dribble flow, and instant shut-off at exactly the pre-selected weight. Primary and secondary setpoints are adjustable on keypad.

Load Monitoring Control

Sensor on electrical load of process equipment motors to determine when the machine is approaching an overload or underload condition connected to control which adjusts feeder output to correct machine loading.
Syntron® MF Electromechanical Feeders

MF Heavy-Duty Electromechanical Feeders

The high-capacity performers

Syntron® MF Heavy-Duty Electromechanical Feeders are the heavy-weights of bulk material handling and are used for higher capacity requirements. The ten heavy-duty models handle capacities from 600 to 4,000 tons per hour.*

Syntron® Heavy-Duty Electromechanical Feeders combine extra structural strength with durable components. The deep wing plates form a bridge between inlet and discharge suspension supports, providing extra strength for years of dependable service. Standard troughs feature unitized weldments – one-piece, completely welded units for greater strength. Troughs are also available with bolt-together construction for tunnel installations or other confined areas.

MF Heavy-Duty Electromechanical Feeders are two-mass, spring-connected and sub-resonant-tuned. The exciter unit is connected to the trough with corrosion resistant polymeric springs, which are more stable under varying conditions. The springs are compressed for improved load stability, improved feed angles and straight line motion. The spring design eliminates pinch points, an important safety feature.

All Syntron® MF Electromechanical Feeder motors are labeled for inverter duty and vibration service. Motors can be supplied to meet UL explosion-proof requirements.

* Based on sand weighing 100 pounds per cubic foot. Capacities vary depending on material characteristics, material density, trough length and width, trough liner type, feeder installation, skirt boards and hopper transitions.

NEW! Two-Mass Direct Drive

All MF Mechanical Feeders, except MF-1600 and 2000, are designed using the new Two-Mass Direct Drive. This drive provides reliable service using a rotary vibrator to minimize components. Belts and pulleys, which commonly require adjustment and replacement due to wear, are eliminated. The new Two-Mass Direct Drive is also maintenance friendly and requires minimal time for thrust adjustment or replacement.
MF Electromechanical Direct Drive Feeder

Features

- Operating frequency - 1100 VPM at 55.4 Hz
- Stroke: 0.25 - 0.30 inches
- Dependable, flexible, easily adjustable
  - Minimal component design to reduce adjustments and replacements due to wear
  - Quick replacement of Drive Unit
  - Infinite unbalance adjustment
  - VFD control providing 10:1 turn-down feed adjustment
- Sub-resonant tuning
  - Stroke consistency and speed stability under varying headload and material dampening
- Start and operate fully loaded or empty
- Structural strength
  - Deep wing plates
  - Engineered weldments using the latest FEA techniques and software
- Hazardous Area Service
  - Explosion proof motors
  - ULXP: Class 1, Div 1, Group C & D Class 2, Div 1, Group E, F, & G
- Bolt-in trough liners
  - T1-A
  - AR-400, AR-500
  - 304 stainless steel
  - Chromium carbide overlay ceramic
  - UHMW, TIVAR, rubber

Syntron® MF-600 Electromechanical Feeder feeding rock to a crusher.
**MF Heavy-Duty Feeder Specifications**

**MODEL MF-200-DD**

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◆ Based on feeder with 10° down slope, below-deck drive unit, installed with proper hopper transition and skirt board arrangement, feeding sand weighing 100 pounds per cubic foot. 460/575 Volt 60 Hz three-phase. 380/415 Volt 50 Hz three-phase.

Many other trough sizes are available. Capacities vary depending on drive unit location, material characteristics, material density, trough length and width, trough liner type, feeder installation, skirt boards and hopper transitions. Cad drawings are available. Please call Syntron Material Handling for expert help with your application.
### Model MF-400-DD

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Based on feeder with 10° down slope, below-deck drive unit, installed with proper hopper transition and skirt board arrangement, feeding sand weighing 100 pounds per cubic foot. 460/575 Volt 60 Hz three-phase. 380/415 Volt 50 Hz three-phase.

### Model MF-600-DD

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Based on feeder with 10° down slope, below-deck drive unit, installed with proper hopper transition and skirt board arrangement, feeding sand weighing 100 pounds per cubic foot. 460/575 Volt 60 Hz three-phase. 380/415 Volt 50 Hz three-phase.

Many other trough sizes are available. Capacities vary depending on drive unit location, material characteristics, material density, trough length and width, trough liner type, feeder installation, skirt boards and hopper transitions. Cad drawings are available. Please call Syntron Material Handling for expert help with your application.
## MF Heavy-Duty Feeder Specifications

### MODEL MF-800-DD

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Based on feeder with 10° down slope, below-deck drive unit, installed with proper hopper transition and skirt board arrangement, feeding sand weighing 100 pounds per cubic foot. 460/575 Volt 60 Hz three-phase. 380/415 Volt 50 Hz three-phase.

Please request a certified drawing for installation.

### MODEL MF-1000-DD

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Based on feeder with 10° down slope, below-deck drive unit, installed with proper hopper transition and skirt board arrangement, feeding sand weighing 100 pounds per cubic foot. 460/575 Volt 60 Hz three-phase. 380/415 Volt 50 Hz three-phase.

Please request a certified drawing for installation.

Many other trough sizes are available. Capacities vary depending on drive unit location, material characteristics, material density, trough length and width, trough liner type, feeder installation, skirt boards and hopper transitions. Cad drawings are available. Please call Syntron Material Handling for expert help with your application.
MODEL MF-1600

Please request a certified drawing for installation.

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◆ Based on feeder with 10˚ down slope, below-deck drive unit, installed with proper hopper transition and skirt board arrangement, feeding sand weighing 100 pounds per cubic foot. 460/575 Volt 60 Hz three-phase. 380/415 Volt 50 Hz three-phase.

MODEL MF-2000

The largest Syntron® Electromechanical Feeder is the MF-2000. With a trough measuring 120 inches wide x 168 inches long, the MF-2000 has capacities up to 4,000 tph. Each one is custom built to meet demanding capacity requirements. Please contact Syntron Material Handling for dimensions.

A Syntron® MF-2000 Electromechanical Feeder measuring 72 inches wide by 240 inches long is custom built to feed coal at 1000 tph.

Many other trough sizes are available. Capacities vary depending on drive unit location, material characteristics, material density, trough length and width, trough liner type, feeder installation, skirt boards and hopper transitions. Cad drawings are available. Please call Syntron Material Handling for expert help with your application.
MF Heavy-Duty Feeder Trough Styles

All standard troughs are unitized welded construction and can be supplied in a variety of materials. Special coatings and liners are available, including abrasion-resistant steel, manganese, stainless steel, urethane, UHMW plastic, rubber overlay and ceramic tiles.

Optional above-deck drive units can be furnished for installations where there is insufficient space below the trough. Covers, down spouts and belt centering discharges can also be provided.

Other Trough Options Include:

- Covered Trough with Dust Seals
- Open Trough with Dust Seals
- Screening Feeders
- Diagonal Discharge Trough

Trough Liner Options Include:

- T-1A
- AR-400
- AR-500
- Stainless Steel
- Plastic
- Rubber
- Ceramic
- Carbide Overlay
Syntron® HP Electromechanical Feeders

Lowering Project Cost While Boosting Productivity

Built with the Coal Industry in mind, our Syntron® quality products are synonymous with dependability and durability. We continue to listen to your needs and provide technology that is innovative, quality focused, and backed with the Syntron® value you demand and expect. With their robust two-mass, spring connected and sub-resonant tuned features, our feeders provide structural strength and durable components. This combination and the added feature of the deep wing plates forming a bridge between the inlet and discharge suspension supports make our Syntron® product the work horse in coal facilities around the globe.

What’s different?

Trough to exciter relationship is key to feeder performance. This new exciter optimizes design fundamentals that are crucial when providing the highest performing feeders in the industry. Our methodology creates improved capacity and higher travel speeds in a more compact area, whereby lowering overall project cost. The exciter is connected to the trough with corrosion resistant polymeric springs, which are more stable under varying conditions. Our springs are compressed for improved load stability, and when combined with optimized motor placement, results in improved feed angles and straight line motion. The exciter is then properly balanced with many different trough options including bolt-together construction for ease of installation in tunnels and other confined areas.
**NEW! Two-Mass Direct Drive**

Our three new feeder models – MF-300, MF-500 and MF-1100 – are made using the new Two-Mass Direct Drive. This drive provides reliable service using a rotary vibrator to minimize components. Belts and pulleys, which commonly require adjustment and replacement due to wear, are eliminated. The new Two-Mass Direct Drive is also maintenance friendly and requires minimal time for thrust adjustment or replacement.

**Reduced Project Cost**

Prep plants are currently increasing belt width to increase capacity, thus requiring larger feeders. Syntron Material Handling’s new high performance feeders will provide the capacity needed while minimizing:

- Energy
- Space
- Initial feeder cost
- Size of prep plant structure
- Feeder trough size

---

**HP Electromechanical Feeder Features**

- Smaller feeder footprint, reducing initial construction and component cost
- Lighter weight for comparable capacity
- Lower energy consumption
- NEW! Two-Mass Direct Drive technology
- Added trough options such as:
  - One-piece stainless liner
  - Bolt-together troughs for confined areas
Many other trough sizes are available. Capacities vary depending on drive unit location, material characteristics, material density, trough length and width, trough liner type, feeder installation, skirt boards and hopper transitions. Cad drawings are available. Please call Syntron Material Handling for expert help with your application.
Many other trough sizes are available. Capacities vary depending on drive unit location, material characteristics, material density, trough length and width, trough liner type, feeder installation, skirt boards and hopper transitions. Cad drawings are available. Please call Syntron Material Handling for expert help with your application.

MODEL MF-1100-DD

Please request a certified drawing for installation.

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\* Based on feeder with 10° down slope, below-deck drive unit, installed with proper hopper transition and skirt board arrangement, feeding sand weighing 100 pounds per cubic foot. 460/575 Volt 60 Hz three-phase. 380/415 Volt 50 Hz three-phase.
SYNTRO-FLO Cone Crusher Loading Feeders by Syntron®

The SYNTRO-FLO Cone Crusher Loading Feeder by Syntron is a MF Two-Mass Tuned Direct Drive vibratory feeder with an engineered discharge uniquely designed for equal distribution of fine and coarse product. The trough including the discharge is fully lined to account for wear. Like traditionally designed feeders, it is suspension mounted, which can be easily integrated into a trolley system allowing it to be moved out of the way for crusher maintenance.

In side-by-side installations of a feeder-plus-rotary distributor versus a SYNTRO-FLO Cone Crusher Loading Feeder directly feeding the crusher, the SYNTRO-FLO unit delivered superior, cone-friendly performance. The uniform distribution provided by the SYNTRO-FLO unit increased crusser manganese life and yielded more cubicle formed product.

SYNTRO-FLO is available in 3 standard sizes for tertiary crusser applications: STF-3F, STF-4F and STF-5F. In addition, Syntron is developing the STF-3C, STF-4C and STF-5C for secondary crushing applications. Both designs work with 300 HP, 400 HP and 500 HP cones respectively. These designs will allow the SYNTRO-FLO unit to be the most cost effective solution feeding your Cone Crusser equipment. (See data sheet for equipment details). Syntron can build a custom cone crushing feeder unit for larger and smaller applications upon request.
## SYNTRO-FLO 3-F, 4-F and 5-F for Fine Crushing Applications

### MODEL STF-3F, STF-4F, & STF-5F

Please request a certified drawing for installation.

<table>
<thead>
<tr>
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<th></th>
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<tbody>
<tr>
<td>STF-3F</td>
<td>42 x 84</td>
<td>350</td>
<td>7</td>
<td>4</td>
<td>3</td>
<td>4.4</td>
<td>VF-5D2</td>
<td>3056</td>
<td>1390</td>
<td>3700</td>
<td>1700</td>
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<tr>
<td>STF-4F</td>
<td>48 x 90</td>
<td>440</td>
<td>8</td>
<td>4</td>
<td>3</td>
<td>4.4</td>
<td>VF-5D2</td>
<td>3725</td>
<td>1694</td>
<td>4325</td>
<td>1966</td>
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<tr>
<td>STF-5F</td>
<td>54 x 96</td>
<td>550</td>
<td>9</td>
<td>4</td>
<td>3</td>
<td>4.4</td>
<td>VF-5D2</td>
<td>3955</td>
<td>1798</td>
<td>4600</td>
<td>2090</td>
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</tbody>
</table>

◆ Based on feeder with 10° down slope, below-deck drive unit, installed with proper hopper transition and skirt board arrangement, feeding sand weighing 100 pounds per cubic foot. 460/575 Volt 60 Hz three-phase. 380/415 Volt 50 Hz three-phase.
Syntron® Electromechanical Feeder Controls

State-of-the-art, solid-state units that can vary material flow rate

Controls for electromechanical feeders are VF Series (variable frequency VFD-type) and are optimized for efficient operation. and allow for a full range of material flow with a 10:1 turn-down ratio.

The VF Series controls are UL/CUL approved. In addition, a wide range of optional functions are available for specific control requirements:
- analog input
- digital communication
- onboard diagnostic capability

Electromechanical Feeder Control Dimensions

Digital Keypad

Variable-frequency controls offer total feed rate regulation through manual adjustment or PLC interface.
## Electromechanical Feeder Control Dimensions

### Frame A
**MODEL**
VF-5D2

<table>
<thead>
<tr>
<th>Frame</th>
<th>W</th>
<th>H</th>
<th>D</th>
<th>W1</th>
<th>H1</th>
<th>D1*</th>
<th>Ø</th>
<th>Ø1</th>
<th>Ø2</th>
<th>Ø3</th>
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<tbody>
<tr>
<td>A1</td>
<td>mm</td>
<td>130.0</td>
<td>250.0</td>
<td>170.0</td>
<td>116.0</td>
<td>236.0</td>
<td>45.8</td>
<td>6.2</td>
<td>22.2</td>
<td>34.0</td>
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<tr>
<td></td>
<td>inch</td>
<td>5.12</td>
<td>9.84</td>
<td>6.69</td>
<td>4.57</td>
<td>9.29</td>
<td>1.80</td>
<td>0.24</td>
<td>0.87</td>
<td>1.34</td>
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**D1*: Flange Mounting

### Frame B
**MODEL**
VF-10D2
VF-15D2
VF-20D2

<table>
<thead>
<tr>
<th>Frame</th>
<th>W</th>
<th>H</th>
<th>D</th>
<th>W1</th>
<th>H1</th>
<th>D1*</th>
<th>Ø</th>
<th>Ø1</th>
<th>Ø2</th>
<th>Ø3</th>
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<tbody>
<tr>
<td>B1</td>
<td>mm</td>
<td>190.0</td>
<td>320.0</td>
<td>190.0</td>
<td>173.0</td>
<td>303.0</td>
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<td>8.5</td>
<td>22.2</td>
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<tr>
<td></td>
<td>inch</td>
<td>7.48</td>
<td>12.60</td>
<td>7.48</td>
<td>6.81</td>
<td>11.93</td>
<td>3.07</td>
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<td>1.34</td>
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</table>

**D1*: Flange Mounting

### Frame C
**MODEL**
VF-25D2
VF-30D2
VF-40D2

<table>
<thead>
<tr>
<th>Frame</th>
<th>W</th>
<th>H</th>
<th>D</th>
<th>W1</th>
<th>H1</th>
<th>D1*</th>
<th>Ø</th>
<th>Ø1</th>
<th>Ø2</th>
<th>Ø3</th>
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</thead>
<tbody>
<tr>
<td>C1</td>
<td>mm</td>
<td>250.0</td>
<td>400.0</td>
<td>210.0</td>
<td>231.0</td>
<td>381.0</td>
<td>92.9</td>
<td>8.5</td>
<td>22.2</td>
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<tr>
<td></td>
<td>inch</td>
<td>9.84</td>
<td>15.75</td>
<td>8.27</td>
<td>9.09</td>
<td>15.00</td>
<td>3.66</td>
<td>0.33</td>
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<td>1.34</td>
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**D1*: Flange Mounting
Recommended Designs for Hoppers and Transitions

Feeder Transition Hoppers

Feeder capacity depends on the design of the hopper. Material characteristics such as size distribution, shear properties and cohesiveness generally dictate the configuration of feeder transition hoppers. Material flow velocities vary, depending upon material properties, feeder stroke and operating speed.

Good transition hopper design optimizes flow rate, resulting in the most economical choice of a feeder. Improperly designed transition hoppers will substantially reduce feeder capacities.

Figure 1 illustrates Ideal and Acceptable Hopper designs. The Ideal Hopper with a throat (T) to gate height (H) ratio of 0.6 shows a uniform material flow pattern to the feeder trough. Material at the front and rear of the hopper moves at nearly the same velocity, and the discharge depth (d) is nearly equal to the hopper gate height. The Ideal Hopper design allows the most economical feeder to be used.

The Acceptable Hopper design may require a slightly larger feeder than required for the Ideal Hopper design. This is due to the non-uniform flow pattern of material at the rear of the hopper. Material flow velocity is reduced, material depth “d” is reduced and there is a reduction in feeder capacity. A T/H ratio of 0.6 to 1.0 is generally acceptable. However, when the T/H ratio exceeds this range, the material flow patterns distort drastically and will significantly reduce capacities.

Ideal Hopper
- Uniform flow pattern
- Maximum capacity
- Maximum material velocity
- Maximum material depth
- Optimized feeder size
- Reduced potential for material buildup at inlet
- Reduced potential for spillage at back and sides
- Reduced material load on feeder

Acceptable Hopper
- Optimized flow rate
- Maximum feeder width
- Reduced potential for material buildup at inlet
- Reduced material load on feeder

Suggested Electromagnetic Size
- If material size is -4 in with a trough down slope of up to 10°, use 30-40 ft/min.
- If material size is +4 in to -12 in with a trough down slope of up to 10°, use 25-30 ft/min.
- If material size is +12 in with a trough down slope of up to 10°, use 20-30 ft/min.

Suggested Electromechanical Size
- If material size is -4 in with a trough down slope of up to 10°, use 50-60 ft/min.
- If material size is +4 in to -12 in with a trough down slope of up to 10°, use 45-55 ft/min.
- If material size is +12 in with a trough down slope of up to 10°, use 40-50 ft/min.

Feeder down slope usually effects flow rate by 2% per degree. As down slope increases flow rate increases. As down slope decreases flow rate decreases.

\[
\begin{align*}
d (\text{in}) &= \frac{\text{Capacity (tons per hour) x 4800}}{[W (\text{in}) - 4 (\text{in})] \times R (\text{ft/min}) \times D (\text{lb/ft}^3)} \\
C (\text{tph}) &= \frac{[W (\text{in}) - 4 (\text{in})] \times R (\text{ft/min}) \times D (\text{lb/ft}^3) \times d (\text{in})}{4800}
\end{align*}
\]
### Recommended Hopper Design and Feeder Selection

Refer to Figure 2.

1. Rear wall angle steep enough to permit material flow (60° ± 5°).

2. Front wall angle just enough to permit material flow (55° ± 5°).

3. The throat dimension "T" for random size material should be a minimum of 2 times the largest particle size. For particles that are nearly the same size (near size), "T" should be a minimum of 4 times the largest particle size to prevent blockage at the throat opening. In all cases, the arc "A" should exceed 2 ½ times the largest particle size.

4. Gate opening "H" must be a minimum of 2 times the largest particle of material and should increase proportionally for the desired capacity. The most economical feeder is selected when the throat dimension "T" is equal to or slightly larger than H/2. If "T" is greater than "H" the flow pattern of the material is disturbed, resulting in non-uniform flow.

5. When adjustable gates are used, the gate must be parallel to the hopper's front wall and must be as close to the front wall as possible. The separation must not exceed 2 inches. The gate should act as an adjustable front wall. Leveling blades and downstream gates must not be used. Horizontal cut off gates should be used to perform feeder maintenance and must not be used to regulate flow.

6. The inside width of the opening "D" (between stationary skirtboards) should allow for a 1-inch clearance between the feeder trough and skirt boards and should be a minimum of 2 1/2 times the largest particle size. For near size material the width of "D" should be a minimum of 4 times the largest particle size.

7. The minimum length of the feeder is determined by projecting the angle of repose for the specific material from the gate point to the feeder pan and adding approximately 6 inches.

8. The feeder must not contact any adjacent structure but must be free to vibrate. Allowance must be made for a decrease in feeder elevation of approximately 2 inches, due to static material load. In addition, 1 inch minimum clearance at sides and 1 ½ inches at bottom and back must be maintained in both loaded and unloaded conditions.

9. The skirts must taper in the direction of flow (diverge from conveying surface) to prevent material from jamming and causing additional problems such as spillage and build-up. Skirts must run parallel to trough sides and must be reinforced to resist bulging outward against trough.

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*Syntron Material Handling offers free review and advice on your hopper and Syntron® feeder installation and isolation. Just send us your layout drawings.*
Feeder Mounting and Isolation

**Base Mounting**

Base-mounted vibratory equipment sits directly on isolation springs mounted on seats which attach to the stationary support structure made by others. The springs can be steel coil, polymeric or pneumatic.

**Suspension Mounting**

Suspension-mounted vibratory equipment hangs from isolation assemblies attached to the overhead stationary support structure made by others.

Syntron Material Handling recommends the use of flexible wire rope for suspension-mounted vibratory equipment. A chart of the proper wire rope sizes is available on our website, www.syntronmh.com, in our free book “Working with Isolation” and in our Service Instruction Manuals which accompany the shipment of equipment.

Syntron Material Handling suggests the use of link bar assemblies when a wire rope suspension is too short to be assembled in accordance with wire rope manufacturer recommendations. Contact Syntron Material Handling for appropriate link bar dimensions for specific applications.

For more information about feeder mounting and isolation, ask for our free book “Working with Isolation,” visit our website, call the Application Specialists at (662) 869-5711 or (800) 356-4899, or email us at info@syntronmh.com
Syntron® Vibrators

Syntron® Vibrators offer an efficient, cost-effective means to maintain free flow of product from bins, hoppers and chutes, with a direct and positive result on the bottom line. Whether the need is to ensure constant, uninterrupted material flow, or to eliminate the necessity for manual manipulation of a bin, hopper or bulk material, Syntron® Vibrators increase productivity and reduce production costs.

Three types of Syntron® Vibrators – electromagnetic, rotary electric and pneumatic – provide product flow solutions for just about any industry, application or environment. Compact yet mighty, Syntron® Vibrators are designed for years of high-performance, trouble-free continuous or intermittent operation, with the broadest selection of models and power ranges available.

Syntron® Electromagnetic Vibrators are ideal for continuous or intermittent operation. An easily adjustable control assures optimum and variable material flow. Dependable Syntron® Electromagnetic Vibrators are virtually maintenance-free because the electromagnetic design eliminates moving parts. Most models come standard with fully-enclosed dust-tight and watertight construction.

Syntron® Electric Rotary Vibrators are motor driven for reduced noise levels. These rugged vibrators are totally enclosed for reliable operation in dusty, dirty or moist environments. Adjustable eccentric weights allow easy adjustment of force to suit varying applications.

Syntron® Pneumatic Vibrators can be installed where electricity is not readily available because they use compressed air. Two types of pneumatic vibrators, turbine and piston, are available. Designed to keep operating noise at a minimum, Syntron® Pneumatic Turbine Vibrators are ideal for locations where noise pollution is undesirable. Vibrator speed is adjusted by simply varying the air supply. Pneumatic turbine vibrators feature totally enclosed construction which eliminates concern over environmental factors such as dust, dirt or moisture.
Supplement this data sheet with additional comments and/or drawings that will assist in a complete description of the application.

<table>
<thead>
<tr>
<th>Material to be Handled</th>
<th>Name or Description</th>
<th>Samples being Furnished</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes [] No []</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maximum Weight in Bin or Hopper</th>
<th>LBS.</th>
<th>Tendency to</th>
<th>Arch [] Rathole []</th>
<th>Fineness (Attach screen analysis, if possible)</th>
<th>Weight [___ lbs.</th>
<th>Moisture Content [%]</th>
<th>Temperature [___ °F]</th>
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</table>

<table>
<thead>
<tr>
<th>Bin or Hopper Location of Inlet Opening</th>
<th>Angle of Bottom [___ °] From Horizontal</th>
<th>Discharge</th>
<th>Intermittently [] Continuously []</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Size of Bin or Hopper</th>
<th>Diameter [<em><strong>] Length [</strong></em>] Width [<em><strong>] Depth [</strong></em>]</th>
<th>Size of Discharge Opening</th>
<th>Diameter [<em><strong>] Length [</strong></em>] Width [___]</th>
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</table>

Add dimensional information. Also show reinforcing, if any, and number and location of discharge opening. Use the reverse side for sketches if necessary.

Bin or Hopper Construction

<table>
<thead>
<tr>
<th>Steel:</th>
<th>Gauge [___]</th>
<th>Welded [] Riveted []</th>
<th>Wood:</th>
<th>Plank [<em><strong>] Plywood [</strong></em>] Thick [___]</th>
<th>Metal Liner []</th>
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Special Requirements [___]

Unit Preference

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<tr>
<th>Impacting:</th>
<th>Electromagnetic (solid [<em><strong>] / Cushioned [</strong></em>])</th>
<th>Volts [___]</th>
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<tr>
<td>Pneumatic Piston (solid [<em><strong>] / Cushioned [</strong></em>])</td>
<td>Cycles [___]</td>
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Inertial

<table>
<thead>
<tr>
<th>Electromechanical</th>
<th>Pneumatic Turbine</th>
<th>Phases [___]</th>
</tr>
</thead>
</table>

Customer Name | Quote To Attention Of | Phone |

Street | Contract Engineer | Syntron Representative |

City | State | Zip Code [___] | Mail Quote To: | Customer [] Sales Office |

Mail Quote To: | Customer [] Sales Office |

Date [___]
Heavy Duty Electromagnetic and Electromechanical Feeder Data Sheet

Quantity of Feeders:

Name or description of material to be handled:

Weight (lbs.) per Cubic Foot ___

Size of Material (Sieve Analysis) ___

Material Width Max: ___

Material Length Max: ___

Material Thickness ___

Temperature of Material ___ F deg. Max

Temperature of Surroundings ___ F deg. Max

Moisture Content: ___ %

Angle of Repose ___ deg.

Minimum feed rate (in tons per hour) ___ TPH

Maximum feed rate (in tons per hour) ___ TPH

Trough Type: (Sketch if other than flat open pan)

☐ Flat Open Pan ☐ Covered ☐ Tubular ☐ Down Spout ☐ Belt Loader ☐ Diag. Disc

Dimensions Requested

“Wide X ___ “Long X ___ “High

☐ None Requested (Provide most economical)

Trough Liners:

☐ T1-A ☐ 304SS ☐ UHMW ☐ Other ___

Trough Slope: ___ deg. down ___ deg. up.

Type of Mounting:

☐ Base ☐ Suspension

Drive Position:

☐ Under trough in rear ☐ Over trough in front

Controller Enclosure:

☐ Standard (NEMA+) ☐ D.C. Input ☐ Load Monitoring ☐ Proportional ☐ Remote Pot

If there are any additional controller requirements please describe:

AC (Municipal) Power:

☐ Voltage ___ Cycle ___ Hz

Method of supplying material to Syntron Feeder trough:

Feeder discharges into:

If an existing hopper, provide dimensions and wall slope. Provide additional sketch if necessary.

Hopper Transition:

“T” = ___

“H” = ___

“B” = ___

Rear Angle = ___

Front Angle = ___

“W” = ___

Side Angle = ___

If there are any unusual operating conditions requiring special construction, please give details.

Customer Type: ☐ User ☐ OEM ☐ Resale

Company Name:

Contact:

Address:

City, State, Zip:

Email:

Phone:

Fax:

10204 05/01/14
Proven Engineered Products – Complete Material Handling Solutions

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Fax: 662.869.7493
Toll Free: 800.356.4898
info@syntronmh.com

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