PRODUCT DATA SHEET

Vibratory Compaction Tables



Condenses, Settles, De-Airs & Packs Bulk Materials, Molded & Cast Products

Vibratory Tables from The Cleveland Vibrator Company handle tough material challenges of condensing, settling, densifying, deairing and packing. Designed to improve your current operations, our multiple models provide options to fit your needs in production, filling and packing and weighing. The use of low-maintenance, continuous duty rated vibrators ensures long and low-cost equipment life span. The flexibility in design options ensures that you get the right solution for your specific material and application.

- Cut container costs by as much as 20% by fitting more material in every box, drum, bulk bag or Gaylord.
- Cut material loss in transit by compacting and stabilizing materials prior to shipment.
- Decrease shipping cost by fitting more material per shipment.
- Improve structural and surface quality of precast products by quick consolidation of material to eliminate voids and air bubbles.
- Reduce processing, packing time and labor

Product Overview

SAVE TIME & MONEY

CONTAINER COSTS

Typically, bulk material will compact down by 20% of its aerated state. Materials that normally fill five containers can be reduced to only four, saving on container and storage costs.

LOSS & SPILLAGE

Materials shipped or stored in an aerated state will eventually compact due to gravity or vibration in transit. The result is dead space in the container. Compacting the material beforehand prevents container breakage, product loss or contamination.

FREIGHT COSTS

When shipping on a cubic foot basis, vibratory compaction provides full utilization of container capacity. This allows for more product to be shipped in the same amount of space, saving you and your customers money.



TABLES, PACKERS & BELT SYSTEMS

The Cleveland Vibrator Company offers a wide range of light, medium and heavy-duty vibratory tables and packers for settling and compacting bulk materials.

Production line systems incorporating vibratory equipment can provide:

- Fully automated fill stations
- Accurate container weights
- Containers filled, weighed and closed in less time than with manual installations
- Maximum compaction typically reached within 10-30 seconds

- Consolidation of Concrete
- Foundry Shake-Out
- Plastic Pellet & Resin Compaction
- Weigh & Fill Systems
- Foundry Sand Compaction
- In-Line Belt Conveyor Systems
- Chemical Compaction
- Frozen Food Compaction
- Portable Storage Bin Compaction
- Fatigue Testing

The Cleveland Vibrator Difference

DESIGNED FOR YOU, YOUR MATERIAL AND YOUR PROCESS

DESIGN EXPERIENCE

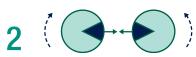
The Cleveland Vibrator Team has over 60 years of collective experience sizing and designing vibratory tables for 100's of materials and applications. So, you know you will get the right force, frequency, amplitude and custom options to make your project successful.

SIMPLE

Our tables are designed and built with minimal wear parts to make maintenance an infrequent and easy task.

Motor A Motor B

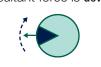
Resultant force is upward



Resultant force is zero



Resultant force is downward





Resultant force is zero

IN-HOUSE TESTING

Cleveland Vibrator's in house testing lab includes an MBIS Vibration Table with independent variable frequency and variable amplitude controls to allow determination of optimal vibration conditions for any material AND prediction of compaction rates and process outcomes.

LINEAR VIBRATION Sure, using one mot

Sure, using one motor would cost less. But, 99% of compaction applications perform best with linear vibration, in line with gravitational forces, that are ONLY achieved with two electrically synchronized vibrator motors, using the **Dual Motor Principle**. (Refer to the diagram to the right)

HIGH QUALITY, LOW MAINTENANCE

QUALITY COMPONENTS

Uras or Cleveland Vibrator Motors, Yaskawa Controls, Firestone isolation mounts, Mettler-Toledo weigh modules, to name a few. We use only the best brands of components, recognized for quality and continuous duty.

BUILT IN DAMAGE PREVENTION

Avoid operator error by preventing costly mistakes. Our tables include automatic mechanisms to prevent damaging situations such as operation when the table is not isolated, erratic coasting to a stop and changes in table height during loading.

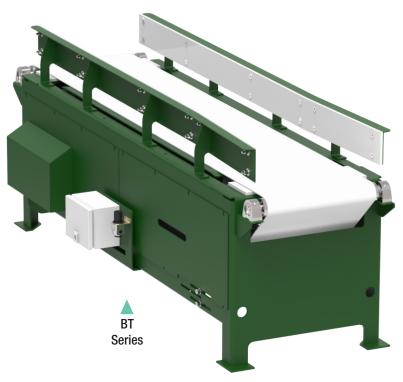
BUILD SOLID FOR LONG LASTING CONSISTENCY

EVEN VIBRATION TRANSFER

Take a look under the hood...or the tabletop in this case. You won't just see two vibrators mounted to the underside of the table top. Our table designs use a heavy duty undercarriage to hold heavy loads and to evenly distribute vibration to the entire top making sure that materials are de-aired or packed evenly.

LARGE LOADS? NO PROBLEM

Cleveland Vibrator has experience designing and building tables to vibrate loads in excess of 20,000 lbs.



Flat Deck Vibratory Tables



FA • FLAT DECK TABLES

MODEL	DECK WIDTH	DECK LENGTH	DECK HEIGHT	NORMAL LOAD CAPACITY
FA - 2424	24"	24"	24"	300 - 1,000 lbs.
FA - 3030	30"	30"	24"	300 - 2,000 lbs.
FA - 3636	36"	36"	24"	500 - 2,000 lbs.
FA - 3636HD	36"	36"	30"	2,000 - 4,000 lbs.
FA - 4848	48"	48"	24"	500 - 2,000 lbs.
FA - 4848HD	48"	48"	30"	2,000 - 4,000 lbs.

The Cleveland Vibrator Company's **Model FA Flat Deck Vibratory Table** is the most widely used of our products, and is available in both standard and low-profile configurations.

Designs accommodating over 10,000 Lbs. are available.

Model FA is typically used to settle material in cartons, drums, kegs, boxes and bags or for removing air from poured concrete and refractories. Model FA features inflatable airbag or Marsh Mellow Mount® isolation, providing quiet operation, superior isolation and adjustable table height. Controls for vibration intensity are included with air powered models. Controller options for controlling force and frequency are available.

CUSTOMIZE YOUR FLAT DECK SURFACE WITH THE FOLLOWING OPTIONS:



Custom Fixtures
for Tall Canisters or
Saggers, Removable
Surface Option
Available



Ball Transfer Decks for Roll On/Roll Off Transfers



Strap Down Fixtures for Securing Molds while Settling Castable Refractories



Magnetic Tops for Securing Molds

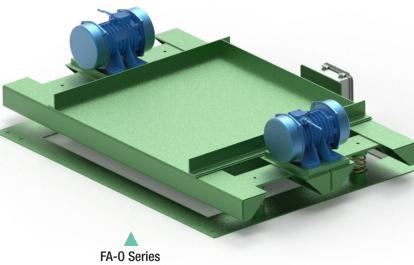


Perimeter Lips for Passively Restraining Containers During Compaction

FA-0 • LOW PROFILE FLAT DECK TABLES

MODEL	DECK WIDTH	DECK LENGTH	DECK HEIGHT	NORMAL LOAD CAPACITY
FA - 2424	24"	24"	7"	300 - 1,000 lbs.
FA - 3030	30"	30"	7"	300 - 2,000 lbs.
FA - 3636	36"	36"	7"	500 - 2,000 lbs.
FA - 3636HD	36"	36"	10"	2,000 - 4,000 lbs.
FA - 4848	48"	48"	7"	500 - 2,000 lbs.
FA - 4848HD	48"	48"	14"	2,000 - 4,000 lbs.

The Model FA-0 Low Profile Flat Deck Vibratory Table comes equipped with twin outward Rotary Electric Drives and airbag isolation air mounts or Marsh Mellow Mount®. Coil springs also available. Models are fully customizable and are ideal for compacting containers of plastic pellets, chemicals, frozen foods, peanuts and automotive parts.



Grid Top Vibratory Tables

The Cleveland Vibrator Company's **GT Grid Top Vibratory Table** is ideal for automatic and semi-automatic packaging and filling lines that use roller conveyor systems. The table is installed at the filling or compaction station of an in-line conveyor system. GT Grid Top Tables are available in standard, low profile or custom configurations.



GT Grid Top Tables can fit with 3 different types of roller sections:

- CDLR Chain Driven Live Roller
- Strand Conveyors
- Gravity Rollers



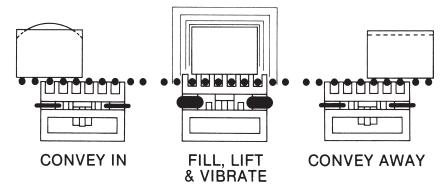
Common Applications Include:

- Settling materials in cartons, drums, kegs and bags before package sealing and shipping
- Removal of air and voids from poured concrete, refractories and other castable materials
- Test product quality and fatigue

GT • GRID TOP TABLE

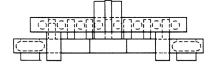
MODEL	DECK WIDTH	DECK LENGTH	DECK HEIGHT	NORMAL LOAD Capacity
GT - 2326	23"	26"	201/2"	300 - 1,000 lbs.
GT - 2338	23"	38"	201/2"	300 - 1,000 lbs.
GT - 2950	29"	50"	221/2"	300 - 4,000 lbs.
GT - 3550	35"	50"	221/2"	1,000 - 4,000 lbs.
GT - 4750	47"	50"	221/2"	1,000 - 4,000 lbs.

The load is first rolled into position over the vibrating station. Air mounts lift the load above the rollers then vibration is applied. After the vibration sequence, the load is lowered back onto rollers for evacuation and now ready for the process to be repeated on the next container. See diagram below:



GT-O • LOW PROFILE GRID TOP TABLE

MODEL	DECK WIDTH	DECK LENGTH	DECK HEIGHT	NORMAL LOAD Capacity
GT-O - 2326	23"	26"	131/2"	500 - 1,000 lbs.
GT-O - 2338	23"	38"	131/2"	500 - 1,000 lbs.
GT-O - 2950	29"	50"	151/2"	1,000 - 2,000 lbs.
GT-O - 3550	35"	50"	151/2"	1,000 - 2,000 lbs.
GT-O - 4750	47"	50"	151/2"	1,000 - 4,000 lbs.





Vibratory Packers & Joggers



The Cleveland Vibrator Company's **VJ Electromagnetic Vibratory Jogger** is ideal for filling small moulds in the plastic and fuse industries It has also been used in the chocolate and candy industry. This rugged unit comes with a HDPE (High Density Polyethylene) deck and built-in controls.

The unit is designed for 115/1/60 operation and the frequency is fixed at 3600 VPM. 220V models are also available. The standard controller includes a dial to adjust intensity and a 3 position toggle switch to choose between standard or optional VAF control (Variable Amplitude and Frequency controller).

VJ • LIGHT DUTY JOGGER PACKERS

MODEL	DECK WIDTH	DECK LENGTH	DECK HEIGHT	NORMAL LOAD Capacity
VJ - 1212	12"	12"	6 ¾"	75 lbs.
VJ - 1515	15"	15"	7"	85 lbs.



The Cleveland Vibrator Company's **VP Light Duty Table** is commonly used for compacting coffee, pharmaceuticals, or other powdered products in small containers such as bottle, cans or bags.

Force and frequency of Air Powered Models are adjustable by air pressure regulation, while electric tables are adjustable by mechanical means or an optional (VFC) Variable Frequency Controller.

Other available features include:

- Plastic Tops
- Supporting Fixture for Containers
- Stainless Steel Construction

VP • LIGHT DUTY JOGGER PACKERS

MODEL	DECK WIDTH	DECK LENGTH	DECK HEIGHT	NORMAL LOAD Capacity
VP - 4	12"	12"	12 "	50 - 75 lbs.
VP - 6	18"	18"	14"	100 - 150 lbs.
VP - 8	24"	24"	15 ¹ "	100 - 250 lbs.



The Cleveland Vibrator Company's **Drum Packer Model** eliminates dead space in large drums before shipping, reducing container costs. Common applications include compacting granules, powders, pellets, molded or stamped rubber, plastics and steel parts.

It's rugged yet compact design takes up less than 6 square feet of floor space and is rated for continuous duty. Air Powered and Electric Powered options available.

The electric powered model's quiet operation meets OSHA requirements and is supplied with a VFD controller for adjustment of vibration force and frequency. Explosion proof pneumatic drum packers are available.

Customize your Drum Packer by calling our **SALES DEPARTMENT** at: **1-800-221-3298**

Weigh Scale Packers





The Cleveland Vibrator Company's **Weigh Scale Packer Model** is available in both **FWT Flat Deck** and **WGT Grid Top** design.

Weigh Scale Packers allow for filling, weighing, and vibration of bulk containers. Tables can be fitted with digital scale instruments that incorporate set points to control the start and stop of the fill device, as well as the vibration sequence. Weigh Scales are available in a variety of deck options to meet any requirements.

Additional features such as gross weight readout, analog signal, and set points for automatic or semi-automatic operation are also available. The Cleveland Vibrator Company can also provide complete systems including fill devices and conveyors.

Benefits Include:

- Reduction of costs in packaging
- Improved accuracy for container weight
- Improved integrity of package resilience due to product densification
- Reduction of product loss due to spillage in transit
- Digital scales can weigh and control vibration automatically
- Reduction of manual efforts
- Increased quality and consistency in molded and settled product
- Elimination of broken product and/or broken package rejections

Shake-Out Tables

The Cleveland Vibrator Company's **Shake-Out Table** can handle loads of up to 12,000 pounds depending on deck size.

The Shake-Out Table has a simple, low maintenance design with no exposed moving parts and trouble-free Marsh Mellow Mounts® isolation. The vibrator bearings come pre-lubricated. The unit's open bottom construction allows sand to pass through unobstructed.

Shake-Out Tables feature a low profile design and quiet operation, with no noise generated from the steel isolation springs, belts, pulleys, or vibrating crank arms of other designs. Units with UHMW side liner deflectors are available.

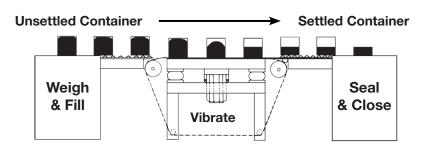


Vibratory Belt Table Conveyor

The Cleveland Vibrator Company's Model BT Vibratory Belt Table Conveyor cuts packaging and handling costs for a wide range of materials packed in corrugated containers and small drums.

The Belt Table Conveyor is designed to simultaneously settle product within its container while transporting the container to a closing and sealing machine. Linear vibration aids in settling the material in its container before the container is closed.

The BT Belt Table Conveyor will also flatten bags prior to palletizing, without damaging the bags. There is no pinching, just a gentle vibration to naturally flatten the bags without degradation of contents.



Utilize our Product Testing prior to purchasing by calling our SALES DEPARTMENT at: 1-800-221-3298



Live Beam Tables

A senior member of the Cleveland Vibrator Table Family, the **Live Beam Table** is designed and built primarily for the consolidation of concrete or castable materials in large forms and moulds.

Ideally suited for pre-stressed concrete forms, the beams can be spaced apart as much as 10 to 15 feet for handling long and narrow, yet extremely heavy loads.

Each beam is mounted on a series of heavy duty rubber-in-compression mounts for stability and vibration isolation. Vibratory energy is imparted by two **Rotary Electric Vibrators** (RE Model), which are totally enclosed, dust tight and rated for continuous duty, Each vibrator is fully adjustable by varying the eccentric weight settings.



How To Choose The Best Vibratory Table

Significant advancements have been made in bulk packaging systems that can handle numerous types of bags, pouches, bins and crates. During the packaging and filling process, the settling and compaction of product into these various containers relies on a series of vibratory tables designed to handle numerous dry bulk materials.

Vibratory tables handle difficult material challenges, such as condensing, settling, densifying, de-airing and packing. They are used by a host of companies, especially those that produce and sell spices, almonds, pet foods, plastic or biomass pellets, feed or grain materials and even cement, sand and fertilizer. A range of light, medium and heavy-duty vibratory tables are available, depending upon the specific material, application and processing facility.

The following are typical applications to include a vibratory table in a processing line:

- Flattening the cone or pile of material made from the filling station discharging into the center of the tote, box, Gaylord or similar type packaging container.
- Compacting and stabilizing bulk bags, flexible intermediate bulk containers (FIBCs) or super sacks for easier stacking and handling prior to storage or shipment.
- Fully or semi automating packaging lines by integrating with roller sections, gravity or chain driven live roller (CDLR), or belt conveyors.
- Filling, weighing and compacting material.
- Removing air bubbles in molds and casted products for improved structural and surface finish.

Lowering labor hours and costs for packaging and processing lines. There are multiple ways product compaction reduces operating costs at any facility. Typically, bulk material will compact down by 20% of its aerated state. Materials that normally fill five containers, for example, can be reduced to only four, saving on container and storage costs.

Materials shipped or stored in an aerated state will eventually compact because of gravity or vibration in transit. The result is dead space in the container. Compacting the material beforehand prevents container breakage, product loss and/or contamination.

Also, when shipping on a cubic foot basis, vibrating compaction provides full utilization of container capacity. This allows for more product to be shipped in the same amount of space, saving money for the producer and customers.

Some materials can achieve 25% to 30% compaction if the vibration is applied correctly and the vibratory table is designed and sized correctly. What does this mean for a company using 10,000 Gaylords annually at a typical price of \$30 a box? Packaging the same amount of product into 20% less boxes translates into an annual savings of \$60,000.

CHOOSING THE PROPER VIBRATORY TABLE

Basically, a table is designed to vibrate linearly in the vertical direction. From this very basic concept there is a variety of table designs and variables to accomplish a customer's goal, regardless of how simple or complex the objective. Here are the most popular vibratory tables on the market:

Flat-Deck Vibratory Table is the most widely used in compaction and densification applications. The flat deck model is typically used to settle materials in cartons, kegs, bulk bags or Gaylords, but other applications include setting castable refractories into molds and eliminating voids and air bubbles from the final molded product.

Variations to this design include the flat deck low profile vibratory table where lift height requirements are at a minimum. Also available is a flat deck vibratory weigh table where digital scales can weigh and control vibration automatically. This type table with digital scales uses set points to control the start and stop of the fill device, as well as the vibration sequence.

Grid Top (or Grid Deck) Vibratory Table is used in automatic and semi-automatic packaging and filling lines in concert with roller conveyor systems. This table is installed under a hopper-type net weigher or bulk filling station.

The empty box, carton or drum is rolled into position over the grid top which is in the lowered position. Upon starting, the grid deck is raised by inflating air mounts and the load is elevated off the roller conveyor surface. The contents are then compacted or settled inside the container. Upon completion of the vibrating cycle, the container is lowered back onto the conveyor and advanced to the next operation.

How To Choose The Best Vibratory Table

Like its flat deck cousin, the grid top also is available in two other designs: the grid top low profile design saves space in compact areas, while the grid top vibratory weigh table features digital scale instruments that use set points to control the start and stop of the fill device and the vibration sequence.

The Vibratory Belt Table simultaneously settles and packs the product before conveying to a closing or sealing machine. Gentle vibration along the belt ensures efficient removal of voids and air pockets in containers, molds or packaging without product damage. This belt table can also flatten bags before palletizing, without damaging the bags or its contents.

There are two other vibratory tables mostly used in heavy industrial settings. The Foundry Shake Out Table is a low-profile unit that handles extremely heavy loads. The open bottom construction allows sand or other debris to pass through unobstructed. This heavy-duty table can handle up to 12,000 pounds and is mainly used in the foundry or mining industry.

Finally, the Live Beam Vibratory Table is used for the consolidation of concrete in large forms and molds or for uniform vibration of large containers such as shipping vessels. Beams are spaced apart to handle long and narrow, yet heavy loads. Each beam is mounted onto a series of heavy duty rubber-in-compression molds for good stability and vibration isolation.

POWERING THE VIBRATORY TABLE

Practically every vibratory table on the market operates through linear vibration. Material placed on the table should vibrate straight up and down, provided the table is level, so the material does not 'walk' or move significantly from side to side. The proper selection of vibrators helps to keep the material centered on the table top and limits possible movement.

Heavier material responds best to high frequency vibration and the resulting smaller stroke high frequency vibrators produce. Lighter material or discrete parts often compact best with lower frequency vibration and the larger stroke they produce.

Manufacturers can build vibratory tables with air-cushioned pneumatic vibrators, rotary electric vibrators or even electromagnetic vibrators that best suit the frequency and force requirements. Companies like Cleveland Vibrator offer more than 50 different rotary electric vibrator units, ranging from 900 vibrations per minute (VPM) to 1200, 1800 and 3600 VPM. Force outputs can range as low as 110 pounds of force (lbf) up to 40,700 lbf.



Air-cushioned piston vibrators can be used to address safety issues when working within hazardous environments. The vibrational direction is inherently linear and provides powerful vibration while using low air consumption during operation. Force outputs of air-cushioned models can range as low as 150 pounds of force (lbf) up to 7,500 lbf.

Cleveland Vibrator uses an in-house testing lab as the basis for selecting the optimum combination of force and frequency. Material is sent to the lab so CVC technicians can determine compaction rates and process outcomes before deciding which vibratory table is needed.

Other Vibratory Equipment

THE CLEVELAND VIBRATOR COMPANY OFFERS A FULL RANGE OF FABRICATED VIBRATORY EQUIPMENT SUITABLE FOR ANY SIZE JOB. All equipment is fully customizable and can be incorporated into automated or semi-automated production lines. Vibratory Equipment can ensure less waste of space and materials, faster production times, and more thorough feeding and screening.

Vibratory Screening



Model EMBS Electromechanical Screener with Ball Tray Deck

Relieve screen deck plugging and clogging while saving costs of maintenance and provides high efficiency in your screening process.



Model SF-A Air Powered Screener

Primarily used in applications where simple, economical control of the feed rate is desirable. Also, these screeners are recommended for hazardous-duty areas.



Model PSC-E Portable Slope Deck Screener

Offers a customizable screening option with lightweight portability for use across multiple applications dealing with fine bulk materials.



Model RSM Volumetric Screener

The all in one unit enables production efficiencies for easily dumping material from an inexact process and getting a controlled and uniform product outcome.

VIBRATORY SCREENERS

We offer multiple vibratory screener, scalper and sieve styles to handle separation and sizing of materials, or removal of unwanted materials from a batch, such as liquids, fines or oversized products. Pneumatic and Electric Powered Models Available.

- Volumetric Screeners
- Electromechanical Screeners
- Air Powered Screeners
- Gravity Flow Screeners
- Portable Sloped Screeners

Model EMS **Electromechanical Screener**

Fit with dual Rotary Electric Drives, this model is designed for precise screening where high efficiency is required in the end particle size. Units are mounted horizontally, requiring no gravitational assistance.



Fine Mesh Screening HK TECHNOLOGIES

An Affiliate of The Cleveland Vibrator Company

FINE MESH SCREENERS

Used for sizing, fines removal or liquid/solid separation, HK Technologies' Fine Mesh Screening Equipment can handle screening dry or wet materials from 10 micron to #10 mesh. Add Ultrasonics to achieve maximum throughput of materials and increase sieving rates while utilizing 100% of the screen surface.

- Lab & Pilot Sieves
- Production Sifters & Screeners
- Ultrasonic Deblinding Systems
- Rescreening & Remeshing Services

Lab & Pilot Sieves

Fine Mesh Vibratory Sieves quick sieve analysis of product samples. Get consistent throughput and repeatable sampling compared to manual sieve sizing applications.



Ultrasonic Deblinding Systems

Convert your existing gyratory screners, sieve or sifter to an ultrasonic screener in the matter of minutes, no matter who manufactured it.



Production Sifters & Screeners

Fine Mesh Vibratory Sifters & Screeners for large batch processing and continuous screening or scalping applications. Designed to handle difficult-to-screen products and high capacity screening applications.

Rescreening & Remeshing Services

HK's turn-key remeshing and rescreening services offers a 1-3 day turn around time, providing a quick solution to keep your operations running.



Vibratory Feeders

VIBRATORY FEEDERS

Typically used to feed raw materials or finished products into mixers, furnaces, production processes or final containers, Cleveland Vibrator's Vibratory Feeders are available in a wide variety of styles and finishes. Fully adjustable volumetric flow allows for automated or semi-automated production process or fill stations.

- Air Powered Feeders
- Electromechanical Feeders
- Volumetric Feeders
- Tube Feeders



Model EMF Electromechanical Feeder

Utilizing twin (RE) Rotary Electric Vibrator Drives rated for continuous duty, feed your materials using the linear motion that provides smooth, uniform, volumetric flow that is fully adjustable. RE Models available in four speeds for medium to heavy-duty applications.



Model RFM Volumetric Feeder

Compact and self-contained units that incorporate a vibratory bulk supply hopper and vibratory feeder enables controlled and reliable flow of bulk materials and parts ensuring efficient and low-cost dumping and feeding into production processes.



Model CF-A Air Powered Feeder

Economical and effective, these feeders can meet the demands for feed rates up to 50 tons per hour in hazardous environments.



Model EMF-T Tube Feeder

This model provides an enclosed tubular shaped feed tray that allows for materials to feed consistently and effectively without being exposed to external environmental factors.



FOR MORE INFORMATION

Call: Sales at 800-221-3298

Email: sales@clevelandvibrator.com Buy Online: www.clevelandvibrator.com

















The Cleveland Vibrator Company has been driving innovations in materials handling since 1923. From our corporate headquarters in Cleveland, Ohio, and in partnership with HK Technologies located in Salem, Ohio, we've met the challenges of more

than 15,000 customers all around the globe in a vast array of industries. Our comprehensive product line includes air-piston, rotary electric, electromagnetic, turbine and ball vibrators, as well as a wide variety of fabricated feeders, vibratory screeners,

ultrasonic screeners, vibratory conveyers and vibratory tables used for light, medium and heavy-duty industrial applications.

clevelandvibrator.com

4544 Hinckley Industrial Pkwy

Cleveland, OH 44109

800-221-329

ax 216-241-3480