HEAVY DUTY BRUTE FORCE

MECHANICAL FEEDERS AND SCREENERS

FEATURES

- Rugged, heavy duty construction
- Twin rotary motors for stability
- Unique tray designs available
- Quiet operation
- Easy access to rotary motors
- Available for hazardous environment applications

ONLY FROM ERIEZ

Our heavy duty line of Brute Force feeders provide a cost effective means to feed or screen large volumes of bulk material for applications where limited feed rate adjustability is required. Brute Force feeders are ideal for applications such as coal or stone processing, recycling and scrap recovery. Eriez BF feeders can be provided with unique tray designs for your specific application.

BRUTE FORCE - HEAVY DUTY VIBRATING MECHANICAL FEEDER

Feeder tray motion is provided by eccentric weights mounted on synchronized, counter-rotation, twin motors. The motors counteract each other to minimize the isolation problems associated with single eccentric drive systems. Feed rate can be varied by adjusting the weights. The twin motor drives operate on standard AC power.

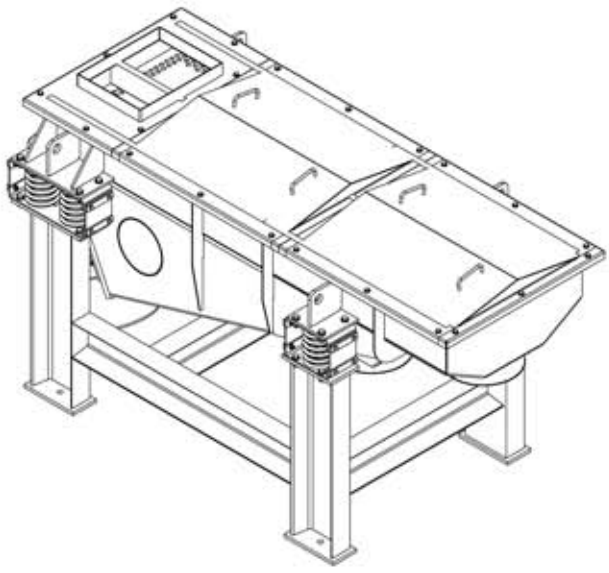
Dust-tight construction and splash-proof design make the motors suitable for dusty, dirty environments, as well as out-doors in rain or snow. Heavy-duty construction and long-life bearings ensure peak, long-term performance.

The heavy-duty trays are designed for trouble-free, high-capacity feeding. A variety of sizes and styles can be ordered to match specific application requirements. Tray options include screens, liners, covers and grizzlies.

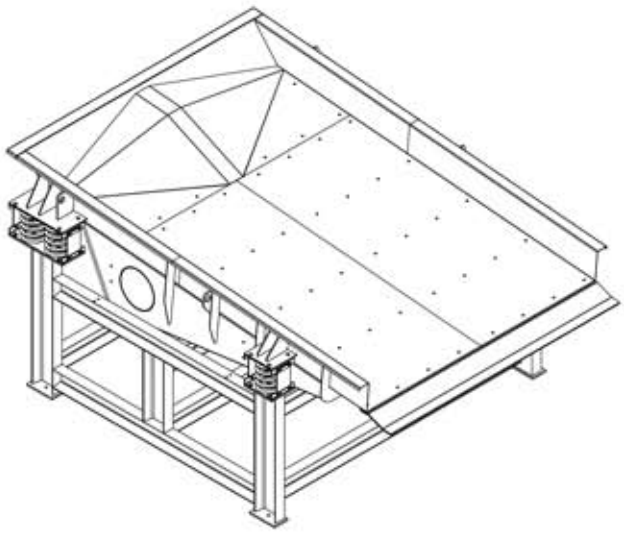
Counter rotating rotary motors provide the driving force and stability required for heavy duty applications.

Eriez Brute Force feeder distributing material onto a belt in a scrap sorting application.

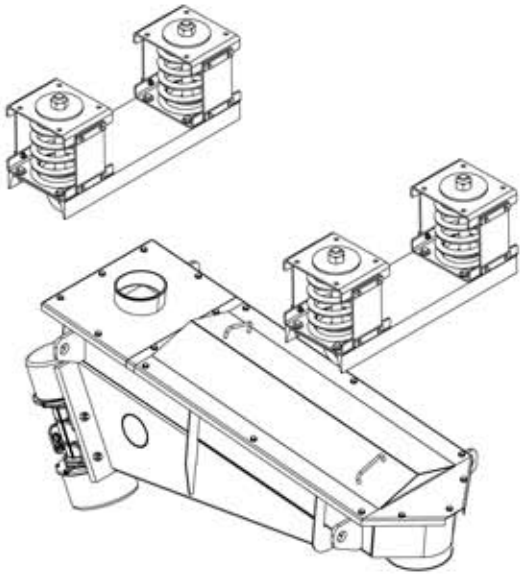
BRUTE FORCE FEEDERS AND SCREENS WITH UNIQUE TRAY DESIGNS



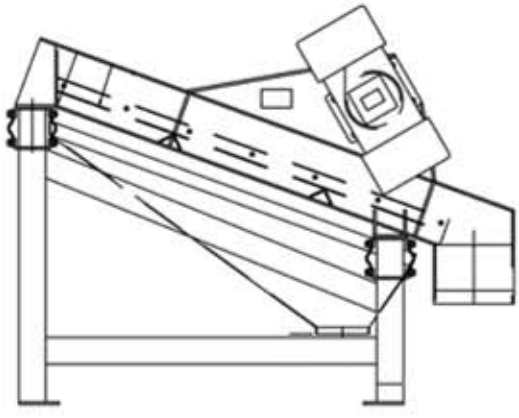
Heavy duty Brute Force Screener with interchangeable perforated plate screen.



Brute Force Feeder with an 86 inch wide tray incorporating a spreader hump for the recycling industry.



Brute Force Screener with covered tray for powder handling. Unit is shown with suspension assemblies.



Screener with overhead drive for maximum screen area.

HOPPER DESIGN FOR OPTIMUM PERFORMANCE

HOPPER DESIGN

If you plan to build a new hopper or modify an existing one for installation with an Eriez vibratory feeder or screen, its design should adhere to certain guidelines in order to obtain the rated capacity of the feeder, achieve the required discharge or delivery rate, prevent bridging, arching or ratholing.

Along with the hopper design, flow velocity (v) is dependent on material characteristics such as particle size, size distribution and moisture content. Rated capacities require ideal conditions. Refer to Figure 1 for the factors utilized in estimating feeder capacity.

The capacity of a vibratory feeder is given by:

$$Q = \frac{W \times d \times D \times v}{K}$$

Where:	English	Metric
Q = Capacity	TPH	MTPH
W = Tray width	inches	mm
d = Material depth	inches	mm
D = Density	lb/cu ft	g/cu cm
v = Flow velocity	ft/min	m/min
K = Constant	4,800	16,700

Figure 1. Determining Vibratory Feeder Capacity

IMPORTANCE OF THE TRANSITION SECTION

A hopper's transition section - the part of the structure between the main bin and the feeder plays a very significant role in obtaining the rated capacity of a feeder. *An improperly designed hopper or transition section can reduce feeder capacities by as much as 30%.*

The bottom of the hopper, for example, should be almost as wide as the feeder tray to provide full–width feeding. Clearance of 1" (25 mm) between hopper and tray is recommended.

Throat Opening

For random sized material, the hopper throat opening (T) should be 2-1/2 - 3 times the largest particle size. For near-sized material, the hopper throat opening (T) should be 3 times the particle size. The throat opening should not exceed 30% of the tray length, however, or "headloading" may overpower the ability of the feeder to move the material. In some cases, load deflectors (i.e., angle iron) will be required to obtain satisfactory operation.

Gate Height

The gate height (H) should increase proportionally to the particle size and to the depth of flow (measured at the end of the trough) required to deliver the desired discharge rate. Generally speaking, the gate height should be at least twice the size of the largest particle size, adjustable by means of a slide gate. During operation, the gate height should be 1.2 - 1.5 times the depth of material (D) needed to meet capacity requirements.

Uniform flow patterns also require that the gate height (H) be 1 - 2 times (2 is preferable) the throat dimension (T). When H becomes less than T, material flow patterns are not uniform and usually result in dead zones where little or no flow occurs.

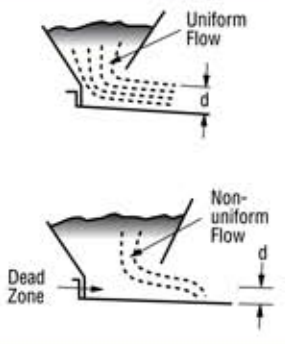


Figure 2. Determining Gate Height

ACHIEVING UNIFORM FLOW

There is a natural tendency of feeders to draw material from the front portion of the hopper. However, a properly designed hopper will cause material to also flow onto the rear of the feeder trough, creating a uniform flow pattern (Figure 2).

The rear wall of the hopper's transition section should be quite steep - at a slope of 60° or more - to assure flow of material along the rear wall surface. In contrast, the slope of the front wall may be more shallow; an angle 5 - 10° less than the rear wall is acceptable.

Figure 3 illustrates a properly designed hopper which promotes good material flow while minimizing material load on the feeder.

INSTALLATION OF SKIRTBOARDS

To obtain the rated capacity of larger Eriez feeders, a burden depth higher than the tray sides must be carried by the feeder. To contain the material and prevent spillover, skirtboards should be installed on both sides of the gate opening, extending to the end of the trough.

To prevent any hang-ups or restrictions of material flow, the skirt boards should flare slightly, becoming wider at the discharge end, and also should taper away from the bottom of the feeder along the length of the trough. The flare and taper rate should be at least 1/2" per foot (40 mm per m) of feeder length.

Skirt boards are nearly always required in installations where the feeder pan is given downslope in order to use gravity to boost delivery rate. Some installations have increased capacity by more than 50% with a 10° downslope. As a rule of thumb, each degree of downslope increases delivery by 2%.

A minimum of 1" (25 mm) clearance must be maintained between the skirtboards and the feeder tray. Movement of the tray must not be restricted by rigid attachment to nearby structures.

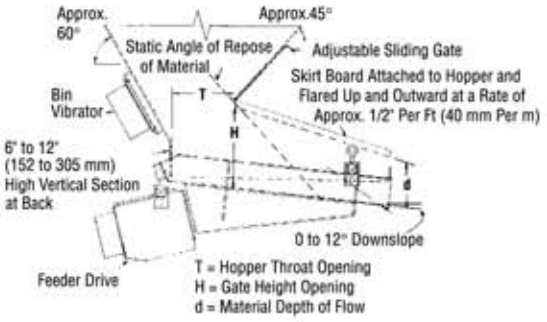


Figure 3. Typical Hopper and Skirtboard Installation

PRELIMINARY VIBRATORY SPECIFICATION SHEET

CONTACT INFORMATION

DATE: _____

CUTOMER NAME: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

CONTACT: _____ PHONE: _____

TITLE: _____ EMAIL: _____

APPLICATION DETAILS

FEEDER FED FROM: _____ NO. OF UNITS: _____

FEEDER DISCHARGES TO: _____

BULK DENSITY: _____ PRODUCT TEMP: _____

CAPACITY: _____ AMBIENT TEMP: _____

PARTICLE SIZE: _____ ABBRASIVE: _____

ANGLE OF REPOSE: _____ MOISTURE %: _____

EQUIPMENT DESIGN

OPERATING VOLTAGE: VOLTAGE: _____ HZ: _____

IS FEEDER CYCLED ON/OFF: NO: _____ YES: _____ HOW OFTEN: _____

DRIVE LOCATION: BELOW TRAY: _____ ABOVE TRAY: _____

MOUNTING: BASE: _____ SUSPENSION: _____

TRAY SIZE: WIDTH: _____ LENGTH: _____ DEPTH: _____

TRAY TYPE: OPEN: _____ ENCLOSED: _____ TUBE: _____

OTHER: _____

IF ENCLOSED: INLET INFO: _____ OUTLET INFO: _____

TRAY MATERIAL: MILD STEEL: _____ 304 SS: _____ OTHER: _____

SANITARY CONSTRUCTION: NO: _____ YES: _____ DESCRIPTION: _____

_____

CONTROL REQUIREMENTS

CONTROL REQUIRED: NO: _____ YES: _____ NEMA ENCLOSURE TYPE: 1 12 4 4X SS

SIGNAL FOLLOWING: NO: _____ YES: _____ OTHER: _____

IF YES, 4-20 MA DC OR 0-10 VDC: _____ _____

OTHER REQUIREMENTS

SCREEN: NO: _____ YES: _____ DESCRIPTION: _____

_____

Note: *Note: Some safety warning labels or guarding may have been removed before photographing this equipment.*

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