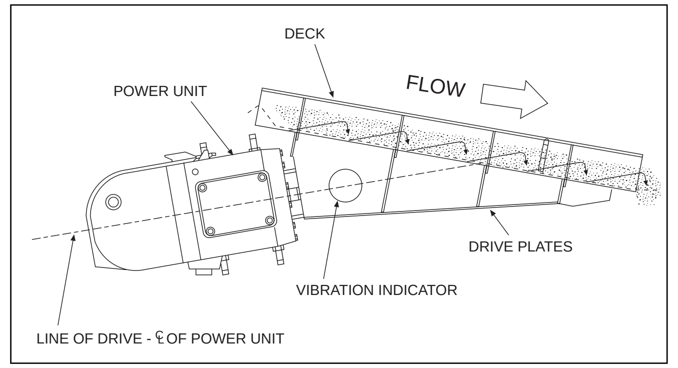
Electromagnetic Operation

Jeffrey electromagnetic feeders operate through controlled, high-frequency vibration. This is accomplished with electrical pulses and a machine that is tuned to a mechanical resonant frequency that is higher than the electrical frequency of the power supply (sub-resonant tuning).

Electrical pulses in the coils create a series of magnetic pulls that attract the armature and the deck. Restoring forces in the bar oppose each pull, causing the armature to spring away from the magnet. At an electrical frequency of 60 cycles per second, the armature and the deck operate at 3,600 times per minute (the vibration rate of the feeder). Material is moved by a series of "jumps" that correspond to the frequency of the vibrations. The distance the bars travel can be changed by varying the voltage to the coils. With this variation in the length of each "jump," or vibration amplitude, the conveying speed of the material on the feeder deck changes, resulting in a capacity rate that fits your requirements.



Feeder Control

The electrical controllers for our electromagnetic feeders are designed around half-wave rectification of AC power. The efficient switching mechanism of silicon-controlled rectifiers produces DC impulses without wasteful resistor or rheostat energy loss. Plus, it provides a full 0 – 100% range of control. All standard controllers comply with NEMA 12 and CSA design standards, and a variety of custom controllers are available (consult our factory).

The control cabinet has a 115-volt push button for the magnetic contactor, which is in accordance with current NEC requirements. A separate control transformer is provided.

The solid-state control circuit includes a "soft-start" feature. A regulator, requiring no additional connection to the feeder(s), maintains vibration to within ± 0.002", provided the line voltage variations do not exceed ± 5% and the line frequency is ± 0.5 Hz.

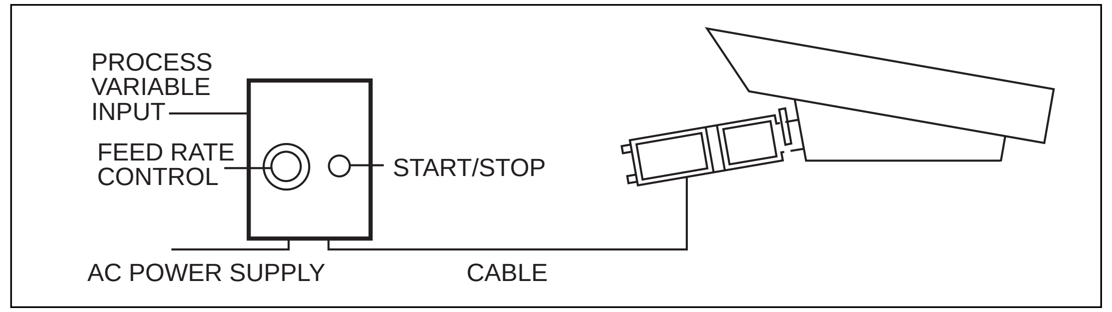
Manual or process variable controllers are available. There are also variations of these two basic arrangements. These include simultaneous, proportional, and sequential control for several feeders; HI/LO switches for batch weighing or filling operations; AMP demand control that affords over-stroke protection and efficient and effective feed to process machinery, such as size reduction equipment.

Manual Control

Varies the flow from 0 – 100% with a stepless potentiometer. Install the control cabinet at a local or remote location.

Process Variable Control

Any process variable input transmittable in small current signals 4 – 20 mA can automatically increase or decrease material flow.



Electromagnetic Vibrating Feeder Applications

Ideal for the bulk material feeding of:

- Aggregates
- Coal
- Minerals
- Chemicals
- Industrial Materials
- Various Blended Materials

JEFFREY

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CATALOG EF1000

ELECTROMAGNETIC VIBRATING FEEDERS

JEFFREY

Highest Capacity For Deck Size In The Industry, Features Easy Access & Rebuildable Power Unit

Highest Capacity for Deck Size

New, improved electromagnetic feeder design feeds more material for its deck size than any competitive unit.

Rebuildable Power Unit

Rebuildable power unit assembly simplifies maintenance and lowers the total cost of ownership.

Removable Covers

Removable side and rear covers allow easy access to the power unit.

No Moving Parts

The feeder's electromagnetic operation has no moving parts in the drive mechanism. This eliminates wear and the need for replacement parts, as well as assures trouble-free service in all types of environments.

Sub-Resonant Tuning

As the deck liner wears, sub-resonance tuning assures efficient, continued feeder operation. Controls are infinitely adjustable over a 0 to 100% operating range, using solid state circuits.

High-Frequency Vibration

With an appropriate deck slope, high-frequency vibration affords conveying speeds as high as 65 FPM. This vibration is maintained even with varying line power fluctuation.

Design Flexibility

Our experience and longevity in the market have resulted in a variety of deck sizes.

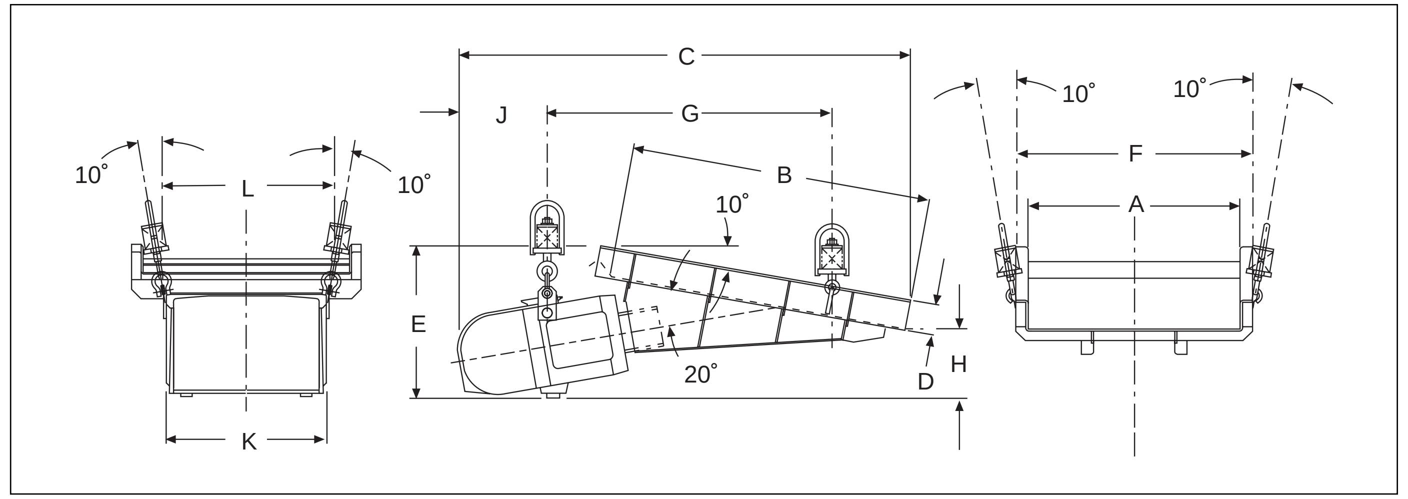
- Open
- Enclosed
- Tubular
- Grizzly
- Power Unit Overhead
- Conveyors with Multiple Power Units
- Decks with Screen Sections
- Special Discharge End Sections for Charging Furnaces

Field Service

Jeffrey provides field service personnel for commissioning, problem solving, and maintenance training.

Dimensions & Specifications

Power Unit Underneath



Model	Standard Deck Size (Width X Length)	Maximum Capacity	Deck Slope	Feeder Weight	Available Deck Sizes (Width X Length)	A	B	C	D	E	F	G	H	J	K	L
EF3	**36 X 60**	600	10	2700												
					24 X 84	24	84	111	6	34	30	77	13	17	32.5	37
					30 X 60	30	60	91	6	30	36	58	13	17	32.5	37
					36 X 60	36	60	90	6	30	42	57	13	17	32.5	37
EF4	**42 X 60**	850	10	3400												
					30 X 84	30	84	113	6	35	36	73	14	18	32.5	35
					36 X 72	36	72	100	6	33	42	64	14	18	32.5	35
					42 X 60	42	60	91	6	31	48	57	14	18	32.5	35
EF5	**42 X 72**	1000	10	4600												
					36 X 84	36	84	123	6	39	42	88	18	18	36	39
					42 X 72	42	72	112	6	37	48	75	18	18	36	39
					48 X 72	48	72	112	6	37	54	75	18	18	36	39
EF6	**48 X 84**	1200	10	5900												
					42 X 84	42	84	121	6	40	48	89	19	16	37	39
					48 X 84	48	84	124	6	40	54	91	19	16	37	39
					54 X 72	54	72	112	6	38	60	79	19	16	37	39

These specifications indicate maximum capacities for standard models, based on the use of Jeffrey's recommended hopper design; appropriate deck slope; and dry, granular materials weighing 100 pounds per cubic foot.
*Stock units appear in **bold type**. All feeders are furnished with vibration absorbers for suspension or supported mounting.*

Recommended Hopper Design

Proper hopper design plays an important role in obtaining the rated capacity of a feeder. Proper transition design is also critical to controlling the material "headload" on the feeder and avoiding possible resulting damage to the feeder.

Recommended Hopper Configuration The rear wall should be at a slope of approximately 60° to ensure flow of material from the rear of the hopper. The slope of the front wall should be 5° – 10° less than that of the rear wall (50° – 55°).

Hopper Dimensions Generally speaking, the gate height (H) should be a minimum of twice the largest particle size for material with normal size distribution. The hopper throat dimension (T) should be approximately 1/2 the gate height (H), otherwise the material flow patterns could be distorted and feed rate could be significantly reduced. In addition, it could also create an excessive "headload" of material to the hopper that could overpower the ability of the feeder to convey material and cause feeder damage. The hopper width dimension should allow for approximately 1/2" clearance on each side. The hopper width should also be a minimum of 2.5 times the largest particle size for random size material and five times the largest particle size for near-size particles.

Skirting Installation Skirts should be tapered slightly away from the bottom of the feeder deck and have 1/2" clearance from each sidewall of the feeder.

Feeder Length A safety factor of 6" – 12" (E) of extra length is recommended to prevent the possibility of free flow.