

Rotary Electric Vibrators Facts and Features



UNPARALLELED DESIGN FEATURES

Heavy Duty Construction offered by B.E.S.T., Inc. guarantees long life and excellent field performance. Ductile iron castings, steel end covers and high alloy fasteners are just some of the unique design features. All units can be mounted horizontally or vertically.

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Long Life Bearings insure peak, long-term performance for our rotary electric vibrators and drives. Our B-10 bearing life is unsurpassed in the industry. Our smaller units are furnished with ball bearings which are sealed for the life of the bearing. Larger units employ both ball and roller bearings with grease fittings.

0% To 100% Force Adjustment is available on all but our smallest model. Many competitive units offer models with limited "continuous duty" force settings. B.E.S.T. offers continuous operation on all models at the maximum force.

The Highest Force to Motor Weight Ratio in the industry.

Low Noise Level. All motors average 55db(A) as measured five feet from the motor.

Dust Tight Construction and Splashproof Design make these motors suitable for dusty, dirty environments, as well as outdoors in rain or snow.

Terminal Junction Box and Cable are assembled with compression type Belleville locking washers to prevent loosening by vibrators.

SIZING INFORMATION-ROTARY ELECTRIC VIBRATORS AND DRIVES

In order to select the correct size rotary electric vibrator for any hopper or bin application, the ratio of the weight of material in the sloped wall section of the hopper, to the force output of the vibrator, must be determined. Although each application is different, most applications should have a ratio of one pound of vibratory force for every ten pounds of material in the sloped wall section of the hopper.

When dealing with bin, hopper and chute applications, the 1800 RPM higher amplitude motors usually will provide the required force in order to activate flow of "difficult" material. The 3600 RPM motors are primarily used for materials having characteristics ranging from "free flowing" to "difficult."

The following two formulas will help you select the correct size vibrator:

1. Weight of Material in the Sloped Hopper Section =
Bulk Density of Product x Volume (cu. ft.) of the hopper section.
2. To calculate the volume of a conical hopper:
 $1.0472 \times \text{vertical height} \times [R^2 + (R \times r) + r^2] = \text{volume}$

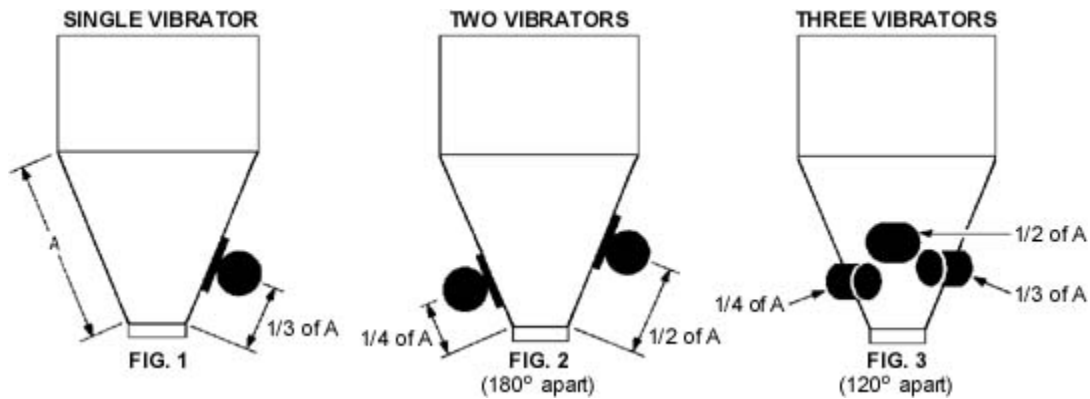
where R is the radius of the cone at the transition point and r is the radius of the cone at the discharge.

Material Weight in Sloped Hopper (lbs.)	B.E.S.T. Model 115 v. 1p., 60c.	B.E.S.T. Model 230/460 v. 3p., 60c.	Average Wall Thickness
200	BES-30-2		< 20 ga.
1,100	BES-110-2	BE-110-2	16 - 20 ga.
2,200	BES-220-2	BE-220-2	1/8 - 3/16"
4,400	BES-440-2	BE-440-2	3/16 - 1/4"
7,700	BES-770-2	BE-770-2	3/16 - 1/4"
13,200		BE-1320-2	1/4 - 3/8"
22,000		BE-2200-2	3/8 - 1/2"
35,200		BE-3520-2	1/2 - 3/4"
50,600		BE-5060-2	3/4 - 1"
66,000		BE-6600-2	1 - 1-1/4"
88,000		BE-8800-2	1-1/4 - 1-1/2"

LOCATING VIBRATOR MOTORS ON HOPPERS & BINS

The majority of applications require only one (1) BE motor vibrator. Figure 1 illustrates the most commonly recommended mounting for a single unit on a bin or hopper, attaching the motor 1/3 up the sloped wall section.

Applications requiring more than one vibrator generally involve larger hoppers or more difficult flowing materials. Figures 2 and 3 illustrate the mounting of 2 and 3 vibrators, respectively. More than 3 vibrators are rarely used on a particular hopper or bin.



AMPLITUDE & FORCE REQUIREMENTS

For applications involving vibratory equipment such as feeders, conveyors and tables, the following formulas should be used in calculating amplitude and force requirements.

Amplitude (inches)

Force (pounds)

Frequency (RPM/motor)

Load (pounds)

Equal to structure weight, plus motor weight, plus material or product weight.

$$\text{AMPLITUDE} = \frac{70,500 \times \text{FORCE}}{\text{LOAD} \times (\text{FREQUENCY})^2}$$

$$\text{FORCE REQUIRED} = \frac{\text{AMPLITUDE} \times \text{LOAD} \times (\text{FREQUENCY})^2}{70,500}$$

NOTE: The actual frequencies, vibrator weights, and force figures needed for the above calculations, can be obtained from data charts on this brochure.

ADJUSTMENT OF FORCE OUTPUT

B.E.S.T., Inc. motor vibrators are easily adjusted by setting the dot on the eccentric weight to the proper (% of maximum force) output. The photo below shows the operator setting the weights at 50% of maximum force.

IMPORTANT: Both ends of the motor must be adjusted to the same setting.

