

**Syntron®  
Vibrators**



# table of contents

Syntron® Vibrators

3

Electromagnetic Vibrators

4

Electric Rotary Vibrators

14

Pneumatic Vibrators

32

**Syntron** Material Handling

# Syntron® Vibrators

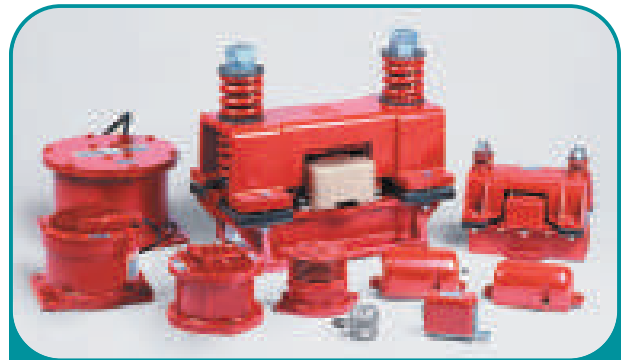
Syntron® Vibrators offer an efficient, cost-effective means to maintain free flow of product from bins, hoppers and chutes, with a direct and positive result on the bottom line. Whether the need is to ensure constant, uninterrupted material flow, or to eliminate the necessity for manual manipulation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

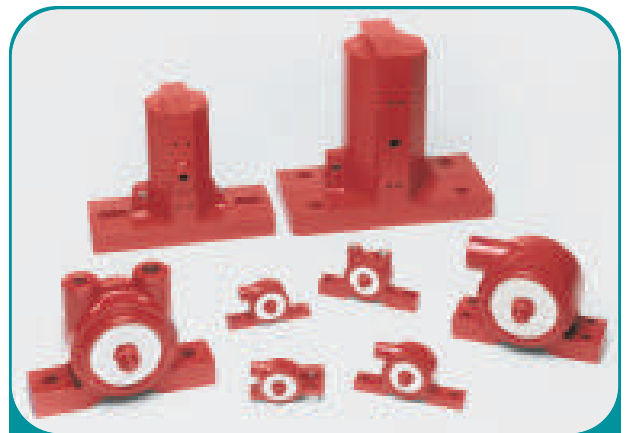
Syntron Pneumatic Vibrators can be installed where electricity is not readily available because they use compressed air. Two types of pneumatic vibrators, turbine and piston, are available. Designed to keep operating noise at a minimum, Syntron Pneumatic Turbine Vibrators are ideal for locations where 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.



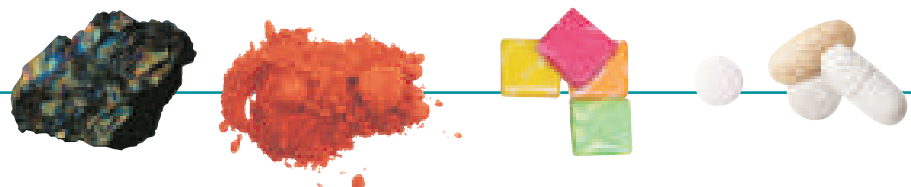
*Syntron® Electromagnetic Vibrators*



*Syntron® Electric Rotary Vibrators by Visam*



*Syntron® Pneumatic Vibrators*



## Syntron® Electromagnetic Vibrators

Keep Your Materials Flowing Efficiently and Economically

Syntron® Electromagnetic Vibrators from Syntron Material Handling offer an economical means of maintaining the flow of bulk materials from bins, hoppers and chutes. They come with an easily adjustable control which provides flexibility and assures optimum flow for the type of material being handled. Furthermore, Syntron Electromagnetic Vibrators can be operated continuously or intermittently depending upon the specific requirements.

To assure the highest standard of quality, Syntron Electromagnetic Vibrators are factory tested and adjusted for optimum performance. Most models come standard with totally enclosed, dust-tight and waterproof construction. Since these vibrators have no rotating or sliding parts, they are virtually maintenance-free.

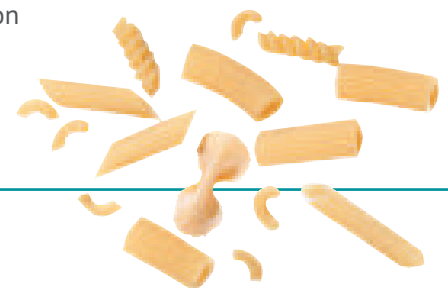
Syntron Electromagnetic Vibrators come with the technical expertise of Syntron Material Handling's application staff, who have been providing productive solutions for a wide variety of material handling problems for more than 80 years. Call Syntron Material Handling Application Specialists and request a data sheet or download one from our website at [www.syntronmh.com](http://www.syntronmh.com). Syntron Electromagnetic Vibrators may also be ordered online at [www.syntronmh.com](http://www.syntronmh.com).



*Syntron® Electromagnetic Vibrators are available in a wide variety of sizes and force ratings.*

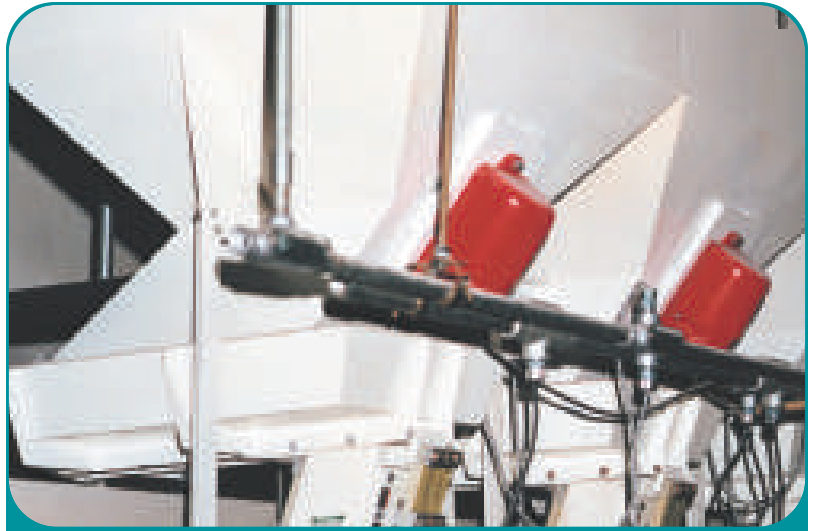
### Features and Benefits

- Electromagnetic design
  - No rotating or sliding parts; maintenance-free
  - Ideal for continuous or intermittent operation
- Adjustable control
  - Varies vibration force with simple turn of control knob
- Urethane encapsulated magnet assemblies
  - Provides protection from moisture and other contaminants
  - Prevents wire degradation
- Productivity enhancing performance
  - No need for manual labor to unclog bins or to keep material flowing
- Simple design, durable, rugged construction
  - Safe, reliable performance for years of service
- Wide range of sizes
  - Accommodates your specific application
- Low noise models available
  - Quiet, reliable operation





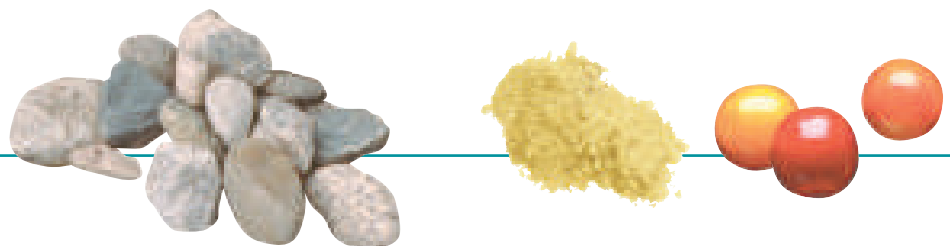
*Syntron® model V-41 Electromagnetic Vibrator installed on a stainless steel bin.*



*Syntron® model V-20 Electromagnetic Vibrators maintain the flow of pasta from bins to packaging lines.*



*This Syntron® model V-85 Electromagnetic Vibrator is maintaining flow of dust particulates from the collecting hopper of an electrostatic precipitator.*



## Syntron® Electromagnetic Vibrator Models

Syntron® V-2 and V-4 Electromagnetic Vibrators are two of the smallest industrial vibrators available. These versatile vibrators can be controlled electrically with a separate control. When these vibrators are operated without a control, they can be mechanically controlled by turning an easily accessible adjusting screw. Increased amplitude can be obtained by using rectified AC power. Flexibility and ease of installation are common to both models and the Model V-4 is available with a dust-tight case.

Models V-9 and V-20 are compact in size, but at 3600 vpm, they pack enough vibratory “punch” to excel in a wide range of applications. Each is available with a separate dust-tight case.

Typical applications for the above models include installations on small bins, handling lightweight materials, or in counting, sorting or packaging operations.

### Impact and Cushioned Vibrator Compact Models

Models V-50, V-85 and V-180 are “solid” impact vibrators. These units use a metal striking block to produce positive impact.

Models V-41, V-51, V-86 and V-181 are “cushioned” impact vibrators, which utilize a rubber striking block to produce positive impact. Their high power/low noise characteristics make them ideal for use in confined areas with nearby workers. Physical dimensions and electrical specifications are identical to the “solid” impact type vibrators. Dust-tight and waterproof construction are standard for both versions.

### Open Models

Models V-75 and V-500 feature a power-packed, solid impact, open-type design. They are used on difficult, heavy-duty applications. The V-500 is one of the largest magnetic vibrators available. Both the V-75 and V-500 are available with a separate dust-tight case.

### Self-Contained Models

Models V-9 through V-500 require separate controls unless specifically ordered as self-contained units. Self-contained units include a built-in rectifier and they always operate at full force. Self-contained units are recommended only where no force adjustment is required. Models V-41 and V-500 are not available as self-contained units.



V-2



V-4



V-9, V-20



V-41



V-50  
V-51



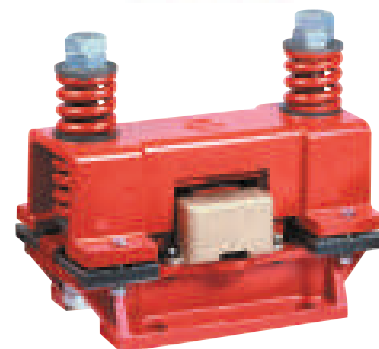
V-75



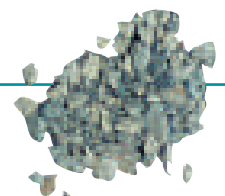
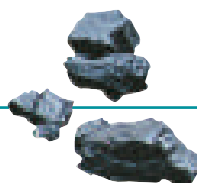
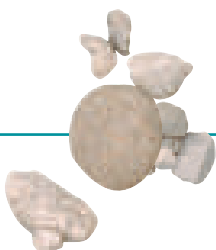
V-85  
V-86



V-180  
V-181



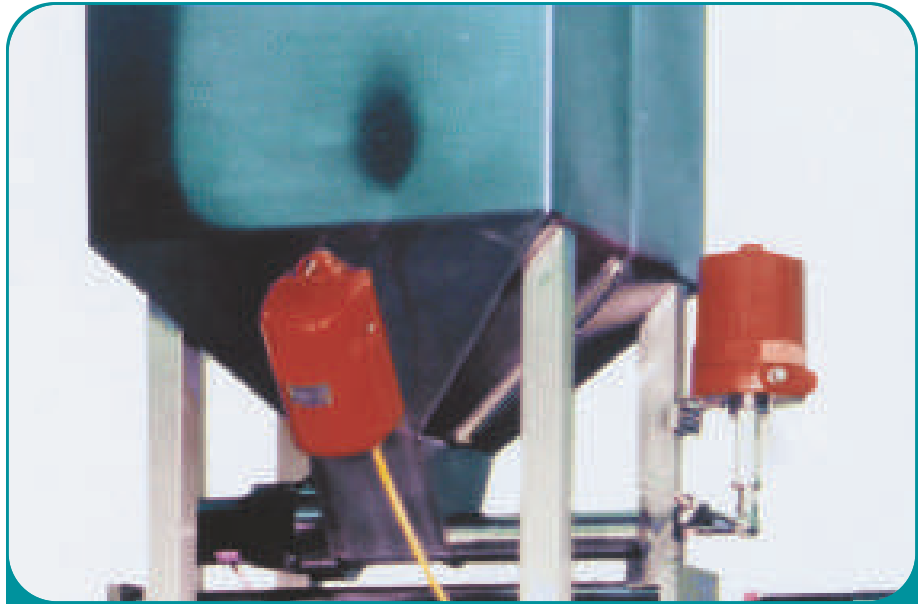
V-500





## Selecting the Proper Syntron® Electromagnetic Vibrator

The primary consideration in vibrator selection is the thickness of the bin or chute wall. Once the proper vibrator model has been selected from the Application Tabulation Table, compare the capacity in the tapered portion of the bin with the rated capacity shown in the table. If the rated capacity is exceeded, multiple vibrators may be required, depending on the material being handled. Stiffeners used to reinforce the bin or chute may also affect the selection or preferred location of the vibrator. Please contact Syntron Material Handling for a copy of our data sheet and assistance with selection of appropriate units in these applications.

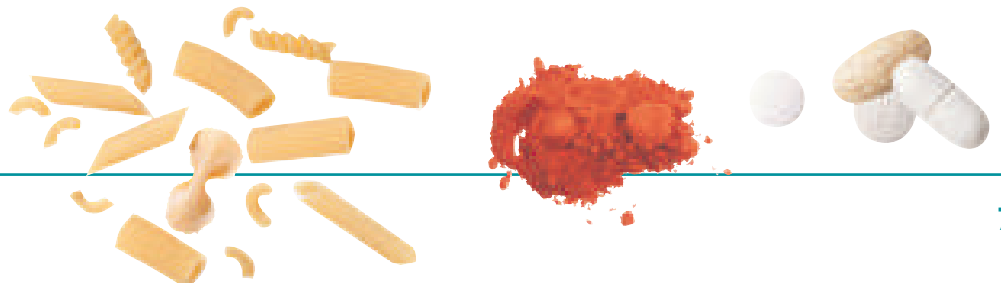
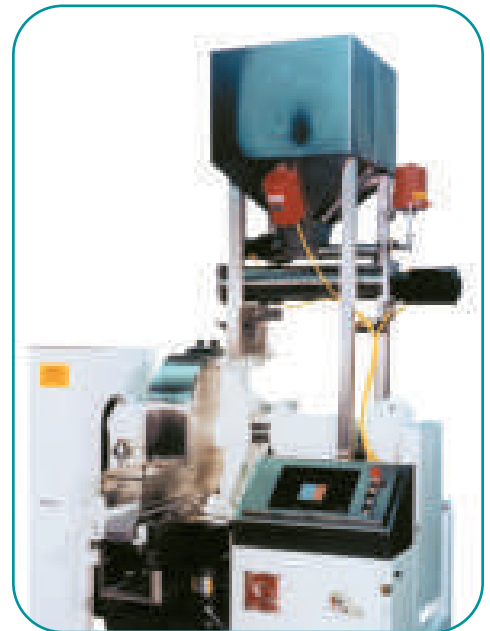


*Syntron® model V-20 Electromagnetic Vibrator ensures controlled feed from hopper to extruder.*

### Application Tabulation

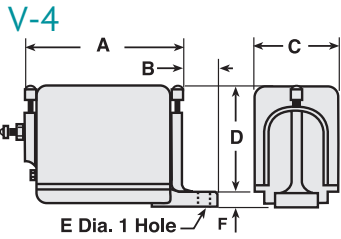
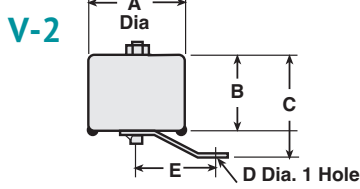
Model	Wall Thickness*	No. Vibrators Needed per Capacity in Tapered Portion of Bin/Hopper
V-2	24 ga (0.5 mm)	1 ft <sup>3</sup> (0.03 m <sup>3</sup> )
V-4	22 ga (0.8 mm)	1 ft <sup>3</sup> (0.03 m <sup>3</sup> )
V-9	20 ga (1 mm)	3 ft <sup>3</sup> (0.08 m <sup>3</sup> )
V-20	1/16 in (1.5 mm)	10 ft <sup>3</sup> (0.28 m <sup>3</sup> )
V-41	1/8 in (3 mm)	20 ft <sup>3</sup> (0.57 m <sup>3</sup> )
V-51	1/8 in (3 mm)	30 ft <sup>3</sup> (0.85 m <sup>3</sup> )
V-50	1/4 in (6 mm)	1 per 5-ton (4.5 metric ton)
V-86	1/4 in (6 mm)	1 per 5-ton (4.5 metric ton)
V-75	5/16 in (8 mm)	1 per 20-ton (18.1 metric ton)
V-85	5/16 in (8 mm)	1 per 20-ton (18.1 metric ton)
V-181	5/16 in (8 mm)	1 per 30-ton (27.2 metric ton)
V-180	3/8 in (10 mm)	1 per 50-ton (45.4 metric ton)
V-500	1 in (25 mm)	1 per 100-ton (90.7 metric ton)

\* Wall thickness is critical to proper vibrator selection; if in doubt, call Syntron Material Handling for assistance.



# Electromagnetic Vibrators

## Electromagnetic Vibrator Specifications and Dimensions



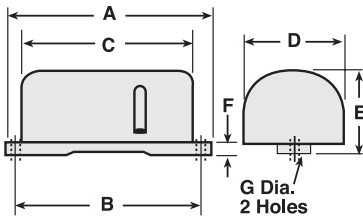
### Specifications

Model	Weight		Input Amps		Speed (vpm 50 Hz)			Speed (vpm 60 Hz)		
	lb	kg	115V	230V	Without Control	AC Control	RC Control	Without Control	AC Control	RC Control
V-2	2 1/2	1.1	0.3	0.18	6,000	6,000	3,000	7,200	7,200	3,600
V-4	4 1/2	2.0	0.9	0.45	6,000	6,000	3,000	7,200	7,200	3,600

### Dimensions

Model	A		B		C		D		E		F	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
V-2	2 7/8	73	2 1/4	57	3 1/16	78	1 3/32	10	2 3/8	60	--	--
V-4	5 5/8	143	1 1/4	32	3	76	3 3/4	95	1 7/32	13	1/2	13

## V-9, V-20



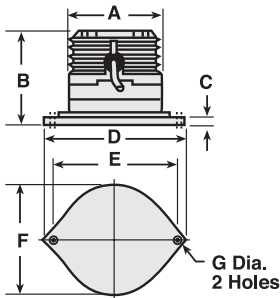
### Specifications

Model	Weight		Input Amps			Speed	
	lb	kg	115V	230V	460V	(vpm 50 Hz)	(vpm 60 Hz)
V-9	9 1/2	4.3	1.2	0.75	NA	3,000	3,600
V-20	14	6.4	2.0	1.0	0.5	3,000	3,600

### Dimensions

Model	A		B		C		D		E		F		G	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
V-9	10 1/4	260	9 1/4	235	8	203	4 1/4	108	4 1/16	103	9/16	14	7/16	11
V-20	10 1/4	260	9 1/4	235	8	203	5 1/8	130	4 5/16	110	1/2	13	7/16	11

## V-41



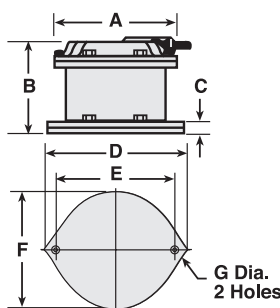
### Specifications

Model	Weight		Input Amps			Speed	
	lb	kg	115V	230V	460V	(vpm 50 Hz)	(vpm 60 Hz)
V-41	25	11.3	3.5	1.75	0.88	3,000	3,600

### Dimensions

Model	A		B		C		D		E		F		G	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
V-41	6 1/4	159	6 1/2	165	7/16	11	9 3/8	238	8 1/4	210	7 3/8	187	1 7/32	13

## V-50, V-51



### Specifications

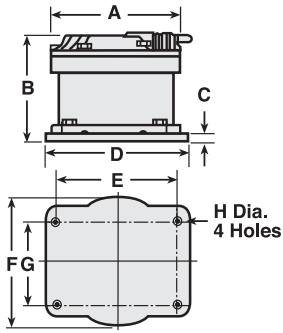
Model	Weight		Input Amps			Speed	
	lb	kg	115V	230V	460V	(vpm 50 Hz)	(vpm 60 Hz)
V-50, V-51	40	18.1	4.5	2.3	1.2	3,000	3,600

### Dimensions

Model	A		B		C		D		E		F		G	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
V-50	9 1/2	241	7 1/4	184	15/16	24	10 3/4	273	9 1/4	235	9 3/4	248	1 1/16	17
V-51	9 1/2	241	7 1/4	184	15/16	24	10 3/4	273	9 1/4	235	9 3/4	248	1 1/16	17



## V-85, V-86



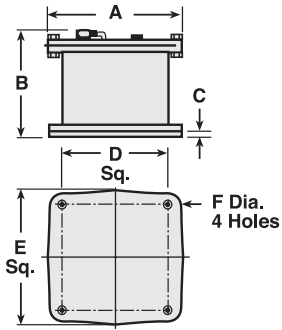
### Specifications

Model	Weight		Input Amps			Speed	
	lb	kg	115V	230V	460V	(vpm 50 Hz)	(vpm 60 Hz)
V-85, V-86	79	35.8	7.0	3.5	1.8	3,000	3,600

### Dimensions

Model	A		B		C		D		E		F		G		H	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
V-85	10 <sup>7/16</sup>	265	8 <sup>3/4</sup>	222	5/8	16	11 <sup>1/2</sup>	292	10	254	10 <sup>5/8</sup>	270	7	178	11 <sup>1/16</sup>	17
V-86	10 <sup>7/16</sup>	265	8 <sup>3/4</sup>	222	5/8	16	11 <sup>1/2</sup>	292	10	254	10 <sup>5/8</sup>	270	7	178	11 <sup>1/16</sup>	17

## V-180



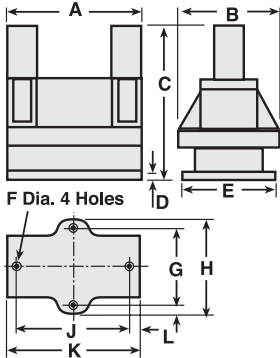
### Specifications

Model	Weight		Input Amps		Speed	
	lb	kg	230V	460V	(vpm 50 Hz)	(vpm 60 Hz)
V-180, V-181	220	100	12.0	6.0	3,000	3,600

### Dimensions

Model	A		B		C		D		E		F	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
V-180	15 <sup>3/16</sup>	386	11	279	11 <sup>1/16</sup>	17	12	305	15 <sup>1/4</sup>	387	13 <sup>1/16</sup>	21
V-181	15 <sup>3/16</sup>	386	11	279	11 <sup>1/16</sup>	17	12	305	15 <sup>1/4</sup>	387	13 <sup>1/16</sup>	21

## V-75



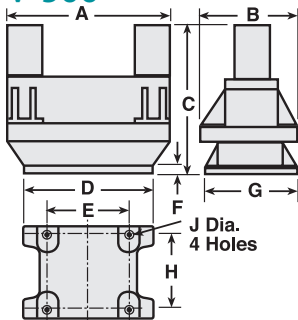
### Specifications

Model	Weight		Input Amps			Speed	
	lb	kg	115V	230V	460V	(vpm 50 Hz)	(vpm 60 Hz)
V-75	113	51	16.0	8.0	4.0	3,000	3,600

### Dimensions

Model	A		B		C		D		E		F		G		H		J		K		L	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
V-75	13	265	10	254	12 <sup>3/8</sup>	314	1/2	13	8	203	11 <sup>1/16</sup>	17	6 <sup>1/2</sup>	165	8	208	11 <sup>1/2</sup>	292	13	330	3/4	19

## V-500



### Specifications

Model	Weight		Input Amps		Speed	
	lb	kg	230V	460V	(vpm 50 Hz)	(vpm 60 Hz)
V-500	700	318	35.0	17.5	3,000	3,600

### Dimensions

Model	A		B		C		D		E		F		G		H		J	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
V-500	25 <sup>3/4</sup>	654	14 <sup>1/2</sup>	368	23 <sup>3/4</sup>	603	20	508	13	330	1 <sup>1/8</sup>	29	14	356	11 <sup>1/2</sup>	292	1 <sup>9/16</sup>	40

When ordering, specify 50 or 60 Hz operation. Refer to control information, page 10. For other voltage requirements, contact Syntron Material Handling.

# Electromagnetic Vibrators

Syntron® Vibrating Feeders are furnished with a standard control to vary the flow of material through the feeder by adjusting the amplitude of the feeder pan. Standard control units include an operating switch, fuse and adjustable control to vary the amplitude.

Controls are available for 115, 230 or 460 volts, 50 or 60 cycle power and

are available for operation at other voltages upon request. Control units for multiple feeder applications are available. For special electrical standards, custom control enclosures can be provided. In addition to the standard controls listed here, Syntron Material Handling can provide control systems built to meet your requirements.

Velocity® RS drives can be provided with a separate, standard RC control (see pages 20-21) and are also available with a self-contained rectifier. Units with a self-contained rectifier operate at full stroke.

Control Model	Volts	Amps	Enclosure	Approvals	Intermittent Contacts	Intensity	Soft Start	Voltage Regulation	RC Output	AC Output
Power Pulse RC WT	115/230	5	Nema 4	cUL	●	Potentiometer			●	
Power Pulse AC WT	115/230	5	Nema 4		●	Potentiometer				●
Conductor DC 15	115	15	Nema 4	cUL	●	POT / 4-20mA	●	●	●	●
Conductor DC 28	230	8	Nema 4	cUL	●	POT / 4-20mA	●	●	●	●
Conductor DC 118	115	18	Nema 12	cUL	●	POT / 4-20mA	●	●	●	●
Conductor DC 218	230	18	Nema 12	cUL	●	POT / 4-20mA	●	●	●	●
Conductor 420	340/480	4-20	Nema 4		●	POT / 4-20mA	●	●	●	
Conductor 518	575	4-18	Nema 4		●	POT / 4-20mA	●	●	●	
Conductor CH 15	115	15	Open Chassis	cUL	●	POT / 4-20mA	●	●	●	●
Conductor CH 28	230	8	Open Chassis	cUL	●	POT / 4-20mA	●	●	●	●

● Standard in the model listed

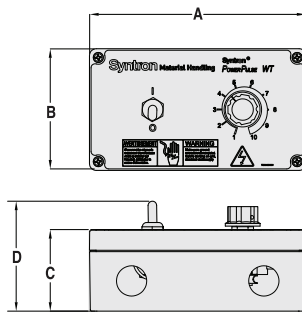
\* Conductor controls are also available in open chassis models for ease in mounting in your system controls.

Note: Some open chassis models have reduced amperage capability. Contact Syntron Material Handling for details.

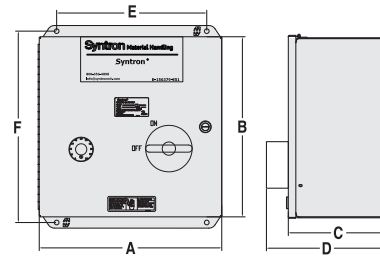
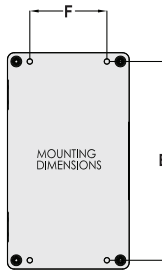


## Control Dimensions

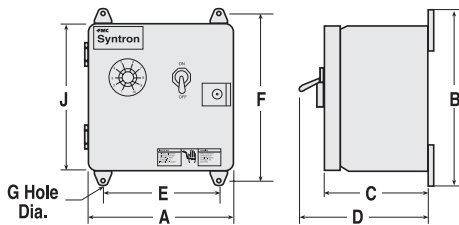
Control	A		B		C		D		E		F		G		H		J		Weight	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	kg
Power Pulse WT	6 1/4	160	3 1/2	89	2 1/4	57	3 1/4	82	5 3/4	146	2 1/4	57	-	-	-	-	-	-	1 1/4	5
<b>Conductor Series</b>																				
15 & 28 Enc.	8	203	9 1/2	242	4 3/4	121	5 5/8	143	6 1/4	159	8 5/8	219	5/16	8	-	-	8	203	7	3.18
118 & 218 Enc.	8	203	10	254	4 3/4	121	5 5/8	143	6 1/4	159	8 5/8	219	5/16	8	-	-	8	203	8	3.63
420 & 518 Enc.	12 1/4	310	12 1/4	310	6	152	7 13/16	198	10	254	12 3/4	324	0.3	7.92	-	-	12	303	18.5	8.4
15 & 28 Open Chassis	3 15/16	100	3 13/16	96	3 1/16	78	-	-	3 1/4	82	3 1/4	82	0.18	4.5	-	-	-	-	0.58	0.26



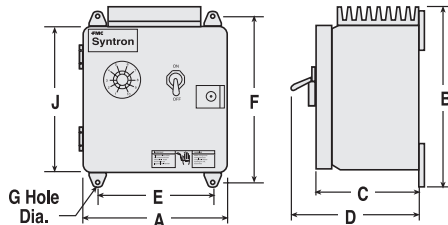
Power Pulse WT



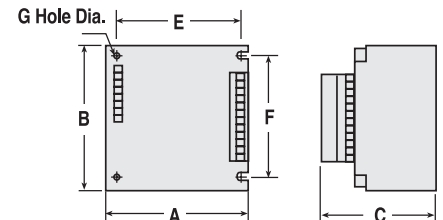
Conductor 420, Conductor 518



Conductor DC 15,  
Conductor DC 28



Conductor DC 118,  
Conductor DC 218



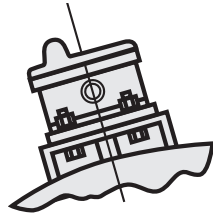
Open Chassis Conductor 15  
and Conductor 28

## Mounting Syntron® Electromagnetic Vibrators

Correct location of electromagnetic vibrators is of prime importance in obtaining maximum efficiency from the selected model. Note: Operate vibrators on hoppers only when the hopper is open to flow. Otherwise, vibration may pack the hopper contents.

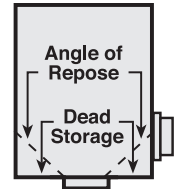
### Curved Surfaces

To mount a vibrator to a curved surface, select a bracket made from a channel section or a bent plate. A center gusset is required for all totally enclosed vibrators, and two blocks of sufficient height to contact the curved surface are required for Models V-75 and V-500. The selected gusset or blocks must be securely welded to the underside of the bracket and curved surface. This arrangement is required to stiffen the mounting and transmit vibrations directly to the hopper contents. Mounting bolt heads can be welded to the underside of the bracket.



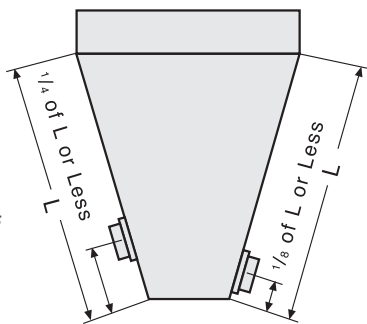
### Rectangular or Cylindrical Bins with Flat Bottom and Center Discharge.

Mount directly to the side of the bin, just below the point where the materials' natural angle of repose intersects the side, as shown.



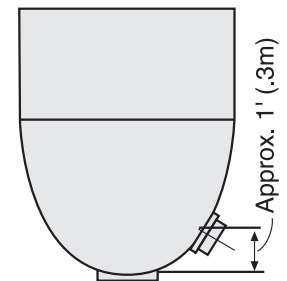
### Rectangular Hoppers

Mount vibrator and mounting channel as for a conical hopper or a curved surface. If a stiffener obstructs mounting, mount the vibrator in the middle of the panel next to the stiffener. If required, a second vibrator should be mounted on the opposite face at a slightly higher elevation.



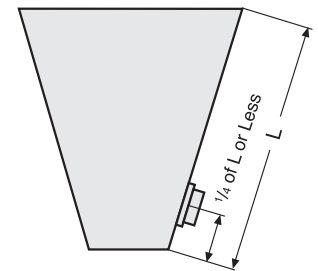
### Parabolic Bins or Hoppers

Mount the vibrator within one foot of each discharge opening and in line with center of opening.



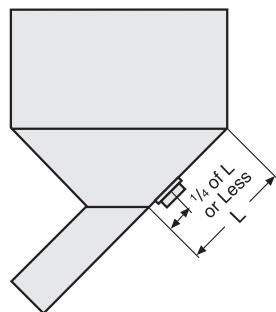
### Conical Hoppers

Mount the vibrator to the hopper (as for a curved surface) 12 to 18 inches (300 to 450 mm) or less from the discharge.



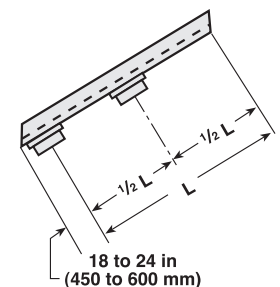
### Hopper with Sloping Discharge

Mount the vibrator on the center line of the hopper, as close to the discharge as possible. An additional vibrator may be required on the discharge chute.



### Inclined Chutes

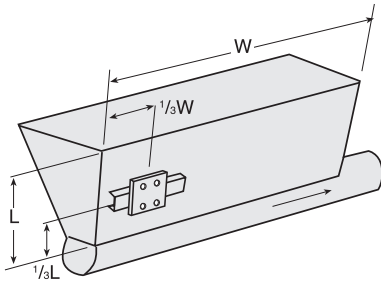
Chutes less than 10 to 12 feet (3 to 3.6 m) long are usually equipped with just one vibrator located well below the center. Allow for the vibrator to be moved about one foot (300 mm) in either direction. On chutes requiring more than one vibrator, the first one should be located 18 to 24 inches (450 to 500 mm) from the outlet. The second unit should be mounted about half-way between the first vibrator and the upper end. Allow for the vibrators to be moved about one foot (300 mm) in either direction.



Note: Drawings illustrate typical installations. Specific installations may require slight variations. For other applications not covered here, please consult factory for recommendations.

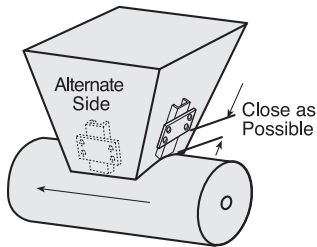
### Screw Feeder

Screw conveyors feed from the back of the hopper. Vibrator should be  $\frac{1}{3}$  from the inlet. If two vibrators are used, place second vibrator on opposite side,  $\frac{1}{3}$  from the discharge. Do not operate the vibrator at the discharge end until the back of the bin is empty and the vibrator at the inlet is shut off.



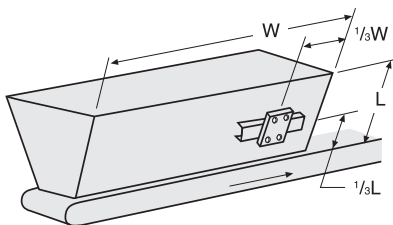
### Short Screw Feeder

Place vibrator as close as possible to feeder.



### Long Bin

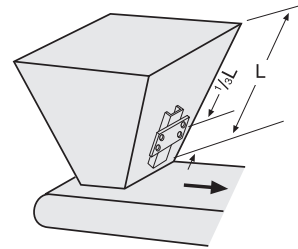
Belt conveyors feed from the front of the hopper. Vibrator should be  $\frac{1}{3}$  from front. If two vibrators are used, place one on the opposite side and  $\frac{1}{3}$  from back. Do not operate the back vibrator until the front is empty and the front vibrator is shut off.



Note: Drawings illustrate typical installations. Specific installations may require slight variations. For other applications not covered here, please consult factory for recommendations.

### Belt Conveyor and Standard Bin

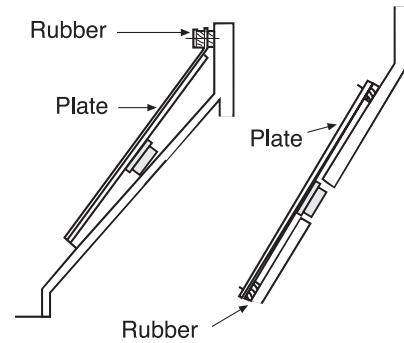
Mount vibrator on the belt discharge side of the hopper. Follow mounting instructions for the appropriate bin type on page 12.



### Concrete Hopper or Lined Wooden Hopper

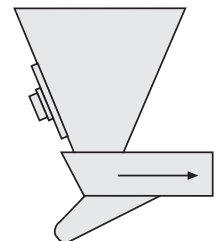
For wooden hoppers lined with thin sheet metal, attach vibrator mounting bolts to the hopper lining.

For concrete hoppers, secure a steel plate across the top inside of the hopper, to the discharge opening along the side to which the vibrator will be mounted. At about one-quarter or less of the distance from the discharge to the vertical side, cut an opening to allow the vibrator to be bolted to the steel plate.



### Vibrating Feeder and Standard Bin

Mount vibrator on the feeder infeed side of the hopper. Follow mounting instructions for the appropriate bin type on page 12.



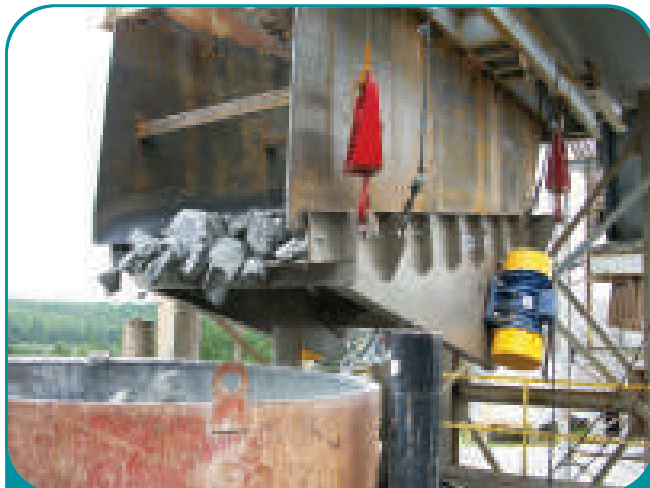
## Syntron® Electric Rotary Vibrators by Visam

**Rugged construction, reliable performance to assure the efficient flow of bulk materials**

Syntron® Electric Rotary Vibrators from Syntron Material Handling provide a safe, reliable, cost-effective way to maintain the flow of materials. Motor-driven to provide virtually noiseless operation (most models 76 db or less\*), these vibrators help facilitate material flow from the smallest bin, hopper or chute to the largest silo, screens, feeders, grizzly feeders, conveyors, fluid beds, shake-outs, helical elevators, etc. Additionally, they are totally enclosed to eliminate concerns over environmental factors such as dust, dirt and rain. Syntron Electric Rotary Vibrators can be used to pack material in drums and bags as well as to consolidate material in pipe and precast industries, in vibrating screen applications and many other industrial environments. High stroke/low frequency models are especially suitable for hard-to-handle materials such as sawdust, cinder or clay content materials.

Syntron Electric Rotary Bin Vibrators also come with the technical expertise of Syntron Material Handling's application staff, who have been providing productive solutions for a wide variety of material handling problems for more than 80 years.

\* At 3 feet (1 meter) on A scale



*Electric Rotary Vibrators in Primary Feeder Application*



### Features and Benefits

- Motor driven for reduced noise level
- High force to weight ratio
- Adjustable eccentric weights allow easy change of force to suit varying applications
- Orbital action facilitates material flow in hopper & chute applications
- Terminal box for easy connection and change of voltage (on 3 phase models) or direction of rotation
- Units sealed to IP66 except the AMV which is IP65
- Rugged, durable construction for many years with safe, reliable performance
- Wide range of sizes to accommodate your specific application
- Class F (Inverter Duty) windings are standard
- All units are tropical duty for high humidity applications / locations
- Standard construction suitable for operation in -22 to +133 degree F ambient temperature locations
- Internal thermal detection is standard on larger units
- Each vibrator fully tested after assembly
- All units are designed for heavy and continuous duty at the maximum centrifugal force
- Wide range with centrifugal forces up to 50,000 lbs



# Selecting the Proper Syntron® Electric Rotary Vibrator for Rotational and Elliptical Applications

## Bins or Hoppers

In order to move material in a bin or hopper, the friction between the material and the bin wall must be broken. Once the friction is broken, the material cannot cling to the sides of the bin and it will flow out through the discharge. For most applications, the vibrator force needed to accomplish this is simply calculated as follows:

- Calculate the weight of the material in the transition or sloping part of the bin. Normally, this is the only place where the friction between the material and the bin side has to be broken. Do not calculate the total weight, only what is in the transition part of the bin.
- For conical bins, calculate as follows:  
 $.261 \times \text{dia.}^2 \times \text{height} \times \text{material density in lb/ft}^3 \text{ (kg/m}^3\text{)}$
- For rectangular bins, calculate as follows:  
 $\text{Length} \times \text{width} \times \text{height} \times 1/3 \times \text{material density.}$

When the weight (lb) has been calculated, divide the weight by 10 to get the force or impact needed from the vibrator (lbf). For example: The conical part of a 25-ton bin contains 7000 lb. Divide 7,000 by 10 to get the force (lbf) or impact needed from the vibrator. Find a suitable vibrator on pages 20 - 29.

Additional considerations when sizing vibrators to bins:

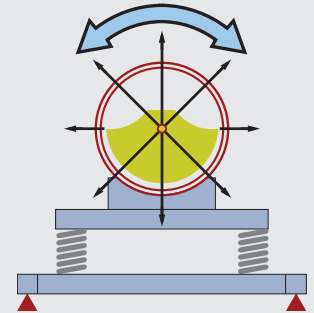
- If the bin side angle is less than 30 degrees, select a larger vibrator.
- If the bin has a vertical section, select a larger vibrator.
- If the bin wall is extra thick select a larger vibrator.
- On very sticky and hard to move materials, it is better to use two small vibrators instead of one large one (size the two smaller ones by dividing the required force in half).

## Vibrating Tables for Packing Materials

Dense materials respond best to high-frequency vibration (3600 rpm or more), while light, fluffy or flaky materials respond best to low-frequency vibration (1800 rpm or less).

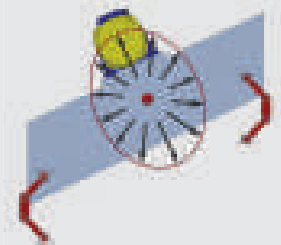
### ROTATIONAL

obtained with  
1 Electric Vibrator



### ELLIPTICAL

obtained with  
1 Electric Vibrator  
(not in center of gravity)



For packing or settling materials, use a vibrator with an impact force of one-and-a-half to two times larger than the weight of the material plus larger container. Find a suitable vibrator in the tables on pages 20 - 29.

## Vibrating Screens

For self-cleaning screen, use a vibrator with a centrifugal force (impact) four times the weight of the material plus the weight of the screen.

Note: Coarse, lumpy, sticky or wet materials respond best to high-frequency vibration; powdery and dry materials to low-frequency vibration.

## Consolidating Concrete

For three-inch “slump” concrete, use a vibrator with the same force (impact) as the weight of concrete and form. For one- to two-inch slump concrete, an additional 30 to 50 percent impact is needed. For dry mixes (zero slump) increase the impact by 100 to 200 percent.

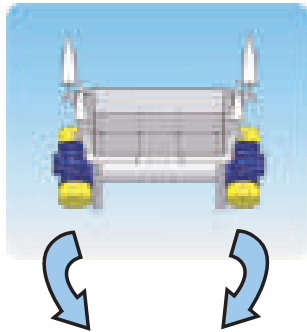
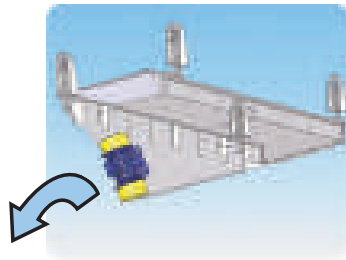
## Chutes

The force required of the vibrator is equal to the weight of the chute plus the vibrator plus the maximum material in the chute. See page 30 for more information.

## Selecting the Proper Electric Rotary Vibrator for Linear Applications

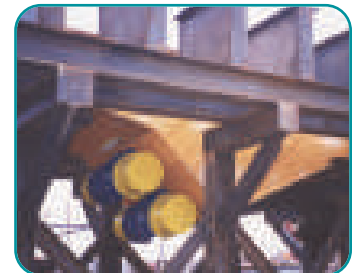
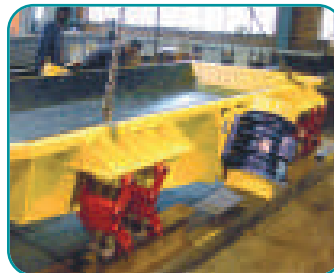
Syntron Material Handling now offers vibrators for a broader range of equipment applications by introducing the Visam product line in combination with the years of experience, service and knowledge of Syntron vibratory products. Our products have been associated with process control in conveying, feeding and screening applications for over 80 years. Markets include:

- Mining
- Steel
- Cement
- Aggregate
- Foundry
- Chemical
- Recycling
- Plastics
- Food
- Packaging



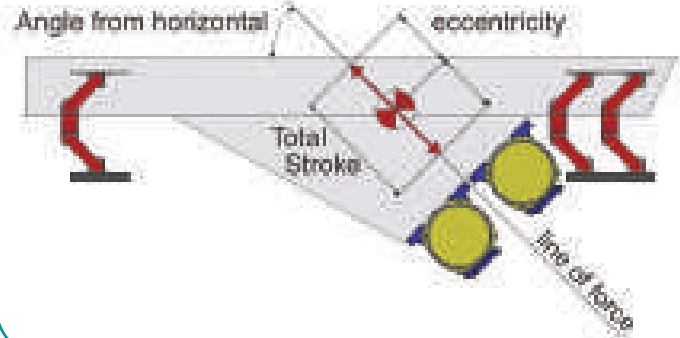
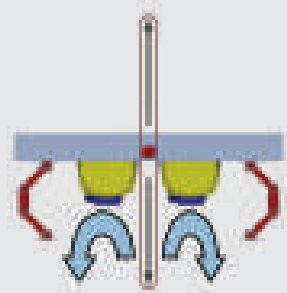
### Custom equipment applications for Linear Vibration include:

- |                      |                        |
|----------------------|------------------------|
| • Horizontal Screens | • Shake Out            |
| • Feeders            | • Fluid Beds           |
| • Grizzly Feeders    | • Purifiers            |
| • Conveyors          | • Spiral Elevator      |
| • Hopper Feeders     | • Separators (milling) |



### LINEAR

obtained with 2 identical Electric Vibrators (opposite rotation)



*Feeder for use in Steel Foundry.*



*Steel Foundry*



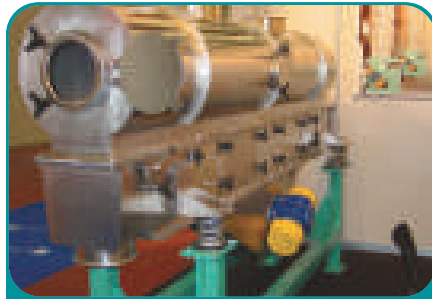
*Steel Foundry*



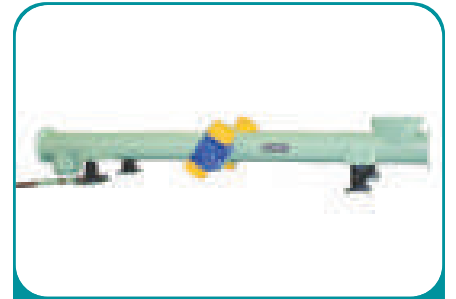
*Steel Foundry*



*Food Industry*



*Food Industry*



*Chemical / Plastic*



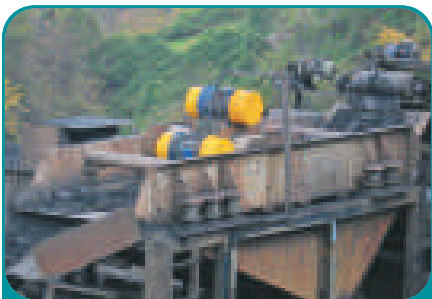
*Mining / Aggregates*



*Mining / Aggregates*



*Mining / Aggregates*



*Mining / Aggregates*



*Cement*



*Ceramic*

## Vibrator Selection Guide

Choosing the right type of vibrator when conveying material

For maximum efficiency proper vibrator **selection** is the key. Selection requires information regarding your process considering the key requirements below:

- Process (such as conveying, screening, hopper feeding, primary feeding, or feeding)
- Particle size of the material
- Line power frequency / Hz (50 or 60)
- Weight of vibrating structure

Process	Typical Speeds (RPM)		Typical Angles Line of Force (°)
	50 Hz	60 Hz	
<b><i>Product of high specific weight and medium/large size (i.e. rock)</i></b>			
Primary Feeding	750 - 1,000	900 - 1,200	30 - 40
Primary Scalping	750 - 1,000	900 - 1,200	30 - 45
<b><i>Product of high specific weight and coarse particles (i.e. gravel)</i></b>			
Primary Screening	1,000 - 1,500	900 - 1,800	30 - 45
Hopper Feeding	1,000 - 1,500	1,200 - 1,800	25 - 30
Feeding	1,000 - 1,500	1,200 - 1,800	25 - 35
<b><i>Product of high specific weight and fine particles (i.e. sand)</i></b>			
Fine Screening	1,500	1,200 - 1,800	30 - 45
Hopper Feeding	1,000 - 1,500	1,200 - 1,800	25 - 35
Feeding	1,000 - 1,500	1,200 - 1,800	25 - 35
Dewatering	1,000 - 1,500	1,200 - 1,800	30 - 50
Fluidizing	750 - 1,000	720 - 900	50 - 80
<b><i>Product of low specific weight and very flexible (i.e. leaves)</i></b>			
Conveying	750 - 1,000	720 - 900	25 - 30
<b><i>Product of low specific weight and coarse particles (i.e. wheat)</i></b>			
Separating	1,000	900 - 1,200	30 - 45

## Basic Formula

### FORMULA

$e = S / 2$	$SM_t = W_t \times e$	$W_t = W_s + W_v$	$a = CF_t / W_t$
$e = SM_t / W_t$	$S = e \times 2$		$CF_t = W_t \times a$

### LEGEND

e	= Eccentricity (in.)
s	= Total Stroke (Peak to Peak) (in.)
a	= Acceleration (Number of G's)
SM <sub>t</sub>	= Total Static Moment (Static Moment of vibrator x number of vibrators) (lb*in)
CF <sub>t</sub>	= Total Centrifugal Force (Centrifugal Force of vibrator x number of vibrators) (lb)
W <sub>t</sub>	= Total Weight of machine (structure + vibrators) (lb)
W <sub>s</sub>	= Weight of isolated structure (lb)
W <sub>v</sub>	= Weight of vibrator (Weight of vibrator x number of vibrators) (lb)
SM <sub>v</sub>	= Static Moment of vibrator (lb*in)

## Speed and Stroke

Hz	POLE	SPEED	MAX STROKE at 5 G'S
50	8	750	.60 in.
60	8	900	.43 in.
50	6	1,000	.35 in.
<b>60</b>	<b>6</b>	<b>1,200</b>	<b>.26 in.</b>
50	4	1,500	.18 in.
60	4	1,800	.12 in.
50	2, AMV	3,000	.05 in.
60	2, AMV	3,600	.04 in.

\* As a general rule it is advisable to limit designs for a maximum of 5 G's of acceleration. In specialized applications or designs it may be acceptable to exceed the 5 G acceleration limit. Consult factory for guidelines.

## Example:

Known information:

Type of process	= quarry primary feeder	Stroke (from table)	= <b>.26</b>
Type of vibration	= linear (2 vibrators)	Speed (from table)	= <b>1,200 RPM</b>
Weight of vibrating structure	= 3,300 lb	Power Supply	= 60 Hz
Estimated vibrator's weight:	= 825 lb (25% of vibrating structure)		

## Vibrator rough selection:

- I. Considering the known information from above use the table on page 18 to determine rough Speed (RPM) needed. (In the example above the RPM range is 900 - **1,200** for a Primary Feeding process at 60Hz.)
- II. Using the Speed and Stroke table above, select the appropriate vibrator pole size based on your Hz and Speed requirements. (In the example above the pole selection is **6** based on 60Hz and 1,200 Speed (RPM).)
- III. Using the formulas below, determine **SM<sub>v</sub>** (Static Moment) required for this application.
  - a.  $e = S / 2$  =  $> .26 / 2$  = .13 in
  - b.  $SM_t = W_t \times e$  =  $> (3300 + 825) \times .13$  = 536
  - c.  $SM_v = SM_t / \text{Number of Vibrators}$  =  $> 536 / 2$  = **268 lb\*in**
- IV. Referencing the charts on pages 20 - 29 the SMH model number selection is **SPV6-14000** based on 6 pole, 60Hz and a Static Moment of 268 or greater. (Actual Static Moment for this vibrator is **319.7**)

## Checking the SMH model selection:

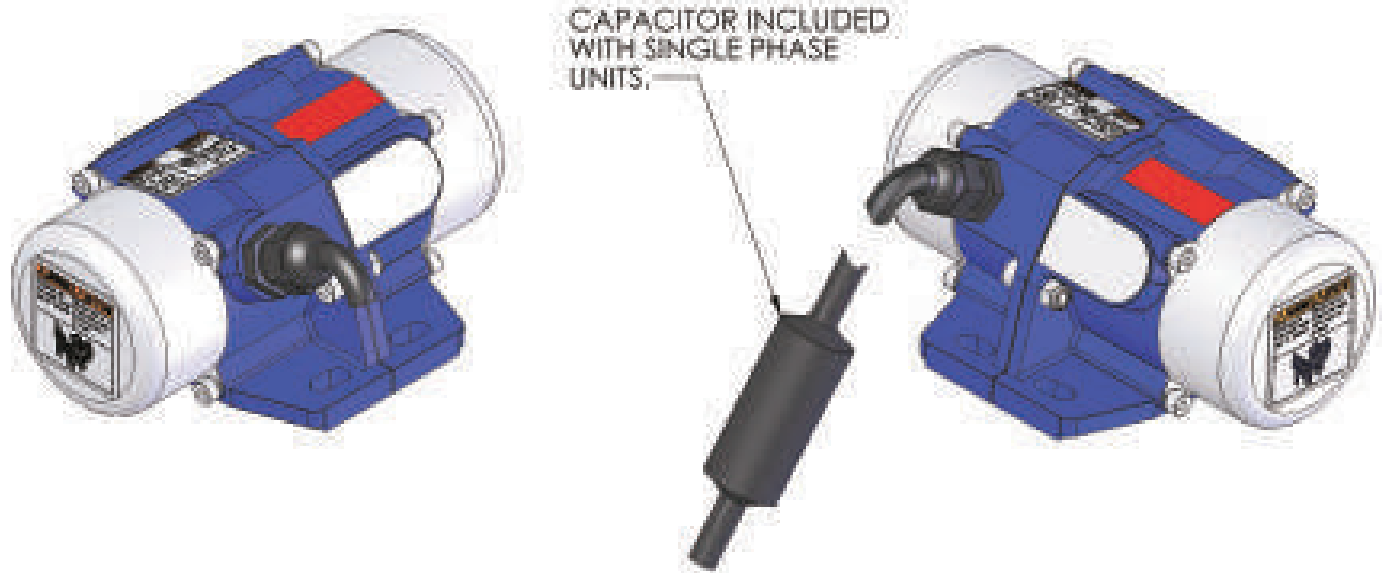
$SM_t = SM_v \times 2$	= <b>319 (actual SM<sub>v</sub> from page 26)</b> x 2	= 638 lb*in
$W_t = W_s + W_v$	= 3300 + ( <b>477 (actual wt from page 26)</b> x 2)	= 4254.0 lb
$e = SM_t / W_t$	= 638 / 4254	= .15 in

\* In the example above by using two SPV6-14000 vibrators, the desired eccentricity 0.13 can be reached with 87% setting of weights (SM<sub>t</sub> 638 x 87% = 555/4254 = .13 in).

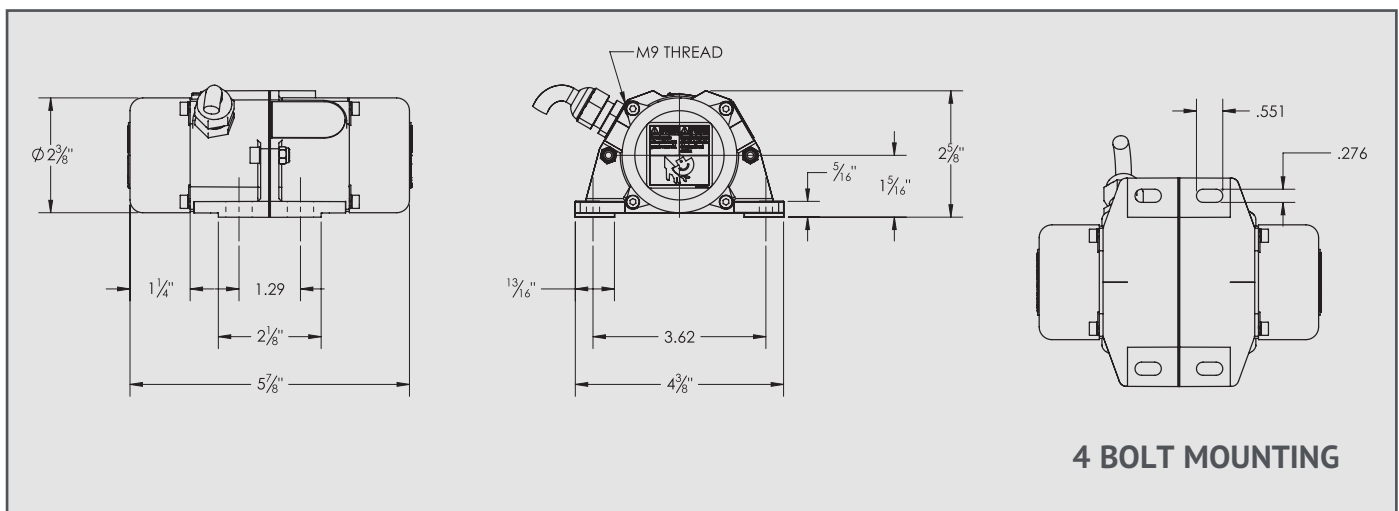
\* If additional adjustments are required, the following larger model SPV6-15000 can be selected, recalculating the eccentricity formula to reach 81% of weight setting.

\* When selecting a vibrator it is always advisable to use approximately 80% of the Static Moment or Centrifugal Force reported in the catalog in order to leave 20% of extra performance available in case on site adjustments are required. According to this assumption all our vibrators are set at 80% before shipment.

## AMV Electric Rotary Vibrator Specifications and Dimensions



SMH Model	SMH Part Number	Description	Weight (lbs)		Centrifugal Force (lbs)		Static Moment (lb*in)		RPM		Amps	
			50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
<b>4 BOLT</b>												
AMV1-70BN	6515-040-BN	110 - 120V 60hz Single Phase	3 3/4	3 3/4	-	68	0.18	0.18	-	3,600	-	0.26
AMV1-70BM	6515-040-BM	220 - 240V 60hz Single Phase	3 3/4	3 3/4	-	68	0.18	0.18	-	3,600	-	0.13
AMV2-70BO	6515-040-BO	440 - 460V 60hz 3-Phase	3 3/4	3 3/4	-	68	0.18	0.18	-	3,600	-	0.07
AMV1-50AM	6515-040-AM	220 - 240V 50hz Single Phase	3 3/4	3 3/4	47	-	0.18	0.18	3,000	-	0.11	-
AMV2-50AQ	6515-040-AQ	380 - 415V 50hz 3-Phase	3 3/4	3 3/4	47	-	0.18	0.18	3,000	-	0.06	-





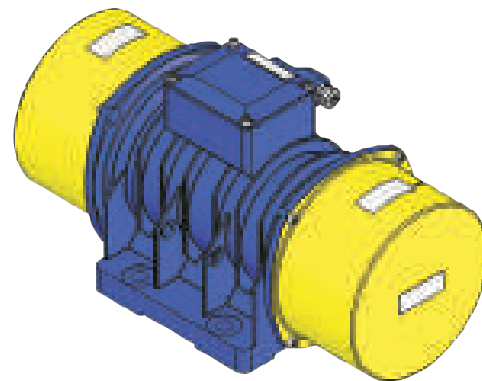
# SPV Electric Rotary Vibrator Specifications and Dimensions

3,000 RPM, 50Hz  
3,600 RPM, 60Hz

2-Pole

\*COMPLETE THE PART NUMBERS / MODEL NUMBERS FOUND IN THE SPECIFICATIONS CHART BY ADDING A POWER INPUT SUFFIX:

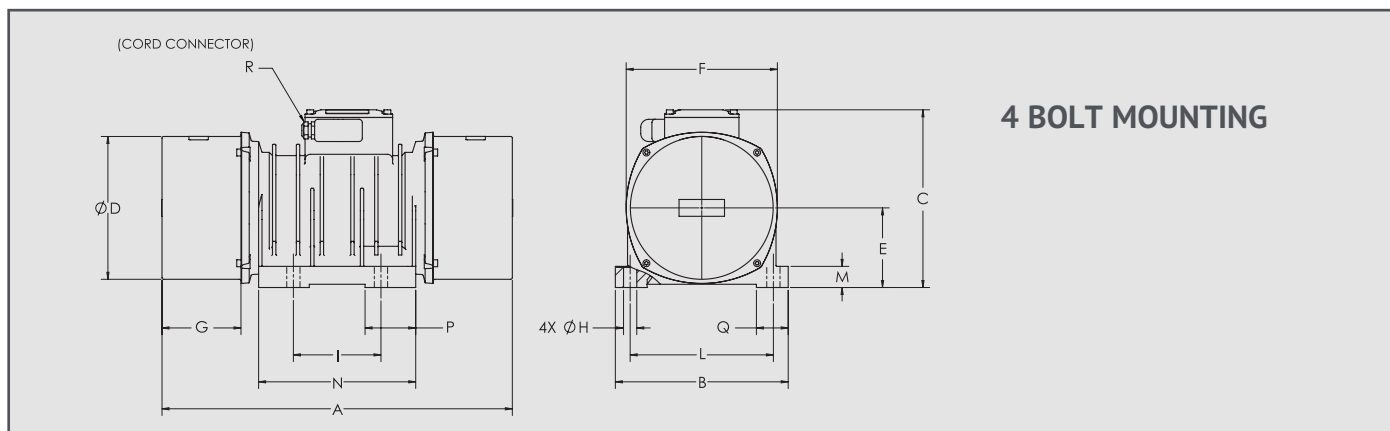
POWER INPUT - SINGLE PHASE VIBRATORS	
Suffix	Description
BN	110 - 120V 60Hz Single Phase
BM	220 - 240V 60Hz Single Phase
AM	220 - 240V 50Hz Single Phase



## Specifications

SPV1 SERIES, 2-POLE SINGLE PHASE	FRAME SIZE	SMH Model	SMH Part Number	Weight (lbs)		Centrifugal Force (lbs)		Static Moment (lb*in)		Max Input Power (kw)		Max Current Amps	
				50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
	4 BOLT											220V	110V
	020	SPV1-300*	6515-031-020*	11	10	276	298	1.1	0.8	0.17	0.18	0.80	1.60
	021	SPV1-500*	6515-031-021*	11	11	483	496	1.9	1.3	0.18	0.19	0.80	1.70
	030	SPV1-700*	6515-031-030*	19	19	741	710	2.9	1.9	0.30	0.33	1.40	3.00
	040	SPV1-1300*	6515-031-040*	34	32	1,091	1,257	4.3	3.4	0.50	0.75	3.10	7.80
	050	SPV1-1900*	6515-031-050*	47	45	1,746	1,887	6.8	5.1	0.65	1.00	5.70	9.60
	060	SPV1-2200*	6515-031-060*	58	56	2,218	2,127	8.7	5.8	1.00	0.90	4.70	8.10
	061	SPV1-2700*	6515-031-061*	62	59	2,956	2,661	11.6	7.2	1.25	1.25	5.90	11.00

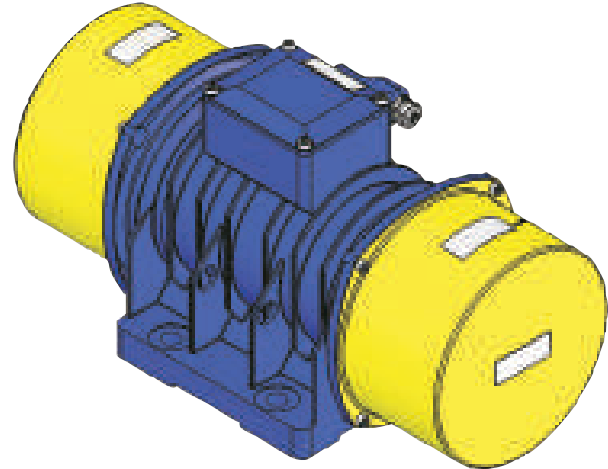
SMH Model	OVERALL REFERENCE DIMENSIONS (inches)														
	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"L"	"M"	"N"	"P"	"Q"	"R"
4 BOLT															
SPV1-300*	9 - 1/4	5 - 7/8	5 - 5/8	4 - 1/8	2 - 7/16	5 - 1/8	1 - 7/8	0.354	2.32 - 2.95	4.17	1/2	3 - 7/8	1 - 3/16	1 - 3/8	M16X1.5
SPV1-500*	9 - 1/4	5 - 7/8	5 - 5/8	4 - 1/8	2 - 7/16	5 - 1/8	1 - 7/8	0.354	2.32 - 2.95	4.17	1/2	3 - 7/8	1 - 3/16	1 - 3/8	M16X1.5
SPV1-700*	10 - 3/8	6 - 5/16	6 - 7/8	4 - 15/16	2 - 13/16	5 - 1/2	1 - 9/16	0.512	3.54	4.92	9/16	5 - 1/4	1 - 5/8	1 - 3/16	M16X1.5
SPV1-1300*	12	7 - 1/2	8 - 1/16	5 - 13/16	3 - 3/8	6 - 7/16	2	0.512	3.94	6.10	11/16	6 - 11/16	1 - 15/16	1 - 1/2	M20X1.5
SPV1-900*	13 - 11/16	8 - 3/8	8 - 7/16	6 - 5/8	3 - 3/4	7 - 1/4	2 - 3/8	0.669	4.53	6.69	13/16	7 - 1/2	2 - 5/16	1 - 3/4	M20X1.5
SPV1-2200*	14 - 13/16	9 - 3/16	9 - 1/4	7 - 3/8	4 - 1/8	7 - 7/8	2 - 11/16	0.669	4.72	7.09	13/16	7 - 9/16	2 - 5/16	1 - 11/16	M20X1.5
SPV1-2700*	14 - 13/16	9 - 3/16	9 - 1/4	7 - 3/8	4 - 1/8	7 - 7/8	2 - 11/16	0.669	4.72	7.09	13/16	7 - 9/16	2 - 5/16	1 - 11/16	M20X1.5



Sizes up to and including SPV1-1300 feature permanently lubricated bearings.  
 Sizes up to and including SPV1-2200 feature an aluminum housing.  
 Sizes up to and including SPV1-1900 and larger use logarithmic roller type bearings.

# Electric Rotary Vibrators

## SPV Electric Rotary Vibrator Specifications and Dimensions



\*COMPLETE THE PART NUMBERS / MODEL NUMBERS FOUND IN THE SPECIFICATIONS CHART BY ADDING A POWER INPUT SUFFIX:

### POWER INPUT - 3 - PHASE VIBRATORS

Suffix	Description
BB	220 - 240/440 - 480V 60Hz 3-Phase
AA	220 - 240/380 - 415V 50Hz 3-Phase
BY	575 - 600V 60Hz 3-Phase

**3,000 RPM, 50Hz**  
**3,600 RPM, 60Hz**

**2-Pole**

### Specifications

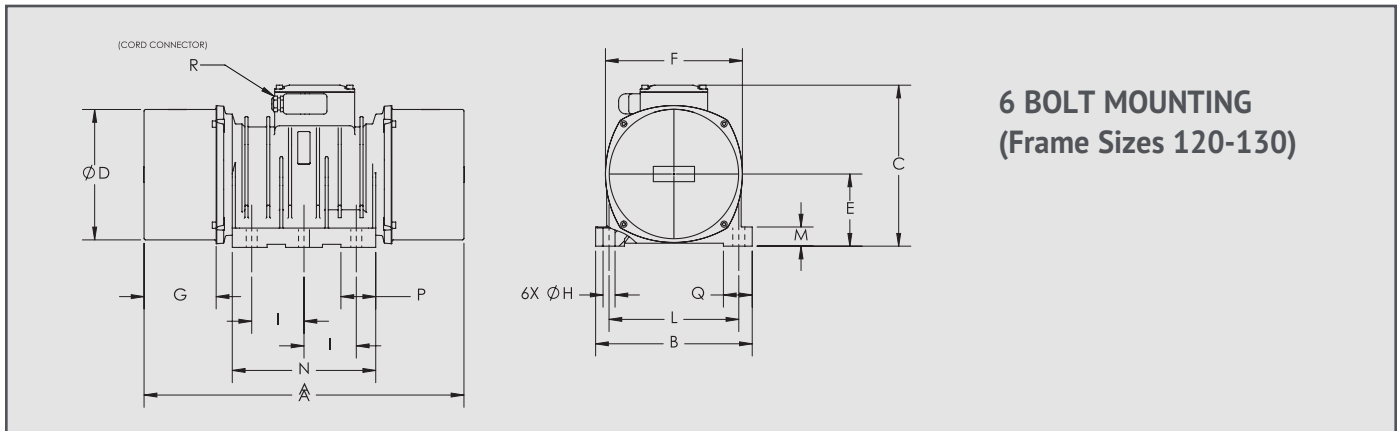
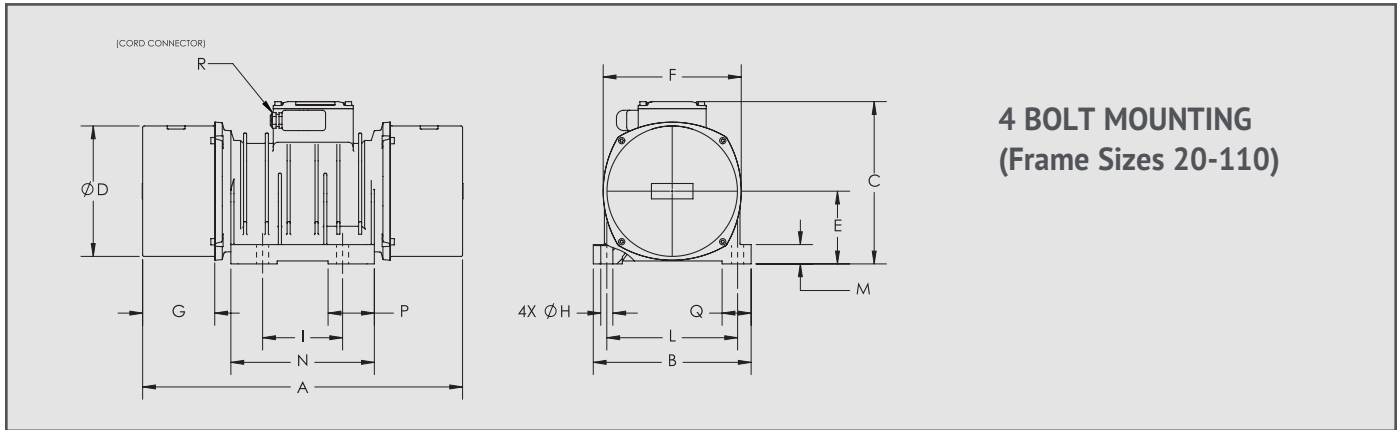
SPV2 SERIES, 2-POLE 3-PHASE	FRAME SIZE	SMH Model	SMH Part Number	Weight (lbs)		Centrifugal Force (lbs)		Static Moment (lb*in)		Max Input Power (kw)		Max Current Amps	
				50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
	<b>4 BOLT</b>											400V	460V
	020	SPV2-300*	6515-032-020*	11	10	276	298	1.1	0.8	0.18	0.20	0.40	0.30
	021	SPV2-500*	6515-032-021*	11	11	483	496	1.9	1.3	0.19	0.21	0.40	0.40
	030	SPV2-700*	6515-032-030*	19	19	741	710	2.9	1.9	0.28	0.30	0.60	0.60
	040	SPV2-1300*	6515-032-040*	34	32	1,091	1,257	4.3	3.4	0.51	0.60	1.00	1.00
	050	SPV2-1900*	6515-032-050*	47	45	1,746	1,887	6.8	5.1	0.70	0.73	1.20	1.10
	060	SPV2-2200*	6515-032-060*	58	56	2,218	2,127	8.7	5.8	1.06	1.20	1.80	1.80
	061	SPV2-2700*	6515-032-061*	62	59	2,956	2,661	11.6	7.2	1.30	1.40	2.10	2.00
	070	SPV2-4300*	6515-032-070*	100	95	4,065	4,257	15.9	11.6	1.55	1.60	2.70	2.80
	080	SPX2-4900*	6515-032-080*	97	93	4,410	4,851	17.3	13.2	1.70	1.80	2.80	2.50
	090	SPX2-6400*	6515-032-090*	120	116	5,954	6,395	23.3	17.4	2.00	2.20	3.20	3.20
	100	SPV2-11000*	6515-032-100*	236	233	8,971	10,860	35.1	29.5	4.00	4.20	6.30	6.00
	110	SPV2-13000*	6515-032-110*	338	333	12,432	12,527	48.6	34.0	5.50	5.80	8.60	7.90
	FRAME SIZE	SMH Model	SMH Part Number	Weight (lbs)		Centrifugal Force (lbs)		Static Moment (lb*in)		Max Input Power (kw)		Max Current Amps	
				50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
	<b>6 BOLT</b>											400V	460V
	120	SPV2-15000*	6515-032-120*	395	386	15,051	14,334	58.9	39.0	7.00	7.30	11.20	10.20
	129	SPV2-18000*	6515-032-129*	497	490	17,170	17,562	67.2	47.7	7.90	8.60	13.50	12.00
	130	SPV2-21000*	6515-032-130*	545	536	21,089	20,779	82.5	56.5	8.00	9.50	13.00	13.50

Sizes up to and including SPV2-1300 feature permanently lubricated bearings.

Sizes up to and including SPV2-2200 feature an aluminum housing.

Sizes SPX2-4900 and larger feature cast iron housing.

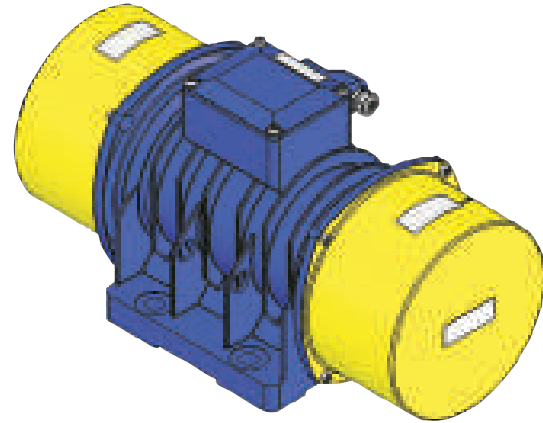
Sizes SPV2-1900 and larger feature logarithmic roller type bearings.



OVERALL REFERENCE DIMENSIONS (inches)														
"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"L"	"M"	"N"	"P"	"Q"	"R"
<b>4 BOLT</b>														
8 - 3/8	5 - 7/8	5 - 5/8	4 - 1/8	2 - 7/16	5 - 1/8	1 - 13/16	0.354	2.44 - 2.91	4.17	1/2	3 - 7/8	1 - 3/16	1 - 3/8	M16X1.5
9 - 1/4	5 - 7/8	5 - 5/8	4 - 1/8	2 - 7/16	5 - 1/8	1 - 13/16	0.354	2.44 - 2.91	4.17	1/2	3 - 7/8	1 - 3/16	1 - 3/8	M16X1.5
13 - 1/8	6 - 5/16	6 - 7/8	4 - 15/16	2 - 13/16	5 - 1/2	1 - 9/16	0.512	3.54	4.92	9/16	5 - 1/4	1 - 5/8	1 - 3/16	M16X1.5
12	7 - 1/2	8 - 1/16	5 - 13/16	3 - 3/8	6 - 7/16	2	0.512	3.94	6.10	11/16	6 - 11/16	1 - 15/16	1 - 1/2	M20X1.5
13 - 11/16	8 - 3/8	8 - 7/16	6 - 5/8	3 - 3/4	7 - 1/4	2 - 3/8	0.669	4.53	6.69	13/16	7 - 1/2	2 - 5/16	1 - 3/4	M20X1.5
14 - 13/16	9 - 3/16	9 - 1/4	7 - 3/8	4 - 1/8	7 - 7/8	2 - 11/16	0.669	4.72	7.09	13/16	7 - 9/16	2 - 5/16	1 - 11/16	M20X1.5
14 - 13/16	9 - 3/16	9 - 1/4	7 - 3/8	4 - 1/8	7 - 7/8	2 - 11/16	0.669	4.72	7.09	13/16	7 - 9/16	2 - 5/16	1 - 11/16	M20X1.5
16 - 5/16	9 - 5/8	9 - 3/4	7 - 7/8	4 - 7/16	8 - 7/16	3 - 1/4	0.669	5.91	7.48	1	8 - 1/4	2 - 1/16	1 - 15/16	M20X1.5
16 - 1/8	11	10 - 3/16	8 - 3/8	4 - 5/8	8 - 15/16	2 - 7/8	0.669	6.30	7.87	1 - 3/16	10	3 - 3/8	3	M20X1.5
20 - 3/16	11 - 13/16	11	9 - 5/16	5 - 3/16	10 - 1/16	4 - 1/8	0.866	6.50	9.06	1 - 3/8	11 - 11/16	4 - 5/16	2 - 13/16	M20X1.5
22 - 3/4	13 - 1/4	13 - 3/8	10 - 5/8	5 - 7/8	11 - 1/4	4 - 5/16	0.984	6.50	10.63	1 - 9/16	11 - 1/8	3 - 1/2	2 - 3/8	M25X1.5
24 - 1/2	14 - 1/4	14 - 3/8	12 - 1/8	6 - 9/16	12 - 11/16	4 - 9/16	1.142	8.27	11.61	1 - 9/16	12	3 - 7/16	2 - 1/2	M25X1.5
OVERALL REFERENCE DIMENSIONS (inches)														
"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"L"	"M"	"N"	"P"	"Q"	"R"
<b>6 BOLT</b>														
26 - 3/16	15 - 3/8	15 - 7/16	13 - 9/16	7 - 9/16	15 - 9/16	4 - 7/8	1.142	4.33	12.20	1 - 9/16	12 - 15/16	3 - 11/16	3 - 3/16	M25X1.5
27 - 5/16	15 - 3/8	16 - 11/16	13 - 9/16	8	15 - 9/16	4 - 7/8	1.142	4.53	12.60	1 - 3/4	13 - 11/16	3 - 7/8	2 - 5/8	M25X1.5
28 - 5/16	15 - 3/8	16 - 11/16	13 - 9/16	8	15 - 9/16	4 - 7/8	1.142	4.53	12.60	1 - 3/4	13 - 11/16	3 - 7/8	2 - 5/8	M25X1.5

# Electric Rotary Vibrators

## SPV Electric Rotary Vibrator Specifications and Dimensions



1,500 RPM, 50Hz  
1,800 RPM, 60Hz

4-Pole

\*COMPLETE THE PART NUMBERS / MODEL NUMBERS FOUND IN THE SPECIFICATIONS CHART BY ADDING A POWER INPUT SUFFIX:

### POWER INPUT - 3-PHASE VIBRATORS

Suffix	Description
BB	220 - 240/440 - 480V 60Hz 3-Phase
AA	220 - 240/380 - 415V 50Hz 3-Phase
BY	575 - 600V 60Hz 3-Phase

### Specifications

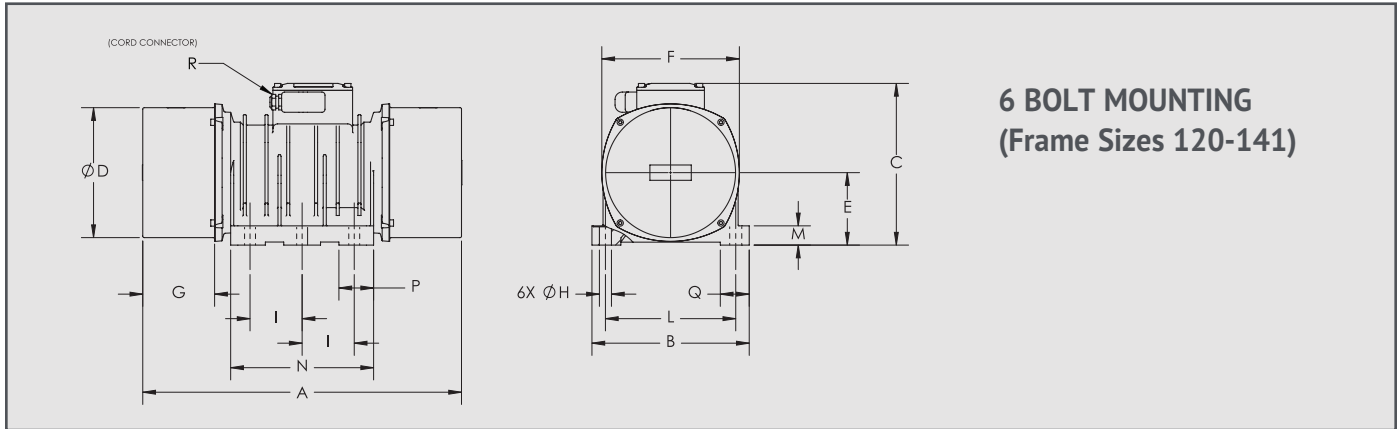
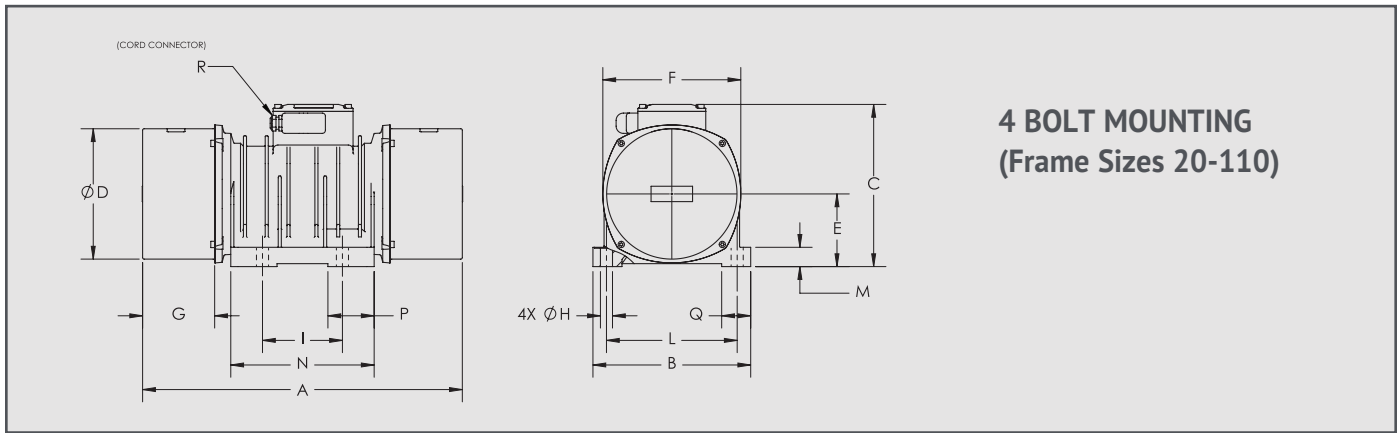
	FRAME SIZE	SMH Model	SMH Part Number	Weight (lbs)		Centrifugal Force (lbs)		Static Moment (lb*in)		Max Input Power (kw)		Max Current Amps		
				50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	
SPV4 SERIES, 4-POLE 3-PHASE	<b>4 BOLT</b>												400V	460V
	020	SPV4-150*	6515-034-020*	12	12	121	148	1.9	1.6	0.09	0.10	0.30	0.20	
	021	SPV4-200*	6515-034-021*	13	13	190	198	3.0	2.2	0.10	0.15	0.30	0.30	
	030	SPV4-600*	6515-034-030*	24	21	586	578	9.2	6.3	0.20	0.22	0.50	0.40	
	040	SPV4-1000*	6515-034-040*	45	40	963	959	15.1	10.4	0.35	0.42	0.70	0.70	
	041	SPV4-1400*	6515-034-041*	51	46	1,314	1,389	20.6	15.1	0.43	0.50	0.80	0.80	
	050	SPV4-1600*	6515-034-050*	59	52	1,653	1,587	25.9	17.2	0.55	0.63	0.90	0.90	
	060	SPV4-2500*	6515-034-060*	81	72	2,487	2,460	38.9	26.7	1.00	1.10	1.90	1.60	
	070	SPV4-4000*	6515-034-070*	125	117	3,732	3,979	58.4	43.2	1.20	1.35	2.20	1.90	
	080	SPX4-4400*	6515-034-080*	126	113	4,631	4,410	72.5	47.9	0.95	1.10	1.70	1.60	
	090	SPX4-6200*	6515-034-090*	154	149	6,064	6,174	94.9	67.0	1.40	1.65	2.80	2.80	
100	SPV4-9300*	6515-034-100*	279	262	8,706	9,281	136.3	100.9	2.40	2.60	4.90	4.90		
110	SPV4-13000*	6515-034-110*	366	355	11,658	12,427	182.5	100.4	3.50	3.80	5.80	5.60		
	<b>6 BOLT</b>												400V	460V
	120	SPV4-14000*	6515-034-120*	437	424	12,758	13,808	199.7	150.1	4.50	5.00	7.40	7.00	
	129	SPV4-16000*	6515-034-129*	534	505	15,510	15,668	242.8	170.3	6.10	6.25	10.00	9.60	
	130	SPV4-19000*	6515-034-130*	585	554	18,755	18,874	293.6	205.2	7.10	7.30	11.90	11.00	
	140	SPV4-22000*	6515-034-140*	693	657	21,129	21,343	330.7	232.0	7.80	8.40	12.40	12.00	
	141	SPV4-29000*	6515-034-141*	732	693	27,287	28,576	427.1	310.6	10.70	11.10	17.60	17.00	

Sizes up to and including SPV4-1000 feature permanently lubricated bearings.

Sizes up to and including SPV4-2500 feature an aluminum housing.

Sizes SPX4-4400 and larger feature cast iron housing.

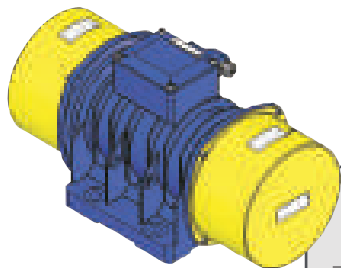
Sizes SPV4-1400 and larger feature logarithmic roller type bearings.



OVERALL REFERENCE DIMENSIONS (inches)														
"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"L"	"M"	"N"	"P"	"Q"	"R"
<b>4 BOLT</b>														
8 - 3/8	5 - 7/8	5 - 5/8	4 - 1/8	2 - 7/16	5 - 1/8	1 - 13/16	0.354	2.44 - 2.91	4.17	1/2	3 - 7/8	1 - 3/16	1 - 3/8	M16X1.5
9 - 1/4	5 - 7/8	5 - 5/8	4 - 1/8	2 - 7/16	5 - 1/8	2 - 5/16	0.354	2.44 - 2.91	4.17	1/2	3 - 7/8	1 - 3/16	1 - 3/8	M16X1.5
13 - 1/8	6 - 5/16	6 - 7/8	4 - 15/16	2 - 13/16	5 - 1/2	2 - 11/16	0.512	3.54	4.92	9/16	5 - 1/4	1 - 5/8	1 - 3/16	M16X1.5
14 - 15/16	7 - 1/2	8 - 1/16	5 - 13/16	3 - 3/8	6 - 7/16	3 - 7/16	0.512	3.94	6.10	11/16	6 - 11/16	1 - 15/16	1 - 1/2	M20X1.5
16 - 3/8	7 - 1/2	8 - 1/16	5 - 13/16	3 - 3/8	6 - 7/16	4 - 3/16	0.512	3.94	6.10	11/16	6 - 11/16	1 - 15/16	1 - 1/2	M20X1.5
15 - 3/4	8 - 3/8	8 - 7/16	6 - 5/8	3 - 3/4	7 - 1/4	3 - 3/8	0.669	4.53	6.69	13/16	7 - 1/2	2 - 5/16	1 - 3/4	M20X1.5
17 - 5/16	9 - 3/16	9 - 1/4	7 - 3/8	4 - 1/8	7 - 7/8	3 - 15/16	0.669	4.72	7.09	13/16	7 - 9/16	2 - 5/16	1 - 11/16	M20X1.5
16 - 5/8	9 - 5/8	9 - 3/4	7 - 7/8	4 - 7/16	8 - 7/16	4 - 5/16	0.669	5.91	7.48	1	8 - 1/4	2 - 1/16	1 - 15/16	M20X1.5
19 - 1/8	11	10 - 3/16	8 - 3/8	4 - 5/8	8 - 15/16	4 - 3/8	0.669	6.30	7.87	1 - 3/16	10	3 - 3/8	3	M20X1.5
20 - 3/16	11 - 13/16	11	9 - 5/16	5 - 3/16	10 - 1/16	4 - 1/8	0.866	6.50	9.06	1 - 3/8	11 - 11/16	4 - 5/16	2 - 13/16	M20X1.5
22 - 3/4	13 - 1/4	13 - 3/8	10 - 5/8	5 - 7/8	11 - 1/4	4 - 5/16	0.984	6.50	10.63	1 - 9/16	11 - 1/8	3 - 1/2	2 - 3/8	M25X1.5
24 - 1/2	14 - 1/4	14 - 3/8	12 - 1/8	6 - 9/16	12 - 11/16	4 - 9/16	1.142	8.27	11.61	1 - 9/16	12	3 - 7/16	2 - 1/2	M25X1.5
<b>OVERALL REFERENCE DIMENSIONS (inches)</b>														
"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"L"	"M"	"N"	"P"	"Q"	"R"
<b>6 BOLT</b>														
26 - 3/16	15 - 3/8	15 - 7/16	13 - 9/16	7 - 9/16	15 - 9/16	4 - 7/8	1.142	4.33	12.20	1 - 9/16	12 - 15/16	3 - 11/16	3 - 3/16	M25X1.5
27 - 5/16	15 - 3/8	16 - 11/16	13 - 9/16	7 - 9/16	15 - 9/16	4 - 7/8	1.142	4.53	12.60	1 - 3/4	13 - 11/16	3 - 7/8	2 - 5/8	M25X1.5
28 - 5/16	15 - 3/8	16 - 11/16	13 - 9/16	7 - 9/16	15 - 9/16	4 - 7/8	1.142	4.53	12.60	1 - 3/4	13 - 11/16	3 - 7/8	2 - 5/8	M25X1.5
28 - 13/16	17 - 15/16	17 - 15/16	16 - 1/8	8 - 7/8	18 - 1/8	4 - 5/8	1.260	5.12	14.96	1 - 15/16	14 - 15/16	4 - 5/8	3 - 9/16	M25X1.5
29 - 1/16	17 - 15/16	17 - 15/16	16 - 1/8	8 - 7/8	18 - 1/8	4 - 5/8	1.260	5.12	14.96	1 - 15/16	14 - 15/16	4 - 5/8	3 - 9/16	M25X1.5

# Electric Rotary Vibrators

## SPV Electric Rotary Vibrator Specifications and Dimensions



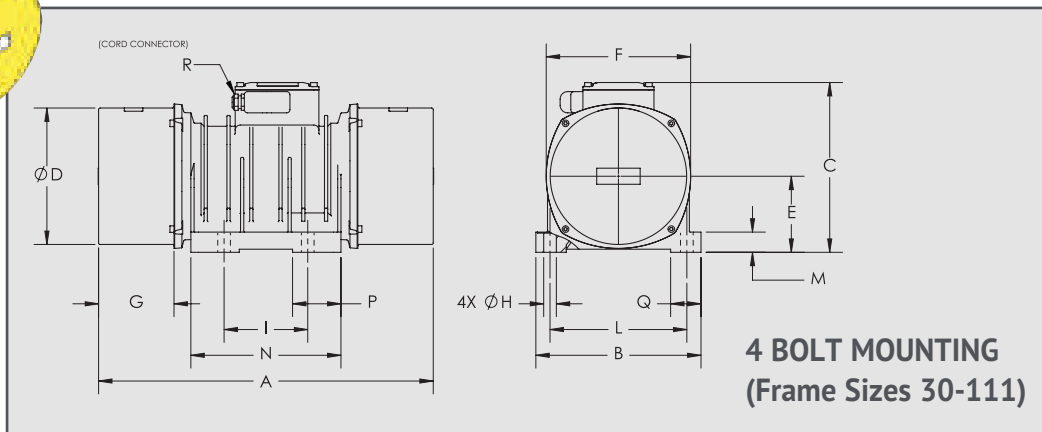
1,000 RPM, 50Hz  
1,200 RPM, 60Hz

6-Pole

\*COMPLETE THE PART NUMBERS / MODEL NUMBERS FOUND IN THE SPECIFICATIONS CHART BY ADDING A POWER INPUT SUFFIX:

### POWER INPUT - 3-PHASE VIBRATORS

Suffix	Description
BK	220 - 240/440 - 480V 60Hz 3-Phase
AA	220 - 240/380 - 415V 50Hz 3-Phase
BY	575 - 600V 60Hz 3-Phase



### Specifications

FRAME SIZE	SMH Model	SMH Part Number	Weight (lbs)		Centrifugal Force (lbs)		Static Moment (lb*in)		Max Input Power (kw)		Max Current Amps	
			50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
<b>4 BOLT</b>												
030	SPV6-400*	6515-036-030*	24	24	260	375	9.2	9.2	0.15	0.17	0.40	0.40
040	SPV6-600*	6515-036-040*	45	45	428	617	15.1	15.1	0.28	0.35	0.70	0.80
041	SPV6-850*	6515-036-041*	50	50	584	842	20.6	20.6	0.30	0.38	0.70	0.80
050	SPV6-1100*	6515-036-050*	64	58	979	1,058	34.5	25.9	0.35	0.50	0.90	1.00
060	SPV6-1600*	6515-036-060*	88	83	1,270	1,592	44.8	38.9	0.80	0.90	1.50	1.50
070	SPV6-2400*	6515-036-070*	133	123	2,090	2,388	73.6	58.4	0.90	1.00	1.80	1.70
080	SPX6-3000*	6515-036-080*	138	125	2,756	2,977	97.1	72.8	0.85	0.95	2.00	1.90
090	SPX6-3900*	6515-036-090*	183	159	4,079	3,859	143.6	94.4	1.15	1.30	2.40	2.50
100	SPV6-7600*	6515-036-100*	333	305	6,753	7,546	237.8	184.6	2.27	2.35	5.00	4.50
110	SPV6-9300*	6515-036-110*	417	382	8,752	9,242	308.2	226.0	2.70	3.00	5.80	5.50
111	SPV6-11000*	6515-036-111*	455	408	10,419	10,441	366.9	255.4	3.30	3.50	6.80	6.20
FRAME SIZE	SMH Model	SMH Part Number	Weight (lbs)		Centrifugal Force (lbs)		Static Moment (lb*in)		Max Input Power (kw)		Max Current Amps	
<b>6 BOLT</b>												
120	SPV6-14000*	6515-036-120*	521	477	12,613	13,069	444.2	319.7	4.00	4.20	7.10	6.80
129	SPV6-15000*	6515-036-129*	649	587	14,905	14,705	525.0	359.6	5.30	6.20	9.50	10.00
130	SPV6-20000*	6515-036-130*	750	673	19,484	19,656	686.2	480.8	7.60	8.20	13.00	13.00
140	SPV6-23000*	6515-036-140*	849	768	22,511	22,207	792.8	543.1	8.00	8.60	13.40	13.80
141	SPV6-27000*	6515-036-141*	926	816	28,133	26,733	990.8	653.8	9.80	10.80	16.00	17.00
142	SPV6-30000*	6515-036-142*	953	845	30,047	29,489	1,058	721	10.20	11.00	17.00	17.50
150	SPV6-35000*	6515-036-150*	1,169	1,070	33,940	34,604	1,195	846	11.50	12.50	19.80	18.50
151	SPV6-39000*	6515-036-151*	1,279	1,151	39,009	38,283	1,374	936	13.80	15.00	24.00	23.50
FRAME SIZE	SMH Model	SMH Part Number	Weight (lbs)		Centrifugal Force (lbs)		Static Moment (lb*in)		Max Input Power (kw)		Max Current Amps	
<b>8 BOLT</b>												
171	SPV6-43000*	6515-036-171*	1,995	1,907	50,296	42,827	1,771	1,047	19.00	20.50	32.40	31.40

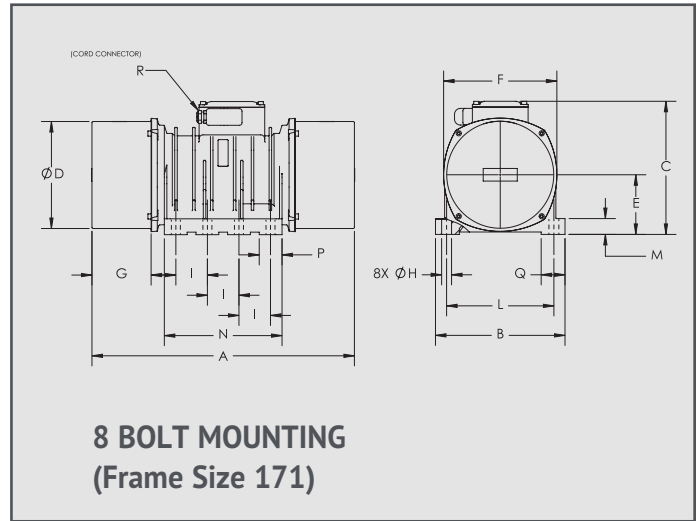
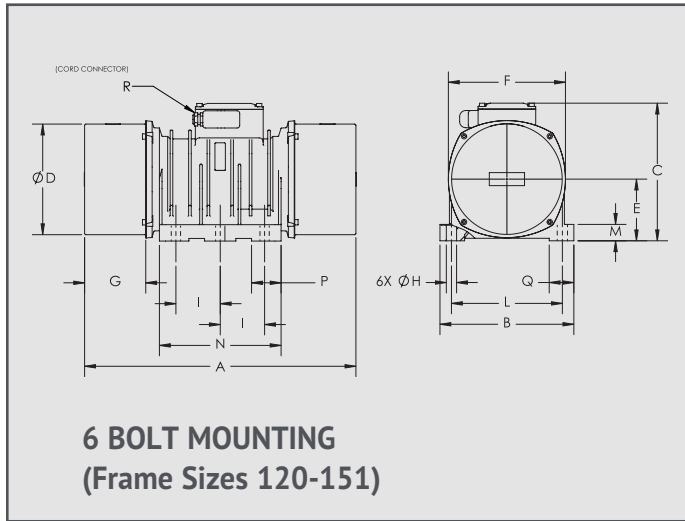


Sizes up to and including SPV6-600 feature permanently lubricated bearings.

Sizes up to and including SPV6-1600 feature an aluminum housing.

Sizes SPX6-3000 and larger feature cast iron housing.

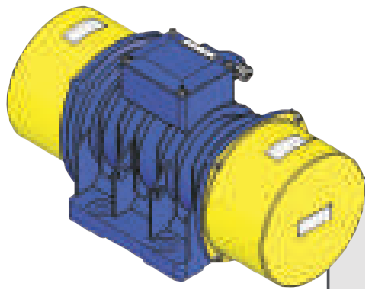
Sizes SPV6-850 and larger feature logarithmic roller type bearings.



OVERALL REFERENCE DIMENSIONS (inches)														
"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"L"	"M"	"N"	"P"	"Q"	"R"
<b>4 BOLT</b>														
13 - 1/8	6 - 5/16	6 - 7/8	4 - 15/16	2 - 13/16	5 - 1/2	3 - 3/8	0.512	3.54	4.92	9/16	5 - 1/4	1 - 5/8	1 - 3/16	M16X1.5
14 - 15/16	7 - 1/2	8 - 1/16	5 - 13/16	3 - 3/8	6 - 7/16	3 - 7/16	0.512	3.94	6.10	11/16	6 - 11/16	1 - 15/16	1 - 1/2	M20X1.5
16 - 3/8	7 - 1/2	8 - 1/16	5 - 13/16	3 - 3/8	6 - 7/16	4 - 3/16	0.512	3.94	6.10	11/16	6 - 11/16	1 - 15/16	1 - 1/2	M20X1.5
17 - 1/4	8 - 3/8	8 - 7/16	6 - 5/8	3 - 3/4	7 - 1/4	4 - 1/8	0.669	4.53	6.69	13/16	7 - 1/2	2 - 5/16	1 - 3/4	M20X1.5
18 - 1/4	9 - 3/16	9 - 1/4	7 - 3/8	4 - 1/8	7 - 7/8	4 - 7/16	0.669	4.72	7.09	13/16	7 - 9/16	2 - 5/16	1 - 11/16	M20X1.5
20 - 1/16	9 - 5/8	9 - 3/4	7 - 7/8	4 - 7/16	8 - 7/16	5 - 1/16	0.669	5.91	7.48	1	8 - 1/4	2 - 1/16	1 - 15/16	M20X1.5
19 - 1/8	11	10 - 3/16	8 - 3/8	4 - 5/8	8 - 15/16	4 - 3/8	0.669	6.30	7.87	1 - 3/16	10	3 - 3/8	3	M20X1.5
20 - 3/16	11 - 13/16	11	9 - 5/16	5 - 3/16	10 - 1/16	4 - 1/8	0.866	6.50	9.06	1 - 3/8	11 - 11/16	4 - 5/16	2 - 13/16	M20X1.5
26 - 9/16	13 - 1/4	13 - 3/8	10 - 5/8	5 - 7/8	11 - 1/4	6 - 1/4	0.984	6.50	10.63	1 - 9/16	11 - 1/8	3 - 1/2	2 - 3/8	M25X1.5
27 - 13/16	14 - 1/4	14 - 3/8	12 - 1/8	6 - 9/16	12 - 11/16	6 - 1/4	1.142	8.27	11.61	1 - 9/16	12	3 - 7/16	2 - 1/2	M25X1.5
27 - 13/16	14 - 1/4	14 - 3/8	12 - 1/8	6 - 9/16	12 - 11/16	6 - 1/4	1.142	8.27	11.61	1 - 9/16	12	3 - 7/16	2 - 1/2	M25X1.5
<b>OVERALL REFERENCE DIMENSIONS (inches)</b>														
"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"L"	"M"	"N"	"P"	"Q"	"R"
<b>6 BOLT</b>														
29 - 5/16	15 - 3/8	15 - 7/16	13 - 9/16	7 - 9/16	15 - 9/16	6 - 7/16	1.142	4.33	12.20	1 - 9/16	12 - 15/16	3 - 11/16	3 - 3/16	M25X1.5
30 - 1/2	15 - 3/8	16 - 11/16	13 - 9/16	7 - 9/16	15 - 9/16	6 - 7/16	1.142	4.53	12.60	1 - 3/4	13 - 11/16	3 - 7/8	2 - 5/8	M25X1.5
34 - 5/8	15 - 3/8	16 - 11/16	13 - 9/16	7 - 9/16	15 - 9/16	8 - 1/16	1.142	4.53	12.60	1 - 3/4	13 - 11/16	3 - 7/8	2 - 5/8	M25X1.5
35 - 11/16	17 - 15/16	17 - 15/16	16 - 1/8	8 - 7/8	18 - 1/8	8 - 1/16	1.260	5.12	14.96	1 - 15/16	14 - 15/16	4 - 5/8	3 - 9/16	M25X1.5
38 - 11/16	17 - 15/16	17 - 15/16	16 - 1/8	8 - 7/8	18 - 1/8	8 - 1/16	1.260	5.12	14.96	1 - 15/16	14 - 15/16	4 - 5/8	3 - 9/16	M25X1.5
38 - 11/16	17 - 15/16	17 - 15/16	16 - 1/8	8 - 7/8	18 - 1/8	8 - 1/16	1.260	5.12	14.96	1 - 15/16	14 - 15/16	4 - 5/8	3 - 9/16	M25X1.5
38 - 11/16	19 - 5/16	19 - 1/2	17 - 11/16	9 - 5/8	19 - 11/16	7 - 1/2	1.496	6.10	15.75	1 - 15/16	17 - 15/16	5 - 5/8	3 - 9/16	M32X1.5
40 - 15/16	19 - 5/16	19 - 1/2	17 - 11/16	9 - 5/8	19 - 11/16	8 - 7/16	1.496	6.10	15.75	1 - 15/16	17 - 15/16	5 - 5/8	3 - 9/16	M32X1.5
<b>OVERALL REFERENCE DIMENSIONS (inches)</b>														
"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"L"	"M"	"N"	"P"	"Q"	"R"
<b>8 BOLT</b>														
44 - 1/8	24 - 7/16	24	21 - 9/16	11 - 13/16	23 - 5/8	9 - 1/16	1.142	4.33	12.20	1 - 9/16	12 - 15/16	3 - 11/16	3 - 3/16	M25X1.5

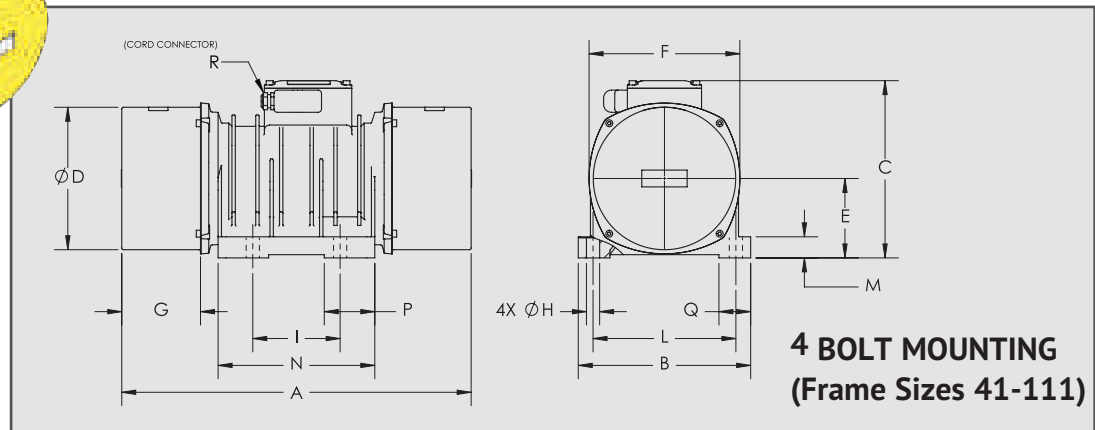
# Electric Rotary Vibrators

## SPV Electric Rotary Vibrator Specifications and Dimensions



750 RPM, 50Hz  
900 RPM, 60Hz

8-Pole



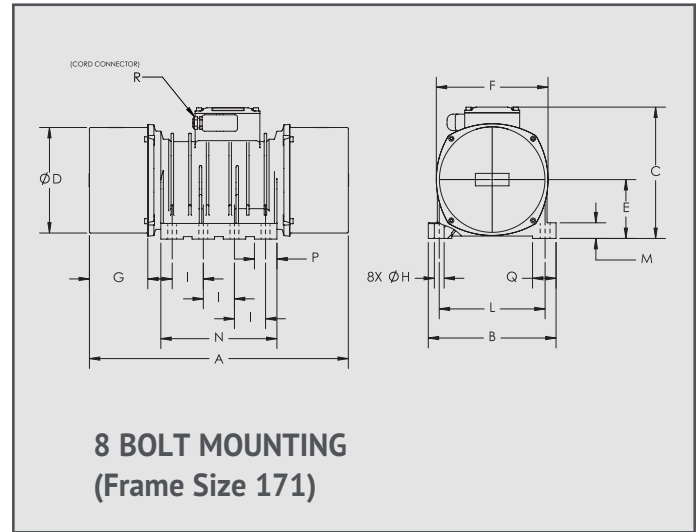
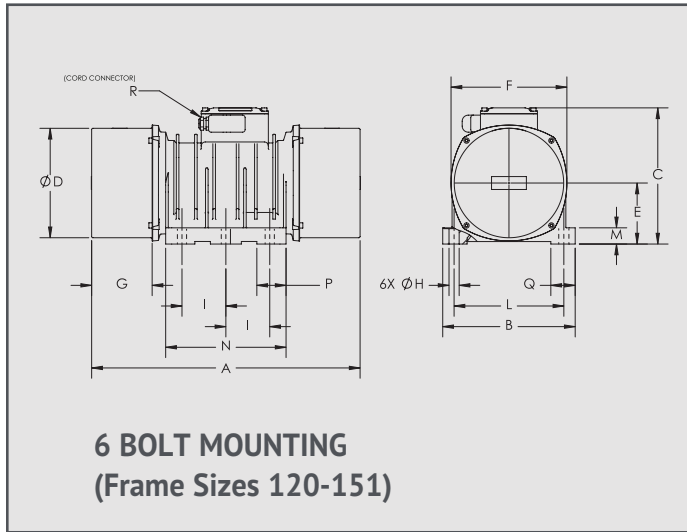
\*COMPLETE THE PART NUMBERS / MODEL NUMBERS FOUND IN THE SPECIFICATIONS CHART BY ADDING A POWER INPUT SUFFIX:

POWER INPUT - 3-PHASE VIBRATORS	
Suffix	Description
BK	220 - 240/440 - 480V 60Hz 3-Phase
AA	220 - 240/380 - 415V 50Hz 3-Phase
BY	575 - 600V 60Hz 3-Phase

### Specifications

	FRAME SIZE	SMH Model	SMH Part Number	Weight (lbs)		Centrifugal Force (lbs)		Static Moment (lb*in)		Max Input Power (kw)		Max Current Amps		
				50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	
SPV8 SERIES, 8-POLE 3-PHASE	<b>4 BOLT</b>											400V	460V	
	041	SPV8-500*	6515-038-041*	50	50	328	474	20.6	20.6	0.28	0.32	0.90	0.80	
	050	SPV8-800*	6515-038-050*	64	64	551	794	34.5	34.5	0.45	0.44	1.20	1.10	
	060	SPV8-1100*	6515-038-060*	88	88	714	1,030	44.8	44.8	0.55	0.72	1.50	1.70	
	070	SPV8-1700*	6515-038-070*	133	133	1,175	1,693	73.6	73.6	0.60	0.65	1.70	1.60	
	080	SPX8-2200*	6515-038-080*	139	139	1,544	2,205	95.9	95.9	0.55	0.70	1.70	1.80	
	090	SPX8-3300*	6515-038-090*	183	183	2,315	3,308	143.8	143.8	0.90	1.10	2.20	2.20	
	100	SPV8-5500*	6515-038-100*	333	333	3,799	5,470	237.8	237.8	1.90	2.00	4.60	4.30	
	110	SPV8-7100*	6515-038-110*	417	417	4,923	7,088	308.2	308.2	2.20	2.75	5.00	5.90	
	111	SPV8-8500*	6515-038-111*	455	455	5,860	8,439	366.9	366.9	3.00	3.30	6.70	6.90	
SPV8 SERIES, 8-POLE 3-PHASE	<b>6 BOLT</b>											400V	460V	
	120	SPV8-11000*	6515-038-120*	567	536	8,422	10,216	527.2	444.2	3.60	4.00	8.00	8.00	
	129	SPV8-13000*	6515-038-129*	662	618	10,366	12,075	649.0	525.0	5.20	5.80	10.00	10.30	
	130	SPV8-16000*	6515-038-130*	823	761	13,585	15,783	850.6	686.2	6.20	7.20	11.90	11.60	
	140	SPV8-19000*	6515-038-140*	948	865	16,651	18,234	1,043	792.8	7.00	8.00	13.10	12.60	
	141	SPV8-25000*	6515-038-141*	993	948	19,055	24,339	1,193	1,058	7.30	8.50	13.90	13.30	
	150	SPV8-28000*	6515-038-150*	1,290	1,235	24,665	27,492	1,544	1,195	10.00	10.80	20.90	19.90	
	151	SPV8-36000*	6515-038-151*	1,467	1,411	30,329	35,622	1,899	1,549	11.20	12.00	22.70	22.80	
	SPV8 SERIES, 8-POLE 3-PHASE	<b>8 BOLT</b>											400V	460V
		171	SPV8-49000*	6515-038-171*	2,161	2,084	41,085	48,533	2,572	2,110	13.60	14.80	26.90	28.10

Sizes up to and including SPV8-1100 feature an aluminum housing.  
 Sizes SPX8-2200 and larger feature cast iron housing.  
 Sizes SPV8 feature logarithmic roller type bearings.



OVERALL REFERENCE DIMENSIONS (inches)														
"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"L"	"M"	"N"	"P"	"Q"	"R"
<b>4 BOLT</b>														
16 - 3/8	7 - 1/2	8 - 1/16	5 - 13/16	3 - 3/8	6 - 7/16	4 - 3/16	0.512	3.94	6.10	11/16	6 - 11/16	1 - 15/16	1 - 1/2	M20X1.5
17 - 1/4	8 - 3/8	8 - 7/16	6 - 5/8	3 - 3/4	7 - 1/4	4 - 1/8	0.669	4.53	6.69	13/16	7 - 1/2	2 - 5/16	1 - 3/4	M20X1.5
18 - 1/4	9 - 3/16	9 - 1/4	7 - 3/8	4 - 1/8	7 - 7/8	4 - 7/16	0.669	4.72	7.09	13/16	7 - 9/16	2 - 5/16	1 - 11/16	M20X1.5
20 - 1/16	9 - 5/8	9 - 3/4	7 - 7/8	4 - 7/16	8 - 7/16	5 - 1/16	0.669	5.91	7.48	1	8 - 1/4	2 - 1/16	1 - 15/16	M20X1.5
20 - 9/16	11	10 - 3/16	8 - 3/8	4 - 5/8	8 - 15/16	5 - 9/16	0.669	6.30	7.87	1 - 3/16	10	3 - 3/8	3	M20X1.5
23	11 - 13/16	11	9 - 5/16	5 - 3/16	10 - 1/16	5 - 1/2	0.866	6.50	9.06	1 - 3/8	11 - 11/16	4 - 5/16	2 - 13/16	M20X1.5
26 - 9/16	13 - 1/4	13 - 3/8	10 - 5/8	5 - 7/8	11 - 1/4	6 - 1/4	0.984	6.50	10.63	1 - 9/16	11 - 1/8	3 - 1/2	2 - 3/8	M25X1.5
27 - 13/16	14 - 1/4	14 - 3/8	12 - 1/8	6 - 9/16	12 - 11/16	6 - 1/4	1.142	8.27	11.61	1 - 9/16	12	3 - 7/16	2 - 1/2	M25X1.5
27 - 13/16	14 - 1/4	14 - 3/8	12 - 1/8	6 - 9/16	12 - 11/16	6 - 1/4	1.142	8.27	11.61	1 - 9/16	12	3 - 7/16	2 - 1/2	M25X1.5
<b>OVERALL REFERENCE DIMENSIONS (inches)</b>														
"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"L"	"M"	"N"	"P"	"Q"	"R"
<b>6 BOLT</b>														
32 - 7/16	15 - 3/8	15 - 7/16	13 - 9/16	7 - 9/16	15 - 9/16	8	1.142	8.27	11.61	1 - 9/16	12	3 - 7/16	2 - 1/2	M25X1.5
33 - 5/8	15 - 3/8	16 - 11/16	13 - 9/16	7 - 9/16	15 - 9/16	8 - 1/16	1.142	4.53	12.60	1 - 3/4	13 - 11/16	3 - 7/8	2 - 5/8	M25X1.5
37 - 3/4	15 - 3/8	16 - 11/16	13 - 9/16	7 - 9/16	15 - 9/16	9 - 5/8	1.142	4.53	12.60	1 - 3/4	13 - 11/16	3 - 7/8	2 - 5/8	M25X1.5
38 - 7/16	17 - 15/16	17 - 15/16	16 - 1/8	8 - 7/8	18 - 1/8	9 - 7/16	1.260	5.12	14.96	1 - 15/16	14 - 15/16	4 - 5/8	3 - 9/16	M25X1.5
38 - 11/16	17 - 15/16	17 - 15/16	16 - 1/8	8 - 7/8	18 - 1/8	9 - 7/16	1.260	5.12	14.96	1 - 15/16	14 - 15/16	4 - 5/8	3 - 9/16	M25X1.5
39 - 3/4	19 - 5/16	19 - 1/2	17 - 11/16	9 - 5/8	19 - 11/16	9 - 1/4	1.496	6.10	15.75	1 - 15/16	17 - 15/16	5 - 5/8	3 - 9/16	M32X1.5
44 - 7/8	19 - 5/16	19 - 1/2	17 - 11/16	9 - 5/8	19 - 11/16	10 - 7/16	1.496	6.10	15.75	1 - 15/16	17 - 15/16	5 - 5/8	3 - 9/16	M32X1.5
<b>OVERALL REFERENCE DIMENSIONS (inches)</b>														
"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"L"	"M"	"N"	"P"	"Q"	"R"
<b>8 BOLT</b>														
44 - 1/8	24 - 7/16	24	21 - 9/16	11 - 13/16	23 - 5/8	9 - 1/16	1.142	8.27	11.61	1 - 9/16	12	3 - 7/16	2 - 1/2	M25X1.5

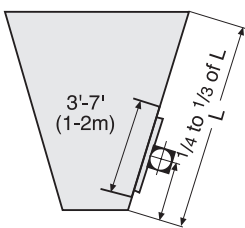
## Mounting Syntron® Electric Rotary Vibrators

Vibrator selection and installation is based upon individual application requirements. For vibration distribution, each electric rotary bin vibrator should be mounted midway, on a length of channel, welded with its legs against the side of the bin. All electric rotary bin vibrator models can be mounted with the shaft in any position from horizontal to near vertical. For maximum effectiveness, chutes requiring vibrators

should be independently isolated. In addition, the vibrator should be mounted midway on a channel located underneath the length of the chute.

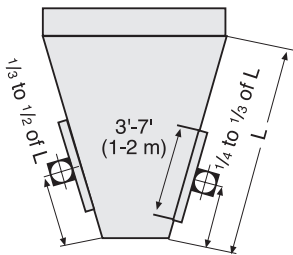
Note: For free-flowing bulk material installations, vibrators on hoppers should operate only when the hopper is open to flow. Otherwise, packing of material can result.

### Conical Hoppers



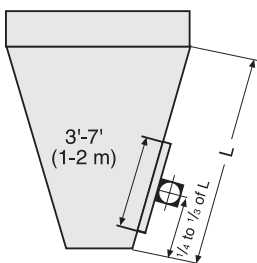
Mount vibrator by channel-iron stiffener 3 to 7 feet long (1-2 m) to hopper wall, one-fourth to one-third the distance from the discharge to the top. A second vibrator (if necessary) should be mounted diametrically opposite and approximately halfway up the bin wall.

### Rectangular Hoppers



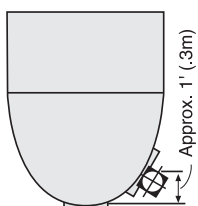
Mount as for conical hoppers on the centerline of one side. A second vibrator may be required if complete cleaning of all corners and sides is desired. To mount, follow instructions for conical hoppers.

### Rectangular Bins with Hopper Bottoms



Usually requires larger force vibrators than conical or rectangular hoppers because of additional head load. Locate vibrator one-fourth to one-third the distance up sloping section of bin wall, and follow mounting instructions for conical hoppers.

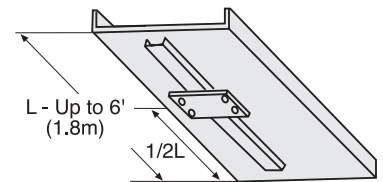
### Parabolic Bins or Hoppers



Mount vibrator within one foot of each discharge opening and in line with center of opening.

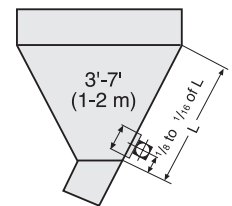
### Chutes

To move the material in a chute, the chute should be inclined to no less than half the "angle of repose" of the material (at least 10 degrees). On chutes from six to 10 feet (1.8 - 3 m) long, two vibrators are needed; one should be placed 18 - 24 inches (457 - 610 mm) from the discharge and the other approximately in the middle. Since chutes are very sensitive to vibration, a provision should be made to move the lower vibrator six inches (152 mm) in either direction. This could mean the difference between moving the material or not moving it. Vibrator shaft (eccentric weight) should be rotating in the direction of material flow.



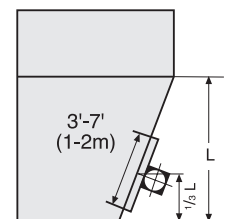
### Bins with Sloping Discharge

Mount the vibrator one-sixteenth to one-eighth the distance up bin wall that is contiguous with the underside of chute. This lower mounting position puts vibrator close to bin discharge throat and assures vibration transference into chute.



### Bin or Hopper with Vertical Side

Mount vibrator on wall with the least slope. Follow mounting instructions for rectangular bins with hopper bottoms.

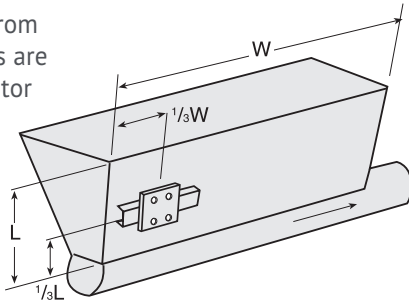


Note: Drawings illustrate typical installations. Specific installations may require slight variations. For other applications not covered here, please consult factory for recommendations.

# Mounting Syntron® Electric Rotary Vibrators, cont'd.

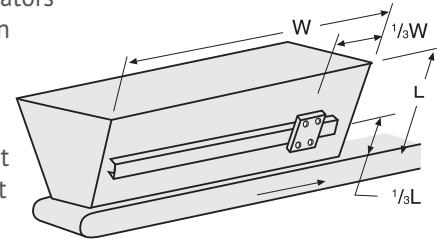
## Screw Feeder

Feeds from the back. Vibrator should be  $\frac{1}{3}$  from the inlet. If two vibrators are used, place second vibrator on opposite side,  $\frac{1}{3}$  from the discharge. Do not run the vibrator at the discharge until the back of the bin is empty and the vibrator at the inlet is shut off.



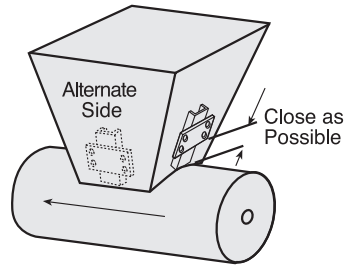
## Long Bin

Belt conveyor feeds from front. Vibrator should be  $\frac{1}{3}$  from front. If two vibrators are used, place one on opposite side and  $\frac{1}{3}$  from back. Do not operate the back vibrator until the front is empty and the front vibrator is shut off.



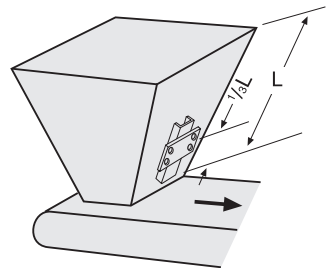
## Short Screw Feeder

Place vibrator as close as possible to feeder.



## Belt Conveyor and Standard Bin

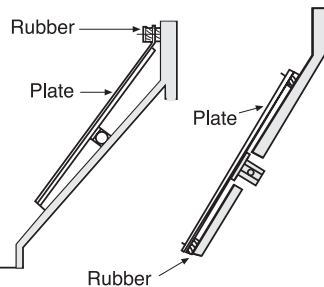
Mount vibrator on the belt discharge side of the hopper. Follow mounting instructions for the appropriate bin type on page 30.



## Concrete Hopper or Lined Wooden Hopper

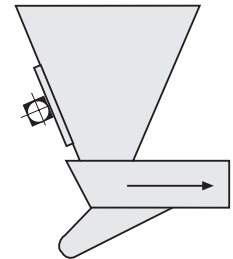
For wooden hoppers lined with thin sheet metal, attach vibrator mounting bolts to the hopper lining.

For concrete hoppers, secure a steel plate across the top inside of the hopper to the discharge opening along the side to which the vibrator will be mounted. At about  $\frac{1}{4}$  or less of the distance from the discharge to the vertical side, cut an opening to allow the vibrator to be bolted to the steel plate.



## Vibrating Feeder and Standard Bin

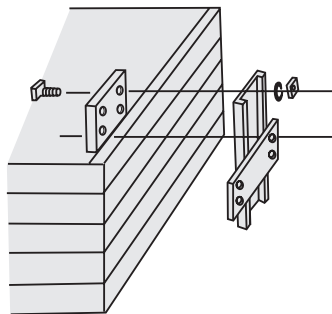
Mount vibrator on the feeder infeed side of the hopper. Follow mounting instructions for the appropriate bin type on page 30.



Note: Drawings illustrate typical installations. Specific installations may require slight variations. For other applications not covered here, please consult factory for recommendations.

## Wood Bin

Use steel plate on inside and bolt to outside mounting plate.



## Syntron® Pneumatic Vibrators

Syntron Material Handling offers two types of Syntron® Pneumatic Vibrators – turbine and piston. Turbine models feature rotary action designed to keep noise to a minimum. Operating speed is adjusted by simply varying the air supply.

Syntron piston vibrators feature one piece, cast iron, flat base construction which produces high impact, linear force and efficient energy transfer. They are ideal for mining, chemical, concrete, plastics, steel, foundry and paper industries.

Syntron Pneumatic Bin Vibrators also come with the technical expertise of Syntron Material Handling's application specialists, who have been providing productive solutions for a wide variety of material handling problems for more than 80 years.



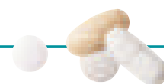
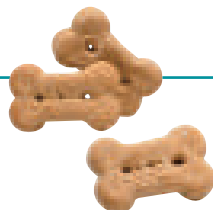
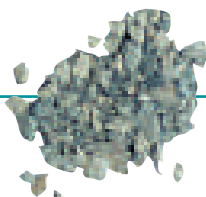
*Syntron® Pneumatic Vibrators*



*Syntron® Pneumatic Turbine Vibrator mounted on stainless steel hopper.*



*Syntron® Pneumatic Piston vibrator maintains consistent flow of coal from a coal bin to a vibrating feeder.*



# Syntron® Pneumatic Turbine Vibrators

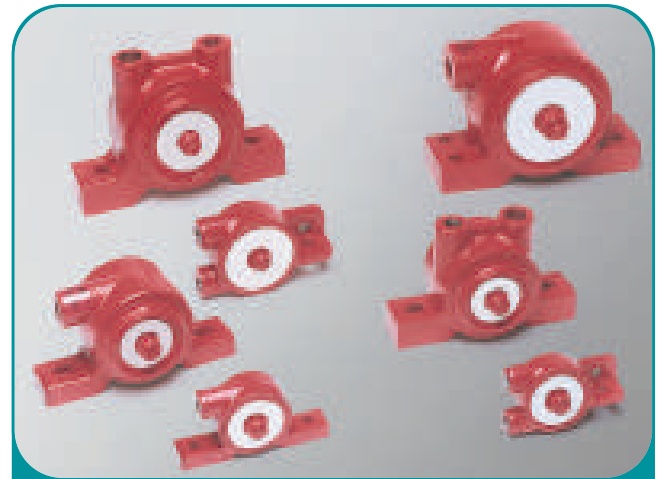
Syntron® Pneumatic Turbine Vibrators from Syntron Material Handling offer a convenient, reliable alternative to other vibrators. Designed to keep noise pollution at a minimum, Syntron Turbine Vibrators aid in controlling the flow of material in almost any application, from screening, sizing and separating both fine and coarse materials, to aiding the flow of materials from supply hoppers and chutes, to driving parts feeders.\*

Unlike other vibrators, Syntron turbine vibrators use compressed air to turn a turbine wheel, allowing air to be channeled through the unit and then through a muffler. This makes turbine vibrators convenient in locations where electricity is not readily available. Speed is adjusted by simply varying the air supply. Additionally, the vibrator's sealed bearings are prelubricated for life, making them ideal for food and other applications where oily exhaust air is unacceptable. And, their compact, totally enclosed construction eliminates concern over environmental factors such as dust, dirt or moisture.

There are three types of Syntron Pneumatic Turbine Vibrators: TAM, TBM and TB.

## Features and Benefits

- Rotary action provides low noise level
- Adjustable air pressure allows easy adjustment of force to suit varying applications
- Sealed and prelubricated bearings require no additional lubrication
- Totally enclosed construction permits placement in dusty, dirty or wet locations
- Energy-conserving design requires less air than comparable ball vibrators
- Air efficiency remains constant throughout vibrator life
- Orbital action facilitates material flow in chutes
- Oversized bearings promote longer life
- Rugged, durable construction for many years of safe, reliable performance
- Malleable iron housings except as noted
- Wide range of sizes

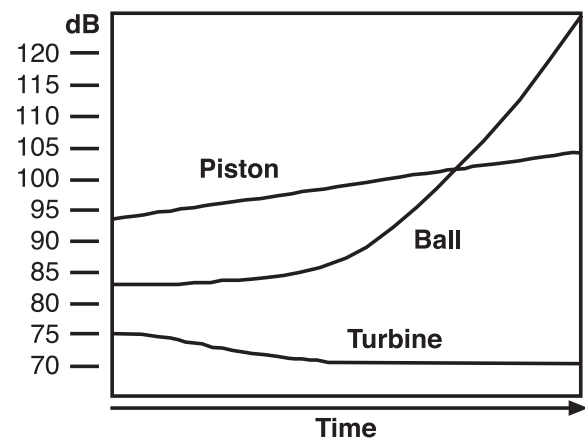


Syntron® Pneumatic Turbine Vibrators

\* For low-pressure applications, please contact Syntron Material Handling for recommendations.

## A lifetime of quiet, reliable operation

Turbine vibrators maintain 70-75 decibels throughout their entire life, as compared to sharp increases in noise levels of ball, roller, and piston type vibrators. Turbine sound levels actually decrease during a short "break in" period and retain a constant low sound level throughout their life.



Vibrator Life Curve





## Selecting the Proper Syntron® Pneumatic Turbine Vibrator

### Bins or Hoppers

In order to move material in a bin or hopper, the friction between the material and the bin wall must be broken. Once the friction is broken, material cannot cling to the sides of the bin and it will flow out through the discharge. For 80 percent of all turbine bin vibrator applications, the vibrator force needed to accomplish this is simply calculated as follows:

- Calculate the weight of the material in the transition or sloping part of the bin. Normally, this is the only place where the friction between the material and the bin side has to be broken. Do not calculate the total weight, only what is in the transition part of the bin.
- For conical bins, calculate as follows:  
 $0.261 \times \text{dia.}^2 \times \text{height} \times \text{material density in lb/ft}^3$   
( $\text{kg/m}^3$ )
- For rectangular bins, calculate as follows:  
 $\text{Length} \times \text{width} \times \text{height} \times 1/3 \times \text{material density.}$

NOTE: For selecting the proper pneumatic piston vibrator model, see page 42.

When the weight (lb) has been calculated, divide the weight by 10 to get the force or impact needed from the vibrator (lbf). If the weight is calculated in kg, divide the weight by 1.02 to get the force or impact needed from the vibrator (N). For example: The conical part of a 25-ton bin contains 7000 lb. Divide 7,000 by 10 to get the force (lbf) or impact needed from the vibrator. Find a suitable vibrator on pages 35, 36 and 38.

Additional considerations when sizing vibrators to bins:

- If the bin side angle is less than 30 degrees, select a larger vibrator.
- If the bin has a vertical section, select a larger vibrator.
- If the bin wall is extra thick (see tables pages 35, 36 and 38), select a larger vibrator.
- On very sticky and hard to move materials, it is better to use two small vibrators instead of one large one (size the two smaller ones by dividing the required force in half).



*Two Syntron® model TB-320 Pneumatic Turbine Vibrators mounted on a batch hopper.*

### Vibrating Tables for Packing Materials

Dense materials respond best to high-frequency vibration while light, fluffy or flaky materials respond best to low-frequency vibration. For packing or settling materials, use a vibrator with an impact force of one-and-a-half to two times larger than the weight of the material plus container. Find a suitable vibrator on pages 36 and 38.

### Vibrating Screens

For self-cleaning screens, use a vibrator with a centrifugal force (impact) four times the weight of the material plus the weight of the screen.

NOTE: Coarse, lumpy, sticky or wet materials respond best to high-frequency vibration; powdery and dry materials respond best to low-frequency vibration.

### Consolidating Concrete

For three-inch "slump" concrete, use a vibrator with the same force (impact) as the weight of concrete and form. For one- to two-inch slump concrete, an additional 30 to 50 percent impact is needed. For dry mixes (zero slump), increase the impact by 100 to 200 percent.

### Chutes

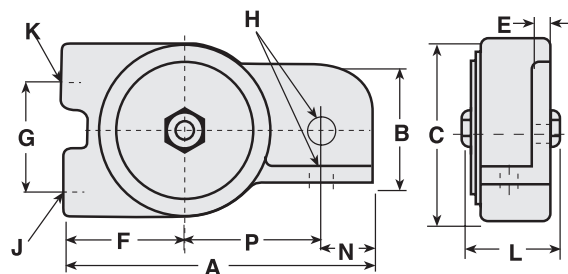
The force required of the vibrator is equal to the weight of the chute plus vibrator plus maximum material in the chute. See page 40 for more details.

# TAM Turbine Vibrator Series

For Small to Medium Applications

## Features

- Low noise, 70 dB or less ●
- Adjustable speed
- Maintenance free; never needs lubrication, even for continuous duty operation
- Versatile mounting design
- Threaded exhaust for muffler or closed system
- Ideal for use in screening, sizing, settling, aiding flow in parts feeders and for moving powdered materials through hoppers and chutes; also unjamming caps, parts and cans



## Specifications

Model	Weight		60 psi		80 psi					Max Material		Bin Wall	
			Speed		Speed	Force			in Bin▲		Thickness		
	lb	kg	vpm	cfm	vpm	cfm	lbs	N	dB●	lb	kg	in	mm
◆ TAM-100	5 oz	.142	12,000	3.5	--	--	20	89	66	200	91	1/32 - 1/16	0.8 - 1.6
◆ TAM-130	9 oz	.255	8,000	4.5	10,500	5.5	75	334	67	750	340	1/16 - 3/16	1.6 - 4.7
◆ TAM-160	12 oz	.340	8,500	5	9,000	7	160	712	67	1600	726	3/16 - 5/16	4.7 - 7.9
◆ TAM-190	15 oz	.425	8,500	5	10,000	7	250	1112	70	2500	1134	3/16 - 3/8	4.7 - 9.5

Data obtained on laboratory test block. Frequency and force will decrease on less rigid mount. Data subject to design changes.

◆ Aluminum construction. Balance of models have malleable iron housings.

● Decibel from A-scale at 1 meter and 80 psi

N = Centrifugal force in Newtons

▲ Rule of thumb for sizing = 1 lb (.4536 kg) Vibrator Force for each 10 lb (4.536 kg) of bin content at 80 psi

or 9.8 N (5.5 bar) Vibrator Force for each 10 kg of bin content at 80 psi.

**Note: For low-pressure applications, or to operate outside listed parameters, please contact Syntron Material Handling for recommendations.**

## Dimensions

Model	A		B		C		E		F		G		H■		J,K★	L		N		P	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in -NPT	in	mm	in	mm	in	mm
TAM-100	3 1/4	83	1	25	1 7/8	37	5/16	16	1 1/4	32	1 1/4	32	5/16	8	1/8	1 5/8	41	1/2	12	1 3/8	35
TAM-130	3 3/4	95	1 3/16	30	2 1/4	57	5/16	16	1 3/4	44	1 1/4	32	3/8	10	1/8	1 7/8	48	9/16	14	1 9/16	40
TAM-160	4 1/8	105	1 1/4	32	2 9/16	65	5/16	16	1 3/4	44	1 5/8	41	3/8	10	1/4	2	51	11/16	17	1 13/16	46
TAM-190	4 1/8	105	1 1/4	32	2 9/16	65	5/16	16	1 3/4	44	1 5/8	41	3/8	10	1/4	2	51	11/16	17	1 13/16	46

■ Bolt size ★ NPT pipe tap size

## TBM Turbine Vibrator Series

For Light to Heavy Applications

### Features

- Low noise and adjustable speed
- Maintenance free – never needs lubrication, even for continuous duty operation
- Ideal for pharmaceutical and food industries – non-lubricated air supply means no oily exhaust
- Threaded exhaust for muffler or closed system allows piping off of air exhaust in closed, sanitized systems
- Available in a wide range of sizes
- Ideal for fast moving parts or materials in small feeding tracks to large bins
- Malleable iron castings on most models



Syntron® TBM Pneumatic Turbine Vibrator models

### Specifications

Model	Weight		60 psi		80 psi					Max Material		Bin Wall	
			Speed		Speed	Force			in Bin▲		Thickness		
	lb	kg	vpm	cfm	vpm	cfm	lbs	N	dB●	lb	kg	in	mm
◆ TBM-60	7 oz	.198	12,000	4	--	--	20	89	66	200	91	1/32 - 1/16	0.8 - 1.6
◆ TBM-130	10 oz	.283	8,000	4.5	10,500	5.5	75	334	67	750	342	1/16 - 1/8	1.6 - 3.2
TBM-160	2	.9	9,500	7	11,000	8	160	712	70	1,600	726	3/16 - 5/16	4.7 - 7.9
TBM-190	3	1.4	5,500	7.5	7,200	8.5	270	1,201	71	2,700	1,225	3/16 - 3/8	4.7 - 9.5
TBM-250	5	2.3	5,200	8	7,200	9	480	2,136	72	4,800	2,177	5/16 - 7/16	7.9 - 11.1
TBM-320	8.5	3.9	5,500	9	6,800	10	600	2,669	70	6,000	2,722	3/8 - 7/16	9.5 - 11.1
TBM-380	13	5.8	4,500	16	5,000	18	670	2,981	74	6,700	3,039	7/16 - 1/2	11.1 - 12.7
TBM-440	17	7.7	4,300	18	4,800	21	700	3,114	76	7,000	3,175	1/2	12.7
TBM-510	18	8.2	4,000	18	4,500	21	900	4,004	77	9,000	4,082	1/2	12.7
TBM-570	25	11.3	3,600	21	4,000	26	1,050	4,671	83	10,500	4,763	1/2	12.7

Data obtained on laboratory test block. Frequency and force will decrease on less rigid mount. Data subject to design changes.

◆ Aluminum construction. Balance of models have malleable iron housings.

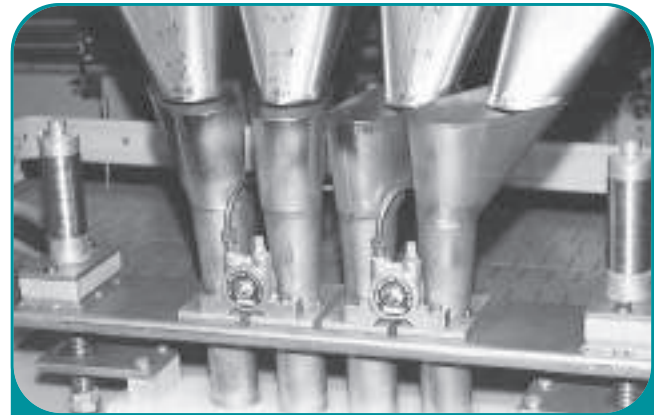
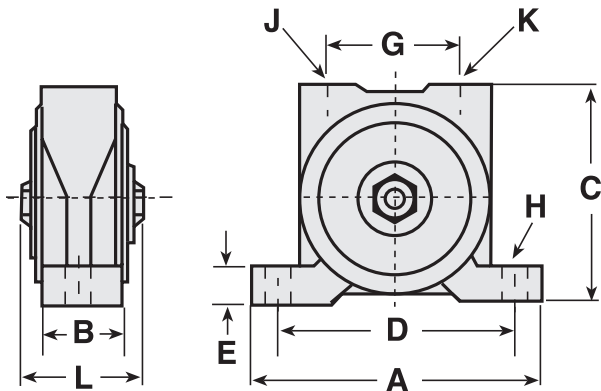
● Decibel from A-scale at 1 meter and 80 psi

N = Centrifugal force in Newtons

▲ Rule of thumb for sizing = 1 lb (.4536 kg) Vibrator Force for each 10 lb (4.536 kg) of bin content at 80 psi  
or 9.8 N (5.5 bar) Vibrator Force for each 10 kg of bin content at 80 psi.

**Note: For low-pressure applications, or to operate outside listed parameters, please contact Syntron Material Handling for recommendations.**



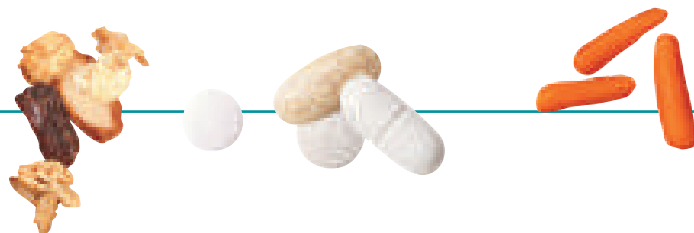


*Pneumatic turbine vibrators mounted on a track to consolidate pills in a bottle filling operation.*

## Dimensions

Model	A		B		C		D		E		G		H ■		Inlet J ★	Exhaust K ★	L	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in -NPT	in -NPT	in	mm
TBM-60	3 7/8	98	3/4	19	2 3/8	60	3	76	5/8	16	1 1/4	32	1/4	6	1/8	1/8	1 3/16	30
TBM-130	4 7/8	124	7/8	22	2 3/4	70	4	102	3/4	19	1 7/16	37	3/8	10	1/8	1/4	1 7/8	48
TBM-160	5 3/16	139	1 1/4	32	3 7/16	81	4	102	7/8	22	1 7/8	48	3/8	10	1/4	3/8	2 3/4	70
TBM-190	5 3/16	139	1 1/4	32	3 7/16	81	4	102	7/8	22	1 7/8	48	3/8	10	1/4	3/8	3 1/16	78
TBM-250	6 3/4	171	1 5/16	33	3 15/16	100	5	127	7/8	22	2 1/8	54	1/2	12	1/4	3/8	3 1/8	79
TBM-320	6 1/2	165	1 5/8	41	4 7/8	124	5	127	1 1/8	29	2 3/4	70	1/2	12	3/8	1/2	4	102
TBM-380	7 7/8	200	1 7/8	48	5 7/16	138	6	152	1 1/8	29	2 7/8	73	5/8	16	3/8	1/2	4 5/8	117
TBM-440	8 13/16	224	2 3/16	56	5 3/4	146	7	178	1 1/4	32	3 1/8	79	5/8	16	1/2	3/4	4 3/4	121
TBM-510	8 13/16	224	2 3/16	56	5 3/4	146	7	178	1 1/4	32	3 1/8	79	5/8	16	1/2	3/4	4 3/4	121
TBM-570	10 1/16	256	2 7/8	73	7	178	8	203	3/4	19	3 13/16	97	3/4	19	3/4	1	5 3/8	137

■ Bolt size ★ NPT pipe tap size



## TB Turbine Vibrator Series For Light to Heavy Applications

### Features

- Low noise and adjustable speed
- Maintenance free; never needs lubrication, even for continuous duty operation
- Built-in muffler for quiet operation
- Ideal for use in air material conveying systems and medium size batch hoppers
- Models TB-2000 and TB-5000 are lightweight solutions for large bins, hoppers and chutes and are ideal for packing table and screen applications
- Malleable iron castings on most models



### Specifications

Model	Weight		60 psi		80 psi					Max Material		Bin Wall	
			Speed	cfm	Speed	cfm	Force		dB●	in Bin▲		Thickness	
	vpm	vpm	lbs		N		lb	kg		in	mm		
◆ TB-100	7 oz	.198	12,000	4	--	--	20	89	66	200	91	1/32 - 1/16	0.8 - 1.6
◆ TB-130	11 oz	.312	8,000	4.5	10,500	5.5	75	334	67	750	342	1/32 - 1/8	0.8 - 3.2
TB-160	2	.9	10,000	7	12,000	8	160	712	70	1,600	726	3/16 - 5/16	4.7 - 7.9
TB-190	3	1.4	4,200	7.5	7,200	9	270	1,201	70	2,700	1,225	3/16 - 3/8	4.7 - 9.5
TB-250	4	1.8	5,500	9	7,200	10.5	500	2,225	70	5,000	2,268	5/16 - 7/16	7.9 - 11.1
TB-320	6.5	2.9	5,200	9	6,800	11	600	2,669	69	7,000	3,175	7/16 - 1/2	11.1 - 12.7
TB-380	11.5	5.2	4,600	16	5,200	17	725	3,226	72	7,250	3,289	7/16 - 1/2	11.1 - 12.7
TB-510	15	6.8	4,000	18	4,500	21	900	4,004	77	9,000	4,082	1/2	12.7
TB-2000	23	10.5	4,000	30	6,000	35	2,000	8,900	78	20,000	9,072	1/2 - 3/4	12.7 - 19
TB-5000	48	21.8	4,000	35	6,000	40	5,000	22,245	75	50,000	22,680	3/4 - 1 1/4	19 - 32

Data obtained on laboratory test block. Frequency and force will decrease on less rigid mount. Data subject to design changes.

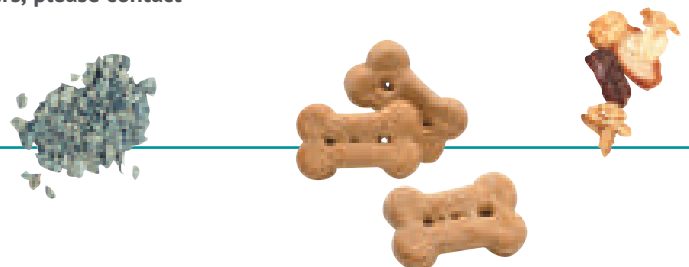
◆ Aluminum construction. Balance of models have malleable iron housings.

● Decibel from A-scale at 1 meter and 80 psi

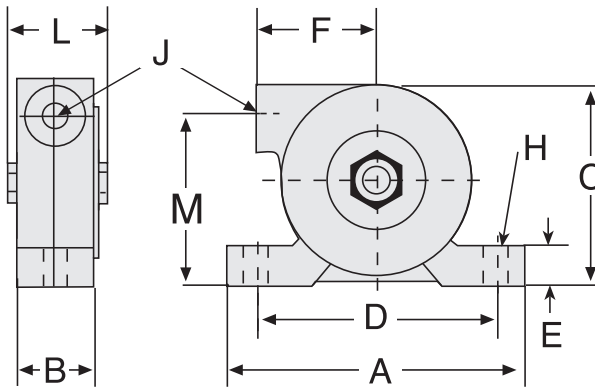
N = Centrifugal force in Newtons

▲ Rule of thumb for sizing = 1 lb (.4536 kg) Vibrator Force for each 10 lb (4.536 kg) of bin content at 80 psi.  
or 9.8 N (5.5 bar) Vibrator Force for each 10 kg of bin content at 80 psi.

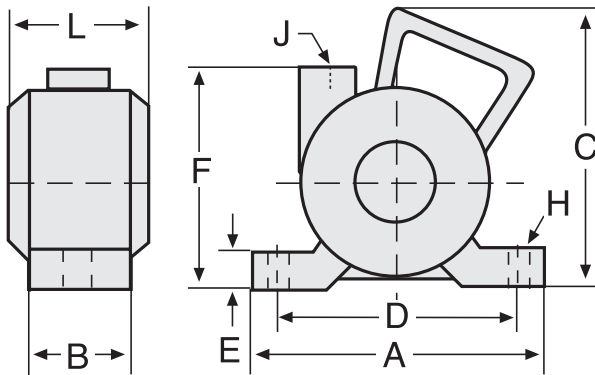
**Note: For low-pressure applications, or to operate outside listed parameters, please contact Syntron Material Handling for recommendations.**



All models except  
TB-2000 and TB-5000



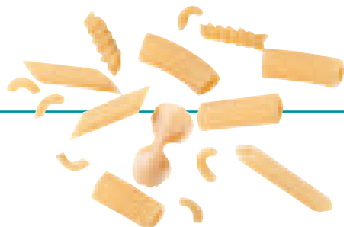
Models TB-2000 and  
TB-5000



## Dimensions

Model	A		B		C		D		E		F		H ■		J ★	L		M	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in -NPT	in	mm	in	mm
TB-100	3 7/8	98	3/4	19	2	51	3	76	5/16	8	1 5/16	33	1/4	6	1/8	1 7/16	37	1 11/16	43
TB-130	4 7/8	124	15/16	24	2 5/16	59	4	102	5/16	8	1 1/2	38	3/8	10	1/8	1 7/8	48	1 15/16	49
TB-160	5 1/16	129	1 5/16	33	2 5/16	59	4	102	5/16	8	1 7/8	48	3/8	10	1/4	2 3/4	70	2 1/2	64
TB-190	5 1/16	129	1 5/16	33	3 5/8	92	4	102	9/16	14	1 7/8	48	3/8	10	1/4	2 13/16	71	2 1/2	64
TB-250	5 3/8	137	1 1/2	38	3 1/2	89	4	102	9/16	14	2 1/4	57	1/2	12	1/4	3 1/16	78	2 15/16	87
TB-320	5 5/16	135	1 1/2	38	4 5/8	117	4	102	3/4	19	2 1/4	57	1/2	12	3/8	4	102	4 1/8	105
TB-380	6 5/8	168	2 1/8	54	4 7/8	124	5 1/2 x 1 1/4	140 x 32	1	25	2 7/8	73	3/8	10	3/8	4 3/8	111	4	102
TB-510	6 3/4	171	2 5/8	67	5 3/8	137	5 1/2 x 1 3/4	140 x 32	1	25	2 7/8	73	3/8	10	1/2	4 3/4	121	4 5/8	118
TB-2000	7 5/8	194	2	51	7 3/8	187	5 15/16	151	3/4	19	5 7/16	138	5/8	16	3/4	7 3/4	197	--	--
TB-5000	10 1/16	256	3	76	9	229	8	203	1	25	6	153	3/4	19	1	8 5/8	216	--	--

■ Bolt size ★ NPT pipe tap size



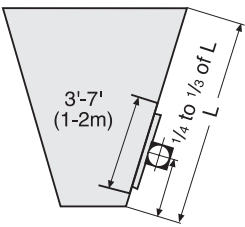
## Mounting Sytron® Pneumatic Turbine Vibrators

Vibrator selection and installation is based upon individual application requirements. For vibration distribution, each pneumatic turbine vibrator should be mounted midway, on a length of channel, welded with its legs against the side of the bin. All vibrator models can be mounted with the shaft in any position, from horizontal to vertical. For maximum effectiveness, chutes requiring vibrators should be independently

isolated. In addition, the vibrator should be mounted midway on a channel located underneath the length of the chute.

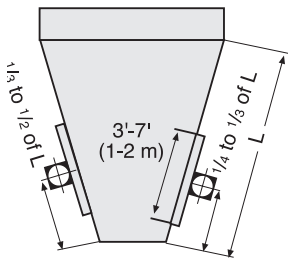
Note: For free-flowing bulk material applications, vibrators on hoppers should operate only when the hopper is open to flow. Otherwise, packing of material can result.

### Conical Hoppers



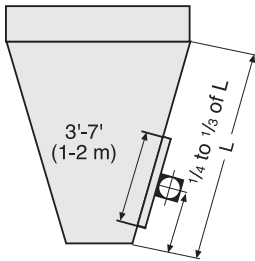
Mount vibrator by channel-iron stiffener 3 to 7 feet long (1-2 m) to hopper wall, one-fourth to one-third the distance from the discharge to the top. A second vibrator (if necessary) should be mounted diametrically opposite and approximately halfway up the bin wall.

### Rectangular Hoppers



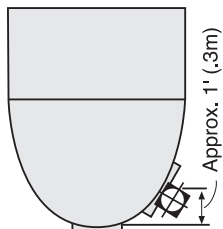
Mount as for conical hoppers on the centerline of one side. A second vibrator may be required if complete cleaning of all corners and sides is desired. To mount, follow instructions for conical hoppers.

### Rectangular Bins with Hopper Bottoms



Usually requires larger force vibrators than conical or rectangular hoppers because of additional head load. Locate vibrator one-fourth to one-third the distance up sloping section of bin wall, and follow mounting instructions for conical hoppers.

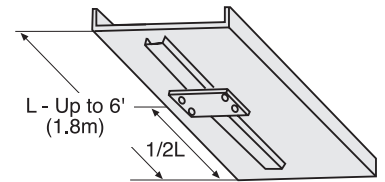
### Parabolic Bins or Hoppers



Mount vibrator within one foot of each discharge opening and in line with center of opening.

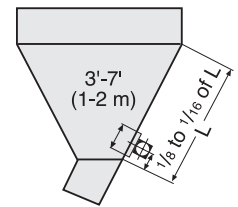
### Chutes

To move the material in a chute, the chute should be inclined to no less than half the "angle of repose" of the material (at least 10 degrees). On chutes from 6 to 10 feet (1.8 - 3 m) long, two vibrators are needed; one should be placed 18-24 inches (457 - 610 mm) from the discharge and the other approximately in the middle. Since chutes are very sensitive to vibration, provision should be made to move lower vibrator six inches (152 mm) in either direction. This could mean the difference between moving the material or not moving it.



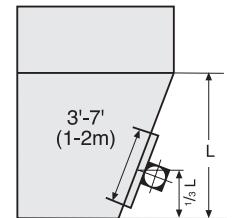
### Bins with Sloping Discharge

Mount the vibrator one-eighth to one-sixteenth the distance up bin wall that is contiguous with the underside of chute. This lower mounting position puts vibrator close to bin discharge throat and assures vibration transference into chute.



### Bin or Hopper with Vertical Side

Mount vibrator on wall with the least slope. Follow mounting instructions for rectangular bins with hopper bottoms.

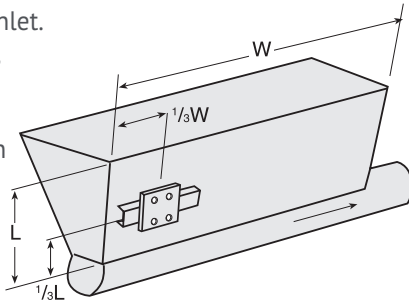


Note: Drawings illustrate typical installations. Specific installations may require slight variations. For other applications not covered here, please consult factory for recommendations.



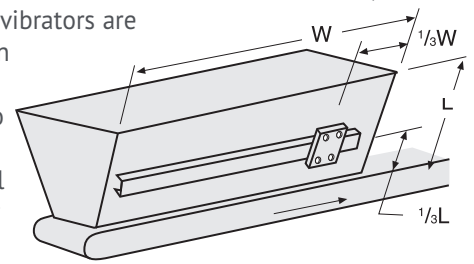
### Screw Feeder

Feeds from the back. Vibrator should be  $1/3$  from the inlet. If two vibrators are used, place second vibrator on opposite side,  $1/3$  from the discharge. Do not run the vibrator at the discharge until the back of the bin is empty and the vibrator at the inlet is shut off.



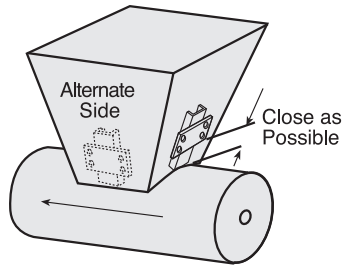
### Long Bin

Belt conveyor feeds from front. Vibrator should be  $1/3$  from front. If two vibrators are used, place one on opposite side and  $1/3$  from back. Do not operate the back vibrator until the front is empty and the front vibrator is shut off.



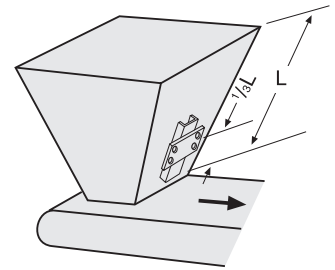
### Short Screw Feeder

Place vibrator as close as possible to feeder.



### Belt Conveyor and Standard Bin

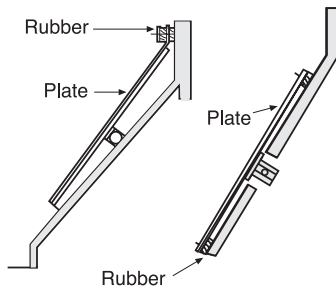
Mount vibrator on the belt discharge side of the hopper. Follow mounting instructions for the appropriate bin type on page 40.



### Concrete Hopper or Lined Wooden Hopper

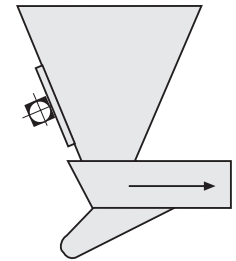
For wooden hoppers lined with thin sheet metal, attach vibrator mounting bolts to the hopper lining.

For concrete hoppers, secure a steel plate across the top inside of the hopper to the discharge opening along the side to which the vibrator will be mounted. At about  $1/4$  or less of the distance from the discharge to the vertical side, cut an opening to allow the vibrator to be bolted to the steel plate.



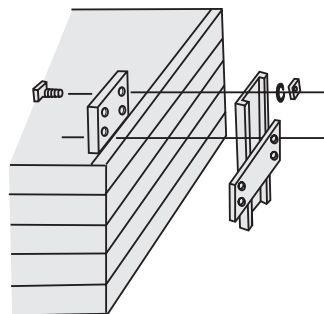
### Vibrating Feeder and Standard Bin

Mount vibrator on the feeder infeed side of the hopper. Follow mounting instructions for the appropriate bin type on page 40.



### Wood Bin

Use steel plate on inside and bolt to outside mounting plate.



Note: Drawings illustrate typical installations. Specific installations may require slight variations. For other applications not covered here, please consult factory for recommendations.

## PV and PVS Piston Vibrator Series Positive Punch for Difficult Applications

Syntron® Piston Vibrators from Syntron Material Handling assure the flow of materials through bins, chutes and weigh batchers.

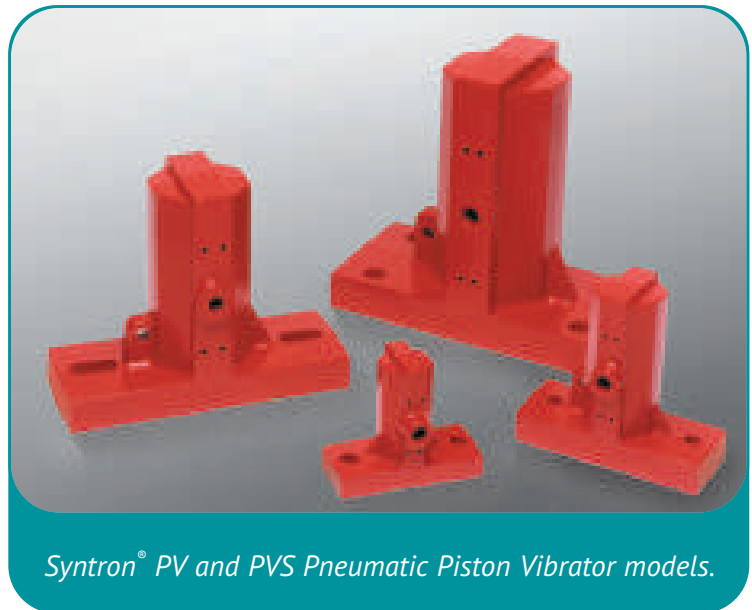
Their cast iron, flat base construction provides an efficient means of transmitting shock energy developed by the reciprocating piston to the mounting surface.

Syntron Piston Vibrators are available in two models: High impact (PV) and Reduced Noise (PVS). PVS vibrators (impact against a cushion of air) can be used where noise is objectionable.

Unlike turbine vibrators, piston vibrators require lubrication with oil, SAE-10 or lighter. Lack of oil in the air rapidly wears down the piston and cylinder wall.

### Features and Benefits

- Cast iron, flat base construction.
- One-piece housing
- Flange mounted
- Ideal for use in mining, chemical, concrete, plastics, steel, foundry and paper industries
- Available in high impact (PV) or reduced noise (PVS) models
- High thrust reciprocating action of PVS models permits operation at low air pressures
- High impact, linear force and efficient energy transfer assures flow of materials through bins, chutes and weigh batchers
- Linear vibration
- Impacts in both directions



*Syntron® PV and PVS Pneumatic Piston Vibrator models.*

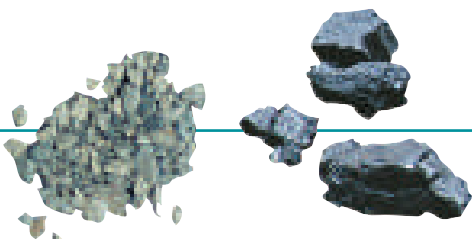
### Piston Vibrator Selection

In order to move material in a bin or hopper, the friction between the material and the bin wall must be broken. Once the friction is broken, material cannot cling to the sides of the bin and it will flow out through the discharge. A prime consideration in selecting the correct piston bin vibrator is wall thickness. The following formulas calculate material in the restricted area which is used as a guide to determine the number of piston bin vibrators necessary.

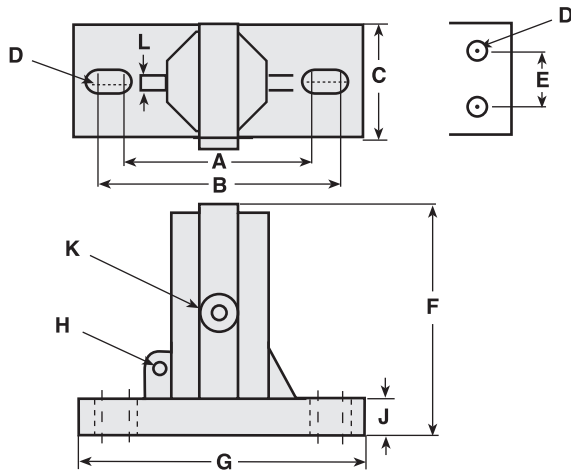
- Calculate the weight of the material in the transition or sloping part of the bin. Normally, this is the only place where the friction between the material and the bin side has to be broken. Do not calculate the total weight, only what is in the transition part of the bin.
- For conical bins, calculate as follows:  
 $0.261 \times \text{dia.}^2 \times \text{height} \times \text{material density in lb/ft}^3 \text{ (kg/m}^3\text{)}$
- For rectangular bins, calculate as follows:  
 $\text{Length} \times \text{width} \times \text{height} \times 1/3 \times \text{material density.}$

### Chutes

The force required of the vibrator is equal to the weight of the chute plus vibrator plus maximum material in the chute. See page 43 for more detail.



# PV and PVS Specifications



Syntron® piston vibrators also come with the technical expertise of Syntron Material Handling's application staff who have been providing productive solutions for a wide variety of material handling problems for more than 80 years.

## Specifications

Model	Piston Size	40 psi		60 psi		80 psi		Max Material in Bin		Bin Wall Thickness	
		Speed vpm	cfm	Speed vpm	cfm	Speed vpm	cfm	lb	kg	in	mm
PVS-55-100	1	3,700	2	4,150	2.2	7,200	3	200 - 400	91 - 181	20 ga - 1/16	1 - 1.5
PV-55-100	1	6,100	2	8,100	3	10,500	3.5	200 - 400	91 - 181	20 ga - 3/16	1 - 5
PVS-55-125	1-1/4	2,900	3.5	3,400	6	4,500	7	200 - 400	91 - 181	20 ga - 3/16	1 - 5
PV-55-125	1-1/4	4,600	3.5	5,750	5.5	6,800	6.5	400 - 1,000	181 - 454	1/8 - 1/4	3 - 6
PVS-55-150	1-1/2	2,200	5	3,200	7.5	3,500	8.5	400 - 1,000	181 - 454	1/8 - 1/4	3 - 6
PV-55-150	1-1/2	4,500	5	3,900	8	4,400	10	1,000 - 4,000	454 - 1,814	1/4 - 3/8	6 - 9
PVS-55-200	2	2,800	5	3,300	8.5	4,800	11	1,000 - 4,000	454 - 1,814	5/16 - 7/16	8 - 11
PV-55-200	2	4,000	5.5	5,350	9	5,500	12	4,000 - 10,000	1,814 - 4,536	3/8 - 1/2	9 - 13
PVS-55-300	3	1,700	13.5	1,950	20.5	2,200	28	8,000 - 20,000	3,629 - 9,072	7/16 - 1/2	11 - 13
PV-55-300	3	3,000	16.5	3,750	25.5	4,000	30	10,000 - 30,000	4,536 - 13,608	1/2	13

Data obtained on laboratory test block. Frequency and force will decrease on less rigid mount. Data subject to design changes.

**⚠ NEVER** operate without piston vibrator securely bolted to mounting plate or channel.

## Dimensions

Model	A		B		C		D ■		E		F		G		H		J		K ★	L	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in-NPT	in	mm
PV-55-100 PVS-55-100	0	0	3 1/2	88.9	2	51	1/2	13	0	0	3 7/8	98	4 1/2	114	0	0	9/16	14	1/4	1/4	6
PV-55-125 PVS-55-125	0	0	4 1/2	114.3	2 1/2	64	1/2	13	0	0	5 5/16	135	6	152	1/4	6	7/8	22	1/4	1/4	6
PV-55-150 PVS-55-150	6	152	7 1/2	190.5	3 1/2	89	11/16	17	0	0	7 1/4	184	9	229	1/2	13	1	25	1/4	1/2	13
PV-55-200 PVS-55-200	6	152	7 1/2	190.5	3 1/2	89	11/16	17	0	0	7 1/4	184	9	229	1/2	13	1	25	1/4	1/2	13
PV-55-300 PVS-55-300	7 3/4	197	0	0	5	127	15/16	24	3 1/4	83	9 7/16	240	10 1/2	267	1/2	13	1 1/8	29	3/8	3/4	19

■ Bolt size ★ NPT pipe tap size

## Mounting Sytron® Pneumatic Piston Vibrators

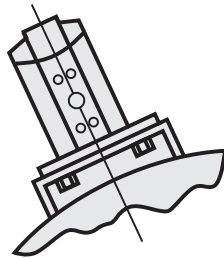
To obtain maximum efficiency from pneumatic piston vibrators, correct location is important. Mount the vibrator with the centerline of the piston a minimum of 15 degrees from the horizontal. For free-flowing bulk material installations, vibrators on hoppers should

operate only when the hopper is open to flow. Otherwise, packing of material can result.

NOTE: Never mount the vibrator directly to the skin of the bin. Always mount the vibrator on a mounting plate or channel iron.

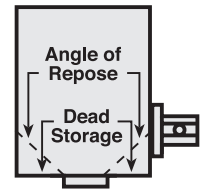
### Curved Surfaces

To mount a vibrator to a curved surface, select a bracket made from a channel section or bent plate. Mounting bolt heads can be welded to the underside of the bracket.



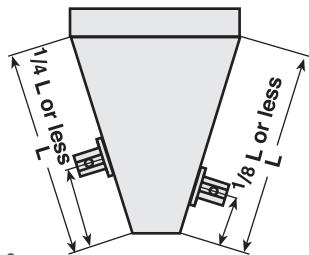
### Rectangular or Cylindrical Bins with Flat Bottom and Center Discharge.

Mount directly to the side of the bin, just below the point where the materials' natural angle of repose intersects the side, as shown.



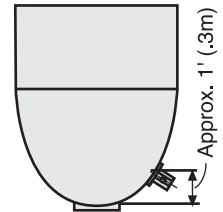
### Rectangular Hoppers

Mount vibrator and mounting channel as for a conical hopper or a curved surface. If a stiffener obstructs mounting, mount the vibrator in the middle of the panel next to the stiffener. If required, a second vibrator should be mounted on the opposite face at a slightly higher elevation.



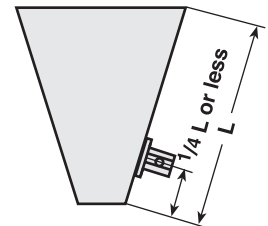
### Parabolic Bins or Hoppers

Mount the vibrator within one foot of each discharge opening and in line with center of opening.



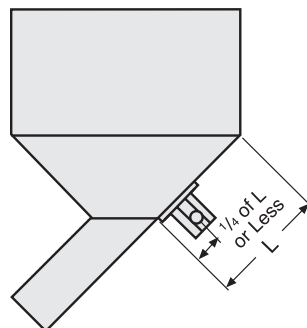
### Conical Hoppers

Mount the vibrator to the hopper (as for a curved surface) 12 to 18 inches (300 to 450 mm) or less from the discharge.



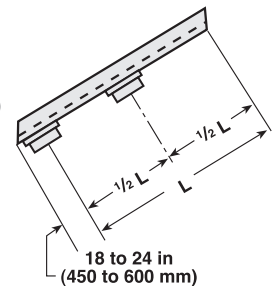
### Hopper with Sloping Discharge

Mount the vibrator on the center line of the hopper, as close to the discharge as possible. An additional vibrator may be required on the discharge chute.



### Inclined Chutes

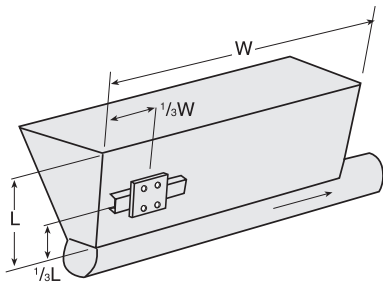
Chutes less than 10 to 12 feet (3 to 3.6 m) long are usually equipped with just one vibrator located well below the center. Allow for the vibrator to be moved about one foot (300 mm) in either direction. On chutes requiring more than one vibrator, the first one should be located 18 to 24 inches (450 to 500 mm) from the outlet. The second unit should be mounted about half-way between the first vibrator and the upper end. Allow for the vibrator to be moved about one foot (300 mm) in either direction.



Note: Drawings illustrate typical installations. Specific installations may require slight variations. For other applications not covered here, please consult factory for recommendations.

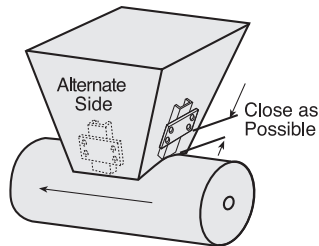
### Screw Feeder

Screw conveyors feed from the back of the hopper. Vibrator should be  $1/3$  from the inlet. If two vibrators are used, place second vibrator on opposite side,  $1/3$  from the discharge. Do not operate the vibrator at the discharge end until the back of the bin is empty and the vibrator at the inlet is shut off.



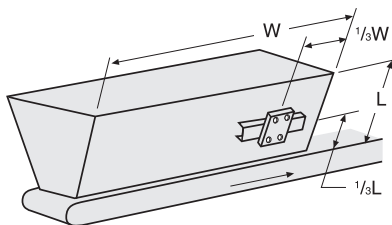
### Short Screw Feeder

Place vibrator as close as possible to feeder.



### Long Bin

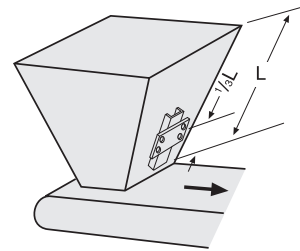
Belt conveyors feed from the front of the hopper. Vibrator should be  $1/3$  from front. If two vibrators are used, place one on opposite side and  $1/3$  from back. Do not operate the back vibrator until the front is empty and the front vibrator is shut off.



Note: Drawings illustrate typical installations. Specific installations may require slight variations. For other applications not covered here, please consult factory for recommendations.

### Belt Conveyor and Standard Bin

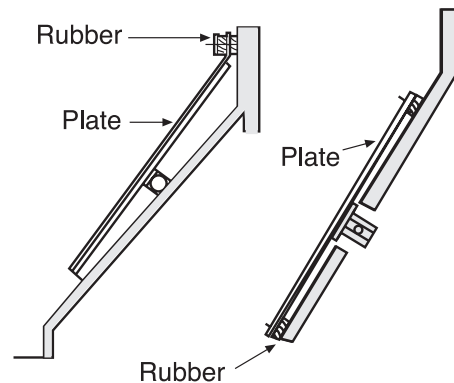
Mount vibrator on the belt discharge side of the hopper. Follow mounting instructions for the appropriate bin type on page 44.



### Concrete Hopper or Lined Wooden Hopper

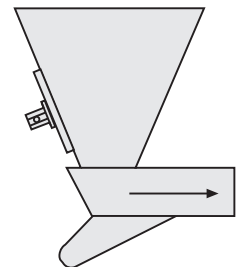
For wooden hoppers lined with thin sheet metal, attach vibrator mounting bolts to the hopper lining.

For concrete hoppers, secure a steel plate across the top inside of the hopper to the discharge opening along the side to which the vibrator will be mounted. At about  $1/4$  or less of the distance from the discharge to the vertical side, cut an opening to allow the vibrator to be bolted to the steel plate.



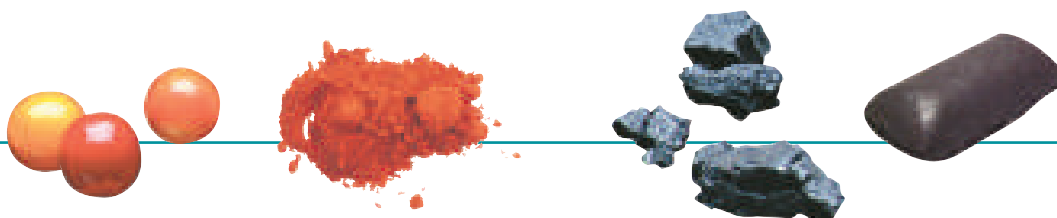
### Vibrating Feeder and Standard Bin

Mount vibrator on the feeder infeed side of the hopper. Follow mounting instructions for the appropriate bin type on page 44.



## Optimized Operation of Syntron® Turbine and Piston Pneumatic Vibrators

1. **Air Line to Vibrator** – In order to minimize pressure loss from the compressor, the inner diameter (ID) of the hose to the vibrator should be the same as or larger than the inlet ID (pipe size) of the vibrator.
2. **Flow Valve** – A flow control valve can tune the vibrator to the required force. The flow volume determines the force and frequency of the vibrator. Throttling the flow enables you to find the desired material discharge rate and avoid the natural frequency of the bin or hopper. If the bin wall and vibrator shake violently, increase or decrease the speed to run with minimum movement. Do not exceed the maximum air pressures shown on pages 35, 36, 38 and 43.
3. **Quick-Opening Valves** – Quick-opening valves can be used between the air regulator and vibrator to allow air to enter the vibrator at full starting force, even at low regulator valve settings. However, the air regulator must be installed at a sufficient distance from the quick-opening valve so that the air pressure between the two valves will build up enough to yield the necessary starting force.
4. **Water in the Line** – Water in the line should be avoided because it will remove the protective film of lubrication necessary to ensure proper operation.
5. **Air Filter** – Use an air cleaner in the line to prolong vibrator life and keep it at maximum efficiency and lowest energy consumption. In turbine vibrators, unclean air will accelerate wear of the housing and clog the muffler. In piston vibrators, unclean air will considerably diminish vibrator life and clog clearance between the cylinder and piston. It will also increase wear on the piston, as well as increase air consumption and diminish vibrator efficiency.
6. **Air Lubrication** – Lubrication is necessary ONLY for Piston Vibrators. Turbine vibrators have prelubricated bearings. Lubricated air may clog the muffler on turbine vibrators.
7. **Operation Requirements** – Do not operate a piston vibrator prior to mounting it to a mounting plate or channel.
8. **Using a Timer** – For better efficiency and longer vibrator life, operate the vibrator only as required to maintain flow.
9. **Empty Bin** – Do not operate a vibrator on an empty bin.
10. **Ambient Temperature** – Do not install pneumatic vibrators in environments where ambient temperatures exceed 180°F.



# Syntron Material Handling

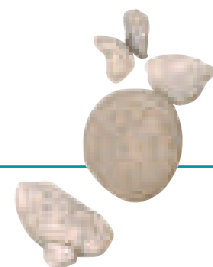
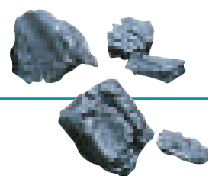
Look to Syntron Material Handling for exceptional value and performance in bulk material handling. For more than 80 years, we've partnered with our customers to solve material handling requirements in the most demanding and diverse industries and applications. Proven, low-maintenance and built to last, our Syntron® line—backed by our expert team of engineers and application specialists—sets the standard for quality, performance and reliability.

Syntron Material Handling is committed to complete customer satisfaction, with fast, efficient solutions for most bulk handling applications. From state-of-the-art electronic data capabilities, to expert sales and engineering support specialists, we're focused on ensuring a smooth design, production and installation process—from start to finish. Once you're up and running, our customer service and field service teams are on call for technical service and support.

# Syntron®

## Vibrators

The first name in vibration technology. Rugged and built to last, Syntron® bulk material handling equipment has a proven track record for reliable, low-maintenance performance for a wide range of industries and applications.





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