

# Service & Installation Manual



## Electric Vibrators

**VIBCO**  
VIBRATORS

Vibco Vibrators

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CANADA

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# GENERAL INFORMATION

## ORDERING SPARE PARTS

Parts should be ordered only through authorized distributors or direct from the factory. The following data should be provided when ordering:

From the nameplate:	Type and serial number of unit.
From spare parts list:	Reference number; Part number; Description; Number of pieces required.
Shipping instructions:	Specify shipping point; Specify method of shipping (truck, air).

## ERRORS, SHORTAGES, COMPLAINTS

Complaints concerning goods received or errors, should be made at once. Claims must be made within five days after receipt of goods. Clerical errors are subject to correction.

## RETURNING PARTS

No parts shall be returned to the factory without written or verbal permission. Material returned to stock is subject to a 10% rehandling charge. Shipping charges must be prepaid.

All return shipments should clearly show your name and address. Our invoice number, against which these parts were returned, must be supplied to insure proper credit.

Orders for equipment built to specifications which vary from our standard units are not subject to cancellation.

## RESPONSIBILITY

We cannot be responsible for delays resulting from strikes, accidents, negligence of carriers, or other causes beyond our control.

## FREIGHT CLAIMS

Should you receive a shipment from us which was damaged in transit, your claim should be filed immediately with the carrier. All parts sold by us are on the basis of F.O.B. Wyoming, Rhode Island.

## PRODUCT CHANGES

The right is reserved to make changes in pattern, design, or materials when deemed necessary without prior notice or obligation to make corresponding changes in previous models.

## PRICE CHANGES

The right is reserved to make changes in pattern, design, or materials when deemed necessary without prior notice or obligation to make corresponding changes in previous models.

## PRICE CHANGES

Prices are subject to change without notice.

## PATENTS

Most of VIBCO'S vibrators are manufactured under one or more of the following patents . . . . .  
3,870,282, 3,932,057, 3,638,914, 3,938,905, 3,672,639, 3,790,137, 3,945,246, 4,042,102, 4,280,616.  
Most of these patents are also filed in most countries outside of the United States.



## MOUNTING INSTRUCTION CHECK LIST

**NOTE:** Warranty is void if vibrators are not properly installed. During installation follow and check off these steps:

1. Determine where the vibrators should be placed on bin, 1/4 or 1/3 up sloping side (page 4)
2. Select thickness of vibrator mounting plate and drill holes for mounting (page 5 #8).
3. Determine the length of channel iron (page 5 #9).
4. Weld mounting plate to channel iron (page 5 #10).
5. Weld channel iron to bin (page 5 #11).
6. Put vibrator on mounting plate. Important — check for warping (page 6 #A, B, C). Secure vibrator firmly.
7. Install safety chain or wire (page 6 #9C).
8. Have a qualified electrician make all necessary electrical installations and install proper overload protection.
9. Take a voltage reading at vibrator while running (page 6 #II). VOLT \_\_\_\_\_
10. Take an amp reading while vibrator is running (page 6 #III). AMPS \_\_\_\_\_
11. Is the force the vibrator produces sufficient? Do you need more or less, see service instructions, page 13

If the above steps have been followed, your vibrator has been installed properly and it should give you years of trouble free service.

### NOTES ABOUT INSTALLATION:

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**IF YOU HAVE ANY QUESTIONS CALL VIBCO's ENGINEERING DEPARTMENT.**



**VIBCO, INC.** In Canada:  
75 Stilson Rd. 2215 Dunwin Dr.  
Wyoming, RI 02898 Mississauga, Ont. L5L 1X1  
Phone: 800-633-0032 Phone: 800-465-9709  
Fax: 401-539-2584 Fax: 905-828-5015

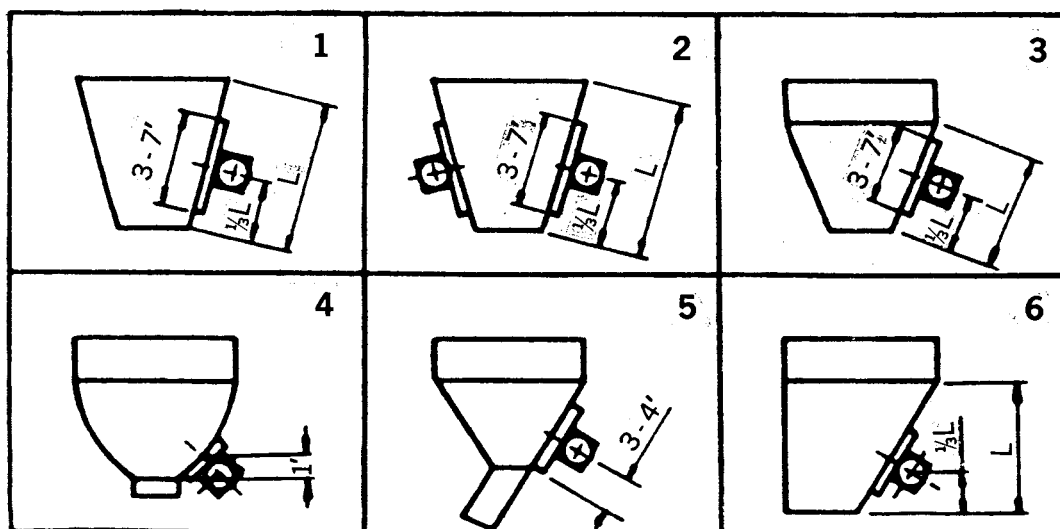
## MOUNTING INSTRUCTIONS

You are now the owner of the finest electric vibrator available. We have complete confidence in it's quality and dependability. You can make it perform at peak efficiency and insure yourself of years of trouble-free service and unnecessary maintenance expense by following these simple "mounting" and "preventive maintenance" rules when you install your vibrator.

When the vibrator is to be used on concrete pipe, prestressed or precast forms or on vibrating tables, ask for your free copy of mounting instructions pertaining to these.

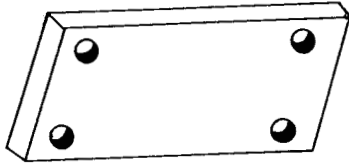
### MOUNTING

The vibrator should, for coarse materials, be placed approximately  $\frac{1}{3}$  of the distance from the discharge opening to the top. For fine grain materials,  $\frac{1}{4}$  of the same distance. NOTE: If possible, mount the vibrator with it's shaft horizontal.



1. CONICAL BINS OR HOPPERS are easily vibrated. Should a second vibrator be necessary, it should be mounted diametrically opposite; for coarse material, mount one vibrator  $\frac{1}{3}$  up the side, the other  $\frac{1}{2}$  up. For fine materials mount the first vibrator  $\frac{1}{4}$  up and the second one  $\frac{1}{3}$  up.
2. RECTANGULAR BINS AND HOPPERS. One vibrator generally clears the walls; if the material still sticks in the corners, increase the vibration by first changing the impact of the vibrator, or change to a larger size or use a second unit mounted opposite the first.
3. RECTANGULAR BINS WITH HOPPER BOTTOMS react the same as #2, but usually more impact is needed.
4. PARABOLIC BINS OR HOPPERS. Normally only one vibrator is needed for each discharge point.
5. BINS WITH SLOPING DISCHARGE. The vibrator is mounted close to the transition between chute and bin to give the chute sufficient vibration for a steady flow.
6. BIN OR HOPPER WITH VERTICAL SIDES reacts the same as paragraph 2.
7. The following pages will show several different applications.

8. MOUNTING PLATE. The vibrator is NEVER placed directly on the skin of a bin. It is either mounted to a plate or channel iron welded to the bin. VIBCO vibrators can be mounted with their shaft vertically or horizontally. The most common is the horizontal mounting with vibrator rotation in direction of material flow. Vertically mounted vibrators will try to create a gyratory effect on the bin and materials, especially desirable when bins are free floating — hanging in springs or resting on isolation shocks.



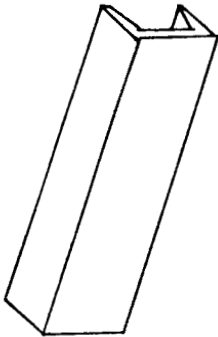
FOR UP TO 100 LBS. OF VIBRATION IMPACT the mounting plate should be 1/8 to 1/4" thick and extend 1-2" larger than the vibrator and welded to a 3" channel iron.

FOR UP TO 1000 LBS. OF VIBRATION IMPACT the mounting plate should be 1/2" thick and be 1-2" larger than the vibrator and welded to a 4" channel iron.

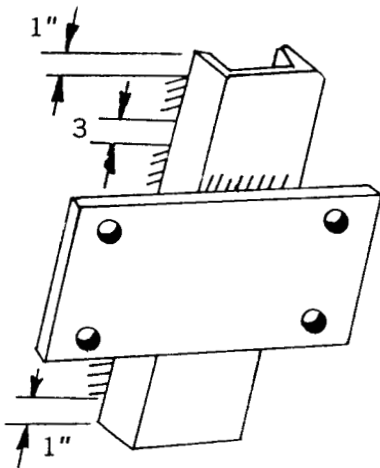
FOR 1000 TO 2000 LBS. OF VIBRATION IMPACT the mounting plate should be 5/8" thick and 1-2" larger than the vibrator and welded to a 4 or 6" channel iron.

FOR 3000 TO 5000 LBS. OF VIBRATION IMPACT use a 3/4" plate and 1-2" larger than the vibrator and welded to a 6-8" channel iron.

FOR OVER 5000 TO 15000 LBS. OF VIBRATION IMPACT use a 1" plate 1-2" larger than the vibrator and welded to a 8-10" channel iron.

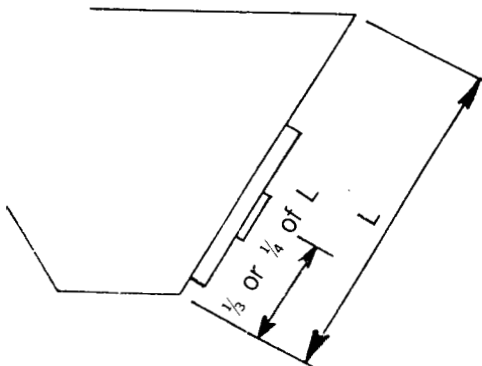


9. THE LENGTH OF THE CHANNEL IRON is determined by the thickness of the bin plate. For 3/16 to 3/8" plate, make the channel iron 3-5' long; under 3/16", make channel iron the length of bin side or 6-7' long; over 3/8" thick, it need only be 2-3' long.



10. WELDING MOUNTING PLATE TO CHANNEL IRON. Weld mounting plate to channel iron so that when channel iron is mounted to the bin side the mounting plate ends up 1/3 up the bin side for coarse material, or 1/4 up for fine materials. Mounting plate should be as close to the middle of the channel iron as possible.

MAKE SURE MOUNTING PLATE DOES NOT WARP. If it warps or bends from welding, follow procedures in paragraph 12 when mounting vibrator.



11. WELDING CHANNEL IRON TO BIN. Tack weld channel iron in place then weld intermittent welds 3-6" long with 3" between them. NOTE: STOP WELDS AT LEAST 1" FROM THE ENDS OF THE CHANNEL IRON — DO NOT WELD THE ENDS. The heat concentration when welding the ends could cause crystallization of the metal and the start of fatigue cracks.

## 12. INSTALLATION OF VIBRATOR

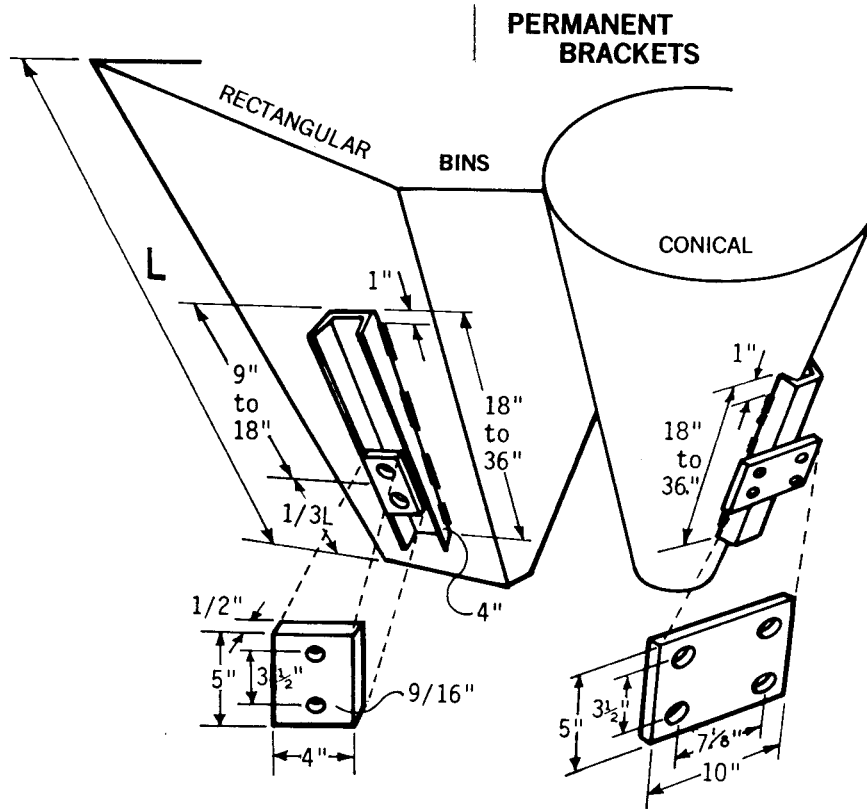
MAKE SURE A QUALIFIED ELECTRICIAN MAKES ALL NECESSARY ELECTRICAL INSTALLATIONS.

### THE VIBCO VIBRATOR IS NOW PUT IN PLACE.

- A. Secure one end bell to the mounting plate with 2 bolts.
  - B. If mounting plate is warped or bent due to the welding, shim up the opposite end bell (over-shim slightly) then tighten mounting bolts.
  - C. Remove end cover on vibrator and spin shaft with finger, it should spin freely — if not, re-shim vibrator. Retighten the bolts after the first 10-15 minutes of running, then check them periodically for tightness. NOTE: A loose vibrator can cause damage to the bin and may also get electrically overloaded, which could cause a motor burnout. It is also advisable to install a safety chain or wire in case the vibrator works itself loose.
- II. TAKE A VOLTAGE READING at the vibrator when running to make sure there is no voltage drop and the vibrator is connected for the same voltage as stamped on the nameplate. If a voltage drop of more than 10% exists, you will overload your vibrator. On single phase units the relay or switch controlling the cut-out of the starter winding will not disengage, causing a fast overheating of starter winding with danger of burnout. The remedy is to:
- A. Check incoming voltage if it is too low notify your electric company.
  - B. Make sure the voltage drop is not caused by a too long extension cord. If this is the case, try to make your connection closer to the vibrator or use a larger wire size in the extension cord, instead of #16 wire, use #14 or #12.
- III. TAKE AN AMPERE READING OF THE VIBRATOR. This is the most important check because it will tell you about your installation. Too high amperage is caused by:
- A. Too flexible installation or too powerful a vibrator. To avoid overloading the vibrator, it will be necessary to reduce the amperage to a safe value (below what is stamped on the nameplate).
    - 1. If a vibrator is too powerful, reduce the vibration by changing the eccentrics to a lower setting (see service instructions).
    - 2. Stiffen up the structure to be vibrated by welding on additional stiffeners — angle or channel irons (same length or longer than the vibrator channel iron). Weld stiffeners 1-1/2 to 2' away from each other. Normally 1 or 2 stiffeners are all that's needed.
  - B. Bin or weld cracks — especially if the new vibrator replaces an old one or your vibrator has been repaired. Inspect all welds and especially end of welds where bin or structural material cracks usually start. To effectively stop a crack, follow it to the end, drill a hole there to prevent further creeping of the crack, weld over the hole and crack.
  - C. Material in a bin acts as a stiffener and the vibrator might operate satisfactorily as long as bin is full or partially full. The vibrator might overload if used when the bin is empty. Overload protection should be used to stop vibrator before the overload damages the winding.

NORMALLY — DO NOT USE VIBRATOR WITH AN EMPTY BIN OTHER THAN FOR SHORT PERIODS TO CLEAN OUT THE BIN.

# MOUNTING SUGGESTIONS



Mounting For  
US-300 - 450T

Mounting For  
US-900



Vertically mounted 2P-450 on  
Crushed Cullet Hopper.

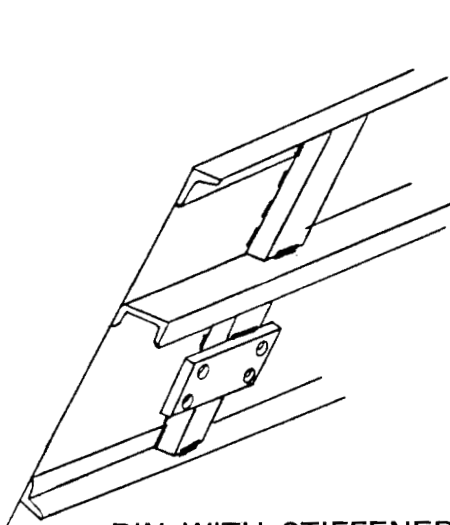
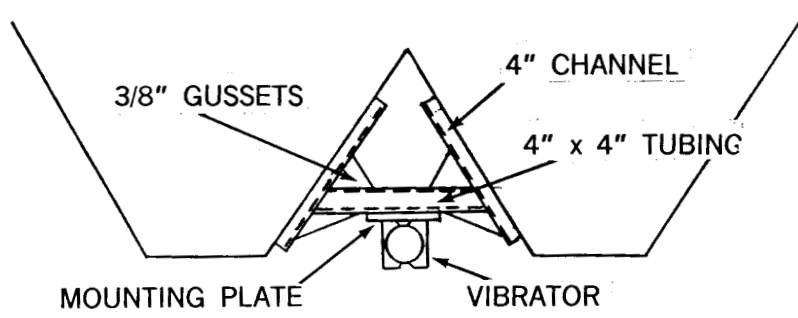


4P-700 on Woodchip Bin with  
Screw Feeder.

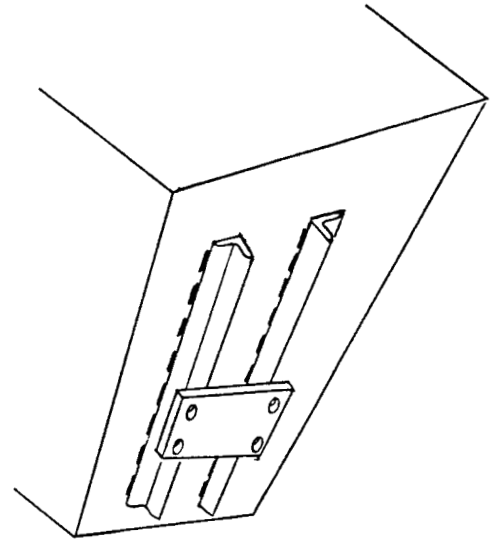


2P-200 on Dust Collector Hoppers

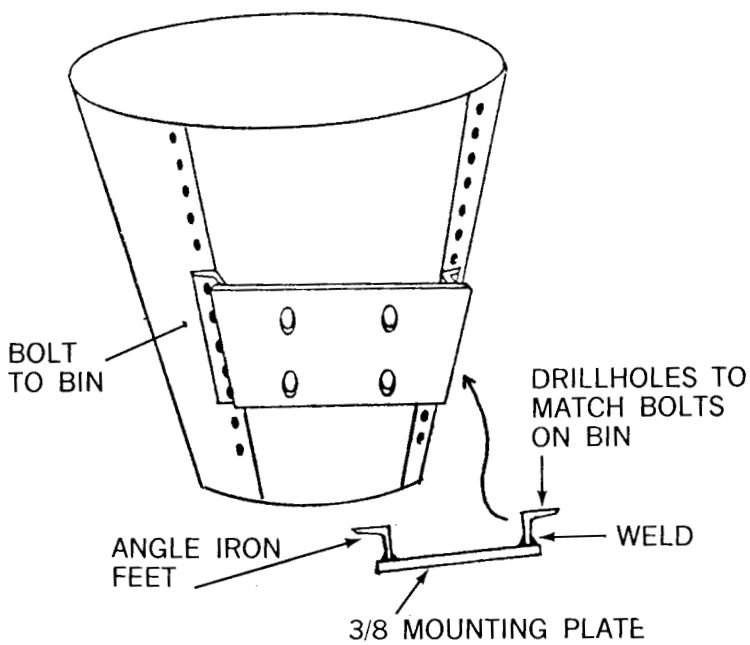
ONE VIBRATOR FOR A DOUBLE BIN



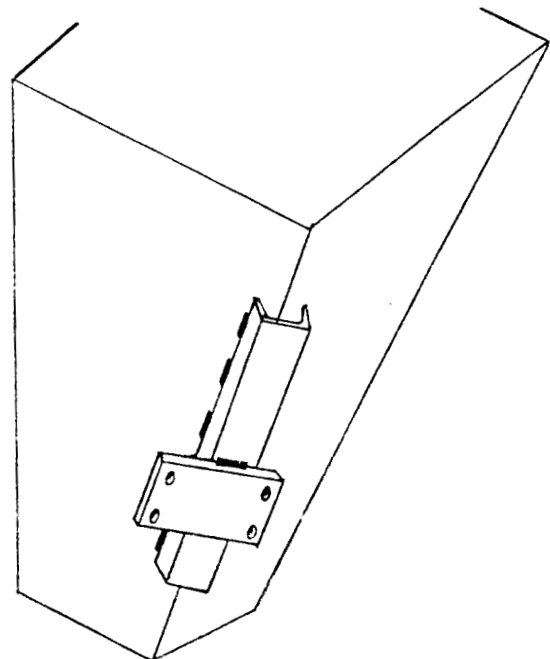
BIN WITH STIFFENERS



ANGLE IRON STIFFENERS  
INSTEAD OF CHANNEL IRON

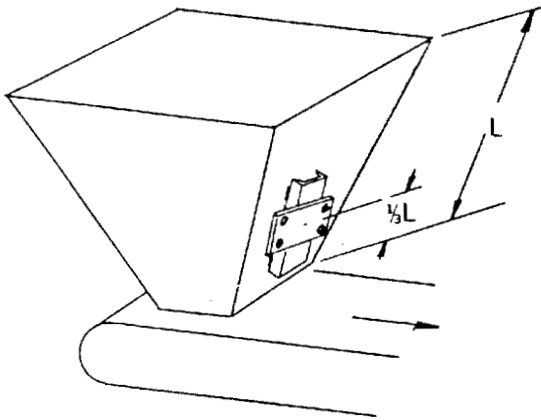


SHEET METAL BIN

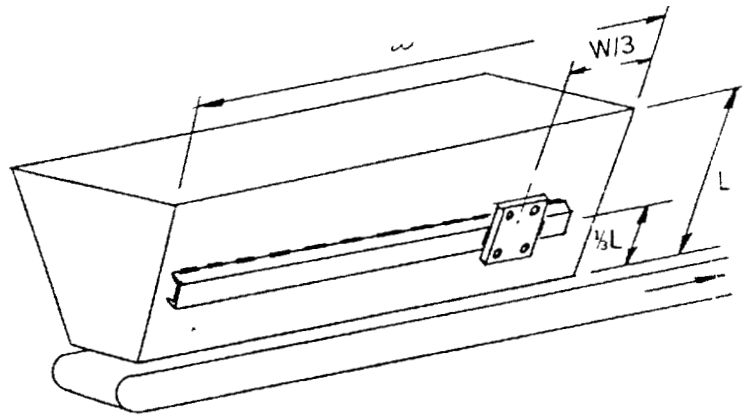


THIN SKINNED BIN — CORNER MOUNT

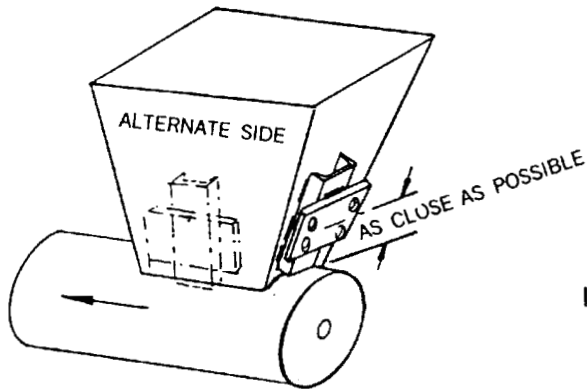




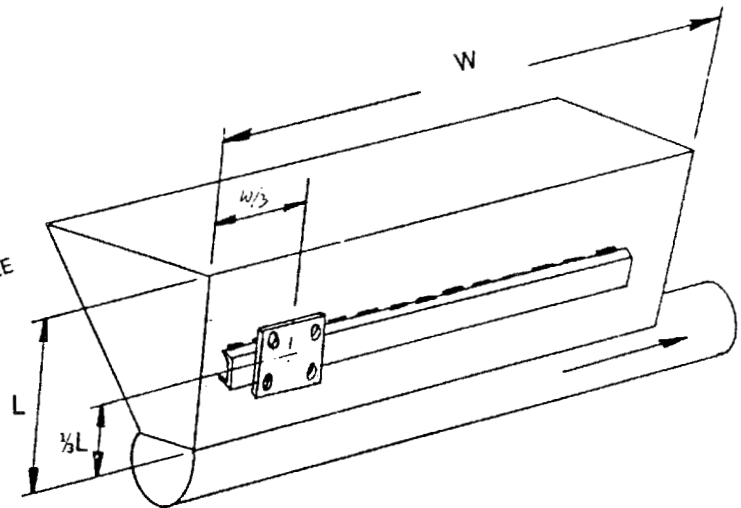
**BELT CONVEYOR & STANDARD BIN**



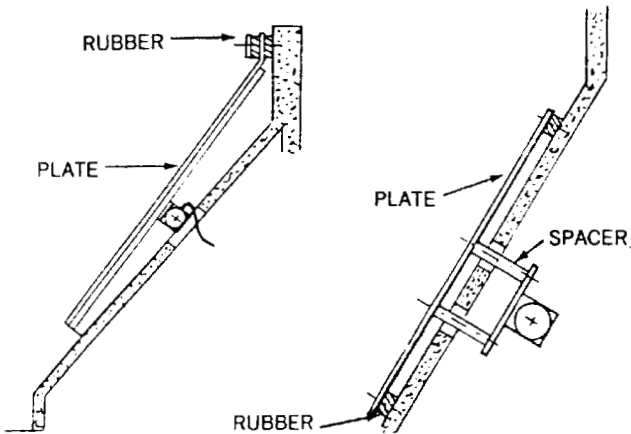
**LONG BIN** — Belt conveyor feeds from the front. Vibrator should be placed 1/3 from front. If 2 vibrators are used place 2nd one directly opposite 1/3 from back. Do not run back one until bin is empty in front. Stop front unit.



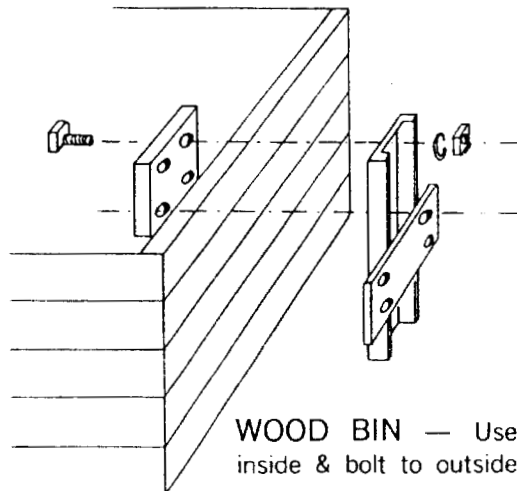
**SHORT SCREW FEEDER** — Place vibrator as close as possible to feeder.



**SCREW FEEDER** — Feeds from back. Vibrator should be placed 1/3 from back. If 2 vibrators are used place 2nd vibrator directly opposite 1/3 from front. Do not run front one until bin is empty in back. Stop back unit. For more details consult Vibco.



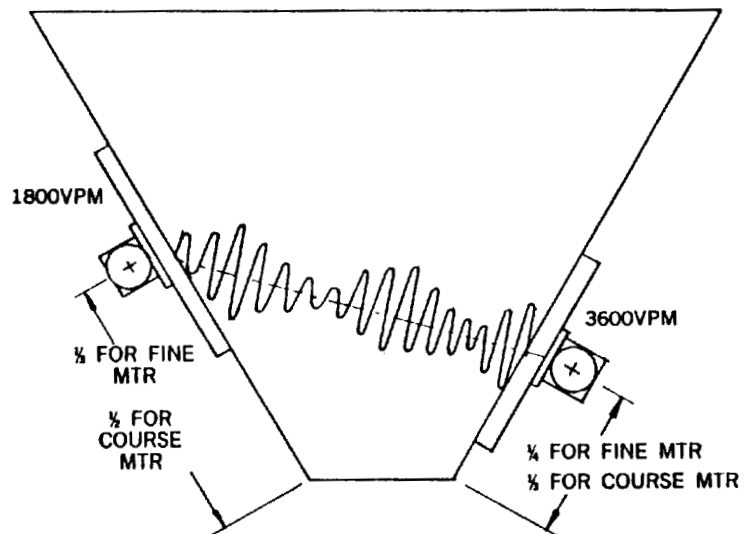
**CONCRETE BIN** — Mount steel plate on inside of bin - mount so that vibrator ends up 1/3 up bin side. Isolate the plate from the concrete by using vibration shock absorbers. Consult Vibco for detailed drawings.



**WOOD BIN** — Use steel plate on inside & bolt to outside mounting plate.

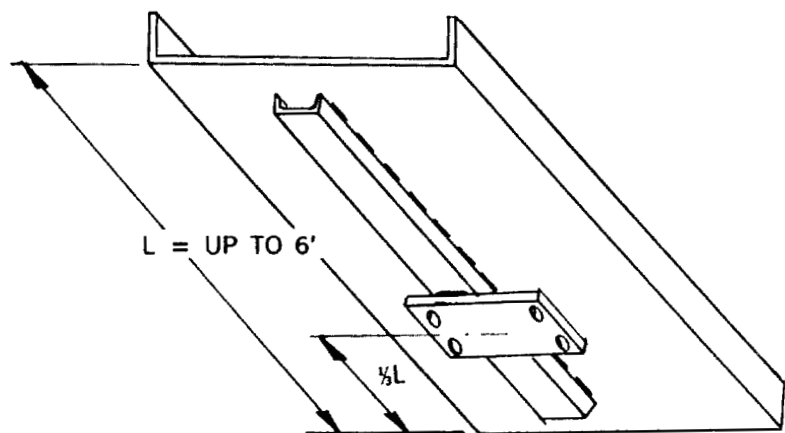
## INTERFERENCE VIBRATION

For real tough materials, large bins, bins containing different particle sizes or a bin used to store different materials, a better result in moving the material is obtained with "Interference Vibration". This is accomplished by using two vibrators on the bin with different frequencies (speed). The most common vibrator speeds are 3600 and 1800 rpm. For example: A bin containing 15,000 lbs. of material needs 1500 lbs. of vibration force. We elect to use two vibrators, one 1800 rpm 4P-700 with 700 lbs. of force max, and one 2P-450 3600 rpm with 900 lbs. max force. The 3600 rpm unit is mounted closest to the discharge, 1/3 up the bin side, the 4P-700, directly opposite and 1/2 way up the bin side. The two frequencies of the vibrators will "interfere" with each other and create a simulated vibration of  $3600 + 1800 = 5400$  vpm to  $3600 - 1800 = 1800$  vpm. The cycling between 5400 vpm and 1800 vpm will, in 90% of all materials, go through the materials "resonance" frequency. At "resonance" frequency, any material will flow easily and freely. This is the reason why interference vibration will move the most stubborn materials. Consult VIBCO for further details.



## CHUTES

To successfully move material in a chute, the "angle of repose" of the material has to be known. It can be found in most handbooks or can easily be measured by dumping a cup of the material on a table. The angle between the table and the cone the material makes is the angle of repose. To move the material in the chute, it should be inclined no less than 1/2 of the angle of repose. If this cannot be obtained, a feeder is necessary to move the material.



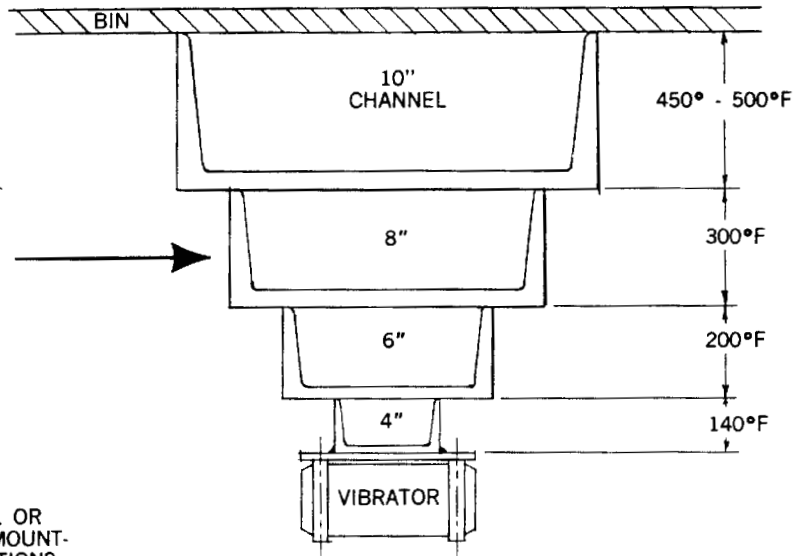
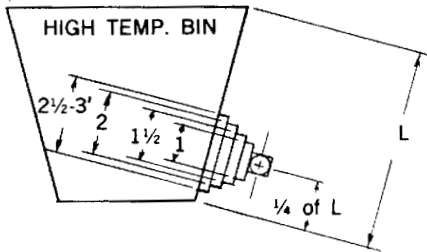
- Chutes up to 6' are generally handled by one vibrator mounted approximately  $\frac{1}{3}$  from the discharge.
- On chutes over 6' to 10' long, two vibrators are needed, one should be placed 18-24" from the discharge. The other approximately in the middle. Since chutes are very sensitive to vibration, provision should be made to move the lower vibrator 6" in either direction. This could mean the difference between moving the material or not moving it.
- The direction of rotation of the vibrator shaft should be in the direction of material flow.
- Force (impact) needed on vibrator is equal to weight of chute + vibrator + max material in chute.

Chutes must have an inclination of at least  $10^\circ$  for vibrators to be able to move the material. If inclination is less the chute has to be made into a feeder. Contact VIBCO for selecting the proper size vibrator or ask for bulletin covering chutes.

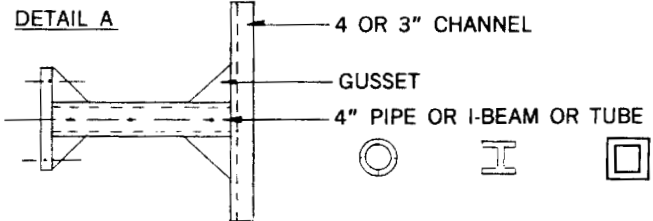
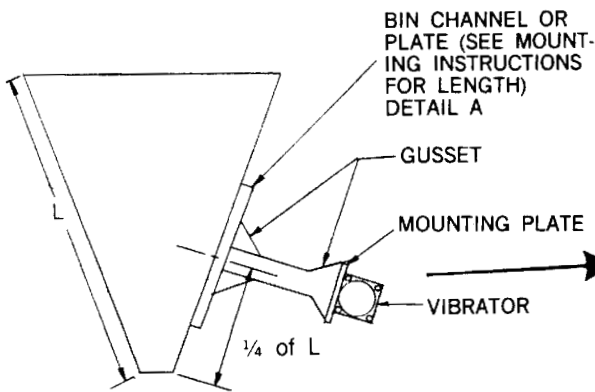
## HEAT MOUNTS FOR (INSULATED) BINS CONTAINING HIGH TEMP MATERIALS

When materials in bin have a temp. over 150°F, it is advisable to use a "heat" mount to prevent excessive heat reaching the vibrator causing vibrator overload or bearing failures. Also ask for "high" temp. grease in vibrator bearing and special high heat resistant winding. Consult with a VIBCO engineer.

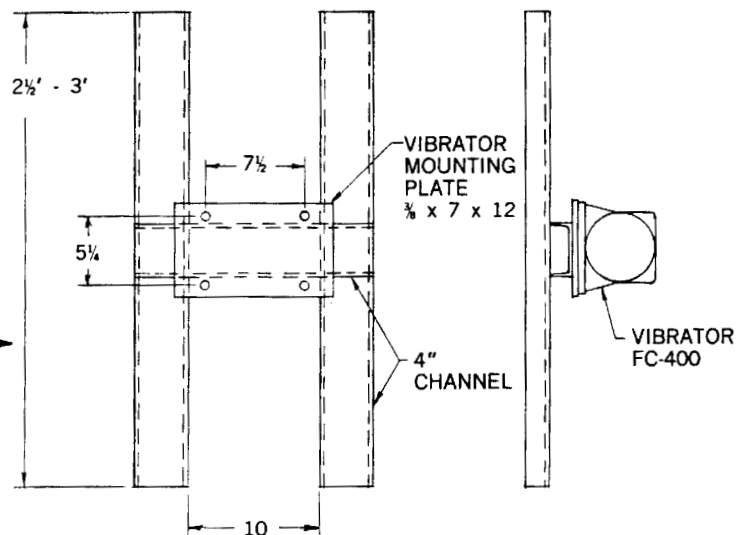
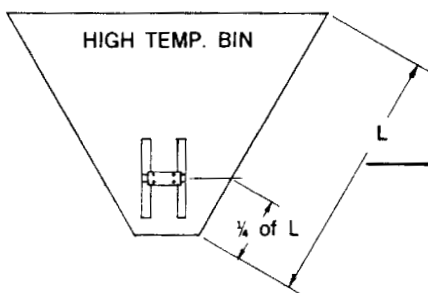
**#1**



**#2**



**#3**



# GENERAL SERVICE INSTRUCTIONS

## ELECTRIC VIBRATOR MODEL SELECTOR

<u>ELECTRICAL DATA</u>	<u>2P</u>	<u>4P</u>	<u>6P</u>	<u>8P</u>	<u>SPR</u>	<u>US</u>	<u>SFC</u>	<u>FC</u>	<u>SCR</u>
115 volt 1 phase	X	X	X	X	X	X	X	X	X
230 volt 1 phase	X	X	X	X			X	X	
Any voltage 3 phase	X	X	X	X			X	X	
50 cycles	X	X	X	X	X	X	X	X	X
Continuous duty	X	X	X	X	X		X	X	X
Intermittent duty						X			
More than 20 stops & starts per hr. 3 phase	X	X	X	X			X	X	
More than 20 stops & starts per hr. 1 phase	X1	X1	X1	X1	X	X	X1	X1	
Totally enclosed	X	X	X	X	X2	X3	X	X	X
Outside fan cooled								X	
Built in overload protection 1 phase	X	X	X	X	X	X	X	X	X
Adjustable speed	X4				X4	X			X
Adjustable eccentric	X	X	X	X		X	X	X	X
Decibel at 3' on A scale	60	60	60	60	48	90	62	62	65

<u>APPLICATION</u>	<u>2P</u>	<u>4P</u>	<u>6P</u>	<u>8P</u>	<u>SPR</u>	<u>US</u>	<u>SFC</u>	<u>FC</u>	<u>SCR</u>
Outside	X	X	X	X	X	X	X	X	X
Water splash	X	X	X	X	X	X5	X	X	X
Powder in air dry	X	X	X	X	X2	X	X	X	X
Powder in air sticky	X	X	X	X	X	X	X	X	X
Powder in air metallic	X	X	X	X		X	X		X
High temperature	X6	X6	X6	X6			X6	X	
Bins with coarse mtr.	X				X	X	X	X	X
Bins with fine mtr.	X				X	X	X	X	X
Bins lumpy or stick mtr.		X	X						
Bins with stringy mtr.		X	X	X					
Bins powdery & sticky mtr.						X			
Packing coarse mtr.	X						X	X	X
Packing fine mtr.		X							X
Stringy-fluffy mtr.			X	X					
Concrete	X					X			
Screens		X	X	X					X
Feeder-chutes	X	X	X	X					X

"X" indicates availability

X1- Model 2P, 4P, 6P, 8P, SFC, & FC are capacitor start or capacitor run motors. The capacitor manufacturer recommends max 30 stops & starts an hour.

X2- Model SPRT is totally enclosed (close to NEMA 12 general enclosure), Model SPWT is water-tight (NEMA 4)

X3- Model US-100 is of open construction, the other US models are totally enclosed (NEMA 12).

X4- See "speed adjustability."

X5- US-100 has an open construction and should not be water splashed.

X6- See "winding temperature."

## CENTRIFUGAL FORCE (IMPACT)

All the electric vibrators have eccentrics attached to the motor shaft. Some are permanently fixed and some are adjustable as per below.

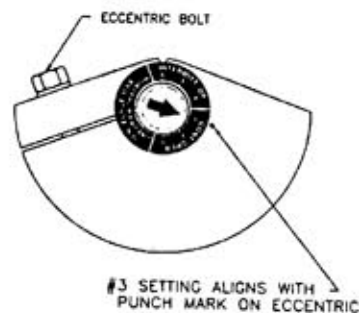
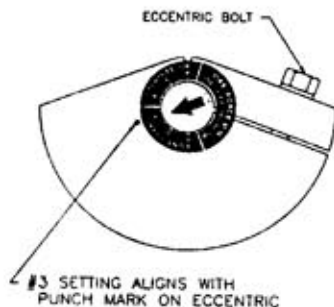
Model 2P (see 2P-75, 2P-100, US-450, SCR-200 below), 4P, 6P, 8P, FC, SFC, US-900, 1600, SCR-500, 1000 vibrators have adjustable eccentrics to give higher or lower impact to suit the application. They are adjustable as follows: Remove the end covers, both sides of the vibrator. The eccentrics will then be in view. There are two different systems of eccentrics. **First system:** The outside eccentric is secured to the inside one with a socket head cap screw. There is either 3 or 6 holes in the outside eccentric. Remove the set screw and turn eccentric to desired position, the diagram below will tell the force at the different positions. **NOTE:** The eccentric should be set at the same number on each side of the vibrator to give uniform vibration.

**Second system:** The eccentrics are clamped onto the shaft. They are also marked from 1 to 6. Loosen bolt holding eccentrics to shaft and swing eccentric on shaft, line up desired number (force as per table below) with arrow stamped in shaft. Secure bolt firmly. **NOTE:** Set eccentrics on both sides of vibrator on the same number.

Force (Impact) at Different Eccentric Settings in Lbs.

Model	1	2	3	4	5	6	Model	1	2	3	4	5	6
2P-75	50	75*	100										
2P-100	50	100*	150				6P-1500	800	1000	1200*	1300	1400	1500
2P-150	75	150*	300				6P-2500	1200	1600	1900*	2100	2350	2500
2P-200	150	300*	450				6P-5000	2450	3050	3850*	4150	4350	4500
2P-450	50	350	650*	900	1000	1100	6P-7500	3650	4800	5700*	6300	6650	7000
2P-800	50	500	950*	1300	1500	1700	8P-500	150	225	300*	360	425	500
2P-1700	800	1000	1500*	2000	2300	2500	8P-750	200	400	525*	650	700	750
2P-2500	0	1000	1900*	2600	3100	3500	8P-1000	200	400	600*	750	875	1000
4P-350	75	150*	300				8P-1250	700	900	1050*	1110	1190	1250
4P-600	230	270	350	425	480	500	8P-2500	1370	1750	2150*	2250	2375	2500
4P-700	0	160	325*	450	575	700	8P-4000	2100	2700	3200*	3350	3575	3750
4P-1000	275	350	550*	700	870	1000	US-900	600	950*	1100			
4P-1400	250	500	750*	1000	1200	1400	US-1600	1100	1600*	1900			
4P-2000	650	850	1200*	1500	1800	2000	SCR-200	50	125*	200			
4P-3000	1500	1800	2200	2500	2700	3000	SCR-500	150	300*	500			
4P-5000	2500	3500	3800*	4100	4300	5000	SCR-1000	50	350	675*	900	1000	1100
4P-10000	5475	7660	8550*	9000	9450	10000	SFC-100	50	100*	150			
4P-15000	8200	10500	12800*	13600	14300	15000	SFC-300	75	150*	300			
6P-300	0	100	225*	250	275	300	FC-100	75	150*	300			
6P-500	50	150	225*	300	400	500	FC-400	150	300*	450			
6P-1000	200	500	625*	750	875	1000							

\* Normal setting - higher settings for intermittent use only



### To Adjust Eccentric Settings:

1. Remove both end covers of vibrators.
2. Loosen the bolt that holds the eccentric to the shaft.
3. Turn the eccentric on the shaft to adjust force output. Align the arrow on the shaft to the desired setting. The higher the number, the greater the force.  
NOTE: Both ends of vibrator must be at same setting.
4. Tighten eccentric bolts and reinstall end covers.
5. Figures above show eccentrics at factory setting (#3 setting).

## CONTINUOUS VERSUS INTERMITTENT OPERATION

Experience has taught us that it is always preferable to use a vibrator intermittently instead of continuously.

When vibrating a bin 1/2 or more full continuously, a densification effect due to the vibration will occur in the straight part as well as the sloping part of the bin. This is especially so during low discharge rates. This densification will, in some cases, set up dead storage of dormant material in the corners of the bin. This material will not be moved out of the bin until all other material has been removed and in some cases, additional vibration force is necessary to move this material.

The intermittent operation or cycling of the vibrators will prevent this dead storage build-up, due to the vibrator exciting it's speed from 0 to maximum and then from maximum to 0 when stopping. Most materials have a resonance frequency in the 0 - maximum range. When the vibrator frequency reaches the material resonance, the vibrator force will move and vibrate the material more violently than at any other speed. This will prevent build-up and dead storage.

### TIMERS

To obtain cycling automatically, a timer can easily be connected into the circuit. For a manual operation, a simple push for "on" and release for "off" switch can be installed. A micro-switch, actuated by a paddle in the material flow direction is useful to automatically control intermittent flow application, or for continuous flow installations where bridging occurs infrequently.

The "on" and "off" time is easily determined by timing the discharge; when the discharge is just above the minimum rate required, a new vibration shock is necessary to keep it moving. The vibration shock should be between 5 to 30 seconds. The very short periods have the best effect. A note has to be made: always be sure to use an "on-off" ratio of at least 1:7 for short spurts of vibration of up to 10 seconds. For example, 5 seconds on, 35 seconds off. By observing this, you will stay within the limits for the motor and it will not overheat. For shorter off time, the motor duty is called "severe duty" and the life of the motor will be severely reduced due to overheating.

Capacitor start motors have a maximum of 30 stops and starts per hour. If more frequent, the capacitor may shorten out and "blow." For more stops and starts, either use 3 phase units for larger applications or the SPR line.

### SPEED ADJUSTABILITY

2P-75, 2P-100 and 2P-150 are capacitor run motors and can be speed adjusted with standard rheostat or electric speed control. All other heavy duty line 3 phase can be speed adjusted with a frequency inverter.

# SFC, & FC

## MODEL SFC End Mount MODEL FC Fan Cooled

### PLUS VALUES:

- **TOTALLY ENCLOSED**
- **CONTINUOUS DUTY**
- **ADJUSTABLE ECCENTRICS**
- **OUTSIDE FAN-COOLED FOR HIGH HEAT APPLICATIONS**
- **CAN TAKE ANY NUMBER OF STARTS AND STOPS**
- **1 AND 3 PHASE MODELS**

### VIBCO'S POPULAR SFC VIBRATORS ARE:

favorites for use indoors and outdoors where a lightweight, totally enclosed vibrator is required to keep materials moving to automatic productions machines, in small to medium size bins, chutes, screens, etc. Ease of mounting, low amperage draw, makes these units popular for O.E.M. applications.

MODEL FC with high capacity external fan and heat resistant winding makes the FC units ideal for applications where ambient temperature is high or heat is transferred through bin skin. Consult VIBCO for application limits.



## TECHNICAL DATA

Model	Ph.	Amp.	Volt***	V.P.M.**	Force (Impact) lbs./N Adjustable						dB*	Wt.	
					Min.		Norm.		Max.			lbs.	kg.
					lbs.	N	lbs.	N	lbs.	N			
SFC-100	1	4.2/2.1	115/230	3600	60	267	100	445	150	667	60	25	11.3
	3	1.6/.8	230/460									21	9.5
SFC-300	1	4.2/2.1	115/230	3600	100	445	220	979	300	1335	62	27	12.2
	3	1.6/.8	230/460									23	10.4
FC-100	1	4.2/2.0	115/230	3600	100	445	220	979	300	1335	62	34	15.4
	3	1.6/.8	230/460									31	14.1
FC-400	1	4.2/2.1	115/230	3600	150	667	300	1335	450	2002	64	35	15.9
	3	1.6/.8	230/460									32	14.5

\* dB at 3' (1 meter) on A-scale N = Centrifugal force in Newton

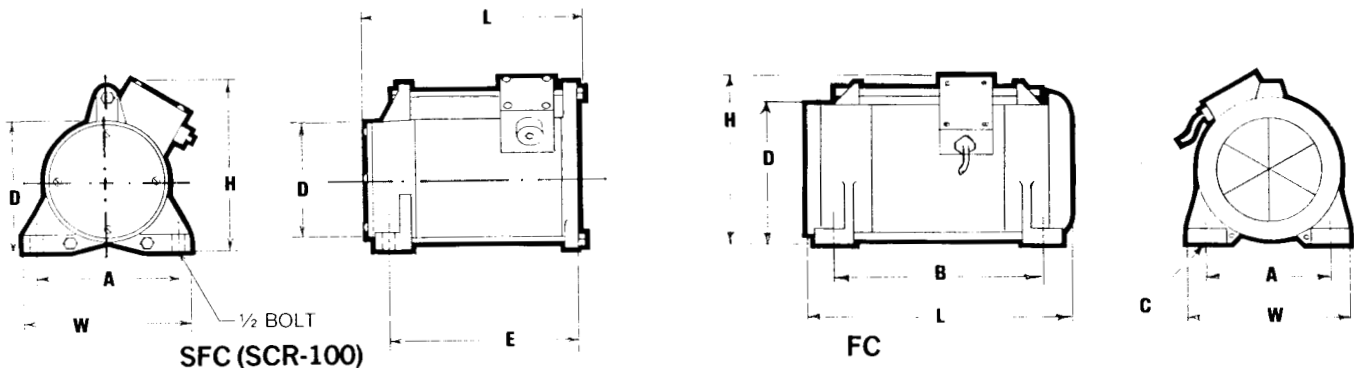
\*\* 1800 V.P.M. (Vibrations Per Minute) available

\*\*\*575 Volt available

## DIMENSIONS

Model	8	203	6½	165	6¾	170	5¼	133	—	½	12	4½	114	6¾	155
SFC															
FC	10	254	6½	165	6¾	170	5¼	133	7½	190	½	12	4½	114	—

\*Bolt size to be used



## ELECTRIC VIBRATORS



2P-75



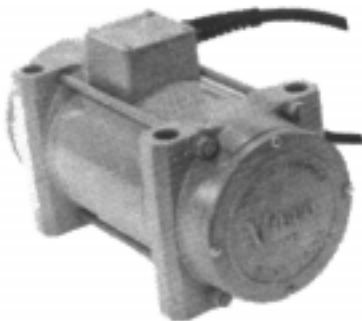
2P-100



2P-150



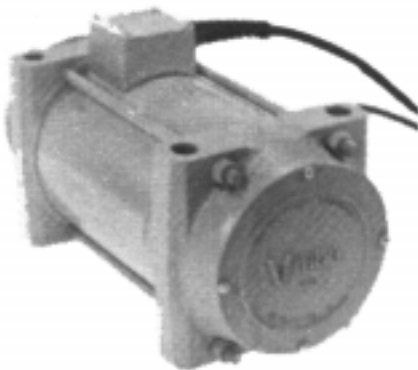
2P-200  
4P-350



2P-450  
4P-700  
6P-300



4P-1000  
6P-500



2P-800  
2P-1700  
4P-1400

# The Unbeatable

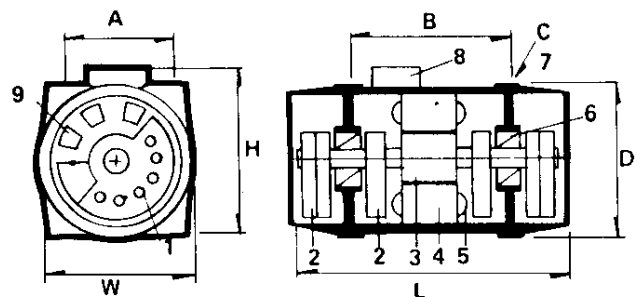
Adjustable Eccentrics •

• Rugged •

Vibco noiseless motor vibrators made in the U.S. by skilled American Craftsmen follow American NEMA and ASTM standards. Vibco Vibrators are totally enclosed, continuous duty and completely noiseless. They can be used inside or outside, in dust, dirt, rain or snow. Vibco's lines of heavy duty vibrators will solve any vibration problem such as: speed the flow of bulk materials through the smallest bin, hopper, and chute, to the largest silo; pack materials in drums and bags; consolidate concrete in pipe, precast and prestressed industries; for screens and screeds and a variety of other industrial applications.

## WHY VIBCO BECAUSE . . . .

- CHOICE — 30 - made in the U.S. heavy duty and completely self-contained units.
- DURABILITY — built stronger throughout; years of service in all types of applications, inside and outside, have proven the Vibco quality.
- EFFECTIVE — multi-directional force proven safest to your equipment and most efficient.
- NOISELESS — no more sound than an electric motor
- ECONOMY — maintenance free, no costly controls, low operating cost.
- GUARANTEE — every VIBCO is fully guaranteed both mechanically and performance-wise.
- SERVICE — over two-decades of vibration know-how, and distributors throughout the U.S.



- DESIGN —
1. Adjustable eccentrics for easy change of force to suit application.
  2. Load equally distributed over bearings for additional life.
  3. Unloaded rotor due to No. 2 to take excessive vibration shock without it hitting stator lamination and burning out.
  4. Oversized electric motor for higher safety factor - watt/lbs. impact.
  5. High heat resistant winding to take additional overload and heat.
  6. Oversized bearings for longer life.
  7. Mounting bolts over force center for efficient vibration transfer.
  8. Terminal box for easy connection and change of voltage.
  9. Internal vent holes for additional cooling in high temperature application.



# VIBCO Heavy Duty Lines

- Totally Enclosed • Continuous • Completely Noiseless
- Maintenance Free • Fully Guaranteed

## TECHNICAL DATA

Model	Phase	1 phase			3 phases			Force (Impact) lbs./N**** Adjustable						**dB	Weight***	
		Amperes at Volt			H.P.	Min.		Max.		lbs.	N	lbs.	N		lbs.	kg.
		115/230	230/460	575		lbs.	N	lbs.	N							
<b>3600 VIBRATIONS PER MINUTE — 2 POLE</b>																
2P-75	1 & 3	.5/25	.2/1	—	1/5	50	222	75	334	100	445	60	8	3.6		
2P-100	1 & 3	.5/25	.2/1	—	1/5	75	334	100	445	150	667	63	10	4.5		
2P-150	1 & 3	1.8/9	.6/3	.12	1/4	100	445	200	990	300	1335	63	19/18	8.6/8.2		
2P-200	1 & 3	3/1.5	1/5	.45	1/3	150	667	300	1335	450	2002	62	30/28	23.6/12.7		
2P-450	1 & 3	5/2.5	1.2/6	.5	1/2	50	489	650	2002	1100	4004	64	48/34	21.8/15.4		
2P-800	1 & 3	8/4	2/1	.8	3/4	50	2002	950	3893	1700	7563	70	85/80	38.6/36.3		
2P-1700	3	—	3/1.5	1.2	1 1/2	800	3782	1500	7341	2500	11123	72	90	31.8		
2P-2500	3	—	5/2.5	3.0	2	1700	7563	2450	10900	3500	15572	73	95	43.1		
2P-3500*	3	—	5/2.5	1.7	2	1700	7563	2450	10900	3500	15572	75	95	43.1		
2P-4500*	3	—	5.5/2.8	3.1	2	2200	9790	3150	14018	4500	20021	76	98	44.5		
2P-5500*	3	—	8/4	3.2	3	2700	12015	4600	20470	5800	25810	72	155	70.5		
<b>*Special Bearings for Concrete Applications. 1800 VIBRATIONS PER MINUTE — 4 POLE</b>																
4P-350	1 & 3	4/2	1/5	.3	1/4	100	445	200	890	300	1335	60	33/31	15/14		
4P-600	1 & 3	4.2/2.1	1/5	.3	3/8	280	1246	370	1646	500	2225	60	36/34	16.4/15.5		
4P-700	1 & 3	6/3	1.2/6	.6	1/2	300	1335	500	2225	700	3114	63	51/40	23.2/18.2		
4P-1000	1 & 3	6.2/3.1	1.2/6	.6	1/2	350	1557	700	3114	1000	4449	63	54/43	24.6/19.6		
4P-1400	1* & 3	*—	3.5/1.8	1.2	1	600	2669	1100	4894	1400	6229	70	70/63	31.8/28.8		
4P-2000	3	—	4/2	1.6	1 1/2	1000	4449	1500	6674	2000	8898	72	98	44.5		
4P-3000	3	—	6/3	2.4	2 1/2	1500	6674	2200	9788	3000	13347	74	155	70.3		
4P-5000	3	—	6/3	2.4	3	2500	11123	3800	16906	5000	2245	75	195	88.5		
4P-10000	3	—	10/5	4	5	5475	24358	8550	38039	10000	44490	76	495	225		
4P-15000	3	—	24/12	10	7.5	8200	36482	12825	57058	15000	66735	76	660	299		
<b>1200 VIBRATIONS PER MINUTE — 6 POLE</b>																
6P-300	1 & 3	4/2	1.2/6	.5	1/4	150	667	200	890	300	1335	60	48/34	21.8/15.4		
6P-500	1 & 3	4.2/2.1	1.6/8	.5	1/4	150	667	300	1335	500	2225	60	52/38	23.6/17.2		
6P-1000	3	—	4/2	1.6	1	500	2225	750	3337	1000	4449	72	98	44.5		
6P-1500	3	—	6/3	2.4	1 1/2	800	3559	1200	5339	1500	6674	74	155	70.3		
6P-2500	3	—	6/3	2.4	2	1200	5339	1900	8453	2500	11123	75	195	88.5		
6P-5000	3	—	10/5	4	3	2450	10900	3850	17129	4500	20021	76	495	225		
6P-7500	3	—	24/12	10	5	3650	16239	5700	25359	7000	31143	76	660	299		
<b>900 VIBRATIONS PER MINUTE — 8 POLE</b>																
8P-500	1 & 3	—	4/2	1.6	1/4	150	667	300	1335	500	2225	65	98	44.5		
8P-750	3	—	6/3	2.4	1/4	400	1780	650	2892	750	3337	74	165	74.8		
8P-1250	3	—	6/3	2.4	1	700	3114	1050	4671	1250	5561	75	195	88.5		
8P-2500	3	—	10/5	4	1 1/2	1370	6095	2150	9565	2500	11123	76	495	225		
8P-4000	3	—	24/12	10	2	2100	9343	3200	14237	3750	16684	76	660	299		

\* Consult factory for availability

Note: Most Vibrators available in both 50 & 60 cycles. 115 to 575 volt.

\*\* Decibel at 3' (1 meter) on A scale

\*\*\*First figure 1 phase units, the other 3 phase units

\*\*\*\* N = Centrifugal Force in Newton

The VIBCO Engineer is at your disposal for supplying you with the recommendations, engineering data, mounting instructions and installation drawings. Our Field Engineers have a thorough knowledge built up through years of practical experience in applied vibration. All recommendations are free and without obligation.

**NOISELESS — AS LOW AS 60dB AT 3' ON A-SCALE**

## ELECTRIC VIBRATORS



2P-2500

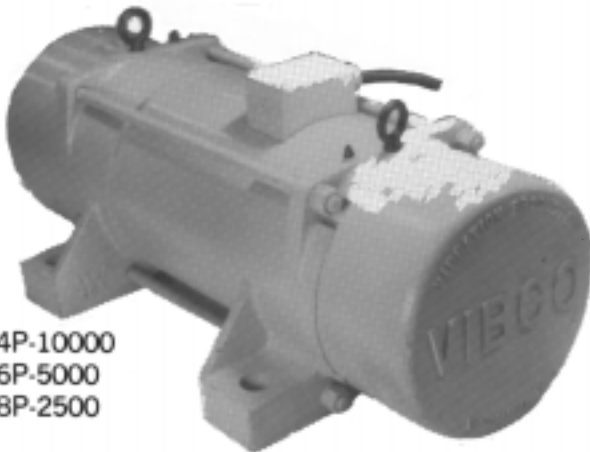
4P-2000  
6P-1000  
8P-500



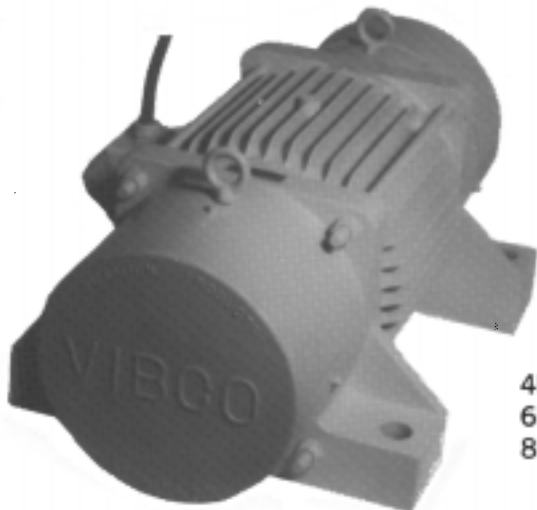
4P-5000  
6P-2500  
8P-1250



4P-10000  
6P-5000  
8P-2500



4P-15000  
6P-7500  
8P-4000



# The Unbeatable

2P Models with 3600 rpm are the most versatile and popular vibrators. Centrifugal force output from 50-3500 lbs. used on all types of bins containing fine to granular materials, for packing coarse materials and casting concrete, etc.

4P Models with 1800 rpm have a force output of 100 to 15,000 lbs. Used on bins containing lumpy or sticky materials for packing light fluffy materials, also a typical screen vibrator.

6P & 8P Models with 1200 & 900 rpm are used in applications requiring low frequency and very high amplitude vibration such as screening and packing of very light and fluffy materials.

### **FORCE OUTPUT: 50-150 lbs.**

Force output 50-150 lbs. Model 2P-75 & 2P-100, smallest in the line. For bins up to 10 cu. ft. capacity. Typical uses: powder hoppers, filling machines, feeding tracks, small O.E.M. applications. Comes in both single phase 115 volt and 3 phase. Single phase units speed adjustable with standard rheostat.

### **FORCE OUTPUT: 50-300 lbs.**

Force output 50-300 lbs., Model 2P-150. For bins up to 20 cu. ft. Adjustable eccentrics with 3 force settings. Typical uses: batchers, supply and blending hoppers.

### **FORCE OUTPUT: 150-450 lbs.**

Force output 150-450 lbs. Model 2P-200, 4P-350. For bins up to 50 cu. ft. or 3 ton. Model 2P-200 the most popular unit for the larger bins in the small bin group. A unit to standardize on for the indoor filling bins. Typical uses: Model 2P-200, batchers, surge hoppers, chutes; 4P-350, screening and scalping of parts, packaging: conveyors and tables.

### **FORCE OUTPUT: 100-900 lbs.**

Force output 100-900 lbs., Model 2P-450, 4P-700 & 1000, 6P-300 & 500. Model 2P-450, our most popular vibrator, to be used on bins up to 25 tons. Can be used on the small to large chemical, food, foundry, and concrete bins. It's low cost makes it a true unit to standardize on. The just-right-size and weight, under 50 lbs., makes it ideal to use for packing and casting tables, for precast and prestressed forms, and other portable installations.

Model 4P & 6P. Excellent units for the medium size screen in foundry, chemical or food industries, packing powder materials in cartons, barrels or boxes.

### **FORCE OUTPUT: 450-1700 lbs.**

Force output 450-1700 lbs., Model 2P-800. For bins with capacity of 25-50 tons. The unit with the reputation of "lasting forever." It's oversized bearings truly make it operate year in and year out without any maintenance. Typical uses: railroad car-shakers, cement silos, stone bins, large screens, concrete tables.

### **FORCE OUTPUT: 700-3500 lbs.**

Force output 700-3500 lbs. Models 2P-1700 & 2500, 4P-1400 & 2000, 6P-1000 & 8P-500. For bins of 100-200 ton capacity. Typical uses: coal bunkers, chip silos, concrete pipe, precast tables, packing, chutes and screens. The lower rpm units especially for packing tables and screens.

### **FORCE OUTPUT: 3500-15,000 lbs.**

Force output 3500-15,000 lbs. Models 4P-3000, 500, 10,000 and 15,000, 6P-1500, 2500, 5000 & 7500; 8P-750, 1250, 2500 & 4000. The only vibrators with large enough force and amplitude to move such stubborn materials as cinder, coal, lime, clay, ore, etc., in the large bunker or silo, the large screen or chute or wherever a giant vibration shock is needed to break material loose and moving.

# VIBCO Heavy Duty Lines

## DIMENSIONS

Model	Phase	L Inch/mm		W Inch/mm		H Inch/mm		A Inch/mm		B ± 1/16 Inch/mm		C** Inch/mm		D Inch/mm	
2P-75	1 & 3	7 1/2	190	4 1/8	105	5	127	3	76	4 11/16	119	5/16	8	3 9/16	90
2P-100	1 & 3	8 3/16	208	4 1/8	105	5	127	3	76	4 11/16	119	5/16	8	3 9/16	90
2P-150	1 & 3	10 3/4	258	4 7/8	124	6 1/4	160	3 1/2	89	6 3/8	162	1/2	12	4	102
2P-200 4P-350	1 & 3	11 3/16	284	5 3/4	145	6 3/8	162	4 1/2	114	7	178	1/2	12	5 1/16	130
4P-600	1 & 3	13	330	5 3/4	145	6 3/8	162	4 1/2	114	7 7/8	200	1/2	12	5 1/16	130
2P-450 4P-700* 6P-300	1	13 1/2	343	6 1/2	165	7 3/8	187	5	127	8 3/8	210	5/8	16	6	152
	3	12 3/8	312	6 1/2	165	7 3/8	187	5	127	7 5/8	194	5/8	16	6	152
4P-1000 6P-500	1 3	15 1/2	394	6 1/2	165	7 3/8	187	5	127	8 3/8	210	5/8	16	6	152
	1	14 3/4	375	7 1/4	184	8 1/2	216	5 1/2	140	9 5/8	244	5/8	16	7	178
2P-800	3	13 1/2	343	7 1/4	184	8 1/2	216	5 1/2	140	8 5/8	215	5/8	16	7	178
2P-1700 4P-1400	3 1 & 3	16 1/2	420	7 1/4	184	8 1/2	216	5 1/2	140	10 13/16	275	5/8	16	7	178
2P-2500 2P-3500	3	17 3/8	441	7 1/4	184	8 1/2	216	5 1/2	140	11 5/8	291	5/8	16	7	178
2P-4500	3	18 7/8	480	7 1/4	184	8 1/2	216	5 1/2	140	11 5/8	291	5/8	16	7	178
2P-5500	3	22 1/4	565	10 1/4	260	10 1/2	267	7 7/8	200	12 13/16	325	1	25	8 7/8	225
4P-2000 6P-1000 8P-500	3 3 1 & 3	18	457	7 1/4	184	8 1/2	216	5 1/2	140	10 13/16	275	5/8	16	7	178
4P-3000 6P-1500 8P-750	3	21 1/2	546	10 1/4	260	10 1/2	267	7 7/8	200	12 3/4	325	1	25	8 7/8	225
4P-5000 6P-2500 8P-1250	3	24	610	10 1/4	260	10 1/2	267	7 7/8	200	12 13/16	325	1	25	8 7/8	225
4P-10000 + 6P-5000 + 8P-2500 +	3	29 3/4	756	15 5/8	397	13	330	12 5/8	321	15 1/2	395	1 1/4	32	10 3/4	273
4P-15000 + 6P-7500 + 8P-4000 +	3	31 3/4	806	19	483	15	380	16	405	18 1/2	470	1 1/4	32	11 3/8	290

\*4P-700, 3 phase dimensions same as 1 phase

\*\*Bolt Size

+Use Figure 2 for dimensions

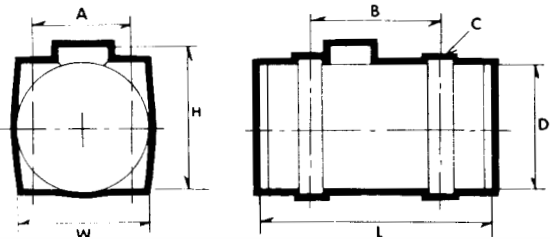


Fig. 1

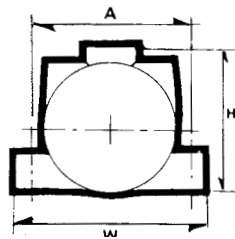
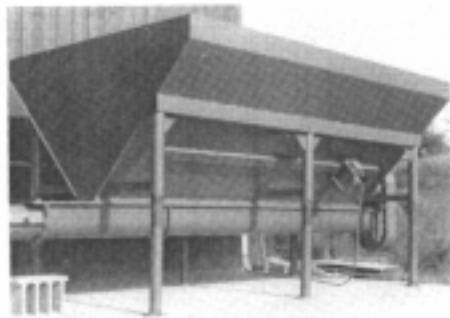


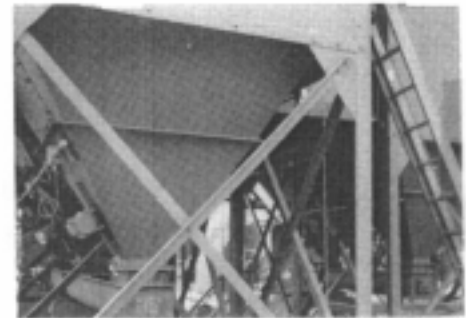
Fig. 2



Vertically mounted 2P-450 on



4P-700 on Woodchip Bin with Screw



2P-200 on Dust Collector Hoppers

## LUBRICATION INSTRUCTIONS

The ball bearings in the 2P-75, 2P-200, 2P-450, 4P-350, 4P-700, 4P-1000, 6P-500, FC, SFC, SPR, US, and SCR, are pre-lubricated for life. Model 2P-800 has one pre-lubricated ball bearing and one roller bearing. All other models have two roller bearings. The life of the roller bearings reach far beyond the ball bearings, however, the roller has a larger contact area than the ball and need more lubricant. Therefore they have to be re-lubricated at certain intervals. For vibrators with 3450 RPM, every two weeks for continuous duty or 400 or 500 operating hours; for 1725 RPM vibrators, every 1000 to 2000 operating hours or every month for continuous duty. The amount of lubricant should be 2.5 to 3 grams (two pumps with standard manual grease gun). Do not overgrease, if too much grease, it will leak out. By removing the end cover you will find out if unit has been excessively over-greased. Clean out excess grease. The same amount is on inside of bearings on stator side. If too heavy, unit should be taken apart and cleaned. For vibrators without grease nipple, (2P-800), the outside eccentric and bearing cover have to be removed. If the bearing has a grease seal, remove it and discard it, remove as much as possible of the old grease and repack bearing.

## RECOMMENDED LUBRICANT

American Oil Co., Rykon #2 EP, or Chevron BRB #2, or other comparable lithium base lubricant with a temperature range of 300°F; for 4P-10000 use lithium base lubricant with a temperature range of 350°F.

## TROUBLE SHOOTING DIAGRAM

Vibrator does not start: short in lines; burned out overload protection; short in winding, check with ohmmeter.

Overload protection shuts off vibrator.

Vibrator overloaded, caused by:

1. Bad Bearings
2. Bolts holding vibrator are loose.
3. Fatigue cracks in structure to be vibrated.
4. Structure to be vibrated too weak, reinforce structure by welding on additional stiffeners.
5. Excessive ambient heat.
6. One phase open, check: (a) Power source; (b) wiring.

## TEST PROCEDURE FOR ELECTRIC VIBRATORS, FOR SHORT, BURNED OUT WINDING, CONTINUITY TEST, ETC.

### SINGLE PHASE

**Model 2P-75** - Remove red, black and white wire from switch and capacitor in switch box, test with continuity meter between black-white (running circuit), black-red (starting circuit), and white and red - all should show a reading, lowest reading between black and white. If all readings are different, stator is OK; then check out the rest of the cable, switch for loose or cut wires, test capacitor with continuity meter.

**Models with 4 wires from stator to conduit box** — Disconnect all wires in the conduit box. Continuity should show between (10) 5 & 8 (starter winding) and 1 & 4 (running winding).

**Models with 6 wires** — Disconnect all wires in conduit box. Continuity should show between 5 (10) & 8 (starter winding) / 1 & 2; 3 & 4 (running winding).

## THREE PHASE

**3 wires** from stator to conduit box, this stator is single voltage, could be 220, 230 volt, 440, 460, 480 volt or 550, 575 volt. Continuity should show between any two wires.

**9 wires** from stator to conduit box, disconnect all wires, continuity should show between 1 & 4; 2 & 5; 3 & 6; 9 & 7; 9 & 8; 7 & 8.

**NOTE:** ALWAYS MAKE SURE THAT THE DATA STAMPED ON THE NAMEPLATE CORRESPONDS TO POWER SOURCES.

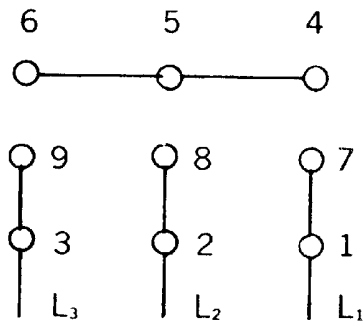
**NOTE:** ALWAYS CHECK FOR SHORT BETWEEN LEAD WIRES AND GROUND.

## CONNECTION DIAGRAMS

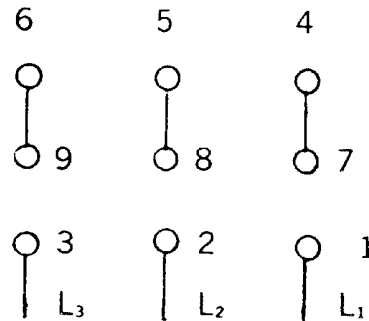
Model SFC, FC, 2P-150 and larger 2P, 4P, 6P and 8P units have DUAL voltage in 3 phase 230/460 volt. To change from one voltage to another, remove cover on conduit box and reconnect as per diagram below.

**Note: Some wires are color coded as follows:**

1 -- Blue	4 -- Yellow	7 -- Pink
2 -- White	5 -- Dark gray	8 -- Red
3 -- Orange	6 -- Purple	9 -- Light gray



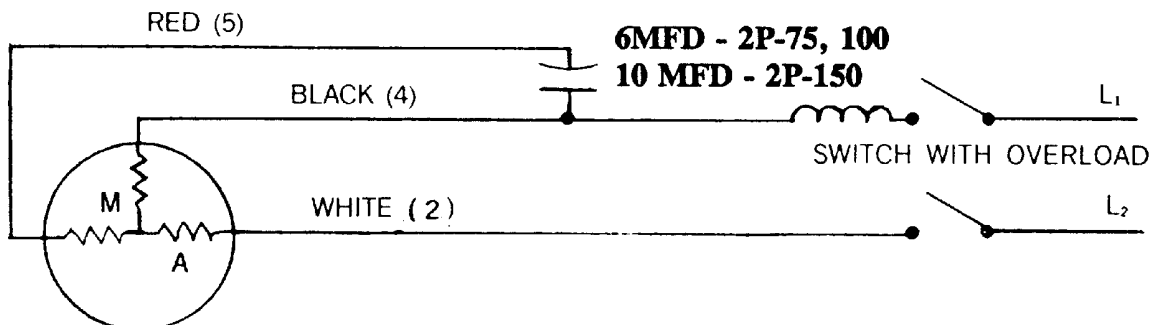
220 or 230 Volt



440 or 460 Volt

To change rotation of rotor, interchange any two lead wires, (1, 2, or 3). This is done either in conduit box or at the plug.

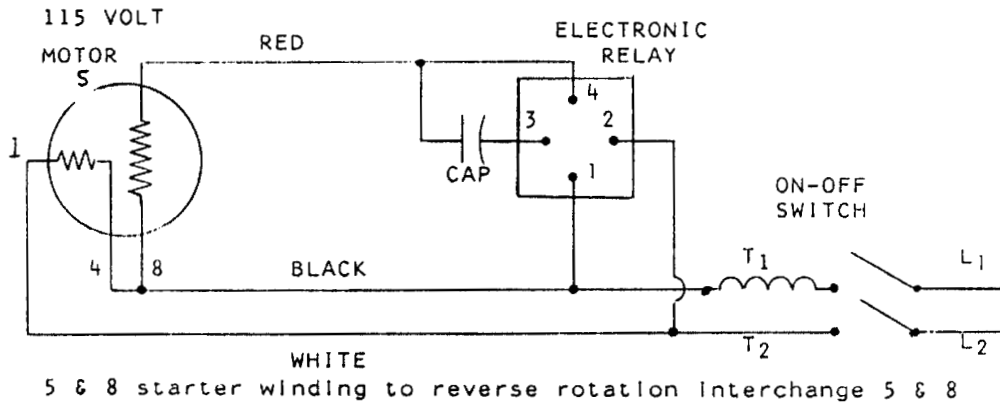
## **MODEL 2P-75, 2P-100 & 2P-150 SINGLE PHASE 115 VOLT ARE CAPACITOR RUN VIBRATORS**



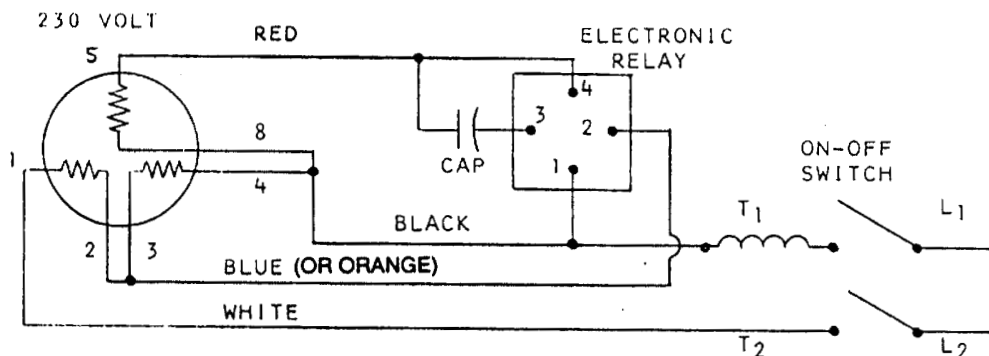
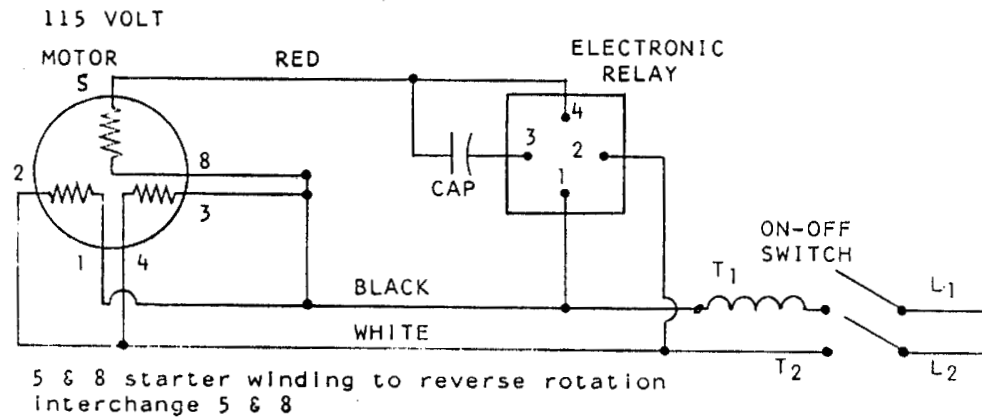
NEW ELECTRONIC RELAY (SEE SERIAL NUMBERS LISTED BELOW)

Models 2P-200, 4P-350, SFC & FC vibrators are capacitor start vibrators with an electronic relay (solid state switch) instead of a voltage or current relay. The wiring diagram below should be followed.

NOTE: The electronic relay is supplied from serial numbers (2P-200 62E..., 4P-350 72E..., SFC-100 41C..., SFC-300 43C..., FC-100 50B..., FC-400 53C...) for 115 volt, 1 phase, 60 cycles.



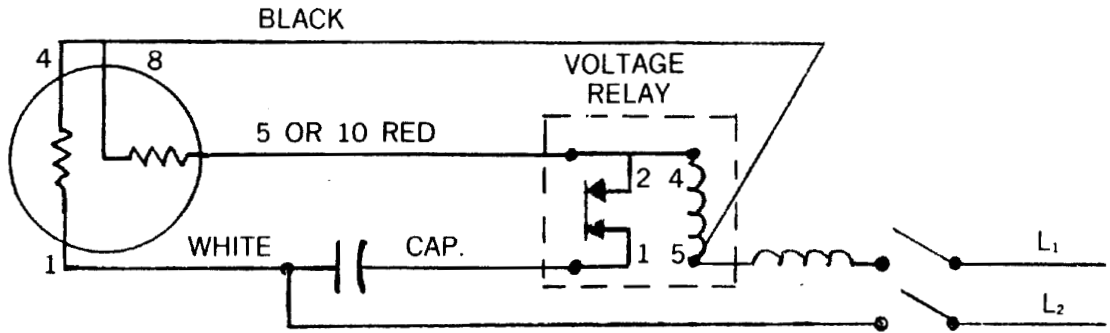
**Models 2P-200, 2P-450, 2P-800, 4P-700, 4P-1000, & 6P-500 are capacitor start motors with dual voltage winding 115/230 volt (6 wires in conduit box). Serial numbers 2P-450, 64F...; 4P-700, 73D...; 4P-1000, 78B...; 6P-300, 80B...; 6P-500, 81B...; these units are supplied with an electronic relay (solid state switch) instead of a voltage relay. The wiring diagram below should be followed:**



- NOTE: 1. A 5 wire cable is needed from motor to control box.
2. 5 & 8 starter winding, to reverse rotation, interchange 5 & 8.
3. Capacitor and switch does not have to be changed for 220 volt operation, the overload heater in switch should be changed to new motor amperage to properly protect the motor for overload.

MODEL 2P-200, 4P-350, FB, SFC AND FC VIBRATORS ARE CAPACITOR START  
VIBRATORS WITH VOLTAGE RELAY AND SINGLE VOLTAGE WINDING  
(4 Wires in Conduit Box)

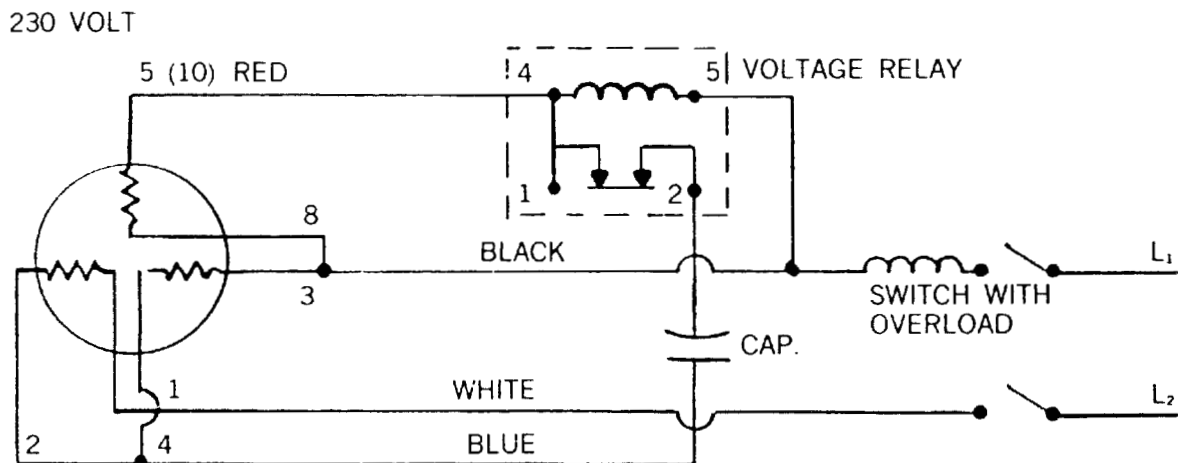
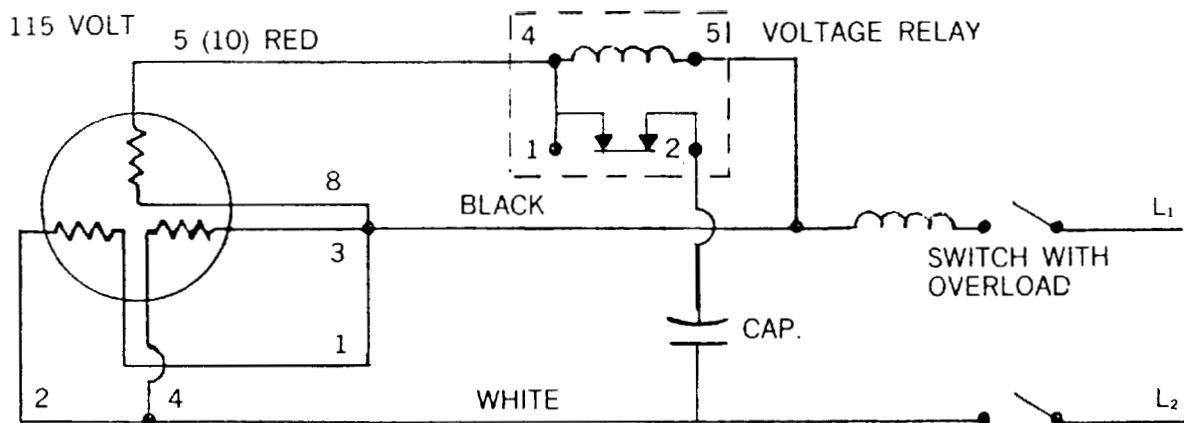
The starting relay (voltage relay) is designed to use with capacitor start induction run single phase motors. The relay functions as follows. The relay (closed) contacts connect the start winding with the running winding. As the motor approaches running speed, the relay coil across the start winding operates (pulls in) on the generated back E.M.F. force. This opens the circuit and disconnects the start winding from the circuit. The motor should come up to speed quickly and the relay should operate just before full running speed is attained. If relay clatters excessively, a slight adjustment is possible by bending the relay armature tail-piece to change the normal armature coil gap. A larger gap raises the pull in point and a smaller gap drops the pull in point. **DO NOT MAKE ADJUSTMENTS WITHOUT THE USE OF A VOLTMETER.** **NOTE:** Make sure that the armature tail-piece rests on the brass frame and not on the frame.



MODEL 2P-450, 2P-800, 4P-700, 6P-500 ARE CAPACITOR START MOTORS WITH  
VOLTAGE RELAY AND DUAL VOLTAGE WINDING 115/230 VOLT  
(6 Wires in Conduit Box)

To change from one voltage to the other, follow the diagram above. **NOTE:** The capacitor or relay does not have to be changed. You must use a 5 wire cable for 230 volt from conduit box to starter box.

To change rotation, interchange 5 & 8 leads in conduit box.



To change rotation interchange wire 5 & 8 in conduit box on vibrator.

## IMPORTANT

### SINGLE PHASE MOTORS - MODELS SFC, FC, 2P, 4P, 6P AND 8P

If unit starts but only runs for less than a couple of minutes, then the overload protection will turn off vibrator. Check the following:

1. Voltage at vibrator has to be minimum 105 volt for motor and starting relay to operate properly. (If long cord is used from power supply and there is too much of a voltage drop, use a larger wire in extension cord; if it was #16, use #14, or #12)
2. If voltage is okay but vibrator still does not work, remove it from it's mounting. Put it on a rubber mat or similar mat and run it. If it operated okay on the mat, it was drawing too much amperage when mounted. Remount vibrator and check amperage. If too high, (higher than what is stamped on the nameplate) do the following:
 

Lower the impact on the unit by changing the eccentrics to a lower setting (#1 for example) or better stiffen up the structure to be vibrated by welding or reinforcing angle or channel irons next to vibrator. See service and mounting instructions.
3. On units started with a capacitor, capacitor may have blown for too much overload. If it is blown (the little red cap will usually have broken and some of the fluid inside it leaked out) change capacitor and try vibrator again. For internal short in capacitor, check it for leakage.

If the above will not start the unit, let a certified electrician check it





# Model US

## MODEL US High Frequency Line

### PLUS VALUES:

- HIGH SPEED
- RUGGED
- SPEED ADJUSTABLE
- 115 VOLT PLUG IN

VIBCO's Model US High Frequency line are 115 volt single phase motors with low amperage draw. They can be plugged into any light outlet or operated from field generators. All units are speed adjustable with rheostat or electronic speed controls. US-900 and 1600 have adjustable eccentrics. The US line is, due to the high frequency, rated for intermittent operation.

### HIGH FREQUENCY VIBRATORS IDEAL FOR ALL CONCRETE WORK

#### PLUS VALUES:

- |   |   |
|---|---|
| <b>FOR CONCRETE PRODUCT</b> <ul style="list-style-type: none"> <li>• Faster pouring</li> <li>• Less cement needed</li> <li>• Greater density</li> <li>• Smoother finish</li> <li>• Faster form removal</li> </ul> | <b>FOR VIBRATOR</b> <ul style="list-style-type: none"> <li>• Totally enclosed</li> <li>• High impact</li> <li>• Light weight</li> <li>• Assortment of brackets available</li> </ul> |
|---|---|

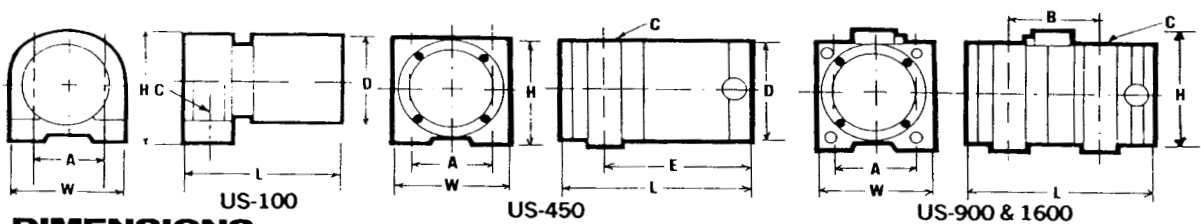
**Casting Concrete.** Model US is ideal both at the precast plant on tables, vaults, septic tanks, patio blocks, steps, etc., and at the construction site giving "architectural" finishes and fireproofing to poured-in-place walls and columns. Model US-900, the most popular unit for septic tanks, burial vaults, step forms, for architectural surface finish and fireproofing columns, casting tables for up to 300 lbs. of product. US-1600 - the problem solver - for similar applications as the US-900. See page 35 and 36 for different brackets.

**Bins & Weigh-Batchers.** The US-450 has become the standard unit throughout the industry for weigh-batchers. The US-900 and US-1600 for moving powdery and sticky materials in bins and chutes.

**Fatigue and Test Tables.** For verifying integrity of electric circuits, removing dangerous residues, detect marginal connections.

## TECHNICAL DATA

Model	1 Phase Amperes at Volt 115/230	3 Phase Amperes at Volt 230/460	Force Impact						dB**	Weight**	
			Min.		Norm		Max			lbs.	Kg.
			lbs.	N	lbs.	N	lbs.	N			
<b>HIGH FREQUENCY</b>											
US-100	.65/-	—	Speed Adjustable To				100	445	78	4	1.8
US-450	3.0/-	—	Speed Adjustable To				450	2002	80	13	5.9
US-900	4.5/-	—	600	2669	900	4004	1100	4894	85	18	8.2
US-1600	5.0/-	—	1100	4894	1600	7118	1900	8453	85	20	9.1



## DIMENSIONS HIGH FREQUENCY

Model	A		B		C		D		E		L		W		H	
US-100	5	127	—	—	1/8	10	4	102	5 1/2	140	6	171	6	152	4 1/4	108
US-450	3 1/2	89	—	—	1/8	12	4	102	6 1/2	165	8	210	4	124	4 1/4	105
US-900	3 1/2	89	6 1/4	175	1/2	12	4	102	—	—	11 1/2	283	4	124	6 1/4	160
US-1600	4	114	7	178	1/2	12	4 1/4	184	—	—	11 1/4	286	5	143	5 1/4	143

## MODEL US SERIES SERVICE INSTRUCTION

### BRUSH LIFE

Average brush life is at least 1,000 hours. The brush life is dependent on the duty cycle.

### DUTY CYCLE

All US series are intermittent duty motors. "Time-On" equals "Time-Off," with "Time-On" not exceeding 30 minutes each hour.

Drilling holes in the end covers to provide the unit with ventilation will increase the duty cycle. The duty cycle has to be determined in each such particular application. A temperature test of the field casing can help determine the duty cycle, with the temperature not exceeding 180°.

It must be noted that a longer duty cycle considerably decreases the brush life.

VIBCO's liability under the guarantee does not cover a duty cycle longer than 30 minutes.

### LUBRICATION

Bearings are pre-lubricated for life.

### ADJUSTABILITY

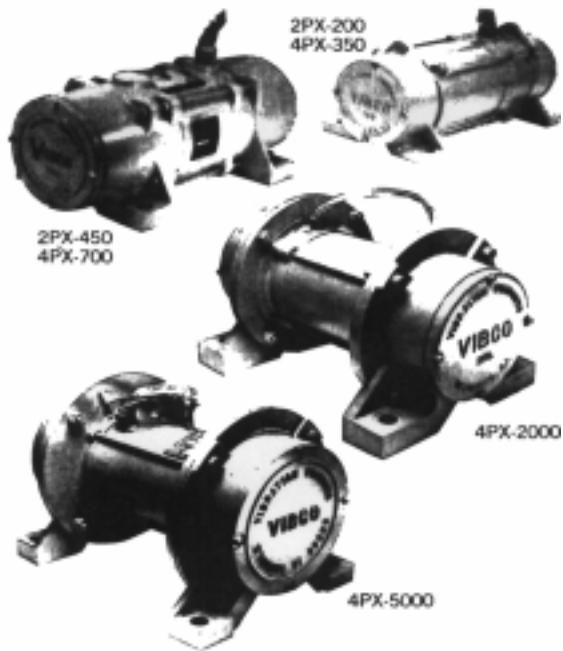
1. Speed. The speed of all units can be controlled with rheostats or solid state speed controls.
2. Eccentrics. Model US-100 and 450 have fixed eccentrics and are not adjustable. Models US-900 and US-1600 are equipped with adjustable eccentrics. Removal of both end covers allows access to the eccentrics. The adjustment of the eccentrics can be made by removing the cap screw and turning the outside eccentric to the desired setting. Setting #1 is minimum and Setting #3 is maximum. Eccentrics on both sides must have the same setting.

NOTE: The speed of the unit will vary with the load. Data is calculated at "no load" speed. Maximum load is not to exceed a load allowing at least 5,000 RPM at full voltage.

### TROUBLE SHOOTING

If vibrator does not start:

1. Short in lines--check line.
2. Brushes worn, carbonized or dity--replace or clean.
3. Fuse in speed control or line burned out--check lines.
4. Short in winding--check with ohmmeter.
5. Bearings making noise or binding--replace.



# Model PX

## MODEL PX Explosion Proof

### PLUS VALUES:

VIBCO NOW OFFERS THE FIRST AMERICAN MADE EXPLOSION PROOF MOTOR VIBRATOR IN NEMA 42, 48, 56 AND 182 FRAME SIZES.

MODEL 2PX-200 AND 4PX-350--42 FRAME AND 2PX-450 AND 4PX-700--48 FRAME, ARE SUPPLIED IN 3 PHASE AND SINGLE PHASE IN CLASS 1, GROUP D, DIV. 1&2.

MODEL 4PX-2000--56 FRAME AND 4PX-5000--182 FRAME, ARE SUPPLIED IN 3 PHASE, CLASS 2, GROUP F&G, DIV. 1&2.

THE ECCENTRICS HAVE 6 ADJUSTABLE FORCE SETTINGS FOR EASY ADJUSTMENT TO MATCH IMPACT FORCE TO APPLICATIONS.

OVERSIZED ROLLER BEARINGS IN MODEL 4PX-2000 AND 4PX-5000 ASSURE EXTRA LONG LIFE. ACCESSIBLE LUBRICATOR NIPPLES MAKE THEM EASY TO LUBRICATE.\* THE OTHER MODELS HAVE BALL BEARINGS WHICH ARE PRELUBRICATED FOR LIFE.

\*SEE HEAVY DUTY LUBRICATION INSTRUCTIONS

### TECHNICAL DATA

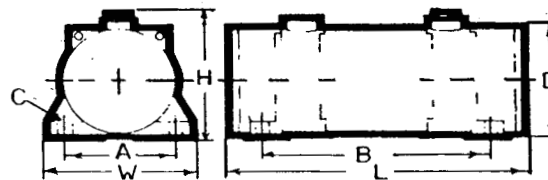
Model	Ph.	Amp.	Volt***	V.P.M.**	dB*	Wt.	
						lbs.	kg.
2PX-200	1	3.4/1.7	115/230	3600	60	20	9.1
	3						
2PX-450	1	5/2.5	115/230	3600	62	56	25.5
	3						
4PX-350	1	3.4/1.7	115/230	1800	62	20	10
	3						
4PX-700	1	6/3	115/230	1800	64	58	26.4
	3						
4PX-2000	3	3.6/1.8	230/460	1800	72	130	59
4PX-5000	3	5.2/2.6	230/460	1800	75	240	109

\* dB at 3' (1 meter) on A-scale N = Centrifugal force in Newton \*\* 1800 V.P.M. (Vibrations Per Minute) available \*\*\*575 Volt available

### DIMENSIONS

MODEL	L	W	H	A	B	C*	D
2PX 200	14 7/8	6 3/4	5 1/4	5 1/2	11 3/4	1/2	4 1/2
2PX 450	14 1/2	8 1/4	5 3/4	6 5/8	9 5/8	5/8	5 3/8
4PX 350	16 7/8	6 3/4	5 1/4	5 1/2	11 3/4	1/2	4 1/2
4PX 700	14 1/2	8 1/4	5 3/4	6 5/8	9 5/8	5/8	5 3/8
4PX 2000	18	12 7/8	11 1/8	10	13 11/16	1	7 7/8
4PX 5000	20 1/2	15 7/8	14 1/2	13	17	1	10 3/4

\*Bolt Size



ECCENTRIC SETTINGS	1	2	3	4	5	6
2PX-200	140	270	385	470	520	540
4PX-350	95	180	255	310	345	356
2PX-450	320	840	900	1100	1220	1260
4PX-700	160	300	425	520	580	600
4PX-2000	550	1050	1500	1850	2050	2100
4PX-5000	1721	3338	4746	5790	6468	6677

#### ECCENTRIC SETTING

Each unit has non-sparking brass eccentrics. To adjust, remove socket head cap screw and turn eccentric to desired position, #1, #2, ect. Re-secure cap screws. The forces obtained are as followed. (Forces in lbs. centrifugal force.)

**ELECTRICAL INSTALLATION:**

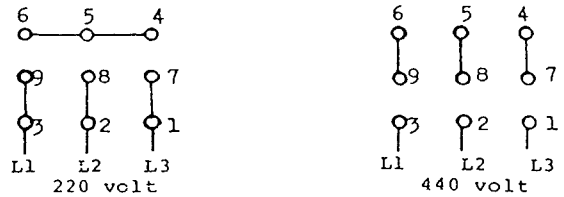
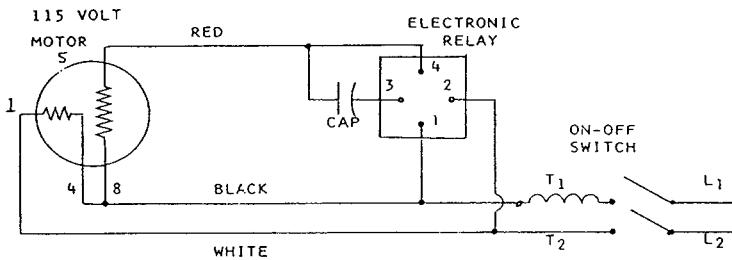
**EXPLOSION PROOF VIBRATORS SHOULD BE INSTALLED BY A CERTIFIED ELECTRICIAN TO MAKE SURE THE INSTALLATION FOLLOWS THE ELECTRICAL CODES.**

**NOTE:** The vibrator has a 1/2"NPT nipple connector on the motor part with long lead wires coming out of motor. DO NOT MAKE A SOLID CONNECTION TO THIS NIPPLE, vibrators might crack nipple and destroy the integrity of the explosion proof rating. Use a flexible cable (like Crouse-Hinds or equal) following the code. Attach one end of it to the vibrator nipple, the other end to an explosion proof approved conduit box mounted on the bin or table, etc., to be vibrated (not on the vibrator mounting plate or vibrator). From this box solid connections can be made from your power supply. For single phase units, a relay and capacitor is necessary to start the vibrator. These components should be mounted in an explosion proof approved enclosure. Make sure it is large enough to house these components. If they are placed further than 10' away from motor, make sure pick-up voltage is 140±7 and drop out voltage 40 or less. Nominal current in MA = 49. Coil DC resistant in OHMS 530 ± 15% at 25°C. If further away from motor than 10', a #14 or #12 wire might be necessary.

**WIRING INSTRUCTIONS**

**MODEL 2PX-200, 4PX-350 ARE CAPACITOR START VIBRATORS, THE WIRING DIAGRAM BELOW SHOULD BE FOLLOWED**

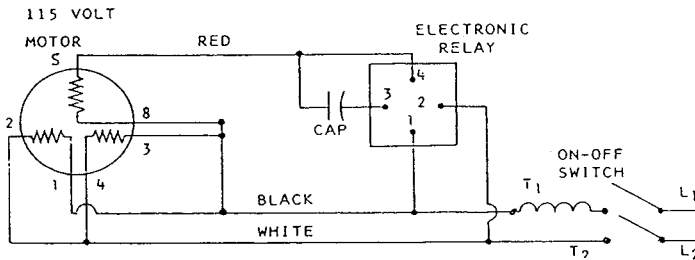
**MODELS 2PX-450, 700, 2000 & 5000 ARE DUAL VOLTAGE IN 3 PHASE 230/460 VOLT. TO CHANGE FROM ONE VOLTAGE TO THE OTHER FOLLOW DIAGRAM BELOW.**



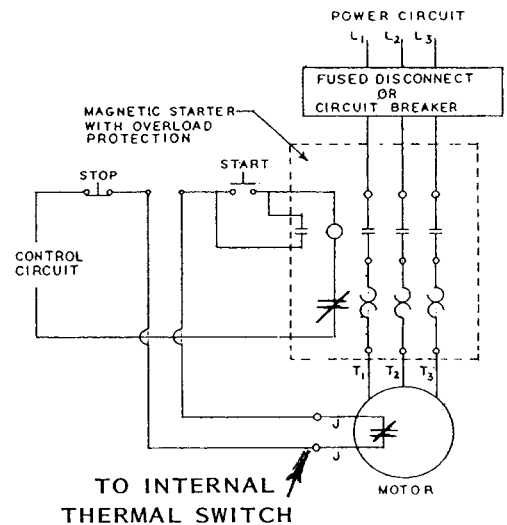
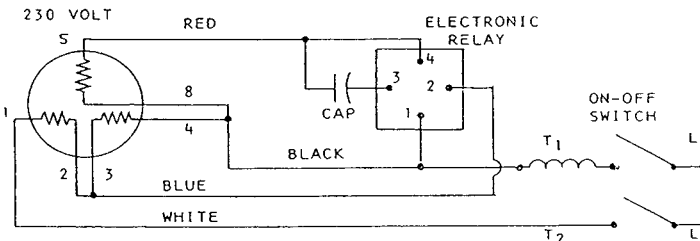
5 & 8 STARTER WINDING, TO CHANGE ROTATION INTERCHANGE 5 & 8

TO CHANGE ROTATION OF ROTOR. INTERCHANGE ANY TWO LEAD WIRES, ( 1,2 or 3). THIS IS DONE EITHER IN THE CONDUIT BOX OR AT THE PIG TAIL END.

**MODELS 2PX-450, 4PX-700 ARE CAPACITOR START VIBRATORS WITH DUAL VOLTAGE WINDING 115/230 VOLT, THE WIRING DIAGRAM BELOW SHOULD BE FOLLOWED.**



5 & 8 STARTER WINDING, TO REVERSE ROTATION INTERCHANGE 5 & 8.



- NOTE: FOR 230 VOLT**
- (1) A 5 WIRE CABLE IS NEEDED FROM MOTOR TO CONTROL BOX.
  - (2) 5 & 8 STARTER WINDING, TO REVERSE ROTATION INTERCHANGE 5 & 8.
  - (3) CAPACITOR AND SWITCH DO NOT HAVE TO BE INTERCHANGED FOR 220 VOLT OPERATION.

**NOTE: CAPACITOR AND RELAY SHOULD BE PLACED IN AN EXPLOSION PROOF ENCLOSURE.**

# ELECTRIC VIBRATORS

# Model SCR

## MODEL SCR

### Adjustable Force & Speed

#### PLUS VALUES:

- 0-4000 RPM • ADJUSTABLE FORCE
- TOTALLY ENCLOSED, SILENT
- HEAVY, CONTINUOUS DUTY
- 115-VOLT PLUG-IN
- EASY SPEED DIAL CONTROL

Another first by VIBCO — a noiseless, heavy duty electric vibrator that can be force and speed adjusted while running. Unlike old-fashioned, noisy electro-magnetic vibrators, this newly developed silent motor vibrator can meet even the most stringent anti-noise pollution requirement.

Model SCR consists of a rugged, permanent magnet DC motor, and SCR control, which is composed of a solid state, full wave rectifier and overload protection. The control is mounted on the cord and plugs into standard 115-volt AC current. No special wiring or circuitry is needed. Accurate and reliable performances throughout the full speed range. Totally enclosed, non-vented housing makes the SCR ideal for use inside or outside in dusty or wet locations. Easy to adjust eccentric settings give additional adjustability. SCR is continuous duty rated even at maximum eccentric setting.

#### WHERE TO USE:

**BINS, CHUTES:** Controlled feed. Dial control vibration gives positive flow rate from trickle to torrent, even with hard to move materials or different bin contents.

**PACKAGING:** Select and settle. Select ideal shake for optimum densification and settling.

**SCREENING:** Fast, non-blinding. For sifting, scalping and sorting, controlled vibration gives fastest and most complete results.

**TEST TABLES:** Verify part integrity, simulate handling and over the road transport. Low cost, full range control gives multitude of speeds, "G" values and amplitudes necessary to meet most specs.



NOTE: ALL SCR UNITS SUPPLIED WITH SPEED CONTROL.

### TECHNICAL DATA

Model	Force (Impact) lbs./N Adjustable		Amp.	Volt	Ph.	Vibrations per Minute		Wt.		dB*
	lbs.	N				Cont. Duty	Int. Duty	lbs.	kg.	
SCR-60	60	267	2.5	115	1	950-2500	2500-4000	5/8	2.3/3.6	68
SCR-100	100	445	1.3	115	1	950-2500	2500-4000	4	1.8	68
SCR-200	200	890	2.6	115	1	950-2500	2500-4000	12	5.4	70
SCR-300	300	1335	1.7	115	1	950-2500	2500-4000	8	3.6	70
SCR-350	350	1558	3.0	115	1	950-2500	2500-4000	20	9.1	71
SCR-400	400	1780	2.0	115	1	950-2500	2500-4000	9	4.1	70
SCR-500	500	2225	3.5	115	1	950-2500	2500-4000	41	18.4	70
SCR-1000	1000	4449	6.5	115	1	950-2500	2500-4000	53	24.0	72

\*Decibel at 3' (1 meter on A-Scale)

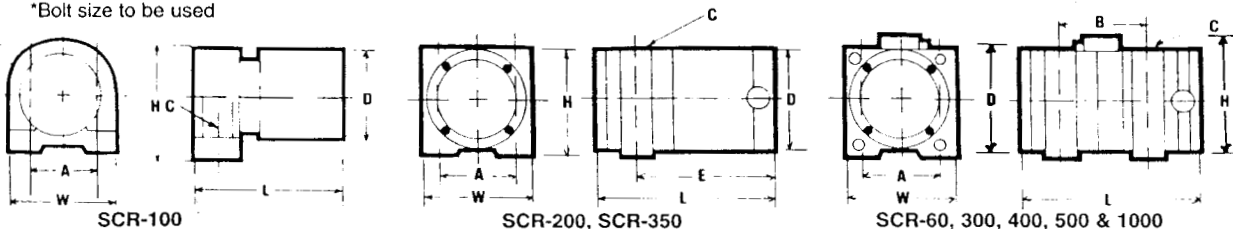
N = Centrifugal force in Newton

\*\*5 lbs. Aluminum 8 lbs. Cast Iron

### DIMENSIONS

Model	L / mm		W / mm		H / mm		A / mm		B / mm		C* / mm		D / mm		E / mm	
SCR-60	6 3/8	162	4 1/2	114	3 1/4	83	3 5/8	64	1 5/16	33	5/16	8	3	76	—	—
SCR-100	6 3/4	187	6	152	4 1/4	108	5	127	—	—	3/8	10	4	102	6 1/2	165
SCR-200	8 3/16	208	4 7/8	124	4 7/8	105	3 1/2	89	—	—	1/2	12	4	102	6 1/2	165
SCR-300	8 1/2	216	4 1/8	105	5	127	3	76	5 3/4	145	5/16	8	3 9/16	90	6 1/2	—
SCR-350	8 3/4	210	5 5/8	143	5 1/4	133	4 1/2	114	—	—	1/2	12	5 1/16	128	—	165
SCR-400	9	229	4 1/8	105	5	127	3	76	5 3/4	145	5/16	8	3 9/16	90	6 1/2	—
SCR-500	13 3/16	335	5 3/4	146	6 1/2	165	4 1/2	114	8 15/16	227	1/2	12	5 1/16	128	—	—
SCR-1000	14 1/4	362	6 1/2	165	7 1/2	190	5	127	9 7/8	238	5/8	16	6	140	—	—

\*Bolt size to be used



# MODEL SCR SERVICE INSTRUCTIONS

## GENERAL FEATURES

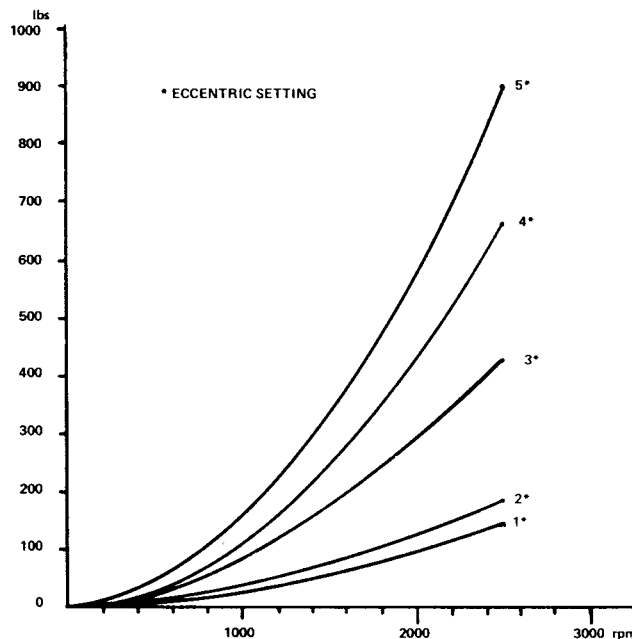
The Model SCR incorporates the controllability of a DC motor vibrator with the availability of 115 volt AC 60 HZ power supply. The rugged, totally enclosed permanent magnet motor is integrated with a compact solid state full wave rectifier and power control. A fast action fuse, located in the control, protects the motor from an overload. This continuous duty permanent magnet motor vibrator employs the latest ceramic magnetic material and advanced manufacturing techniques.

## CHANGE OF IMPACT

The SCR-SERIES vibrators have adjustable eccentrics that provide higher or lower impacts throughout the speed range. To change force just remove the end covers from both sides of vibrator (note the cap screw holding the two eccentrics halves together). Remove the cap screw and rotate the eccentric to the desired setting. Replace and securely tighten screw. Repeat this process on other end. **Both ends must be set at the same number.** Vibrator is continuous duty rated at all settings. Factory setting is Number 3 on SCR-1000 and Number 2 on all others. For impact (force) and value, see page 29.

**CAUTION: DO NOT USE VIBRATOR UNDER 950 RPM FOR CONTINUOUS DUTY OPERATION**

## FREQUENCY FORCE CURVE FOR SCR-1000 (NO LOAD CONDITION)



The curve represents the different forces obtained at different speeds at Setting #1, 2, 3, 4 and 5 on the eccentrics. These values may vary depending on the load on the vibrator and should be made up for each load. (For example, a vibrating table will show a different curve for a larger or smaller load).

## INSTALLATION

Refer to separate installation instructions.

## LUBRICATION

Bearings are pre-lubricated for life.

## BRUSHES

Unit has two brushes. Brush life is approximately 1,000 hours. To change brushes, remove brush caps and brushes. Make sure new brush slides freely in brush slot (if not, file down gently).

## TECHNICAL DATA

Unit is connected to 115 volt AC current. Control will convert this to 90 volt DC adjustable with rheostat on control panel. At 90 volts, vibrator frequency is 4000 VPM. Frequency 950-2500 vibrations per minute, continuous duty, 2500-4000 VPM intermittent duty, 58 dB at 6 feet "C" scale.

## WARNING

Improper installation or operation of this control may cause injury to personnel or electronic failure. The control must be installed and grounded in accordance with local state and national safety codes. At no time should circuit continuity be checked by shorting terminals with a screwdriver or other metal device.

## TROUBLE SHOOTING

1. Unit will not operate:
  - (a) check power to unit.
  - (b) check motor continuity, if "open" motor armature should be replaced.
  - (c) check control potentiometer (2000.000 ohms nominal resistance) if "open" replace.
2. Unit operates at full speed and is not speed adjustable:
  - (a) check potentiometer, if "shorted" replace.
3. Unit will not turn off:
  - (a) replace on-off switch.

# ELECTRIC RAILROAD CARSHAKERS

The VIBCO Carshaker consists of a vibrator built especially sturdy to take heavy shocks, and is connected to a VMC (clamp-on bracket) or VMW (wedge-type bracket).

## INSTALLATION AND OPERATING INSTRUCTIONS

1. Be sure the motor voltage is the same as the line voltage.
2. When you install your vibrators, make sure you use an overload protection (starter box) with proper overload protection. The starter box should be mounted no closer than 4' from motor (on it's cord) but no further away than 20'. If you have to mount it further away, a voltage reading should be taken at the vibrator while running, as well as at the overload protection.

If there is no voltage drop, proper size wire is used, if more than 5% lower at the vibrator, a heavier wire is necessary. For example, if #16 wire was used, change to #14.

3. The VMW bracket is secured in the female bracket on the car by use of the flat bracket which is put on the lower bolt and held in place with the nut and lockwasher. DO NOT NEGLECT TO USE THIS SECURING METHOD. If not used, the vibrator can jump out of the bracket or it will vibrate loose and overload. To remove the male bracket, put the flat bracket on the top bolt and use it as a puller.
4. The VMC bracket is clamped on the flange of a channel or angle iron. After starting unit, only run it for 30 to 60 seconds then retighten bolts. It is now possible to tighten up on the bolts considerably, due to dirt, paint and burrs being vibrated away.
5. Unit should now operate smoothly and quietly.
6. The unit should not jump or vibrate violently, you are then only shaking the vibrator itself, and not the car. The kickback vibration will also overload the motor. If unit is shaking or jumping so hard that the nameplate cannot be read, stop unit and restart while bracing up the unit with the hand or a heavy piece of wood (2 x 4 or similar). If this does not help, MOVE THE UNIT TO A MORE RIGID PLACE ON THE CAR, or CHANGE THE SETTING ON THE ECCENTRICS TO GIVE A LOWER IMPACT. Change it down to the point where the unit operates smoothly and quietly.
7. When a railroad car is full, it is very rigid and can take almost any vibration force. However, as it empties, it gets less and less rigid. When close to being empty, it's rigidity is low and it might not absorb all the vibration the railroad carshaker is developing. The vibration it cannot absorb is "kicked back" to the vibrator and acts as a braking force on it. If this "kick back" vibration is large enough it will overload (stall) your vibrator and kick out the overload and stop the vibrator. When railroad car is close to being empty use vibrator only intermittently giving railroad car only short spurts of vibration.

The overload protection **will not** guarantee you from "burning out" your vibrator, it is only a warning that tells you "check me out." If vibrator is immediately turned on again without checking out and rectifying the problem, you may burn out your vibrator motor.



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