

# **AIR**MATIC®

**WE'LL HANDLE IT.**



# ***martin***®



## **VIBRATION SOLUTIONS**

**BIN, HOPPER, FEEDER, TRUCK & RAILCAR**

### **AIR**MATIC

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## APPLIED VIBRATION TECHNOLOGY

Using the power of applied vibration, Martin Engineering Vibration Technologies energize material, reducing friction against container walls as well as internal particle-to-particle cohesion. The material moves more freely, feeds more effectively, sorts more consistently, compacts more efficiently and handles more easily.

The relationship between the bulk material and the frequency of vibration best suited to stimulate that material is proportional to particle size. As a general rule, the smaller the particle, the better it responds to higher vibration frequencies. The relationship between amplitude of vibration and the bulk material is based on cohesive and adhesive forces.

As the particle size increases, the amplitude required to cause the bulk material to move increases. Particles that are fine and free flowing (low cohesive) tend to respond well to small amplitudes of vibration; free-flowing particles that are larger respond better to larger

amplitudes. Particles that are sticky tend to build up in solid masses that respond well to low-frequency high-amplitude vibration. Generally, the direction of the rotation or the stroke of the vibrator's mass should be in the direction of desired flow of the material.

## AIR OR ELECTRIC?

Choose Between Air- or Electric-Powered Vibration

**Initial Cost:** Initial purchase price for electric vibrators is typically greater than for airvibrators.

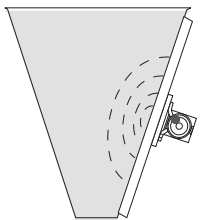
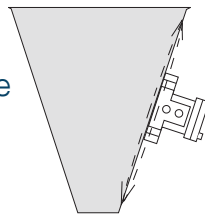
**Operation Cost:** Electricity is less expensive than air, therefore long-term operating costs will typically be lower for electric vibrators.

**Noise Level:** Electric vibrators are quieter than air vibrators; rotary is quieter than linear.

**Power Source Available:** Availability of compressed air, electric, or hydraulic power may dictate choice.

## WHAT TYPE OF VIBRATION SHOULD BE APPLIED?

Determine whether the material is wet/sticky or dry. Linear vibrators activate the material inside a chute or bin by using heavy blows on the outside of the structure's steel walls. Suitable for wet products.



Rotary vibrators create a vibratory force through the rotation of an eccentric weight. Suitable for dry products.

## HOW MUCH FORCE?

Determine Force output Required

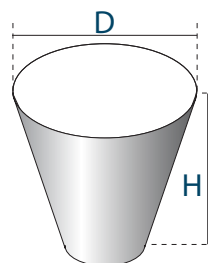
Dry Material – 3600 RPM vibrators Force = Material Weight / 10

Wet Material – 1800 RPM vibrators Force = Material Weight / 13

## WHAT'S THE SLOPE VOLUME?

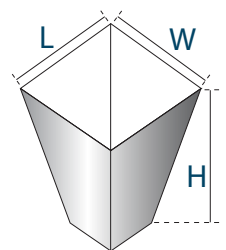
Calculate Volume of sloped section of bin

### ROUND CONE



$$V = 1/3 \cdot 3.14 \cdot r^2 \cdot H$$

### SQUARE/RECTANGLE



$$V = 1/3 \cdot L \cdot W \cdot H$$

## HOW MUCH DOES IT WEIGH?

Calculate Weight of the Material in Sloped Section of Bin

$$\text{Material Weight} = V \cdot d$$

(Note: d = material density)



3-Phase 8-Pole



3-Phase 4-Pole Explosion Proof

**HEAVY DUTY ELECTRIC VIBRATOR**

- Heavy Duty Electric Vibrator B-Series.
- Units available for 850-, 1170-, 1750-, 3450- and 3600-RPM.
- Centrifugal force output ranges from 20 to 24800 lbf.
- Dust-tight/water-tight construction with TENV motor.

**HAZARDOUS LOCATION VIBRATOR B-SERIES**

Engineered for applications in hazardous environments, including exposure to explosive dust.

- UL listed for Class II, Group E, F, & G, Division 1 & 2
- Ductile iron bearing housings
- 1000 lbf, 1750-RPM
- 230/460V 3-Phase
- High-temperature Class H windings

**MOTOR SPECIFICATIONS BY APPLICATION**

Application	Frequency (RPM)	Recommended Acceleration (G-force)	Amplitude
Bin/Hopper and Chute Evacuation	1800 - 3600	0.05 - 0.15	Medium
Compaction of Bulk Materials	1800 - 7200	2.0 - 4.0	Low
Consolidation of Concrete	3600 - 10800	0.8 - 1.5	Very Low
Conveying or Feeding	900 - 1800	2.0 - 5.0	High
Screening	900 - 1800	5.0 - 7.0	High
Draining or Dewatering	1800 - 3600	3.0 - 5.0	Medium
Testing of Parts or Assemblies	450 - 7200	0.5 - 5.0	High to Low



B3-3000-2 Concrete Form

### ELECTRIC CONCRETE FORM VIBRATOR

- Interchanges with Bosch 18-120 & Iskco EVL-35
- 3000 lbf, 3450-RPM
- 230/460V 3-Phase
- Roller bearings designed for vibration
- Ductile iron bearing housings
- High-temperature Class H windings
- Adjustable Eccentrics 0–100%

### VIBROTOR™ HIGH-FREQUENCY PNEUMATIC ROLLER VIBRATORS

“Roller-inside-a-roller” design generates multiple vibrations on each orbit to activate material.



CCR-5500

Light weight and built-in handle improves portability. Rugged construction and bearing-free design extends service life and minimizes service requirements.



U1-1600 Single-Phase

### ELECTRIC HEAVY DUTY ROTARY ELECTRIC VIBRATOR D & U SERIES

Units available for 3450- and 9000-RPM. Centrifugal force output ranges 15 to 5400 lbf.

- Triple-dipped shock-resistant windings
- Sealed units for outdoor environment
- Oversized bearings lubricated for life
- 1 PH unit includes overload/current protection

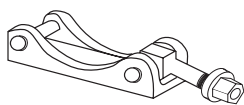
### WHIRLWIND™ HIGH-FREQUENCY PNEUMATIC TURBINE VIBRATORS

Larger unbalance creates greater force output to move your material.

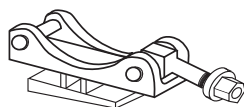


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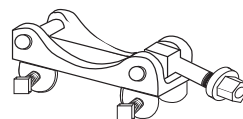
Units mount easily to a cradle lug bracket or cast-iron railcar wedge. Urethane-encapsulated turbine and sealed bearing provide quiet operation with low maintenance.



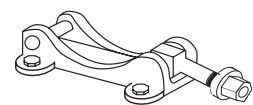
Standard Mount



Wedge Mount



Clamp Mount



Bolt-On Mount





### MB36-3000

The MB36-3000 Electric Form Vibrator offers the Precast Industry excellent cast compaction for improved concrete strength and fewer voids. The rugged Vibrator design not only has the industry's highest power-to-weight ratio, but it's also the most reliable because it uses high heat-rated internal components, which enables the vibrator to perform consistently under punishing conditions for extended periods. The result is exceptional quality and durability, delivering a lower cost of ownership than any comparable vibrator on the market.

### BENEFITS

- Sized to fit in smaller diameter concrete pipe form cores.
- Modern design allows for easier installation in tight spaces.
- Fits most standard mounting configurations.
- Adjustable eccentric weights enable you to customize force, save energy, and increase the life of the vibrator.
- Dependable performance covered by Martin Engineering's 3-year warranty.

### FEATURES

- Interchanges with BOSCH/BRECON 18-120 and other vibrators used by leading concrete pipe machine & equipment manufacturers
- 3000-lbf @ 3450-RPM
- 230-460V/3Ph/60Hz
- Ductile Iron Bearing Housings
- Permanently Lubricated Roller Bearings Designed for Vibration
- High Temperature Class H Windings withstand continual use in heated, sealed environments
- Adjustable Force Output



***“Delivering as much power on the inside of the smaller diameter core as on the outside!”***

## MM SERIES ELECTRIC VIBRATOR



Engineered for continuous duty.

C4 clearance roller bearings.

Dust-tight, water-tight: O-ring seals and machined surfaces provide an IP 66 enclosure rating to protect against the entry of dust and water.

Drives are fully interchangeable with other major manufacturers.

## MARTIN MMX SERIES ELECTRIC VIBRATORS



Only USA manufacturer of continuous-duty, high-output / low-frequency industrial vibrators guaranteed for 3 years.

Engineered for continuous duty and drives are fully interchangeable with other major manufacturers.

Dust-tight, water-tight: O-ring seals and machined surfaces provide an IP 66 enclosure rating to protect against the entry of dust and water.

## MARTIN SCREEN ELECTRIC VIBRATORS



Martin Screen Vibrators provide up to 16500 lbf (7484 kg) for efficient material separation. Sturdy design is proven in rugged testing and in field applications and is covered by Martin's unsurpassed 3-year warranty.

Explosion-proof model ETL/cETL/ATEX/IECex certified for hazardous duty gas environments (non-explosion proof models also available).

Force output is adjustable on all screen vibrator models.

## MARTIN HSV SERIES HYDRAULIC VIBRATORS



Unit is provided with same mounting bolt patterns as 65- and 75-frame Martin Electric Vibrators.

Bearing lubrication needed only every 2000 operating hours.

Works in portable screen applications where no electricity is available.

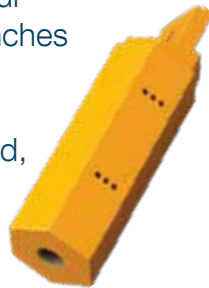
Up to 8300 lbf. Quiet operation.

## **PNEUMATIC POWER WITH LINEAR FORCE**

- Reduce manual labor and prevent vessel damage from pounding or prodding and maintain consistent material flow to improve efficiency and reduce bottlenecks. Piston vibrators offer control of force and frequency to meet a variety of conditions.
- All Piston Vibrators feature alloy steel bodies and hardened pistons to provide long operational life and minimal maintenance.

### **2000 SERIES**

Broad application range. High-frequency energy. Four piston sizes from 1- to 2-inches available. Options include manifold/muffler for quiet operation and air-cushioned, non-impacting action.



### **AP5-200**

An economical solution to eliminate the pounding, poking and hammering of hoppers, AP5 Series Piston Vibrators require minimal maintenance while offering variable control of force and frequency to meet a variety of material conditions. Serves as a bolt-in direct replacement for nearly all 2-inch piston vibrators and comes standard with exhaust mufflers to limit noise and protect from dust and dirt.



PV-1.25



T-300

### **PV SERIES**

Powerful linear force activates stubborn material from bins, hoppers, chutes or railcars. Four sizes supply consistent performance in moving material from vessels without manual labor or damage.

### **THUMPER™**

Timed Pneumatic Impactors Controlled by a timer, Thumper Impactors deliver powerful yet controlled blows at rates from one to sixty impacts per minute to keep production flow on target.

## PNEUMATIC POWER WITH ROTATIONAL FORCE

- Simple, strong, durable design provides highest ratio of force to physical weight in the industry.
- One moving part—a chrome steel ball rolling in hardened steel races—eliminates service requirements.
- Mufflers, tapped exhaust and o-ring seal reduce noise levels and eliminate external contamination.
- Three mounting and port configurations available. Interchangeable with other manufacturers.

### VIBROLATOR® ABL-SERIES

Delivers slight-to-moderate force. Dual-mount bracket allows simple, one-bolt installation in two positions. Ideal for small hoppers, chutes, match plates, light sifting or feeding and lab testing.



Vibrolator ABL-25

### VIBROLATOR ABF-/ABU-SERIES

Built for operation in the toughest conditions. Withstands moisture, exposure to material.



Vibrolator ABF-25



Vibrolator ABU-25

## TURBINE VIBRATORS

Pneumatic Power w/ Rotational Force

- Optional speed muffler allows precision control of force and speed (regular muffler comes standard).
- Lower air consumption than comparable air vibrator.
- Low 62-78 dBA noise level is well below OSHA standards.
- Excellent power to weight ratio with.
- No lubrication required.
- Direct interchange with competitors' models.
- Durable anodized aluminum finish provides a tough exterior.

*2-bolt slotted base allows easy upgrade when upgrading from ball-, ring- and roller-type vibrators.*



ATU-62

ATU-42

ATU-21



**PNEUMATIC POWER W/ ROTATIONAL FORCE**

- Powerful forces for bin or railcar evacuation, or movement through a bin, hopper, chute or screen.
- One moving part—ring on a hardened steel shaft—requires no lubrication.
- Noise reducing muffler is included.
- Excellent power to weight ratio, delivering higher force output than comparable air vibrators.
- Conserves energy and requires the lowest air consumption of any rotary air vibrator.

**VIBROLLER™ ARU SERIES**

Available in six sizes. Tapped inlet and exhaust for complete air control. Highest output.



Vibroller ARF-19

**VIBROLLER ARF-SERIES**

For vessels holding up to 5400 lbs of material in their sloped portion.

Available in four sizes with two-hole mount. High output and low air consumption.



Vibroller ARU-19

**NP SERIES**

Available in four sizes. Muffler standard. 650°F temperature rating.



Vibroller NP-55

**VIBROLLER ARL-SERIES**

For vessels holding 2000+ lbs of material in their sloped portion.

Available in four sizes. Compact, lightweight dual-mount design. Tapped exhaust.



Vibroller ARL-16

**PNEUMATIC & HYDRAULIC VIBRATORS**

**BRUTE® PNEUMATIC & HYDRAULIC VIBRATOR SERIES**

Adjustable eccentrics on many models tune output to your needs. Long service in challenging applications with minimal power consumption. Stepless adjustment allows precise regulation of material flow.



CCV4



DV6



CC2.8



CV2.8

**MOBILE VIBRATION SOLUTIONS**

**COUGAR<sup>®</sup> DC TRUCK & MOBILE EQUIPMENT VIBRATORS**

- DC vibrators from Cougar Vibration improve the speed and control of material flow from dump trucks and other self-powered heavy equipment.
- Small size and light weight with high-speed, low-amp electric motors. Sealed against dirt, dust and water for long life in extreme conditions.
- Shielded, oversized, permanently-lubricated ball bearings assure exceptional service life. Easy, low-cost installation.

**ELECTRIC TRUCK VIBRATORS**



DC-3200/-2500/-1100  
1000-3200 lbf at 4000-5000  
VPM



DC1-400  
410 lbf at 3800 VPM



DC-80/-200  
80-200 lbf at 4000-4500 VPM

**HYDRAULIC ROTARY  
TRUCK VIBRATOR**



THD-2500  
2726 lbf at 4000 VPM

**PNEUMATIC PISTON  
TRUCK VIBRATOR**



AP5-200-Y  
2600-4100 VPM at 40-80 PSI

**PNEUMATIC TURBINE  
TRUCK VIBRATOR**



ATU-43  
11700 VPM at 60 PSI  
and 13000 VPM at 80  
PSI

**TRUCK APPLICATION SELECTION CHART**

Model	Dump Truck				Spreaders				Concrete Pumper	Sanitation, Pumper & Vacuum Trucks	Volumetric Mixers	Mixer Trucks	Grain Trailers
	Standard			Tandem Live Bottom	Slide-In	Mounted	Tailgate or ATV						
	1-5 yards	5-10 yards	10-15 yards	15-30 yards	5-10 yards	5-10 yards	.2-2 yards	2-4 yards					
DC 3200			X	X		X				X			
DC 2500		X			X	X				X			
DC 1100	X												
DC1-400									X				
DC 200											X		
DC 80							X					X	
DC 40							X						
THD-2500 (hydraulic)			X	X						X			
AP5-200-Y (pneumatic)											X		X
ATU-43												X	

**RAILCAR VIBRATORS FOR POWERFUL RAILCAR VIBRATION**

Powerful pneumatic vibrators prove their value in the toughest applications—the evacuation of stubborn materials from railcars and large storage vessels. Models are available with pneumatic or hydraulic power for permanent or portable mounting.

**MP3 IMPACTING RAILCAR VIBRATOR**

Compact vibrator and mount assembly provides plenty of power to unload the most stubborn materials

Vibrator and wedge system weighs only 48 lbs, reducing strain and risk of injury



**4432 4-INCH RAILCAR PISTON VIBRATOR**



Hardened pistons  
Low air consumption  
Produces uniform directional force



**AIRMATIC INC** founded in 1944, is a woman-owned Industrial Distributor, with installation and maintenance capabilities, offering equipment, machinery, and shop supplies to the Industrial, Construction, Utility, Government, and Commercial Markets. Our products and services are sold through three business units:

The **MATERIALS MANAGEMENT GROUP** provides products and services to industries that convey, store, transport, and process powders and bulk solids from aggregates, cement, and chemicals to foods, grains, metals, power generation, and waste water treatment applications;

The **SERVICE GROUP** provides fabrication, installation, and maintenance services to improve bulk materials handling efficiency; mechanical clean-out services for silos and hoppers to eliminate material flow problems; and shop repair/rebuilding and modifications services of products sold by the Company.

The **TOOL GROUP** provides power tools, personal protective equipment, materials-handling equipment, shop equipment and MRO supplies used for production, fabrication, assembly, metal removal, maintenance, and storage in manufacturing, construction, utility, and commercial applications. Our Customers tell us that by choosing **AIRMATIC** to solve their problems, they gain increased productivity, decreased costs, and a safer, cleaner work environment.

The logo for MARTIN ENGINEERING features the word "martin" in a bold, orange, italicized sans-serif font with a registered trademark symbol (®).

**MARTIN ENGINEERING** is the leading global supplier of system to make the handling of bulk materials cleaner, safer, and more productive. Since its founding in 1944, the company has grown dramatically through the development of solutions to help the solids-handling industries around the world. MARTIN ENGINEERING's success can be attributed to the development of practical, field-proven, cost-effective answers for "real life" problems. MARTIN Products are designed for tough industrial conditions; they are built to allow easy maintenance; they are engineered for simplicity, cleanliness, safety, and efficiency; they are personalized to meet each customer's unique requirements.

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