

# Electromagnetic Vibrators Manual



## Installation, Manual & Maintenance

When you've got material that needs to move reliably from small hoppers, chutes, flow pipes and feeders, count on Cleveland Vibrator. When you've got material that needs to compact in packaging, molds, joggers or tables, count on Cleveland Vibrator.

Easy to install and control, these small, hardworking units are designed to keep material flowing and eliminate bridging, plugging and ratholing.

### WHAT'S INSIDE

- Vibrator placement and mounting overview
- Proper welding techniques
- Installation guidance so you can plan ahead
- Construction and maintenance tips



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## A NOTE FROM THE CLEVELAND VIBRATOR COMPANY

Thank you for purchasing an Electromagnetic Vibrator from the Cleveland Vibrator Company. Properly sized and installed electromagnetic vibrators ensure better material flow through bins and hoppers.

Please review all installation, maintenance, operation, and model specific information carefully before use. If any assistance is required, do not hesitate to call our sales department with questions:

**1.800.221.3298**

# Installation

Cleveland Vibrator Company's electromagnetic vibrators can be used on any bin, hopper or chute location where 110/1/50-60 or 220/1/50-60 power is available.

CM electromagnetic units have a two bolt mounting design to bolt directly onto a length of channel. The channel, in turn, is stitch welded to the hopper wall or underside of the chute.

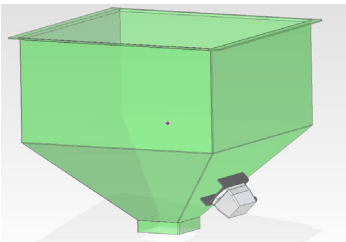
Re-tighten after one hour of operation until no loose bolts are found

## CHUTE DISCHARGE

The vibrator is mounted every 8 to 10 feet along the chute. Do not install vibrators more than 4 ft. from the end point of the chute.

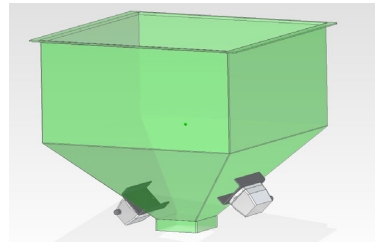
## CONICAL HOPPERS

Mount the vibrator on the hopper wall 1/3 the length of the sloped wall up from the discharge. Should a second vibrator be necessary, it should be mounted opposite and approximately 1/4 way up the sloped wall. For large hopper applications requiring three vibrators, mount the third vibrator 1/2 way up the sloped wall.



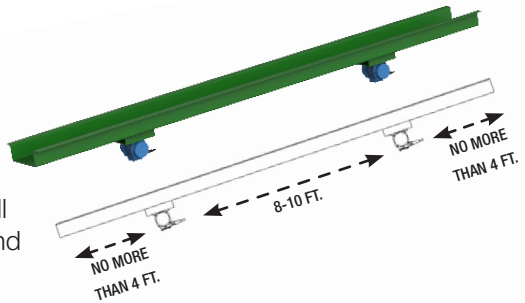
## RECTANGULAR & SQUARE HOPPERS

Mount is similar to conical hoppers on the centerline of one side. A second vibrator may be required if complete cleaning of all corners and sides is desired. Should a second vibrator be necessary, it should be mounted opposite and approximately 1/4 way up the wall. **Two (2) units work best for full corner clean out in bins and hoppers.**



## KEY CONCEPTS

- Vibrators have a ~5 ft. radius of influence on material and structure
- Vibration transfers better through curves than through corners
- When in doubt where to place a vibrator, think about where your problem point is and make sure vibration gets to it
- Be aware of rigid structural elements



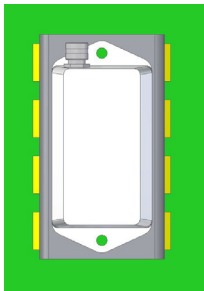
# Proper Welding Techniques

## KEY CONCEPTS

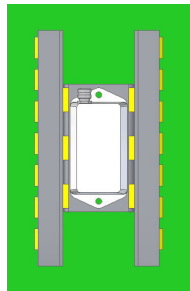
- Never continuously weld
- Leave the corners free of weld, as welding the corners could result in cracking of the hopper or bin wall
- The thickness of the weld should be at least as thick as the minimum thickness of either the bin wall or the mounting channel For example: if welding our SMP-2 on a 1/4" thick bin wall, use a weld that is at least 1/4" thick
- It is the responsibility of the welder to know the thickness of the bead and the penetration of the weld into both the channel and the bin wall. Penetration is critical. Too deep, the weld will go through the bin wall. Too shallow, the mounting channel hopper joint will fail
- It is suggested to have an equal 1:1 ratio of weld bead to gap between welds. For example: if an SMP-2 is being installed, we suggest 2" beads then 2" gap then 2" bead then 2" gap, etc.

**MIG, or also known as GMAW, welding is the preferred method.** It is recommended to use flux core wire for the MIG weld, as it is ideal for welding to surfaces such as mild steel and stainless steel.

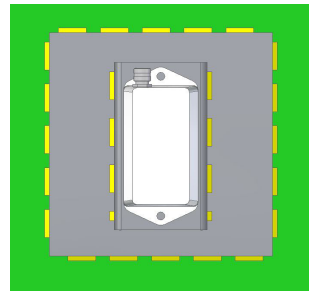
When stitch welding a cast iron bracket to a mild steel vessel, preheat casting (500°F to 1200°F) before beginning the welding job. A rod similar to Ni55 is suggested to be used when MIG welding the bracket to the vessel.



Proper Welding of a Short Mounting Channel



Proper Welding of a Short Mounting Channel with Angle Runners



Proper Welding of a Short Mounting Channel with Stiffener Plates



## CONSTRUCTION

Cleveland Vibrator's Electromagnetic Vibrators are designed to promote the free flow of stubborn materials out of bins, hoppers and chutes, by eliminating bridging, plugging, and ratholing. All CM series vibrators have strong aluminum mounting bases and totally enclosed aluminum housings. CM vibrators deliver 3,600 vibrations per minute at 60 Hz. CM vibrators operating at 50 Hz will deliver 3,000 vibrations per minute. All models are available with optional amplitude (VIC) or variable amplitude/frequency (VAF) controls for precise vibration adjustments.

Model CM's encapsulated coil electromagnetic vibrators are designed for years of economical and trouble-free operation. They require no lubrication. However, if for some reason servicing becomes necessary, CVC maintains a complete stock of parts for quick factory repair.

## UNIT ADJUSTMENT

All CM Models are preset to maximum force at the factory. If adjustment is necessary, the VIC or VAF controller **MUST** be used, otherwise the warranty could be voided. Should the unit begin to impact, (typified by a harsh, rapping noise) the unit should be returned to the factory for inspection.

## RECEIPT & STORAGE

All CM style vibrators are thoroughly tested and inspected prior to shipping to ensure all quality standards are met or surpassed. However, damage that may occur while in transit is beyond control of the Cleveland Vibrator Company. For this reason, the unit should be inspected immediately upon receipt and any damage reported to the carrier. Should this unit not be put into immediate service, it should be stored in a dry, temperate atmosphere. Under these conditions, the unit can be safely stored for 18 months. Longer storage may require additional provisions.

## DUTY CYCLE

It is recommended that operation does not exceed 8 hours within a 24 hour period.

## MOUNTING BOLT SIZES

MODEL	BOLT SIZES
CM-5	1/4 - 28
CM-10	3/8 - 24
CM-30	3/8 - 24

# Controllers

## VIC CONTROLLER (OPTIONAL)

The VIC variable intensity controller provides precise control of the vibration intensity of the CM vibrators. It has a 20-amp switch in a 3" x 4 1/4" NEMA 4x enclosure. The 10-turn wire wound precision potentiometer makes this a very flexible controller. Compatible use with all CM models.



## VAF CONTROLLER (OPTIONAL)

The use of a controller is highly recommended. The VAF is a variable amplitude and frequency control mounted in a NEMA-12 enclosure. Amplitude is adjustable from 0% to 100%. The VAF controller can handle a wider range than what the vibrator is designed for. Max of 140 Hz for vibrator operation. \*Please note, operating at this frequency shortens the operation cycle time of the vibrator. The Fine Pot alters the frequency setpoint of the coarse pot by +/- 10 Hz. The input power fuse is rated at 3 amps maximum. There are no operator adjustments inside the enclosure.



MODEL	COMPATIBLE CM MODELS
VAF- 3	CM-5, CM-10, CM-30
VAF-9	CM-30-HF

# Troubleshooting



If CM Electromagnetic vibrator fails to operate, check the following as causes of failure:

- Check power supply
- Tighten mounting bolts if they're loose
- Inspect electrical cord for damage

# Warranty Information



Cleveland Vibrator Company industrial vibrators are warranted for 6 months from the date of shipment, if the unit is installed and operated in accordance with the factory instructions. The warranty covers material defects and manufacturer's workmanship.

All CM Models are preset to maximum force at the factory. If adjustment is necessary, the VIC or VAF controller MUST be used, otherwise the warranty could be voided. Each unit comes with a factory seal of approval connecting the cover and the base. Warranty is void if seal is broken. Should the unit begin to impact, (typified by a harsh, rapping noise) the unit should be returned to factory for inspection.

# Repair Services



**The cost of reconditioning generally runs approximately 50%-60% of the cost of a new unit and is covered by the same warranty as the new unit, if it is a Cleveland Vibrator Company unit.**

Cleveland Vibrator Company has its own repair department, staffed by experienced and qualified personnel. Both the air and electric repair departments provide quality reconditioning of all used and worn vibrators. We can also evaluate, repair or replace competitor vibrators. Units can be sent for a free evaluation.

A cost estimate, if repairable, will be provided in writing before repair work begins.

FOR MORE INFORMATION

Call: Sales at 800-221-3298

Email: [sales@clevelandvibrator.com](mailto:sales@clevelandvibrator.com)

Buy Online: [www.clevelandvibrator.com](http://www.clevelandvibrator.com)

