

Installation, Operation and Maintenance Instructions



UNIT VIBRATOR MODELS-D55P & D55S

ERIEZ MAGNETICS HEADQUARTERS: 2200 ASBURY ROAD, ERIE, PA 16506-1440 U.S.A.
WORLD AUTHORITY IN ADVANCED TECHNOLOGY FOR MAGNETIC, VIBRATORY and INSPECTION APPLICATIONS

Introduction

This manual details the proper steps for installing, operating and maintaining the Eriez Unit Vibrator.

Careful attention to these requirements will assure the most efficient and dependable performance of this equipment.

If there are any questions or comments about the manual, please call Eriez Manufacturing at 814/835-6000 for Unit Vibrator assistance.

⚠ CAUTION: Safety labels must be affixed to this product. Should the safety label(s) be damaged, dislodged or removed, contact Eriez for replacement.

Table of Contents

ERIEZ UNIT VIBRATOR - MODELS 55P AND 55S

INSTALLATION	4
Mounting.....	4
Electrical Connections	4
OPERATION.....	5
Routine Maintenance and Checking.....	5
E-Frame and Anvil Gap Adjustment	5
REPAIRS	7
Springs	7
Coil and E-Frame Assembly	7
Armature.....	8
Impact Pad and Anvil.....	8
Performance Test and Standards	8
TROUBLESHOOTING	9



Installation

MOUNTING

The vibrator should be securely fastened to the mounting surface plate or channel, using bolts with lockwashers or locknuts. The base of the vibrator must have full contact with the mounting surface plate or channel without being forced. To insure full contact with a surface that is not perfectly flat, use metal shims as needed between the vibrator base and the mounting surface.

ELECTRICAL CONNECTIONS

Check the specifications of the power line to be certain that they are the same as those shown on the name plate of the vibrator (or control, if used).

Where no control is used, connections are as shown in Fig. 1. Where an Eriez control is used, connections are as shown in Fig. 2. Ground connections should always be used as shown. A GATE INTERLOCK SWITCH SHOULD BE PROVIDED SO THAT THE UNIT VIBRATOR IS OFF WHEN THE DISCHARGE OPENING IS CLOSED.

Eriez unit vibrators cannot be operated by Direct Current.

YOU ARE NOW READY TO START YOUR VIBRATORY FEEDER.

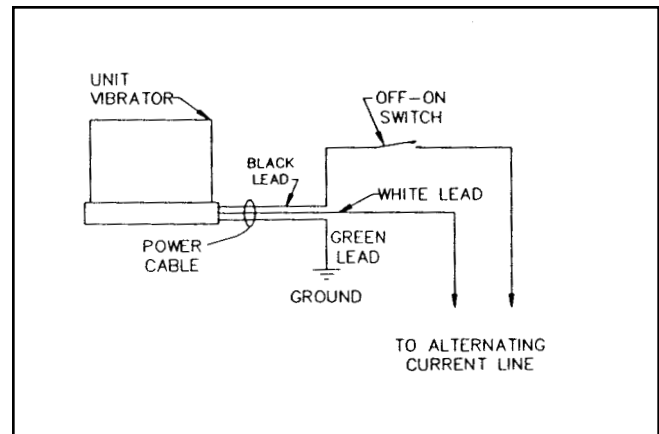


FIGURE 1

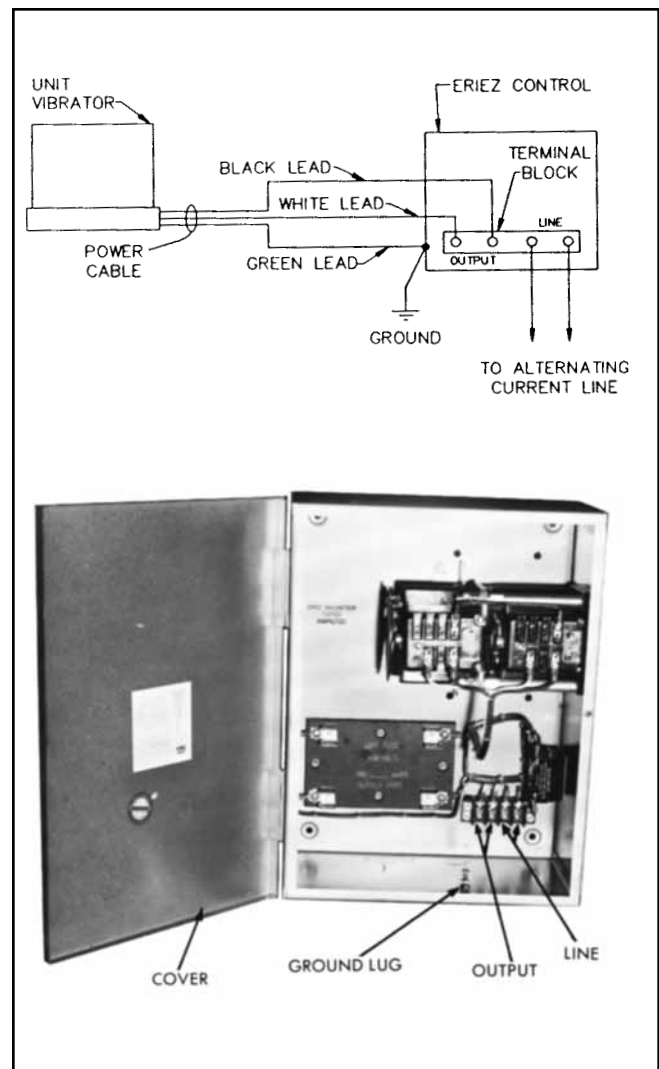


FIGURE 2

Operation

To start in operation after all connections have been made, simply turn the unit on.

No warm-up period is needed. If an Eriez control is used, adjust the variable auto-transformer to the desired vibration output level. As the control knob is rotated clockwise, impact should start at a low voltage value and increase to maximum at full line voltage in the full clockwise position.

Eriez unit vibrators are operated by an alternating current electromagnet energized directly from any single phase AC source of the correct voltage and frequency. No intermediate rectification equipment is required.

ROUTINE MAINTENANCE AND CHECKING

In normal operation with the unit properly installed and the cover in place, the unit will operate with a solid metallic hammering sound (P-type unit) or a dull, more subdued hammering sound (S-type unit). This steady hammering sound is a necessary by-product of the metal-to-metal or metal-to-elastomer impacting action of this type of vibrator. Spurious rattling or tinny noise indicates loose or resonant parts in the system.

For inspection and checking purposes, units may be operated temporarily with the cover removed.

The mounting bolts, as well as all fasteners in the vibrator assembly, should be checked periodically for tightness. Loose fasteners anywhere in the assembly or mounting may result in a loss of efficiency.

Foreign material, if allowed to accumulate on the E-Frame and moving assembly or on the base, may also result in loss of efficiency. Such foreign material may be blown out with an air hose.

These vibrators do not require lubrication of any kind.

For possible troubles and their remedies, refer to the Unit Vibrator Service Chart on page 9 in this instruction material.

E-FRAME AND ANVIL GAP ADJUSTMENT

Whenever it becomes necessary to adjust the E-Frame and anvil gaps (as when parts are replaced – see “Repairs” below) use the following procedure:

- a. Loosen the bolts fastening the E-Frame, Part 4, (see “Parts List”, Eriez Form VT-3555) and those holding the spring assembly. Add or remove shims, Part 13, equally at each side of the spring assembly, as shown in Fig. 3, until impact pad, Part 9, barely touches anvil, Part 10. Tighten the bolts holding the spring assembly.

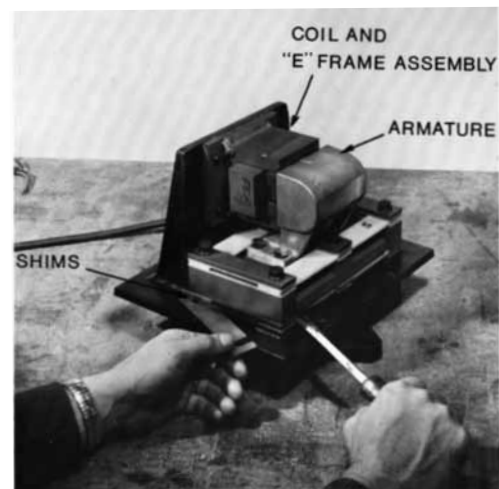


FIGURE 3

Operation (cont.)

- b. Fasten the E-Frame bolts only finger tight so that the E-Frame can still be moved as shown in Fig. 4. Using a bar or large screwdriver, shift the E-Frame to obtain a sliding fit of an .063" (1.6 mm) thick non-magnetic spacer between the lower side of either armature pole piece the adjacent E-Frame leg. After tightening the E-Frame bolts, the .063" (1.6 mm) spacer should slip easily through the gap from one side to the other.



FIGURE 4

Repairs

SPRINGS

Although spring failure will rarely occur if the unit is operated within its limitations, springs may eventually fail for one reason or another. Such failure will show up in the unit gradually becoming weak or inoperative. Faulty springs will be indicated by irregular white areas adjacent to the spring clamps, or as excessively worn areas under the edges of the clamps. Refer to the Parts List and order a new set of springs from the factory. Be sure to include the serial number of the unit when ordering.

Note – springs should be replaced in sets to insure proper overall springing characteristics.

To install a new set of springs, proceed as follows:

- a. Remove the armature, Part 3, and the E-Frame.
- b. Remove the old spring, noting the relative positions of the hammer, spring clamps, spacers and shims in the assembly.
- c. Reassemble the new springs, hammer, spring clamps and spacers on the base, referring to Fig. 4 for relative positions of the parts.
- d. Align the parts as shown in Fig. 4, and tighten the outside center spring clamp bolt.
- e. Reverse the assembly (turn 180° on base) and tighten the other center spring clamp bolts.
- f. Replace the E-Frame and follow the instructions given above for E-Frame and anvil gap adjustment.

COIL AND E-FRAME ASSEMBLY

Since the coils are permanently embedded on the center legs of the E-Frame, a coil and E-Frame must be replaced as a unit. In removing an old coil and E-Frame, disconnect the old coil by cutting the leads on the coil side of the crimp connectors, leaving stubs long enough to properly connect the new coil.

Then remove the four bolts securing the E-Frame and slide the E-Frame out sideways (See Fig. 5). Before fastening the new E-Frame in place, the gaps should be adjusted in accordance with instructions previously given.

When ordering a new E-Frame assembly be sure to include the vibrator nameplate voltage.

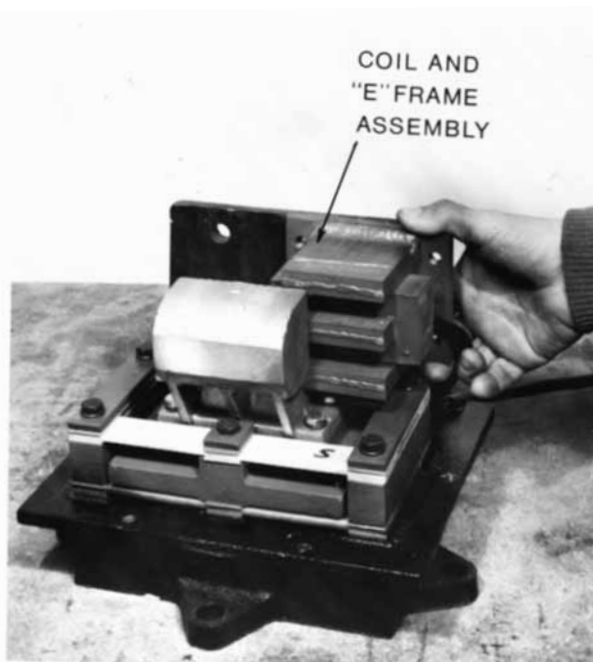


FIGURE 5

Repairs (cont.)

ARMATURE

Remove the E-Frame and armature, install the new armature and tighten, install E-Frame, and follow E-Frame gap adjustment procedure.

IMPACT PAD AND ANVIL

If it becomes necessary to replace the impact pad, Part 9, or the anvil, Part 10 (55P model only), due to possible wear or breakage, it is best to replace both parts. In replacing these parts, the spring change procedure given above should be followed, except that it will not be necessary to unfasten the spring and hammer at the center. The 55S model has no impact pad as the hammer casting impacts directly on the rubber-covered anvil; therefore, only the anvil may require replacement due to wear.

PERFORMANCE TEST AND STANDARDS

To test the performance of the Vibrator, use a manual voltage control with sine wave output (such as a variable auto-transformer) and slowly apply voltage, starting at zero and increasing to maximum. Impacting should start at from 5% to 40% of full voltage, with maximum vibratory output obtained at full voltage.

To check the vibratory output, remove the cover and place a vibratory displacement decal on either side of the armature assembly as shown in Fig. 6. With the unit operating at full voltage observe where the fine gray lines of the calibrated V on the displacement decal meet. The deflection is read opposite the point where they meet.

With an empty bin this deflection should be

approximately .040" (1.0 mm) and with a full or loaded bin it should not exceed .060" (1.5 mm).

To adjust for maximum output shims can be removed or added (see Fig. 4) providing equal numbers of shims are maintained at each end of the springs. To increase the deflection of a unit, shims are added, and to decrease the deflection shims are removed. These shims should be added or removed two at a time, one at each end of the springs, and the vibrator output rechecked with each shim change until the proper output is achieved.

If a displacement of .050" (1.3 mm) to .060" (1.5 mm) is not possible with a full bin it is evident that the bin wall is flexing due to insufficient stiffness. The bin wall must be stiffened with additional bracing or a longer channel used for mounting the vibrator. With sufficient stiffness the maximum output displacement can be adjusted using shims.

All D55P and D55S Vibrators must meet rigid performance standards before shipment. Testing is done with standard loading in a standard test fixture designed by Eriez.

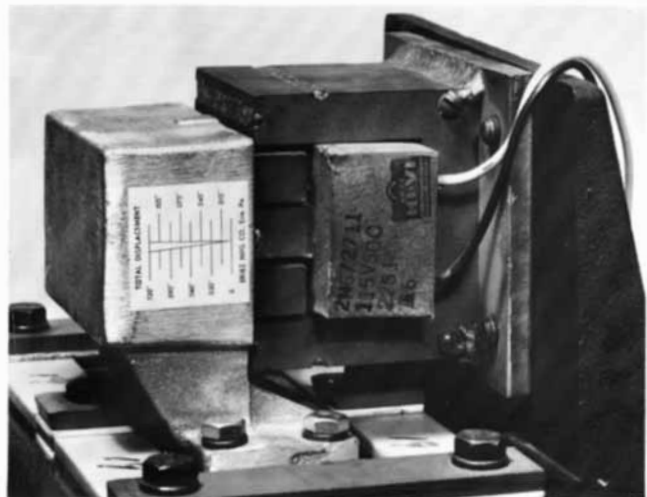


FIGURE 6

Troubleshooting

TABLE 1. SERVICE CHART

NATURE OF PROBLEM		Incorrect Voltage	Loose Fastenings	Foreign Material Inside of Unit	Faulty Controls or Wiring	Incorrect Factory Adjustment	Blown Fuse or Circuit Breaker	Line Voltage Variation	Coil Failure	Incorrect Air Gap Adjustment	Spring Failure	Product or Volume Variation	Loose or Broken Cover	Broken Base or Other Casting	Extreme Heat Over 120°F	Rubber Covered Anvil or Impact Pads Worn	Bowed Mounting Channel, Plate or Hopper Wall
		1	2	3	4	5								13	14		16
Initial Installation	Reduced or Low Output	1	2	3	4	5								13	14		16
	Noisy but Output Okay		2	3		5							12	13			
	Noisy Certain Periods Only		2					7									
Develop After Satisfactory Initial Operation	Completely Inoperative				4		6		8	9	10			13			16
	Operating But Reduced Output	1	2	3	4					9	10			13			16
	Output Okay Too Much Noise			3						9	10		12	13		15	
	Gradual Fading			3	4				8		10						
	Inconsistent Output			3	4			7				11					

• Numbered Squares indicate possible sources of trouble • Numbers in Squares indicate corrective measures to be taken. See list at bottom of page.

IMPORTANT – Be sure the power supply (voltage and cycle) matches that shown on the name plates. Unit Vibrators will not operate on Direct Current.

1. Incorrect Voltage

Check nameplate specifications and line voltage.

2. Loose Fastenings

Remove cover and check all bolts - make certain that bolts to bin are tight.

3. Foreign Material Inside of Unit

Remove cover and clean with air hose.

4. Faulty Controls or Wiring

Check and replace if necessary.

5. Incorrect Factory Adjustment

Adjust air gap (see maintenance instructions).

6. Blown Fuse or Circuit Breaker

Check and correct - check all wiring for short circuits

7. Line Voltage Variation

Check and install voltage regulator if necessary.

8. Coil Failure

Check - remove and install new coil (see maintenance instructions).

9. Incorrect Air Gap Adjustment

Check and readjust (see maintenance instructions)

10. Spring Failure

Check and replace - order new from factory - follow maintenance instructions.

11. Product or Volume Variation

Possibly incurable - customer to decide and correct if practical.

Troubleshooting (cont.)

12. Loose or Broken Cover

If broken cover, order new and tighten screws. All models have cover gaskets.

13. Broken Base or Other Casting

Check - return to factory for repairs.

14. Extreme Heat Over 120°F

Extreme heat - (ambient temperature exceeding 120°F (50°C)) need Hi-Temperature Drive unit (Max. 300°F (150°C)).

15. Rubber Covered Anvil or Impact Pads Worn

Install replacement anvil or pads - (see maintenance instructions).

16. Bowed Mounting Channel, Plate or Hopper Wall

Check for bow in mounting channel, plate or hopper wall. Flat, surface to surface contact is to be kept. Grind smooth, shim or replace with flat channel or mounting plate.



World Authority in Advanced Technology for Magnetic, Vibratory and Inspection Applications

Headquarters: 2200 Asbury Road, Erie, PA 16506-1440 U.S.A.

Telephone: 814/835-6000 • 800/345-4946 • Fax: 814/838-4960 • International Fax: 814/833-3348

® Web Site: <http://www.eriez.com> e-mail: eriez@eriez.com

Manufacturing Facilities: AUSTRALIA • BRAZIL • CANADA • CHINA • INDIA • JAPAN • MEXICO • SOUTH AFRICA • UNITED KINGDOM • UNITED STATES