VM-3670D

Installation, Operation and Maintenance Instructions

ERIEZ®

VIBRATING FEEDERS & CONVEYORS
MODEL TM

ERIEZ MAGNETICS HEADQUARTERS: 2200 ASBURY ROAD, P.O. BOX 10608, ERIE, PA 16514-0608 U.S.A.
WORLD AUTHORITY IN ADVANCED TECHNOLOGY FOR MAGNETIC, VIBRATORY and METAL DETECTION APPLICATIONS

Introduction

This manual details the proper steps for installing, operating and maintaining the Eriez Mechanical Vibrating Feeder/Conveyor.

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 at 814/835-6000 for Conveyor assistance.

WARNING: Suspension mounting inherently involves risk of damage to property or injury to personnel located under or near the equipment, should a suspension component fail. As with all suspended equipment, access to the area under this machine should be restricted. *Specifications for suspension components given in this manual are suggestions only, and the user is entirely responsible for final selection of suspension method and details.* Select and properly use suspension components with rated capacities (including all appropriate reduction factors) that provide adequate safety when the weight of the equipment and all possible loading conditions and upsets are taken into account. Consult Eriez at 814-835-6000 if additional information regarding Eriez equipment is needed to make this selection.

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 VIBRATING FEEDER/CONVEYOR - MODEL TM

Installation

DAMAGE IN SHIPMENT

When you receive your conveyor, examine it carefully for damage. If damage is found, report it immediately to Eriez Magnetics and the Carrier.

HANDLING

It is important to handle this equipment carefully to avoid twisting or bending the frame or pans. If lift lugs are provided, they must be used; otherwise, lift with slings.

A spreader board over the pan should be used to prevent your chain or cable from bending the pan while lifting.

An excessively large amount of weight placed on the pans or springs could damage the unit.

INSTALLATION PROCEDURES

Conveyors are normally base mounted. Base pads should be fastened to floor or framework to maintain conveyor position. Adequate space must be provided between pan and/or base with any surrounding solid object to prevent interference. Conveyor can also be suspended. Suspension is hung from the base using eyebolts with rubber isolation springs. See Figure 1.

The isolation assemblies should be welded to suitable overhead structure. Wire rope and/or turnbuckles may be used for greater suspension heights. Tension on all suspension parts should be equal. Conveyors are normally mounted horizontal but can be mounted up to 10 degrees downslope. In this position velocity of 80 foot per minute (24 mpm) can be obtained, depending on material characteristics.

If feeding conveyor from storage hopper, care must be taken to minimize headload.

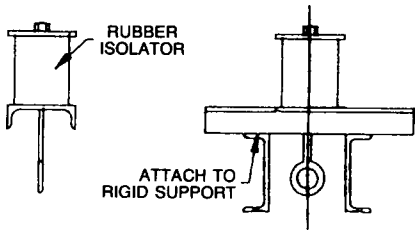


FIGURE 1

WIRING

Wiring to the motor should enter from a flexible conduit. Use of a motor starter and circuit protection is recommended. Wiring must be properly sized to prevent line voltage drop.

Motors commonly supplied are 1725 rpm, dual voltage polyphase. Connect wiring according to the manufacturer's instruction, usually located on the nameplate or in the conduit box cover.

Motor rotation should be such that the top of the pulley rotates in the opposite direction from the feed of the pan. However, some materials feed better with the belt turning in the same direction as the feed.

When controller is supplied connect according to instructions enclosed with this equipment.

TYPICAL ERIEZ MODEL TM

Operation and Maintenance

SPECIAL TROUGHS AND ATTACHMENTS

Eriez Engineering Service Department should always be consulted before undertaking the design or construction of special troughs. The troughs as furnished by Eriez should not be modified or attachments added without first consulting Eriez, as the feeders and conveyors are a tuned mass system and damage will result. To do so will void the warranty.

DEFLECTION

Eriez TM conveyors are normally set at approximately 7/16" (11 mm) pan deflection. This can be checked with an Eriez deflection sticker. The sticker is read while the equipment is operating by looking at the optical illusion in which the printed circles appears as double. Read the deflection where the two circles touch. A deflection sticker is shown in Figure 2.

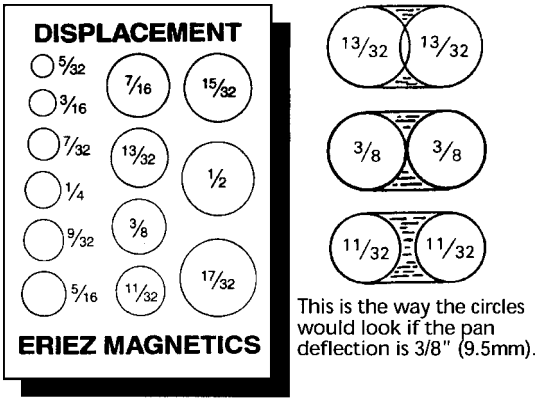


FIGURE 2

The deflection may also be read by holding a pencil very steadily (resting against a solid object) and touching the pan side with the pencil point while the pan is operating. Then stop the equipment and measure the deflection indicated by the line drawn on the side of the pan.

Do not operate with pan deflections greater than 7/16" (11 mm) because spring damage will result.

The total of pan and base deflection must not exceed 11/16" (18 mm) for TM conveyors. This deflection should be taken at full voltage and with material feeding at maximum capacity.

DEFLECTION ADJUSTMENT

ADJUSTMENT BY SPEED

The deflection may be changed by means of the adjustable drive sheave. Making the sheave smaller in pitch diameter will slow down the eccentric shaft and decrease the deflection. Increasing the drive sheave pitch diameter will increase deflection.

To adjust the drive sheave, first disconnect all power, then remove guard.

1. Loosen motor plate mounting bolts.
2. Slide motor plate back to loosen belt.
3. Loosen set screws that lock sheave halves.
4. Turn sheave halves so they move apart to decrease the pitch diameter or turn the opposite way to increase diameter.
5. Retighten set screws.
6. Reinstall belt and pull motor tight against belt.
7. Tighten motor plate mounting bolts.

If the driven sheave is removed, the tapered bushing must be carefully tightened to prevent slipping on the shaft. Tighten each bolt in the bushing until each is tightened to about 10 ft. lb. (14 Nm). Be sure to recheck the torque because tightening one bolt will loosen the others.

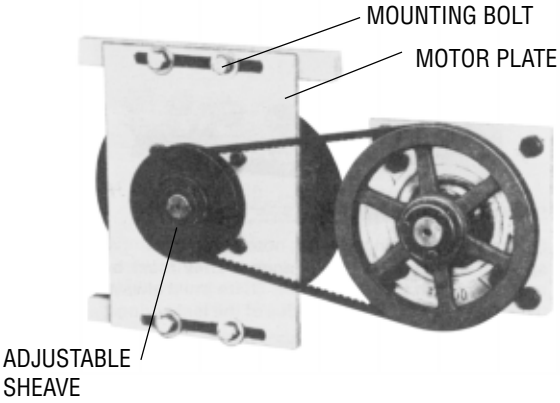


FIGURE 3

Operation and Maintenance (cont.)

ADJUSTMENT BY ADDING/REMOVING SPRINGS

Deflection may also be adjusted by adding or removing leaf springs.

Adding springs will decrease deflection at the same speed and removing springs will increase deflection at the same shaft speed. Refer to Repairs-Spring Replacement in this manual for instruction on placing or adjusting springs.

NOTE: Material build-up on pan may increase pan deflection and cause tuning spring failure or cracks in tray and base.

CAUTION: Do not operate unit with any associated equipment in direct contact with any part of the vibratory unit. Cracks can occur in the tray and base.

LUBRICATION

Bearings should be lubricated approximately every 200 hours of operation with gun grease suitable for roller bearings. To reach grease fittings, first shut down the unit, lockout tag out, then remove plugs from the two access holes on the end of the eccentric enclosures. Replace plugs when finished.

This bearing is factory lubricated with No. 2 consistency lithium base grease which is suitable for most applications. However, extra protection is necessary if bearing is subjected to excessive moisture, dust, or corrosive vapor. In these cases, bearing should contain as much grease as speed will permit (a full bearing with consequent slight leakage through the seal is the best protection against contaminant entry).

In extremely dirty environments, the bearing should be purged daily to flush out contaminants.

The following table is a general guide for normal operating conditions. However, some situations may require a change in lubricating periods as dictated by experience. If the bearing is exposed to unusual operating conditions, consult a reputable grease manufacturer.

TABLE 1 - LUBRICATION GUIDE

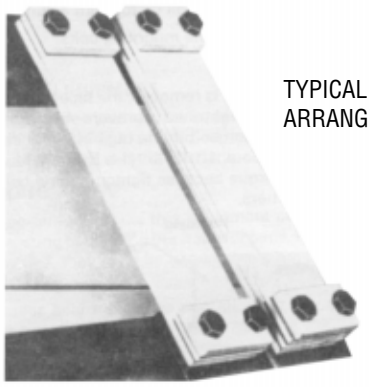
Suggested Lubrication Period in Weeks				
Hours run per day	**251 to 500 rpm**	**501 to 750 rpm**	**751 to 1000 rpm**	**1001 to 1500 rpm**
8	12	10	7	5
16	7	5	4	2
24	5	3	2	1

Repairs

SPRING REPLACEMENT

Before disassembling springs, note how the clamps, springs, and spacers are arranged. They must be reassembled in the same order. There must always be a plastic spacer on both sides of the leaf springs.

Torque spring bolts to 78 ft. lbs. (106 Nm)



TYPICAL SPRING ARRANGEMENT

FIGURE 4

MOTOR REPLACEMENT

When replacing motors, replace with an identical hp, rpm and voltage motor and insure all sheaves are in proper alignment. Excessive belt wear will result if belts are operated misaligned. Always replace worn belts.

BELTS

Periodically inspect the belt for tension and wear. The belt should be tensioned to allow approximately 1/2-inch (12 mm) deflection at the mid-span when moderate pressure is applied by hand.

Excessively loose or tight belts will wear rapidly.

A new belt should be readjusted after a few hours of operation.

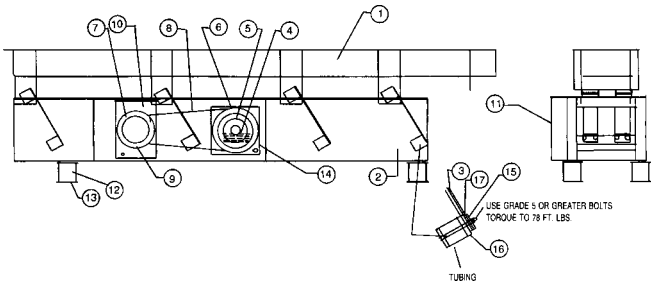
BEARING REPLACEMENT

When replacing bearings on the eccentric shaft, DO NOT use the set screws to lock the bearing collar to the shaft. Doing so will cause premature bearing failure. The eccentric shaft must free float on the inner race of the bearing for even wear.

Parts List

Item No.	Name	Quantity
1.	Trough (Specify Width & Length)	1
2.	Base Assembly (Specify Width & Length)	1
3.	Spring	As Req'd.
4.	Eccentric Shaft	1
5.	Flange Bearing (Specify Diameter of Bore)	2
6.	Driven Sheave (Specify Size)	1
7.	Variable Pitch Drive Sheave (Specify Size)	1
8.	"V" Belt (Specify Size)	1
9.	Motor (Specify HP, RPM, Phase, Hz)	1
10.	Motor Mounting Plate	1
11.	Belt Guard	1
12.	Vibration Isolator (Specify Size)	4
13.	Isolator Base Plate	4
14.	Bearing Plate	2
15.	Spring Clamp	As Req'd.
16.	Backing Plate	As Req'd.
17.	Spring Spacer	As Req'd.

NOTE: WHEN ORDERING PARTS BE SURE TO SPECIFY FEEDER MODEL AND STYLE, PART NUMBER AND QUANTITY.



Troubleshooting

PROBLEM	CAUSE	REMEDY
Low Deflection	(a) heavy load on pan	(a) reduce load, improve hopper design
	(b) pan hitting fixed object	(b) provide clearance
	(c) unit out of tune due to damaged springs	(c) replace springs
	(d) belt slipping	(d) tighten belt, replace if worn
	(e) motor stalling due to incorrect voltage	(e) check motor wiring and voltage and correct
	(f) shaft running too slow due to incorrect ratio	(f) check rpm and correct
	(g) object added to pans	(g) remove object
	(h) malfunctioning control	(h) check direct line
	(i) loose spring bolts	(i) tighten spring bolts
	(j) material build-up on pan	(j) keep pan clean
No Deflection	(a) see Low Deflection	(a) see Low Deflection
	(b) motor failure	(b) replace motor and find cause of failure
	(c) no electricity	(c) check for electricity at terminals
	(d) broken, loose or thrown belt	(d) check belt and install properly
High Deflection	(a) shaft running too fast	(a) check rpm and correct
	(b) broken or damaged springs	(b) replace springs
	(c) object added to pans	(c) remove object
	(d) excessive temperature	(d) remove heat or reduce speed
	(e) material build up on pan	(e) keep pan clean
Noisy Operation	(a) mounting has come loose or is inadequate	(a) check mounting and correct
	(b) pan hitting material or object	(b) provide clearance
	(c) high deflection	(c) see High Deflection
	(d) cracks or breaks in pan or frame	(d) repair cracks or breaks
	(e) loose object on pan	(e) remove or secure objects
	(f) bearing failure	(f) replace bearing
	(g) loose spring bolts	(g) tighten bolts
Motor Overload Protection Tripping	(a) high deflection	(a) see High Deflection
	(b) inadequate ventilation	(b) provide air circulation
	(c) incorrect voltage	(c) check motor wiring and voltage
	(d) excessively tight belt	(d) loosen belt
	(e) defective motor	(e) replace motor
	(f) bearing failure	(f) replace bearings
	(g) operating on two legs of three phase line	(g) check terminals and fuses
	(h) pan jammed against external object or base	(h) provide clearance

World Authority in Advanced Technology for Magnetic, Vibratory and Metal Detection Applications

HEADQUARTERS: 2200 ASBURY ROAD, P.O. BOX 10608, ERIE, PA 16514-0608 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 IN: AUSTRALIA • BRAZIL • CANADA • CHINA • INDIA • JAPAN • MEXICO • SOUTH AFRICA • UNITED KINGDOM • UNITED STATES