

Installation, Operation and Maintenance Instructions



INDUCED MAGNETIC ROLL SEPARATOR

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

Description

The Eriez IMR Separator is designed for removing contaminating weakly magnetic oxides, etc. from dry materials such as glass sand, dolomite, etc. and for concentrating dry feebly magnetic ores and minerals.

The basic IMR consists of a revolving laminated roll which is positioned in the gap of an extremely powerful electromagnet. Alternate laminations of the roll are Armco Steel and nonmagnetic material. This design creates a series of sharp magnetic edges which become highly induced in the strong magnetic gap. The magnetic fraction of the feed is attracted by the roll and removed from the nonmagnetic part of the feed which is discharged from the roll in natural trajectory. Machines can be of one-roll design or with multiple rolls, three being the most common. On multiple roll machines, the nonmagnetic fraction from the first roll passes to lower rolls by gravity where the process is repeated.

Feed is introduced to the top roll by an Erie Hi-Vi Vibratory Feeder to give a smooth even flow of material through the machine. Alternate gravity flow hoppers are also available.

For certain applications, a magnetic drum is placed above the first roll to scalp out highly magnetic materials.

Installation

CAUTION

Whenever moving or mounting the equipment, the base must remain flat or else the magnetic rolls may lose their alignment.

Use care in uncrating to avoid damage to equipment. If machine is to be lifted, do not connect slings to magnet circuit members or feeders. Make sling connections to the vertical main supporting channels and the lift eyes provided.

Carefully observe installation instructions packed with auxiliary equipment such as rectifier, feeder, drive motors, scalping drum, etc.

Each roll on the IMR will discharge two products, a magnetic and a nonmagnetic fraction of the material fed to it. These products will fall by gravity into separate chutes within the separator. Provision must be made to collect these products as they are discharged. The usual way is by chute and duct work installed by the user to suit the installation.

Operation

- Check instructions on auxiliary equipment carefully and be sure all necessary operation and maintenance rules and precautions are observed. Before operating machine, make sure rolls are not rubbing against pole pieces and that nothing has been allowed to get between the rolls and pole pieces which could jam and damage the machine.
- The voltage for which the magnet is wound is shown on the nameplate. Voltage more than ten percent higher or lower than normal will affect the magnet's operation. Over voltage may cause the coils to burn out. The unit will not function at full strength when voltage is low.
- Be sure that the magnet is always turned on when it is in use and turned off when not in use.
- The IMR generates considerable heat. If the machine is to be installed in a restricted location, provision should be made to insure adequate air circulation to cool the unit. A fan can be used for this purpose. Maximum operation temperature should be kept below 100° C.
- Feed material supplied to the feeder will be introduced to the top of the first roll (or scalping drum, if furnished). Feed must be dry and free flowing and free of oversized particles which could jam between the pole nose and roll.



Adjustments

FEED

The feed rate is easily adjusted by means of the feeder control. A thin, even flow will give best separation results. Ideal flow is one particle deep going over the roll. Depending on difficulty of separation, more material than this can sometimes be handled.

SPLITTER

An adjustable splitter is mounted below each roll for regulating the amounts of material discharged into the magnetic and nonmagnetic chutes. This splitter is pivoted and is adjusted by loosening the locking screw on the adjustment quadrant and moving the control lever to position the blade. By moving the blade back and forth, more or less material can be discharged into either chute. In this way, the purity of the separated fractions can be closely controlled by directing middling material into the desired chute, either with the magnetics or with the non-magnetics.

GAP (STRENGTH)

CAUTION

Do not attempt to adjust the gap while the rolls are in motion.

Gap between pole nose and roll is adjustable on all IMR's. On multiple roll machines, it is usual practice to have each successive roll of greater magnetic strength than the preceding roll. This is accomplished by adjusting the pole noses to produce a smaller gap between the pole and the roll (the closer the gap, the stronger the roll) on each successive roll. IMR machines are shipped with the gaps set for normal operation as follows:

First Roll - 5/8" to 1/2"

Second Roll - 1/4" to 3/16"

Third Roll - 3/16" to 1/8"

Gaps can be increased or decreased as necessary to give just enough clearance to allow passage of the material without overflow. Adjustment of the gap between pole nose and roll is made by loosening the locking bolt at either side of the primary pole and raising or lowering the pole nose by means of height adjustment screws mounted on top of the primary pole. (See Figure 1).

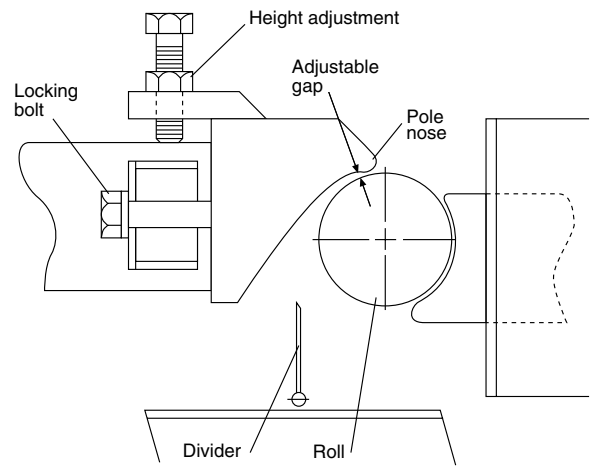


FIGURE 1

After adjustment has been set, the locking bolts should be securely tightened. Nonmagnetic gauges (brass, copper, etc.) can be used to determine the gap between the pole nose and the roll. This gap should be gauged with the magnet turned on as the gap decreases slightly with the magnet on.

Maintenance

- Be sure to carefully follow maintenance instructions for auxiliary equipment.
- Drive belt idler-take up sheaves are adjusted at the factory to provide proper belt tension. These idlers should be checked periodically for adjustment. Belt tension should be per normal V-belt practice.
- Drive belt idler-take up bearings should be greased frequently - at least once a week - daily if conditions so indicate. Access slots are provided in the belt guard for this purpose. Any good grade of bearing grease is satisfactory (NLG12).
- Bearings (two per roll) should be greased weekly, more often if conditions so indicate. Any good grade of bearing grease is satisfactory (NLG12).
- A nylon brush is provided to assist in keeping the rolls clean and prevent a build-up of fines on the roll surfaces. This brush is located at the bottom of the roll and is held up to the roll surface by spring tension. As the brush wears, the spring should be tightened to keep the brush in contact with the roll. This adjustment is made by tightening the machine bolt in the center of each spring leaf (one spring each end of brush).

Maintenance *(cont.)*

- The roll brushes should be examined periodically and replaced when worn. To remove brush, unscrew the round head wood screws securing brush to holder. The brush assembly is easily accessible from the side of the machine.
- If rolls become worn or damaged, they can be removed from the machine for repair. After removing bearings on the adjustment side of the machine, the rolls may be withdrawn with the aid of a crane.

Repairs and Alteration

Repair, alteration or disassembly of this magnetic equipment in the field without written authorization and instructions by Eriez Magnetics nullifies the responsibility and guarantee of the manufacturer.

If further information or advice is required, contact the Eriez sales representative in your area.



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