

Drum Separators

...Only from Eriez.

Model HFP, Types CC, RE and A

Erium®-powered permanent magnets for automatic separation of ferromagnetic particles for higher levels of purity in food, grain, chemicals, plastics, metals, rock products, ores, etc.*

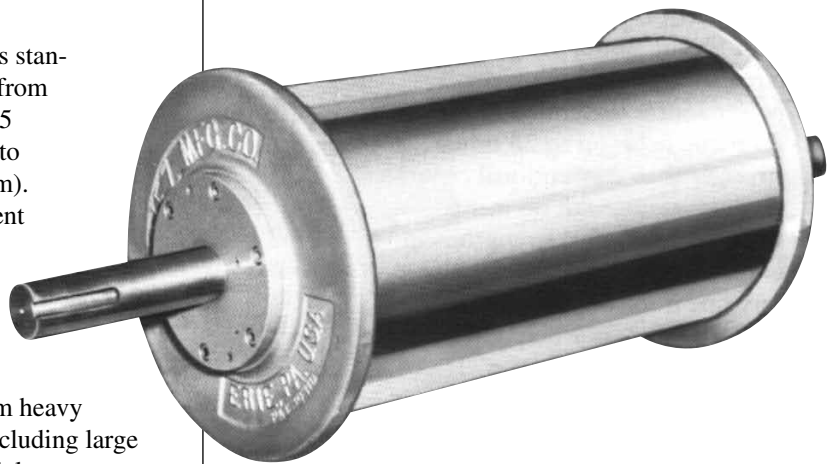
Eriez' Drum Separators remove both large and small pieces of iron contaminants from material processing lines. Powerful permanent magnets enable more efficient separation performance for a broader range of applications than ever before.

The complete line includes standard models in diameters from 12 to 36 inches (305 to 915 mm), and widths from 12 to 60 inches (305 to 1525 mm). These units provide efficient separation on volumes up to 25,600 cubic feet (725 cubic meters) per hour. They provide years of trouble-free automatic removal of tramp iron from heavy flows of bulk materials, including large and highly abrasive materials.

FEATURES

- Erium®-powered
- Six diameters
- Twelve standard widths

**ERIUM is the trade name applied to the high quality permanent magnetic power sources as specifically designed and energized by Eriez, for use in Eriez components and equipment.*



Introduction/Overview

STANDARD DRUM SEPARATORS

For many years, Eriez Permanent Magnetic Drums have used ceramic or alnico magnet materials as their power source. When built with Eriez-designed circuits, these separators provide good magnetic fields for a nominal cost and satisfactorily remove both tramp and fine iron contaminants in most applications. They continue to be the magnets most frequently used to improve the product purity of dry bulk materials.

RARE EARTH DRUM SEPARATORS

Now available from Eriez are Rare Earth Drum Separators made with Erium® 3000, a high quality rare earth permanent magnetic power source. Erium® 3000 develops magnetic fields up to 25 times stronger than conventional ceramic or alnico units, with no increase in size. The additional strength helps in removing weakly magnetic or very fine iron contaminants from a wide variety of powdery, dry bulk materials as well as slurries. The increased strength at a greater distance, high gradients, and increased holding force of the RE Drums allows them to hold magnetic or fine iron contaminants so tightly that wipe-off by product flow is virtually eliminated.

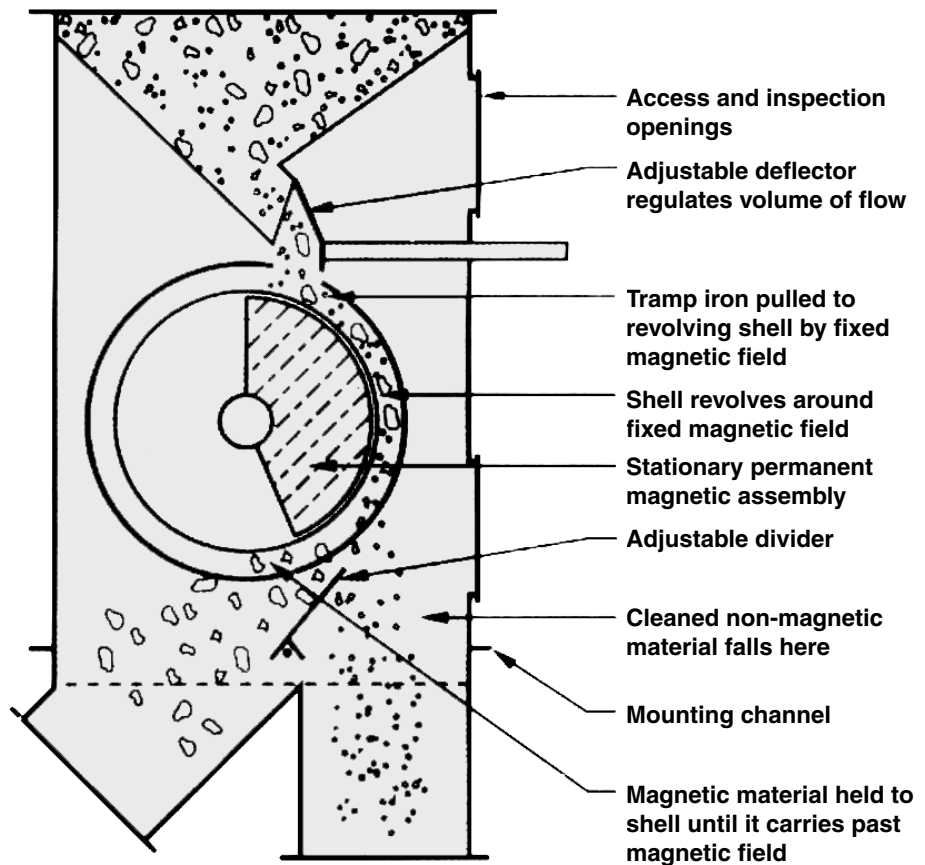
Rare Earth Drums are effective in treating or purifying large quantities of bulk materials such as foods, plastics, abrasives, metal powders, ceramic material, paper, glass cullet, soda ash, kaolin clay, chemicals, gypsum, and quartz powder. They remove very fine ferrous particles, locked particles, and even strongly paramagnetic particles.

PRINCIPLE OF OPERATION

As material reaches the drum, the magnetic field attracts and holds ferrous particles to the drum shell. As the drum revolves, it carries the material through the stationary magnetic field. The nonmagnetic material falls freely from the shell, while ferrous particles are held firmly until they are carried out of the magnetic field. (See illustration below.)

SELECTION ADVICE

Customer applications dictate the size and capacity Magnetic Drum required. Eriez technicians can assist with proper selection. Customers who send a sample of the material to be separated, along with a sketch of the desired installation, can receive a complete Engineering Report.



Often Asked Questions About Rare Earth Magnets

1. WHAT EXACTLY ARE RARE EARTH MAGNETS?

Rare earth magnetic materials are neither rare nor earth. “Lanthanides,” is the proper name for these metals, which range from atomic number 57 to 71 on the Periodic Table of Elements. While rare earth materials have been known for a long time, it is only within recent years that their use has become economically feasible. Rare earth metals are now being combined with other elements to produce a “new breed” of permanent magnets.

2. HOW DO RARE EARTH MAGNETS DIFFER FROM OTHER MAGNETS?

Rare earth magnets are a major advance because they have much higher magnetic strength than conventional ferrite or ceramic magnets (up to 25 times more pull), yet provide similar circuit stability and long service life.

Properly designed RE magnets also have high magnetic gradients and greatly increased holding force. This means they can “reach out” and attract weakly magnetic or very fine iron contaminants and hold them so tightly that wash-off by product flow is virtually eliminated.

3. ARE ALL RARE EARTH MAGNETS CREATED EQUAL?

Definitely not. An Eriez Magnetic Technical Center study of all the different compounds and magnetic circuits showed that some rare earth compositions and circuits were only slightly better than ferrite (ceramic) magnetic circuits, while others were many times stronger. This research led Eriez to the development of Erium 3000, a powerful, third generation, permanent rare earth magnetic compound.

Depending upon their circuit design, Eriez rare earth magnets, as noted above, can provide up to 25 times the pulling power of conventional permanent magnets — with no increase in size. In fact, Eriez RE plate magnets are both much smaller and lighter than conventional ceramic plate magnets of less strength.

4. ARE RARE EARTH MAGNETIC SEPARATORS ECONOMICAL?

RE magnets offer solutions to many fine or weakly magnetic iron contamination problems. These solutions were just not available before. The magnetic strength of the RE magnet falls in the medium-intensity range — 4,000 to 10,000 gauss. Previously, this strength was available only through high intensity electromagnets, which are bulky in size, expensive to purchase, and expensive to operate. All too often, the high-cost electromag-

netic level of separation is not really needed, or it exceeds the “value added” to the product or process, making its use difficult to justify.

The gap between high-intensity electromagnets and the low-intensity conventional ferrite and alnico magnets left a void in the medium-intensity range. Rare earth magnets fill this void and allow economically feasible solutions to ferrous contamination problems that are too tough for low-intensity separation but for which high intensity separation is overkill.

5. HOW CAN RARE EARTH MAGNETS BENEFIT A PROCESSING OPERATION?

The improved performance of RE magnets makes them particularly suited for certain applications. These include:

1. The removal of fine iron, such as iron of abrasion, which is difficult to attract and hold because of its small mass;
2. The removal of weakly magnetic contaminants, such as iron oxide or rust, which do not respond well to conventional ferrite magnets; and
3. The removal of some stainless steel particles which have been rendered paramagnetic through work hardening.

Choose From Four Drum Separator Models

TYPE CC - Criss-Cross Circuit Drum

Type CC Model Drum Separators have a unique “criss-cross” magnetic circuit. A powerful permanent magnetic field uniformly covers the entire drum width to ensure maximum tramp iron removal. The smooth stainless steel shell with single wiper strip assures positive tramp iron discharge and a minimum of product carryover on powdery or cohesive materials. They are available in 12 - 36" (305 - 915 mm) diameters. Special construction for heavy duty applications is available for units 18 - 36" (457 - 915 mm). Replaceable auxiliary shells are available and are recommended where highly abrasive materials are being handled.



TYPE RE - Rare Earth Drum

Rare Earth Drum Separators should be used for applications where a high degree of product purity is required. Rare Earth Drums are effective in removing very fine ferrous particles, locked particles, and even strongly paramagnetic particles. Magnetic lines of flux are concentrated in each internal pole, creating an extremely high-gradient magnetic field. RE Drums are available in 12-36" (305-915 mm) diameters. They can be retrofitted into Model HFP housings.



TYPE A - Agitator-Type Drum

Type A Agitator-Type Drum Separators automatically removes difficult-to-separate magnetic contamination from nonmagnetic materials. This Drum (available with or without HFP housing) has a specially designed magnetic element that causes agitation of materials passed over it. The agitation moves the material in and out of a set of magnetic fields, and thereby physically shakes nonmagnetic materials from ferrous materials, even when entangled. Type A Drums are powered with Erium 25 axial magnetic fields. They are available in 12 - 36" (305 - 915 mm) diameters.



MODEL HFP - Drum in Housing with Feed Protection

HFP Drums provide exceptional controlled feed as well as discharge features. The steel hopper has a nonmagnetic stainless steel portion near the Drum to prevent the hopper from being magnetically induced. The chute-type feed hopper is designed to provide increased efficiency of separation by more effectively directing the material flow to the face of the Drum. It also prevents material from plunging directly onto the Drum shell, to reduce the possibility of physical damage to the shell caused by impinging heavy material or heavy tramp iron.



Additional Drum Separator Information

KEYWAY SIZES FOR ALL DRUMS

Drum Diameter		Width		Depth		Length	
in	mm	in	mm	in	mm	in	mm
12	305	1/2	13	1/4	6	3-1/4	83
15 & 18	381 & 457	5/8	16	5/16	8	3-1/2	90
24	610	5/8	16	5/16	8	3-1/2	90
30 & 36	762 & 914	3/4	19	1/2	13	3-1/2	90

ADDITIONAL FEATURES OF DRUMS IN HOUSING

Dust-Tight Housings Are Standard.

Housing of Model HFP is continuously welded at all joints. Inspection panels are located at both front and back of housings. Bolted-on Drum Support Panels and Inspection Panels are sealed with 1/8" (3 mm) thick neoprene gaskets. All input and output openings are flanged for ease of connection to duct work.

There is a Drum removal opening on the drive side of the Model HFP Drum housing. Drums can be removed from housings without removing the housing from flowline. A heavy steel Drum Support Panel bolted to the housing covers the opening and supports the Drum.

Totally Enclosed Motor Drives.

Motor Drive for Model HFP Drums include motor, motor mounting brackets, motor sheave, drum sheave, V-belt and belt guard. These are totally enclosed right angle gear motors, 230/460V, 3-phase, 60 cycle. Explosion-proof motors are

available at extra cost. Eriez V-Belt Drive assures maximum protection of equipment against damage due to jam-ups. In event of severe clogging or jamming due to excessive heavy material or unusually large pieces of tramp iron, the slippage of the V-belt will prevent severe damage to the Drum Separator and minimize the danger of motor burnout.

Heavy Duty Construction.

Model HFP in 18" and 24" (457-610 mm) diameters are also available specially constructed for heavy duty applications.

Special Circuit Designs.

Special circuit designs are available for high temperature applications or special separation requirements.

TECHNICAL AND TESTING SERVICES

Eriez maintains industry's largest magnetic and vibratory test laboratories at its Technical Center at the Erie, PA headquarters. Magnetic separation test equipment, ranging from conventional plates, grates, and traps to superconducting high gradient magnetic separators, is available to help determine the most effective way to remove contaminants or concentrate valuable minerals.

Customers are encouraged to participate in the testing of their samples as Eriez technicians seek the most efficient, reliable, economical, and permanent solution to their processing problems.



Dimensions and specifications are subject to change without notice.

Note: Some safety warning labels or guarding may have been removed before photographing this equipment

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

