

# ERIEZ



## SUSPENDED MAGNETS

REMOVE TRAMP METAL FROM CONVEYED MATERIALS



**ERIEZ**  
GLOBAL LEADER IN SEPARATION TECHNOLOGIES

## About Eriez

Established in 1942, Eriez stands as a pioneering force in separation technologies, embodying a truly global presence.

With 12 wholly owned subsidiaries across the globe, we proudly design, manufacture, and support our magnetic separation, flotation, metal detection, X-ray inspection, and material handling equipment on an international scale.

Our dedicated team of knowledgeable and experienced sales engineers collaborates closely with customers, understanding their unique challenges to deliver dependable, high-performance equipment, systems, and solutions.

Whether clients require our standard equipment or custom solutions tailored to their precise specifications, Eriez delivers.

Drawing from more than 80 years of experience across diverse industries, including mining and minerals processing, food processing and packaging, aggregates, metals recycling, and many other sectors, Eriez leverages its extensive experience to design and supply products that elevate productivity, efficiency, and product purity.

Eriez remains steadfast in its commitment to setting the global standard for excellence in key technologies, driving innovation and reliability across industries worldwide.

## Styles & Models

Suspended Magnets play a critical role across various industries by efficiently removing ferrous contaminants from conveyed materials. Also known as overband or crossbelt magnets in different global industries, these high-performance separators not only recover valuable metals, but also enhance product quality, improve operational safety, and protect essential downstream equipment.

### Suspended Permanent Magnets

Suspended Permanent Magnets use ceramic magnet material in a pattern specifically designed to create a powerful magnetic field that will efficiently remove tramp metal from conveyed materials. These magnets are permanently charged so they offer uninterrupted magnetic protection and require no external power source.



### Suspended Electromagnets

Strong and powerful Suspended Electromagnets have a deeply penetrating field and will remove unwanted iron from heavy burden depths of material being conveyed on fast-moving belts. Automatically remove large pieces of tramp metal that will present a hazard to downstream equipment. Electromagnets can be turned off for cleaning or service.



#### Self-Cleaning (SC) Models

SC models provide completely automatic tramp metal removal. This system features a short rubber conveyor belt built around the magnet's face — with a rugged continuous channel frame, bearings, adjustable take-ups, and a shaft-mounted reducer coupled to a Totally Enclosed Fan-Cooled (TEFC) motor.

#### Manual Cleaning (MC) Models

All MC models are cleaned of accumulated tramp iron by manually transporting the magnet to a dump location and turning off the power. MC models are recommended for material flows with low concentrations of iron or work-hardened stainless steel.

## Factors Influencing Magnetic Collection

**Belt Speed:** As the belt speed increases, it becomes more difficult to remove ferrous components. Larger, stronger Suspended Electromagnets may be required for faster belt speeds.

**Burden Depth:** As the burden depth on the conveyor belt increases, an increase in the magnetic field strength is needed to collect the tramp metal.

**Size and Shape of Ferrous Components:** Small pieces of tramp metal (1–2.5 cm/1/2–1") may be extremely difficult to remove, especially when they are covered by a deep overburden of material, compared to larger items like shovel teeth, rail spikes, or rebar.

**Shape of Ferrous Components:** Flat plates and rod-shaped tramp metal are easier to remove than spherical or cube-shaped tramp pieces due to their higher surface area-to-weight ratio.

# Suspended Permanent Magnets

Suspended Permanent Magnets use ceramic magnetic material in a pattern specifically designed to create a powerful magnetic field that will efficiently remove tramp metal from conveyed materials. These magnets are permanently charged so they offer uninterrupted magnetic protection and require no external power source.

Designed for both fixed and mobile installations, Eriez Suspended Permanent Magnets offer robust performance, low operating costs, and versatile integration. With a wide range of models and configurations available, Eriez provides magnetic separation solutions suited to nearly any application, environmental condition, or budget.

## Magnet Design & Construction

Eriez Suspended Permanent Magnets incorporate advanced magnetic circuit technology to meet the demands of modern processing environments. Each unit is built for durability, effective tramp iron separation, and straightforward maintenance.

Operating without electrical power, these magnets deliver strong, continuous protection by extracting large ferrous objects – such as rebar, nails, drill bits, and scrap – from deep within heavy burden depths. This energy-free operation enhances reliability and reduces operating expenses.

Each magnet is precisely sized to match specific application requirements for stationary and mobile systems. The magnetic circuit, constructed from high-grade materials, is permanently charged and housed in a rugged steel enclosure for consistent, long-term operation, even under harsh conditions.

Eriez offers a variety of magnetic circuit designs – including centre-pole, twin-pole, and inter-pole configurations – tailored to diverse industrial needs.



## Applications

- Construction and demolition debris
- Primary and recycled aggregates
- Mining and quarrying operations
- Municipal and industrial recycling
- Wood, paper, and biomass processing
- Cement and construction material handling
- Mobile crushers, screeners, and shredder integrations

## Features

- Compact and lightweight for confined spaces
- Single, twin, and multi-pole magnet circuit designs
- Self-cleaning and manual-cleaning configurations
- Compatible with 500–2,000 mm (18–84") wide conveyors with larger sizes available upon request
- Custom options including turnbuckles, speed switches, hazardous rated components, guards, belting, electrical or hydraulic drives, and component monitoring



| Model | Magnet Circuit Design | Suspension (Max)   | Applications                                                         |
|-------|-----------------------|--------------------|----------------------------------------------------------------------|
| CP    | Centre-pole           | 200–350 mm (8–14") | MRF plants, mobile crushers, picking belts, quarries, concrete rebar |
| TP    | Twin-pole             | 200–350 mm (8–14") | Waste wood, mobile shredders, picking belts, recycling               |
| SP    | Multi-pole            | Up to 400 mm (16") | Large quarry or mining conveyors, protection of downstream equipment |
| FH    | Multi-pole            | 200–350 mm (8–14") | Mobile crushers, shredders, screens, picking belts, recycling        |

## Model Highlights

**CP Series:** Cost-effective and dependable, CP magnets employ a powerful single-pole design for general tramp metal removal. Suitable for a wide range of conveyed materials and available in multiple sizes.

**TP Series:** Incorporating a higher-strength twin-pole design to enhance the separation of smaller tramp iron. Their horizontal lift orientation avoids damaging belt wear, making them well-suited for mobile and recycling applications.

**SP Series:** Engineered for high performance at greater suspension heights, SP Magnets feature robust magnet blocks and a multi-pole configuration to ensure efficient tramp metal removal.

**FH Series:** Lightweight and compact, FH Magnets are optimal for mobile equipment. Their stainless steel frame and multi-pole design delivers high separation efficiency in space-constrained environments.

# Suspended Electromagnets



Strong and powerful Suspended Electromagnets have a deeply penetrating field and will remove unwanted iron from heavy burden depths of material being conveyed on fast-moving belts. Automatically remove large pieces of tramp metal that will present a hazard to downstream crushers, mills, pulverizers, and grinders. Eriez electromagnets can be turned off for cleaning or service.

Typically mounted or suspended over a conveyor belt, Suspended Electromagnets remove sharp metal that can damage or tear expensive belts, especially at transfer points. Eriez' Suspended Electromagnets are engineered for belt widths up to 350 cm (138") wide to remove large, unwanted tramp metal to protect processing equipment and improve product quality.

## Design Elements

- Lift lugs include two side-by-side holes to allow for simultaneous hoisting and installation of suspension gear
- 23 magnet sizes, 69 standard models and hundreds of special designs available for unique applications
- Coil design for elevation greater than 982 m (2,950 ft) above sea level available upon request
- Special options, including CSA approved designs available upon request, high fire points coolants, zero speed switches, and dust covers

## Exclusive External Oil Expansion Tank

This unique feature has helped prevent coil burnout on thousands of Eriez oil-cooled electromagnets. The negative effects of heat and moisture are mitigated by the expansion tank which assures that the coils are always fully immersed in cooling oil. This feature prevents air space from forming within the magnet housing where damaging condensation is collected when moist air seeps in through the pressure relief valve as the magnet cools. Eriez' expansion tank traps this moisture and keeps it out of the magnet.

# Series 7000 Suspended Electromagnets

With thousands in place around the globe, Eriez' most popular suspended magnet model is the SE-7000. Designed to remove damaging tramp metals transported on conveyor systems. They enhance product quality and protect downstream equipment like crushers, mills, and shredders.

By removing sharp metal fragments, they also reduce the risk of tears in high-value conveyor belts. This protection provides for minimal downtime, lower maintenance costs, and an extended lifespan for processing equipment.

## Magnet Design

Eriez oil-filled convection-cooled Suspended Electromagnets are engineered to deliver the magnetic strength required to extract large ferrous contaminants from heavy burden depths. From loader bucket teeth to drill bits and rods, these magnets are built to perform in demanding environments.

Each unit is precisely sized based on belt width, speed, burden depth, and material type to ensure optimal tramp iron removal. The magnetic circuit is formed by tightly wound, insulated wire coils around a solid steel core, enclosed in a rugged steel housing. Eriez streamlined coil designs favor more wire and lower power to reduce heat buildup, extend insulation life, and enhance magnetic field strength..



## Features

- Oil-filled and convection-cooled for reliable 24/7 operation – even in the harshest industrial environments – without the need for external cooling
- Exclusive External Expansion Tank designed to maintain coil integrity by regulating oil levels and preventing moisture intrusion
- Insulated aluminium coils with non-degradable spaces and insulation to ensure optimal performance and extended service life
- Manual and self-cleaning options to continuously discharge tramp metal
- Five-year coil warranty for industry-leading protection and long-term peace of mind
- Custom options including turnbuckles, coolants, speed switches, hazardous-rated components, guards, belting, motors, and component monitoring

## Available Size & Weight Range

Our line spans a wide range of sizes to suit diverse applications. Below is a sample of the smallest and largest available configurations (manual cleaning models) within our SE-7000 line:

|          | L x W x H (mm)        | L x W x H (in) | Weight – kg (lb) | Watts  |
|----------|-----------------------|----------------|------------------|--------|
| Smallest | 612 x 610 x 330       | 24 x 24 x 13   | 272 (600)        | 1,646  |
| Largest  | 3,658 x 3,658 x 2,007 | 144 x 144 x 79 | 73,179 (161,395) | 59,586 |

# Compact Force-Cooled Suspended Electromagnets

Eriez provides significantly smaller sized compact force-cooled magnets that are able to provide the same strength as our largest magnets. The key is using a lightweight, active cooling system which can be fully integrated or located remotely.

In applications involving exposure to high ambient temperatures, Eriez optimises the performance of an oil-cooled magnet assembly by recirculating the coolant through a heat exchanger. This improves heat dissipation and increases magnet strength in a much smaller footprint.



## Applications

- Coal
- Limestone
- Sand
- Gravel
- Municipal waste
- Wood products
- Recycled materials
- Copper ore
- Other ores

## Features

- Higher magnetic fields in a smaller footprint
- Forced cooling allows the magnets to produce a higher field strength at lower temperatures
- Reduced suspended mass compared to traditional electromagnets
- Exclusive Oil Expansion Tank prevents condensation and keeps the coils submerged and cool
- Manganese bottom plate provides for superior durability in demanding applications
- Special features available such as elevation-derated coils, high fire point coolants, oil temperature sensors, flow switches for monitoring heat exchanger operation, conveyor speed switches, guards, controls, monitoring devices, and more

## Available Size & Weight Range

Our line spans a wide range of sizes to suit diverse applications. Below is a sample of the smallest and largest available configurations (manual cleaning models) within our Force-Cooled SE line:

|                 | L x W x H (mm)      | L x W x H (in) | Weight – kg (lb) |
|-----------------|---------------------|----------------|------------------|
| <b>Smallest</b> | 1,744 x 1,744 x 267 | 69 x 69 x 10.5 | 4,375 (9,645)    |
| <b>Largest</b>  | 2,845 x 2,845 x 642 | 112 x 112 x 25 | 29,305 (64,606)  |

## Chute Suspended Electromagnets

Eriez' SE-2400 Chute Electromagnets are engineered to remove damaging tramp metals from material streams flowing through chutes or discharging from conveyors.

Each unit is custom engineered based on chute width, burden depth, and material characteristics to ensure optimal tramp metal removal. The magnetic circuit includes tightly wound, insulated wire coils around a solid steel core, all housed in a rugged, industrial-grade enclosure.

What sets the SE-2400 apart is its enhanced coil design, which increases magnetic field strength and coverage. Its unique stepped face improves separation efficiency for maximum tramp metal retention, ensuring cleaner product flow and better protection for your equipment.



### Applications

- Meat
- Protein
- Rendering Industries

### Features

- Oil-filled and convection-cooled for reliable 24/7 operation – even in the harshest industrial environments – without the need for external cooling
- Insulated aluminium coils with non-degradable spacers and insulation to ensure optimal performance and extended service life
- Stepped magnet face allows for unrestricted product flow and prevents accumulated tramp metal from wash off
- Support legs position the unit at a 55-degree angle
- Five-year coil warranty for industry-leading protection and long-term peace of mind
- Custom options including legs, chute angle, coolants, junction box, and controls

### Available Size & Weight Range

Our line spans a wide range of sizes to suit diverse applications. Below is a sample of the smallest and largest available configurations (manual cleaning models) within our Force-Cooled SE-2400 Chute line:

|          | L x W x H (mm)      | L x W x H (in) | Weight – kg (lb) |
|----------|---------------------|----------------|------------------|
| Smallest | 497 x 751 x 457     | 19 x 29 x 18   | 317 (700)        |
| Largest  | 1,321 x 1,721 x 816 | 52 x 67 x 32   | 44,000 (9,710)   |

# Dry Compact Suspended Electromagnets

Dry Compact Suspended Electromagnets are designed to deliver the magnetic strength necessary without the need for oil-filled magnet housings. These air-cooled units generate minimal internal heat for maximum heat transfer via conduction, eliminating the need for cooling fluids or mechanical systems.

The Dry Compact series features an elongated rectangular core that distributes the magnetic field more uniformly across flat conveyor belts. This enhanced coil and core design boosts field strength and coverage for maximum separation efficiency and equipment protection in both stationary and mobile systems — ideal for high-demand material handling.

## Available Size & Weight Range

Our line spans a wide range of sizes to suit diverse applications. Below is a sample of the smallest and largest available configurations (manual cleaning models) within our Dry Compact SE line:

|                 | L x W x H (mm)             | L x W x H (in)                    | Weight –<br>kg (lb)  |
|-----------------|----------------------------|-----------------------------------|----------------------|
| <b>Smallest</b> | <b>1,981 x 1,401 x 413</b> | <b>78 x 55 1/8 x 16 1/4</b>       | <b>1,626 (3,585)</b> |
| <b>Largest</b>  | <b>2,580 x 1,401 x 413</b> | <b>101 9/16 x 55 1/8 x 16 1/4</b> | <b>2,556 (5,635)</b> |

## Applications

- Construction and demolition debris
- Primary and recycled aggregates
- Mining and quarrying operations
- Municipal and industrial recycling
- Wood, paper, and biomass processing
- Cement and construction material handling
- Mobile crushers, screeners, and shredder integrations

## Features

- Completely dry construction with no combustible or environmentally contaminating coolants used inside the magnet
- Rectangular core promotes even magnetic field distribution across conveyor for improved separation efficiency
- VEOX-adonised aluminium strip coil features inherent layer-to-layer insulation provided by its adonised coating, enhancing both thermal dissipation and mechanical stability
- Low profile configuration ideal for upgrading portable systems
- Modular component based design simplifies spare parts compatibility and maintenance
- Custom options including turnbuckles, speed switches, hazardous rated components, belting, motors, and component monitoring

# Dry Hazardous Location Suspended Electromagnets

Eriez Dry Hazardous Location Suspended Electromagnets are designed to deliver the magnetic strength necessary without the need for oil-filled magnet housings. From loader bucket teeth to drill bits and rods, these magnets are built to perform reliably in hazardous-rated environments.

Each unit is sized to application parameters to ensure optimal tramp metal removal. The magnetic circuit consists of tightly wound, insulated wire coils around a solid steel core, enclosed in a rugged, seam-welded steel housing. These units operate with significantly reduced power consumption to oil-cooled models, due to the increased size of the coil in comparison to similarly sized oil-filled magnets, offering energy efficiency and operational cost savings.

## Available Size & Weight Range

Our line spans a wide range of sizes to suit diverse applications. Below is a sample of the smallest and largest available configurations (manual cleaning models) within our Dry Hazardous Location SE line:

|                 | L x W x H (mm)        | L x W x H (in) | Weight – kg (lb) |
|-----------------|-----------------------|----------------|------------------|
| <b>Smallest</b> | 610 x 610 x 330       | 24 x 24 x 13   | 219 (483)        |
| <b>Largest</b>  | 2,286 x 2,286 x 1,346 | 90 x 90 x 53   | 16,104 (35,500)  |

## Applications

- Mining and quarrying
- Chemical and petrochemical facilities
- Food processing
- Wood and paper products
- Recycling and waste management
- Energy and utilities

## Features

- Completely dry construction with no combustible or environmentally contaminating coolants used inside the magnet
- Hazardous location components junction box
- Static-conducting belt to eliminate sparking from static electricity
- Insulated aluminium coils with non-degradable spacers and insulation to ensure optimal performance and extended service life
- Manual or self-cleaning option to continuously discharge tramp metal
- Five-Year coil warranty for industry-leading protection and long-term peace of mind

## Optional DC Power Supplies

Eriez offers fixed-voltage DC power supplies that convert a wide range of 50/60 Hz AC input voltages into DC magnet voltage, with capabilities starting at 500 watts. Standard enclosures are designed to meet common regional specifications (e.g. NEMA or IP), with optional configurations available to support various international standards and operating environments. Available features may include voltmeters, ammeters, current relays, remote operation capabilities, lockable AC disconnects, shunts, and auxiliary contacts. Eriez also offers a complete line of third-party approved three-phase rectifiers for global installations.

## Features

- Straightforward design for long-term, dependable performance
- Convection-cooled
- Full wave bridge circuit with avalanche characteristics
- Fused AC switch
- Rated for ambient temperatures up to 38° C (100° F) and elevations up to 914 m (3,000 ft), with moderate derating required above these limits

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