MAGNETIC SEPARATORS

POWERFUL SOLUTIONS
For Recovering Materials
Ensuring Product Purity
Protecting Your Equipment

Heavy Industry
Aggregate
Construction/Demolition
Mining
Recycling
Waste Recovery
Introduction

Providing Separation Solutions Since 1899

Dings magnetic separators for ferrous and nonferrous metals are used in a wide variety of industries. In addition to ensuring product purity, they prevent costly repairs and downtime by protecting processing equipment from damaging metal. Reclaiming metals, recovering saleable materials, and concentrating minerals are other important uses for Dings products.

Dings has been manufacturing a full line of separators since 1899, and through the years has pioneered a number of key design features such as the long-life magnet coil and the Durabelt. These innovations, along with a solid record of reliability, assure you of a high-performance product.

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Overhead separators suspend above belt or vibratory conveyors, magnetically lifting ferrous metals out of bulk material. Separated steel objects are held against the magnet until removed – automatically on self-cleaning models, or manually on stationary models.

Types:
Electromagnets – Self-Cleaning or Stationary
Permanent Magnets – Self-Cleaning or Stationary
Severe Duty - Self-Cleaning
Solid Waste Magnetic Systems

Rectifiers .............................................. PAGE 4

All electromagnets require a steady DC current. Dings rectifiers are specifically designed to transform the alternating current from your local power source to the necessary direct current.

Magnetic Head Pulleys .............................. PAGE 6

Dings Perma Pulleys are permanent (nonelectric) magnetic separators that operate as head pulleys on belt conveyors. These low-cost, self-cleaning magnets remove tramp iron and purify materials conveyed in bulk form.

Magnetic Drums .................................... PAGE 6

The Deep Draw Drums is a permanent self-cleaning separator. Its rugged construction is ideal for separating ferrous metal from material such as shredded cars, slag, crushed ore, and ash at mass burn plants. Electromagnetic drums are also available for scrap recycling.

Type:
Self-Cleaning Permanent &
Electromagnetic Scrap Recycling Drums

Eddy Current Separators ......................... PAGE 6

The Eddy Current Separator is ideal for recovering nonferrous metals from recyclables, plastics, glass, material processed at composting or waste-to-energy facilities, automotive shredder residue, and other processed materials.

Specialty Magnets ................................. PAGE 7

Swinging Pendulum Magnets
Rendering Magnets
Sugar Cane Magnets

Type: Self-Cleaning Electromagnet
Type: Electromagnet
Type: Permanent Magnet
Typical Applications

Which separator is best for your application? The chart below provides some basic guidelines for choosing a magnetic separator. Since it is impossible to list all applications, we have chosen a few to highlight the differences in our products. To choose the best product for your particular application, simply contact our experienced in-house sales engineers who will help you choose the specific separator for your needs.

<table>
<thead>
<tr>
<th>Magnet Type</th>
<th>Overhead Self-Cleaning</th>
<th>Overhead Stationary</th>
<th>Eddy Current</th>
<th>Head Pulley</th>
<th>Drum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of removal</td>
<td>Ferrous</td>
<td>Ferrous</td>
<td>Non-ferrous</td>
<td>Ferrous</td>
<td>Ferrous</td>
</tr>
<tr>
<td>Volume of metal</td>
<td>High</td>
<td>Low</td>
<td>High</td>
<td>Low-Med</td>
<td>High</td>
</tr>
<tr>
<td>Type of magnetism</td>
<td>Electro &amp; Permanent</td>
<td>Electro &amp; Permanent</td>
<td>Permanent</td>
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Applications

<table>
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<tr>
<th></th>
<th>Construction/Demolition</th>
<th>Foundry</th>
<th>Mining &amp; Aggregate</th>
<th>Recycling- C&amp;D</th>
<th>Recycling- Municipal</th>
<th>Scrap</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>X</td>
</tr>
</tbody>
</table>

Electromagnetic Design Advantages

How can we offer a 10-YEAR WARRANTY against coil burn-out? And a LIFETIME GUARANTEE on magnetism? With a history of innovative designs and over 100 years experience, Dings has developed the highest quality magnetic separators in the market. Because of this, we stand behind our products – offering the best warranties in the industry.

Exclusive Coil Design Eliminates Magnet Burn-out

Dings electromagnets are wound with anodized aluminum strap, an exclusive design that lasts longer and generates more magnetism than any other on the market.

Coils wound with this material don’t require insulation. You benefit from extra turns which fit into the same area – generating more magnetism and separating power. With aluminum strap, every coil turn is exposed to oil-cooling. With round wire, inside turns are not cooled evenly. These coil hot spots can cause magnet burn-out. Dings magnet coils stay cooler – and since electromagnets perform best at lower operating temperatures, this ensures a stronger, more efficient magnet.

Because each strap turn is in contact with oil, thermal expansion of the oil can be accommodated inside the magnet box, eliminating the need for an oil expansion tank.

Permanent Magnet Design Advantages

Patented Flux Control Circuit Provides Ultimate Magnetic Power

The Dings patented flux control circuit (DFC) was a breakthrough in the design of permanent magnetic separators. It eliminates internal leakage between magnetic poles and improves separating performance.

Conventional magnetic circuits contain air or filler material between the magnetic poles. This gap causes the flux, or excess magnetism, to be wasted. In Dings DFC design, blocking magnets are strategically positioned in the spaces between magnetic poles. These blocks redirect the flux outward, into your product, converting the wasted force lines to working force.

The overall strength of the magnet is improved three ways – the field is stronger, the field is extended deeper and the field pattern is more uniform and therefore more efficient. By efficiently using the magnetism, A Dings magnet can be sized to provide the right amount of magnetic power for your application – a potential savings in weight and cost.

www.dingsmagnets.com
Overhead Magnets
Electromagnets – Self-Cleaning

Overhead separators suspend above belt or vibratory conveyors, magnetically lifting ferrous metals out of bulk material. They are used for steel recovery, separating ferrous metals from nonmagnetic material. Overhead magnets also protect processing equipment, removing damaging tramp metal that can cause costly repairs and downtime.

Self-Cleaning

Continuous Removal
A belt travels continuously around the body of the magnet to discharge ferrous metals. Recovered metal objects are removed automatically from the magnetic zone. These powerful separators come equipped with a tough, vulcanized rubber belt with 1” cleats to continuously remove metal from the product stream (3” cleats available for material recycling facilities).

Severe Duty
This rugged version of the overhead magnet is designed for severe-duty applications such as recycling concrete, pallets, and construction and demolition debris. The armor-clad Durabelt prolongs belt life in applications with sharp-edged steel or with frequent impact from large quantities of ferrous. Full-width metal cladding is available as an option for crossbelt applications.

Severe Duty Additional Features
• Armor-clad Durabelt
• Heavy duty drive package
• Lagging on the drive pulley
• Individual plates or cleats can be easily replaced in the field, saving on belt replacement costs and reducing downtime

Exclusive Coil Design Eliminates Magnet Burn-out
Dings electromagnets are wound with anodized aluminum strap, an exclusive design that lasts longer and generates more magnetism than any other on the market.

Coils wound with this material don’t require insulation. You benefit from extra turns which fit into the same area – generating more magnetism and separating power. With aluminum strap, every coil turn is exposed to oil-cooling. With round wire, inside turns are not cooled evenly. These coil hot spots can cause magnet burn-out. Dings magnet coils stay cooler – and since electromagnets perform best at lower operating temperatures, this ensures a stronger, more efficient magnet.

Because each strap turn is in contact with oil, thermal expansion of the oil can be accommodated inside the magnet box – eliminating the need for an oil expansion tank.
Overhead Magnets
Electromagnets – Stationary

Stationary

If tramp metal is an occasional problem, then a stationary magnet is the right choice. Just suspend it over the conveyor or over the head pulley. When the magnet surface starts to fill up, swing the magnet away from the conveyor and cut the power to release the attracted metal. Then swing the magnet back over the conveyor or head pulley. Each Dings stationary overhead magnet is constructed from continuously welded stainless steel bottom plate, steel side plates and backplate. With no moving parts, there is nothing to lubricate, tighten or replace. You’ll also find it easy to install your Dings magnet. It comes complete with a convenient 3 point suspension system consisting of two cables and one turnbuckle connected to a common bull ring. To change the suspension angle, simply adjust the turnbuckle. There’s no measuring, shortening, lengthening or cutting of cable.

Features
• 10-Year warranty against coil burnout
• Stainless steel bottom plate, steel side plates and backplate
• Easy installation
• Additional wear plate provides extra protection for the magnet impact area

Options
• Hazardous location model available
• CSA approved model available
• Suspension systems – turnbuckles, trolleys, wire rope

Rectifiers

All electromagnets require a steady DC current. Dings rectifiers are specifically designed to transform the alternating current from your local power source to the necessary direct current.

Features
• DC output wattage up to 50 KW to match separator requirements
• No maintenance solid state silicon diode design
• Excellent voltage regulation – within 3.5% from no load to full load
• Overload capacity for short infrequent periods
• Hinged door cabinet for easy access
• Available in your choice of enclosures: NEMA12, 4, 4XSS, or 9

Options
• Many options available to meet your specifications

Overhead Magnet Mounting

Self-Cleaning

INLINE

CROSSBELT

Stationary

OVER CONVEYOR

OVER HEADPULLEY

www.dingsmagnets.com
Overhead Magnets
Permanent Magnets – Self-Cleaning & Stationary

Self-Cleaning

Continuous Removal
Permanent overhead magnets are non-electric suspended type separators. No external power source is required for the magnet. During operation, tramp iron contained inside material conveyed under the magnet is magnetically attracted. Magnetic force lifts the metal to the face of the magnet. Metal attracted by the self-cleaning model is automatically and continuously removed from the magnet face by a belt that travels around the body of the magnet.

Features
• Lifetime guarantee on magnetism
• Patented flux control circuit (DFC) provides a stronger, deeper and more uniform magnetic field
• LOWER WEIGHT: Unique construction allows a smaller, lighter magnet for a given strength than any other in the industry
• Different magnet strengths for different suspension heights to meet your application

Options
• Option of electric or hydraulic motor
• Dust cover, belt & pulley guards
• High temperature belt, rubber cleats, stainless steel cleats
• Hazardous location model available
• Special voltages
• Crossbelt deflector
• PCM Series with stainless steel frame
• Suspension systems
  - turnbuckles, trolleys, wire rope

Stationary

This maintenance-free design has no moving parts and requires no power supply. A convenient three-point sling assembly is included with your magnet. Just suspend it over the conveyor or over the head pulley and it’s ready to pick up those stray metal fragments before they can cause damage to downstream equipment. When the magnet surface starts to fill up, swing the magnet away from the conveyor and dislodge the attracted metal. Swing it back over the conveyor and you’re back in operation.

Features
• Lifetime guarantee on magnetism
• Patented flux control circuit (DFC) provides a stronger, deeper and more uniform magnetic field
• Can be supplied with 3- or 4-point suspension system

Options
• Sweeper arm
• Suspension systems
  - turnbuckles, trolleys, wire rope

Overhead Magnet Mounting

<table>
<thead>
<tr>
<th>Self-Cleaning</th>
<th>Stationary</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="IN-LINE SUSPENSION" /></td>
<td><img src="image2" alt="OVER CONVEYOR" /></td>
</tr>
<tr>
<td><img src="image3" alt="CROSSBLET SUSPENSION" /></td>
<td><img src="image4" alt="OVER HEADPULLEY" /></td>
</tr>
</tbody>
</table>

Shown with 4 suspension lugs

www.dingsmagnets.com
Magnetic Head Pulleys

Perma Pulleys are permanent magnetic separators that operate as head pulleys on belt conveyors. These self-cleaning magnets remove tramp iron and purify material conveyed in bulk form. When material carried on a conveyor enters the magnetic field surrounding a Perma Pulley, pieces of ferrous metal in the material are attracted to the belt. They’re held magnetically against the belt until carried to the underside of the pulley, where the belt takes them away from the magnetic field to be discharged. Nonmagnetic material falls away from the pulley in a normal trajectory. Separation is automatic and continuous. In many applications, it’s possible to replace an existing head pulley with a Perma Pulley, on a size-for-size basis. A wide range of diameters, widths, and shaft sizes are available.

Features
- Lifetime guarantee on magnetism
- Weatherproof stainless steel face
- Shipped ready to install
- Diameters from 6” to 42”, widths to 84” +

Options
- QD hub
- Lagging available
- Three strength levels – Standard, Heavy Duty and DFC Ultimate
- Patented flux control circuit (DFC) increases efficiency and performance

Deep Draw Drums

The Deep Draw Drum is designed for heavy-duty, high-volume ferrous recovery. Its rugged construction is ideal for separating ferrous metal from material such as shredded cars, slag, crushed ore, and ash at mass burn plants. The outside shell is nonmagnetic, and is driven around an internal stationary magnet. Ferrous metal is magnetically drawn out of the material feed, held against the revolving shell, and released when it reaches a discharge point beyond the magnetic field. Can be specified in sizes to fit any application.

Features
- Replaceable heavy duty manganese wear cover greatly extends life of the drum
- Lifetime guarantee on magnetism (Permanent magnets)
- Patented flux control circuit (DFC) provides a stronger, deeper and more uniform magnetic field

Options
- Available in sizes up to 5 feet in diameter
- Frame and drive
- Axial(lateral)/radial pole designs
- Electromagnetic drums for scrap recycling

Eddy Current Separators

The eddy current separator uses powerful rare earth magnets for recovering nonferrous metals from commingled recyclables, plastics, glass, material processed at composting or waste-to-energy facilities, automotive shredder residue, and other processed material or minerals. Dings eddy current separators feature a patented, triple layer shell which provides maximum protection for the rotor. A stainless steel shell encapsulates the magnetic rotor. This, in turn, is protected by ceramic tile fused to a high temperature, fiberglass shell. This unique design extends the life of the rotor, meaning more production for you.

Features
- Strongest, most efficient eddy current on the market – more than double the magnetic force than any other manufacturer
- Triple layer shell provides maximum protection for the magnetic rotor
- Heavy duty industrial design
- 7” or 12” diameter rotors for MRF and light duty
- 13” diameter rotors for heavy duty and high volume

Options
- Non-standard voltages
- Control panel
- Splitter assembly
- Variable speed belt

www.dingsmagnets.com
**Specialty Magnets**

**Swinging Pendulum Magnets**

This exceptionally durable magnetic separator was originally designed for reclaiming iron from steel mill slag. It can withstand the punishment of continuously attracting massive hunks of steel weighing up to 200 lbs. Other applications include removing ferrous metal from mass burn ash and recyclables where large ferrous metal is present. A unique self-cleaning pendulum swings underneath a powerful electromagnet, cooled by a forced oil system. Attracted metal is discharged first to one side and then to the other. All shock and wear is absorbed by the manganese steel plates and cleats on the pendulum face, protecting the magnet.

**Sugar Cane Magnets**

Machetes, cutting tools, metal plates, etc. can pose a serious danger in sugar mills. The Sugaron magnet was specifically engineered to capture these items in mills processing sugar cane. These large (up to 7 feet and more) permanent magnets install easily in an existing chute and work constantly to protect workers and equipment in this challenging application. The magnet’s unique stepped face design helps prevent attracted metal from being wiped away from the surface.

**Rendering Magnets**

These powerful electromagnets are specifically designed to capture knives and other metal objects as they fall down an inclined chute along with entrails and other meat processing byproducts. The magnet’s sloped design and 4” step protect and hold attracted metal until the chute is ready for cleaning. Turn off power to the magnet and attracted metal falls freely away.

**Service**

**In-House Testing**

Unsure which product is best for your application? Just send us a sample of your product with a brief description of what you are trying to accomplish. We’ll be happy to test it on actual equipment at our in-house testing laboratory at no charge. We will then give you a report and recommend the best equipment for your particular application.

**Custom Design**

Don’t see exactly what you’re looking for in our standard products? Our team of highly experienced sales engineers will work with you to design the perfect separator for your application. Using state of the art computer modeling and design, our engineers will provide you with certified prints prior to production to ensure that everything meets your requirements.

**Rebuilds**

If your magnet has been damaged and funds aren’t available for replacement, consider having Dings rebuild it. In many cases, we can bring a magnet back to near-new condition at a cost substantially less than that of a new one.

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