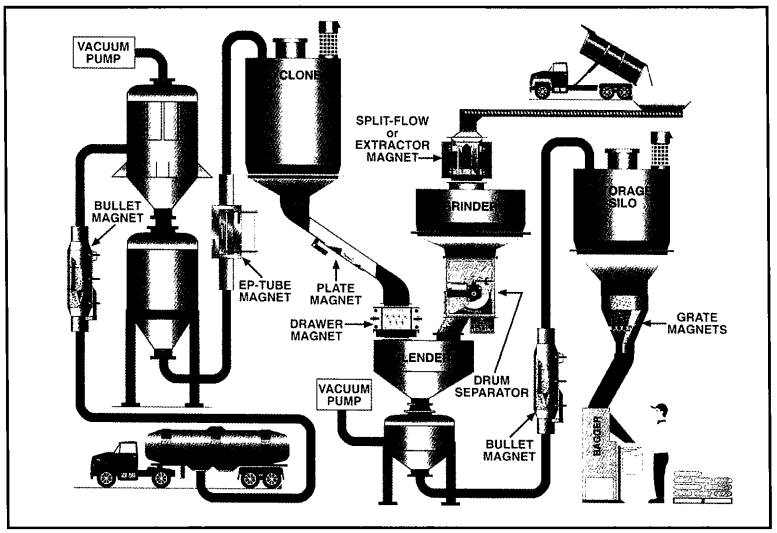
Magnets for Magnetic Purification and Equipment Protection

Magnetic Material

- **Ceramic:** Used for small to larger ferrous particle separation such as: nails, bolts, washers, etc.
- **Alnico:** High heat applications up to 1100°F. Particle size and separation the same as ceramic.
- **Neodymium-Iron-Boren (Rare Earth):** Extremely powerful magnet is used for "fine particle" separation such as; metal filings, shavings, metal wear residue, work hardened stainless steel, etc.
- **Electromagnets:** Control on/off ability with an electromagnetic version.

Magnetic Separator Location and Selection Guide



Things to Consider When Choosing a Magnetic Separator

MAXIMUM LUMP SIZE: Is the material that you are processing consistent or variable in size?

BURDEN DEPTH (Depth of Material): What is the depth of the product flow as it travels through a chute or conveying process? This information is critical for designing a magnet that will effectively reach through the product flow & capture metal.

VOLUMETRIC FLOW RATE: What is the volumetric rate of your product flow as it travels through your processing system? This information will aid in correctly sizing a magnet that will offer your product maximum magnetic exposure.

ANGLE OF REPOSE: What is the minimum angle you can have to maintain product flow?

BRIDGING TENDENCIES: What is the moisture content of your product? Does it have a tendency to cake, clump, or stick together? This characteristic often causes the product to have difficulty flowing through a standard grate magnet. Alternate tube spacing or magnet design may be required.

TRAMP METAL CAPTURE: Is your main concern equipment protection: capturing large ferrous metal items like nuts, bolts, screws, paper clips, etc? Or do you need to purify your product from all fine particles of ferrous metal? Your objective will influence the type of magnetic material that is used.

SPACE CONSTRAINTS: (The shape and design of the magnet) What are the space constraints you need to work within in order to accommodate the magnetic equipment? Depending on your available space, you may require a magnet custom designed for your application.

WEIGHT OF MAGNET: What effect will the weight of the magnet have on your existing processing system? Is there a weight limitation, or will additional framework be needed to support the magnet?

CLEANING/ACCESSIBILITY TO MAGNET: How is the tramp metal to be removed? In case of manual clean, will your employees have easy access to the magnet, and will it be easy enough for them to clean regularly? Keep in mind that rare-earth magnets are very difficult to clean manually.

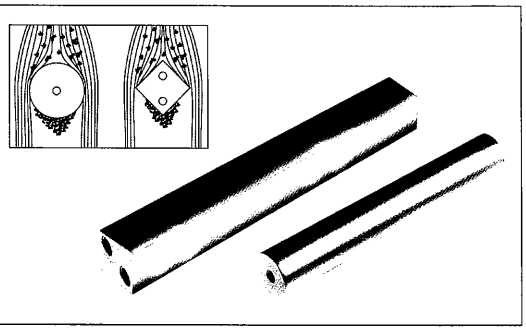
Magnetic Grate Tubes and Magnetic Grates

Round and Square Grate Tubes

Ceramic • Alnico • Rare Earth (Neodymium)

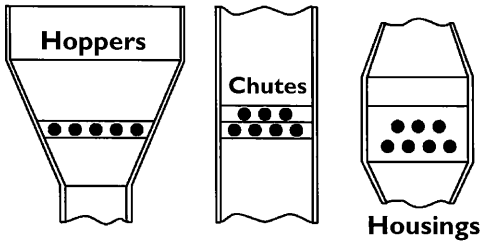
Individual magnetic tubes in either round or square styles are available for customers desiring to fabricate their own systems for special applications requiring non-standard spacing or tube arrangement.

Ruggedly constructed from 304 stainless steel, both styles have tapped mounting holes at each end for easy installation. The one inch (1") diameter round tubes have 1/4"-20 mounting holes and the one and one half (1-1/2") inch ceramic square tubes have 3/8"-16 mounting holes. Standard tube lengths range from 4" to 48" long. *For more information see IMI Tech Sheet TRAMP MTL 2A.*



Magnetic Grate Selection Factors

Product consistency, density and moisture content, which influence flow characteristics, are important factors in grate magnet applications. In order to choose the correct magnetic grate to ensure positive flow, it is important to recognize materials that have tendencies to bridge between the magnetic tubes. While diverter systems are helpful in directing the material flow to the magnets, be aware they tend to increase bridging and reduce uniform product flow. *For more information see IMI Tech Sheets TRAMP MTL 2B, 2C and 2D.*



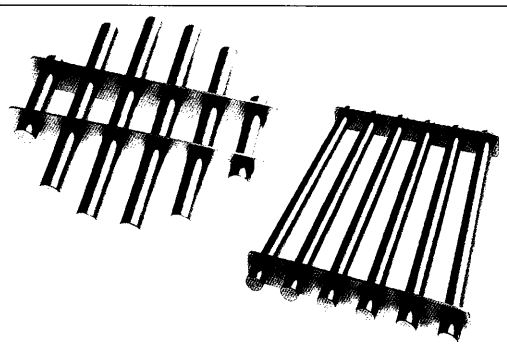
Round Tube Magnetic Grates

Ceramic • Alnico • Rare Earth (Neodymium)

Magnetic grates deliver ferrous tramp metal separation in bins, chutes, drawers, hoppers and circular enclosures.

IMI grates are constructed with one inch diameter magnetic tubes placed on two inch (2") centers in heavy duty 1/8" thick x 2" wide 304 stainless steel framing. The round magnetic grates are available in 30 standard diameters ranging from 4" to 36". Special sizes are also available.

Each round grate can be equipped with diverters. See tech sheet for diverter styles. *For more information see IMI Tech Sheets TRAMP MTL 2B and 2C.*



Square Tube Magnetic Grates

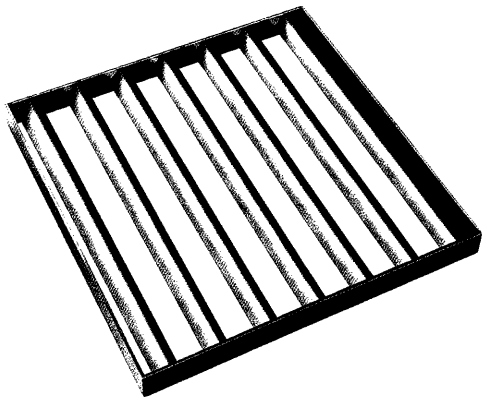
Ceramic • Alnico • Rare Earth (Neodymium)

Square tube magnetic grates are ideal for heavy duty applications where high product volume is involved.

Having strong magnetic fields, the square tubes are installed with the leading edge toward the material flow. This positioning helps eliminate material bridging and provides a protected collecting area along the bottom of the magnet where ferrous tramp metal remains out of the material flow.

Constructed from 304 stainless steel, and mounted in a 1/4" thick x 2-1/2" high stainless steel bar framing, IMI square tube magnet grates deliver heavy duty performance and long service life.

Available in 66 standard square or rectangular sizes, these square tube grates are the optimum tramp metal separation device for point-of-entry receiving areas. *For more information see IMI Tech Sheet TRAMP MTL 2D.*



Ceramic and Rare Earth Plate and Spare Magnets

Selecting the appropriate plate magnet for a particular application involves a number of key factors.

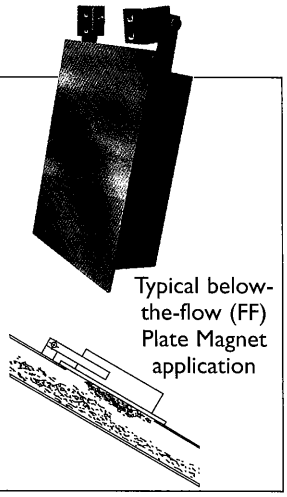
- Product moisture content
- Velocity
- Angle of flow
- Magnet positioning above or below the flow
- Bulk density
- Burden depth
- Magnet location

If you'd like assistance in selecting the most effective magnet for your application, contact us at 1-800-326-7253.

All IMI plate magnets feature performance engineering, rugged welded stainless and steel construction, and use the finest magnet material available. IMI magnets have an approximate magnetic loss of 1/2 of 1% per 100 years.

Flush Face (FF)

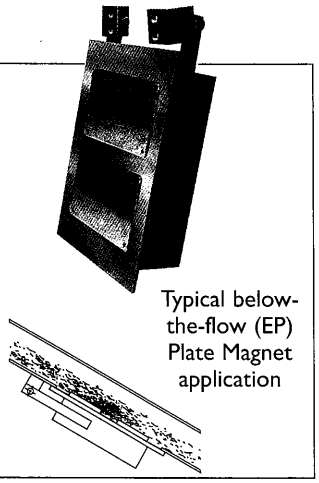
plate magnets deliver optimum tramp metal separation performance when used in above-the-flow chute or belt applications. When installed over the material flow, the powerful Flush Face plate magnets deliver continuous magnetic protection for down stream processing equipment by lifting ferrous tramp out of the product flow stream. *For more information see Tech Sheets TRAMP MTL IA-IC.*



Typical below-the-flow (FF) Plate Magnet application

Exposed Pole (EP)

plate magnets are engineered to deliver high performance tramp metal separation in low volume applications. These applications are for below-the-flow installations where the product flows over the magnet face. *For more information see Tech Sheets TRAMP MTL IA-IC.*

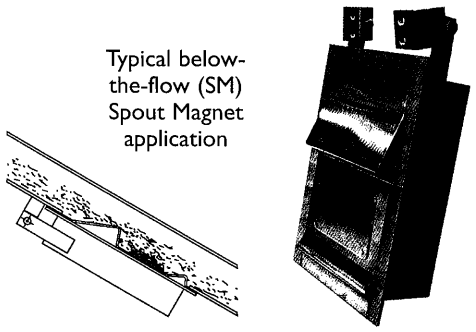


Typical below-the-flow (EP) Plate Magnet application

Ceramic & Rare Earth Spout Magnets (SM)

provide maximum ferrous tramp metal separation in high volume chute applications where wash-off can be a problem. Spout magnets employ a primary diverter to prevent tramp metal "wash-off". A secondary diverter reduces product degradation by ramping the product over the downstream chute edge. *For more information see Tech Sheets TRAMP MTL IA-IC.*

- Use for High Volume Chute Applications
- 8 Ceramic Strengths and 2 Rare Earth Strengths available to meet the needs of your application!



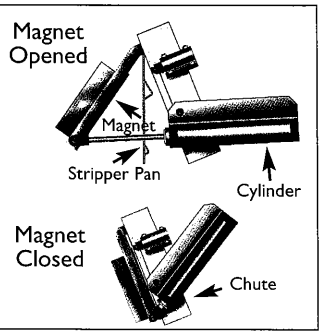
Typical below-the-flow (SM) Spout Magnet application

EZ-Clean and Self-Cleaning Spout Magnets

have a stripper pan cleaning mechanism that allows the collected tramp metal to be easily released.

The EZ-Clean Spout magnet is operated by unclamping the magnet from the chute and pulling the magnet opened by hand. As the magnet is pulled open the stripper pan separates from the magnet, allowing the metal to fall off of the pan's face.

The Self-Cleaning Spout Magnet utilizes air cylinders to swing the magnet and the stripper pan away from the chute allowing for remote cleaning of the spout magnet.



Unimpeded Vertical Flow Magnets

Hump Magnets

Ceramic • Rare Earth

Ideal for ferrous tramp metal separation in gravity systems, IMI Hump Magnet separators are adaptable to either round pipe or rectangular chute transfer lines.

The Hump magnet employs two heavy duty diverter-equipped Spout Magnets, which are positioned so that the offset flow of product flowing through the hump is forced into the magnetic fields. The hinged magnets are gasketed and clamped tightly to the hump housing for maximum product and dust containment during processing operations. They also swing open for easy removal of captured tramp metal.

Ruggedly constructed from stainless steel with a welded flange mounting system to fit either chute or pipe applications. IMI Hump separators are available in nine standard sizes with Custom sizes available upon request. *For more information see Tech Sheet TRAMP MTL 9A.*

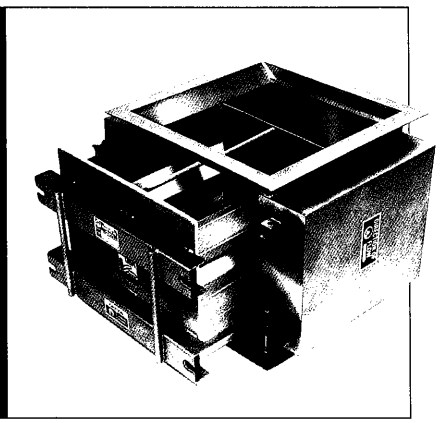
Extractor Magnets

Ceramic • Rare Earth

IMI's Extractors are designed for ferrous metal separation in high volume dry processing applications. The continuous operation, high performance Extractors feature powerful parallel permanent magnets to capture ferrous tramp metal from direct material flow.

As material enters through the Extractor's inlet, it passes over a diverter which angles the product flow towards the magnets. Ferrous metal that is mixed in with the product flow is then captured and held by the powerful magnetic field.

Standard models are equipped with a EZ-clean stripper drawer to easily remove collected metal from the housing. Also available is an air-actuated self cleaning unit for automated or remote cleaning. *For more information see Tech Sheet TRAMP MTL 8A.*



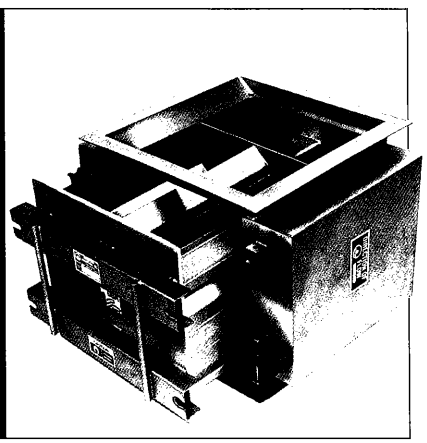
Split Flow Magnets

Ceramic • Rare Earth

The Split Flow magnet provides excellent separation for free-falling or choke flows in vertical chute applications.

As a product enters the Split Flow magnetic housing, a center wedge magnet splits the flow and diverts the streams towards two extra high intensity parallel magnets. These three magnetic contact points offer excellent attraction and holding power.

The housing is constructed of all welded stainless steel for a long, non-corrosive life and is available in both EZ-Clean and Self-Cleaning models. *For more information see Tech Sheet TRAMP MTL 8B.*



Magnetic Drawer-In-Housings

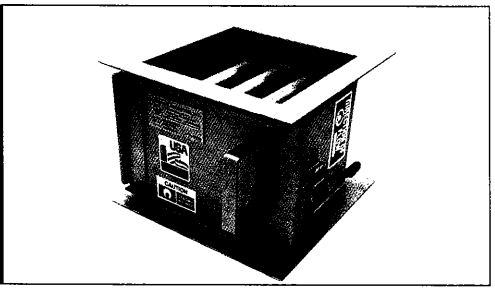
IMI's Drawer-In-Housings are designed for ferrous metal separation in a wide variety of dry processing applications. The main body of the housing consists of a row, or most commonly rows, of round magnetic tubes that are assembled into drawers. Each drawer's magnetic tubes are aligned on alternating centers from the drawer directly above or below it.

As product flows into the top of the housing, it is forced to cascade in a zig-zag pattern from row to row over the magnetic tubes. This cascading effect ensures maximum tramp metal capture since the product comes in direct and repeated contact with a magnet as it travels through the housing.

As ferrous metal passes through the magnetic field, it is held to the tubes and separated from the product. The metal must now be cleaned from the tubes on a regular basis to prevent buildup and subsequent wash-off back into the product flow.

Manual Clean Drawer-In-Housing

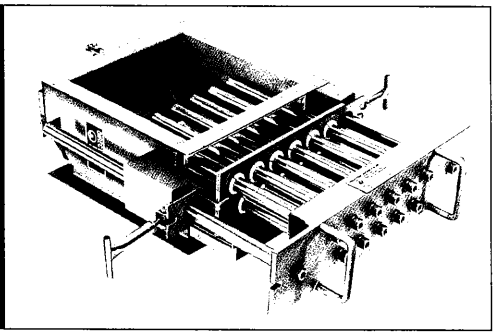
Manual Clean Drawer-In Housings are ideal for applications with low levels of tramp metal contamination. The housing consists of two or more banks of magnetic tubes on alternating centers. To clean collected tramp metal from the tubes you simply open the door, pull each bank of tubes out, and wipe the metal off the tubes with a shop rag or gloved hand. *For more information see IMI Tech Sheets TRAMP MTL 3A.*



EZ-Clean Drawer-In-Housings

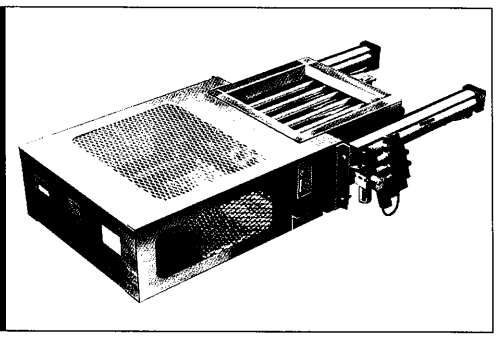
The EZ-Clean Drawer-In Housing is designed to simplify the cleaning process to encourage frequent and quick removal of collected tramp metal.

To initiate cleaning, the operator pulls two handles on the front of the housing which removes the magnetic drawer from the product flow. As the drawer is pulled out, each magnetic tube passes through a seal which wipes the accumulated metal from the tubes. A catch pan is located under the tubes on the front of the housing to collect the metal for proper disposal. *For more information see IMI Tech Sheets TRAMP MTL 3B.*

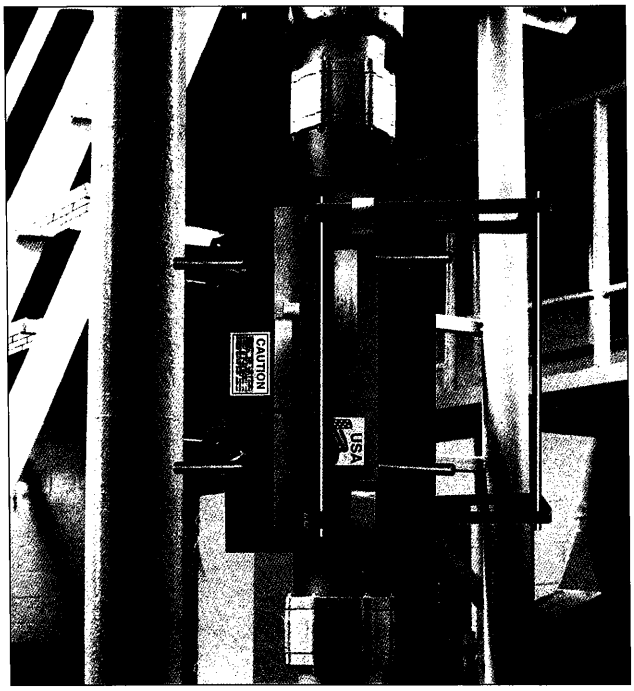


Self-Cleaning Drawer-In-Housings

IMI'S Self-Cleaning Magnetic Drawer-In-Housing is ideal for hard to reach locations, removal of fine tramp metal, or an automated processing plant. A toggle switch allows the operator to actuate the cleaning action from a remote location. In seconds, the air-actuated stripper device discharges collected tramp metal outside the housing. Standard sizes range from 6"x6" to 24"x24" inlets and outlets in even increments. Custom sizes are available upon request, as well as transitions to match existing equipment. *For more information see IMI Tech Sheets TRAMP MTL 3C.*



Pneumatic System Magnetic Separators



In-line magnetic tramp metal separation devices, employed in pneumatic systems, function in three simultaneous roles. First, they enhance product purity. Secondly, they provide continuous protection of the processing machinery and third, through their unique designs, provide for uninterrupted or unimpeded product flow while performing continuous tramp metal removal.

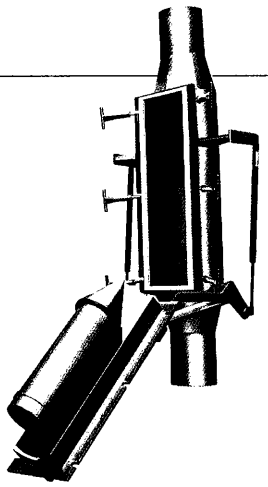
IMI magnet tramp metal separators are available to fit most pneumatic systems. The selection of the most effective in-line magnetic separator for the application will be based on the consistency of the material being processed.

Bullet™ Magnet

Aerodynamically shaped with a solid stainless steel nose cone diverter, the flow-thru design of the Bullet Magnet maintains uniform velocity in line flow, allowing it to be used anywhere in the pneumatic system. It is commonly used ahead of processing equipment and bulk load out to assure product purity and protect machinery from tramp metal damage.

Ideal for dilute phase systems, typical Bullet Magnet applications include: movement of powder and granular, flour, chemical, plastic, food stuff, pharmaceutical and mineral materials.

The IMI Bullet Magnet is easily installed with compression type couplings and is available in sizes ranging from 3" to 6" diameters. Rare Earth versions provide an exceptionally powerful magnet field to capture fine particles previously unattainable. *For more information request Tech Sheets 5A and 5B.*

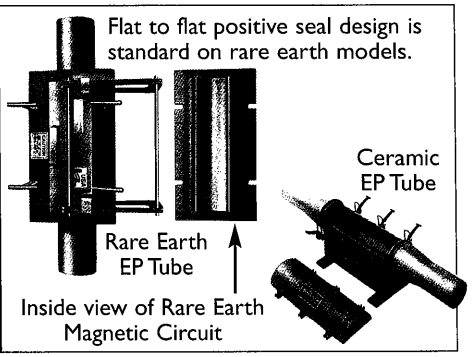


Exposed Pole Tube Magnet (EP Tube)

IMI's Exposed Pole Tube magnet (EP Tube), is designed for use in pneumatic line systems.

It can be used ahead of processing equipment and bulk load out to assure product purity and protect machinery from tramp metal damage.

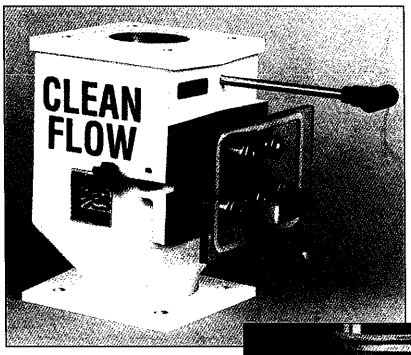
Ideal for use in dense phase systems, typical Exposed Pole Tube magnet applications include the processing of pelletized foods, feed or grain where degradation is a concern, fibrous products, or products that have a higher moisture content with a tendency to clog or congeal. *For more information request Tech Sheet Tramp MTL 5C.*



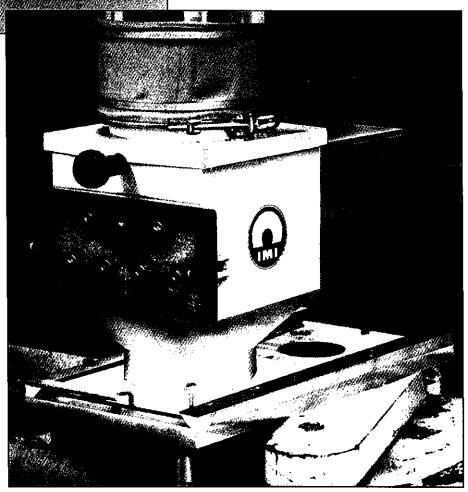
Magnetic Separators for Plastic Processing

Clean Flows™

Built specifically for the plastics industry, IMI's Clean-Flow Drawer-in-Housing improves product purity and protects Injection Molding and Extrusion machines from ferrous tramp metal damage.

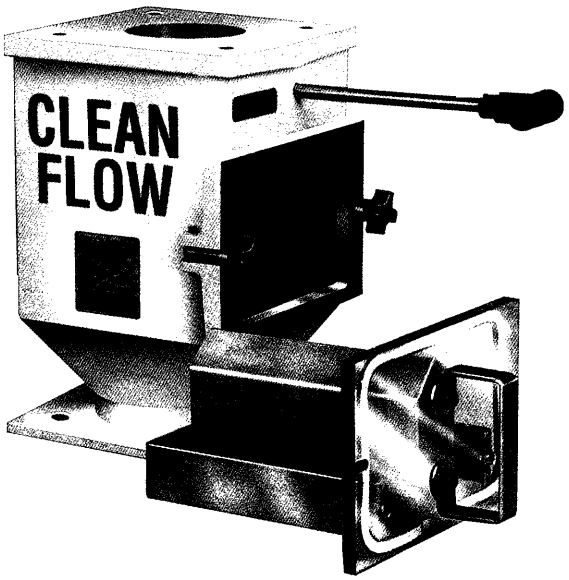


The magnetic drawer can be constructed with either Ceramic, Alnico or Rare Earth material, and uses 1" diameter magnetic tubes on 2" centers to achieve maximum metal separation while maintaining positive product flow. The gasketed drawer has a see through polycarbonate door, and is easily removed from the housing for cleaning captured tramp metal.



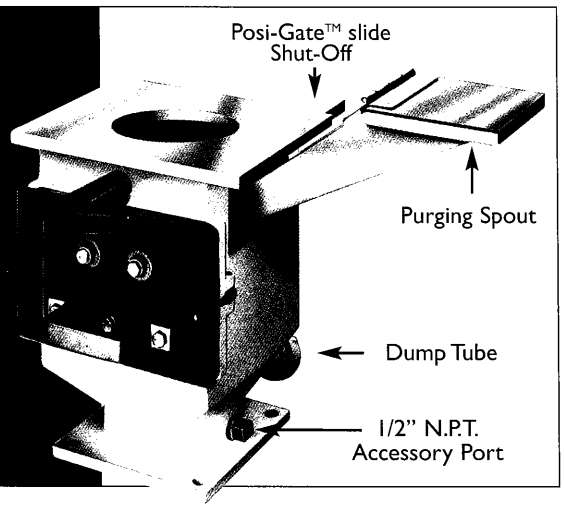
The fully cast ductile iron housings are mounted on the throat opening of your machine and are capable of supporting extremely heavy loads or offset loads from hoppers, dryers, mixers and color feeders. The ductile housing has been tested to withstand over 100,000 pounds of compression pressure and its elasticity absorbs the constant vibration and shaking created by processing machinery.

The Clean-Flow is also available as a fabricated housing with either stainless or mild steel construction, and in EZ Clean or Self-Cleaning models. *For more information, request Tech Sheets 13A through 13C.*



Clean Flow Options:

- Resin Drain Slide: Provides a fast and easy method for material change over. The RDS mounts to the machine throat opening and provides a track for auxiliary equipment to slide on.
- Posi-Gate Slide Shut-off: Stops material flow through housing for quick drawer removal and cleaning.
- Slide Gate Dump Tube: Drains material from the housing.
- Purging Spout: Bypassing hopper for direct feeding of purging compound.
- Top & Bottom Extensions: Accommodates large or irregular mounting plate.
- Accessory Port: Threaded port for adding liquid colorant, thermometer, dew point probe or lubricant.



Liquid Line Magnets

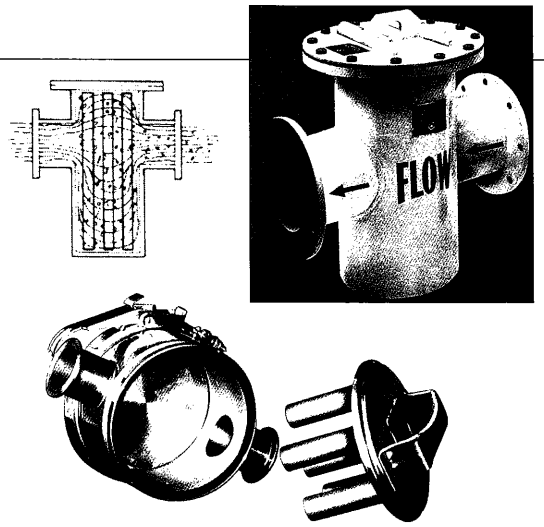
Cage Style "T" Traps

Industrial Magnetics' T-Trap Magnetic separators are designed for heavy duty, large volume liquid and semi-liquid line flow systems.

The T-Trap employs a slip-in cage of stainless steel permanent magnetic tubes, which capture ferrous tramp metal particles and improve the purity of the product. As the particles collect, they migrate to the rear of the tubes where they remain protected from wash-off until the tubes are cleaned.

With its' top access bolt-on steel plate and seal, the T-Trap is easy to clean. Simply remove the top, lift out the magnet cage, wipe clean and reinstall.

Available in 7 standard line sizes from 2" to 18" inches in diameter, IMI T-Trap's can also be produced to meet special applications. *For more information, request Tech Sheets 10A and 10B.*

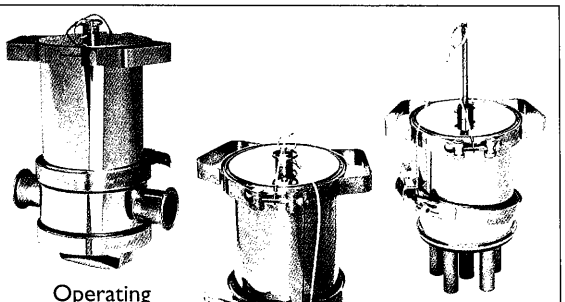


EZ-Clean Cage Style "T" Traps

EZ-Clean T-Trap Magnetic separators make disposing of captured tramp metal a quick & easy process! The EZ-Clean units can be hand operated, or pneumatic actuation can be added to clean the units in automated systems.

Designed with a powerful Rare Earth circuit design, the magnetic tubes capture and securely hold undesirable ferrous metal in 2" to 4" diameter line sizes. To clean, simply unclamp the housing from its base and remove it from the processing line. A quick pull of the housing's cleaning mechanism releases collected metal for disposal.

- Available with air actuated cleaning for certain applications.
- EZ-Clean upgrade packages are available for some styles of manual clean, cage style T-Traps.



Operating Position

Rod Down, magnet in operating position

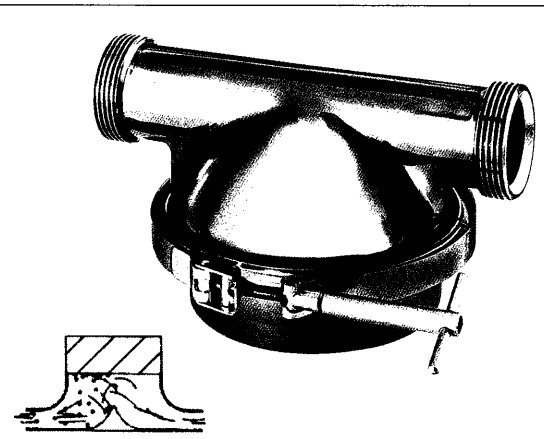
Rod up, magnet in cleaning position

Plate Style "T" Traps

When tramp metal protection is required for liquid lines carrying viscous to fibrous products, the plate style T-Trap is ideal. This magnet allows the product to flow through the housing without causing product bridging. An interior baffle is used to direct the entire product flow towards the powerful plate magnet, ensuring that tramp metal is forced into the magnetic field.

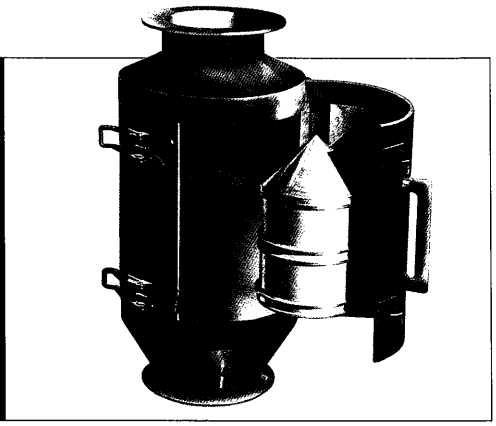
Installation of the plate style magnet can be in any position. Vertical position eliminates the sump area, and in horizontal lines, cleaning is made easier when the magnet element is installed on top.

Available in standard line sizes of 2" and 3" diameters. IMI can also manufacture magnets for special applications or line sizes. *For more information, request Tech Sheets 10A and 10B.*



In Stream Magnetic Separators

Pipe Magnets



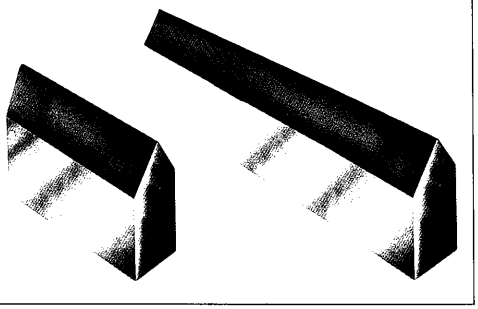
Available in Ceramic, Rare Earth, Alnico and Electromagnetic Designs!

Permanent Pipe Magnets capture ferrous metal contaminates in vertical flow systems. The pipe magnet's design incorporates a cylindrical door mounted magnet that swings open and out of the product flow for safe and easy cleaning.

Constructed of all welded stainless steel, the housing is available in standard sizes to fit 4" to 20" diameter pipes. Typical applications include flour, feed and grain, food processing, powder and bulk, and chemical resin.

Self-cleaning electromagnetic pipe magnets are also available. *For more information see Tech Sheet TRAMP MTL 7A.*

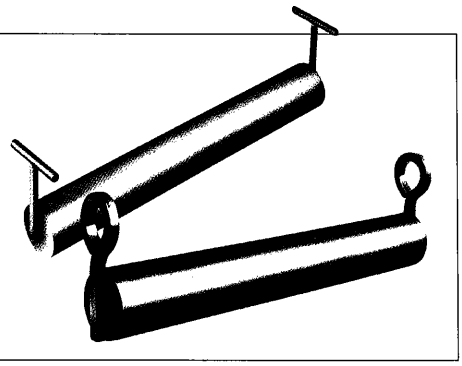
Wedge Magnets



"The Wedge" can be invaluable in any narrow chute application in which tramp metal may be washing off or bypassing other magnets in a system. In many cases the wedge is installed as a "last chance" to catch tramp metal at a final and easily accessible point in the system.

Constructed with a 30° wedge-shaped diverter head to avoid product build up or bridging, the magnet measures 6" high, 2-1/2" thick, with length as ordered. Weight is approximately 2 pounds per inch on length. Available in either Ceramic or Rare Earth with an all-welded stainless steel assembly.

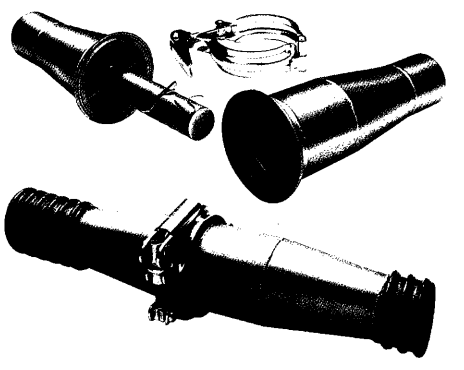
Mud/Ditch Magnets



Protect your pumps, valve seats, rods and liners. The Mud Magnet or Ditch Magnet is designed to capture ferrous metal particles which could cause damage and delays. Install one or more of these magnets in the trough between the shale shaker and the No. 1 mud pit to capture and remove from the mud flow ferrous particles produced by milling, fishing, or routine drilling.

The powerful permanent "Mud Magnet" is housed in a stainless steel cylinder three inches in diameter and 22-3/4" in length. It weighs only 23 pounds. It is easily installed and is easy to remove for cleaning: choose eye bolt-type handles or "T" handles, welded at each end.

Vacuum 4JIT Line Magnet



In vacuum systems, located between the gaylord and the vacuum loader, the Vacuum 4JIT magnet captures ferrous tramp contaminates. The powerful Rare Earth Vacuum 4JIT line magnet provides equipment protection and improved product purity without restricting resin flow.

Quickly clean captured tramp metal by removing the disconnect clamp to separate the two halves. Once separated, the powerful rare earth tube is exposed. With a gloved hand or shop rag, simply wipe the collected metal from the magnet and re-connect the halves. Vacuum 4JIT line magnets are available from 1-1/2" to 2-1/2" line sizes. *For more information see IMI Tech Sheet TRAMP MTL 14A.*