

Plate magnets



Goudsmit Magnetics, driven by magnetism

Family company Goudsmit Magnetics – founded in 1959 – produces, develops and sells products for the separation of metals and the magnetic manipulation and transport of steel parts.

Goudsmit operates in an international business-to-business market, delivering to diverse yet primarily production-oriented companies. These clients are mainly active in the food products, chemical, pharma, plastics, animal feed, bulk, recycling, automotive and plate-processing industries.

The Goudsmit magnet systems contribute to optimizing production processes, improving product quality and boosting safety and efficiency.

Three different brochures are available for the separation of metal particles from various products and widely ranging production processes. Depending on the product and the requirements, we categorize the magnet systems as:

1. Plate magnets for separation of coarse fractions
(see this brochure)
2. Magnetic bar systems for fine separation
(see bar systems brochure)
3. Magnets for recycling of metal and waste
(see recycling brochure)



Plate magnets for separation of coarse fractions.

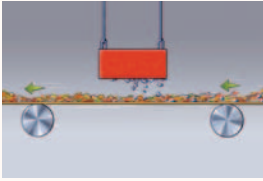


Magnetic bar systems for separation of fine fractions.



Magnets for recycling of metal and waste.

Contents

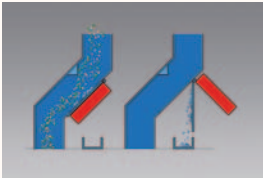


ATEX-certified magnetic equipment for applications in explosion-hazardous environments

Plate magnets

Permanent or electromagnets suitable for process flows with little ferromagnetic contamination.

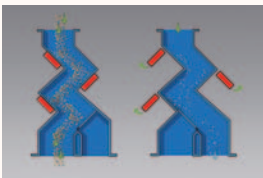
page 4 - 5



Chute magnets

Suitable for free-fall and chute processes.

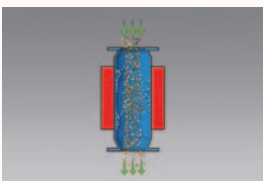
page 6



Cascade magnets

2- or 3-stage permanent magnet system for free-fall processes. Self-cleaning.

page 6 - 7



External pole magnets

Permanent magnet system, placement in free-fall lines, self-cleaning.

page 8



Pipe magnets

Available in permanent or electromagnetic versions.
For removal of fe particles from 50 µm in free-fall lines.

page 9



Drum magnets

Permanent, continuous cleaning magnet for placement in free-fall line
(for heavy ferromagnetic contamination).

page 10



Service

page 12

ATEX magnets for applications in explosion-hazardous environments

The ATEX directive (ATEX: Atmosphères Explosibles) is a harmonized European standard intended to prevent gas and dust explosions. Directive ATEX 94/4/EC (ATEX 95) is for equipment manufacturers. Directive ATEX 1999/92/EC (ATEX 137) is for the users and is intended to protect workers potentially at risk from explosive atmospheres.

The ATEX directives distinguish between gas and dust environments. Goudsmit only makes equipment for use in dust-hazardous environments. Areas with a risk of explosion are subdivided into various zone categories, depending on the frequency of potentially explosive conditions. We divide equipment suitable for use in ATEX zones into three categories: 1, 2 and 3. These correspond to the protection levels: very high, high and normal.

Explosion-hazardous environment	Protection level of equipment	Gas (G)		Dust (D)	
		Zone	Category	Zone	Category
Frequent to continuous	Very high; safe in exceptional conditions	0	1G	20	1D
Now and then	High; safe for reasonably expected failures	1	2G (1G)	21	2D (1D)
Unlikely, seldom, brief	Normal; safe for normal operation	2	3G (1G, 2G)	22	3D (1D, 2D)

An externally certified quality assurance system (ATEX QAN) is required for manufacturers of ATEX equipment. Goudsmit is one of the few companies in the magnet industry to possess this certification. Additionally, product conformity certificates (ATEX certificates) are required for ATEX devices in categories 1 or 2. Goudsmit Magnetics has these certifications for various systems and can therefore deliver magnet systems and metal detectors for use in zone 20/21.

Plate magnets

Plate magnets remove ferromagnetic particles from various products, such as those in the plastics, wood, stone, ceramic and food industries. There are various ways to install plate magnets, including hanging above the conveyor (type A) or against/under the wall of a conveyor (type B). As a general rule: the closer the magnet is to the product, the more effective the iron separation is. Goudsmit builds all the plate magnets with flux control for installation above product lines (type A). These include extra magnets between the poles that cause the lines of flux to penetrate deeper into the product flow. Plate magnets for applications in which the product flows over the magnet (type B) are designed with the strongest possible magnetic field over the poles, rather than deeply penetrating lines of flux. A keyway prevents captured ferromagnetic particles from being carried away again.

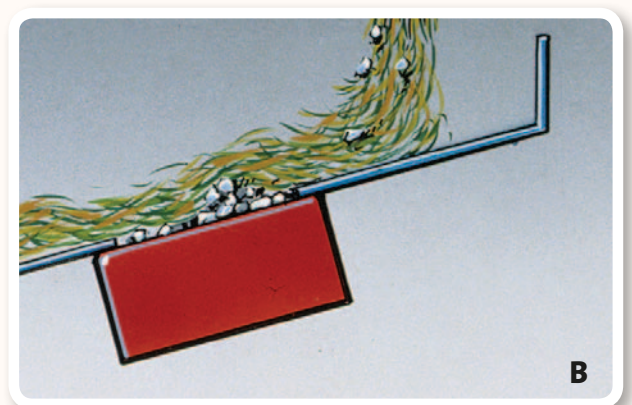
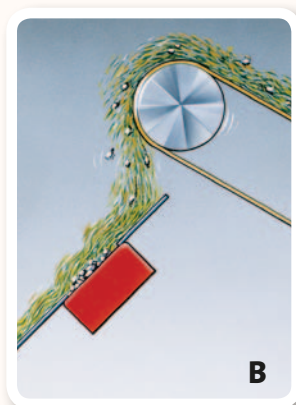
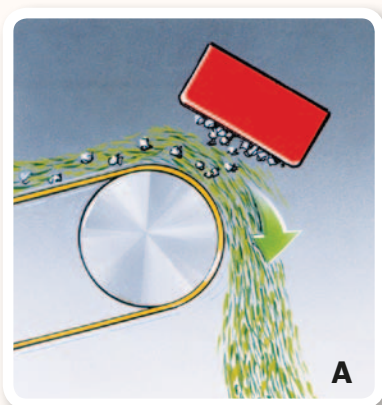
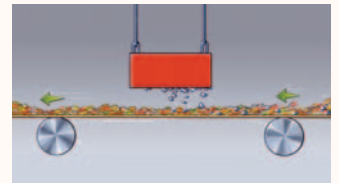
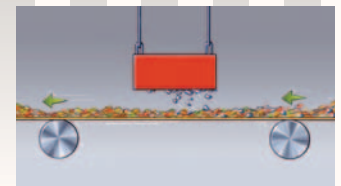


Plate magnets



Ferrite plate magnets

- Cost effective
- Good penetration strength (up to 400 mm)
- Suitable for up to approx. 250°C
- Value at magnetic poles: 2800 Gauss
- Not suitable for capturing stainless steel scrapings
- Application: in recycling industry or as protection of grinding mills for animal feed.

Ferrite plate magnets (variable length)

Type number	W - H mm	Catchfield
VMF1	114 x 47	65
VMF2	154 x 47	75
VMF4	204 x 92	110
VMF5	304 x 99	140



Neoflux® (nd-fe-b) plate magnets

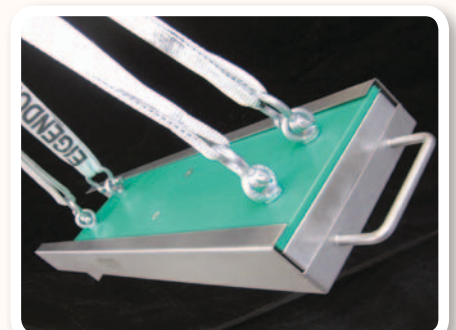
- 4 times more powerful than ferrite magnets
- More temperature sensitive
- Light and compact
- Standard version suitable for up to 80°C
- Special version for up to 180°C
- Field strength of magnetic poles max. 8000 Gauss at the keyway
- Design: completely stainless steel waterproof (IP67)
- Supplied in quick-cleaning version (with stainless steel protection plate)
- Suitable for the food industry.

Neodymium plate magnets (Nd-Fe-B) (variable length)

Type number	W - H mm	Catchfield
VMN6	114 x 34	80
VMN2	205 x 55	180
VMN3	158 x 32	120



Ferrite plate magnet above belt, for removal of fe-particles from potting soil.



Neoflux® plate magnet with cleaning drawer.

Plate magnet holding field depth (force index) determined by means of **computer design**

A plate magnet has a deeply penetrating field. It attracts ferromagnetic particles from great height. The degree of attractive force is not dependent on the weight but rather the shape of the fe-particle. It is easiest to capture a flat wafer. Next easiest is a rod shape, followed by a cube. A sphere is the most difficult to capture. The field strength required to capture a particular shape is known. This is called the 'specific force'. Because we know the force index of a particular magnet, we can predict whether or not a particle will be captured. Goudsmit does this through use of a finite elements calculation program, thus assuring you of an optimally functioning magnet system.

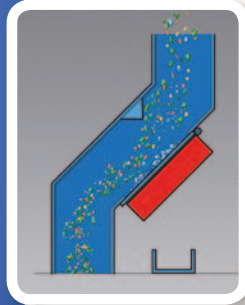


Plate magnet for the removal of ferromagnetic particles from French fries.

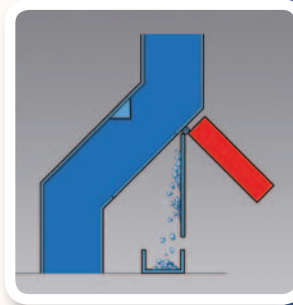
Chute magnets



This series of plate magnets is mainly used for powder streams in free-fall or chute applications. The angle of the chute may not exceed 45° from the vertical. For reasons of safety, the operator must operate the chute magnets with two hands. The magnets are secured in the outermost cleaning position, after which the operator has both hands free for cleaning. Chute magnets are a simple solution for removal of iron particles (in the range 60 µm to approx. 5 mm), are easily installed and deliver good results.



In operation.



Cleaning.

The chute magnet is intended for free-fall or chute applications.



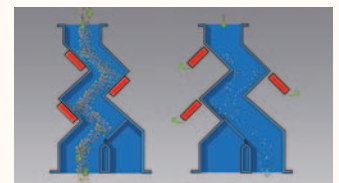
Cleaning

The plate magnets can be cleaned in various ways: for example, manually by wiping (use safety gloves) or semi-automatically (plate magnet with extractor plate) by swinging the extractor plate away from the magnet (the Fe particles fall off of the extractor plate as soon as they are moved far enough away from the magnet).

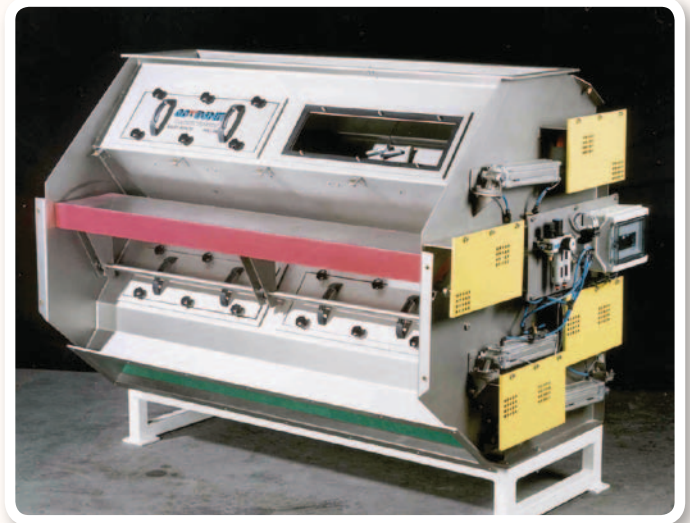
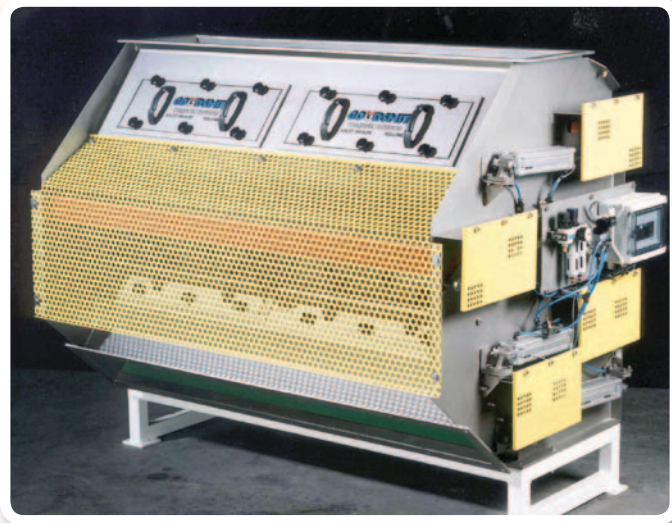
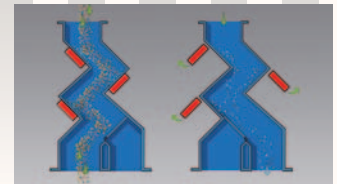


Chute magnet in sugar production, at elevator intake.

Cascade magnets



In the case of a cascade magnet, two or three strong plate magnets are mounted in series. The product is checked two or three times in a single pass. This results in a very high level of separation. Moreover, Goudsmit uses extra strong Neoflux® (Nd-Fe-B) magnets on the last plate for an extra deeply penetrating holding field and optimum separation. Cleaning is accomplished by means of a manual or pneumatic controller, with the Fe particles removed from the magnet through an integrated valve box. This type of magnet is often used in the animal feed industry, to protect hammer mills, but is also suitable for grain and sugar. Even if the pneumatic supply fails, the cascade magnet remains in the production position. This gives a high level of operational reliability. Furthermore, high capacities – of up to 300 m³/hr – are feasible and the cascade magnet is self-cleaning.



Pneumatic cascade magnet in stainless steel 304.

Cascade Manual			
Type number	Intake/outlet mm	Height	Capacity m ³ /hr
SEKM040033	400 x 200	885	50
SEKM060033	600 x 200	885	90
SEKM080033	800 x 200	885	140
SEKM100033	1000 x 300	1165	200
SEKM125033	1250 x 300	1165	240
SEKM150033	1500 x 300	1165	350

Cascade Pneumatic			
Type number	Intake/outlet mm	Height	Capacity m ³ /hr
SRKP040035	400 x 200	885	50
SRKP060035	600 x 200	885	90
SRKP080035	800 x 200	885	140
SRKP100035	1000 x 300	1165	200
SRKP125035	1250 x 300	1165	240
SRKP150035	1500 x 300	1165	350

For bulk handling and recycling please refer to our brochure 'Magnetic separators for recycling', which includes the systems shown below.



Permanent overbelt magnet

This is suitable for product flows with lots of Fe particles and can be mounted above, and across or in line with, flat or trough-shaped conveyor belts. Holding field depth of up to 450 mm possible, and there is a version for suitable for use in ATEX 22 and 21 dust explosion hazard zones.

Permanent overbelt magnets do not use any energy, require no maintenance and are automatically (continuously) cleaned. (For more info: see brochure 'Magnetic separators for recycling'.)

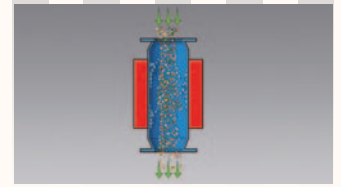
Electromagnetic plate magnets

These magnets remove Fe particles from bulk materials, such as sugar beets and potatoes, preferably at the intake. They can be switched on and off, which is a big advantage with regard to cleaning.

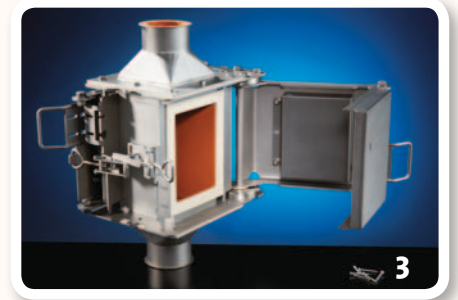
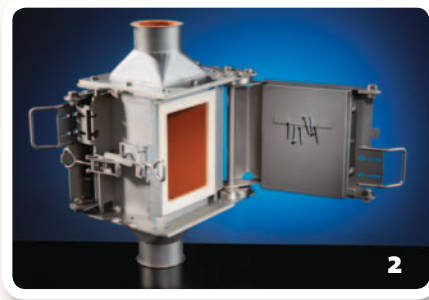
A disadvantage, however, is their less compact size in comparison with permanent plate magnets. To generate a powerful magnetic field, the electric coil must be large enough. Application: above a conveyor belt when the holding field depth must be greater than 350 mm.

(For more info: see brochure 'Magnetic separators for recycling'.)

External pole magnets



External pole magnets filter unwanted ferromagnetic particles – such as iron and steel – from 50 µm to 50 mm out of food, powders and granulates in free-fall lines. Cleaning is possible without interrupting the product flow. They are used in the bulk, animal feed, plastics, ceramic and recycling industries, among others. External pole magnets are very robust. They offer the advantage of being located outside the product channel, so the product can fall through freely, making it possible to process large quantities while keeping bridging to a minimum. Versions are available with either ferrite or neodymium (Neoflux®) magnets.



Construction

For external pole magnets the plate magnets are placed on the outside of a stainless steel tube (photo 1). The magnets attract the Fe particles, which are held in place against the stainless steel plate. For cleaning, the stainless steel plate with the magnets must be swung outwards (photo 2). This moves the iron particles out of the product flow. Then the stainless steel (extractor) plate must be pulled away from the magnet, which removes the magnetic field so the iron falls off (photo 3). The construction is made in such a way that it is impossible for the iron particles to fall back into the product channel.

Self-cleaning external pole magnet

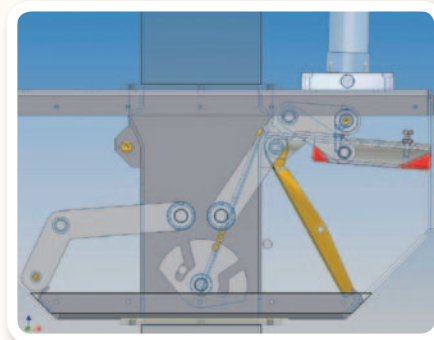
The self-cleaning external pole magnet contains two magnets. Each magnet is cleaned separately so that production can continue without interruption. There is a valve in the middle of the product flow. During cleaning of the magnet on the right, the valve interrupts the product flow for that magnet. A pneumatic cylinder moves the magnet and extractor plate outward. The plate is held stationary at the midway point, and the magnet continues further. The iron is released and falls downward. When the magnet is placed back in the production position, these cleaning steps take place on the other side. The controller requires a 6 bar compressed air connection and a 24V DC signal.

External pole magnets Ferrite		
Type number	Intake/outlet mm	Capacity m ³ /hr
SBPF180001	□ 180	50
SBPF260001	□ 260	100
SPBF360001	□ 360	200

External pole magnets Neodymium (Nd-Fe-B)		
Type number	Intake/outlet mm	Capacity m ³ /hr
SBPN100000	∅ 100	10
SBPN150000	∅ 150	30
SBPN200000	∅ 200	75
SBPN250000	∅ 250	100
SBPN300000	∅ 300	150
SBPN252500	□ 250	100
SBPN353500	□ 350	190



Manually cleanable external pole magnet.



Self-cleaning external pole magnet in cleaning position.

Pipe magnets



Permanent and electromagnetic pipe magnets remove iron particles as small as 50 µm from granulate and powder materials and therefore prevent damage to injection moulding machines, extruders, mixers, grinders and other equipment. They also improve the quality of the end product and protect your expensive systems. Pipe magnet applications are found in the animal feed, plastics, chemical, sand/gravel/cement and ceramic industries, as well as others.



Permanent pipe magnet with manual cleaning.

Permanent pipe magnets

- Suitable for installation in vertical lines
- Flanges are also available with Jacob connections or other connections
- Specially constructed conical (60°) magnet core for good distribution of the material
- Product passes two powerful magnetic fields for optimum results
- Manual cleaning
- Suitable for applications in ATEX 20/21 zones.



Dust-proof housing

- Guide strips force material towards the core
- Core is mounted on the door as standard (during cleaning this entire unit swings outwards)
- The core itself also swings away, for optimum cleaning
- No energy consumption
- High magnetic field strength, up to 4800 Gauss: extremely effective!
- 12 standard sizes, with options for specific applications.



Electromagnetic pipe magnet with valve box.

Electromagnetic pipe magnets

- Automatic cleaning
- Supplied with valve box and control box
- Suitable for use in difficult-to-access areas and fully automated production processes
- Protection: IP55 (core IP65) with automatic safeties
- Optional PLC control
- Available versions: with/without valve box, with/without ATEX 20/21
- Available in six standard dimensions with options for specific applications.

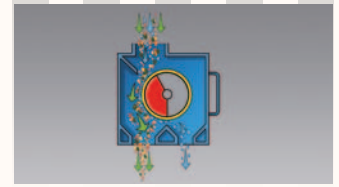
Permanent pipe magnets			
Type number	Intake/outlet mm	Height	Cap. m³/hr
SPPE000160	100	570	10
SPPE000161	150	680	28
SPPE000162	200	792	60
SPPE000063	250	950	100
SPPE000064	300	1000	140
SPPE000065	400	1100	250
SPPE000066	500	1200	380
SPPE000067	600	1300	550
SPPF000160	216	420	10
SPPF000161	271	480	28
SPPF000162	340	600	60
SPPF000063	429	700	100
SPPF000064	509	800	140
SPPF000065	667	850	250
SPPF000066	842	900	380
SPPF000067	1002	970	550

Electromagnetic pipe magnets			
Type number	Intake/outlet mm	Height	Cap. m³/hr
SPEA001063	250	1533	100
SPEA001064	300	1684	150
SPEA001065	400	2085	230
SPEA001066	500	2383	350
SPEA001067	600	2605	500

A pipe magnet removes very fine Fe particles in the ceramic industry.

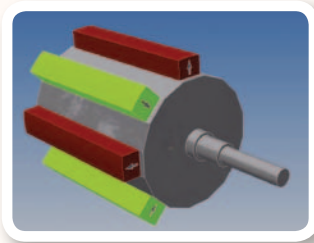


Drum magnets

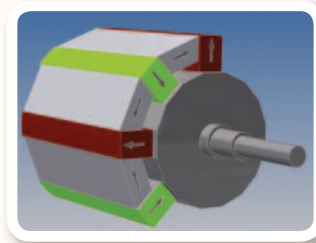


Drum magnets remove unwanted Fe particles or even weakly magnetic particles, such as stainless steel scrapings that can enter the product flow during production. Drum magnets are cleaned continuously, which makes them perfectly suited for removal of large quantities of Fe particles. As such, they always generate maximum magnetic force, because the magnet remains clean. These magnets clean powders, granulates, fibres and coarser materials with heavy Fe contamination. An example is the separation of magnetic and non-magnetic blasting medium. At low capacities, when the drum is fed with a vibratory feeder, these magnets can also remove very small or even weakly magnetic particles. Drum magnets have a low installation height, clean continuously and achieve a high Gauss value.

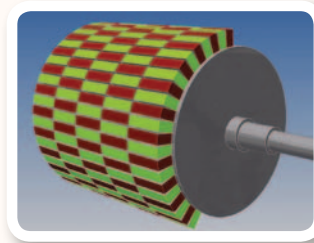
Depending on the requirements, four different magnet systems are available (see drawing below).



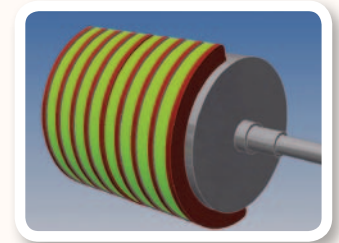
Removal of Fe particles measuring 3-15 mm.
Axial magnetic field (pole) of 3000 Gauss. Cleaning of blasting medium, animal feed or wood chips, for example.
 High capacities possible.



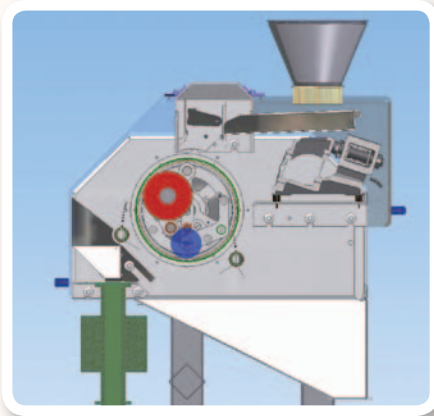
Removal of Fe particles measuring 1-5 mm.
Axial magnetic field (pole) of 6000 Gauss. Suitable for food, pharma and ceramic processes (feldspar).
 High capacities possible.



Removal of high quantities of very small Fe particles measuring 1-3 mm.
Alternating magnetic field (crosspole) of ±3000 Gauss. Only for lower capacities (up to ±15 m³/hr).



Removal of very small Fe particles measuring 0-3 mm.
Radial magnetic field (pole) of ±10,500 Gauss. Only for lower capacities of ±5 m³/hr in food, chemical or ceramic processes.



The Lenastar high gradient separator achieves a magnetic field strength of 10,500 Gauss.

Drum magnets			
Type number	Intake mm	Drum	Cap. m³/hr
SRTK040034	150 x 400	306	35
SRTK060034	150 x 600	306	52
SRTK080034	150 x 800	306	70
SRTK060044	200 x 600	406	90
SRTK080044	200 x 800	406	120
SRTK100044	200 x 1000	406	150
SRTK100054	250 x 1000	506	180
SRTK120054	250 x 1200	506	215
SRTK140054	250 x 1400	506	250
SRTK160054	250 x 1600	506	300



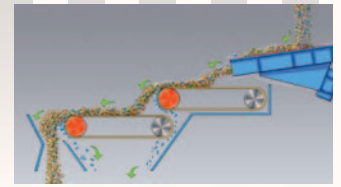
Neoflux® (Nd-Fe-B) drum magnet with radial pole of 6000 Gauss. Completely stainless steel.



Drum magnet with axial pole of 3000 Gauss is suitable for applications such as those found in the ceramic industry.



This drum magnet in a completely dust-proof housing is suitable for the ceramic industry and achieves a magnetic field strength of 6000 Gauss.



High gradient separator

The high gradient separator consists of a circulating belt fitted with an extremely powerful Neoflux® (Nd-Fe-B) drive roller. The materials from which iron is to be removed are supplied via a protective chute. This spreads the substances over the belt in a very thin layer. A Neoflux® roller attracts magnetic particles and carries them along until they are outside the influence of the magnetic field. The non-magnetic particles fall straight downwards. An adjustable valve separates the various particles in the correct manner. The high gradient separator also separates paramagnetic materials. Moreover, the flow of raw material is continuously checked and cleaned.



Goudsmit not only designs and manufactures magnetic systems in plate form but also systems for fine metal separation (bar magnets in hygienic versions for food products, etc.) and recycling, for coarse fractions and non-ferrous separation. Magnets are also suitable for conveyance of metals and holding or lifting of loads. As well as for advertising applications and as a practical office or workplace solution! A few examples are shown here.



Permanent Neoflux® (Nd-Fe-B) overbelt magnet: completely stainless steel frame is half the weight of a ferrite magnet and is therefore excellently suited for mobile installations.



Magnetic filter for installation in pressurized conveyor systems. Filters of this type remove iron dust from liquid products and fatty powders, such as fruit juice, milk powder or chocolate. In the latter case, the filter is double walled, with warm water flowing between the walls to keep the product liquefied.



Goudsmit builds equipment for demagnetizing products large and small and can also provide on-site demagnetization as a service.

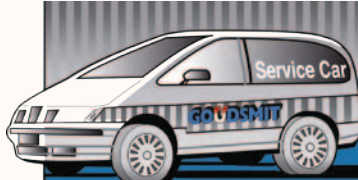


<< You can also contact one of our companies for office supplies, magnetic business gifts and promotional items: the skilled staff of Goudsmit Magnetic Design assist you every step of the way, from design to printing and packaging!

>> These grippers use a combination of magnetism and vacuum technology to lift all kinds of sheet material (without reconfiguration) in a processing machine or robot application.



Service



Goudsmit's service department not only provides installation and maintenance but also inspection, measurement and inspection reports.

Timely maintenance and identification of parts due for replacement is becoming increasingly important in all industries!

We are happy to assist you with:

- Installation of new products
- Configuring the controller
- Checking, inspecting and measuring magnets
- On-site repair
- Maintenance & replacement
- Demagnetization of your product

All these services can also be provided on-site.

