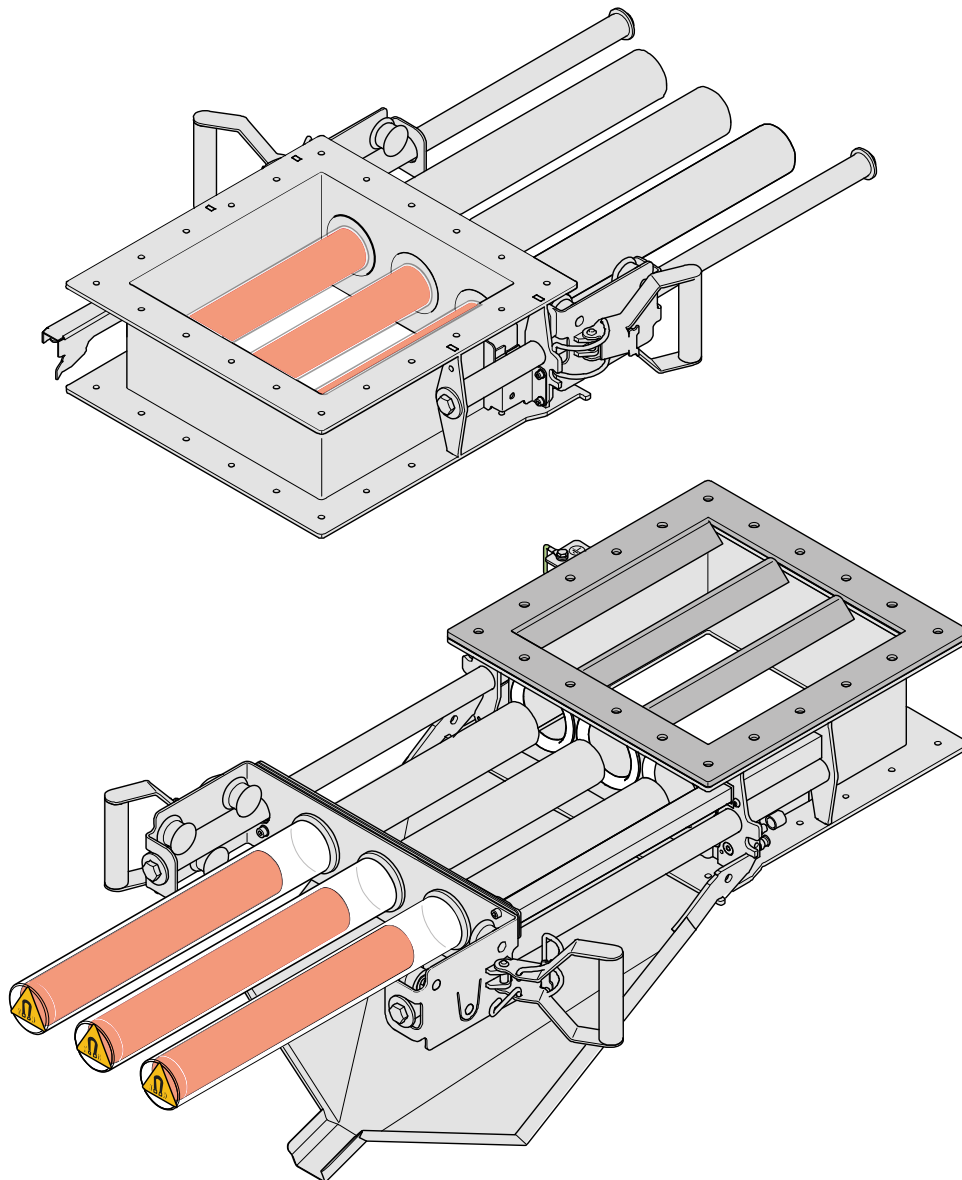


## Installation and user manual

### Semi-automatic cleaning Cleanflow magnet, SECE series

Magnetic separator with permanent magnet



The descriptions and pictures in this manual, used for explanation, may differ from the descriptions and pictures of your version. The as-built drawing(s) of the delivered device are attached.

## Disclaimer

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## Foreword

This manual contains information for the correct use and maintenance of the device. This manual contains instructions on how to avoid possible injuries or damage and provides a safe and trouble free operation of the device. Read this manual carefully and make sure you understand the content before you operate the device.

For more information, please contact GOUDSMIT Magnetics Systems B.V.. All contact information is on the title page of this manual. Please refer to the order number, the name of the device and/or article number to re-order the manual.

In this manual, the SECE Easy Clean Cleanflow magnet is referred to as "device".



- This manual and the manufacturer's statement(s) should be regarded as part of the device.
- The manual has to remain with the device if the device is sold.
- The manual must be available to all operating personnel, service technicians and others operating the device for the service life of the device.

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## Safety

This chapter describes the safety hazards of the device. Where necessary, warning pictograms have been applied to the device.



### Know your pictograms

- Carefully read the warnings and instructions on the stickers and labels of the device.
- Check regularly that the stickers on the device are present and clearly legible.
- Keep the stickers clean.
- Replace deleted or unreadable stickers for new ones and place them in the same place.

### General safety instructions

- The instructions in this manual must be adhered to. Failure to adhere to them may result in property damage, personal injury or even danger to life.
- The device may only be used filter to dry powders and granulates. Any other use does not comply with the regulations. Damage which results from this use is not covered by the manufacturer's warranty.
- Make sure all personnel working with or in the direct vicinity of the device are wearing sufficient safety equipment.
- Take extra safety precautions when the device is still easily accessible for personnel. If this is not possible, make sure clear instructions are given about the installation if which the device is a part.
- All work on the device must only be done by qualified personnel. Maintenance work should preferably be done by Goudsmit Magnetic Systems personnel.
- Always apply local safety and environmental regulations.

### In case of emergency



#### Switch off in case of emergency

The device does NOT have a safety switch. It is very important that your installation has the possibility to switch off the air supply to the device in case of emergency.

### Damage caused by magnetic field

The magnets create a strong magnetic field that attracts ferromagnetic parts. Always use none ferromagnetic tools and work benches with a wooden counter top and a none ferromagnetic base. Do not bring any other ferromagnetic items, such as keys, coins and tools, into the magnetic field as they can be forcefully attracted by the magnet, which can cause serious damage.



#### Strong magnetic field

During maintenance and measuring checks of the magnet components of the magnet bars, injuries can occur. Make sure your fingers can not get caught between the components.

### Other remarks/warnings

Eliminate any malfunction before using the device. If the device is put into operation with the malfunction, after you have carried out a risk assessment, then warn the operating and maintenance personnel of this malfunction and the possible risks it may pose.

**Product Standards and Directives**

**CE marking**

This device complies with all the European and national requirements for construction and operation.



The CE marking confirms the compliance of the device with all the for this marking applicable EU regulations.

**Directives**

The standard version of this device complies with the requirements of these European Directives:

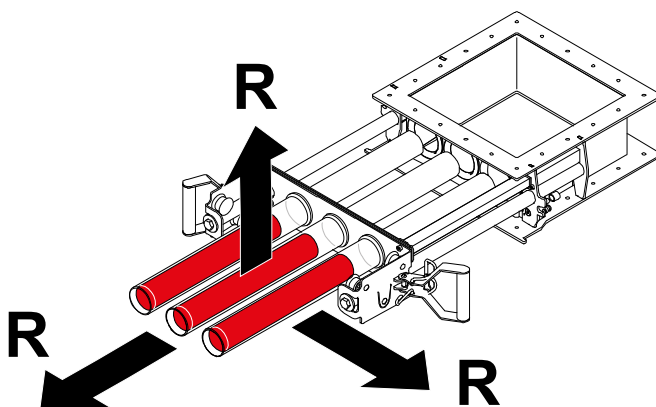
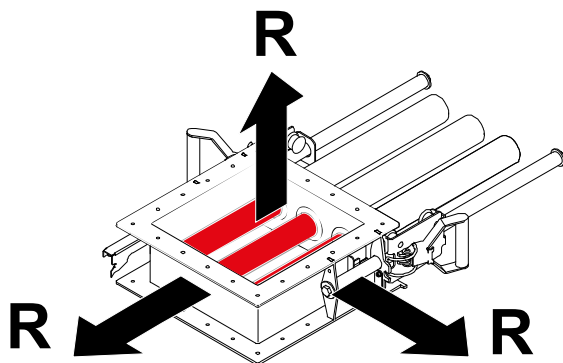
- Machinery Directive 2006/42/EC
- EMC Directive 2014/30/EU, if the device is equipped with an electrical sensor.

**Occupational and public exposure limit values for (electro) magnetic fields**

The limit values of magnetic fields are defined as follows according to the EMF Directive 2013/35/EU:

*Directive 2013/35/EU of the European Parliament and of the Council of 26 June 2013 on minimum health and safety requirements regarding the exposure of workers to the risks arising from electromagnetic fields.*

Observe the following measures regarding exposure to magnetic fields according to EN12198-1 (machine category = 0, no restrictions) of the device:



**Life danger for persons with implanted medical devices**

Persons with active implanted medical devices (i.e. pacemaker, defibrillator, insulin pump) must not enter within a radius "R" of **25 cm** from the device.



**Damage to magnet sensitive objects**

Objects which contain ferromagnetic parts, such as bank, credit or chip cards, keys and watches can be irreparably damaged when they come within a radius "R" of **10 cm** from the device.



Pregnant personnel should keep a minimal distance "R" of **4 cm** from the magnet bars.

Occupational exposure limit values (general and for limbs) are not exceeded.

## Specifications

### Function description

The device is suitable for filtering out ferromagnetic particles of 30 µm and larger from product flows. The maximum particle size is 10 mm. The product can not contain any ferromagnetic parts large enough or heavy enough to cause damage to the magnetic bars.

- ▶ Preferably place a sieve in front of the product inlet of the device in your installation.

### Scope of application

The device is suitable for magnetically removing ferrous and even weakly magnetic contaminants from high-capacity granulate and powder flows in free-fall.

Under special conditions, the device can be installed in low-pressure transport pipes up to 2 bar.

The prerequisite is that the device is equipped with a door sensor (see section "[Door sensor](#)"). If the magnet unit is unexpectedly pulled out of the product channel during operation, the central control immediately switches off the air pressure on the transport pipeline.

### Food contact application

As standard, the device is delivered in stainless steel with a 3 µm ceramic-blasted finish. This finish is suitable for normal food contact applications. All contact materials comply with EU regulation EC1935/2004. Higher quality finishes are available for applications with higher requirements. Refer to the data sheet for specifications.

### Temperatures

The device is equipped with standard neodymium magnets (NdFeB) suitable for the following ambient and product temperatures:

Applied magnet quality	Ambient temperature	Max. ambient temperature (ATEX)	Max. product temperature	Max. product temperature (ATEX)
Neodymium N-42SH	-10 °C to +60 °C	-5°C to +40°C	130°C	80°C
Neodymium N-52	-10 °C to +60 °C	-5°C to +40°C	60°C	80°C

Table 1

The device must be protected against higher temperatures than those indicated in table 1, because the magnet will permanently lose magnetic force when exposed to higher temperatures.

### Supply voltage

Supply voltage for the door sensor (option) and detection switch (option) is 24 VDC.

### Air Pressure

Use an air pressure of 4 to 6 bar on the pneumatic connection(s).

### Air quality (compressed air)

Goudsmit Magnetics advises to use compressed air of ISO 8573-1 (2:4:1) for normal food applications.

It is the responsibility of the user to choose the appropriate air quality for their specific product. There is no direct contact between air and product. The used air is ventilated outside the device. If this is not desired, the exhaust air can be discharged in a return circuit or away from the equipment.

**Free space**

Make sure there is sufficient space around the device for operation and inspection and maintenance work.

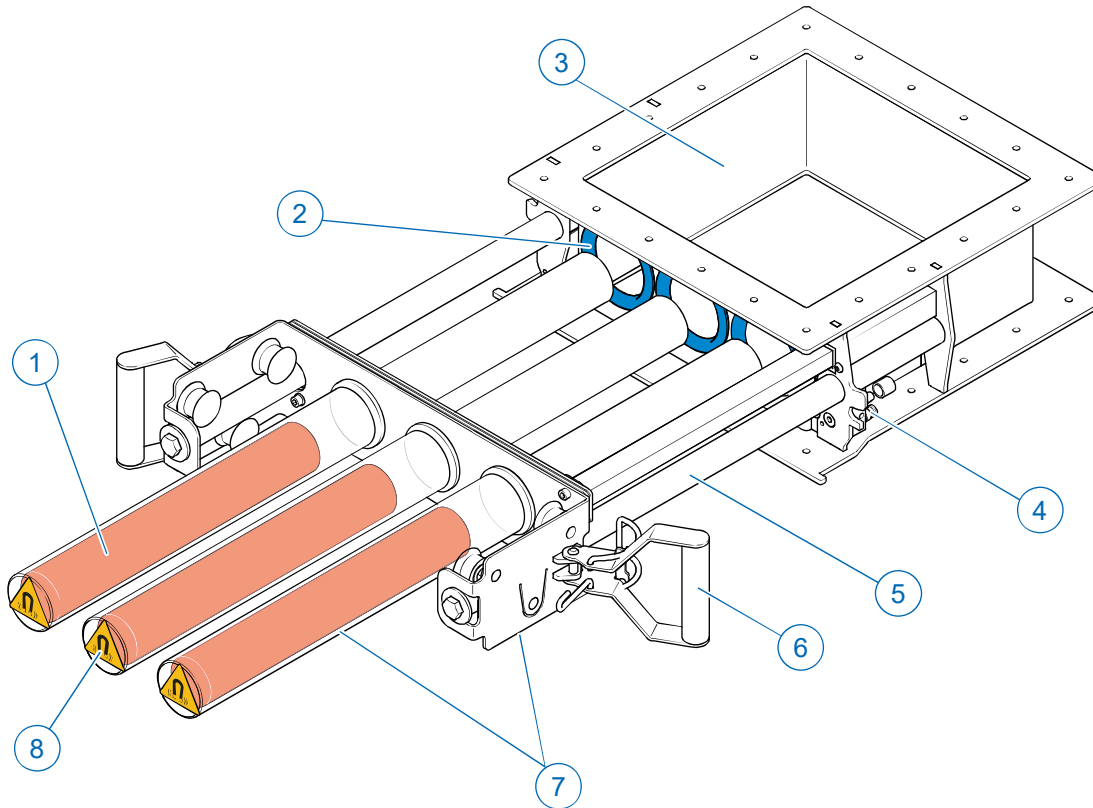
**ATEX**

The device is suitable for use in ATEX dust zones 20, 21 and 22 on the inside and suitable for use in ATEX dust zones 21 and 22 on the outside. Special conditions apply.

The mechanical part of equipment is free of own ignition sources and therefore falls outside the scope of the ATEX Directive 2014/34/EU. The full explanation is described in the ATEX Exclusion Declaration.

Product information

Device overview



- |                    |                               |                  |
|--------------------|-------------------------------|------------------|
| 1. Magnetic bar    | 4. 4/2-valve                  | 7. Magnet unit   |
| 2. Sealing ring    | 5. Side guide                 | 8. Warning decal |
| 3. Product channel | 6. Handle with locking spring |                  |

Scope of delivery

Check the shipment immediately upon delivery for:

- possible damage and/or shortcomings due to transport. If damaged, ask the transporter for a damage report.
- completeness of the delivery. Check if all the ordered accessories are delivered.



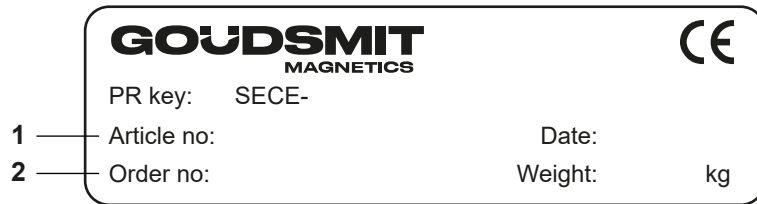
In case of damage or wrong delivery, immediately contact Goudsmit Magnetics.



## Type plate

The device has a type plate with identification data as shown below.  
The identification data is very important for the maintenance of the device.

- ▶ Always keep the type plate clean and legible.



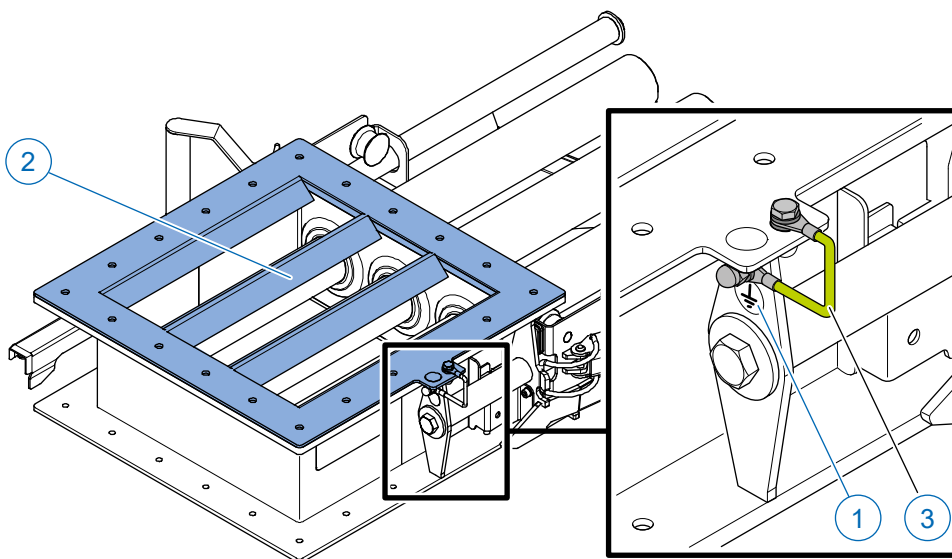
Always mention the article [1] and order number [2] when ordering spare parts, requesting service or in case of failure.

## Earthing

To prevent the creation and build-up of static electricity, ensure that there is a metal bridge between the installation and the magnetic device / product channel. The completed installation must also be earthed. On the bracket of the housing is a provision for earthing provided [1].

## Accessories

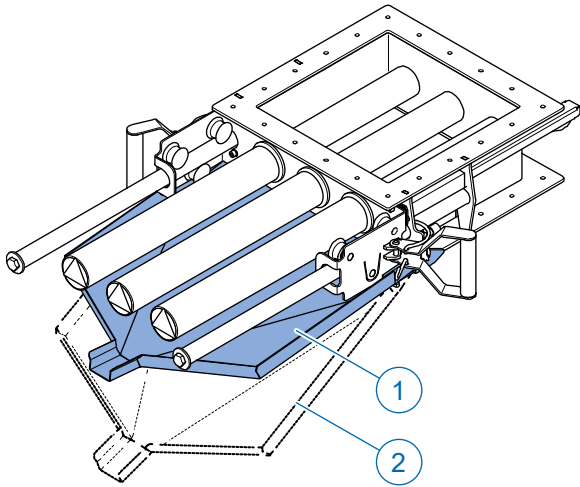
### Deflector grid



Optionally, a deflector grid [2] is available to ensure that all particles in the product flow touch the magnetic bars. If the device is supplied with a deflector grid, it is fitted with an earthing cable [3]. This also applies to devices supplied with adapter pieces.

## Removable collecting tray

A collecting tray is available to collect and dispose of the captured ferromagnetic particles. The collecting tray can be positioned in 2 different positions:

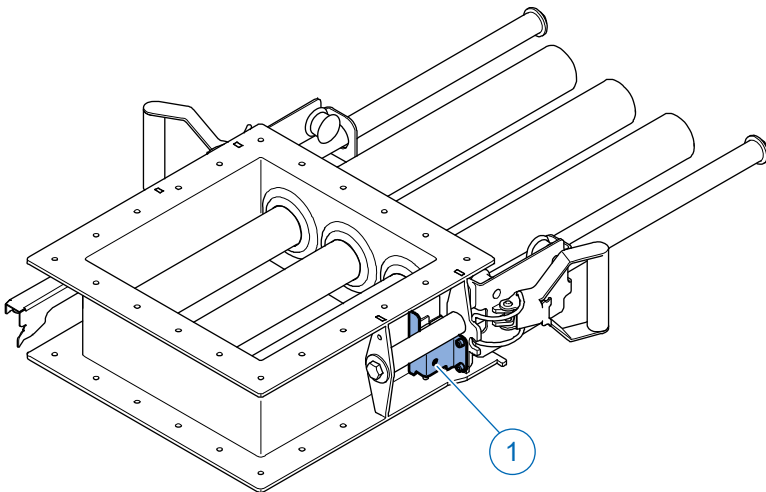


Position 1 – Production position (in operation)  
Magnetic bars in product channel.

Position 2 – Cleaning position / discharge of captured particles

Once the magnetic unit has been pulled out (cleaning mode), the collecting tray can be tilted downwards in order to remove or collect the captured particles.

## Door sensor



Optionally, a door sensor (safety sensor e.g. Steute Ex HS Si 4) can be mounted on the mounting bracket [1] which detects when the magnetic unit is in open (pulled out) or closed position. As the function of this sensor is signalling, and it is not a safety-related function, it is not necessary to connect it to a special safety relay for non-contact sensors, which are additionally equipped with current limitation and short-circuit detection.

In this way, the central control knows whether the magnetic bars are in the product channel (ready for use) or whether the magnetic bars are in the cleaning position.



A complete overview of the available accessories for this device can be found on the website.

## Transport and installation

### Transport

**Caution**

Permanent magnetic force is present on the device.

See chapter "[Safety](#)" for the precautions to take before transport.

- ▶ Take the centre of gravity into account.
- ▶ Avoid any impact during transport to prevent damage, especially to the magnetic bars. If the tubes are damaged, the magnetic packages may not be able to move or move badly in the tubes.

### Installation of the device



Take the following precautions:

- Only allow qualified personnel to work on the installation.
  - The product channels must be strong enough to carry the combined weight of the device and the raw product.
  - Disconnect the compressed air supply while working on the device.
  - Make sure there is at least 1 meter of free space around the installation to be able to place the device in the installation.
  - Permanent magnetic force is present on the device. See chapter "[Safety](#)" for the precautions to take when working on the device.
- 
- ▶ Install the device at the correct working height for the operating personnel in the product channel. Use lifting equipment that supports the weight of the device.
  - ▶ Connect the flanges of the device to the product channel using a bolt-nut connection. Pay attention with tools because of the magnetic attraction force.
  - ▶ Tighten the bolts in the flanges of the device to the inlet and outlet flanges of the product channel. Incorrect alignment and/or loose fastening may cause leakage.
  - ▶ Remove the lifting equipment after the device is completely installed in the product channel.
  - ▶ After installation and before commissioning, the device must be thoroughly cleaned (see section "[Cleaning instructions](#)").

### Preventing electrostatic discharge

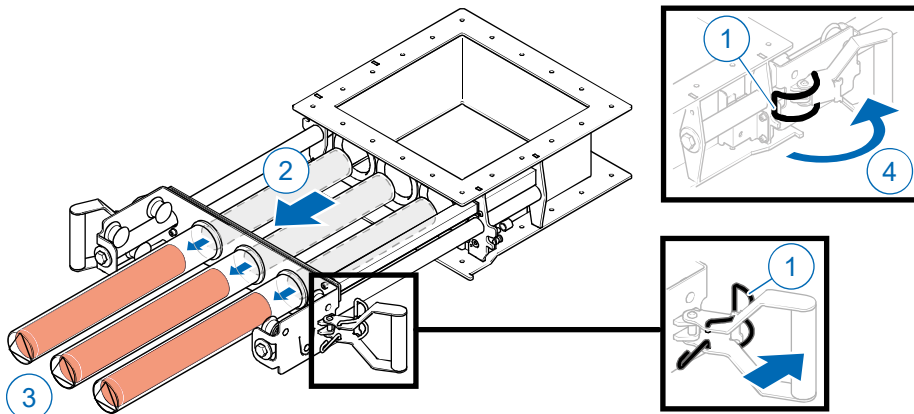
To prevent electrostatic discharge, make provisions to prevent potential differences between the installation and the device. This can be done by attaching a connecting cable to the installation. The electrical resistance must be less than 25  $\Omega$ .

## Working principal

The magnetic grid with very strong neodymium magnetic bars is positioned in the middle of the product flow. The product contaminated with ferromagnetic particles passes the magnetic bars while flowing through the grid. If necessary, an optional deflector grid ensures that the product flow cannot fall freely between the magnetic bars, but is guided towards them.

The magnets attract passing ferromagnetic contaminants, such as iron / steel / stainless steel wear particles. Once particles are captured they stick to the magnets, while the purified product flows further.

Each magnetic bar has a magnetic package that moves pneumatically in a closed tube, allowing automatic removal of captured ferromagnetic particles.



After the product flow has been stopped, manually pull the magnetic unit out of the product channel over the side guides [2].

As soon as the magnet unit has been pulled out to its end of reach, air pressure automatically pushes the magnets out one stage further outside within their enclosing tubes [3].

The moving magnets in the tubes pull the captured ferromagnetic particles along outside. However, they are stopped by a plate halfway the tube length. As soon as the magnets have travelled completely out, the captured particles drop off the tubes, into the iron discharge chute, where you collect and further discharge them.

## Cleaning – removal of ferromagnetic particles

- ▶ Stop the product flow.
- ▶ Loosen both handles with locking spring [1].
- ▶ Push the handles forward as far as possible until the locking spring [1] engages in the handle.
- ▶ Then pull the handles back again so that the magnetic unit is unlocked.
- ▶ Pull the magnet unit by the handles - over the side guides - completely out of the device [2].

*In this extreme position, the magnets in the tubes automatically slide out [3], after which the captured metal particles automatically fall off the tubes. Collect and discharge the falling metal particles.*

- ▶ Collect the falling ferromagnetic particles and dispose.
- ▶ If necessary, remove any trapped particles on the magnetic bar tubes with a linen cloth or compressed air.
- ▶ Push the complete magnet unit back into the product channel.  
The magnets inside the tubes are automatically also moved back IN.
- ▶ Press with your thumbs against the locking spring [1] and hook the locking spring behind the locking lip.  
Now pull the handles all the way back until they reach the end [4].
- ▶ Production can now safely be resumed.

## Maintenance and inspection



### Clamping / crushing hazard

Due to the extremely strong magnetic force on the magnetic bars, it is very dangerous to replace the magnetic bars and/or the magnetic packages. Replacing the bars and/or packages should ONLY be done by qualified personnel or (preferably) by mechanics from Goudsmit Magnetics.

If replacement is done by none-qualified personnel, the warranty is cancelled.

Goudsmit Magnetics is not liable for any consequential damage to persons and/or materials in the event of failure to comply with this prohibition.



### Caution

- Do all work on the unit while the product flow is stopped and the compressed air is switched off.
- Be careful with tools. Even when the power is off, the magnetic force is still present.

Magnetic systems attract ferromagnetic particles. These particles are removed during the cleaning of the magnet unit. A small part of your product also "sticks" to the magnet unit and in the drain channel.

These particles are not removed and must therefore be removed manually. A clean magnet works considerably better!

- ▶ Always inform the operating personnel of planned inspections, maintenance, repairs or in the event of malfunctions.
- ▶ Regularly check that all warning decals are in the correct place on the device. If the warning decals are lost or damaged, apply new decals to the original location immediately.
- ▶ Check that there are no faults on the outside of the device (e.g. loose pneumatic hose).
- ▶ Make sure that the outside of the device is clean. Remove dust, dirt and parts on the device that do not belong there.

### Maintenance interval

Action	Daily	Monthly	6 Months
Clean the magnetic bar tubes (for maximum performance) (see section " <a href="#">Cleaning instructions</a> ")	≥ 2x <sup>1)</sup>		
Clean the side guides and wheels (see section " <a href="#">Cleaning instructions</a> ")	●		
Clean the drain chute and deflector grid (see section " <a href="#">Cleaning instructions</a> ")	●		
Check the sealing rings for the magnetic bars for wear and presence	●		
Measure the flux density of the magnetic bars (see section " <a href="#">Flux density measurement of the magnetic bars</a> ")		●	
Check the tubes of the magnetic bars for wear		●	
Install new sealing rings (see section " <a href="#">Replacing sealing rings</a> ").			●

Table 2 –Maintenance table

1) The cleaning frequency depends on the capacity of your product flow and the contamination with ferromagnetic parts.

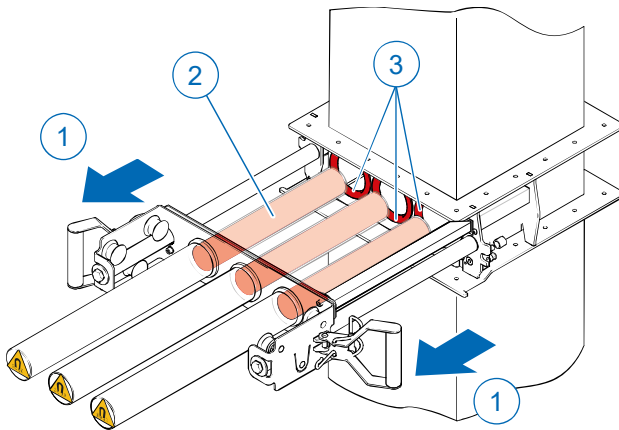


Goudsmit Magnetics offers an annual Maintenance inspection, including replacement of the seals and an inspection report with certificate for the magnets.

## Flux density measurement of the magnetic bars

The flux density of the magnetic bars must be periodically measured to check whether the magnetic force has decreased. Use a suitable Gaussmeter/teslameter to measure the poles of the magnetic bars on the surface of the magnetic bar tubes (unit is tesla, gauss, kA/m or oersted). Goudsmit can carry out magnetic measurements on location on request. Proceed as follows for a flux density measurement:

- ▶ Stop the product flow.
- ▶ Perform a normal cleaning cycle prior to the measurement so that the magnets are clean (see section [“Cleaning – removal of ferromagnetic particles”](#)).
- ▶ Stop the air supply.



- ▶ Pull the magnet unit by the handles - over the side guides - completely out of the device [1].  
*The magnetic bars remain in the production position at the front of the tubes [2].*
- ▶ Use a linen cloth or compressed air to remove the trapped particles on the magnetic bar tubes.
- ▶ Move the Gaussmeter/teslameter along the poles of the magnetic bars. Write down the highest value measured.
- ▶ Check with the corresponding data sheet whether the measured values are within the permissible values specified on the data sheet.
- ▶ Push the magnet unit back into the product channel.
- ▶ Secure the handles with the locking spring and turn the air supply back on.
- ▶ The product flow can be restarted.

## Replacing sealing rings

We recommend replacing the sealing rings at least every six months or more often, depending on the wear and tear. Proceed as follows to replace the sealing rings:

- ▶ Stop the product flow.
- ▶ Pull the magnet unit by the handles - over the side guides - completely out of the device [1].
- ▶ Remove the old sealing rings and replace them with new ones [3]. Before inserting the new sealing rings, clean the corresponding holes thoroughly.
- ▶ Push the magnet unit back into the product channel.
- ▶ Secure the handles with the locking spring.
- ▶ The product flow can be restarted.

If the sealing rings wear out too quickly, e.g. due to too high temperature or abrasive product, please enquire about alternative sealing rings.

## Cleaning instructions



For the cleaning of the inside of the product channel, the customer must make a provision to allow access to the inside of the product channel.

The cleaning and disinfection methods and agents used for cleaning must be adapted to the specific type of pollution encountered (carbohydrates, proteins, fats, etc.) and the degree of cleanliness required for your application. The type of product being processed therefore determines to a large extent which combination of cleaning agents is suitable. Consult your cleaning agent supplier to select the right cleaning agents for your specific situation.

The building materials are stainless steel 1.4301/SAE 304L and 1.4404/SAE 316L. Check with your cleaning agent supplier whether they are suitable for the material of the selected seals (Silicone, NBR or VITON).

### **Wet or dry cleaning**

If the use of liquids in your installation is not permitted, use, if necessary, disinfectant wipes without rinsing that are suitable for food contact.

The frequency of cleaning depends on the degree of cleanliness required for the processed product. In applications where sensitive foodstuffs are processed, the cleaning frequency should be increased. Carry out a hygiene risk assessment to determine the requirements in your case.

## Malfunctions

Use the table below to find the malfunctions, determine the possible cause and find the remedy. In the event of a malfunction that is not listed in the table, please contact the Goudsmit Magnetism Systems B.V. customer service.



Make sure the air supply to the unit is connected when working to solve pneumatic problems in the housing/equipment. Be careful when operating the pneumatics when the moving parts are accessible.

Malfunction	Possible cause	Remedy
Magnet does not separate ferromagnetic particles or separates them poorly.	Magnetic bar is overloaded with ferromagnetic parts.	<ul style="list-style-type: none"> <li>• Clean the magnetic bar more frequently.</li> <li>• Use a permanent magnet to check if the to be separated parts are ferromagnetic.</li> </ul>
	Non-attracted objects are not ferromagnetic enough.	<ul style="list-style-type: none"> <li>• Check the magnetic behaviour of the installed parts by holding an iron part close to the magnets. If there are parts that react to the magnet, replace them with non-magnetic parts, such as those made of stainless steel.</li> </ul>
Magnets are not in the right position.	Magnets are not all in the product channel while the filter is active.	<ul style="list-style-type: none"> <li>• Check the detection sensor (option) and replace if necessary.</li> <li>• Repair or replace the air connection if necessary.</li> <li>• Check the 4/2 valve and replace if necessary.</li> </ul>
	Magnets do not go to the cleaning chute during the cleaning cycle.	
Magnets do not move in their tubes.	Dents in the magnetic bar tubes.	<ul style="list-style-type: none"> <li>• Contact Goudsmit Magnetism.</li> </ul>
	Air pressure is too low or not available.	<ul style="list-style-type: none"> <li>• Repair or replace the air connection if necessary.</li> </ul>
Leakage from product channel to drain chute of collecting tray in production mode.	Sealing rings worn.	<ul style="list-style-type: none"> <li>• Replace sealing rings.</li> </ul>
Leakage from product channel to drain chute or collecting tray during cleaning.	Product channel not pressureless.	<ul style="list-style-type: none"> <li>• Depressurise the product channel.</li> </ul>
	Product flow not stopped.	<ul style="list-style-type: none"> <li>• Stop product flow for cleaning.</li> </ul>



## Service, storage and disassembly

### Customer service

Please have the following information at hand when contacting customer service:

- All the details on the type plate.
- Type and extent of the problem.
- Assumed cause.

### Spare parts

Due to the quality of the products of Goudsmit Magnetics the device has a high operational reliability.

Spare parts are usually parts that are subject to wear and tear:

- sealing rings (various types can be ordered). It is recommended to replace them every 6 months.
- pneumatic magnetic bars.

Depending on your (abrasive) product and the capacity of your product flow, the magnet sealing rings will wear out accordingly. Several types of sealing rings are available for this device. See the data sheet for the exact specifications. Please contact us for the availability of the sealing rings.

- When ordering, please state the article and order number on the type plate.
- Please contact us for more information (+31 (0)40 22 13 283) or check the website.

### Storage and disassembly

The device must be disposed of correctly at the end of its service life in accordance with local regulations.

## Terminology / abbreviations

SECE	Semi-automatic cleaning (Easy cleaning) Cleanflow magnet
Magnetic bar	Stainless steel tube, filled with a magnetic package
Magnet unit	Unit consisting of a row of magnetic bars containing magnetic packages, controlled with pneumatic cylinders.
Abrasive	Wearing by solid particles (granular). Wearing away of the surface by mechanical