

# GOUDSMIT

## MAGNETICS

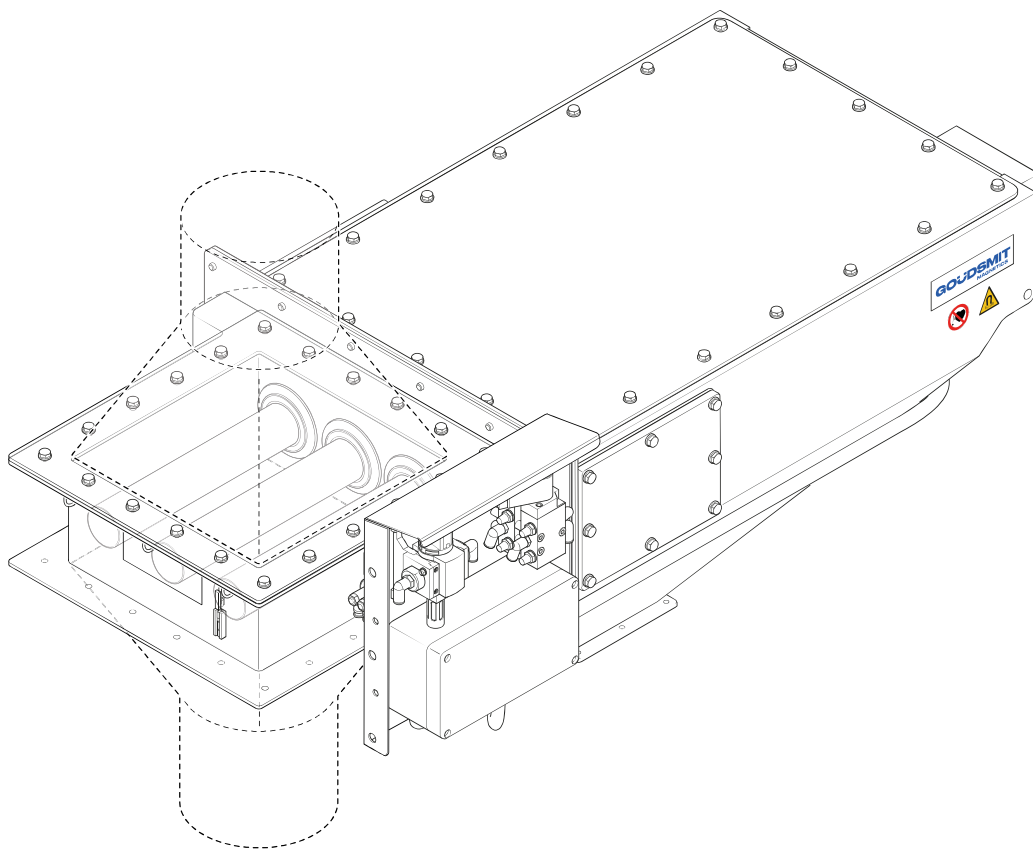
---

### **Installation- and maintenance manual**

Automatic cleaning Neoflux® EasyClean magnet,  
SECA series

Ferromagnetic filter with permanent magnet

---



Descriptions and drawings in this manual are used for explanation purposes and can differ from your version.  
The as-built drawing(s) of the ordered device are included.

---

**GOUDSMIT Magnetics Group B.V.**

Postbus 18 5580 AA Waalre

Petunialaan 19 5582 HA Waalre

Nederland

☎ +31 (0)40 221 32 83

[www.goudsmitmagnets.com](http://www.goudsmitmagnets.com)

[info@goudsmitmagnets.com](mailto:info@goudsmitmagnets.com)

---



## Disclaimer

© Copyright 2019 Goudsmit Magnetism Group B.V.  
All rights reserved.

## Version history

Version	Date	Description
1.0	09/2019	First version

## Foreword

This manual contains information for the correct installation 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 install and operate the device.

All information in this manual is based on the information that was available at the moment of delivery. We reserve the right to change or adapt our devices at any time, without obligation to adapt previously delivered devices accordingly.

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

In this manual, the EasyClean magnet is referred to as “device”.



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

## Table of contents

Disclaimer .....	2
Version history .....	2
Foreword .....	2
Table of contents .....	3
Safety .....	4
General safety instructions .....	4
In case of emergency .....	4
Damage by magnetic field .....	4
Norms and guidelines .....	5
Declaration of conformity .....	5
Guidelines .....	5
Occupational and public exposure limit values for (electro) magnetic fields .....	5
General information .....	6
Ferro-magnetism .....	6
Sale and warranty terms and conditions .....	6
Other remarks/warnings .....	6
Specifications .....	7
Function description .....	7
Scope of application .....	7
Use in food streams .....	7
Temperature .....	7
Supply voltage .....	7
Air pressure .....	7
Air quality (compressed air) .....	7
ATEX .....	7
Product information .....	8
Device overview .....	8
Scope of delivery .....	8
Type plate .....	9
Accessories .....	9
Magnetic bars .....	10
Transport and installation .....	11
Transport .....	11
Installation of the device .....	11
Preventing electrostatic discharge .....	12
Cleaning before use .....	12
Controlling the device .....	13
Connection box for integration into central control .....	13
Connection procedures .....	13
Pneumatic connection .....	13
Electrical connection .....	13
Cleaning cycle .....	14
Maintenance and inspection .....	15
Daily/weekly maintenance and inspection .....	15
Flux density measurement of the magnetic bars .....	16
Malfunctions .....	17
Service, storage and en disassembly .....	18
Customer service .....	18
Spare Parts .....	18
Storage and disassembly .....	18
Terminology / abbreviations .....	19

## Safety

This chapter describes the safety risks of the device. Warning decals can be found on the device where applicable. This chapter explains the meaning of these decals.



### **Know your decals**

- Carefully read the warnings and instructions on the decals of the device.
- Regularly check if the decals on the device are still present, intact and clearly legible.
- Keep the decals clean.
- Replace missing or illegible decals with new ones and make sure to put them in the same place.

## General safety instructions

- The instructions in this manual must be followed. If not, material damage, physical harm or life threatening situations may occur.
- The device may only be used to filter 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.
- The device is equipped with safety and shielding devices. Make sure all personnel working with or in the direct vicinity of the device are wearing sufficient safety equipment. Always leave all safety and shielding devices at their original location when it is not necessary to remove them.
- 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.
- The device may only be used remotely when all shields are installed and moving parts are not accessible.
- **Danger of crushing!** Do not clean or do any maintenance work while the device is still running.
- All work on the device must only be done by qualified personnel. Maintenance work should preferably be done by Goudsmit 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 your installation has the possibility to switch off the electrical and air supply to the device in case of emergency.

## Damage by magnetic field

The magnets create a strong magnetic field that attracts ferro-magnetic parts. Always use none ferro-magnetic tools and work benches with a wooden counter top and a none ferro-magnetic base. Do not bring any other ferro-magnetic 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.

## Norms and guidelines

### Declaration of conformity

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.

### Guidelines

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

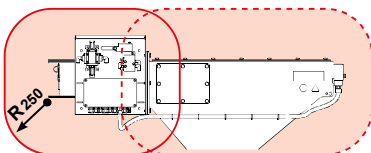
- Machine guideline 2006/42/EG;
- EMC guideline 2014/30/EU.

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

The limit values of magnetic fields are defined by the EMV-guideline 2013/35/EU as follows:

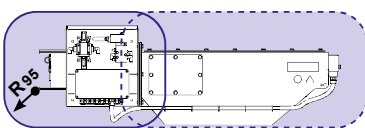
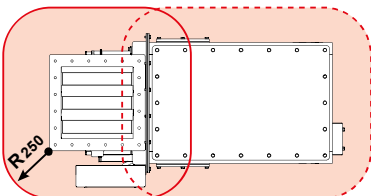
*Directive 2013/35/EU of the European Parliament and of the Council of 26 June 2013 on minimum health and safety requirements regarding the exposure of workers to the risks arising from electromagnetic fields.*

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



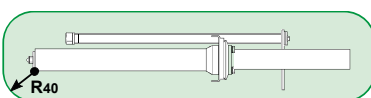
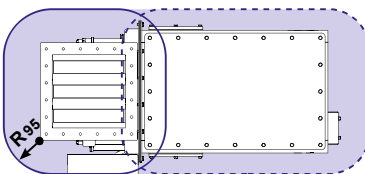
#### Life danger for persons with implanted medical devices

Persons with active implanted medical devices (i.e. pacemaker, defibrillator, insulin pump) must not enter within a radius "R" of **250 mm** from the device.



#### Damage to magnet sensitive objects

Objects which contain ferro-magnetic parts, such as bank, credit or chip cards, keys and watches can be irreparably damaged when they come within a radius "R" of **95 mm** from the device.



Pregnant personnel should keep a minimal distance of **40 mm** from the magnet bars.

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

## General information

### Ferro-magnetism

The principle operation of the device is based on ferromagnetism. Ferro-magnetism is the property that is possessed by certain materials, such as iron, cobalt and nickel. These materials can be magnetized when exposed to an externally applied magnetic field. Materials that remain magnetized after the external magnetic field has been removed are called permanent magnets or hard magnetic.

Most magnetic materials however, lose their magnetism after the external magnetic field is removed.

These are called 'weak magnetic'. Most alloys of iron, cobalt and nickel are magnetic.

However, some stainless steel alloys such as AISI304 or AISI316 are only weak magnetic.

### Sale and warranty terms and conditions

The sales terms and conditions are the '**General terms and conditions for the supply and assembly of mechanical, electrical and electronic devices**' (SE01), published by Orgalime in Brussels.

You can request these conditions in writing from Goudsmit Magnetism Group B.V., as mentioned in our written offer. This document also contains the warranty terms and conditions.

The device warranty is void if:

- service and maintenance are not done in compliance with the user manual or done by personnel that is not specifically trained for this purpose. Goudsmit Magnetism Group B.V. advises to have service and maintenance done by Goudsmit service mechanics.
- modifications are made to the device without prior written consent.
- parts of the device are replaced by none-OEM or none-identical parts.
- other lubricants are used than the prescribed lubricants for the device.
- parts of the device are damaged because the device is used with a (permanent) malfunction.



All parts subject to wear and tear are excluded from the warranty.

### Other remarks/warnings

- Do not use the device if this is damaged.
- Only use the device for the purpose for which it is designed.
- Check that all protective covers (including all safety circuits) are correctly fitted and installed.
- Make sure that the device is maintained correctly and in accordance with the instructions in this manual.

Fix any fault before using the device. If the device is used with the fault after you have carried out a risk assessment, warn the operator and maintenance personnel about the fault and the possible risks that may result from it.

## 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 can be used for free-flowing or poorly-flowing (e.g. oily) powder and granular products (up to 10 mm grain size) such as flour, sugar, coffee beans, plastics and ceramics.

### Use in food streams

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 non-metallic 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.

### Temperature

Suitable for ambient temperatures from -5°C to +40°C and product temperatures up to +60°C (40°C in ATEX environment) with standard Neoflux® magnets.

The device must be protected against higher temperatures than prescribed (refer to data sheet), because the magnet will permanently lose magnetic power when exposed to higher temperatures.

### Supply voltage

The supply voltage for the magnet valve and the (proximity) sensors is 24 V<sub>DC</sub>.

### Air pressure

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

### Air quality (compressed air)

Goudsmit Magnetic Systems B.V. advises to use compressed air of ISO 8573-1 (2:4:1) quality for the stream of food products.

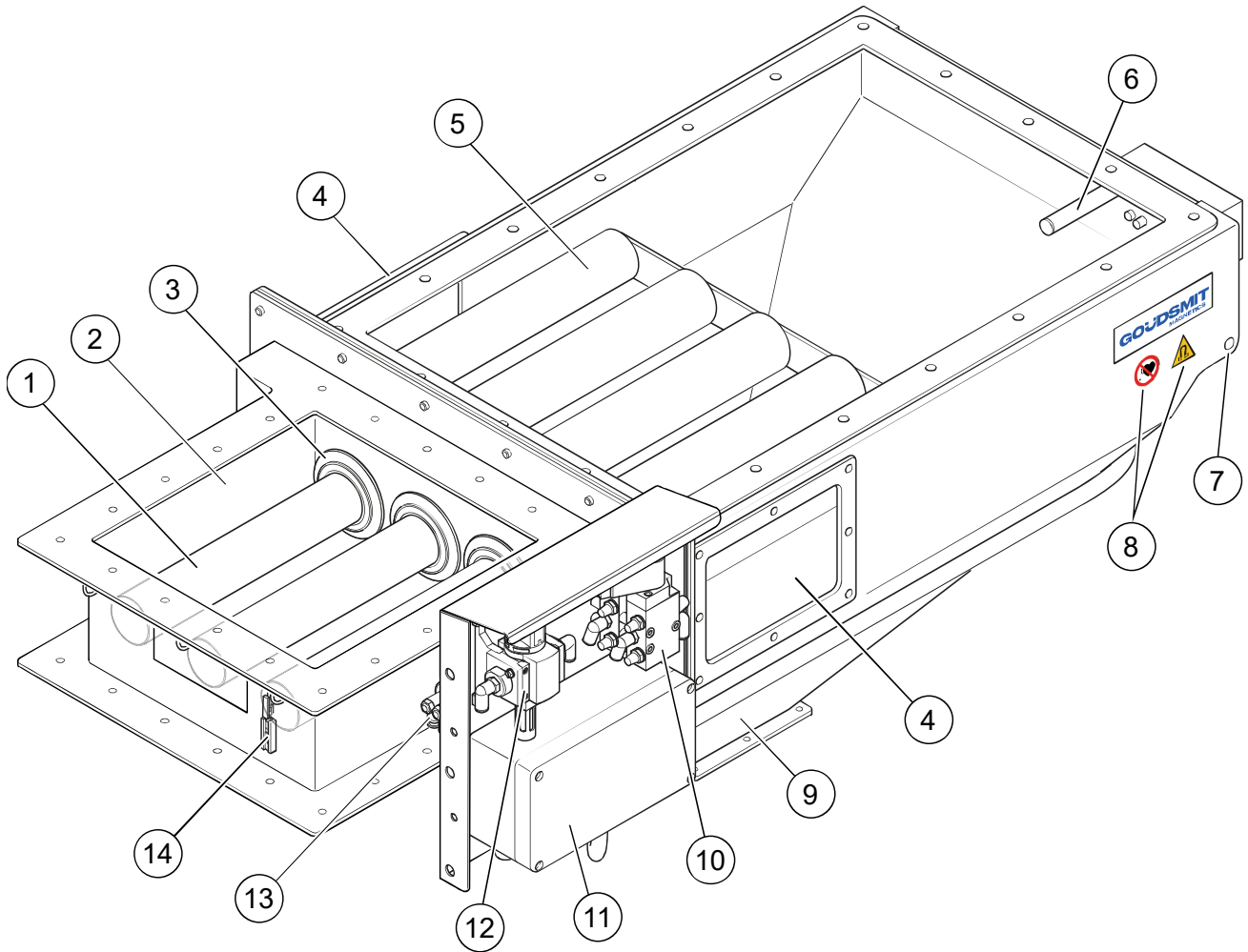
It is the responsibility of the user to choose the appropriate air quality for their specific product stream.

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 to another room.

### ATEX

The device is internally suitable for use in ATEX dust zones 20, 21 and 22 - externally suitable for use in ATEX dust zone 22. Special conditions apply.

**Device overview**



- |                     |                                 |  |
|---------------------|---------------------------------|--|
| 1. Magnet bar       | 6. Sensor drainage and cleaning | 11. Connection box (24 V <sub>DC</sub> ) |
| 2. Product tray     | 7. Support point                | 12. On/Off valve                         |
| 3. Sealing ring     | 8. Warning decals               | 13. Pneumatic cylinder                   |
| 4. Inspection hatch | 9. Drainage channel             | 14. Sensor production                    |
| 5. Magnet insert    | 10. Magnet valve                |  |

**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.



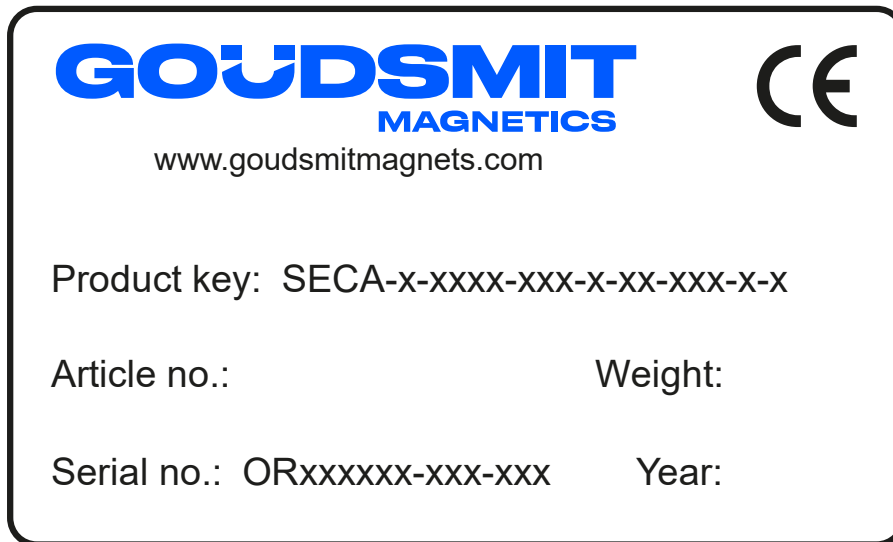
In case of damage or wrong delivery, immediately contact Goudsmit Magnetic Group B.V..



## 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 machine.

- ▶ Never remove the type plate.
- ▶ Always keep the type plate clean and legible.



Always mention the article and serial number when ordering spare parts, requesting service or in case of failure.

## Accessories

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

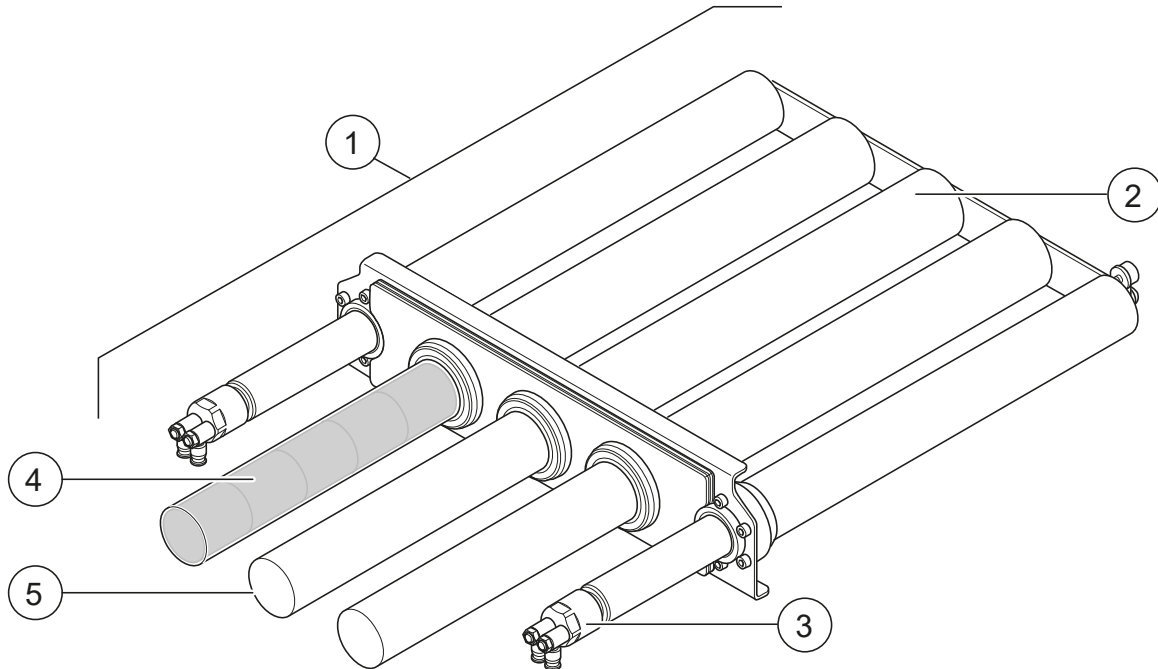
- ▶ For the website address, refer to the title page of this document.

## Magnetic bars



### Damage to magnetic bars

- ▶ Avoid heavy and/or large parts in your product flow. These can damage the tubes of the magnetic bars.



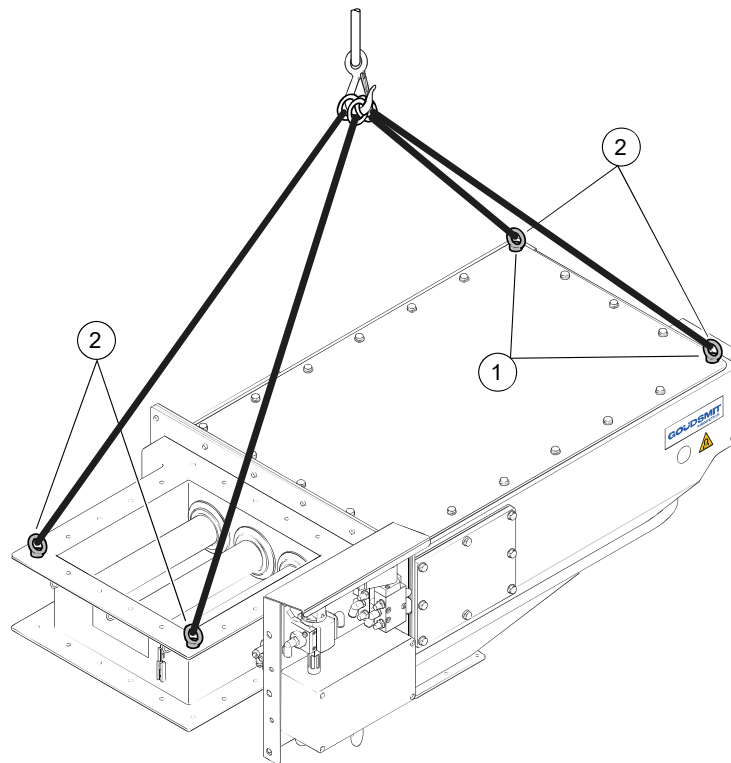
The magnetic insert (1) consists of a magnetic bar unit with 2 or more magnetic bars (2).

The magnetic insert is moved in and out of the product flow by pneumatic cylinders (3). In the magnetic bars, magnetic packages (4) move in a thin-walled tube (5). The wall thickness of the tube is 0.7 or 1.2 mm, depending on the version. Heavy and/or large parts in the product flow can cause dents in the pipes.

These can obstruct and/or damage the movement of the magnet package in the tube. Refer to paragraph "[Specifications](#)" for the maximum size of the particles that may be present in the product flow.

## Transport and installation

### Transport



#### Caution

Lift the device by lifting eyes. Take the centre of gravity into account.

- ▶ Danger of entrapment: do not put your hands inside the crate during lifting. Keep a minimum distance of 1 meter.
- ▶ Make sure that, during transport, the area surrounding the device is clear.
- ▶ 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:

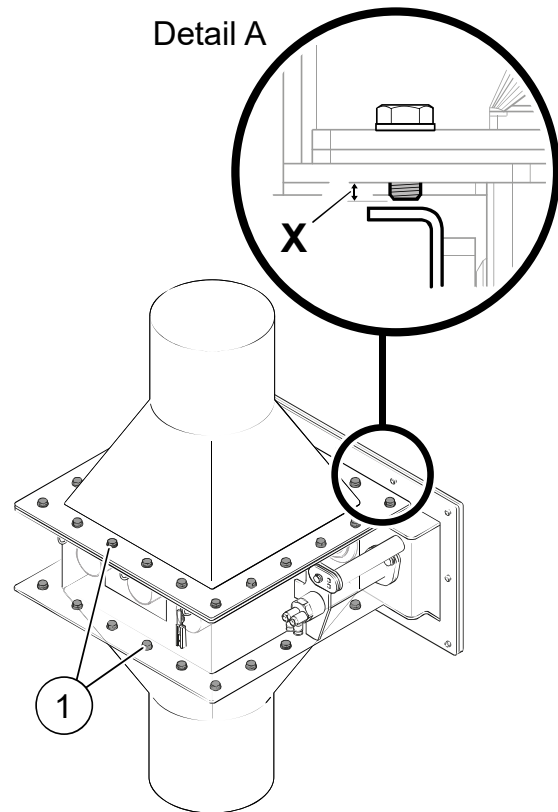
- Only allow qualified personnel to work on the installation.
- The product channels must be strong enough to carry the combined weight of the device and the raw product.
- Provide inspection hatches directly above or below the device to check for blockages in the product inlet or product outlet of the device.
- Shut off the compressed air supply with the on/off valve on the control panel while working on the unit.
- 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 magnetic insert. See chapter “[Safety](#)” for the precautions to take when working on the unit.

- ▶ The device is delivered in a wooden crate. Open the crate and remove the 2 bolts (1) on the corner of the device.
- ▶ Mount an M8 lifting eye at all 4 corners (2) of the unit. Use gloves and pay attention to the magnetic attraction of the tool.
- ▶ Lift the device out of the box evenly. Use lifting equipment that supports the weight of the device.
- ▶ Lift the device up and move it to the installation position. Preferably use lifting equipment depending on the size and weight.
- ▶ Install the device at the correct working height for the operating personnel. Make sure each corner is at the same height for proper alignment during installation.
- ▶ Tighten the bolts (1) in the flanges of the device to the inlet and outlet flanges of the product duct (see detail A). Incorrect alignment and/or loose fastening may cause leakage.
- ▶ Preferably place a support at the back of the device (see “[Device overview](#)”, pos. 7) to relieve the product channel. Depending on the situation, the support for the device can be standing or hanging.

### Caution!

To avoid leakage from the magnetic insert, let the bolts protrude a maximum of 5 mm below the flange (detail A, distance X).

- ▶ Only remove the lifting equipment with lifting eyes after the device is completely installed in the product channel.



### 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  $\Omega$ .

### Cleaning before use

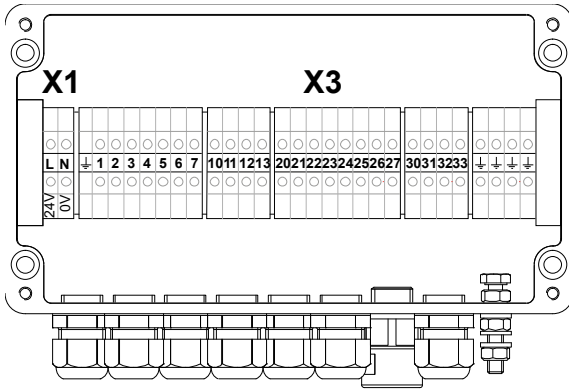
After installation of the device, clean it thoroughly. Use a detergent suitable for the product material to be filtered.

## Controlling the device

### Connection box for integration into central control



- ▶ Use the supplied electrical and pneumatic diagrams to connect the device.



The pneumatic and electrical control can be fully configured and controlled by your system. The cabinet shown is the connection box of the device.

The control of the device can be integrated into your own central control system. The device is then operated and controlled from, for example, your control room.

The coils on the pneumatic valves and the position sensors can be connected via the terminal strip in the connection box. For specifications, see the supplied electrical diagram.

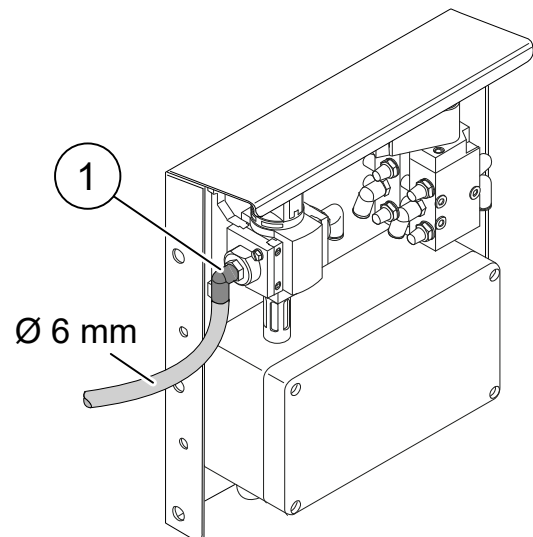
### Connection procedures

After the unit is installed, the compressed air and power supply must be connected to the unit to start it up.

#### Pneumatic connection

For air quality, see paragraph “[Air quality \(compressed air\)](#)”.

- ▶ Connect an air supply hose of at least  $\varnothing 6$  mm to the input connection (1) of the on/off valve.
- ▶ Bring the system up to pressure (max. 6 bar).
- ▶ Check if the device works correctly.
- ▶ Check all connections for air leakage.



#### Electrical connection

- ▶ Connect the electrical components to the central control unit and in the connection box according to the supplied electrical diagram.
- ▶ Connect your 24 V<sub>DC</sub> supply voltage to terminals X1-L, X1-N and ground (Pe) in the connection box.
- ▶ Connect the feedback of sensors S1, S2 and S3 to the central control via terminals X3-20 to 27.
- ▶ Connect the magnet insertion control valves and the magnetic bars to X3-30 to 33.

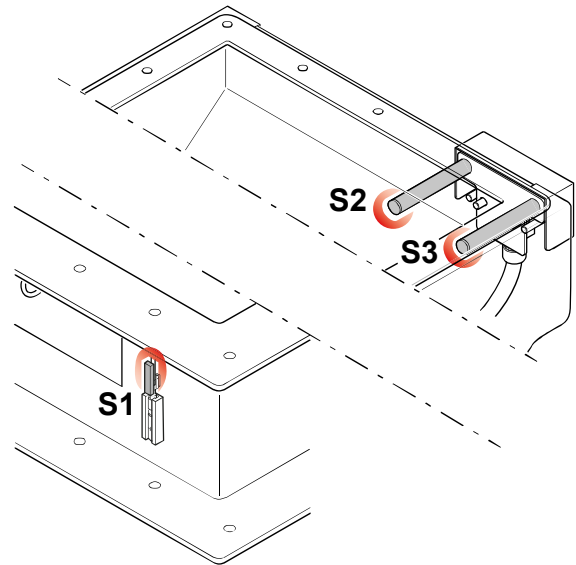
## Cleaning cycle

The cleaning cycle (and times) below is valid for 1 row of magnetic bars. You can adjust the time the total cleaning cycle takes. This cycle must be programmed in the central control system.

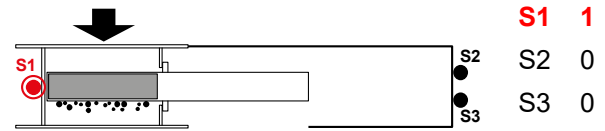


- ▶ Stop the product flow and make sure the product trough is depressurized before starting a cleaning cycle.

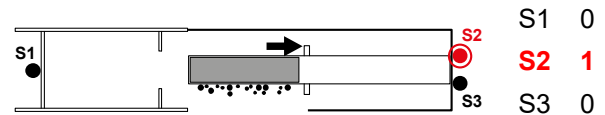
- **S1** = sensor Production mode
- **S2** = sensor Drainage mode (magnetic insert)
- **S3** = sensor Cleaning mode (magnetic insert)
- **1** = high (i.e. [S1] [1])
- **0** = low (i.e. [S3] [0])



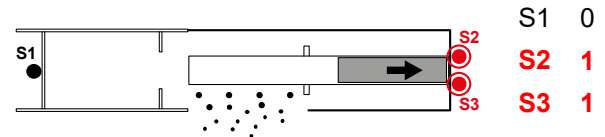
1. When the device is in operation (magnetic insert in the product chute) sensor **S1** will be "high" and sensor **S2** and **S3** will be "low"



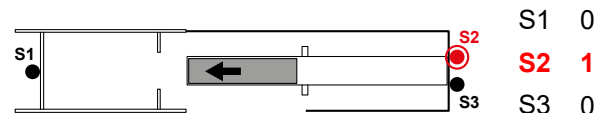
2. After the drain signal is given, the magnetic insert is moved to the drain position (duration 2 sec.). Sensor **S1** will be "low", the position of the drain sensor **S2** will be "high", but the solenoid cleaning sensor **S3** will still be "low".



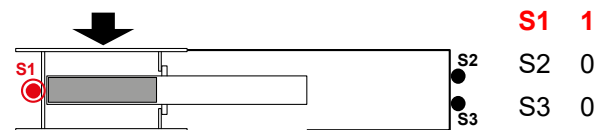
3. The magnetic package in the magnetic bar is moved to the other side of the magnetic bar (duration 10 sec.). The "caught" ferromagnetic parts fall into the drain channel. Sensor **S1** will be "low", but sensor **S2** and **S3** will both be "high".



4. After the discharge time (time duration  $\pm 30$  sec.) the magnetic package is moved to the other side of the magnetic bar (time duration  $\pm 10$  sec.). Sensor **S3** will be "low" again, but sensor **S2** will remain "high". Sensor **S1** will still be "low".



5. The magnetic insert moves back into the product chute (duration 2 sec.). Sensor **S1** will be "high", but sensor **S2** and **S3** will be "low".



## 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 Magnetic Systems B.V..

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

Goudsmit Magnetic Systems B.V. 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 via the on/off valve.
- Be careful with tools. Even when the power is off, the magnetic force is still present.
- During maintenance, place the magnetic insert on a non-ferromagnetic surface.

Magnetic systems attract ferromagnetic particles. These particles are removed during the cleaning of the magnetic insert (cleaning cycle). A small part of your product also "sticks" to the magnetic insert and in the drain channel. These particles are not removed with the cleaning cycle and must therefore be removed manually. A clean magnet works considerably better!

## Daily/weekly maintenance and inspection

- ▶ Always inform the operating personnel of planned inspections, maintenance, repairs or in the event of malfunctions.

### Exterior of device

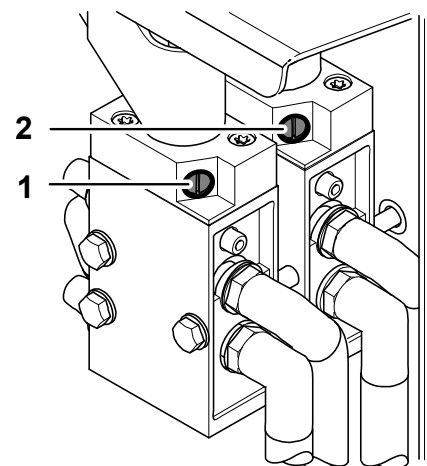
- ▶ Regularly check that all warning decals and the rating plate are in the correct place on the device. If the warning decals or the rating plate are lost or damaged, apply new decals to the original location immediately.
- ▶ Check that there are no faults on the outside of the unit (e.g. loose pneumatic line, inspection hatch not completely closed or not present).
- ▶ Make sure that the outside of the device is clean. Remove dust, dirt and parts on the device that do not belong there.

### Interior of device

- ▶ Check the sealing rings around the magnetic bars for wear and presence. If necessary, install new sealing rings.
- ▶ Check the tubes of the magnetic bars for wear.

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

- ▶ Regularly remove the trapped particles on the magnetic bar tubes to maintain maximum performance. For manual cleaning, take the following steps (also refer to "Cleaning cycle"):
  - Stop the product stream.
  - Make sure that there are no signals sent from the central operating system to the device.
  - Move the magnetic insert with the set screw [1] on the magnet valve to the drain position.



- Move the magnetic packages in the magnetic bars with the set screw [2] to the drain position. The ferromagnetic particles are released and fall into the sump via the drain chute or the drain.
- Stop the air supply on the magnet valves.
- Remove the cover plate from the drain channel.
- Remove any trapped particles on the magnetic bar tubes with a linen cloth or compressed air.
- Manually clean the inner walls from the drain channel with a linen cloth or compressed air.
- Put the cover plate back on the drain channel. Make sure that all bolts are hand-tightened.
- Put the air supply back on the magnet valves.
- Move the magnetic packages and the magnetic insert back to the production position using the setscrew [2] and [1] respectively.
- The product stream can be restarted.



Goudsmit Magnetic Systems B.V. offers an annual 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.

Follow these steps for a flux density measurement:

- Stop the product stream.
- Make sure that there are no signals sent from the central operating system to the device.
- Use the set screw [1] on the magnetic valve to move the magnetic insert to the drain position.
- Move the magnetic packages in the magnetic bars to the drain position with the set screw [2]. The ferromagnetic particles are released and fall into the sump or drain via the drain channel.
- Stop the air supply on the magnet valves.
- Remove the cover plate from the drain channel.
- 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.
- Put the cover plate back on the drain channel. Make sure that all bolts are hand-tightened.
- Move the magnetic packages and the magnetic insert back to the production position using the set screws [2] and [1] respectively.
- The product stream can be restarted.



It is also possible to include these steps in the operating software.



## 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 Magnetics Group B.V. customer service.

Malfunction	Possible cause	Remedy
<b>MAGNET MALFUNCTIONS</b>		
Magnet does not separate ferromagnetic particles or separates them poorly.	Magnetic bar is overloaded with ferromagnetic parts.	Clean the magnetic bar more frequently. Use a permanent magnet to check if the to be separated parts are ferromagnetic.
	Non-attracted objects are not ferromagnetic enough.	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.
	Ferromagnetic parts in the vicinity of the magnets reduce the Fe-separation capacity.	
Magnets are not in the right position.	Magnets are not all in the product gutter while the filter is active.	Check the sensor (the sensor in the product chute has an LED).
	Magnets do not go to the cleaning chute during the cleaning cycle.	Check the sensor.
<b>OTHER MALFUNCTIONS</b>		
Magnets do not move in their housing.	Dents in the magnetic bars.	Contact Goudsmit Magnetics Group B.V.
	Air pressure is too low or not available.	Repair or replace the air connection if necessary.
Leakage from product chute to drain chute in production mode.	Sealing rings worn.	Replace sealing rings.
Leakage from product chute to drain chute during cleaning.	Product gutter not pressureless.	Make product gutter pressureless
	Product flow not stopped.	Stop product flow for cleaning.

## 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.
- Time at which the problem occurred and any additional circumstances.
- Assumed cause.

## Spare Parts

Due to the quality of the products of Goudsmit Magnetic Systems B.V. 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.
- 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 replacing magnetic bars, we recommend replacing the (complete) magnetic insert.

When ordering, please state the article and serial number on the type plate.

Please contact us for more information (+31 (0)40 22 13 283).

## Storage and disassembly

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

---

## Terminology / abbreviations

SECA	Separating Easy Clean Automatic
Magnetic bar	Stainless steel tube, filled with a magnetic package
Magnetic insert	Magnetic unit consisting of a row of magnetic bars containing magnetic packages, possibly controlled with pneumatic cylinders.
PLC	Programmable Logic Controller
Abrasive	Wearing by solid particles (granular). Wearing away of the surface by mechanical movement such as friction, scraping or erosion.