

Version overview of standard manual

Version	Date	Description
1.0	07-2013	First saved version of the user manual derived from the English version of the SxFN user manual.
1.1	11-2019	New logo + small text changes
1.2	01-2022	Identification plate and ATEX description changed.
1.3	01-2025	Installation instructions added

Introduction

Read this manual and make sure that you fully understand its contents before commissioning and operating the device.

If you have any queries or require further explanation regarding any subject related to the device, please do not hesitate to contact GOUDSMIT Magnetic Systems B.V.

All technical information contained in this manual, together with any relevant drawings and technical descriptions we supply, remain our property. It may not be duplicated or disclosed without our prior written permission.

The user manual can be ordered together with the device description and/or the article number as well as the order number

- This manual and the declaration by the manufacturer are part of the device.
- They must remain with the device, even if it is sold.
- The manual must be made available to all operators, service technicians, and others who work with the device throughout its life cycle.

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General

This manual contains information for the correct operation and maintenance of your device. It also contains instructions for avoiding possible injury and serious damage and it allows a safe and as trouble-free functioning of the product as possible. Read this manual thoroughly before putting the device into operation, familiarise yourself with the operation and control of the device and follow all instructions precisely.

- *The data published in this manual is based on the available information at the time of delivery. This is issued subject to later amendment.*
- *We retain the right to amend or modify the construction and/or model of our products at any time whatsoever without any obligation to modify any previously supplied products accordingly.*

Ferromagnetism

The working principle of the device rests on (Ferro)magnetism.

Ferromagnetism is the basic mechanism by which certain materials such as iron cobalt and nickel can get magnetized when exposed to an externally applied magnetic field. Materials that remain magnetized after the external magnetic field is removed, are called permanent magnets. Most magnetic materials lose their magnetism after the external magnetic field is removed. Most alloys of iron, cobalt and nickel are magnetic. However, some stainless steel alloys like AISI304 or AISI316 are only slightly magnetic.

Because in most cases it will be Fe parts that will be Ferro-magnetically influenced, we will use the term 'Fe' in this user manual when we mean ferromagnetic material.

Conditions of supply and guarantee

The conditions of supply are the “**General Conditions for the supply and erection of mechanical, electrical and electronic products**” (SE01), published by **Orgalime**, in Brussels.

These conditions can also- if desired – be requested by writing to GOUDSMIT Magnetic Systems B.V., as also mentioned in our written quotation.

The guarantee prescriptions are mentioned in these conditions.

The guarantee on your equipment will be void if:

- Service and maintenance are not performed in accordance with the instruction manual or by servicemen who are not especially trained to do the work. We strongly recommend that specific magnetic service and maintenance be carried out by GOUDSMIT Magnetics personnel).
- Modifications are made to the equipment without our prior written permission.
- Non-original parts or non 100% exchangeable parts are used.
- Lubrication products other than those prescribed are used.
- The equipment is used injudiciously, incorrectly, negligently or not in accordance with its intent and/or purpose (see chapter “Intended use / user instructions”).

All parts that are subject to wear are excluded from the guarantee.

Remaining remarks / warnings

- Use the device only for the application for which it has been designed (see chapter *"Intended use / user instructions"*).
- Use the device only when it is in technically perfect condition, and ensure that all protective hoods or inspection covers, including all safety circuits, have been fitted and installed in the correct manner.
- Ensure that device maintenance is appropriate and in accordance with the instructions provided in this user manual.
- Any eventual faults, in particular those that may influence safety, should be attended to immediately and remedied before renewed operation. Should you, after estimating the risks of an unsolved fault, still think it is safe to keep the device into operation, then warn the operators and maintenance staff of these faults and the danger(s) caused by these faults.

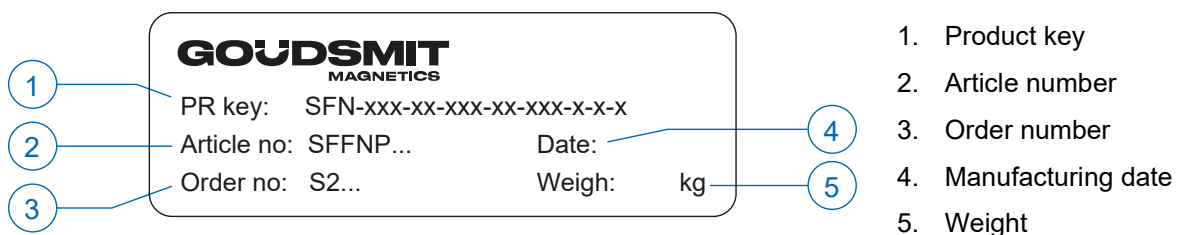
Delivery
General
Check the shipment immediately on delivery for:

- Possible damage and/or shortcomings as a result of transport. If so, ask the transporter to draw up a transport damage report.
- Completeness of the delivery/deliveries, the absence of anything (additionally) ordered.

Always immediately contact GOUDSMIT Magnetic Systems in the event of any damage and/or mistaken delivery.

Identification data

The device has an identification plate with identification data as shown below.
 The identification data is very helpful for maintenance and spare parts of the unit.
 Always keep the type plate clean and legible.



Safety

This chapter describes the safety risks of your device. Where necessary, warning pictograms are attached to the device. This chapter clarifies the meaning of these pictograms.

Regularly check that all warning pictograms are still present and legible, and clean if necessary. Make sure that new pictograms are applied at their correct locations if they have been lost or damaged. Before installing the device, record where the pictograms were originally placed.

General

The device is provided with safeguards where necessary. Make sure every person who comes in contact with the device, wears adequate personal protection (overalls, safety glasses, hearing protectors, helmet, steel-toed safety shoes etc.).

Areas of the device considered dangerous are marked with warning pictograms.

If the device remains easily accessible to persons, then extra safety precautions (e.g. fencing) must be installed. When safeguards are not possible, make sure clear instructions are given to people using the device.

Danger of magnetic field

The magnets generate a powerful magnetic field that strongly attracts ferromagnetic (Fe) materials. Always take into account that these materials may suddenly be drawn towards the magnet, very powerfully. This applies to steel workbenches and steel tools, but also to Ferromagnetic materials carried on your person, such as coins in your wallet or your keys. Make use of non-magnetic tools and workbenches fitted with a wooden worktop and preferably a non-Fe frame (for instance stainless steel).



People fitted with pacemakers should on no account enter the magnetic field (within a radius of **1 metre**).



Prohibited for people with pacemakers!



Credit cards, chip cards, computer disks/tapes, computer screens, watches, etc. may be damaged or destroyed if they enter the magnetic field (within a radius of **0.5 metre**).



Danger for magnetic cards!



Always be aware that Ferromagnetic parts will be attracted -- even personal items - if you are closer than **0.3 metre** to a magnet.



Danger - strong magnetic field!

General public and pregnant personnel should keep a minimal distance of **0.25 metre** from the magnet.

Device description**Intended use / user indications****Products**

The device is suitable for filtering small ferromagnetic* (Fe) impurities - for example wear particles - from liquid mixtures and powders in pressure lines up to 10 bar. Particle size up to 10 mm, such as flour, sugar, soy, spices, plastics, etc.

The device is NOT suitable for in product streams that are too sticky and/or poorly flowing, or for raw materials with a particle size of more than 10 mm.

Fe particles

Suitable for filtering Fe particles from **0.03 to 2 mm**, depending on the type of magnet. See product specifications for exact values.

The product must be free of iron or other parts that can cause damage to the magnet bar tubes (e.g. dents/bumps). If necessary, mechanical sieving is recommended.

If even smaller or soft magnetic (e.g. stainless steel) Fe particles need to be filtered, this can be achieved by using even powerful Neoflux® magnets!

Temperatures

Suitable for ambient temperatures from -10°C to +40°C and product temperatures up to max. +140°C or higher, up to 200°C with special high temperature magnet material, dependant on the magnet type.

The magnet is to be protected against higher temperatures than prescribed, because the magnet might **lose magnetic force permanently** when exposed to high temperatures.

Free space

Make sure that there is enough free space around the magnetic filter to perform and ease the cleaning, inspection and maintenance operation, and for mounting / dismounting of the magnet bars. See also the added drawings in the appendices.

Pressure

The operating pressure in the product channel must be less than 10 bar.

The device is tested with a test pressure of 15 bar as standard. See data sheet for exact values.

Noise level

Vibrations

The magnet is to be protected against strong external vibrations, because the magnet might **lose magnetic force permanently** and or the brittle ceramic magnet material might break.

*ferromagnetic: see chapter General/**Ferromagnetism**

Cleaning

Minimum 2x per day cleaning (Fe disposal) of the device is advised or more / less when the magnet bars catch very much / just a little Fe. Clean magnets provide an optimal magnetic filtering. Also it prevents Fe accumulation on the magnet bar tubes and the problems that can be caused by that. So, make sure you clean more than you think is necessary, to achieve a satisfactory result of the magnet device.

For dirt cleaning, see chapter **Maintenance**

Deliverable specials**High product temperatures**

For higher temperatures, up to 200 °C, there is the possibility of using other magnet material than the standard Neoflux® magnets inside the magnet bars.

Abrasive products

If you have an abrasive product, we can supply the magnet bars and /or inside housing with a protective coating, like for instance a tungsten carbide coating.

Use in FOOD product flows

The magnetic filter can be adapted so that it can be used satisfactory in your specific food flow. It's standard execution already is delivered in gap-free SS AISI316 or AISI316L, but can be made in combination with other – for instance prescribed or delivered by customer – food improved materials. Surface treatments like electrolytic polishing, staining, etc. are naturally possible.

Additional measures are often necessary, if the filter is used in Food product flows

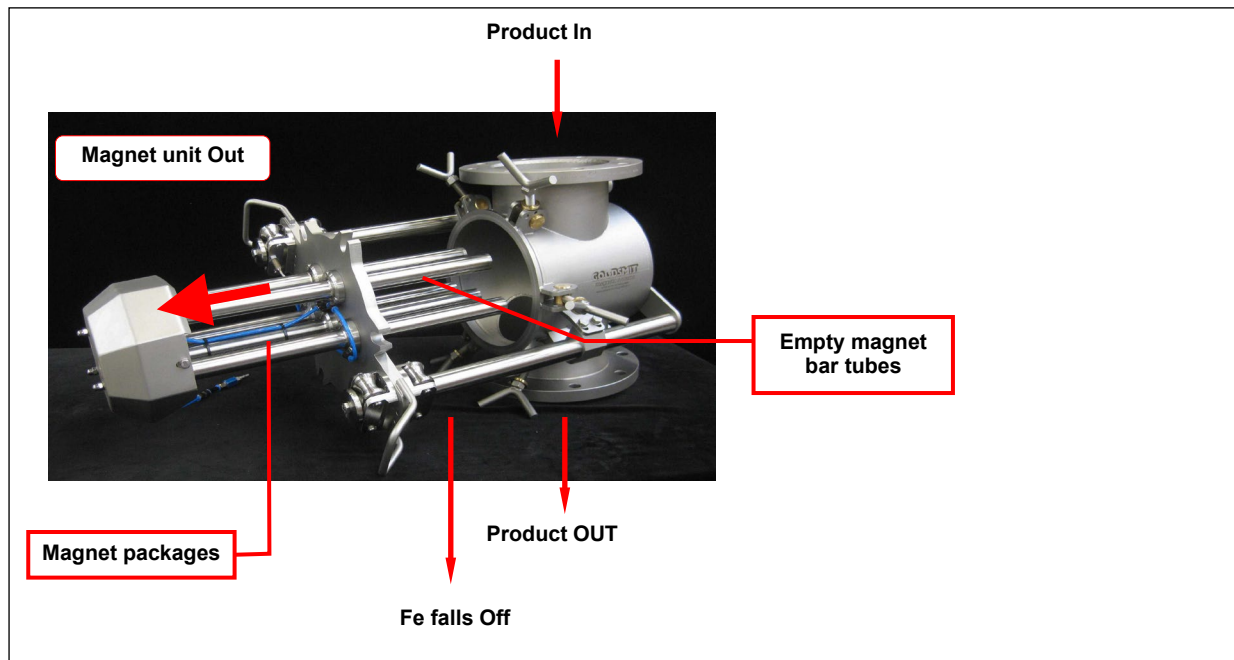
ATEX (if applicable)

The mechanical construction of the standard device is free from its own ignition sources and therefore does not fall within the scope of ATEX Directive 2014/34/EU. The full explanation is described in the ATEX Declaration of Exclusion.

If components are assembled or installed that do not bear an Ex marking, then the components may render the assembled unit unsuitable for use in ATEX dust zone 22. See specifications and nameplate(s) for correct Ex coding.

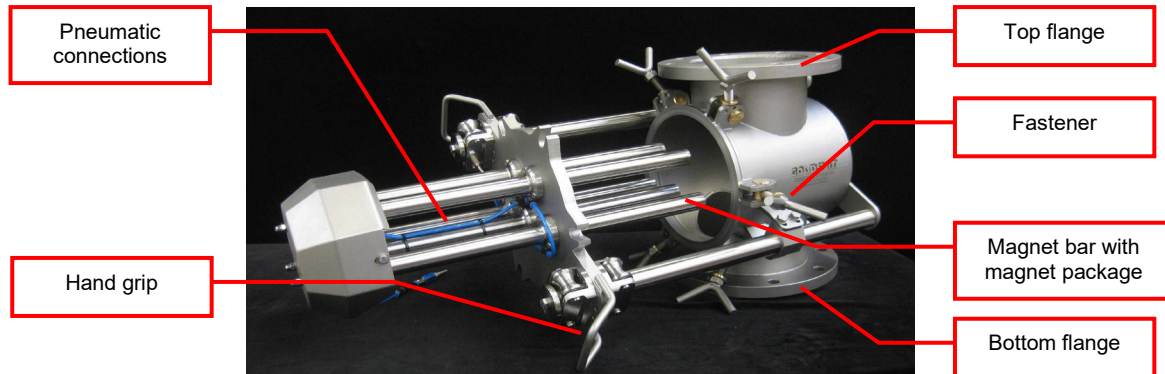
It is your own responsibility to take the correct measures when using in Ex dust zones, such as timely cleaning for the presence of thick dust layers, and appropriate grounding of the magnetic device.

Working principle



Drawing: Cleaning of magnetic filter

- GOUDSMIT magnetic filters are able to remove ferromagnetic (Fe) particles of only 30 microns in size from fluids and powders transported under pressure. The filters have a wide range of applications like the foodstuffs, pharmacy, and ceramic industry, but the principle is always the same. The powerful Neoflux® magnet bars penetrate deep into the product so that they retain even the smallest Fe particles. The bars can be removed from the product flow for cleaning by pulling out the magnet unit.
- Hygienic magnetic filters are specially designed to meet the exacting demands of the foodstuffs industry. They are polished extra smooth on the inside (also the weldings) and have no nooks and crannies.
- In the product channel **several Neoflux® magnet bars** are placed.
- These magnet bars are tubes with a **magnet package** inside.
- The product always passes at least 1 magnet bar very closely.
- The Fe containing material will be attracted by the magnets and will "cling" onto the magnet bar tubes, while the filtered product flows further.
- The Fe will stay on the tubes until it is removed. This can be done by pulling out the complete magnet unit and the pneumatic system will automatically push the magnet packages out of the magnet bar tubes. Then simply wipe the Fe particles off.

Construction

Drawing: magnetic filter, quick-cleaning type

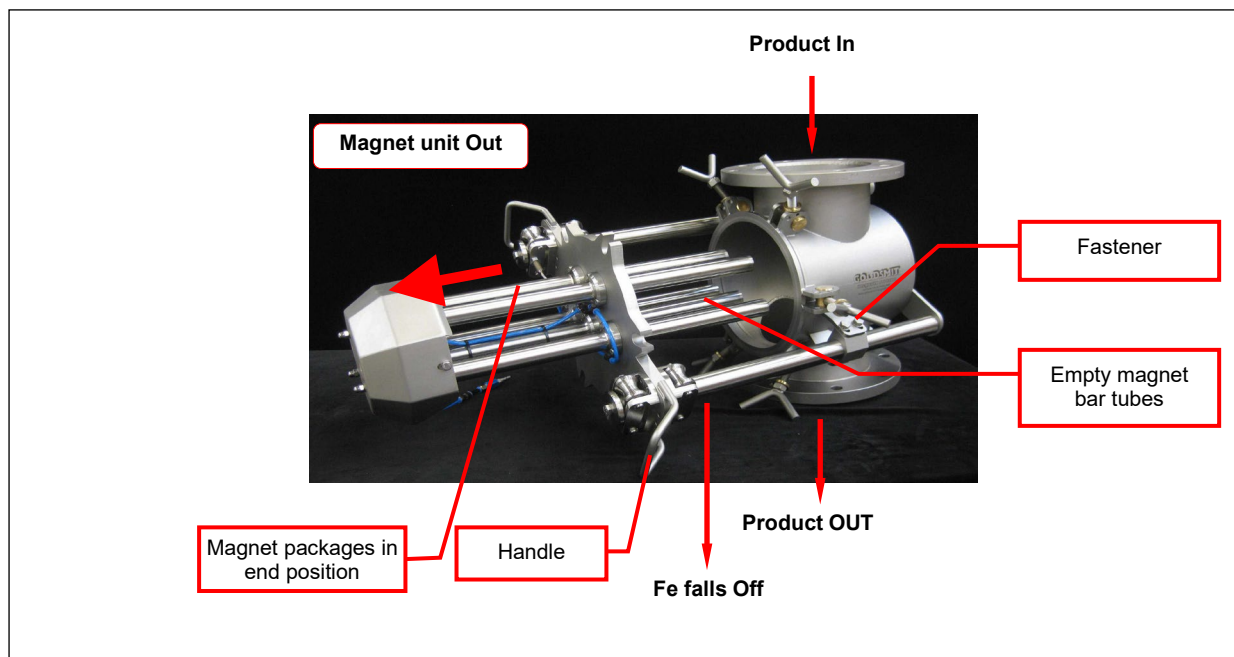
- The magnetic filter standard has **flanges with bolt holes** for easy mounting in your product channel.
- The magnetic filter has several **magnet bars**, placed in a way that the product flow, contaminated with Fe parts, will always pass minimum 1 bar very closely, while flowing through the magnet filter.
- For cleaning the Fe from the magnet unit, the complete magnet unit has to be taken out the product channel. This can be done by loosening the **fasteners** that clamp the magnet unit to the housing.

Magnet bar cleaning

Minimum 2x per day cleaning (Fe disposal) of the device is advised or more / less when the magnet bars catch very much / just a little Fe. Clean magnets provide an optimal magnetic filtering. Also it prevents Fe accumulation on the magnet bar tubes and the problems that can be caused by that. So, make sure you clean more than you think is necessary, to achieve a satisfactory result of the magnet device.

More cleaning, see chapter [Maintenance](#)

Pay attention to personal dangers / wear protective clothing, glasses, shoes, hand gloves!



Drawing: Magnetic filter, quick-cleaning type

Cleaning / iron discharging sequence

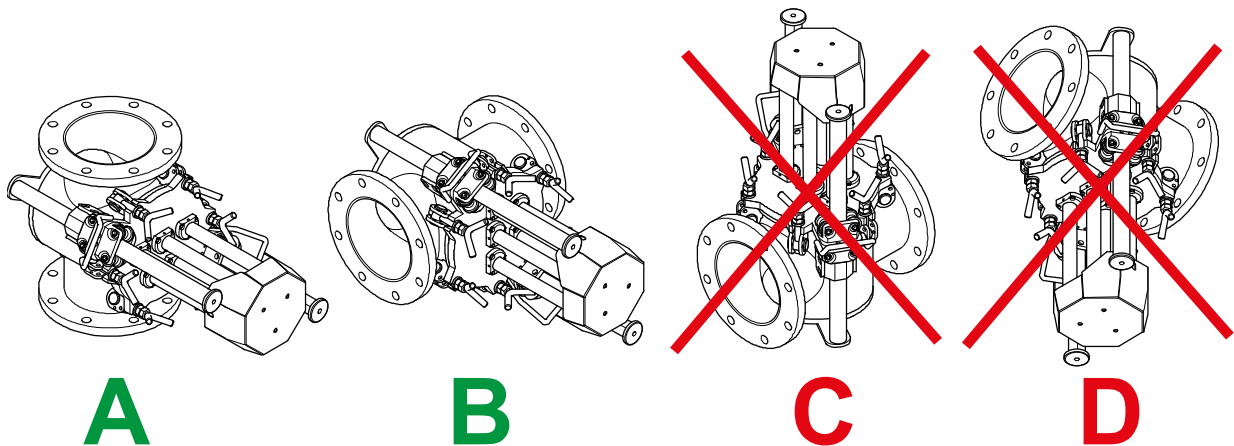
1. Stop the product flow.
2. Loosen the screw connections (fasteners) of the magnet unit.
3. Slide the complete magnet unit out of the housing as far as possible using the handles.
4. The magnetic packages are now pneumatically pushed out of the magnet bar tubes to the end position.
5. Catch the ferrous particles that now will fall off the tubes and dispose them.
6. Wipe clean all parts with a soft cloth and - if necessary - a suitable cleaning fluid.
7. Slide the complete magnet unit back into the housing. The magnetic packages are now pneumatically pushed into the magnet bar tubes in the production position.
8. Re-tighten the screw connections (fasteners).
9. Restart the product flow.

Installation**Transport and placing procedures**

- Clear the area under the magnet during lifting and transport.
- Bolt the joints / flanges of the device tightly to the inlet and outlet joint / flange of your product channel. Improper alignment and loose assembly may cause leakage of raw product.
- Ensure that the product channels are strong enough to support the weight of the magnetic filter and raw product in it. Reinforce them when necessary.

The weight of the device is stated on the identification plate.

- Install the magnetic filter in a well reachable height for the operators when possible. A suitable height eases the working, cleaning and Fe disposal process.
- Work safely; make sure there is enough working space, use proper scaffolding, lifting devices, ladders and other help materials, so the device can be lifted, transported and installed without safety risks.

Mounting instructions

The standard installation of this magnetic filter is in a vertical pressure line (A).

The magnetic filter can also be installed horizontally (B). However, the housing must then be fitted with an additional drain at the bottom. After the product flow is stopped, the residue must be drained before the magnetic filter may be opened.

Horizontal installation as indicated in situations C and D is not permitted.

Magnet bar protection

The magnetic filter has fragile magnet bar tubes. The tubes have a small wall thickness, which has the advantage of ensuring a high grade of Fe separation. Disadvantage is that large, heavy Fe and/or other parts in the product flow can easily create bumps in the tubes.

Ensure that large, heavy parts are filtered out of your product flow before it passes the magnetic filter!
Advise: place a sieve (filter) in front of the magnetic filter!

See also chapter [Maintenance](#)

Damage to the magnet bar and or magnet bar tubes and/or damage caused by damaged tubes (when used) is not covered by guarantee.

Gasket material / grounding

To prevent the build-up of static electricity, make sure there is metal bridge between the magnetic device / product channel and the installation. The completed installation must also be grounded.

Start-up**Before start-up, make sure that:**

- The device or the installation has no damages or malfunctions.
- All connections (electrical, mechanical, pneumatic) have been made properly.
- The device or the installation is placed and situated correctly.
- All protective covers (if applicable) have been fitted correctly.
- That all objects larger than 10mm are blocked from entering the product channel.
- The device is thoroughly cleaned, internally and externally.
- The product does not fall into the magnet device, from a greater height than 10 meters.
- There are no other sources of danger present.

During start-up, make sure that:

- The device or the installation has no damages or malfunctions.
- All other parts of the device or installation function as described.

Maintenance

Magnetic systems attract dust and ferromagnetic (Fe) particles. Therefore, regular cleaning of the system is necessary. A clean magnetic system works significantly better than a heavily soiled magnetic system.

- All parts are best cleaned with compressed air and/or soft cloths. It is also possible to deep clean with special cleaning fluids that do not damage the materials.
- It is important to regularly check that the type plate and warning pictograms are in the correct positions on the device. If the type plate or pictograms are no longer present, they must be reattached in the correct positions.
- Always inform operating personnel regarding planned inspections, maintenance, repairs or if attending to breakdowns. The instruction should be given to a competent supervisor.

Magnet bars

- As a following of the passing product (abrasive or not) and the Fe contamination the magnet bar tubes can wear out sooner or later.

Wear as a following of abrasive product can be reduced by coating the outside bars, with for instance tungsten carbide. Please contact GOUDSMIT Magnetic Systems for advice.

- During maintenance and or cleaning one has to be careful with the magnet bars to prevent them from getting damaged.
- Heavy parts (Fe or product), may hit the bar in a way that bumps occur. The bumps will possibly block the movement of the magnet packages inside the stainless steel tubes and so damage the magnet material, or damage the magnet material underneath the stainless steel protection bushes or tubes.

When a magnet bar or tube is damaged it has to be replaced by another (spare) one immediately to prevent further damage to the magnet bar. The damaged magnet bar tube can be sent to GOUDSMIT Magnetic Systems for repair/revision.

Replace magnet bar tubes


- Send the complete magnet bar to GOUDSMIT Magnetic Systems.
- Dismount the damaged magnet bar by loosening the bolt in the end plate. Send the magnet bar to GOUDSMIT Magnetic Systems.

Cleaning & ATEX

To prevent explosion risk, avoid dust clouds and the build-up of dust layers.

If dust particles or layers heat up they may ignite and burn. This in turn can ignite airborne dust clouds and cause an explosion.

Malfunctions/Service

	CAUTION!
	<p>Improper handling of the magnet device may lead to damages. Potential damage to body and or property!</p> <ul style="list-style-type: none"> Any repair to GOUDSMIT magnet devices may be performed by qualified personnel only. Be aware that permanent magnets attract ferromagnetic material with great force when it gets in reach of the magnetic field → danger of getting jammed! Consult GOUDSMIT MAGNETIC SYSTEMS service.

Malfunctions

In case of malfunctions, consult the following table in order to determine the cause of the malfunction and its possible remedy. In case a specific malfunction can't be found in the table, consult the GOUDSMIT Magnetic Systems service.

Malfunction	Possible cause	Possible remedy
Magnet does not separate ferromagnetic (Fe) particles out of the product flow, or separates them badly	Magnet bar is overloaded with Fe parts	Clean the magnet more often of caught Fe parts
	Not-attracted objects are not ferromagnetic	Check if particles to be separated are ferromagnetic, using a permanent magnet
	Ferromagnetic parts close to the magnet reduce the magnetic field strength	Check if there are ferromagnetic parts close to the bar. If so try to replace the ferrous construction by a non-magnetic one, like aluminium or wood
Magnets do not move in the tubes any more or move badly	Tube is dented	Take bar out and replace it
	Too much Fe on tube(s)	Clean magnet bars more often
	Fe or other parts between magnet bar(s) tube(s)	Clean magnet bars and tubes inside
Large filters with guidance:		
Magnet unit moves bad or not at all over the supporting guidance	Dirt on guidance bars and or roller wheels	Clean guidance bars and or roller wheels
	Semi-automatic types: <ul style="list-style-type: none"> Air pressure is low or off Defect cylinder(s) or valve(s) Mechanical actuated valve does not get (correctly) activated 	<ul style="list-style-type: none"> Reactivate or raise air pressure Repair or replace cylinder(s) and or valve(s) Make sure the valve gets activated, so the 2nd stage get correctly activated

Customer service

Please have the following information available if you require customer service assistance:

- Identification plate (complete)
- Type and extent of the problem
- Time the problem occurred and any accompanying circumstances
- Assumed cause.

Spare parts

As a result of the robustness and quality of GOUDSMIT Magnetic Systems products the device possesses high operational reliability.

When however a specific component requires replacement, the correct component can be ordered by quoting the type number stated on the identification plate or on one of the drawing(s) added to this user manual in the added data sheet.

The spare parts are mostly wear parts, such as:

- magnet bar tubes,
- sealing(s),
- guidance rollers (guidance comes with large filters),
- pneumatic parts.

We advise to have one or more spare parts in stock when proven necessary!

Following mutual consultation GOUDSMIT Magnetic Systems will arrange rapid and correct delivery.

Storage and dismantling

Storage

If the device will not be used for a long period of time, we advise to store the device in a dry, safe place and to conserve fragile and/or sensitive parts.

Dismantling / scrapping

On scrapping and/or disposal of the device's parts separately, take into account the different nature and dangers of the components (magnets, iron, aluminium, electrical parts, insulating materials, etc.) and ensure safe disposal. Preferably entrust the task to a specialised company, and always observe the local regulations in regard to disposal of industrial waste.