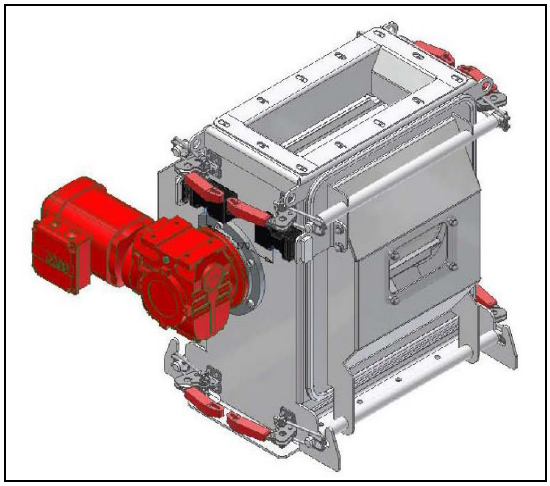
GOUDSMIT MAGNETICS

Assembly instructions and user manual

DRUM MAGNET IN HOUSING, Series SxTK… / RDxx …

Fe separator with permanent magnet

Suited for separation of ferromagnetic (Fe) parts out of granulates and powders



The descriptions and pictures in this manual, used for explanation, may differ from your machine.
We have enclosed the as-built drawing of the delivered machine.

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CE

Disclaimer

Revision history

Version	Date	Description
1.2	05-2000	First version of the English version of the user manual.
2.0	01-2004	Complete renewed version of the manual.
2.1	12-2006	Revisions page added. Atex remarks added.
2.2	10-2009	Specification sheet and declaration by the manufacturer separated from manual
2.3	03-2010	Food grade Neoflux® drum magnet type added.
2.4	01-2012	Revision of manual.
3	12-2018	Update manual, processed revisions native English (SB).

Introduction

Read this manual and make sure that you fully understand its contents before commissioning and operating the machine.
If you have any queries or require further explanation regarding any subject related to the machine, please do not hesitate to contact **GOUDSMIT Magnetic Systems B.V.**
(+31 (0)40 2213283).

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

Table of contents

General

This manual

This manual contains information for the correct operation and maintenance of your machine. It also contains instructions to prevent possible injury and serious damage and it ensures the safest and most trouble-free operation of the machine.
Read this manual thoroughly before putting the machine into operation, familiarize yourself with the operation and control of the device and follow all instructions precisely.

- *The data published in this instruction manual is based on the information available at the time of delivery.*
- *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 is based on ferromagnetism.

Ferromagnetism is the property that certain materials possess, such as iron cobalt and nickel. Those materials can become magnetized when exposed to an externally applied magnetic field. Materials that remain magnetized after the external magnetic field is removed are called permanent magnets. Those materials are called ‘hard magnetic’.
However, most magnetic materials lose their magnetism after the external magnetic field is removed. Those materials are called ‘soft magnetic’.
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 ferromagnetically influenced, we will use the term ‘Fe’ in this user manual when we mean ferromagnetic material.

Terms and conditions of sale and warranty

The terms and conditions of sale are the **'General conditions for the supply and erection of mechanical, electrical and electronic products' (SE01)**, published by ***Orgalime*** in Brussels.
You can request a copy of these terms and conditions by writing to Goudsmit Magnetic Systems B.V., as mentioned in our written quotation.

The aforementioned document also contains the warranty terms and conditions.

The warranty on your equipment will be void if:

- Service and maintenance are not performed in accordance with the instruction manual or are performed by personnel who are not specially trained to do so.
  Goudsmit Magnetic Systems B.V. recommends that service and maintenance be performed by Goudsmit service technicians.
- Modifications are made to the equipment without our prior written permission.
- Parts are replaced with non-OEM or non-identical replacement parts.
- 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 section 'Intended use / user instructions').

All parts that are subject to wear are excluded from warranty!

Remaining remarks / warnings:

- Use the device only for the application for which it has been designed (see section "Intended use / user instructions").
- Use the device only when it is in technically perfect condition, and make sure 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

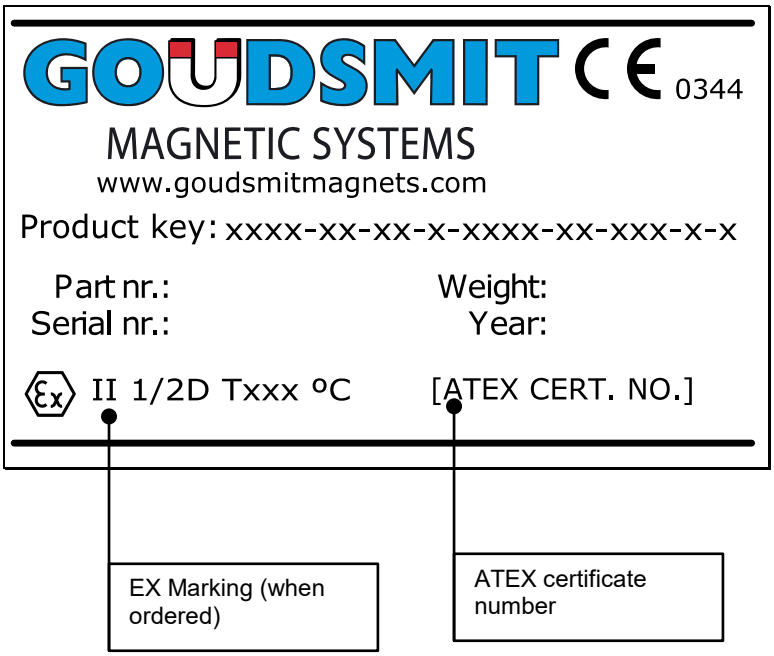
Check the shipment immediately on delivery for:

- Possible damage and/or shortcomings as a result of transport.
  If damaged, ask the carrier to provide a transport damage report.
- Completeness of the delivery. Make sure nothing is missing, particularly anything extra you may have ordered.

Always immediately contact **GOUDSMIT Magnetic Systems B.V.** in the event of any damage or mistaken delivery.

Identification plate

On the device you will find an identification plate as pictured below.
Information on this plate is of great importance when service is required.
We therefore recommend that this plate never will be removed.
Keep it clean and legible!



Don't forget to make note of both the Serial Number and the Item number in case of breakdowns or delivery of spare parts.
If your identification plate is damaged, contact us and we will send you a replacement

ATEX Markings (if applicable)

When the equipment is suitable for use in potentially explosive atmospheres (ATEX) the type plate will feature an Ex Marking specifying the specific device category and other criteria that the equipment satisfies.

- Code example:  II 1/2D c T120°C Da/Db
- Explanation:

II ➔ explosion group (I is underground mining, II is other)

1/2D ➔ Equipment Category (Ignition protection level: 1 = very high, 2 = high, 3 = normal)

Equipment category	1D	2D	3D
Suited for ATEX zone(s)	20 (21, & 22)	21 (22)	22

1D inside device / 2D outside device

c ➔ Type of Ex protection

c = constructional safety

t = protection by enclosure

h = non-electrical equipment (protection method not specified further)

T120°C ➔ Maximum surface temperature
Da/Db ➔ Equipment Protection Level (EPL).

EPL	Da	Db	Dc
Suited for ATEX zone(s)	20 (21, & 22)	21 (22)	22

Da inside device / Db outside device

Ta ➔ Ambient temperature range; only displayed when the range deviates from the standard temperature range for ATEX of -20 … +40°C

If the device is externally certified, then the ATEX certificate number is added to the type plate. Next to the CE mark the identification number of the Notified Body that certified our ATEX quality assurance system is displayed.

In case the equipment contains no ‘own ignition sources’ and therefore is not under scope of the ATEX Directive, then the equipment will not get an EX marking and wil be supplied with a Statement of Exclusion, in which this is stated and also the EX zones are listed in which it can be safely used.

ATEX explosive zone measures

- If the device has been ordered for use in a potentially explosive area, make sure that no higher surface temperature arises then permitted by ATEX.

  The ATEX marking on the Goudsmit identification plate only applies to the product produced by Goudsmit Magnetic Systems B.V.

  Make sure no particles > 10 mm are present in the product flow.
  These can damage the magnet or extractor bars or cause impact sparks.
  If necessary install a mechanical filter (sieve) before the separating equipment!

- The ATEX certified magnetic device requires additional purchase parts to be certified to the ATEX Directive. This includes control units, connection box(es), switch(es), sensor(s) and pneumatic parts, etc. Make sure that these are fitted by qualified personnel!
- If the device is placed in storage or has a longer standstill, make sure the device is emptied and cleaned.
- The device must be grounded, if a gasket is used between the device and the larger installation. Attach a metal strip between the housing of the device and the installation, to make sure the device is grounded.
- All screw connections inside the device must be secured against loosening.

  The ATEX purchase parts are provided with their own ATEX markings.

Safety

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.

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 dust explosion

If this device is made according to an EX dust category (1D/2D/3D, acc. to ATEX equipment directive 2014/34/EU) it can accordingly be used in a dust zone (20/21/22, acc. to ATEX workplace Directive 99/92/EC). The Ex category is then described on the identification plate.

! *Make sure that the device complies to the correct explosion category*.

Danger – dust explosion!
(no sticker on device)

Also check if **the identification plates of mounted parts** show the correct Ex-category for the Ex zone in which the device will be used.

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).

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

Danger - strong magnetic field!

! People fitted with pacemakers should on no account enter the magnetic field (within a radius of at least 1 meters).

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 at least 0.5 meter).

Danger for magnetic cards!

Danger of being caught by moving parts

The only rotating part on the outside of the drum magnet is the rotating axle end. Do not wear or bring any loose clothing and or materials which may be caught by the rotating axle. Shut down the motor during maintenance or cleaning process. The safety pictogram is put on nearby the flange in which the drum axle is hung.

! Do not stick any of your body parts through any open hatches of the Drum Magnet during the operating device.

Danger – being clamped by moving parts

Danger of high voltage

When installing and electrically connecting the device, make sure the activities are performed by qualified personnel.

! *Switch off the electrical power supply before performing activities to the device!*

Danger – Risk of an electric shock!

Always use the main power switch (on the control box) to switch off the installation in the event of a dangerous situation.
Do not restore power until the dangerous situation has been resolved!

Device description

Intended use / user indications

Products

To be used for Fe separation out of powders and granular products such as blasting grid, cocoa and coffee beans, sugar, cattle feeds, fish food, animal meal and ceramic granulates. Also for short-wire products, such as shredded car tires.

Not to be used in (moist) product that is sticky and/or badly flowing

Fe parts

Suited for product flows with Fe particles of **X mm** and larger ➔ see specifications App. A

Temperatures

Suited for:

- Outside temperatures of -20 °C to +40 °C
- Product temperatures up to +60 °C (Neoflux® magnets) or +100 °C (Ferrite magnets).

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 approximately 1 meter of free space around the device to perform and ease the inspection and maintenance operation.

Noise level

The noise level of the device is less than 70 dB at delivery. Should it become higher, then the device has to be checked on a breakdown immediately.

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.

The only vibrations caused by the device are forced by the rotating magnet drum. The product channel in which it is placed has to be stiff enough to damp out the (relatively small) forces of the moving drum with caught Fe parts.

Cleaning

Minimum once per day cleaning of the device is advised for an optimal magnetic separation and to prevent dirt accumulation on the magnet drum and the problems that can be caused by that. Clean magnets have the best Fe separation result. So, make sure you clean a little more than you think is necessary, to achieve a satisfactory result of the magnet device.

For more dirt cleaning: see section Maintenance.

Deliverable specials

High temperatures

When one wants a strong magnetic drum magnet in a hot surrounding (> 80° C for Neoflux® and > 100° C for ferrite), then the standard magnets cannot be used. For product and or surrounding temperatures up to 150 °C there is – for instance - the possibility of using special high temperature Neoflux® magnets. For even higher temperatures other magnet material can be a solution.

Abrasive products

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

Use in FOOD product flows

The drum magnet product channel (or even complete housing + magnet drum) can be executed in gap-free SS AISI304 or AISI316, or in combination with other – for instance prescribed or delivered by customer – food improved materials. Surface treatments like electrolytic polishing, staining, etc. are possible.

Also, we have a special Neoflux® food grade type added to our product range.

ATEX

The drum magnet is standard not to be used in ATEX zones according **EU Guideline 2014/34/EU**. When suited for ATEX, then the ATEX marking is always stated on the Goudsmit identification sticker. The marking on this sticker is only for the parts, produced by Goudsmit, but one can assume that the marking is for the overall device as well. The built-in or built-on components that carry their own marking should have the same or higher ATEX marking as the Goudsmit marking.

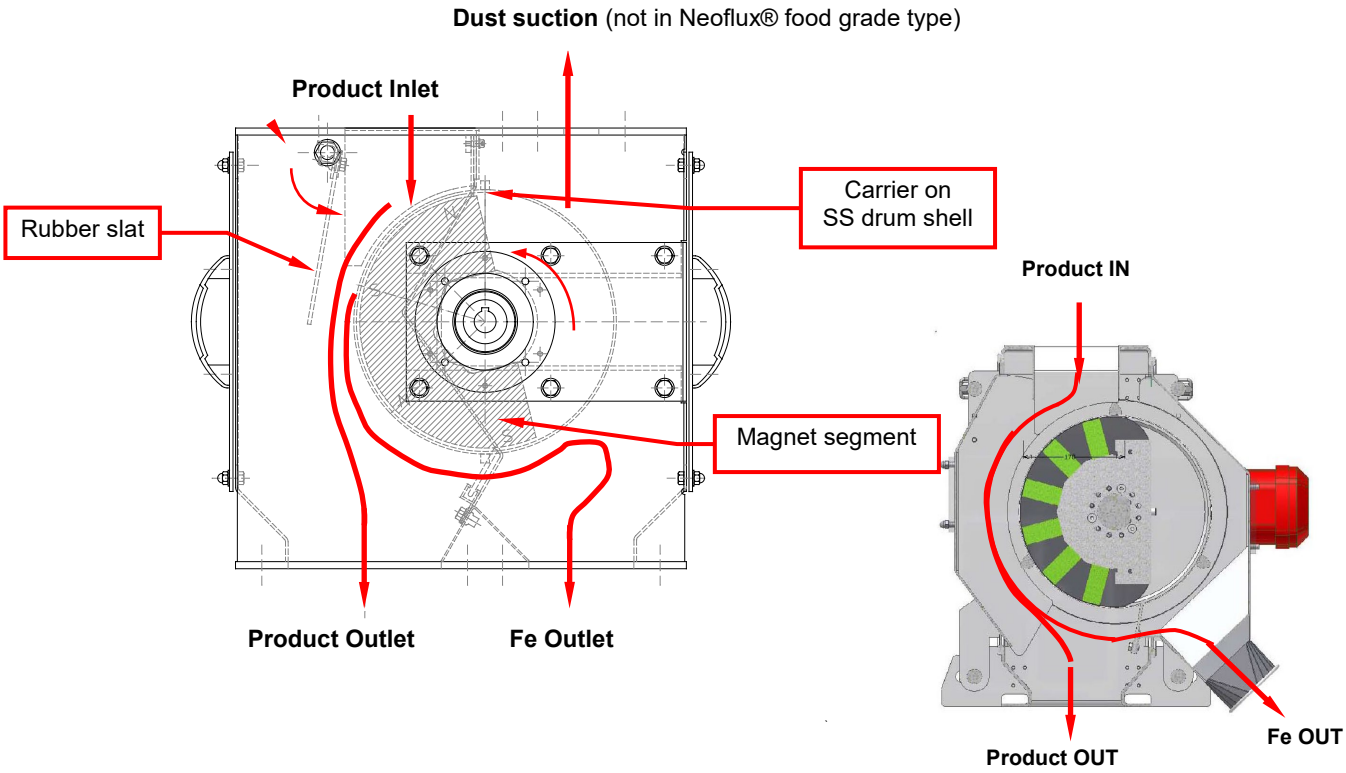
When components are built-on or built-in to ATEX devices, they should be of the same or higher ATEX marking as the Goudsmit marking, stated on the identification sticker.

When using the magnet device in an ATEX zone, it is the users own responsibility to take the right measures, like in-time cleaning to prevent thick dust layers, suited grounding, electric spark prevention and air-blow prevention.

Read this manual thoroughly for ATEX measures.

Principle of operation

The principle of operation is the same for all drum magnet types:



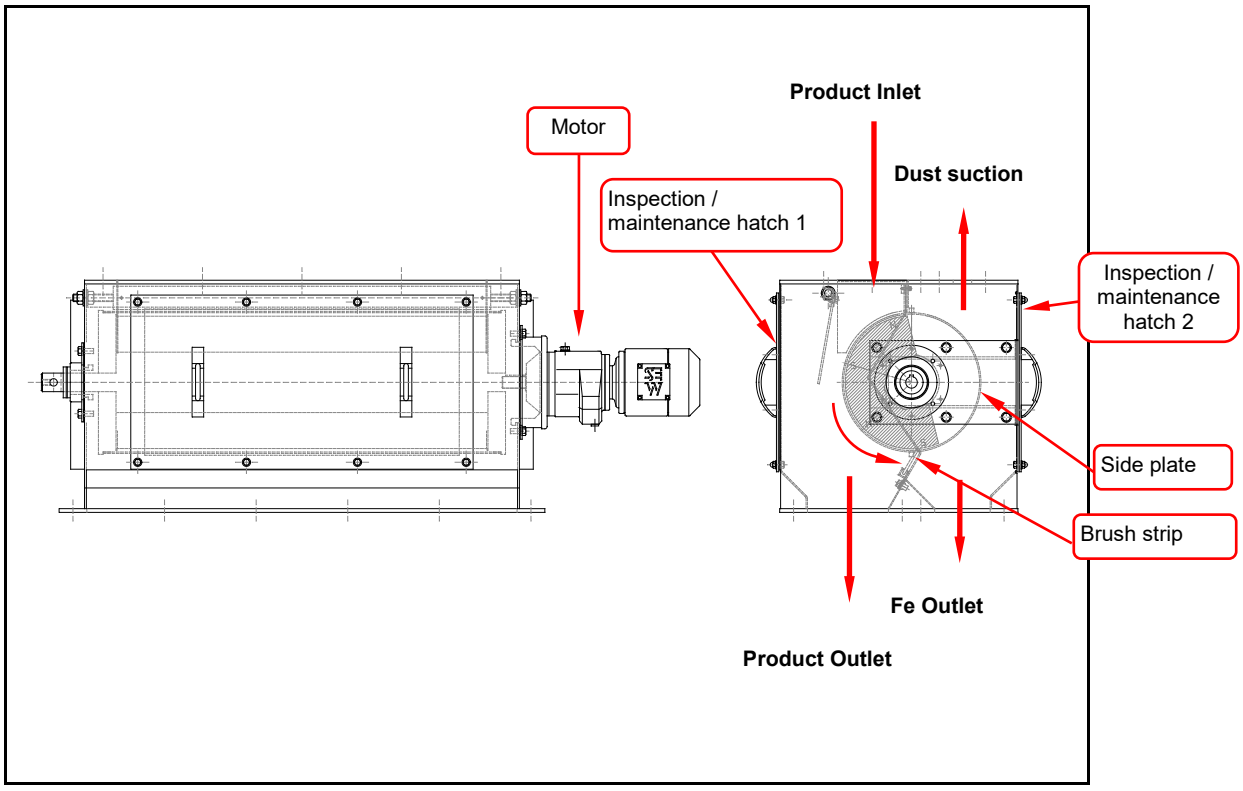
Drawing: Working principle of standard drum magnet

Neoflux® drum magnet in food grade

- The drum consists of a stationary **magnet segment** and **a stainless steel non-magnetic shell**. The drum shell is driven by a motor and resolves in the product. The magnet segment is stationary. The Fe objects are attracted through the stainless steel shell and “stick” to the casing. The product, which is non-magnetic, is not attracted and falls straight through to the bottom. The Fe objects are transported to the non-magnetic part of the drum. Here the - no longer attracted - Fe objects will fall off the drum, into the **Fe outlet**. To ensure that the Fe objects are pushed out of the powerful magnetic field several **carriers (ribs)** are welded to the casing.
- Raw product – contaminated with Fe – reaches the drum shell through the **product inlet**.
- An adjustable **rubber slat** distributes the incoming raw product as close as possible towards the drum shell. The rubber slat position can be adjusted from the device’s outside, by loosening the 2 nuts at the outside housing and then rotating it towards or from the magnet.
- The filtered product leaves the device through the **product outlet**.
- A **dust suction opening** can be used to suck away dust clouds inside the housing.

Construction drum magnet

Standard drum magnet

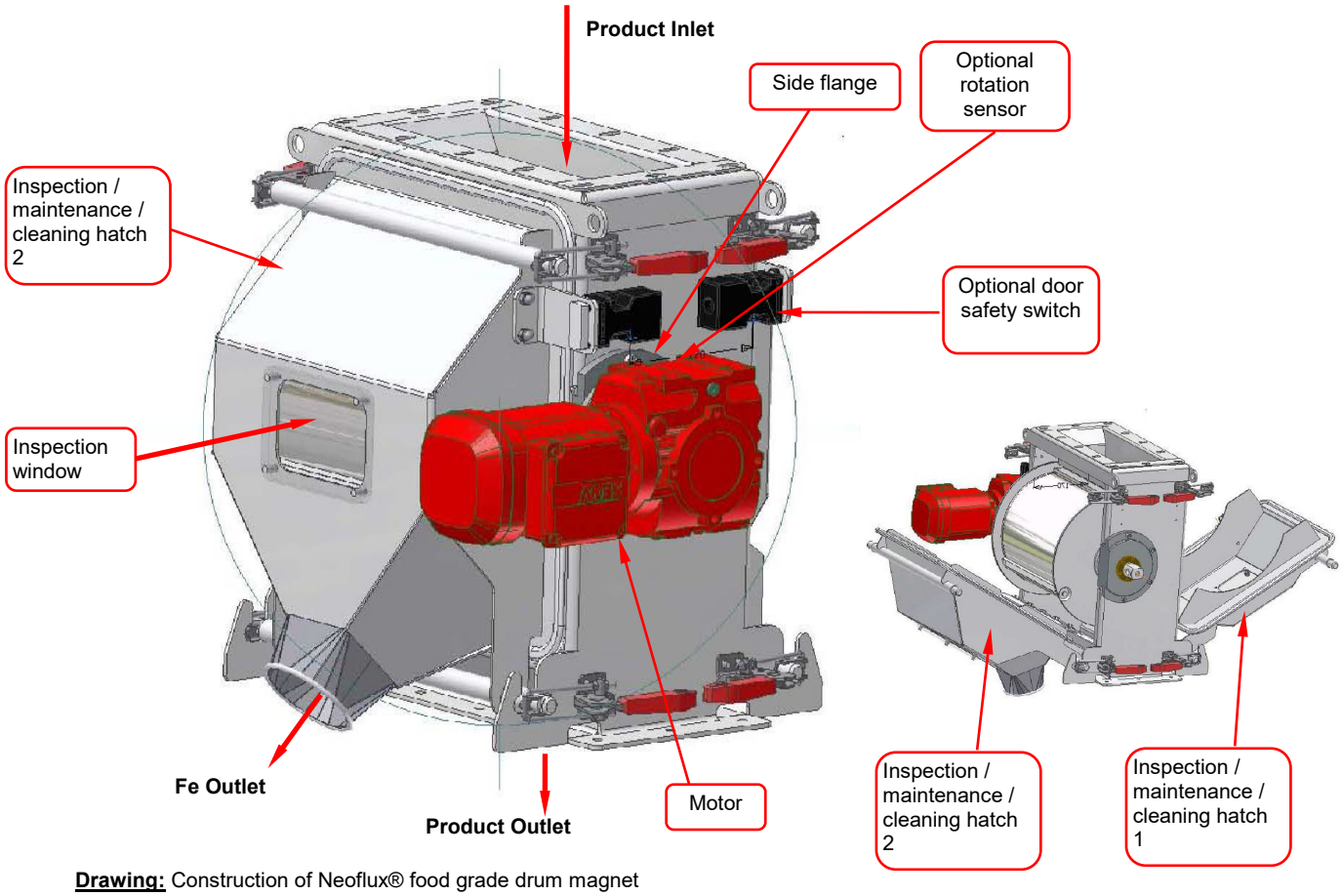


Drawing: Construction of standard drum magnet

- The Drum Magnet is to be connected to your equipment by the **product inlet flange** and the **product outlet flange** (*make your construction stronger if it is too weak!*).
- The top flange has a **dust collection** opening – with flange holes – on top of which you can mount a vacuum suction device.
- The bottom flange has an **Fe outlet** opening – with flange holes.
- By opening **inspection hatch 1** you can inspect the drum's product side.
- A **brush strip** between the product outlet and the Fe outlet 'sweeps' off most unwanted non-magnetic parts from the shell and also works as a 'dust curtain'.
- By opening **inspection hatch 2** and the 2 **side plates**, the drum can be dismounted and taken out in case of any failures / breakdowns.

➔ *for dismounting the drum: see section 'Drum magnet assembly'.*

Neoflux® food grade drum magnet



Drawing: Construction of Neoflux® food grade drum magnet

- The Drum Magnet is to be connected to your equipment by the **product inlet flange** and the **product outlet flange** (*make your construction stronger if it is too weak!*).
- The **Fe outlet** is situated at the side and has a Jacob flange connection.
- The 2 **inspection/maintenance/cleaning hatches** can be fully taken away, thus opening the complete sides of the drum magnet, making inspection, cleaning and maintenance very easy to do.
- A **brush** between the product outlet and the Fe outlet 'sweeps' off most unwanted non-magnetic parts from the shell and also works as a 'dust curtain'.
- By opening **maintenance hatch 2** and loosening the bolts of the 2 **side flanges**, the drum can be dismounted and taken out in case of any failures / breakdowns.

➔ *for dismounting the drum: see section 'Drum magnet assembly'.*

Magnet construction

In standard execution, the magnet drum is fitted with both ferrite (Ferroxdure) and the 3 times more powerful Neodymium (Neoflux®) magnets. The Neoflux® magnets ensure an extra high magnet value on the drum. The Ferroxdure magnets increase the working depth of the magnetic field. An ideal combination!

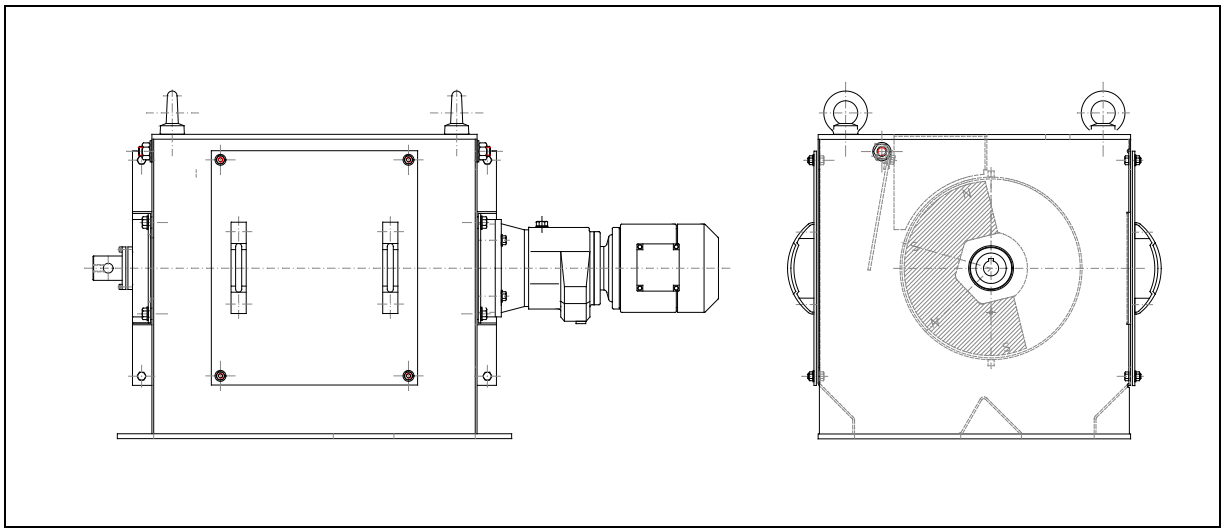
In food grade execution, the complete magnet system is powered with Neoflux® magnets, for most powerful magnet configuration.

Installation

Placing, transporting or moving the magnet

The drum magnet must always be lifted on all 4 lifting lugs!
Mount these lifting lugs only onto the 4 corners of the top flange.

Take the position of the centre of gravity into account. This is *not* in the middle / centre of the device, but closer to the motor side of the magnet.

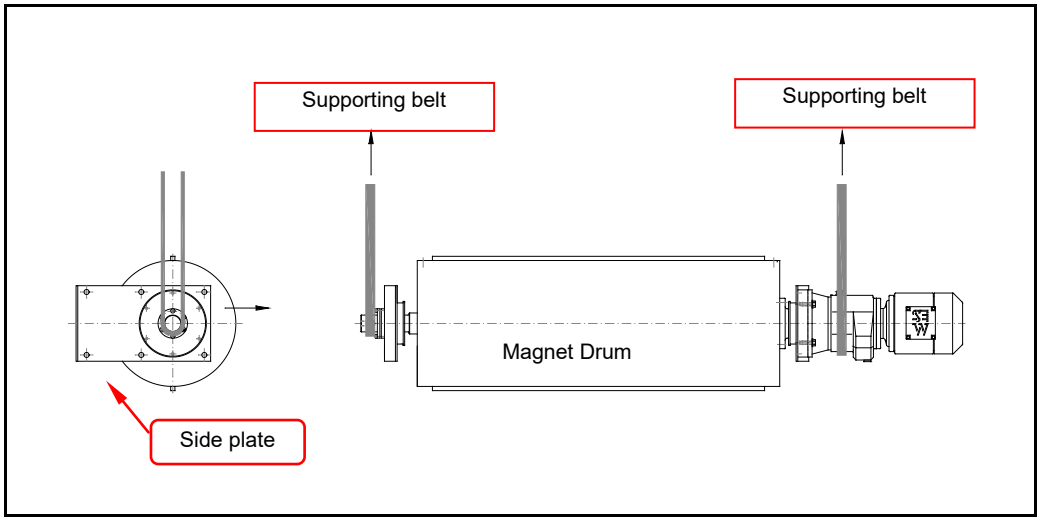


Drawing: Mounting the 4 lifting lugs

- Use only lifting/hoisting and transport equipment that is in good condition and never exceed the safe working load of the equipment being used.
- Avoid shocks during transport
- Work safely, ensure sufficient working space and use stable and reliable scaffolding, ladders and other auxiliary equipment to ensure that the device can be installed without risk.
- Be sure your channel construction is strong enough to safely carry the weight of the drum magnet.

The weight is stated on the *identification plate/sticker/etching,* which is placed on the device housing.

Drum (dis-)assembling



Drawing: Magnet drum lifting

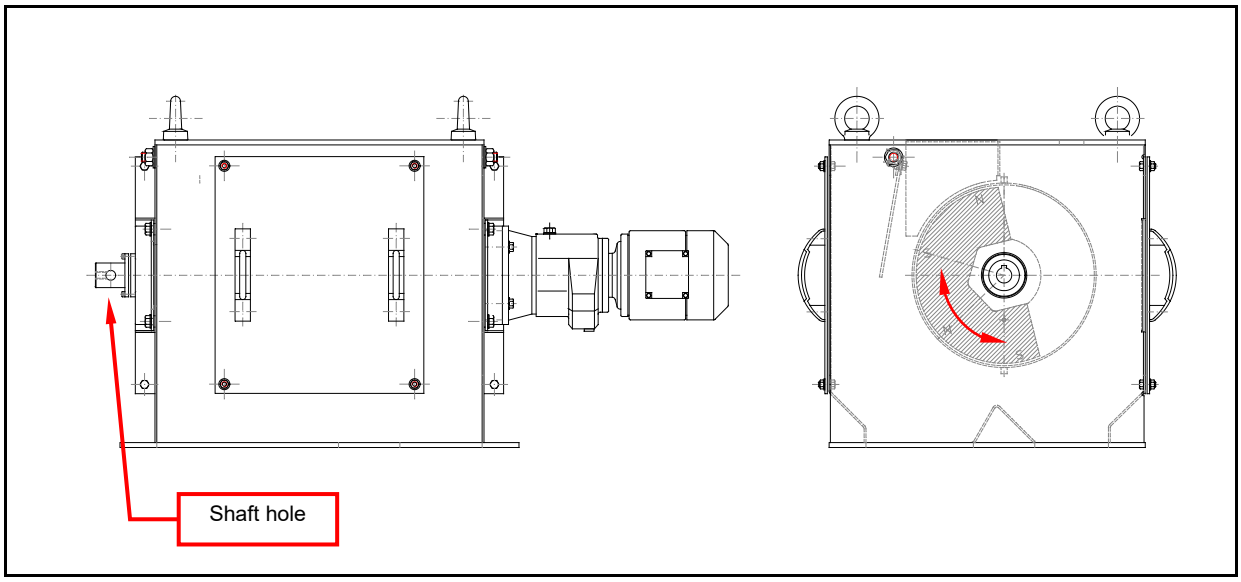
Follow the instructions below for disassembling the magnet drum:

1. Place supporting belts around the flange motor reductor and the shaft at the opposite side. Ensure that the drum magnet hangs at the same height;
2. Loosen/tighten the side plates' bolts so the plates are loosened from the housing;
3. Remove service hatch 2 from the housing;
4. For maintenance personnel: clear area all around your work space;
5. Move the magnet drum out of the housing;
6. To ease the maintenance process and eliminate injury risks, it is highly recommended to place the magnet drum on the floor;
7. Reassembling: in opposite order!

Danger:

The drum is permanent magnetic and will therefore attract Fe or other magnetic parts!

(Re-)Adjusting the magnet segment



Drawing: (re-)adjusting the magnet segment

We have already mounted the magnet segment in the correct position. It will therefore probably not be necessary to readjust it. If however you have a bad separation because all Fe parts fall down before they are above the Fe outlet, then you well have to rotate the magnet segment to the correct position. This can be done as follows :

1. Loosen the clamp bush bolts. The magnet is mounted on the shaft that is now loosened. Rotate the magnet segment to the desired position by rotating the shaft.
2. For this purpose you can use the aid of the adjustment hole on the shaft on the non-motor side. In this hole you can place a lever, for instance a long round bar, to apply torque.

The magnet segment should be approximately in the position as drawn in the above drawing (right view).

3. Retighten the clamp bush bolts

False positioning of the magnet segment can cause bad déferrisation. Therefore special attention for the positioning is very important!

(Re-)Adjusting the magnet spacing

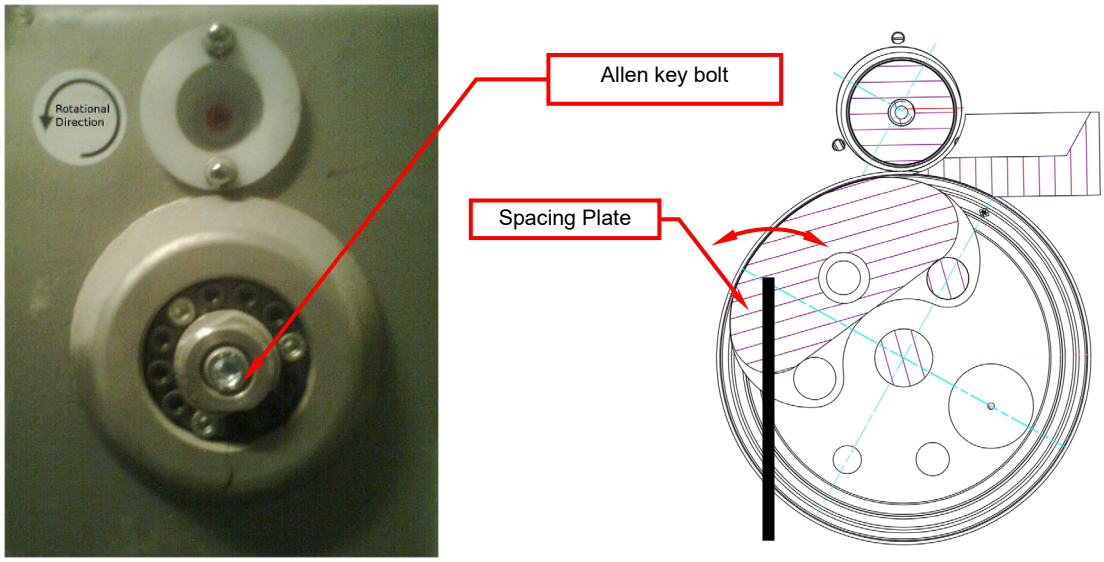


Photo 1: (re-)adjusting the magnet segment for drum magnet with pre-mounted lever handle.
Diagram: drum magnet with spacing plate

To create a thin and even laminar flow over the magnet, the magnet spacing may be adjusted. The correct spacing is dependent on the type of product and flow rate.

(Re-)adjustment of the magnet spacing can be done as follows:

1. While the drum magnet rotates, carefully turn the allen key bolts clockwise. The magnet spacing plate is adjusted towards the magnet drum.

2. Once the plate rubs the drum surface, a noise will become audible. Turn the allen key anti-clockwise 30 degrees or half a turn, until the noise ceases.

3. Check that the product flow is optimal and re-adjust if necessary.

Faulty plate spacing can cause a bad iron separation result, while the right position gives the best result. Therefore special attention to the positioning is very important!

Electrical connections general

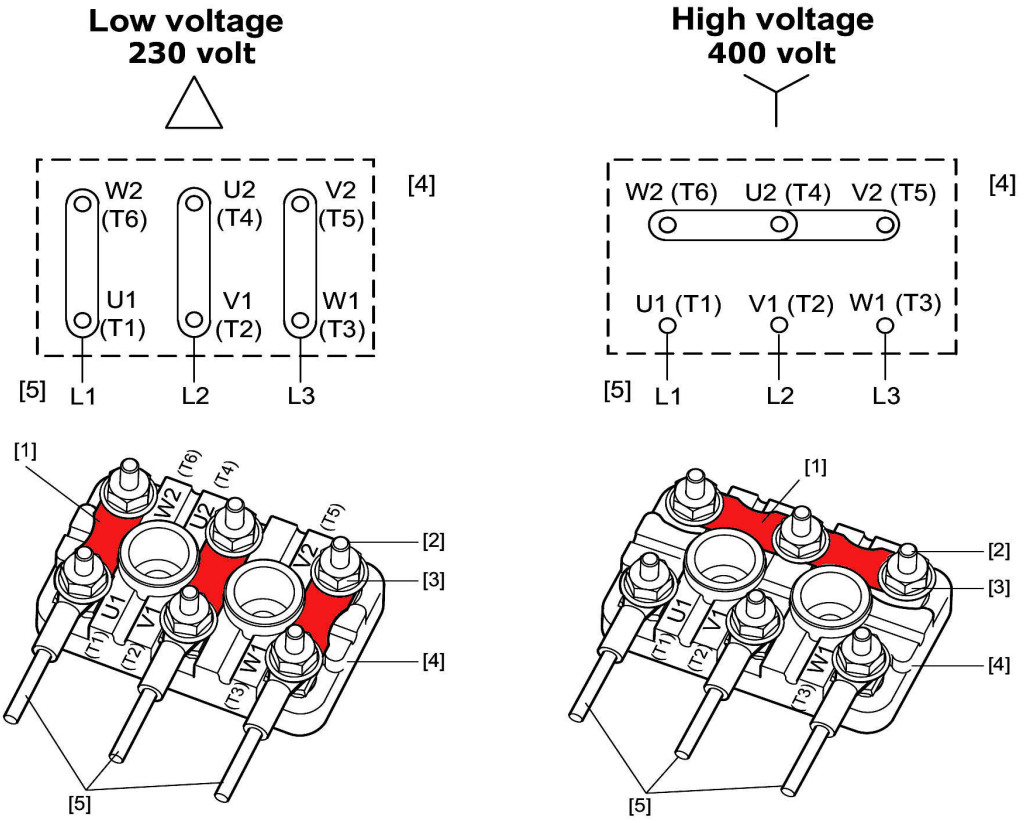
Make sure that the electrical power supply is switched off while you work on the device.

Make sure that all electrical connections are made by qualified personnel and conform to all the applicable standards. Check that the device is suitable for connection.

Check all connections regularly!

Electrical motor installation (only if applicable)

Check that the rotation direction of the driving motor is correct:
This can be checked by briefly switching the motor ON.
If the direction of rotation is incorrect, reverse 2 of 3 phases (U - V):
(*It makes no difference whether you have a **Y** or a **Δ** circuit!)*



Electrical connections & EX

If the device is placed in an Ex zone, everything you add or change to the device's electrical installation must be executed and documented according to the regulations for the specific Ex zone.

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

Checks before and during start-up

During start-up, it is essential to follow the safety notes in this user manual!
Before start-up, make sure that:

The device or the installation has no damages or malfunctions.

- All connections (electrical, mechanical, pneumatically) have been made properly.
- The device or the installation is placed and located correctly.
- All protective covers (if applied) have been fitted correctly.
- All foreign (iron) objects larger than 10mm are blocked from entering the production 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.
- That the entire installation, including the magnet tubes, is grounded.
- There are no other sources of danger.
- During operation, make sure that:
- The device or the installation has no damages or malfunctions.
- The motor is running correctly (no overload, no speed fluctuation, no loud noises, etc.).

The motor rotates in the correct/wanted direction.

Maintenance

Magnetic systems attract Ferromagnetic particles. Regular cleaning is essential.
A clean magnet functions considerably better

All parts are best cleaned with pressurized air and/or a soft cloth. It's also possible to deep clean with special cleaning fluids that do not harm the material. Ensure that these fluids do not contaminate the product

Regularly check that all warning pictograms and the identification plate are present at the correct locations on the device. If warning pictograms or the identification plate should get lost or damaged, immediately apply new ones to the original locations.

Always inform operating personnel regarding planned inspections, maintenance, repairs or if attending to breakdowns.

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.

Bearing systems with open, greased bearings

Regularly check whether the bearings make more noise than usual or whether they are warmer than normal. If this is the case, find out what the cause is and solve the problem(s). After that, it might be necessary to replace the grease and/or to replace the bearing(s).

For bearing **replacement intervals**, combine own experience data of bearings in similar applications with the recommended and/or estimated interval periods, as indicated in the maintenance tables and/or formulas of the bearing manufacturer.

Greasing (relubrication)

The bearing systems applied by **GOUDSMIT magnetic systems** all contain **grease-lubricated bearings**, which are properly sealed against dirt and humidity. They, however, basically still need maintenance, for example when the bearings are used in dirty and/or humid environments and/or at high temperatures and/or when they have a longer operating life than the operating life of the grease. The way and frequency of replacing bearing grease (relubrication) depends on the application and the employed grease (higher-quality grease requires less frequent maintenance). It is desirable to use grease that is equal to the originally filled. Different greases should not be mixed because it can cause a poor lubrication performance

When **relubricating**, completely replace the old grease by fresh grease at a moment that the state of the grease still is sufficient. Preferably supply the grease during operation, in order to avoid excessive greasing level. Inject the fresh grease from the grease supply fitting.

Continuous lubrication is only recommended at low revolutions and/or when the calculated greasing interval is very short and/or other greasing methods do not comply and/or access to the bearing is very difficult.

Table below provides a **general indication for greasing (relubrication) intervals**. For more precise greasing intervals, combine experience data of bearings in similar applications with the recommended and/or estimated interval periods, as indicated in the maintenance tables and/or formulas of the bearing manufacturer.

Table: General indication of greasing intervals

Operating temperature of bearing		General indication of greasing interval		
		Environmental condition		
°C	°F	Clean	Dirty	Very dirty / Heavily humid
50	122	3 years	6 months	3 months
70	158	1 year	2 months	1 month
100	212	3 months	2 weeks	1 week
120	248	6 weeks	1 week	3 days
150	302	2 weeks	3 days	Daily

Consult the (maintenance) manual from the bearing manufacturer for more specific maintenance instructions, like greases to be used and grease replacement intervals.

Motor reductor

De-energise the motor and make sure it cannot be switched back on without your knowledge.
Wait until it has cooled down – **DANGER FOR BURNING!**

Regularly check if the motor produces more noise than normal, or if it generates more heat than normal. If that is the case, find out what the cause is and solve the problem(s) as soon as possible to prevent (further) damage.

In the table below, general inspection and maintenance intervals are shown as an indication of the inspection and maintenance that is needed.

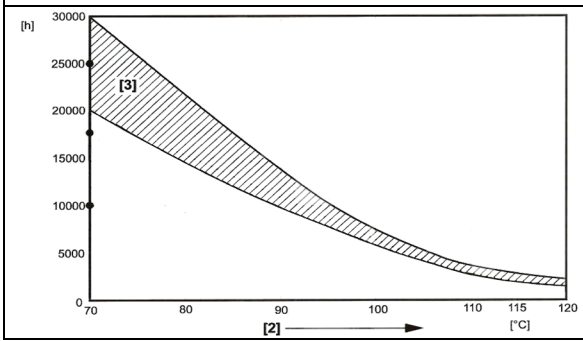
REDUCTOR	
Frequency	**What to do?**
• Every 3000 machine hours, at least every 6 months.	• Check oil and oil level. • Check the seals visually for leakage. • For gear units with a torque arm: Check the rubber buffer and change it, if necessary.
• Depending on the operating conditions (see chart below), every 3 years at the latest. • According to oil temperature.	• Change oil. • Replace anti-friction bearing grease (recommendation). • Replace oil seal (do not install it in the same track).
• Depending on the operating conditions (see chart below), every 5 years at the latest. • According to oil temperature.	• Change synthetic oil. • Replace anti-friction bearing grease (recommendation). • Replace oil seal (do not install it in the same track).
• Some gear units (like SEW R07, R17, R27, F27 and Spiroplan®) have lubrication for life and are therefore maintenance-free.	
• Varying (depending on external factors).	• Touch up or renew the surface/anticorrosion coating.
MOTOR	
Frequency	**What to do?**
• Every 10.000 hours of operation.	Inspect the motor: • Check ball bearings and change if necessary. • Change the oil seal. • Clean the cooling air passages.
	[1] Operating hours. [2] Sustained oil bath temperature. Average value per oil type at 70°C [3] Most of our gearboxes use 0.4 liter CLP PG NSF H1 Klubersynth UH1 6-460 oil [4] Replacement interval is dependent on temperature

Table: general motor gear inspection and maintenance intervals

When replacing oil, use CLP PG NSF H1 **KLUBERSYNTH UH1 6-460** which is approved for incidental contact in the Food and Pharmaceutical industry.

Malfunctions/Service

CAUTION!

Improper handling of the magnet device may lead to damages.
Potential damage to body and or property!

- 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	Cause	Possible remedy
Magnet does not separate ferromagnetic (Fe) particles, or separates them badly	Magnet segment not mounted at correct angle	Adjust the magnet segment angle (see installation)
	Not separated objects are not ferromagnetic, or not enough ferromagnetic	Check if particles expected to be separated are ferromagnetic using a permanent magnet
	Blockage of Fe and/or product outlet	Remove parts that are blocking the outlet(s)
Motor makes too much noise and/or has a higher nominal current [Ampere]	An object got stuck between the drum shell and the outside housing	Remove the object that got stuck
Bearing(s) make(s) too much noise	Bearing(s) shows severe wear	Replace the bearing(s)

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:
bearings, motor, brush strip, rubber slats.

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.