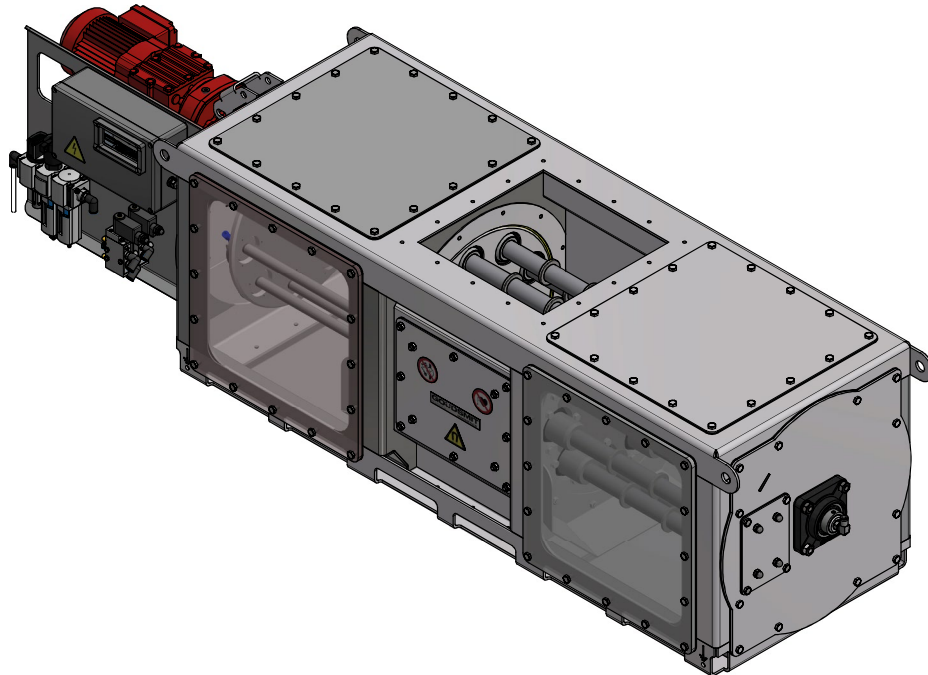


### User Manual

## Automatic continuous cleaning - rotary Neoflux<sup>®</sup> Cleanflow magnet, series SRCC

Permanent magnetic ferrous separator – product flow does not need to be interrupted

Suitable for removal of ferrous (like iron) contamination out of for poorly flowing - like sticky -  
powders in free-fall transport pipes.



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

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**Disclaimer**

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**Revision history**

<b>Version</b>	<b>Date</b>	<b>Description</b>
1.0	04-2005	First digital saved user manual English, derived from the German manual
1.1	04-2007	1 Remarks regarding cleaning and greasing of the piston rods added 2 Remarks regarding ATEX added
1.2	03-2011	1. LOGO parameter adjustment explanation changed to newest LOGO execution 2. Explanation added of how to copy LOGO program from LOGO to Eprom (p.25)
1.3	11-2011	LOGO parameter adjustment changed: was explanation of SECC, with other time parameters
2.0	10-2019	Updated layout and terms.

**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.**

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 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.

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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 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

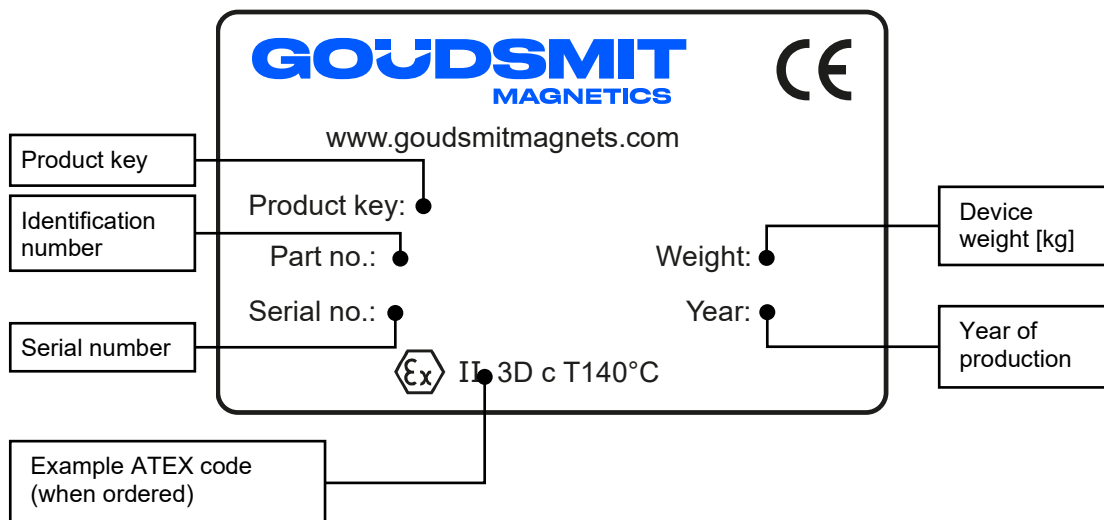
Check the shipment immediately on delivery for:

- 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 plate


On the device you will find an identification plate as pictured below. **Information on this plate is of great importance in case of service.** That is why we advise to maintain this plate on the device at all times. Ensure that it is always legible by cleaning regularly.



**Don't forget to make note of both the Serial and the Identification number in case of breakdowns or delivery of spare parts.**  
 If your identification plate is damaged, contact us and we will send a new one as soon as possible.

### Description ATEX certification

If the device is ordered for use in an explosive (dust) zone and with ATEX certification, then a  marking is added to the identification data which describes the category to which the device complies:

- Code example:  II 3D c T140°C
- Explanation:
  - II → explosion group (I is underground mining, II is other)
  - 3D → Category (1 = very high, 2 = high, 3 = normal) (D = dust)
    - Zone (20, 21, 22) (zone covered by ATEX)
  - c → Type of explosion protection used by Goudsmit
  - T140°C → Maximum permitted surface temperature

If the device complies to category 1D or 2D, then the name and number of the certifying entity are also added to the identification plate, as also the certification number of the device.

The final ATEX classification of the composed apparatus can be lower than the ATEX marking indicated on the main identification plate, if the mounted parts have a lower ATEX marking.

### 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 than 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.*

The final ATEX classification of the whole unit may be lower than the ATEX marking on the typeplate if the attachments have a lower ATEX marking.



**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.*

**Know your 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 jamming by rotating and moving parts****Rotor**

The rotor of the device can, while rotating, grab and take hands when the inspection hatch(es) is/are not in place, like during maintenance. Keep hands away from the rotating rotor, especially during a Fe disposal movement of the magnet bars.



Keep hands away from the rotating rotor and moving magnet bars, especially during a Fe disposal movement of the magnet bars.



**Danger – jamming by rotating & /moving parts**

### Danger for 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).



#### 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 of **1 metre** from the device.



#### Damage to magnetically sensitive products

Objects which contain ferromagnetic parts, such as bank, credit or chip cards, keys and watches can be irreparably damaged when they come within a radius of **0.5 metres** from the device.



#### Danger of (strong) magnetic field

Be aware that ferromagnetic parts can be attracted - even when you are carrying them - if you are within a radius of **0.3 metres** of the magnet.

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

### 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!

**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.

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

The SRCC Neoflux® auto-cleaning rotary Cleanflow magnet is suitable for separation of ferrous (Fe) parts out of poorly flowing - like sticky - powders in free-fall transport pipes – particle size up to 10 mm – such as flour, sugar, coffee beans, plastics, ceramics, etc.

*Abrasive products speed up the wear of the magnet bar tubes and other parts, such as sealings between product channel and Fe disposal side parts.*

**Fe parts**

Suited for product flows with ferrous particles of 30 µm up to 10 mm, depending on the magnet strength quality. See the product specifications on the data sheet for exact particle size specification. Product should be free of Fe part > 10 mm and weight that can cause damage to the magnet bar tubes.

Foreign part (like other metals) size that can cause damage to the magnet bar tubes have to be filtered out.

Therefore, mechanical or other sieving of larger parts is advised.

**Temperatures**

Suited for product temperatures of -20 °C to +60 °C or more, depending on the used magnet type.

Suited for surrounding temperatures of -5 °C to +40 °C.

For exact values see the data sheet.

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

**Air pressure in product channel**

The (relative) over-pressure in the product channel has to be beneath 0.2 bar.

The (relative) under-pressure in the product channel has to be beneath 0.5 bar.

**Air pressure between motor and product channel**

If an air pressure connection is mounted on the motor mounting flange, the connection pressure must not exceed 0.1 bar. This air pressure may only be connected if an air coupling is fitted. If a shut-off plug is fitted, the system is not suitable for connecting overpressure.

**Free space**

Make sure that there is enough free space around the device to perform and ease the inspection and maintenance operation. At one head side, this should be at least 1.5x the magnet bar length, because of the possibility to exchange magnet bars at that side.

**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 magnetic device are forced by the moving magnet bars. The product channel in which it is placed has to be stiff enough to damp out the (relatively small) forces of the moving magnet bars.

**Cleaning**

**Minimum 2x per day** cleaning (Fe disposal) of the device is advised for an optimal magnetic separation and to prevent for Fe accumulation on the magnet bar tubes and the problems that can be caused by that. *This needs to be more often when proven necessary and can be less when proven possible.*

Clean magnets have the best magnetic separation result. So, make sure you clean more often than you think is necessary, to achieve a satisfactory result of the magnet device.

For dirt cleaning, see chapter [Maintenance](#).

<b>Deliverable specials</b>
-----------------------------

**Higher product temperatures**

For high product temperatures there is the possibility of using other magnet material than the standard Neoflux® magnets. See product specifications in the data sheet.

**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 device can be adapted so that it can be used in your specific food stream. It's standard execution already has little gaps or dead spots in the, already complete SS AISI304 product channel. The product channel (or even complete housing + magnet bars) can be delivered 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 naturally possible.

**ATEX**

The SRCC Cleanflow magnet can be delivered suited for ATEX II 3D (dust zone 22).

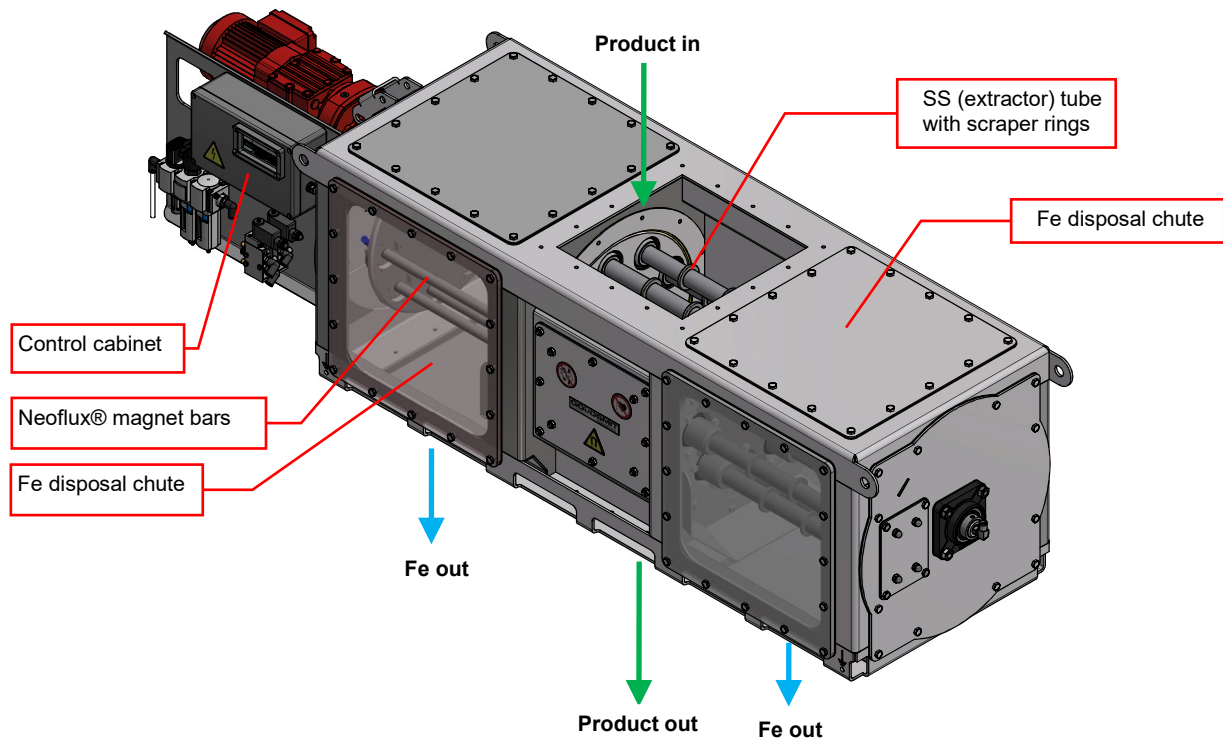
When components are built on or built in, that carry their own identification plate, then these components can - as a following of this - make the device unsuited for use in zone 22.

See specification sheet and or identification plate(s) for the right Ex codes.

It is however your own responsibility to take the right precautions when using the device in zone 22, like in-time cleaning to prevent for thick accumulating dust layers, and suitable grounding measures.

Read this manual thoroughly for all ATEX measures.

**When you desire an ATEX declaration coming with the device, that has to be especially ordered.**

**Working principle**


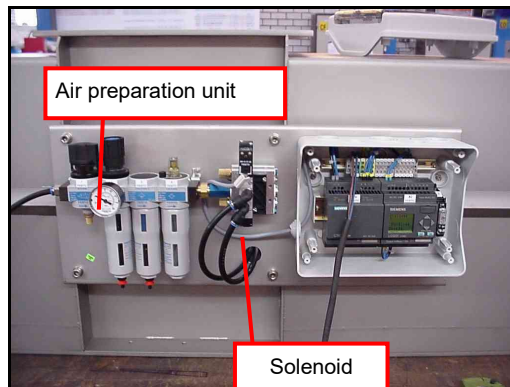
**Drawing:** Overview SRCC Cleanflow magnet

- The SRCC Cleanflow magnet is designed for separation of ferrous (Fe) particles out of a vertical product flow in a free-fall transport pipe, without having to interrupt the product flow. The magnets always remain in the product channel.
- The magnetic separation is achieved by several Neoflux® magnet bars placed on a rotor inside the product channel.
- Inside the bars there is a magnet package that cannot move and will thus always stay in the product channel. A stainless steel (SS) tube can be moved over the magnet package to the left or right by air pressure to move out the caught ferrous particles at fixed intervals.
- The ferrous particles will be attracted by the magnets, get caught and stick onto the SS tubes, while the cleaned product flows further.
- Product will fall through the SRCC product channel, passing several magnet bars.
- The separated ferrous particles will remain on the bars until they will be cleaned via the Fe disposal chutes (Fe out).
- The cleaning of ferrous particles is achieved by moving the magnet bar tubes to the left or right into the Fe disposal chutes (the magnets stay in the product channel). In the Fe disposal chutes there are no magnets inside the tubes anymore, so the ferrous particles will no longer be magnetically attracted and thus fall off and leave the device via the “Fe out” chutes.
- The scraper rings on the tubes will force the ferrous particles to move with the tube, into the Fe disposal chute. The scraper rings also protect the ferrous particles from all clinging onto another and so creating a worse loosening in the Fe disposal chute.
- Cleaning of caught ferrous particles will automatically take place every x minutes / hours (adjustable), controlled by the control unit on the device.
- Status report is optional when a Siemens LOGO! control unit is ordered. This is achieved by sensing the end positions of the magnet bars and so concluding whether the magnet bars still move correctly to the Fe disposal chutes. The status reports can also be sent directly to central control.

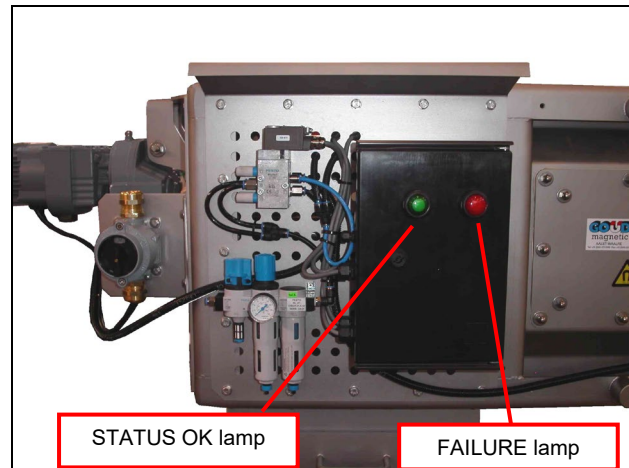
*Unfortunately, product that sticks onto and in-between the ferrous particles, will also fall off with the falling ferrous particles and will thus cause a slight product “loss”.*

## Automatic Fe disposal

- The SRCC Cleanflow magnet is executed with a **local control unit**, a Siemens LOGO! logic Module for controlling the movements of the magnet bars.



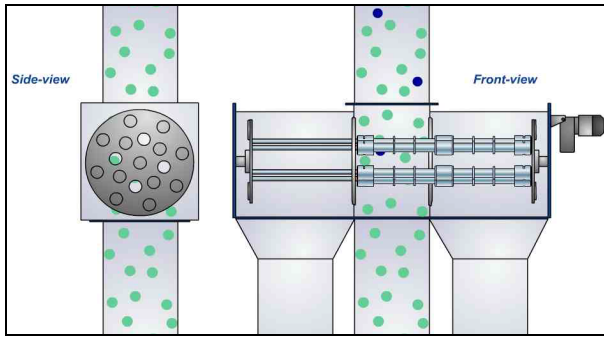
**Photo:** standard control unit



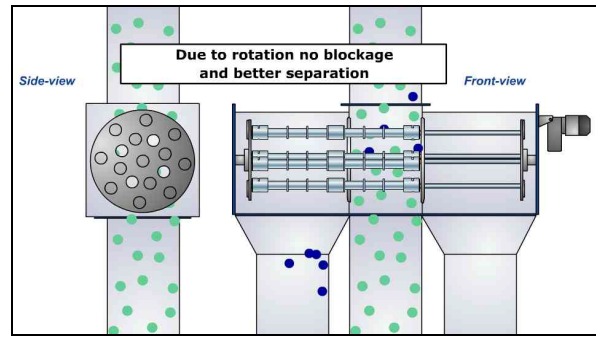
**Photo:** Ex control + work switch + status report

- The logic program provides an automatic ferrous (Fe) disposal cycle:
  - Starting the program can be achieved by supplying power to the LOGO! control unit, stopping by ceasing power supply. An ON/OFF push button or work switch can be used locally for this purpose.
  - Every X hours (cycle time depends on Fe contamination) the magnet bar tubes have to be moved towards the left or right (standard setting = 4 hours).
  - The caught Fe parts will then be moved along with the magnet bar tubes, into the Fe disposal chutes, out of the product channel. Here it will automatically fall off, as they are out of the magnetic field and thus no longer attracted by it.
- The purpose of the Fe disposal cycle** is thus to dispose the separated Fe particles outside the product channel.

**Working principle Fe disposal**



**Drawing:** product (green) with Fe parts (blue)



**Drawing:** Fe disposal in left disposal chute

The Fe disposal cycle of the SRCC Cleanflow magnet is automatic and **continuous**. This means the product flow needs never to be stopped, because the magnets at all times remain inside the product channel to actuate their magnetic separation function.

Advantages continuous cleaning:

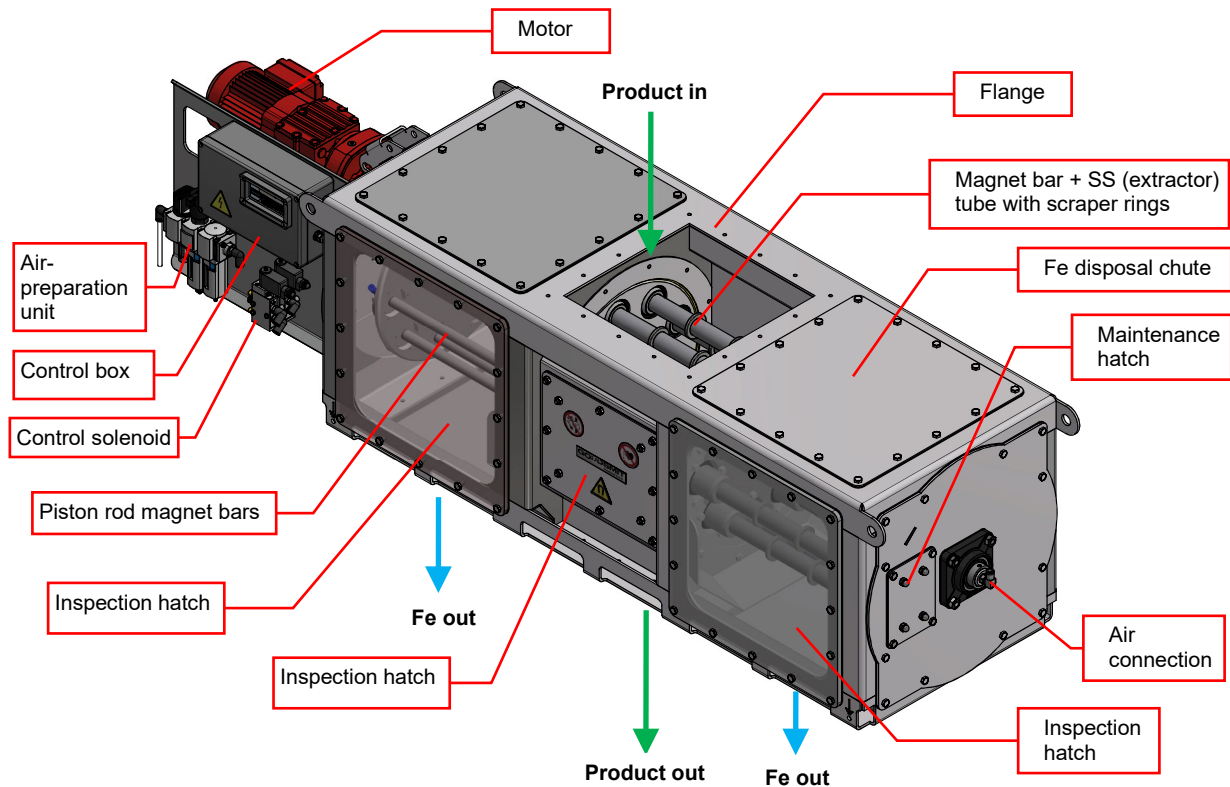
- During the cleaning cycle it is not needed to interrupt the product flow.
- Because of this you can easily more often perform a cleaning cycle, which is better for the magnetic filtering, because a clean magnet bar functions better than a dirty one.

Disadvantages continuous cleaning:

- Not completely dust-tight product channel. Some product loss from flowing product is inevitable during movement of the magnet bar tubes to the left or right in a cleaning action.

*Product loss during non-movement can be solved with extra closure material, but during movement this is not (completely) possible, because of the design principle.*



**Construction**


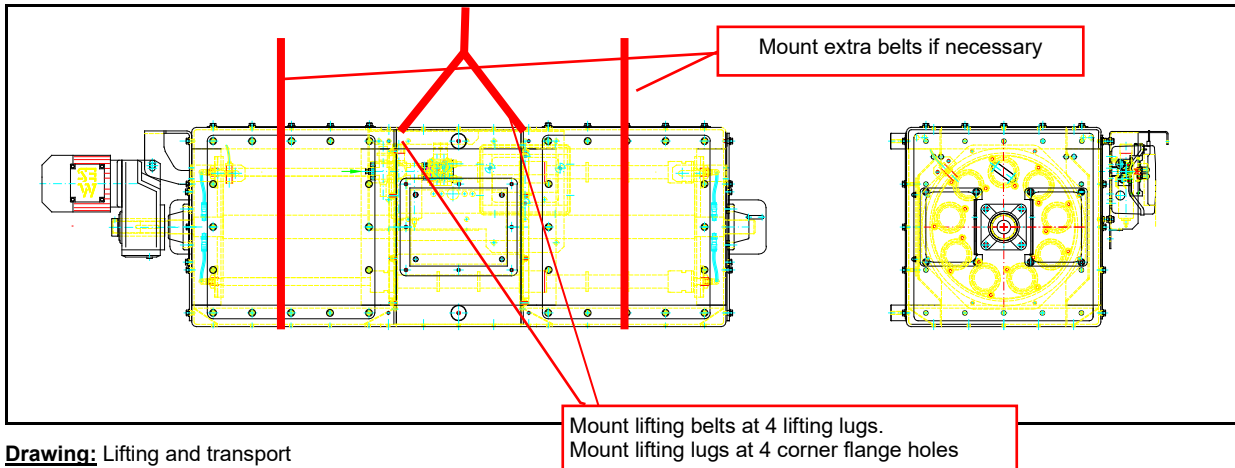
**Drawing:** Construction SRCC Cleanflow magnet

- The SRCC has several **Neoflux® magnet bars**, the number dependant of the product channel opening size.
- The bars are pneumatically actuated cylinders, with a **magnet package** on the cylinder rod. Outside, the bars have a thin-walled (0.8 mm) stainless steel magnet bar tube.
- Every magnet bar is mounted in 2 **aluminium flanges**, which are fixed at both head sides of the housing. In each flange the **air connection** is mounted, for the actuation of the magnet bar.
- In each **Fe outlet** channel and sometimes in the product channel, an **inspection / maintenance hatch** is placed. Through these one can check the magnet bar movements, but they are also useful when a magnet bar has to be taken out, and during maintenance actions.
- The product chute is executed with **flanges** for mounting the in and outlet pipes;
- The Fe outlet chutes are executed with flanges for mounting the Fe outlet pipes, or optional **drawer parts** for collecting the separated Fe in.
- At the non-inspection side the **control unit** is mounted, including **electrical** and **pneumatical supply connections**.
- Also an **air-preparation unit** and a **control solenoid** are mounted on the control unit in the standard delivery. The air goes from the air-preparation unit to the solenoid and then to the magnet bars.

## Installation

### Transport and placing procedures

The SRCC Cleanflow magnet is delivered in a wooden crate. When lifting the device out of the crate and transporting it away, it is best to use the holes in the top flange.



**Drawing:** Lifting and transport

- **Bolt a lifting lug to each of the 4 corners of the top flange** of the magnet housing for stable lifting and further transport. Keep each corner at the same level for proper alignment before installation. Pay attention to possible unequal weight distribution (heavier towards the motor device).
- Use proper lifting devices that suit with device's weight.

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

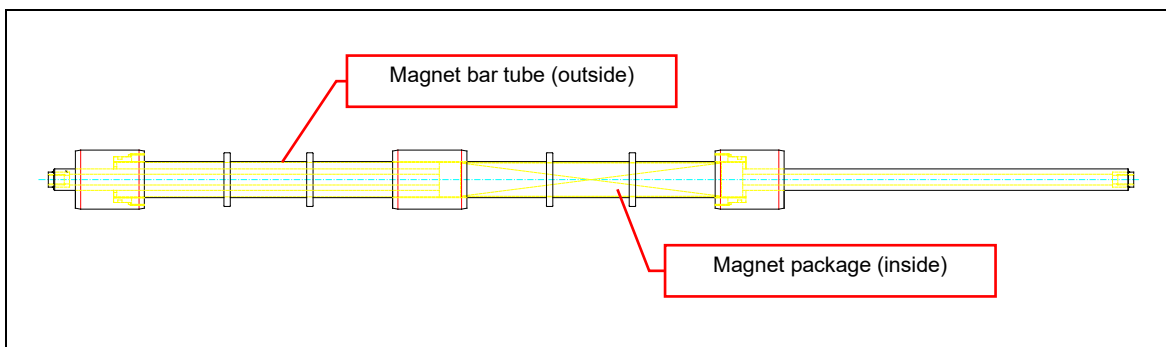
- Ensure that the product channels are strong enough to support the weight and the movements/vibrations (movement of rotor and magnet bars) of the SRCC Cleanflow magnet and raw product in it. Reinforce them when necessary.
- Work safely; make sure there is enough working space, use proper scaffolding, ladders and other help materials, so the device can be installed without safety risks.
- Clear the area under the magnet during lifting and transport.
- Bolt the flanges of the device tightly to the inlet and outlet flange of your product channel. Improper alignment and loose assembly may cause leakage of raw product.
- Install the magnet device in a well reachable height for the operators. A good height eases the working, maintenance and inspection processes.

**Magnet bar protection**

- The Cleanflow magnet SRCC has fragile magnet bar tubes in the magnet bars. The tubes have a very small material thickness (<1 mm), which ensures an excellent Fe separation. Disadvantage is that large, heavy Fe and/or other parts in the product flow can easier create bumps in the tubes.

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

- During maintenance or cleaning operation it is also advised to be very careful with the magnet bar tubes to avoid damage.



**Drawing:** magnet bar – magnet bar tube moves over a magnet package

- When a magnet bar tube is damaged it is probably difficult or impossible to move the tube over the magnet package inside.
- When this occurs it is advised to revise the bar(s) or (preferred) to let the magnet bar(s) be revised by Goudsmit, or order a new one to avoid further damage to the magnet bar and/or other Cleanflow spare parts.

See also chapter [Maintenance](#)

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

## Pneumatic connections

- The solenoid for actuating the magnet bars is placed in or near the LOGO! module on the control plate.
- The air-preparation unit is mounted at the non-inspection side of the device on the control plate and subsequently includes:
  - On/off valve – can be locked by padlock – releases air pressure when closed
  - Regulator (course filter + manometer)
  - Micro-filter

### Air preparation unit



- 1 On/off valve
- 2 Regulator
- 3 Micro-filter

- Connect the air supply to the ON/OFF valve.
- The prepared air is connected to the solenoids that actuate the magnet bars.  
**Make sure that the air pressure to the solenoids is max 8 bar continuous / 10 bar shortly.**  
 Well functioning bars must move smoothly at 4 to 6 bar, but: *they will not all move simultaneously, because of the “slip-stick” effect of air cylinders !*
- After some time – as a result of the use and circumstances – the pneumatic parts of the magnet bars can show some wear. This can cause the bars to need more air pressure for moving. When more than 8 bar is needed, the magnet bars need to be replaced and/or revised. If so, send the bars back for repair to **Goudsmit Magnetic Systems B.V.**

Magnet bar revision, see chapter [Maintenance](#).

## Electrical connections general

Make sure that the electrical power supply is switched off while you work on the device and can't be re-enabled without your knowledge.

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.

The electrical connection values are indicated on the nameplate and/or on the supplied electrical drawings. Before connection, check the supplied devices for the locally valid connected loads and ensure that the appropriate connection cables are designed for the electrical power to be drawn.

Ensure that all electrical connections are checked/tightened after delivery and regularly thereafter (e.g. once a year).

The connection details of the control box supplied (if present) can be found in the enclosed diagrams.

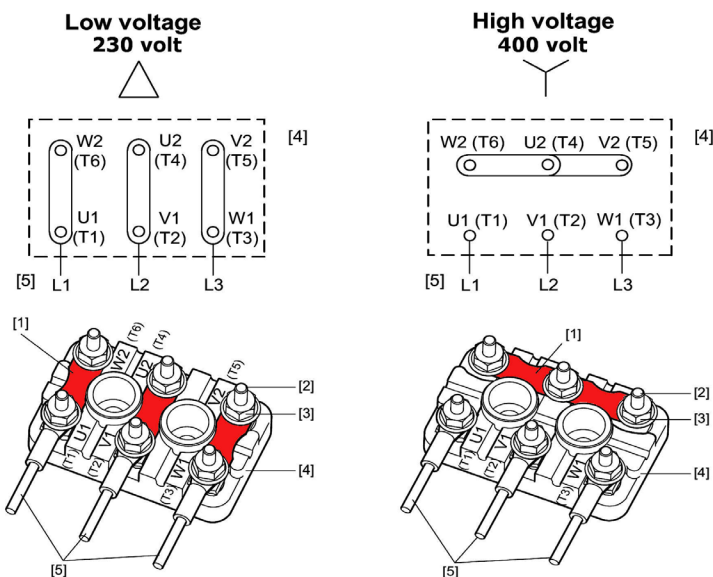
## Electrical motor installation (only if applicable)

**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!)*



Also remember to connect the Earth wire.

## 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.

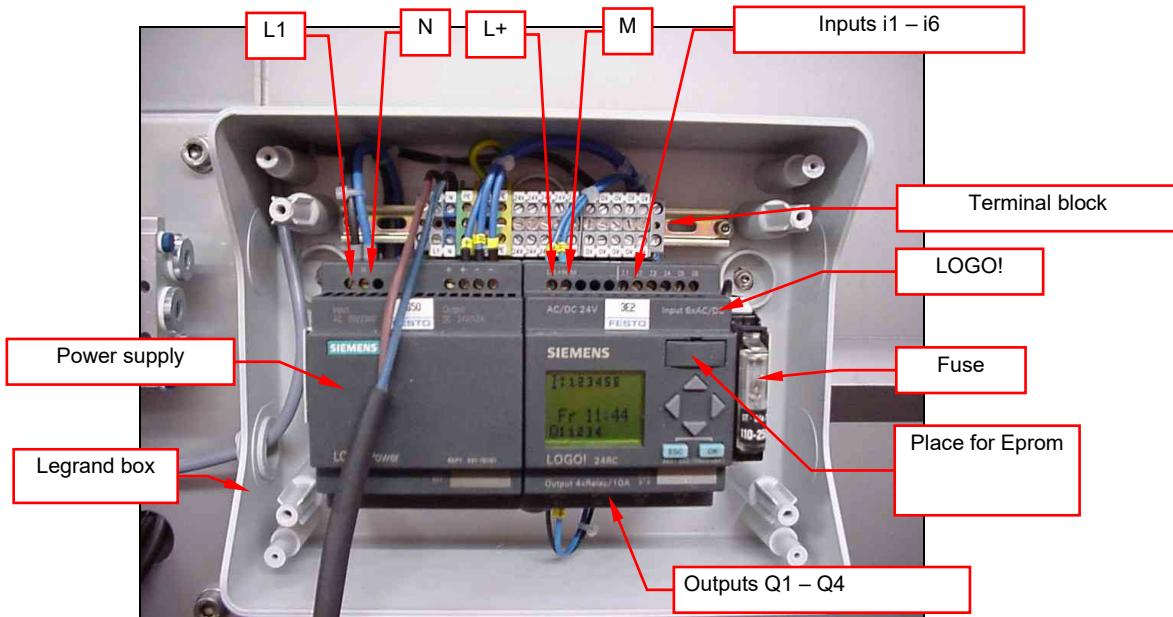
**Siemens LOGO! control unit**

The **LOGO!** is a simple logical module of **Siemens** to control the movement of the magnet bar tubes and – optionally - give status reports to check whether the bars are still functioning well (only possible when sensing the bar movements).

**Electrically connecting the LOGO!**

Connect **24 V<sub>DC</sub>** on **L+** and **M** on ground.

If you do not have 24 V<sub>DC</sub> power supply available, but you do have 120/230V-50/60Hz, than you can use power supply unit (Power 1.3) that is mounted next to the LOGO! It can transform your signal to 24 V<sub>DC</sub>. Connect power in this situation to **L1** and neutral to **N**.



**Photo:** Siemens LOGO! with 24 V<sub>DC</sub> power supply in Legrand box

**Inputs**

Input (i1 – i6) are not in use in the standard execution.

Options (in case of end position sensors are mounted for checking magnet bar movement):

- i3 / i4 = end position sensing of magnet bars left/right
- i6 = Reset failure signal on outlet Q4 → to be **connected by user!**

**Outputs**

- Q1 controls the solenoid for the (optional) air-blow units in the Fe disposal chutes.
- Q2 controls the solenoid that makes the magnet bars move left/right.

*Options (when end position sensors for the magnet bars are being used):*

- Q3 gives STATUS OK signal = all magnet bars move ok.
- Q4 gives FAILURE signal = 1 or more magnet bars do not reach end position.

**These are the standard connections**

## Standard LOGO! program

The logic program of the LOGO! secures how and when the magnet bar tubes will move to the other side. LOGO! energises the solenoid that makes the magnet bars move. The logic program is also saved on the **EPROM** placed in the LOGO! unit.

**Damages caused by false changes to the LOGO! program are not covered by guarantee!**

Goudsmit can send an EPROM with a new program for easy changing of the working of the magnet device. Loading the new EPROM program is done this way:

- Ceasing power of LOGO!.
- Remove old EPROM.
- Place new EPROM.
- Reset power on LOGO!, which makes that the new EPROM program is automatically loaded into the LOGO!.

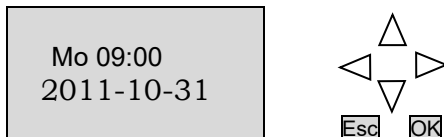
It is possible to adjust the parameters of the logic program in LOGO!, like the interval time between the Fe disposal movements of the magnet bars (moving left / right):

## Changing the Fe disposal interval time in LOGO!

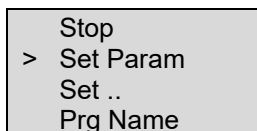
To change the interval time you need to adjust the time parameters in the LOGO! program that controls the time between back and forth movement magnet bars (B1)

*\* It is possible to adjust the parameters without having to stop the program!*

Changing the parameters can be done in mode "Parameters". To get to this mode the following procedure has to be followed from the start screen:



1. Push the **Esc**-button.  
LOGO! will go to mode Parameters (Param) and you will see:

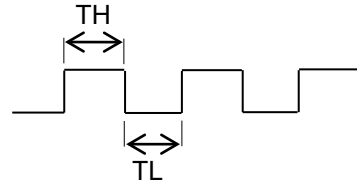


2. Push the ▽-button and go to **“Set Param”**. Push on **OK** to confirm this.

On the screen you will see these lines:

```
B1
TH=04:00h
TL=04:00h
Ta= 00:12m
```

← Standard setting 4 hours  
← *TH and TL should be the same!*



1. Block number with parameter (TH/TL).
2. Set value of this parameter (TH/TL) with his dimension (hours : minutes : seconds)
3. The actual value of the parameter in the running program (Ta).

The cursor will light up in the **B** of block B1

3. To change the time push the **OK**-button. The cursor will jump to the “0” of line **T=04:00h**.
4. With the Δ and ▽ -buttons you can change the value up and down. Then you can go to the next number and back with buttons > and < .
5. Make steps 3 en 4 also for **TL** (set to same value as TH).
6. By pushing the **OK**-button you confirm the changed values.
7. With the **Esc**-button you will go back to the main menu . You have to push **Esc**-button twice to come back into you start position.

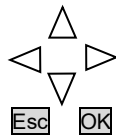
You are back in the start menu and the cleaning cycle is changed inside the LOGO!.

**The new set time parameters are not yet saved to the Eprom though!**

To save these new parameters to the Eprom, see next subsection.

**Saving the new interval times from the LOGO! to the Eprom**

The new interval times can only be changed in the program inside the LOGO! unit. To save the adapted program to the Eprom as well, act as follows:



1. Push the **Esc**-button
2. Go with the arrows to **“Stop”** and push **OK**:

```
>Stop
Set Param
Set ...
Prg Name
```

3. Go with the arrows to **“Yes”** and push **OK**:

```
Stop Prg
No
>Yes
```



4. Go with the arrows to “**Card**” and push **OK**:

```
Program
>Card
Setup
Start
```

5. Go with the arrows to “**→** **Card**” and push **OK**:

```
>→Card
Card→
CopyProtect
```

→ = LOGO!

*To get a full description of the possibilities of the Siemens LOGO! you can download the user manual via web page :*

<https://new.siemens.com/global/en/products/automation/systems/industrial/plc/logo.html>

### **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.

Due to the low rpm, engine, bearings and retaining ring(s) are only slightly stressed.

*However, normal wear can always occur.*

- After a few years, the seal in the back of the housing should be replaced.
- Depending on the product, the extractor tubes may be subject to wear.

## Magnet bars

- Depending on the product (abrasive or not) and the Fe contamination the magnet bar tubes can wear-out.

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.

Make sure that no heavy parts in your product flow can damage the magnet bar tubes.

We advise to place a (mechanical) sieve (filter) in front of the magnetic device.

**Damage, caused by damaged magnet bar tube(s) cannot be claimed by guarantee.**

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

- The low speed of the magnet bars and the relatively small amount of movements will cause only little wear to the inner bars. Normal wear can however always occur.
- After some time the pneumatic components inside the bars can wear-out, so they need to be replaced. The time interval for this is depending on the cleaning cycle, the product, etc. An indication for revision is the air supply to the magnet. **If one needs more than 8 bar to move the magnets inside, then the bar(s) need to be repaired/revised** = replacing the pneumatic components and clean the inside magnet bar.

The magnet bar tubes have a very small wall thickness. This creates a great Fe separation result. Heavy parts (Fe or product) however, may hit the bar in a way that bumps occur, as this will block the movement of the magnet bar.

### Magnet bar piston rods

The piston rods of the magnet bars need to be cleaned and greased or oiled to prevent the bars from getting dirty (also inside) and to make sure they keep moving fluidly and the piston rod and pneumatic components of the magnet bars do not wear-out unnecessary. So, **clean the piston rods in short intervals** with soft cloth and or cleaning fluid and **grease or oil again** after degreased cleaning.

**Grease:** Festo LUB-KB2-silicone-free (20 ml = 397446 / 1kg = no.397447).

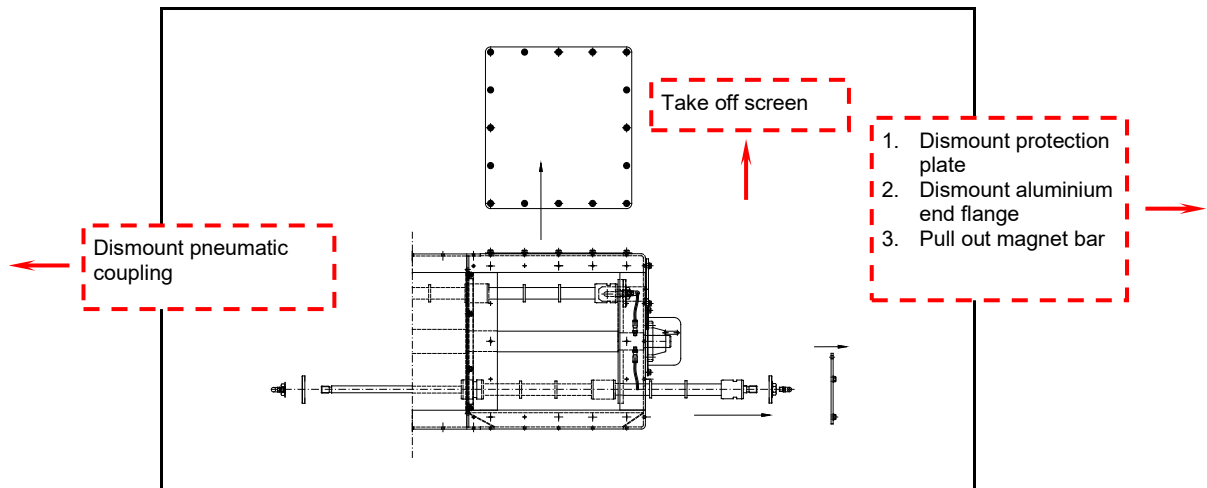
**Oil:** Festo OFSW-32 (1 litre pack = no.152 811)

### Exchange / revise magnet bars

#### Magnet bar dismounting

Take away the protection plate at the head side of the device. Then dismount the aluminium end flange of the magnet bar. After that the pneumatic coupling at the other side of the housing needs to be dismounted. At last, after taking away the side screen, grab the bar and pull it out at one of the 3 thicker SS bushes of the bar.

**! Do not dismount the bar itself → magnetic danger (jamming)!**



**Drawing:** SRCC magnet bar dismounting

**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?
<ul style="list-style-type: none"> <li>Every 3000 machine hours, at least every 6 months.</li> </ul>	<ul style="list-style-type: none"> <li>Check oil and oil level.</li> <li>Check the seals visually for leakage.</li> <li>For gear units with a torque arm: Check the rubber buffer and change it, if necessary.</li> </ul>
<ul style="list-style-type: none"> <li>Depending on the operating conditions (see chart below), every 3 years at the latest.</li> <li>According to oil temperature.</li> </ul>	<ul style="list-style-type: none"> <li>Change oil.</li> <li>Replace anti-friction bearing grease (recommendation).</li> <li>Replace oil seal (do not install it in the same track).</li> </ul>
<ul style="list-style-type: none"> <li>Depending on the operating conditions (see chart below), every 5 years at the latest.</li> <li>According to oil temperature.</li> </ul>	<ul style="list-style-type: none"> <li>Change synthetic oil.</li> <li>Replace anti-friction bearing grease (recommendation).</li> <li>Replace oil seal (do not install it in the same track).</li> </ul>
<ul style="list-style-type: none"> <li>Some gear units (like SEW R07, R17, R27, F27 and Spiroplan®) have lubrication for life and are therefore maintenance-free.</li> </ul>	
<ul style="list-style-type: none"> <li>Varying (depending on external factors).</li> </ul>	<ul style="list-style-type: none"> <li>Touch up or renew the surface/anticorrosion coating.</li> </ul>
MOTOR	
Frequency	What to do?
<ul style="list-style-type: none"> <li>Every 10.000 hours of operation.</li> </ul>	Inspect the motor: <ul style="list-style-type: none"> <li>Check ball bearings and change if necessary.</li> <li>Change the oil seal.</li> <li>Clean the cooling air passages.</li> </ul>
	[1] Operating hours. [2] Sustained oil bath temperature. Average value per oil type at 70°C [3] Most of our gearboxes use SEW GearOil Poly 460 H1 E1 oil [4] Replacement interval is dependent on temperature

**Table:** general motor gear inspection and maintenance intervals

When replacing oil, use **SEW GearOil Poly 460 H1 E1** which is approved for incidental contact in the Food and Pharmaceutical industry.

**Bearing systems in Ex environments**

Regularly, at least every six months, check whether the bearings make more noise than usual or whether they are warmer than normal. If this is the case, replace bearing(s).

In any case replace the bearings after 5 years of service life.

**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.

Use **Shell Alvania S3** for greasing the bearings.

**Drawer boxes**

When drawer boxes are mounted underneath the Fe disposal chutes, then these have to be emptied and cleaned regularly to prevent from getting overloaded and eventually causing breakdown of the rotor.

**Daily visually check** or more / less when experience proves to be necessary / possible.

**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.

## Manual cleaning

Even on the SRCC automatic cleaning rotary Cleanflow magnet, it may sometimes be necessary to clean the extractor regularly. This is to ensure optimum performance.

The frequency of cleaning depends on the volume flow of the product and ferromagnetic contamination.

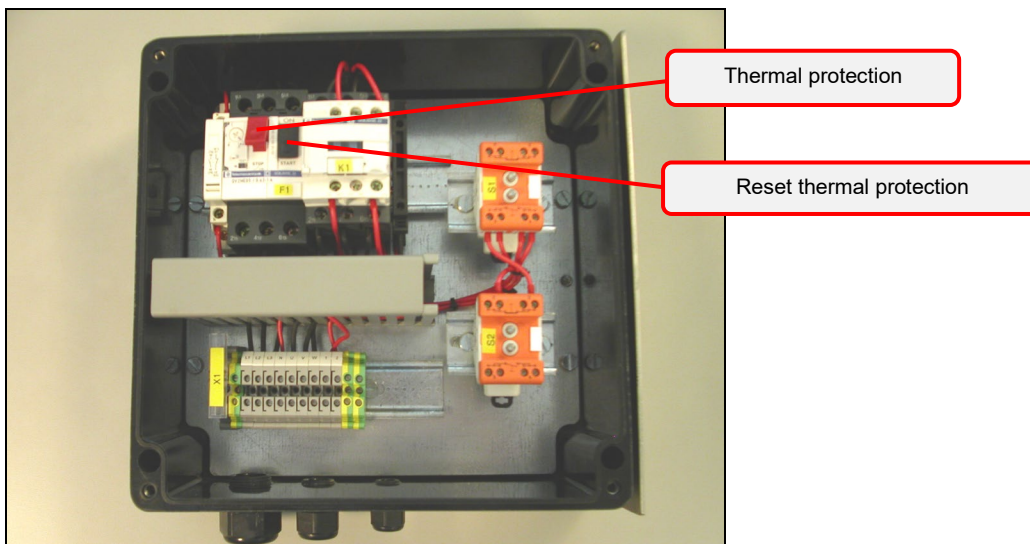
### Cleaning instructions

1. Stop the product flow.
2. Using the rotor cylinders, pull the rotor out of the product channel into the casing.
3. Pneumatically pull the magnetic bars out of the magnetic tube.
4. Steps **2** and **3** can also be done by interrupting a cleaning cycle.
5. Stop the motor, remove the air pressure and open all service hatches.
6. Remove all dirt from the rotor, magnets and casing using a Hoover with a soft plastic nozzle. Use a soft brush for hard-to-reach areas. Avoid dust clouds, especially in Ex areas.
7. Finally, clean with a soft cloth.

**Be extremely careful not to damage the extractor tubes!**

8. Remove the ferromagnetic parts from the drawer or dispose of them via the drain channel.
9. Close all service hatches.
10. Start the motor.
11. Activate the air pressure..
12. Start the product flow.

## Thermal protection in supplied terminal box (optional)




**Photo:** Thermal protection in ATEX control box

If the motor is overloaded, the thermal protection (in standard ATEX switch box) kicks in. Find the cause and resolve it.

Reset the thermal protection by pressing the RESET button in the control box.

## Malfunctions/Service

	<b>CAUTION!</b>
	<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"> <li>Any repair to GOUDSMIT magnet devices may be performed by qualified personnel only.</li> <li>Be aware that permanent magnets attract ferromagnetic material with great force when it gets in reach of the magnetic field → danger of getting jammed!</li> <li>Consult GOUDSMIT MAGNETIC SYSTEMS service.</li> </ul>

## 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.

Failure/breakdown	Possible cause	Possible solution
Magnet does not separate ferromagnetic (Fe) parts out of the product flow, or separates them badly.	Magnet bar is overloaded with Fe parts.	Clean the magnet bars more frequently (adjust Fe disposal interval time parameter).
	Not-attracted objects are not ferromagnetic.	Check if assumed Fe particles are indeed ferromagnetic by using a permanent magnet.
	Ferromagnetic construction parts close to the magnet reduce the magnetic field of the magnet bars.	Check if there are ferromagnetic construction parts close to the magnet bars that influence the magnetic field of the magnet bars. If so try to replace the ferromagnetic construction parts by non-ferromagnetic parts, like aluminium or stainless steel.
Magnet bar is not moving any more or moves badly.	Air pressure is (too) low.	Set to higher air pressure (max. 8-10 bar).
	Air supply connection(s) is (are) loose.	Reconnect air supply.
	Too much Fe parts stick on the magnet bar tube(s).	Set to higher air pressure for one time solution and in future clean more often.
	Dents in the magnet bar tubes.	Find the cause and take that away. Have the magnet bar(s) revised.
	Pneumatic components in the extractor tube are leaking and need to be replaced.	Take the magnet bar out and replace it. Send old bar back for repair/revision to GOUDSMIT Magnetic Systems.
Motor makes more noise than presumed normal, or has a higher nominal current [A].	Motor failure/breakdown.	Repair or replace motor.
	An object 'sticks' between rotor seal ring and housing.	Remove the object from the system and exchange seal ring when necessary.
	Rotor seal ring between product and Fe disposal chute is broken / worn-out.	Have the ring replaced or replace yourself by skilled personnel.
	Rotor turns in false direction, causing extra wear to closure plates on rotor.	Make sure rotor turns in right direction and replace worn-out closure plates.
	Rotor bearings need to be greased or are worn-out.	Grease or replace bearings.
Rotor doesn't turn or turns heavily.	Motor failure/breakdown.	Repair or replace motor.
	Rotor sealing is broken or object or dirt between rotor and housing.	Remove possible object or dirt. Replace sealing when necessary.



## 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 bars,
- pneumatic parts inside the magnet bars,
- the slide bushes or “hutmanchets” between rotor and magnet bars and the sealings (option) inside these bushes,
- rotor sealings (option),
- bearings,
- drawer rubbers and drawer slidings (in case of drawers underneath the Fe disposal chutes).

We advise to have 1 or more complete magnet bars in stock as a spare part and have the magnet bars revised/repared by Goudsmit because of their magnet expertise (jamming danger etc.)!

Clean the piston rods in time and grease again with the right (life-time) grease when cleaned with degreaser. (Grease = Festo LUB-KB2-silicon free (20 ml = 397446 / 1kg = 397447).

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.