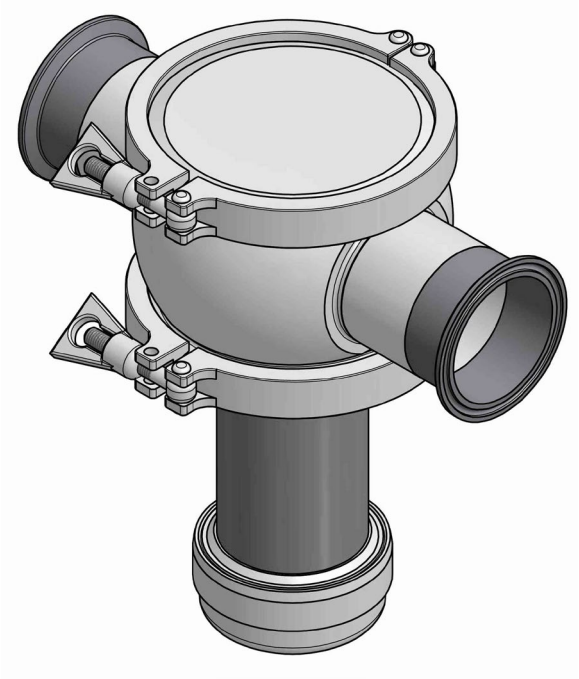
User manual

Permanent magnetic filter with CIP (Clean In Place) / SIP (Steam in Place) configuration, hygienic series SFH



The descriptions and pictures in this manual, used for explanation, may differ from your execution.

GOUDSMIT Magnetic Systems B.V.
P.O. box 18 5580 AA Waalre
Petunialaan 19 5582 HA Waalre
The Netherlands

Tel.: (+31) (0)40 221 32 83
Internet: www.goudsmitmagnets.com
E-mail: info@goudsmitmagnets.com

Table of contents

User manual SFH hygienic magnetic filter with CIP/SIP-configuration, version 02/2021

Safety

Life danger for persons with implanted medical devices
Persons with active implanted medical devices (i.e. pacemaker, defibrillator, insulin pump) must not enter the magnetic field of the device.

Damage to magnet sensitive objects
Objects which contain ferromagnetic parts, such as bank, credit or chip cards, keys and watches can be irreparably damaged if they enter the magnetic field of the device.

Dangers of strong magnetic fields
Ferromagnetic objects will be attracted, if you are closer than 30 cm to the magnet.
Any ferromagnetic tools or components may be attracted and damage the device.

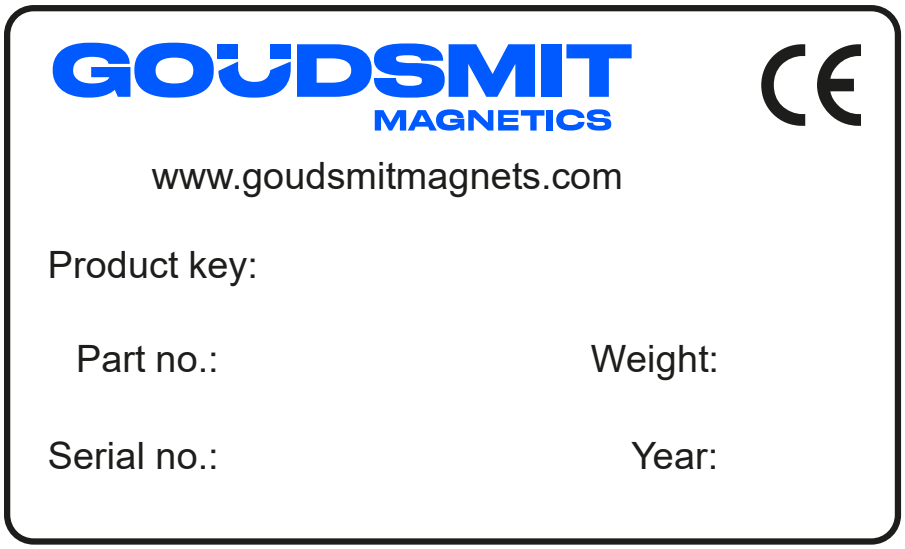
General Protection
Wear all the personal safety equipment necessary for safe operation or maintenance.
This may include; overalls, safety glasses, ear protection, helmet, safety shoes, etc.

Keep all screens and safeguards in place.

Warning Pictograms
Ensure that all warning pictograms are legible. Replace if lost or damaged.

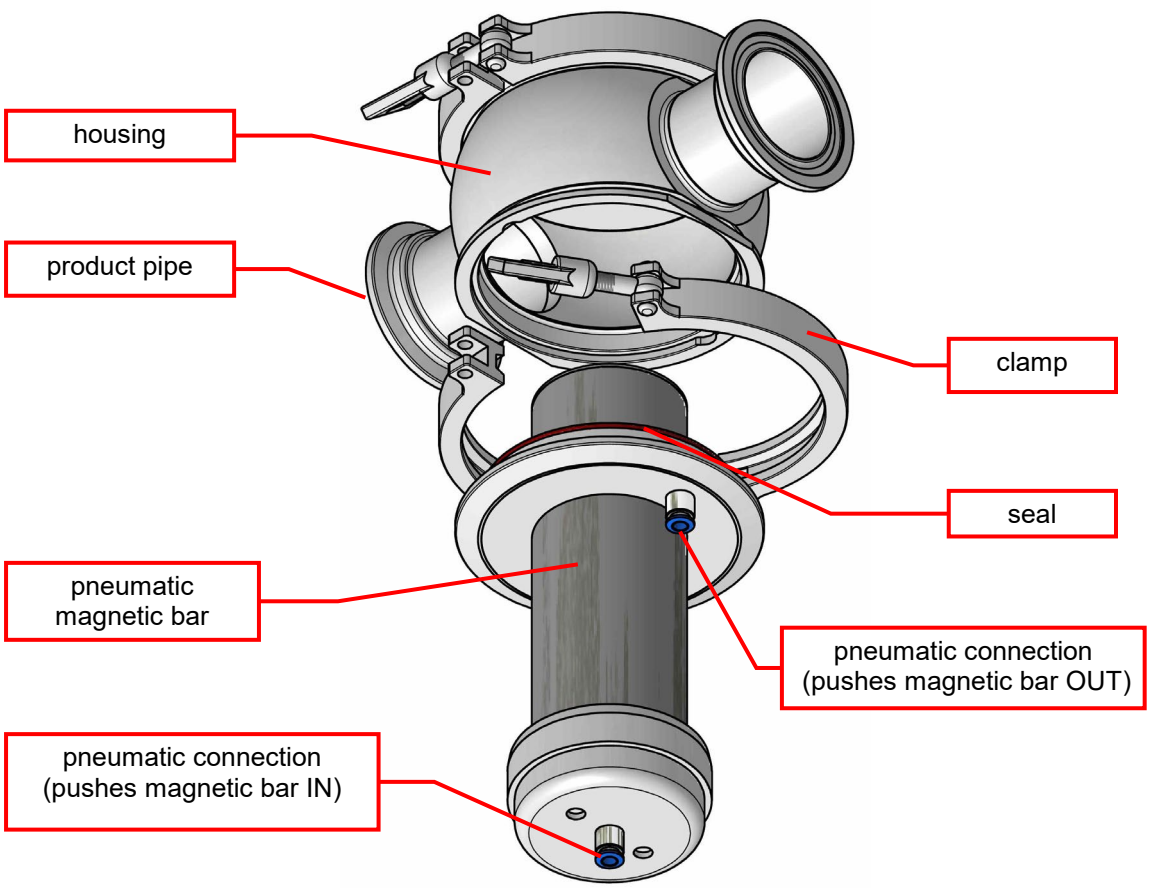
Identification plate

If you have any questions or wish to order spare parts, always have the article number and serial number available.



Smaller models may not have a type plate, but an etching.

Construction and functioning of the pneumatic magnetic filter



The function of the device is to catch ferromagnetic contamination from the product stream.

The device is executed with one thick magnetic bar in a tube located in the centre of the product channel. The magnetic bar can be blown pneumatically IN / OUT the product channel inside the tube.

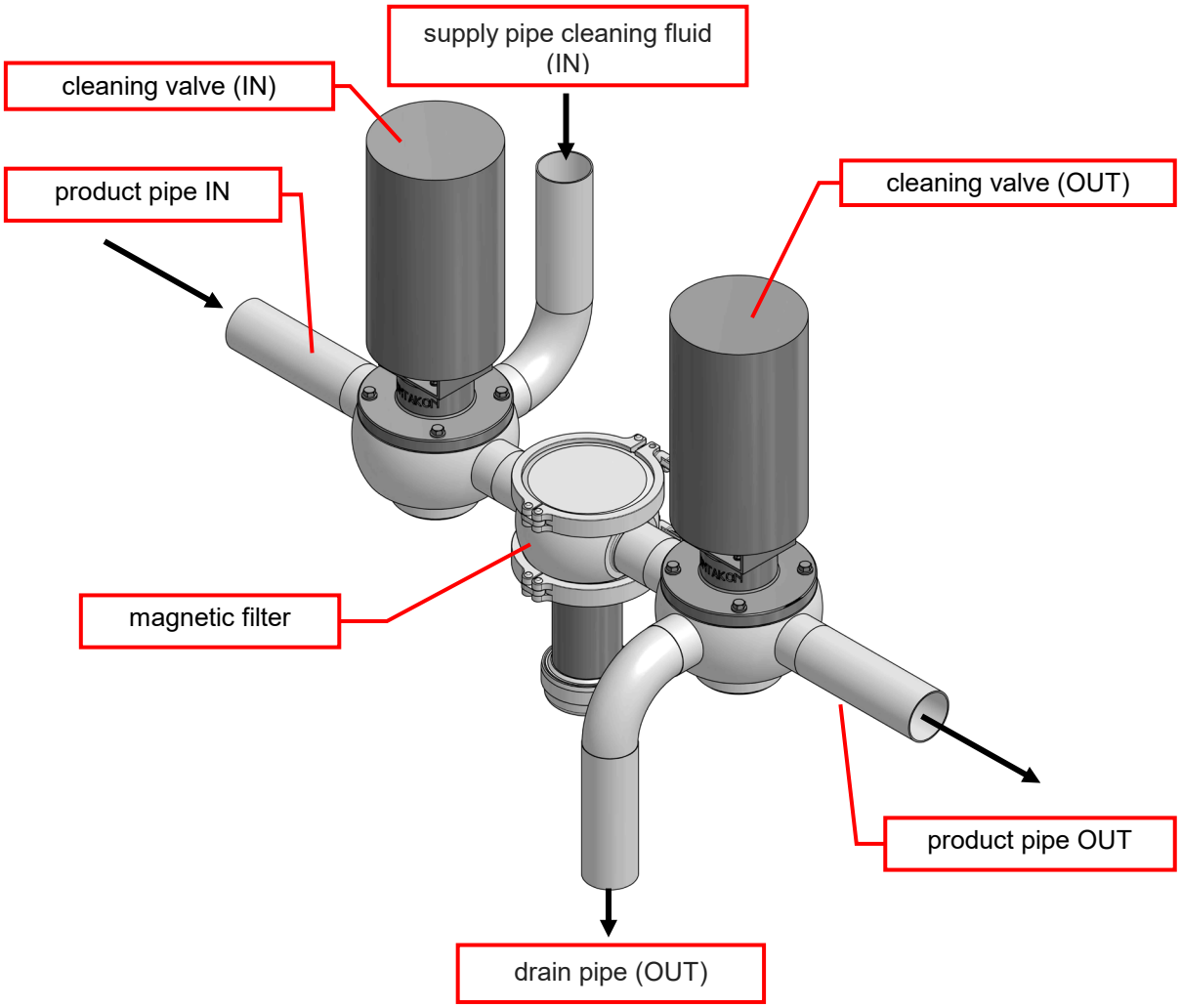
The very strong neodymium magnetic bar is positioned in the middle of the product flow. The product with ferrous impurities passes this bar while flowing through the filter.

The magnet attracts passing ferromagnetic contaminants; the captured particles stick to the magnet, while the purified product flows further.

After stopping the product flow, pneumatically blow the magnetic bar to the OUT position. As a result, the ferrous particles fall from the tube onto the filter bottom. By cleaning the CIP/SIP pipe, you can dispose of the captured ferrous particles with the flushing agent.

Removal of ferromagnetic particles

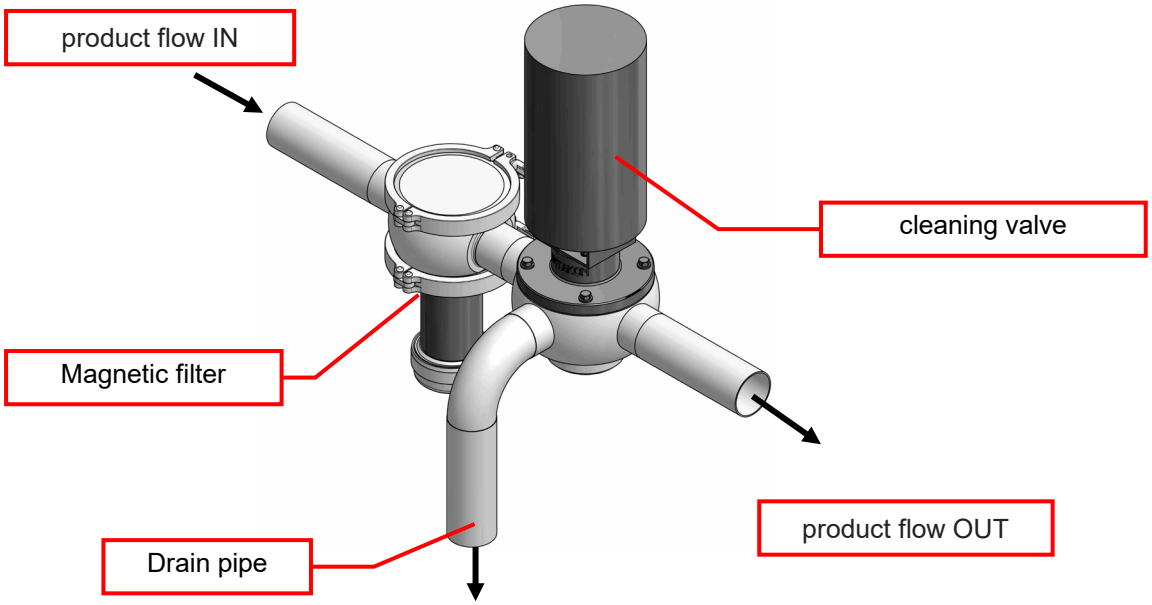
Double valve configuration



Cleaning the magnetic filter of ferromagnetic particles with optional double valve configuration

- Stop the product flow.
- Ensure that all clean product is out of the pipeline.
- Activate the cleaning valves.
- Start the cleaning fluid flow.
- Blow the magnet pneumatically OUT of the product channel.
  The ferrous particles will now fall off the tubes, to the bottom of the filter.
- CIP/SIP clean the pipeline, including the magnetic filter.
- Ensure there is sufficient time for the removal of ferromagnetic parts.
  The drain pipe can also be used for sampling.
- Stop the cleaning fluid flow through the cleaning pipe.
- Deactivate the cleaning valves.
- Blow the magnet back IN the product channel.
- Resume the product flow.

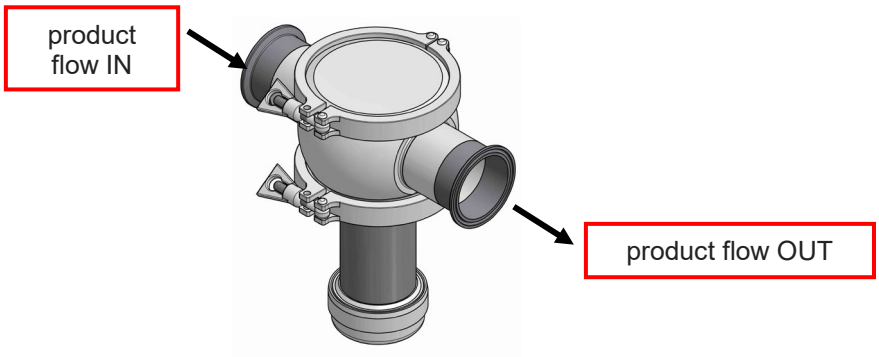
Single valve configuration



Cleaning the magnetic filter of ferromagnetic particles with single valve configuration

- Stop the product flow.
- Ensure that all clean product is out of the pipeline.
- Activate the cleaning cycle.
- Ensure there is sufficient time for the removal of ferromagnetic parts.
  The drain pipe can also be used for sampling.
- Deactivate the cleaning cycle.
- Resume the product flow.

Valveless configuration



Cleaning of ferromagnetic particles with magnetic filter without any valve

- Dispose the ferromagnetic particles through another drain in the installation.

Note.
This manual does not cover the CIP/SIP procedure for the entire installation.

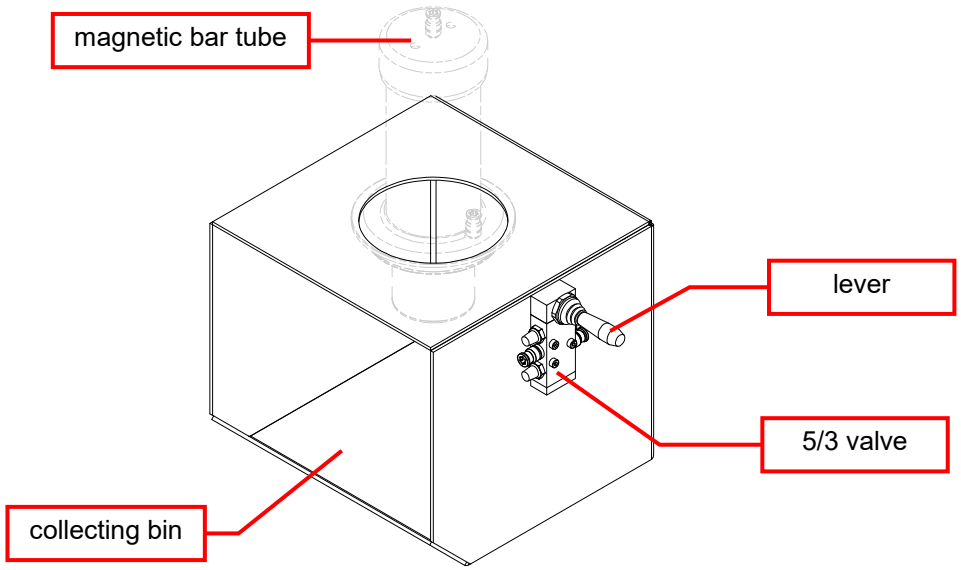
- Always dispose the ferromagnetic particles before the CIP/SIP process.

Magnetic bar cleaning

Cleaning of ferromagnetic particles using a cleaning tool (accessory)

The cleaning of ferromagnetic particles can also be done with a cleaning tool (accessory).

- Insert the magnetic bar into the cleaning tool.
- Connect a Ø6 mm air hose to the magnetic bar tube and to the 5/3 valve.
- Use the lever to move the magnetic bar to the upper position. The captured ferromagnetic particles fall off the magnetic bar tube.
- Empty the collecting bin.
- Use the lever to switch the magnetic bar back to the lower position.
- Disconnect the air hoses.
- Remove the magnetic bar out of the cleaning tool.



Advantages:

- both hands free
- captured ferromagnetic particles fall into the collection bin
- possibly leading to an investigation into separation efficiency
- ferromagnetic particles are no longer attracted by the magnetic bar again when the magnetic package is at the top of the magnetic bar tube (jump over), this possibility exists with manual cleaning
- ferromagnetic objects lying around the workplace during manual cleaning are not accidentally attracted
- can be placed on a table or fixed to the wall using the mounting holes.

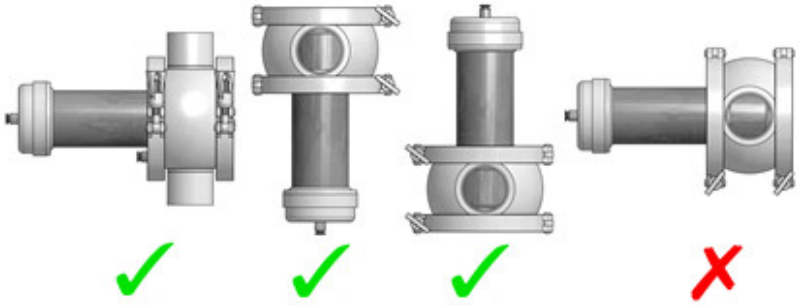
Installation, start-up and servicing

Installation of the device

Take the following precautions:

- Only allow qualified personnel to work on the installation.
- Handle the device with great care. The tube is very fragile.
- Remember that any ferromagnetic tools and components are attracted to the magnet and may damage it.
- Connect joints or flanges correctly to the inlet and outlet joint.
- Install the device correctly and at the correct working height. Never install the device with the connections horizontally positioned and the magnetic bar also horizontal (see figure "Recommended set-up for CIP/SIP applications").
- Shut off the (compressed) air supply while working on the device.
- Connect an air hose to both connection nipples. Connect the air hoses to the central control unit.
- Make sure that there is at least 0.5 meters of free space around the installation to be able to place the device in the installation.
- There is permanent magnetic force on the magnetic bar. See chapter "Safety" for the precautions to be taken when working on the device.

Recommended set-up for CIP/SIP applications



Installation options

- DIN11864-1: 2008 Aseptic screwed pipe connection, standard type
- DIN11864-2: 2008 Aseptic flanged pipe connection, standard type
- DIN11864-3: 2008 Aseptic clamp pipe connection, standard type

For other options consult EHEDG Position Paper “Pipeline and Process connections”.

Air quality (compressed air)

Goudsmit Magnetic Systems B.V. recommends using compressed air of the quality ISO 8573-1 (2:4:1) for the flow of food products.

It is your own responsibility to choose the right air quality to suit your product flow. There is no direct contact between air and the product. The air used is ventilated outside the unit. If this is not desired, the exhaust air can be discharged into a return circuit or to another room.

Air pressure

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

General start-up

- Test the operation of the magnetic bar with a paper clip. If the magnetic package is shifted in the magnetic bar, the paper clip must be " captured " or fall off, as the case may be.
- Check the device for damage or defects.

Maintenance

Clamping / crushing hazard

Due to the extremely strong magnetic force on the magnetic bar, it is very dangerous to replace the magnetic bar and the magnetic packages. Replacing the bars and packages should ONLY be done by qualified personnel or (preferably) by mechanics from Goudsmit Magnetic Systems B.V.. If the replacement is nevertheless performed by non-qualified personnel, the warranty will become void.

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

Caution

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

- The device is designed to be maintenance-free. We recommend regularly checking the seals between the filter housing and the magnetic bar/lid for signs of ageing and wear.
- Check the air hoses for defects.
- Check for leaks.

Maintenance work on the magnetic bar/package may only be carried out by qualified personnel. It should preferably be carried out by service technicians of Goudsmit Magnetics Group B.V.

The warranty on the device is void if service and maintenance are not carried out in accordance with the operating instructions or are carried out by personnel who have not been specially trained for this purpose.

If you nevertheless decide to carry out maintenance on the magnetic bar/package yourself, proceed as follows:

1. Stop the product flow.
2. Depressurize the installation.
3. Disconnect the air hoses from the pneumatic magnetic bar.
4. Open the clamp around the housing.
5. Check the seals on the cover and bottom for defects (wear or aging).

6. Disassemble the magnetic bar and place it on a non-ferromagnetic surface, e.g. wood or plastic.
7. Check the outside of the magnetic bar for dents.
8. Dismantle the cap of the magnetic bar and remove the magnetic package from the pipe (clamping hazard).
9. Check the magnetic bar tube on the inside for scratches.
10. Thoroughly clean all parts. Check the magnetic package for corrosion and damage.
11. Check the O-ring of the magnetic bar tube for defects. Replace the O-ring with some grease or (food grade) oil.
12. Check the sealing ring of the magnetic package for defects. Replace the sealing ring with some grease or (food grade) oil.
13. All parts that are in good condition can be reused. Order defective or damaged parts from Goudsmit.
14. Replace the magnetic package with some grease or (food grade) oil in the magnetic bar tube.
15. Assemble the cap on the magnetic bar.
16. Replace the magnetic bar into the housing.
17. Close the clamp around the housing.
18. Connect the air hoses to the connection points. The device is now fully assembled again.
19. Pressurize the installation.
20. If there are dents or scratches in the magnetic bar tube, test whether the magnetic bar still moves up and down in the tube without any problems. Replace if necessary.
21. Restart the product flow.

Cleaning tool (accessory)

The cleaning of the magnetic bar can also be done with a cleaning tool.
See section “Magnetic bar cleaning”.

Spare parts

Spare parts include the pneumatic magnetic bar and the seals. The seals must be replaced every year.

Goudsmit Magnetic Systems B.V. offers an annual inspection including replacement of the seals and an inspection report with certificate for the magnetic bar. This includes the measurement of the flux density.

Storage and dismantling (recycle)

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