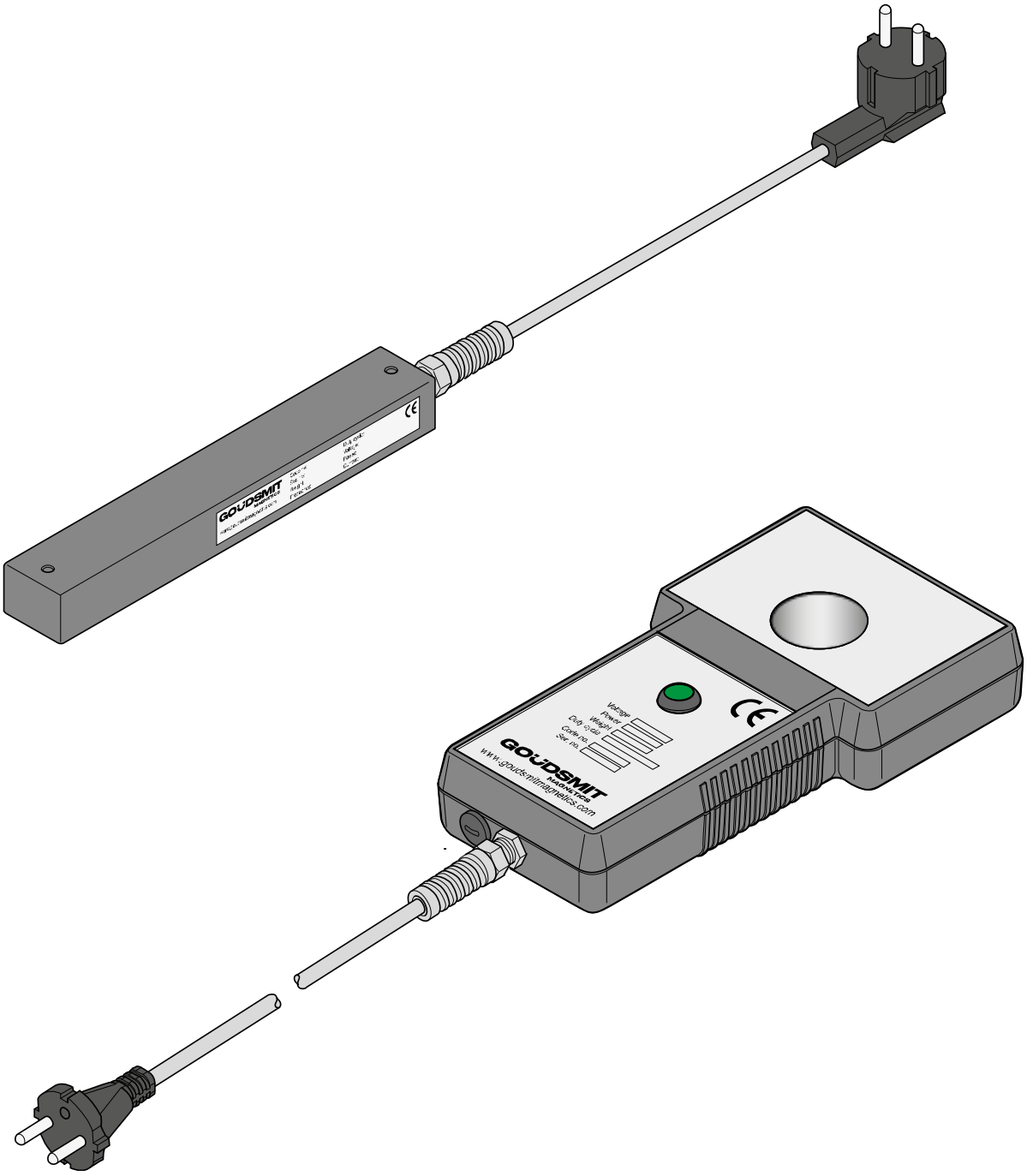
GOUDSMIT MAGNETICS

User manual

Portable demagnetizers

Applicable to the demagnetization of soft-magnetic materials (such as iron)



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1 Introduction

This manual contains information about correct use and maintenance of the device. The manual contains instructions that should be followed to prevent injury and serious damage and to ensure safe and problem-free operation of the device. Read this manual thoroughly and ensure that you fully understand everything before using the device.

If you need more information or still have questions, please contact Goudsmit Magnetic Systems B.V.. The contact details are provided on the title page of this manual. Additional copies of the manual can be ordered by providing the device description and/or article number as well as the order number.

In this manual, the HDHH demagnitization device is further referred to as ‘device’.

NOTICE

Read this manual carefully before installation and commissioning!

The descriptions and figures in this manual, provided for explanatory purposes, may differ from the descriptions and figures of your version.

NOTICE

This manual and manufacturer’s declaration(s) are to be considered part of the device.

Both documents must remain with this device if it is sold.

The manual must be available to all operating personnel, service technicians and others who work with the device throughout the life of the device.

2 Informatie over magnetisme

2.1 The magnetisation of ferromagnetic material

Ferromagnetic (or magnetically conductive) materials such as steel and steel alloys can easily become magnetic. Depending on the type of material or alloy, the material remains magnetic; this is referred to as remanent magnetism. Even non-ferritic stainless steel (AISI304, AISI316) can become magnetically conductive through deformation or welding.

The magnetism that is absorbed usually comes from another magnetic source, such as lifting magnets, clamping tables, loudspeakers or magnetic conveyor systems. However, magnetic fields around transformers, welding cables and welding processes can also be a magnetic source. In addition, processes such as drilling, grinding, sawing and sanding the material can cause remanent magnetism.

2.2 The consequences of undesired magnetism

The consequences of undesired magnetism can range from annoying to very costly. A nut that sticks to a screwdriver is annoying. However, two products sticking together in a mould halt production and cost money. Other examples of consequences include a rough surface after galvanising, weld seams that are stuck on one side, extra wear on bearings and chips that stick.

You can prevent the above consequences by applying demagnetization. GOUDSMIT Magnetics has designed all kinds of demagnetization systems for this purpose.

2.3 Measuring the amount of magnetism in materials

The amount of magnetism stored in materials is not always simple to measure.
This is because it is often spread across the entire material. It is usually most easily measurable at the ends and around holes. Using a (Goudsmit Magnetics) Gauss meter with a hall-effect sensor, for example, you can easily find and measure the field.

The easiest way to determine magnetism is with a metal paperclip. By moving it close to the surface of the material on a thin string, you can discover the magnetic spots. If the material actually attracts the paperclip and it sticks, the magnetic value is at least 20 Gauss. With lower values than 20 Gauss, the paperclip will detach, and with values above 40 Gauss, it will remain firmly attached. Iron filings are already attracted at values as low as 10 Gauss. This is very low, because the Earth's magnetic field is approximately 0.25 to 0.65 Gauss, depending on the location on Earth. After demagnetization of materials, the residual magnetism will be around this value, so do not expect the value to drop to 0!

Even non-magnetic or low-magnetic metals (such as stainless steel) can become magnetic after welding, bending or machining, for example. Furthermore, after demagnetization, these materials and tools can become magnetic again if the material comes into contact with a magnetic field. This is because the structure of the material does not change after demagnetization and therefore, despite demagnetization, it remains more susceptible to magnetisation than the original base material.

3 Safety instructions

DANGER

Risk of electric shock!

During operation, the demagnetization bar carries a voltage of 230 V.

► Do **NOT** use the device if the cable is damaged.

The device is equipped with a (thermal) protection against overheating. If the internal coil rises above 90 °C, the power supply is interrupted. The device can be used again if the temperature of the internal coil drops below 80 °C. The surface temperature is then about 40 °C.

NOTICE

Do NOT place any (flammable) objects on the device after use. This will increase the surface temperature, which may cause scorch marks or even a fire hazard.

3.1 Safety risks

This chapter describes the safety risks of the device. Where necessary, warning pictograms have been affixed to the device. These pictograms are explained later in this document.

NOTICE

Observe the following measures:

► Read the warning pictograms on the device carefully.

► Check that the pictograms on the device are present and legible at regular intervals.

► Keep the pictograms clean.

► Replace pictograms that have become illegible or that have been removed with new pictograms in the same locations.

3.2 Other remarks/warnings

Rectify all faults before operating the device. If the device is used whilst exhibiting a fault, after having completed a risk assessment, warn operating and maintenance personnel of the fault and the potential risks associated with that fault.

4 Standards and directives

4.1 CE marking

In terms of construction and operation, this device complies with European and national requirements.

The CE marking confirms the conformity of the device with all applicable EU regulations associated with the application of this marking.

4.2 Directives

The standard version of this device conforms to the requirements of the following European directives:

- Machinery directive 2006/42/EC
- EMC directive 2014/30/EU

4.3 Limit values for occupational and public exposure to permanent magnetic and electromagnetic fields

The limit values and magnetic fields are defined in accordance with the EMC Directive 2013/35/EU as follows:

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

Observe the following measures in relation to exposure to magnetic fields in accordance with EN12198-1 (machine category = 0, no restrictions) of the device:

Life-threatening danger to people with implanted medical aids

People with an active implanted medical aid (e.g. pacemaker, defibrillator, insulin pump) may never be present within a radius ‘R’ of 0.5 metre(s) of the device.

Damage to products with sensitivity to magnets

Products that contain ferromagnetic parts, such as debit cards, credit or chip cards, keys and watches, may be rendered permanently damaged if they come within a radius ‘R’ of 0.2 metre(s) of the device.

Employees who are pregnant and the general public may not come within a radius ‘R’ of 0.5 metre(s) of the device.

Limit values for occupational exposure (general and for limbs) are not exceeded.

4.3.1 Warranty conditions

The device may only be used for the demagnetization of soft-magnetic materials.

Any other use does not comply with the regulations. Any damage resulting from this is not covered by the manufacturer's warranty.

5 General information

5.1 Ferromagnetism

The device's principle of operation is based on ferromagnetism. Ferromagnetism is a property possessed by certain materials, such as iron, cobalt and nickel. These 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 or magnetically hard.

However, most magnetic materials lose their magnetism after the external magnetic field is removed. These are soft magnetic materials. Most alloys of iron, cobalt and nickel are magnetic.

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

5.2 Warranty conditions

The warranty on the device is void if:

- Service and maintenance are not performed in accordance with the operating instructions or are carried out by personnel not specially trained for this purpose. Goudsmit Magnetic Systems B.V. recommends having service and maintenance carried out by service technicians from Goudsmit Magnetic Systems B.V..
- Modifications to the device are carried out without our prior written consent.
- Parts of the device are replaced with non-OEM or non-identical parts.
- Parts of the device become damaged, because the device was put into production with a malfunction and/or a persistent malfunction.
- The device is used injudiciously, incorrectly, carelessly or in a manner not in keeping with its nature and/or intended use.

NOTICE

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

5.3 Other remarks/warnings

- Do not use the device if it is damaged.
- Only use the device for the application for which it was designed.
- Ensure that the device is maintained correctly and in accordance with the instructions in this manual.
- Rectify all faults before operating the device.

6 Specifications

6.1 Function description

The magnetic neutralization is done by applying a strong demagnetization field, produced by an electromagnetic coil in the bar or device. Small workpieces, such as drills, can easily be demagnetized with a portable demagnetizer.

6.2 Application

The **demagnetizaion bar** is intended for the demagnetization of tools and machine parts in hard-to-reach places.

These bars are frequently used in workshops, tool shops, machine building and watch repair shops.

The **demagnezation device with round feed** is suitable for the demagnetization of tools and small materials.

6.3 Temperatures

The device be used in an ambient temperature range of -10 °C to +40 °C.

7 Commissioning

NOTICE

Before use, make sure that the device is not damaged or defective.

7.1 Demagnetization bar

- Check that the device is clean.
- Plug the power cord into a power socket.
- Hold the magnetic side of the demagnetization bar as close as possible to the object to be demagnetized and move along it at an even speed.

Do not use the device for too long at one time. The operating time is 15% up to a maximum of 10 minutes. The device may only be switched on 15% of the time, the other 85% of the time is needed for cooling down.

- After use, remove the plug from the socket.
- Clean the device with a clean dry cloth.

7.2 Demagnetization device with round feed

- Check that the device is clean.
- Plug the power cord into a power socket.
- Hold down the button on the device and guide the material to be demagnetized as close as possible to the edge of the passage or at an even speed through the round passage.
- After use, do not release the button on the device until 50 cm from the object to be demagnetized. The device is now switched off.
- After use, remove the plug from the socket.
- Clean the device with a clean dry cloth.

8 Maintenance and malfunctions

- Be sure to clean the device with a clean soft cloth before use.
  Demagnetization systems attract a lot of iron particles and possibly other dirt.

If the device does not work (or no longer works), check if:

- there is a break in the (power) cable. The cable is **NOT** interchangeable.
- there is power supply to the socket. Fix the problem.
- **Demagnetization bar**: thermal protection is activated. Let the device cool down for half an hour.
- **Demagnetization device with round feed**: by operating the push button the device will not be activated. If the device is still under warranty, please send it to Goudsmit Magnetic Systems B.V. for repair.

9 Storage and disposal

9.1 Storage

- Store the demagnetization bar in a clean place after use.
- Store the demagnetization device with round feed in the corresponding case.

9.2 Disposal

Waste electrical and electronic equipment that is no longer usable must be collected separately and disposed of in an environmentally friendly manner (European Directive on Waste Electrical and Electronic Equipment).

For the disposal of waste electrical and electronic equipment, use the national return systems.

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