



## MANUAL

Automatic lifting magnet N-500  
2023 V2.0, sn. SN:N50023024B

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## Introduction

### Safety Guidelines and Warnings

Please read this manual carefully before deployment to ensure safe use of the device  
Keep this manual in good condition and easily accessible for the operators of the device



This device includes a source of magnetic field. A fluctuating magnetic field is produced during the use in the proximity of the device.



This device produces a magnetic field that may interfere with medical devices such as metallic implants or cardiac pacemakers. Do not use this device and keep out of close proximity unless you have approval from the manufacturer of the medical device or from your physician



The operator should always ensure that the use of this device meets operational instructions, local regulations and national safety regulations related to lifting and lifting equipment  
Never leave the operating device unattended when fall of the load might cause risk of damage or serious bodily injury

- Never turn off the power or disconnect the battery during lifting
- Do not turn off the power switch when lifting
- Applying a hard blow to the battery may cut off the power from the device, causing the load to fall



- Do not disassemble or replace the device parts
- The device must not be used for lifting or transporting people
- Never leave the load unattended
- Lift only one object at a time
- Make sure that people nearby you know that you are lifting
- Always pay special attention to the factors that may decrease the holding force of the magnet
- Always keep a safe distance to the load
- Never lift loads over people or in close proximity to people
- The permitted lifting capacity must not exceed
- Do not operate a damaged or malfunctioning device
- Never leave the load to hang on the magnet if the battery runs out.
- Lower the load immediately when the low battery alarm sound starts and replace battery



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## **General Product Information**

Automatic Lifting Magnet N-500 manufactured by Naetti Oy is electrically controlled lifting equipment,, which creates magnetic holding force with an electromagnet.

N-500 is a flexible and user-friendly device for professional use.

N-500 is utilized automatically with built-in load-sensing system.

## **Economy**

The functional structure of the automatic lifting magnet N-500 is an electromagnet that, thanks to careful design, has been made to operate with battery energy.

## **Practicality**

The low energy consumption of the automatic lifting magnet N-500 has made it possible to use an external power supply. The device uses a Makita 18V / 5A battery The operating time has been made long, which enables long and efficient work without interruptions. The battery must be replaced quickly, it is recommended to use two separate batteries so that one can be in the charger while the other is in the lift.

## **Safety**

The magnetic holding force of the automatic lifting magnet N-500 is switched on automatically. All you have to do is lower the magnet onto the part to be lifted, so that the lifting sensor lowers freely. The battery charge status does not significantly affect the holding force of the magnet. When the battery level is low enough, the device alerts you with indicators and a buzzer, and the device will not allow you to lift any more until the battery is replaced with a charged one. The load should be lowered as soon as the device starts to alarm.

## **Purpose of the Product**

Automatic Lifting Magnet N-500 is a portable and detachable lifting equipment, which is intended to be used in temporary lifting and moving of magnetic material.

The N-500 lifting magnet can be used, for example, when the use of another mechanical lifting system would be slow or the accessibility of the lifting system or workpiece would be poor and would require a person to move in the lifting area during lifting. The N-500 lifting magnet is not intended to be permanently attached to the load. If the lifting magnet N-500 is used in the way of a semi-finished product as a component when connecting one or more N-500 lifting magnets permanently or temporarily to another device or system, in all cases, the mode of operation and the device or system it is the responsibility of the designer, manufacturer and user to ensure that the use complies with the use and local and national legal and general safety requirements for the application security principles.

**Technical Specifications**

Dimensions (D x H):	D164 mm x 308 mm
Weight:	17,5 kg
Holding force: minimum:	1050 kg (S235 S $\geq$ 20 mm)
Rated lifting capacity:	500 kg (S235 S $\geq$ 20 mm)
Battery:	Makita BL1850B-2 18V LXT Lithium-Ion 5.0Ah

**Environmental conditions:**

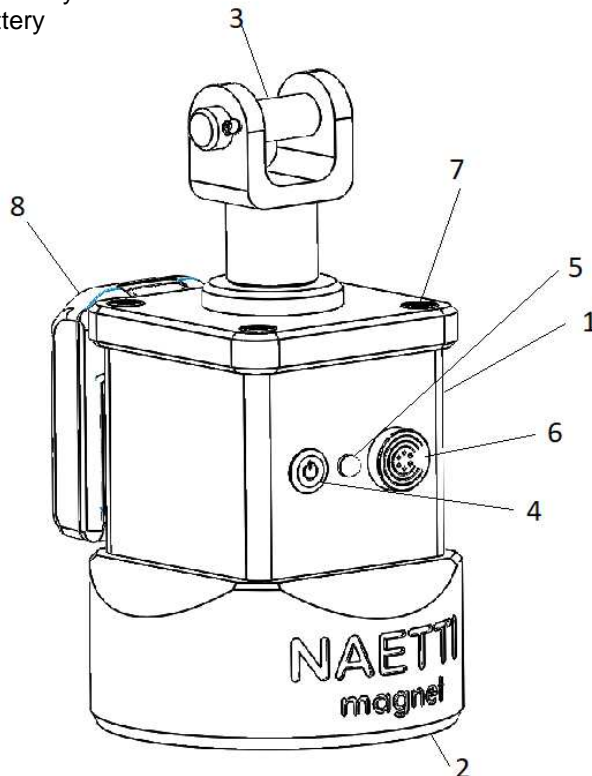
- Operating temperature:	0°C ... +55°C
- Storage temperature:	-30°C ... +40°C
- Humidity	0% ... 90%
- IP 50	(the device is protected from dust)

Operational time with fully charged battery:

100 hours in standby mode or 2h (max lifting time of the battery with a full battery)

**Assembly**

1. Automatic lifting magnet
2. Magnets gripping surface
3. Lifting shaft
4. Power switch
5. Indicator light
6. Buzzer
7. Assembly screws
8. Battery



## Warranty

The product has 12 months warranty from the date of delivery. The warranty covers material and manufacturing defects. Warranty does not cover defects caused by misuse of the product against the instructions and regulations in this manual. Warranty does not cover normal wear and tear.

## Features of the automatic lifting magnet N-500

### Holding Force and Lifting Capacity

The stated holding force and lifting capacity of the automatic lifting magnet N-500 are applicable as such only when the directions of the forces are perpendicular to the plane of the gripping surface and the material is at least 20mm thick.

The holding force is also affected by the quality and thickness of the material to be attached and the weakly magnetic or non-magnetic substance, e.g. air, between the gripping surface of the device and the body. The surfaces must be clean and the air gap zero to achieve the maximum declared holding force. The surfaces of the pieces to be placed against the gripping surface must be flat and cover the entire gripping surface. The maximum holding force of the lifting magnet and the permitted lifting capacity in the material to be attached are achieved with steel EN S235, with a material thickness of at least 20 mm. Lifting capacity in relation to material thickness is given in the section "Material thickness" in these operating instructions. The lifting capacity in relation to the air gap is described in the section of these operating instructions 'Air gap and surface quality'. Carefully familiarize yourself with the lifting capacity of the lifting magnet before using it. The lifting capacity of the device must never be exceeded. The device should be mounted as close as possible to the center of gravity of the piece to minimize and perform safe lifting. When the part tilts during lifting, the torque applied to the device reduces the lifting capacity. When tilted, the part being lifted may slip, causing the part to come loose. When lifting, the forces caused by acceleration must be taken into account. For example, rapidly lifting or lowering the load will cause more force than a slow and steady movement.

### Material Properties

The holding force of the magnet is affected by the magnetic properties of the material to be attached. The holding force consists of the strength of the magnetic field of the magnet and the ability of the material to be lifted to conduct the magnetic field. The holding force and lifting capacity of the automatic lifting magnet N-500 have been measured and determined with steel EN S235. Most other steel materials produce less grip. Hardened steel materials conduct the magnetic field worse than the corresponding unhardened one. Because the magnetic holding force is lower with the hardened material. The lifting capacity of 500 kg is defined by steel EN S235.

### Air Gap and Surface Quality

Any material that separates the magnet's lifting surface from the surface of the load reduces the total magnetic holding force.

Reduction can also be caused by non-magnetic materials or by materials with weak magnetic qualities, such as, zinc or paint or similar coating, rust, frost or air.

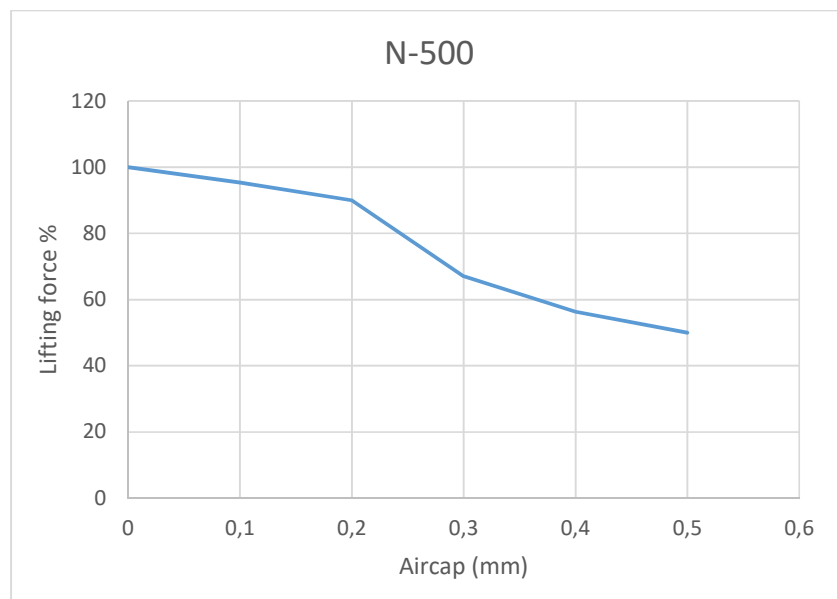


Before attaching the automatic magnet, both the gripping surface of the magnet and the surface of the material should be cleaned of materials that impair adhesion to minimize air gap.



The surface of the material to be lifted may warp during lifting, creating an air gap and impairing the holding force. This phenomenon occurs especially with thin materials

#### N-500 – Lifting capacity in proportion



## Material Thickness

In addition to ferromagnetic characteristics of load material, magnetic holding force is affected by the thickness of the material.

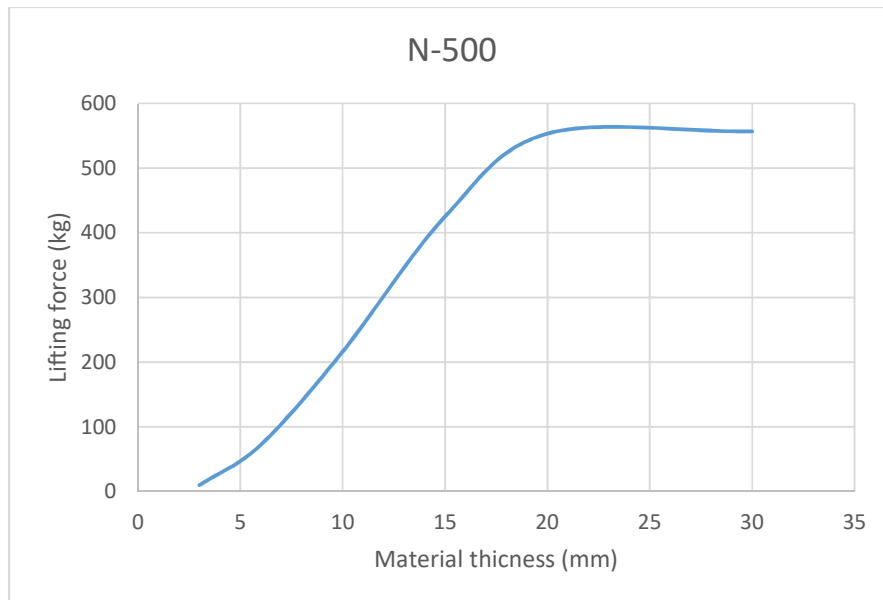
The material's maximum conducting capacity for a specific magnetic field strength is achieved with a specific threshold thickness of steel plate.

When the thickness becomes smaller than this threshold, the conducting capacity of the steel plate weakens, and at the same time, the holding force is reduced.

When steel plate thickness becomes greater than this threshold, the holding force is no longer proportional to thickness, as the magnet has reached its full capacity.

The maximum magnetic holding force of the lift with the material to be lifted is measured with steel EN S235 with a material thickness of at least 20 mm.

### Lifting capacity in proportion to material thickness



## Use of Automatic Lifting Magnet N-500 Indication Lights and Functions

### Device function / status Indicator light (s) Using the device

device off	-> no lights in the device, no functions in the device
starts	-> the red light comes on
blue flashing	-> battery charge too low, replace battery
magnet closed mode green on	-> normal operation, lifting mode
magnet off mode red flashing	-> wait mode
magnet off mode red on	-> magnet off mode



### **Introduction**

The battery of the lifting magnet N-500 automatic magnet is pre-charged by the manufacturer (Makita) and requires a full charge before use. The N-500 Lift Magnet is ready for use after charging and connecting the battery.

### **Start-up and Shutdown**

Turn the device on by pressing the switch 4.

At start-up, the red signal gap on the magnet will light up

To switch off the appliance, press button 4 again to switch off the light.

**Never switch off the appliance in lifting mode.**

### **Automated Use**

#### **Operating Information**

Automatic Lifting Magnet N-500 can sense the elevation of the load automatically.

The device has a vertically moving lifting shaft whose position indicates whether the device is lifted up or released down.

#### **Lifting shaft in up position:**

When the device is elevated, the lifting shaft goes to UP-position.

Own weight of the device keeps the lifting shaft in UP-position when the device hangs freely from its lifting shaft.

#### **Lifting shaft in DOWN-position:**

When the shaft is not loaded by lifting, the shaft returns to the down position under spring load.

When the shaft is released from the load (the shaft moves from the upper position to the lower position), the motion is detected by the magnet and every other time it is closed and every other time it is turned off. When entering the disconnect mode, the device enters the mode with a delay. (security delay)

### **Use**

1. Secure the N-500 from its lifting sling to the lifting device securely and properly
2. Press the power button to turn on the power, wait for the red light to turn on.
3. Lower the N-500 onto the gripping surface and release the shaft load by lowering the unit so that the shaft returns to the down position
4. The magnet will automatically turn on
5. Check that the green light on the device magnet is lit and the buzzer beeps 1 time before lifting the piece. During lifting, make sure that the part to be lifted remains attached to the magnet and perform the lifting with a steady slow motion.
6. After completing the lift, lower the N-500 and the attached piece carefully in a steady motion down so that the shaft load is released and the shaft returns to the down position.
7. The magnet automatically switches off.
8. Check that the red light indicating that the device magnet is off is first blinking and then stays on. The buzzer beeps 2 times. You can now lift the magnet off the attached piece.

**When the magnet is off, the N-500 lifting magnet is not magnetic.**

## **Maintenance and Inspection**

The lifting magnet generates magnetic fields that can have an effect on medical devices such as metal implants or pacemakers. Do not use or stay near the lifting magnet without the permission of the manufacturer of your medical device or your doctor. Keep the Automatic Lift Magnet N-500 clean. Use a towel for cleaning, do not use large amounts of liquid and strong chemicals! Keeping the automatic lifting magnet N-500 clean extends the life of the device, ensuring its functionality and helps to better detect possible defects and broken parts.

### **Do not use the device if you notice broken parts or malfunctions!**

If other parts of the device requiring repair are found, repairs may only be carried out by the manufacturer or by a repairer authorized by the manufacturer. Contact your dealer for services and repairs to the device.

### **Maintenance and inspection within operation**

Performed at least daily before the start of each shift and whenever the device is exposed to abnormal forces, such as a strong impact or falling of the device.

- Clean the device from dirt and debris and check that the device and its parts are intact on the surfaces and that there is no distortions, bumps or cracks
- Check that the lifting shaft (3) moves up / down without jerking.
- Before each use! Clean the magnetic gripping surface (2) of the device and the point of attachment from dirt and debris to ensure maximum grip.

### **Weekly maintenance and inspection**

Performed weekly in addition to in-service maintenance and inspection and whenever the device is exposed forces abnormal, such as a strong impact or falling of the device.

- Check the condition of the lifting shaft (3)
- Check the fastening screws (7) of the device and tighten if necessary
- Check the condition of the magnetic gripping surface (2).

### **Yearly Check**

It is recommended that the lifting capacity should be tested at least once a year by an authorized technician.

## **Decommissioning of Automatic Lifter N-500**

The device contains electronics. When disabling the N-500 Automatic Magnet, follow your local instructions regulations on the recycling of electronic equipment.

## **EC Declaration of Conformity**

We hereby declare that designing, manufacturing and testing of the product Automatic Lifting Magnet N-500 complies with the Directives and Standards listed below 2004/108/EY electromagnetic compatibility and 2006/42/EY machine.

Designing, manufacturing and testing of the product  
EN 61000-6-1:2007, EN 61000-6-3+A1:2011, EN ISO 12100:2010, ISO/TR 14121-2:2007 ja EN 13155:2003+A2:2009.

The device contains electronics. When disabling the N-500 Automatic Magnet, follow your local instructions regulations on the recycling of electronic equipment.

vakuutamme yksinomaan omalla vastuulla

että tuote täyttää vaatimukset joita Euroopan parlamentin

ja neuvoston direktiiveissä 2004/108/EY sähkömagneettisesta yhteensopivuudesta ja 2006/42/EY koneista (konedirektiivi) on suunniteltu, valmistettu ja testattu noudattaen yhdenmukaistettuja standardeja EN 61000-6-1:2007, EN 61000-6-3+A1, EN ISO 12100:2010, ISO/TR 14121-2:2007, EN 13155:2003+A2:2009

<b>Valmistaja</b>	Naetti Oy
<b>Valmistajan yhteystiedot</b>	Kaidekatu 3, 20660 Littoinen
<b>Tuotteen kuvaus</b>	Magneettisten metallien ja niistä valmistettujen tuotteiden nostamiseen tarkoitettu nostoapuväline
<b>Tuotteen kauppanimi</b>	Automaattimagneetti N-500
<b>Tunnistus</b>	Sarjanumero
<b>Testaus</b>	Vetotestit

**Paikka ja päiväys** Kaarina 16.8.2021



**Allekirjoitus** Reijo Nätti  
CEO / Naetti Oy