Battery-powered electro-permanent magnetic lifter

5019679
5048350

Assembly and Operating Manual

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NOTE
In order to improve the quality and performance of the product, we reserve the right to make technical changes at any time and without notice. The images of the product contained in the manual are purely indicative and may therefore not be perfectly representative of the packaging and characteristics of the product, differing in color, size or content.

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Dear customer,
congratulation on choosing a SCHUNK product. By choosing SCHUNK, you have opted for the highest precision, top quality and best service.
You are going to increase the process reliability of your production and achieve best machining results to the customer's complete satisfaction.
SCHUNK products are inspiring.
Our detailed assembly and operation manual will support you.
Do you have further questions? You may contact us at any time – even after purchase.

Kindest Regards

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Reg. No. 003496 QM08 Reg. No. 003496 QM08

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1. About this manual

The manual contains important information regarding the assembly, operation, use and maintenance of the product. Pay particular attention to the "Safety Basics" chapter.

1.1 Warnings

The following signal words and symbols are used to highlight dangers.

1.1.1 Signal words

DANGER
Dangers for persons. Non-compliance will inevitably cause irreversible injury or death.

WARNING
Dangers for persons. Non-compliance may cause irreversible injury or death.

CAUTION
Dangers for persons. Non-observance may cause minor injuries.

ATTENTION
Information about avoiding material damage.

1.1.2 Symbols


Warning about a danger point


Warning about dangerous electrical voltage


Danger of magnetic field


Danger of falling down workpieces


General mandatory sign to prevent material damage

2. Basic safety notes

2.1 Intended use

The product may be used only in the context of its defined application parameters. To use this product as intended, it is also essential to observe the technical data and installation and operation notes in this manual and to comply with the maintenance intervals.

NOTE

This product must not be placed in service until the the combined "product + user machine" system *satisfies the requirements of the Machinery Directive 2006/42/EC.*

2.2 Environmental and operating conditions

- Use the product only within its defined application parameters. See "Technical data".
- Make sure that the environment is clean and the ambient temperature corresponds to the specifications.

2.3 Product safety

Using the product can be dangerous if:

- is not used in accordance with its intended purpose
- it is not installed or maintained properly.
- the safety and installation notes are not observed.

Avoid any manner of working that may interfere with the function and operational safety of the product.

2.3.1 Protective equipment

Provide protective equipment per EC Machinery Directive.

2.4 Personnel qualification

Assembly, initial commissioning, maintenance and repair of the product may be performed only by trained specialist personnel. Every person called upon by the operator to work on the product must have read and understood the complete assembly and operating manual especially the chapter "Basic safety notes". This applies particularly to personnel only used occasionally, such as maintenance personnel.

2.5 Using personal protective equipment

When using this product, observe the relevant industrial safety regulations and use the personal protective equipment (PPE) required :

- use protective gloves, safety shoes and safety goggles
- observe safe distances
- comply with the minimum safety requirements for the use of the equipment.

DANGER

Danger due to a magnetic field

This product is a magnetic system. The following groups of persons must not come into contact with it:

- Persons with pacemakers.
- Persons with metal or electronic prostheses.
- Persons with insulin pumps.
- Persons with muscular stimulation systems.
- Pregnant women.

These persons should always keep a safe distance of at least 2m to the magnetic lifter.

2.6 Notes on particular risks

- Remove the energy supplies before installation, modification, maintenance, or adjustment work.
- Ensure that no residual energy remains in the system.
- Perform maintenance, modifications, and additions outside the danger zone.
- For all work, secure the product against accidental operation.

2.7 How to avoid potentially dangerous operations

- Do not use the equipment or services different from its intended use;
- Do not lift loads while people are crossing the operational area below;
- Do not cross, stop, work or carry out a manoeuvre underneath the suspended load or stand in a position where falling down pieces may cause damage;
- Do not allow unqualified or unsuitable personnel to use the equipment;
- Pay proper attention during load lifting and handling manoeuvres;
- Do not leave the suspended load unattended;
- Do not exceed the nominal capacity of the equipment;
- Do not lift unequally distributed or unbalanced loads;
- Do not lift more than one piece at a time;
- Prevent the load from oscillating while being handled;
- Do not lift “guided” loads ";
- Don’t let the load hit mobile or fixed parts or structures;
- Do not reach the “limit stop” area at full speed during handling operations;
- Do not handle the load, unless the magnet perfectly adheres to the piece;
- Don’t carry out any maintenance work without having first removed the lifted load;
- Do not lift loads having a temperature of more than 80°C;
- Don’t use the equipment use the equipment without wearing suitable work clothing and PPE;
- Do not lift oversized or extremely thin pieces.

2.8 Rules of conduct for a safe use

- Check the conditions of the equipment regularly;
- Use appropriate tools and personal protection devices during working or maintenance operations;
- Place the equipment on the centre of gravity of the piece to be lifted;
- Magnetize the equipment only after it has been correctly placed on the piece;
- Lift and move the load with care, avoiding any unbalancing;
- Clean the poles and the surface of the piece in contact with the equipment prior to each use;
- Inform anyone standing within the working field of the equipment that lifting is about to start;
- Carefully place the piece on stable surfaces before starting the demagnetization;
- After the demagnetization, slowly raise the equipment to make sure that the piece is detached;
- Make sure that the whole magnetic area of the lifter is covered to guarantee maximum lifting capacity;
- The nominal load of the lifter is guaranteed at 0 air gap. If the air gap increases, the load capacity decreases;

* airgap = space between the crossbar poles and the piece to be lifted

3. Warranty

The warranty is valid for 12 months from the delivery date to the production facility under the following conditions:

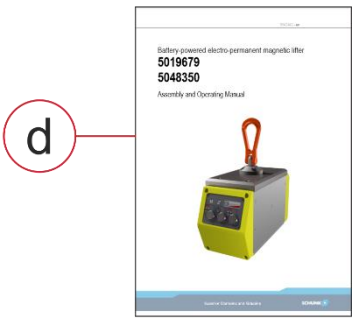
- intended use in 1-shift operation
- observe the mandatory maintenance intervals
- observe the environmental and operating conditions.

Parts touching the workpiece and wearing parts are not part of the warranty.

3.1 Procedure in the event of warranty

The buyer agrees to send a written detailed report on newly discovered defects of the product to SCHUNK within 10 days after identification.

4. Scope of delivery



The package includes:

a. Battery lifter
b. Radio control
c. Battery charger
d. Assembly and operating manual

5. Technical data

Technical product features		
Type	**5019679**	**5048350**
Lenght	135 mm	135 mm
Width	320 mm	320 mm
Height	~340 mm	~355 mm
Weight	~33 kg	~35 kg
Work load limit	500 kg	350 kg

Workpiece features			
Type	**5019679**	**5048350**	
	Flat loads	**Flat loads**	**Round loads**
Min. thickness	15 mm	15 mm	-
Max. width	1500 mm	1500 mm	-
Max. length	2500 mm	2500 mm	2500 mm
Minimum diameter	-	-	50 mm
Maximum diameter	-	-	300 mm
Minimum tubular thickness	-	-	15 mm

Battery charger features	
Incoming voltage	100-240 Vac
Frequency	50/60 Hz
Outgoing voltage	42 Vdc
Current	0.2 - 1.4 A

Battery features	
Battery type	Li-Polymer
Voltage	37 V
Capacity	5000 mAh
Specific energy	185 Wh
Magnetization / demagnetization maneuvers	1400
Recharge time	4 hours
Life cycle	600 recharges

Radio control features	
Battery type	2 x 1,5V AAA / LR03 Alkaline
On/Off switch	Present
Radio communication	Simplex
Band frequency	2405 ÷ 2480 MHz
Protection	IP65
Operating temperature	-20 ÷ +55°C / -4 ÷ +130°F
Certifications	FCC, CE, IC

The lifter's nominal load is guaranteed at airgap=0. If the airgap increases, the load capacity decreases.

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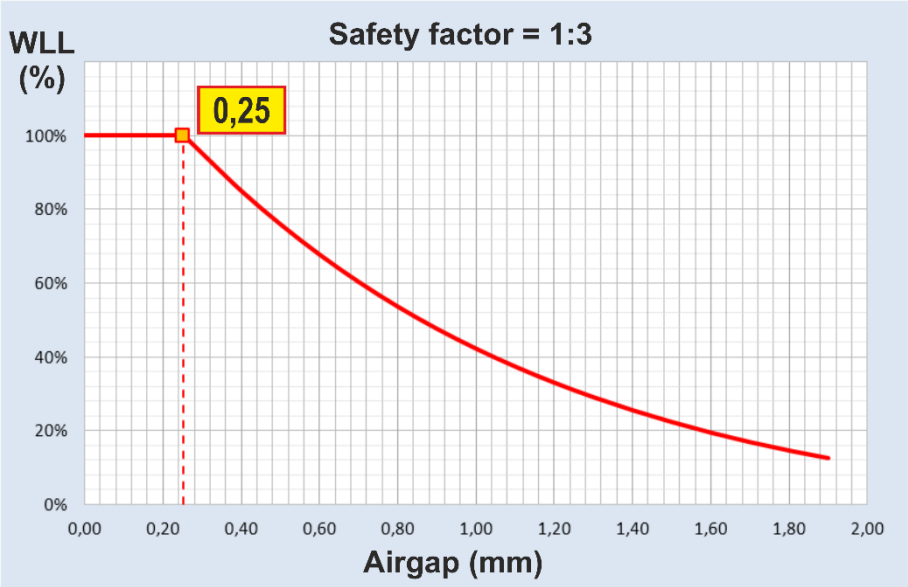
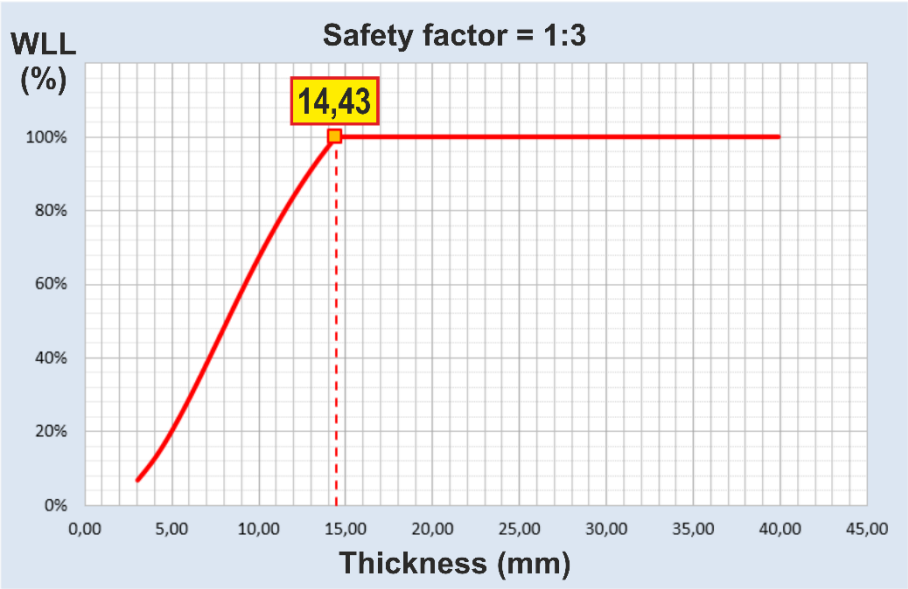
The following chart shows how the max. load capacity (WLL) varies depending on the airgap.



The nominal load of the lifter is guaranteed for a certain minimum thickness of the workpiece. If the thickness decreases, the maximum the load capacity decreases, as well.

The following chart show how the max. load capacity varies depending of the workpiece thickness.



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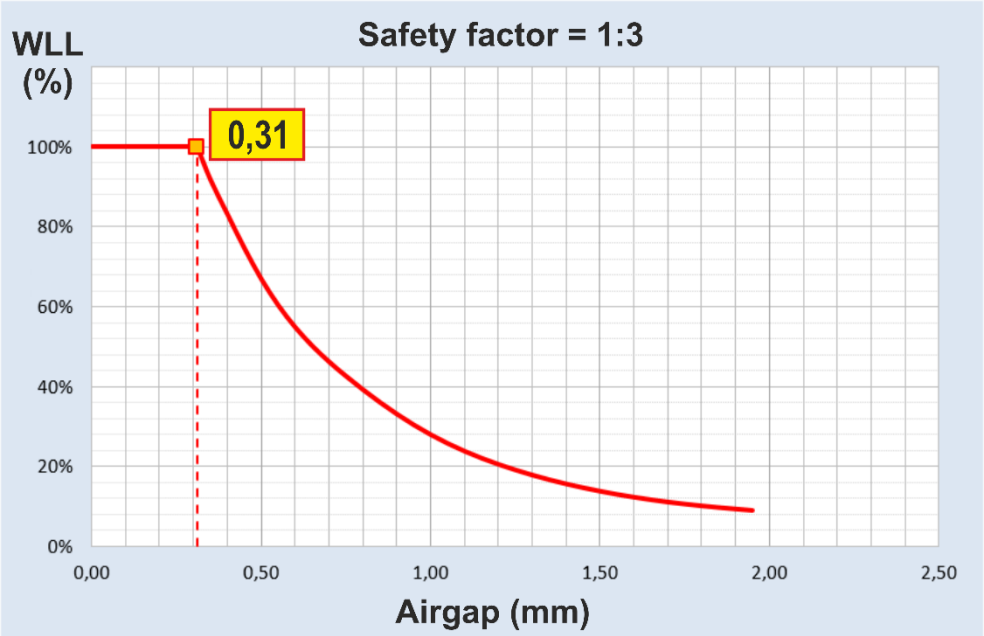
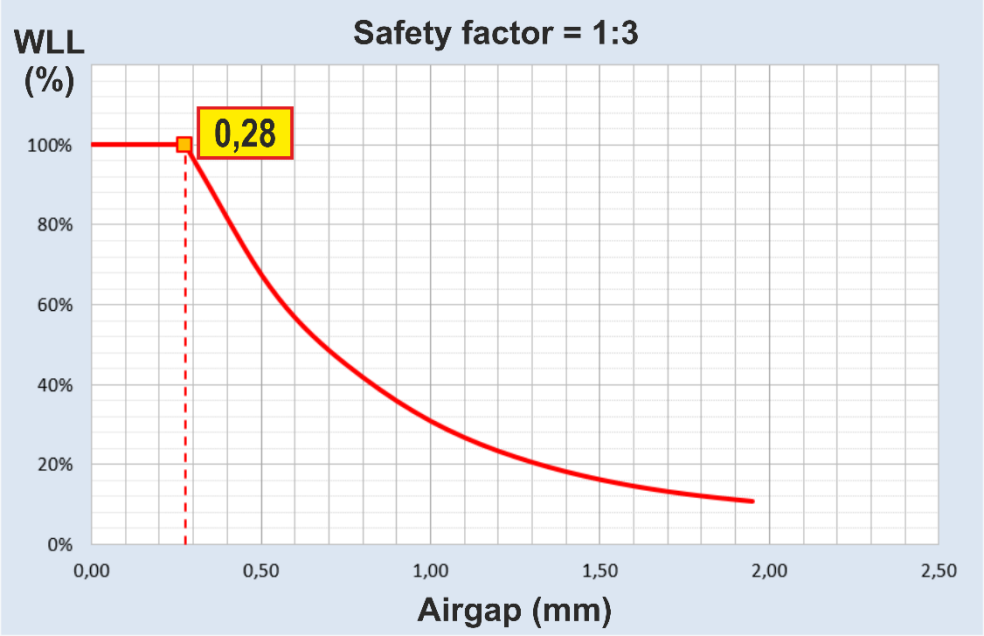
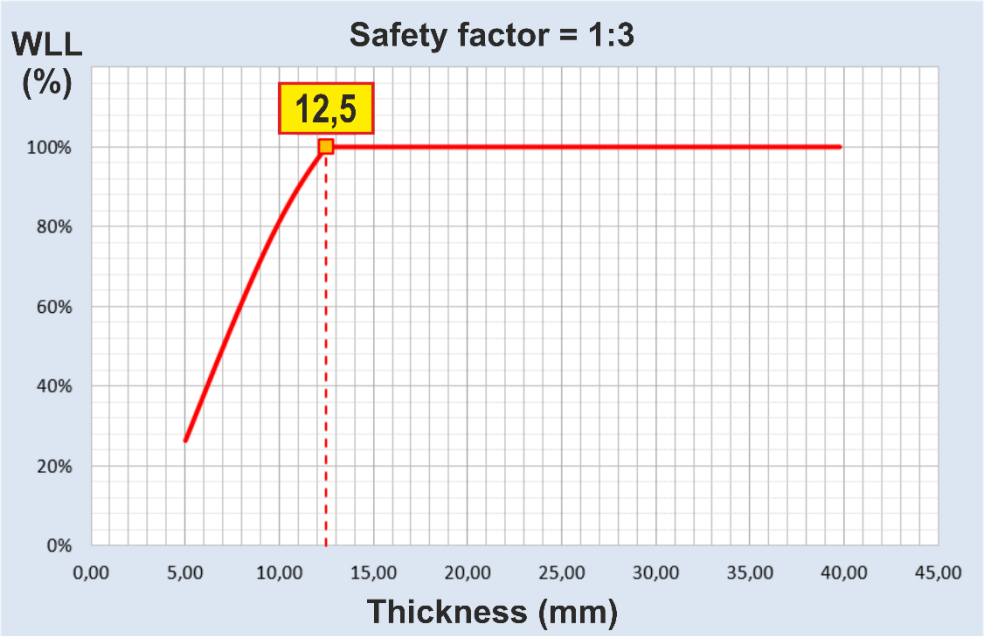
The following chart shows how the max. load capacity (WLL) varies depending on the airgap, for flat loads.



The following chart shows how the max. load capacity (WLL) varies depending on the airgap, for round loads.



The following chart show how the max. load capacity varies depending of the workpiece thickness, for flat loads.



The nominal load of the lifter is guaranteed, furthermore for the lifting of workpieces out of mild steel. The maximum the load capacity varies depending on the workpiece material.

5.1 Identification plate

The identification plate is placed on the back of the product:

Information	Description
Model	Model
Year	Year of production
Weight	Weight
Id. Number	Product code number
Serial Number	Serial number
Work Number	Production number
WLL	Working load limit

The plate shows furthermore the following information:

- chart with the limit dimensions of the liftable loads
- graph showing how the WLL varies depending on the air gap
- graph showing how the WLL varies depending on the thickness
- rules of conduct for a safe lifting

NOTE

The identification plate, once affixed, must never be removed.

For any contacts with the Customer Service of SCHUNK*, please specify the model and serial number shown on the product identification plate.*

6. Description

The product is designed to grip almost all ferromagnetic materials. The anchoring force that can be obtained depends, among other things, on the magnetic resistance and therefore on the chemical composition of the material of the movable piece. As a result, there are some ferromagnetic materials for which a reduction of the anchoring force can be foreseen.
The following table shows some examples of empirical values:

Material	Efficiency
Conventional steel (Fe 360 - C40)	100%
Ferromagnetic raw steel (C10 - C15)	90%
Magnetic stainless steel	65%
Cast-iron	50%

However, this is not true for the following materials:

- Aluminium and its alloys
- Bronze
- Brass
- Non-magnetic cast-iron
- *Some STAINLESS steels (such as austenitic,* though they can be slightly magnetisable following hardening due to plastic deformation).

Moreover, material alloys can lead to residual magnetism in the piece, which significantly reduces the anchoring force and can cause considerable issues during the demagnetisation and consequent release of the piece.

NOTE
Some thermal treatments reduce the magnetic attraction properties. Therefore, pay the utmost attention to materials which have undergone one of the following treatments:

- *Hardening in all possible variants*
- *Tempering*
- *Cementing*
- *Nitriding*

Factors reducing the maximum lifting capacity WLL
Regardless of the magnetic properties of the piece's material, the maximum lifting capacity depends on the following influencing factors:

Dimensions
The piece must be large enough to cover the entire polar surface of the product. This is the only way to close the magnetic circuit and generate the maximum capacity.

Airgap
Irregular or soiled contact surfaces increase the distance (airgap) between the piece and the product. The maximum capacity is greater when the airgap or its distribution on the contact surface are reduced to a minimum. The airgap must also be considered if a higher surface quality cannot be obtained for production reasons.
The lifter's maximum capacity is guaranteed under airgap=0 conditions.
The lifter's maximum capacity drops as the airgap increases.

Piece thickness
For very thin pieces (e.g. sheet metal), the maximum lift capacity cannot be guaranteed for physical reasons. In addition, bending the lifted piece can reduce the available contact surface and hence the effect of the anchoring force.

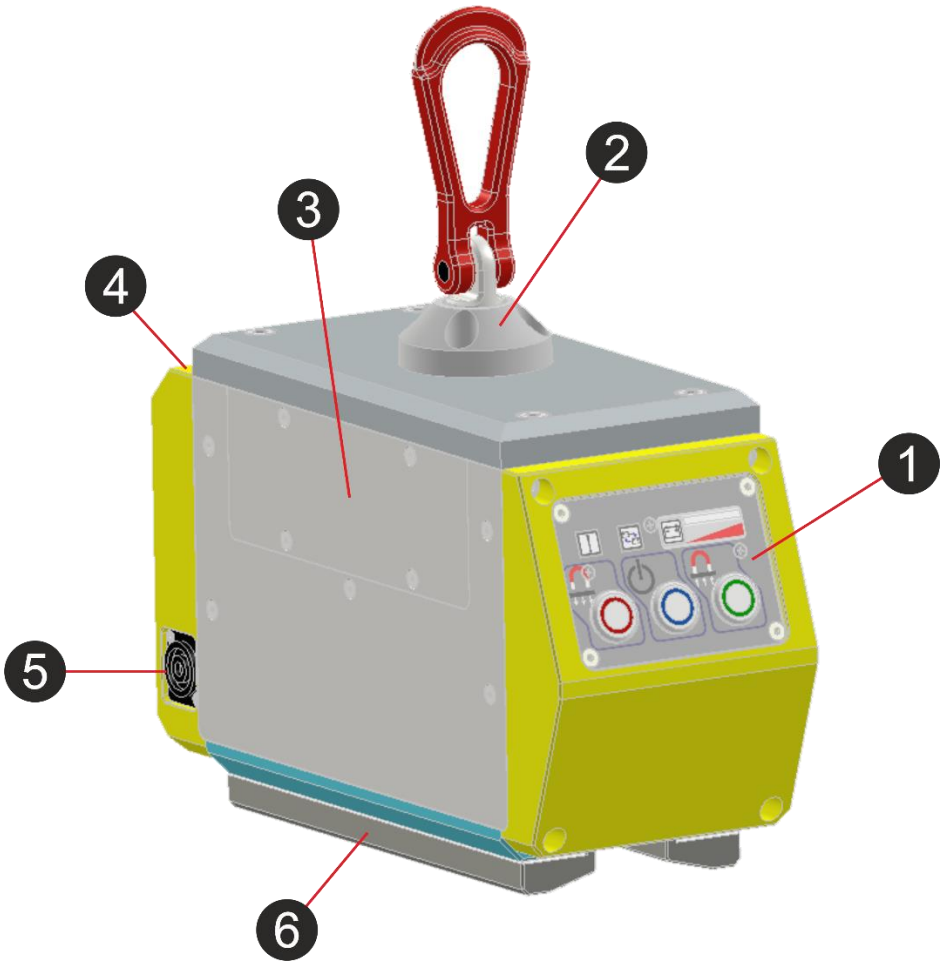
Heating
Every activation increases the internal temperature of the product. Overheating reduces magnetic properties and can destroy the product. The following criteria must therefore be met:

- the residual heat of the workpiece must correspond to the maximum permissible ambient temperature;
- The number of activations per minute must be set in such a way that the maximum allowable product temperature is not reached.

Kinetic energy
When a piece is moved, the anchoring force is countered by acceleration forces. In order to always guarantee the piece is retained in an optimal way, it is necessary to move the lifting device with slow and cautious movements, with no fast jolts!

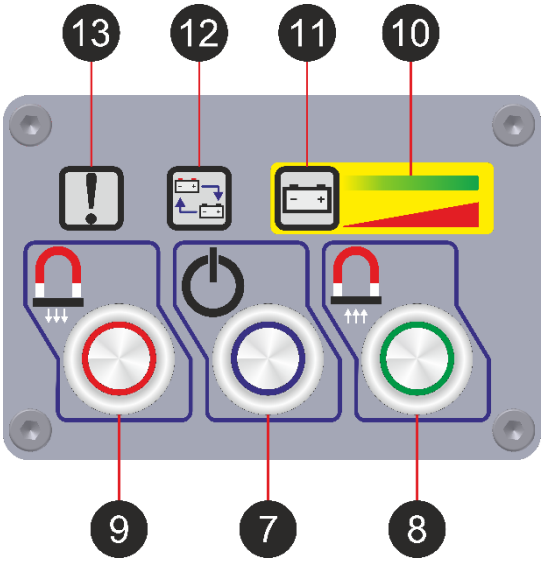
N.B. The product is tested in accordance with the provisions of the EN 13155 technical standard. The test is successful if the detected breakout force is at least 3 times the maximum working load limit (WLL)

The main characteristic elements of the product are the following:



1. Control panel
2. Hook with double security sensor
3. Battery compartment
4. Rear magnetic status indicator light
5. Socket for battery charger
6. Polar extension (only for **5048350**)

6.1 Control panel



7 Power button
8 Magnetization button (MAG)
9 Demagnetizing button (DEMAG)
10 Battery level indicator
11 Low Battery indicator
12 Battery replacement indicator
13 Alarm indicator

6.2 Radio control

The product includes a radio control that allows you to perform magnetization and demagnetization maneuvers while keeping a distance from the magnetic lifter. To turn on the radio control, use the microswitch on the back, bringing it to the ON position.

14 DEMAG key
15 COMM. key
16 COMM. light
17 MAG key

Ref.	Description
 ⓮	DEMAG KEY To be pressed to perform a demagnetization maneuver.
 ⓯	COMM. KEY It must be pressed for a couple of seconds, after switching on the remote control, to activate communication with the internal receiving section of the lift.
 ⓰	COMM. LIGHT The flashing light indicates the connection with the internal receiving section of the lift.
 ⓱	MAG KEY To be pressed to perform a magnetization maneuver.

NOTE

The maneuvers of MAG and DEMAG are allowed with the magnetic lifter resting on the ground and the lifting chains not stretched. Any attempts that are not allowed will be indicated by an alarm light. (see paragraph "Troubleshooting").

6.3 Magnetic status indicator light

On the rear side of the lifter a light indicator ❹ shows the current magnetic status of the product.

The possible indications are as follows :

- *steady green light*: lifter magnetized
- *steady red light*: lifter demagnetized
- *steady orange light*: magnetization/demagnetization not completed due to temporary intervention of the internal circuit of the battery
- *flashing green light*: magnetization attempt with lifter in working conditions (e.g. if it is fixed to a hoist and pulled upwards with a load attached)
- *flashing red light*: demagnetization attempt with lifter in working conditions (e.g. if it is fixed to a hoist and pulled upwards with a load attached)
- *flashing orange light*: magnetization/demagnetization not properly carried out due to an internal malfunction of the product.

6.4 Safety hook

The hook ❷ placed on top of the product features on its inside a safety device against accidental demagnetizations.
A double micro-switch helps detecting whether the lifter is in a resting or operating condition.
If the hook is in the resting condition (e.g. when the lifter is placed on the workpiece without being in traction), the micro-switch enables to activate the magnetization or demagnetization cycle.
Any attempt causes the button on the control panel and the rear magnetic status indicator light ❹ to flash (green light for magnetization attempt or red light for demagnetization attempt).
There is therefore no possibility of accidentally dropping the piece

Nota

The hook features two safety-micro-switches. If one of them should fail to work, the product is still secured against accidental demagnetizations.

6.5 How to recharge the battery

Two lights on the control panel indicate the battery charge level and when the battery needs to be recharged, respectively. Another light indicates when the battery is exhausted. The exhausted battery must be replaced with a new one. When disposing of this product, be sure to follow the waste disposal regulations of the country or region where it is used.

NOTE

The indicator for depleted battery can only light up after a complete battery charging. Partial charging won't make it possible to the system to detect whether the battery is depleted or not.

Indicator	Meaning	Actions
Battery level ⑩	Maximum level : battery charged	-
	Minimum level : low battery	Charge the battery
Low battery ⑪	Low battery : it's not possible to perform any work cycle except the demagnetization maneuvre	Charge the battery
Battery change ⑫	Exhausted battery	Replace the battery

The lifter battery can be charged using the special battery socket ⑤ located on the side of the lifter. Here are some simple steps to follow for correct battery charging:

- make sure that the lifter is switched off;
- connect the battery charger to the mains;
- connect the battery charger to the socket ⑤ of the product;
- make sure that the power button ⑦ on the control panel starts flashing (meaning that the battery is being charged);
- wait until the power button ⑦ lights up steadily (meaning that the battery charging has been completed);
- disconnected the battery charger from the product;
- disconnected the battery charger from the mains.

ATTENTION

Full battery recharges (100%) will allow approximately 300 total recharges before battery replacement.

6.6 Battery replacement

The replacement procedure is contained in the battery kit supplied directly by SCHUNK.

⚠ WARNING

Malfunction or damage to the product.
The lifter battery must "necessarily" always be replaced with the original spare part.

7. Preparation for first start

1. Check the packaging before accepting the product.
2. Check the product for transport damage.
3. Compare the product with the specifications given in the order.
4. Check the integrity of the connection cables.

⚠ WARNING

Danger caused by short-circuit.
Never switch on the magnetic lifter if you have detected visual damage!
Notify the freight carrier or SCHUNK immediately if you detect damage and/or missing components (with all the relevant details)!

5. Clean the poles of the magnetic lifter by removing the rust preventive oil.
6. Then mount the lifter to the supporting structure (overhead crane, crane, etc.) by means of the corresponding hook. Any other additional hook, eyebolt and fastening hole or special structure must be discussed during the commercial negotiations.
7. Please check after the installation that the lifter is safely fixed to the supporting structure without possibility to move in any direction.

⚠ DANGER

Danger from electric shock.
Touching live parts can cause death by electric shock.The product may be opened for the connections only by an electrican. Removing protective devices is reserved exclusively to SCHUNK.

ATTENTION

During the installation, both magnetic lifter and the supporting structure on which it will be mounted must be disconnected.
Always observe laws, regulations and standards applicable at the site of installation and operation.

NOTE
For any contact with SCHUNK *Customer Service, please specify the model and serial number indicated on the product identification plate.*

8. Initial commissioning and normal operation

After having installed the magnetic lifter, check its proper functioning:

1. Ensure that the magnetic lifter is not magnetized by means of the steel tip of a screw driver.
2. Clean the contact surfaces of the lift

⚠ WARNING

Danger due to suspended loads
If the handling of the magnetic lifter requires the use of lifting equipment, such as cranes, hoists, etc., please keep the respective safety distances!

3. Position the magnetic lifter over the workpiece to be lifted by making sure to centre it in order to avoid unbalanced loads.
4. Turn the magnetic lifter on by pressing the corresponding ON-button ❼. Make sure that it lights up blue and that the DEMAG-button ❾ lights up red.
5. Check if the magnetic status indicator ❹ on the rear side of the magnetic lifter lights up red.
6. Press the MAG-button ❽. At the end of the cycle, this button lights up green.
7. Make sure that the magnetic status indicator ❹ on the rear side of the magnetic lifter lights up green.
8. Lift the charge approx. 10 cm from the ground, making sure that it is properly anchored to the lifter.
9. Carry out the movement of the workpiece.
10. Replace the charge onto the ground or onto a stable surface.
11. Press the DEMAG-button ❾. At the end of the cycle, this button lights up red.
12. Make sure that the magnetic status indicator ❹ on the rear side of the magnetic lifter lights up red.
13. Carry out a new movement of the workpiece, repeating in sequence all the operations described in the paragraph.

NOTE
Please contact SCHUNK *if the expected results are not achieved even if you strictly followed the described steps.*

9. Troubleshooting

Detected trouble	Possible causes	Suggested operations
The alarm indicator ⓭ on the control panel flashes for a short time	A demagnetization cycle has been activated while the lifter is still in traction (see “Safety hook”).	Place the lifter onto a stable surface and carry out demagnetization.
	The micro-switches on the hook of magnetic lifter are defect.	Secure the magnetic lifter and contact the after-sales service.
The alarm indicator ⓭ on the control panel flashes continuously.	The built-in control system has detected a malfunctioning during the magnetization or demagnetization cycle.	Secure the magnetic lifter (as it could still be partially magnetized) and contact the after-sales service.
The alarm indicator ⓭ on the control panel lights up and remains on.	A temporary intervention of the internal circuit of the battery has interrupted the magnetization or demagnetization cycle.	Secure the magnetic lifter (as it could still be partially magnetized) and place it on a stable surface. Carry out eventually a demagnetization cycle
After the magnetization, the workpiece detaches from the magnetic lifter.	Problem linked to the dimensions or the weight of the workpiece.	Compare both weight and features of the workpiece to be lifted with the technical specifications of the magnetic lifter.
	Problem linked to the contact surface between workpiece and magnetic lifter.	Make sure that there’s no air gap between lifter and workpiece. Carefully clean if necessary the contact surfaces of both lifter and workpiece.
After the demagnetization, the workpiece doesn’t detach from the magnetic lifter.	The workpiece still contains a lot of magnetic remanence.	Place the lifter along with the workpiece onto the ground and slightly hit the latter with a nylon hammer in different spots so as to detach it from the lifter.
The power button ❼ flashes (blue led), and the MAG ❽ (green led) or DEMAG ❾ (red led) buttons are lit steadily	Overheating problem (temperature above 80°C). Internal lift protection intervenes.	Do not perform maneuvers and wait for the temperature to return to the expected limits (hysteresis 10 ° C)

10. Servicing and maintenance

We recommend checking regularly the state of the magnetic lifter. An excellent and careful maintenance is a decisive factor for optimum safety, functioning and performance and a longer service life of the product!

DANGER

Maintenance work must always be performed by qualified personnel. The same must carefully read this operating manual.

To ensure optimum availability and reliability of the magnetic lifter in the long run, the parts exposed to the greatest strain during operation must be regularly inspected. Please follow the instructions and maintenance intervals given in the table below so as to avoid expensive repairs due to failures or defects along with the consequent downtimes and inconveniences.

Defective electrical and electromechanical components must always be replaced by SCHUNK *service personnel. If components are replaced by the operator, this automatically renders the warranty void.*

After maintenance and before reconnecting and restarting the magnetic lifter, restore all protection devices.

Operation	Description	Frequency			
		For each use	1 x week	1 x month	1 x year
Check and cleaning of the magnetic poles	Make sure that the magnetic poles are clean. Remove if necessary any dirt or impurity that may cause an air gap, thus reducing the magnetic force. Make sure that there are no cracks, deformations or breaks on the polar surface.	●			
Check of the identification plates	Check the identification plates indicating technical features for damage and ensure good legibility.	●			
Check of the light indicators	Check if every light indicator of the magnetic lifter is working properly.	●			
Check the safety devices of the hook	Make sure that it is not possible to carry out a demagnetization cycle when the lifter / hook is in traction.		●		
Check of the lifting hook	Make sure that there are no cracks, deformations or breaks on the upper hook		●		
Check of the frame	Check each lifter component. Make sure there are no cracks, deformations or breaks.			●	
Check of the correct lifting force	By means of already known weights, check if the lifter features a magnetic force of ≥ than 3 times the indicated WLL.				●

11. Transportation and storage

11.1 Transportation

⚠ WARNING

Risk of personal injury and damage of the magnetic lifter in case it falls down during the transportation!

The magnetic lifter must be handled by means of a forklift, an overhead crane or hoists of suitable lifting capacity.

- The weight of the packaging is stated on the side label: please refer to this data during the transportation. The total weight of the packed product, on the contrary, is indicated of the relevant delivery documents.
- Use the required personal protective equipment during handling and shipment.

11.2 Storage

When storing the magnetic lifter for a longer period of time, observe the following instructions to ensure its functionality up to the time of installation:

- Ensure a correct packaging! : store the product in its original packaging.
- The magnetic lifter and the packaging should be inspected at regular intervals.
- Inspect the packaging for outer damage due to collisions and effects of the weather.
- If the magnetic lifter has to be stored, make sure that the humidity values in the storage area range between 30% and 80%.
- Carry out a complete battery charging every 2 months.

12. Disposal

This product is made of plastics, iron, permanent magnets and electronic components. If it is taken out of operation, it has to be disposed of in compliance with the applicable regulations. The battery-powered magnetic lifter has been designed to grant sturdiness, durability, and flexibility on a long-term basis. As soon as the end of the lifecycle has been reached, the magnetic lifter has to be decommissioned, i.e. put into a state in which it can no longer be used for its original intended use and in which it is still possible to recycle the raw materials it contains.

NOTE
SCHUNK *assumes no liability for material damage or personal injury that may result from reusing individual components of the magnetic lifter for purposes other than the original intended use!* SCHUNK *provides neither implicit nor explicit declarations about possible usability of recycled components after decommissioning the magnetic lifter.*

12.1 Procedure for the final decommissioning and disposal of the product

⚠ CAUTION

Risk of injury
Decommissioning, disassembly and disposal of the magnetic lifter must be performed by qualified persons using suitable tools.

- Make sure that no suspended load is anchored to the magnetic lifter and that the same is completely demagnetized. Unfasten the lifter from the supporting structure, in order to avoid any unexpected movements;
- Disconnect the product from any devices, etc.;
- Have the magnetic lifter disposed of by a company specialized in the disposal of electrical and magnetic equipments. When disposing of this product, be sure to follow the waste disposal regulations of the country or region where it is used

13. Spare parts

Please get in contact with the SCHUNK service department for any spare parts request.

Magnetic field evaluation document

SEFE-LFT

This document certifies that the underlying product :

MANUFACTURER	***H.-D. SCHUNK GmbH & Co. Spanntechnik KG***
DESCRIPTION	***Battery-powered lifter***
MODEL	***1456150***

has been subjected to the measurement of the magnetic field, with reference to human exposure, in accordance with the Community Directive 2013/35/EU.

The evaluation of the electromagnetic field was performed using the following primary instrument

MANUFACTURER	MODEL	CALIBRATION DATE	BANDWIDTH	ACCURACY	GEOMETRY
NARDA S.T.S / PMM	HP-01	26/07/2018	DC at 1kHz	± 1% of reading	Hall triaxial probe

The end user is reminded that this evaluation was carried out on a new product, in rest and working conditions, without any magnetically attached piece.

It will be up to the end user to repeat the evaluation by replicating the real working conditions.

It will also be the user's responsibility to repeat the evaluation if wear or accidental events suggest that results of the first evaluation have been exceeded.

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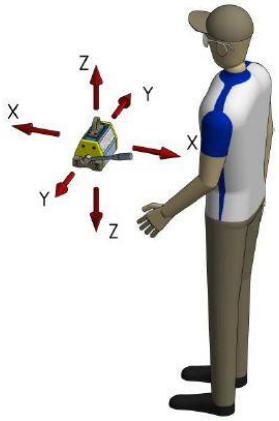
Magnetic field evaluation document

Mod - 85 – 8
feb-20 - Rev.1

SEFE-LFT



TERMS AND DEFINITIONS	LIMIT VALUES	WORKING CONDITIONS MAGNETIZED Min Distance	WORKING CONDITIONS DEMAGNETIZED Min Distance
Sensorial ELV: *Exposure limit value above which workers could be subject to temporary disturbances in sensory perception and slight alterations in brain function;*	2T	0 mm *	0 mm *
Healthy ELV: *Exposure limit value above which workers could be subject to harmful effects on health, such as thermal heating or stimulation of nerve or muscle tissue;*	8T	0 mm *	0 mm *
Limb exposure ELV: *exposure limit value above which workers could be subject to temporary disturbances of sensory perception and slight alterations of brain functions with reference to the single exposure of the lower or upper limbs;*	8T	0 mm *	0 mm *
AL limit x attraction: *Action limit value above which it is necessary to take action to reduce the risk of attraction and propulsion in the peripheral field of high intensity sources;*	3.000 µT	135 mm long x 90 mm long y 135 mm long z	30 mm long x 0 mm * long y 25 mm long z
AL limit x interference: *action limit value above which it is necessary to take action to reduce the risk of interference with active implanted devices, such as cardiac pacemakers;*	500 µT	350 mm long x 255 mm long y 350 mm long z	150 mm long x 90 mm long y 120 mm long z
		*Values achieved at any point, no minimum distance.	

**The image shows a lever lifter as an example and therefore can be considered extensible to other magnetic lifting structures.

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