EN

Original operating instructions

Operating instructions
Load Lifting Magnet Type CSmag

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Contents

1. Introduction

Before you use the load lifting magnet CSmag for the first time, read the operating instructions in their entirety. The operating instructions explain how to safely use, maintain, inspect, and dispose of the load lifting magnet CSmag. These operating instructions are a component of the product and must be available to all users. Keep the operating instructions in a safe place for re-use. The load lifting magnet CSmag is called the load lifting magnet below.

1.1 Manufacturer/Service

Carl Stahl Hebetechnik GmbH
Tobelstraße 2
73079 Süßen

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INFO
We will be happy to answer any questions you may have about your product.

1.2 General terms and conditions

The general terms and conditions are available directly from the manufacturer or at:
www.carlstahl-hebetechnik.de/downloads/

1.3 EU declaration of conformity

Content of the document:

For the product designated below

Name:	Load lifting magnet
Type:	CSmag

we hereby declare that it corresponds to the **basic requirements** specified in the harmonization legislation named below:

DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL of May 17, 2006 about machines and the change of Directive 95/16/EC (new version) – for short: **Machine directive**

Specification of the applicable harmonized standards that apply or details of the specifications for which conformity is declared:

Reference	**Date of issue**	**Title**
Harmonized standards for the machine directive:		
EN ISO 12100 + Correction 1	2010-11 2013-08	Safety of machines – General principles for design – Risk assessment and risk reduction
EN 13155	2009-08	Cranes – Safety – Non-fixed load lifting attachments
Additional applicable technical specifications (not published in the EU official gazette):		
DIN ISO/TR 14121-2 DIN SPEC 33885	2013-02	Safety of machinery - Risk assessment - Part 2: Practical guidance and examples of methods

Authorized within the meaning of Annex II No. 1. A. No. 2, 2006/42/EC for the compilation of the technical documents:

Company	Carl Stahl Hebetechnik GmbH
Address	Tobelstr. 2 D-73079 Süßen

Sole responsibility for issuing this declaration of conformity with regard to meeting the basic requirements and preparation of the technical documents is borne by the manufacturer (or installation company):

Company	Carl Stahl Hebetechnik GmbH
Address	Tobelstr. 2 D-73079 Süßen

Declared by:

Last name, first name	Schwenger, Wolfgang
Title	Managing director

This declaration certifies conformity with the named harmonization legislation, however it does not promise properties.

Additional details:

This declaration applies to all copies that are manufactured according to the corresponding production drawings, which are a component of the technical documents. The attached accompanying documentation that supports the declaration of conformity contains additional details about adherence to above references.

The complete declaration of conformity is attached as a separate document**.**

2. Preparation of information

These operating instructions contain symbols, designations, instructions, and lists as depicted in Chapters 2.1 to 2.2.

2.1 Symbols and designations

Warnings

The warnings are classified and depicted as follows:

DANGER

A warning with the signal word “DANGER” indicates a hazard that can immediately and certainly cause death or severe, lasting injuries.

WARNING

A warning with the signal word “WARNING” indicates a hazard that may cause severe injuries or death.

CAUTION

A warning with the signal word “CAUTION” indicates a hazard that may cause minor to moderate injuries.

ATTENTION

A warning with the signal word “ATTENTION” indicates a hazard that may cause property damage.

In a **warning**, steps are marked with ▶ and structured chronologically.

Pictographs for specific hazards

Meaning:
Warning about suspended load.

Meaning:
Warning about danger of crushing.

Meaning:
Warning about hand injuries.

The pictographs are used in connection with the associated classification and the appropriate signal word.

Useful information and tips

INFO
This symbol identifies useful information and tips.

Disposal

NOTICE ABOUT DISPOSAL
of packaging materials and load lifting devices.

2.2 Instructions and lists

All instructions are structured in chronological order and numbered sequentially, e.g.:

1. Step 1
2. Step 2

The result of an action is marked with an arrow:

➢ Result or device reaction

Instructions that do not have to be carried out in a particular sequence are marked as follows:

- Step
- Step

The result of an action is marked with an arrow:

➢ Result or device reaction

Lists are marked with dashes:

– List

3. Safety

Before you use the load lifting magnet, carefully read the following safety instructions.

Chapters 3.1 to 3.3 list basic behavior rules that you must observe when handling the load lifting magnet. You must absolutely follow the instructions that are marked with a ⚠ symbol to prevent danger to people. Warnings that belong to the individual instructions are always listed before the step in question.

3.1 Basic safety instructions

The load lifting magnet has been constructed, tested, and left the company in a perfectly safe condition. In order to maintain this state, you must follow the instructions in these operating instructions.

- Read these operating instructions in their entirety;
- Heed the warnings and safety instructions;
- Make sure that these operating instructions are always available where the load lifting magnet will be used;
- Make sure that only suitable specialized personnel performs work with and on the load lifting magnet (see Tab. 1);
- During use, comply with the locally-applicable requirements for occupational safety and the work instructions of the operator;
- Consider the circumstances on-site;
- Comply with the maximum carrying capacity;
- Consider the minimum thickness of the material;
- Consider the tare weight of the load lifting magnet, the tare weight must be added to the load:

  Tare weight load lifting magnet + load weight = total weight ▶ Consider the weight of all components with regard to the maximum load capacity!
- You must immediately repair damage that compromises safety;
- Perform all work with great care;
- Never open the load lifting magnet when it is under load;
- Only use the load lifting magnet if the nameplate is easily legible;
- When using the load lifting magnet in combination with a sling/load lifting attachment, heed the operating instructions for the sling/load lifting attachment;
- Use only suitable slings/load lifting attachments, take special care that the carrying capacity of the sling/load lifting attachment fulfills the requirements;
- Consider the additional tare weight of the sling
- Avoid strong vibrations and shocks

Classification of the qualification areas for load lifting devices

Area of activity	Qualification	Professional knowledge
Delivery and transport	Dealer, mover	– Proof of training about load lifting attachments – Safe handling of load lifting attachments
Storage	Storage specialist	– Safe handling of load lifting attachments
Start-up, maintenance, and service	Specialized personnel	– Expert: professional training and experience, sufficient knowledge in the area of load lifting attachments – Safe handling of load lifting attachments – Product-specific knowledge
Use, simple visual inspection	Specialized personnel	– Safe handling of load lifting attachments, professional training and experience
Disposal	Specialized personnel	– Knowledge of the regulations for proper disposal and re-use

Tab. 1. *Overview*

3.2 Proper use

The following points comprise proper use:

- Vertical lifting and lowering of non-guided loads;
- Observe the permissible load capacity: **Tare weight of the individual components + load weight;**
- Temperature range from -10 °C to + 80 °C;
- Even distribution of the load;

In addition to the points listed here, additional details must be taken from the technical data and observed (Chapter 4).

3.3 Improper use

The following points comprise improper use:

- Exceeding the maximum load capacity;
- Horizontal lifting and lowering of loads;
- Conveying people and animals;
- Transporting fluids and hazardous materials;
- Breaking free stuck loads;
- Changes to the construction;
- If people linger under suspended load;
- In environments that are subject to explosion, or where there is exposure to salt, acid, toxic, and/or alkaline substances;

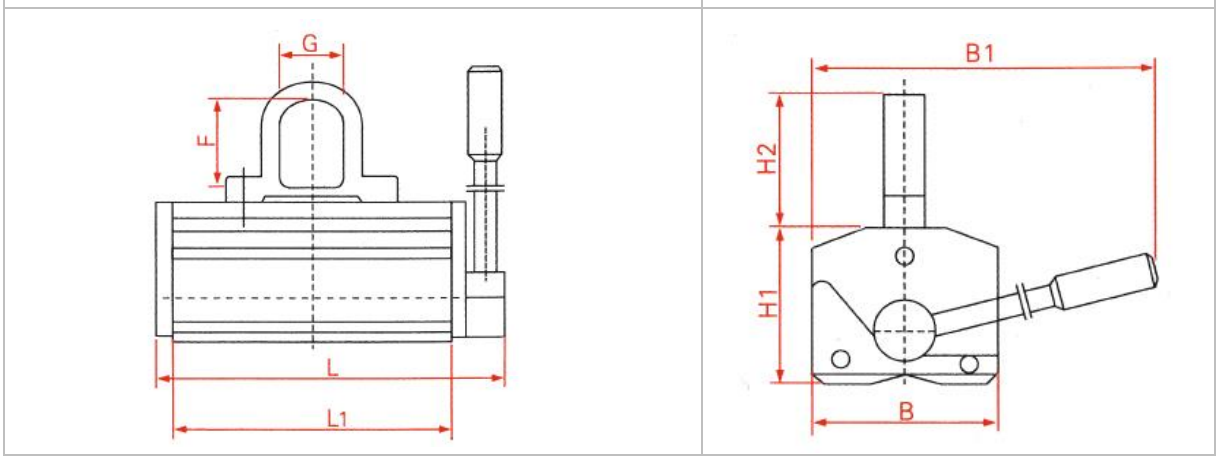
Chapter 3.3 does not guarantee completeness. Anything that is not expressly permitted falls under improper use.

4. Technical data

Name:	Load lifting magnet
Type:	CSmag
Model:	CSmag 100, CSmag 300, CSmag 600, CSmag 1000, CSmag 1500, CSmag 2000

General information Flat material		**CSmag 100**	**CSmag 300**	**CSmag 600**	**CSmag 1000**	**CSmag 1500**	**CSmag 2000**
Load capacity	kg	100	300	600	1000	1500	2000
Required material thickness for material ST 37 for maximum load capacity	mm	20	20	30	40	45	55
General information Round material							
Load capacity	kg	50	150	300	500	750	1000
Max. material Ø	mm	100	300	400	450	500	600
Required material thickness for material ST 37 for maximum load capacity	mm	10	12	20	28	34	40

Dimensions:



	CSmag 100	**CSmag 300**	**CSmag 600**	**CSmag 1000**	**CSmag 1500**	**CSmag 2000**
Dimension in	mm	mm	mm	mm	mm	mm
L	135	203	266	330	385	470
L1	110	165	226	290	330	420
W	60	87	112	148	178	178
H1	65	89	109	125	145	145
H2	46	68	86	95	118	118
B1	150	223	287	364	447	487
F	32	45	58	60	70	70
G	32	38	45	52	65	65
Weight in kg	3.5	10.0	21.0	40.0	65.0	83.0

Tab. 2. *: Technical data*

5. Delivery and transport

5.1 Scope of delivery

Check the delivery to ensure it is complete.

Pieces	Item	Type	Order no.
1	Load lifting magnet	CSmag 100 or; CSmag 300 or; CSmag 600 or; CSmag 1000 or; CSmag 1500 or; CSmag 2000	25301210015007 25301210015008 25301210015009 25301210015010 25301210015011 25301210015012
1	Control lever with clamping screw		
1	Original operating instructions	-	-
1	Declaration of conformity	-	-
1	Inspection certificate	-	-

Tab. 3. *Scope of delivery*

If parts are missing or damaged, contact the manufacturer/dealer (Chapter 1.1).

5.2 Installation instructions

1. Remove load lifting magnet from the packaging.

Fig. 1. *Installation instructions step 1*

2. Remove safety pins from the shaft (while securing the shaft against twisting)

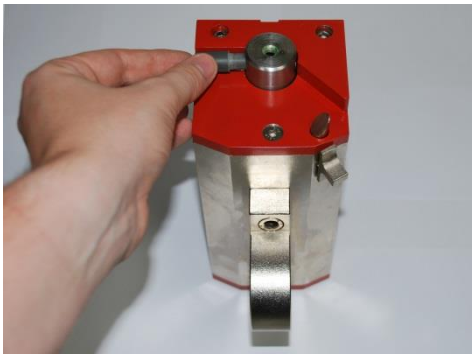


Fig. 2. *Installation instructions step 2*

3. Insert control lever in the shaft

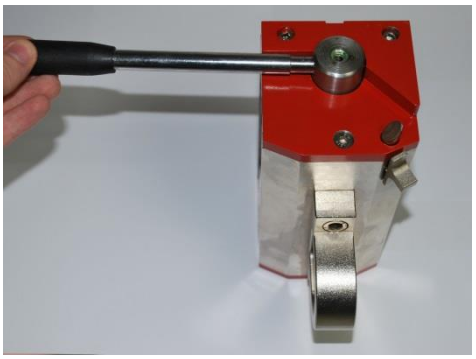


Fig. 3. *Installation instructions step 3*

4. Secure the control lever with the clamping screw (tighten by hand)

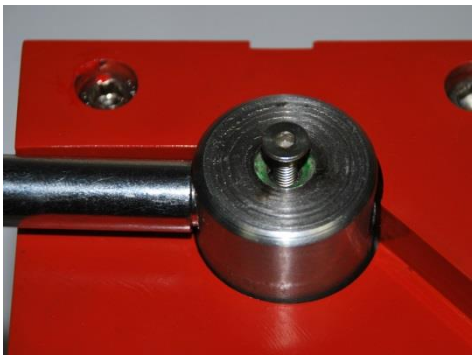


Fig. 4. *Installation instructions step 4*

5.3 Transport

Delivery is made in appropriate packaging.

Always transport the load lifting magnet in suitable packaging.

5.4 Storage

ATTENTION

Damage to device due to improper storage!

Improper storage can damage the load lifting magnet.

- ▶ Store the load lifting magnet in a suitable place.
- ▶ Store the load lifting magnet in a clean, dry place indoors.
- ▶ Protect the load lifting magnet against:
  - The effects of temperatures that fall below or exceed the permissible temperature range (see Chapter 4).
  - Humidity
  - Soiling
  - Damage
  - Corrosion

6. Structure and function

The load lifting magnet consists essentially of the following components:

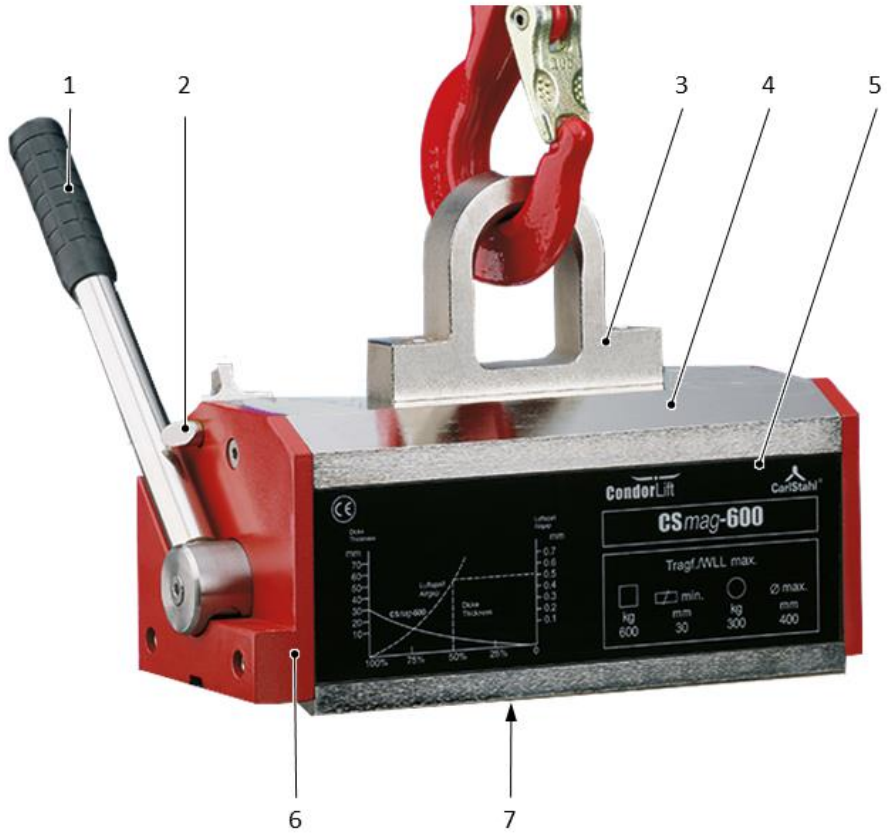


Fig. 5. *Structure*

Position	Name
1	Control lever
2	Safety pin
3	Suspension eye
4	Housing
5	Nameplate
6	Side plate
7	Contact surface

Tab. 4. *Structure and function*

7. Use

7.1 Inspection before use

7.2 Inspection before use

An inspection must be conducted before each use. You must conduct an inspection before first use (initial start-up), before each recurring use or after each servicing. For the precise details of the corresponding inspections, see the maintenance/inspection plan. Read Chapter 8, especially 8.2 - 8.4.

The inspection is intended to ensure that the load lifting magnet is in perfect condition and ready for operation.

Before using the load lifting magnet, you must observe the following regarding the work environment:

DANGER

Danger to life due to falling load!

A falling load can cause severe injuries or death.

- Never linger under a suspended load.
- Never pass under a suspended load.
- Ensure there is sufficient free space to work.
- Ensure that there are no people in the working area.

WARNING

Danger of crushing due to lack of space!

There is a danger of crushing due to clearances that are too small at the load pick-up point, on the load transport path or at the load drop-off point.

- Inspect your work environment.
- Ensure there is sufficient space at the load pick-up point, on the load transport path, and at the load drop-off point.

7.3 Lifting the load

Before lifting, rust, dirt, burrs, and other protrusions must be removed from the surface of the load. The center axis of the magnet must be on the center axis of the load. The load lifting magnet is set down accordingly on the load. By moving the lever from the “OFF” to the “ON” position (beyond the safety pin) to the “HOLD” position, the load is magnetized and held. Make sure that the safety pin is snapped out all the way and thus blocks the hand lever. The load can now be lifted.

The magnet may not be overloaded and there may not be any people lingering under the suspended load during the lifting process.

When transporting round material, make sure the concave magnet center axis is flush against the load. Generally, the rated load capacity is reduced for this type of transport (see Chapter 4).

7.4 Lowering the load

To finish the lifting process, set the load down. Press the hand lever down, pull back the safety pin, and bring the hand lever from the “ON” to the “OFF” position to the “RELEASE” position. The magnet is now demagnetized and can be removed from the load.

7.5 Main factors influencing the load capacity of load lifting magnets

The most important factors include the material thickness, material composition, and the surface properties of the load.

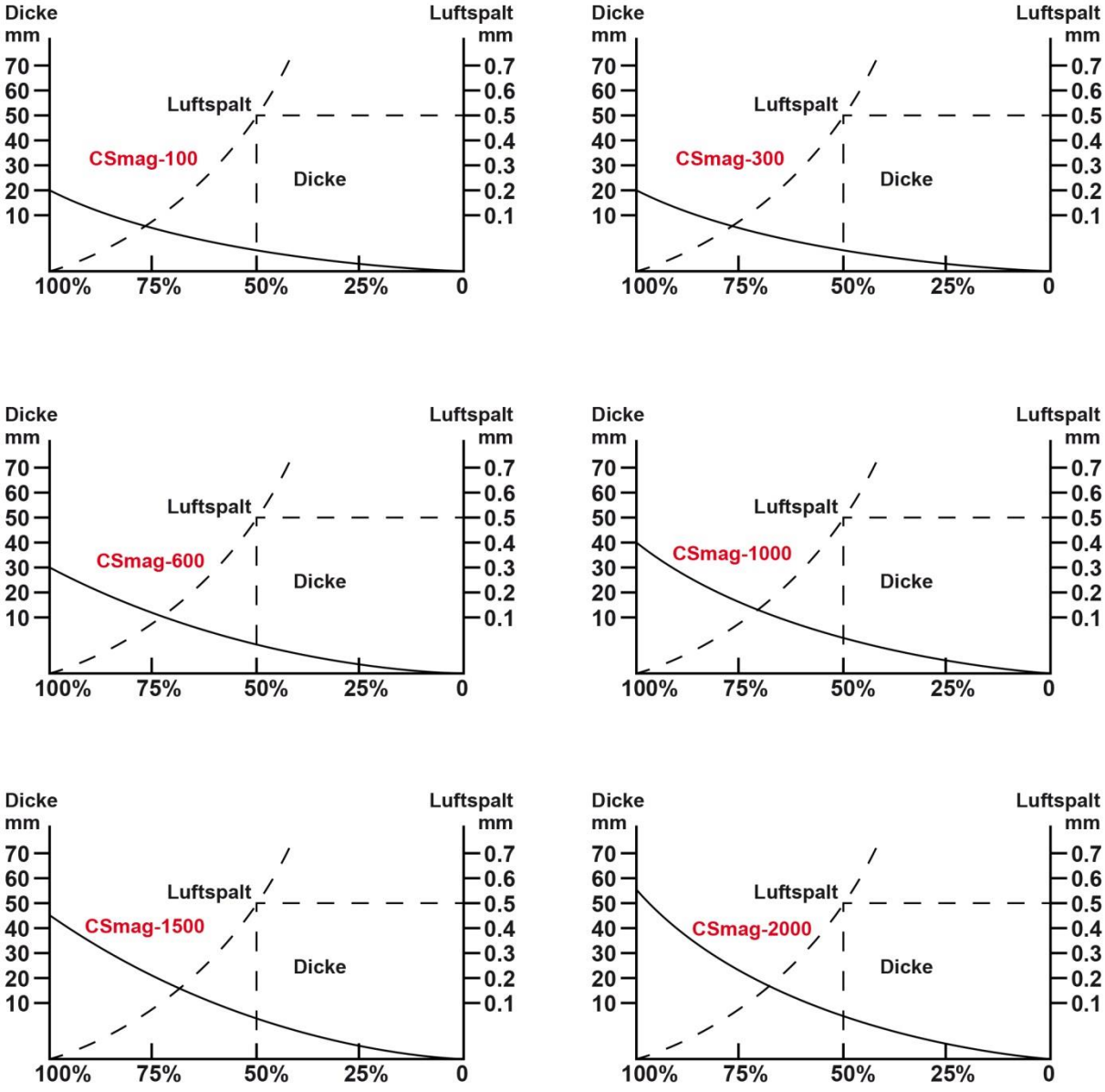


Fig. 6. *Diagrams air gap/thickness*

Material composition

Another important influencing factor is the material composition of the steel. Low-carbon steel (coefficient 1.00) serves as reference medium; the load carrying coefficient is specified based on this steel:

Material	Magnetic force in %
Non-alloy steel (0.1-0.3% C content)	100
Non-alloy steel (0.3-0.5% C content)	90-95
Cast steel	90
Gray cast iron	45
Nickel	11
Stainless steel, aluminum, brass	0

Tab. 5. *Other factors*

8. Servicing

A standard lifting device must be cleaned, maintained, and inspected regularly. For the maintenance/inspection intervals, see the maintenance/inspection plan.

8.1 Cleaning

INFO

Regular cleaning and careful handling mean that the load lifting magnet will be in good condition throughout its life cycle.

Component	Cleaning criteria	Actions
Control lever	The control lever must be movable and not bent.	Clean
Safety pin	The safety pin must be movable and not bent.	Clean
Suspension eye	The suspension eye must be free of dust and dirt.	Clean
Housing	The housing must be free of dust and dirt, and not bent.	Clean
Nameplate	The nameplate must be free of dirt and legible.	Clean
Side plate	The side plate must be free of dust and dirt.	Clean
Contact surface	The contact surface must be free of dirt and smooth.	Clean

Tab. 6. *Cleaning*

8.2 Maintenance/inspection plan

Maintenance/inspection interval	Activity
Before first use (initial start-up)	– Visual inspection and function check
Before each recurring use of the load lifting magnet without extraordinary events	– Visual inspection
Annually	– Visual inspection and function check, check for tearing off
Extraordinary inspection	– Depending on external conditions, the **annual** inspection cycle may be shortened. This includes the following points: – After damage events, servicing or special incidents, – Permanent use in shift operation, – Increased wear, – Corrosion, effects of heat due to environmental influences, – etc.

Tab. 7. *Maintenance/inspection plan*

8.3 Inspection criteria

The discard criteria for the load lifting magnet are determined using the inspection criteria in the following table. For the basic value, specified in mm, see Technical data (see Chapter 4).

Component	Inspection criteria	Actions
Control lever	Any type of deformation and wear	Take out of service and contact manufacturer/service
Safety pin	Any type of deformation and wear	Take out of service and contact manufacturer/service
Suspension eye	Any type of deformation and wear	Take out of service and contact manufacturer/service
Housing	Any type of deformation and wear	Take out of service and contact manufacturer/service
Nameplate	Legibility	Take out of service and contact manufacturer/service
Side plate	Any type of deformation and wear	Take out of service and contact manufacturer/service
Contact surface	Any type of deformation and wear	Take out of service and contact manufacturer/service

Tab. 8. *Inspection criteria*

8.4 Visual inspection and function check

The contact surfaces of the magnet must be clean and smooth. Any surface unevenness affects the load capacity. The contact surfaces should be treated with a corrosion inhibitor after use.

Do not press the lever if the load lifting magnet is not in contact with material that can be magnetized.

Before each use, the load lifting magnet must be checked and inspected. Chapter 8.3 lists criteria which may indicate that you must take the load lifting magnet out of service.

DANGER

Danger to life due to falling load!

Due to deformation and wear of the individual components, the load capacity may be reduced and the load can fall.

- Check the load lifting magnet for defects.
- Check to what extent the individual components are functional.
- Take the load lifting magnet out of service by marking it appropriately, if it is no longer functional and is irreparably damaged (see Chapter 9.19.1).
- If necessary, contact the manufacturer/service (see Chapter 1.1).
- If necessary, dispose of the load lifting magnet (see Chapter 9.2)

Visual inspection

1. Check the load lifting magnet for visual defects such as:
   - Cracks,
   - Deformation,
   - Wear,
   - Unevenness on the contact surface,
   - Legibility of the nameplate,
   - Incompleteness.
2. Take the load lifting magnet out of service, if the load lifting magnet has a defect (see Chapter 9.1).

General function check

1. Check all moving parts to ensure they move easily.
2. Check the functionality of the load lifting magnet.
3. Check the control lever lock of the load lifting magnet.
4. Take the load lifting magnet out of service, if the load lifting magnet has a defect (see Chapter 9.1).

8.5 Check for tearing off

The tearing force of a load lifting magnet must be checked regularly. In order to ensure process reliability, we recommend an annual check for tearing off according to DIN EN 13155, with a safety factor of 3:1.

9. Taking out of service and disposal

9.1 Taking out of service

1. Take the load lifting magnet out of service by marking it.
2. Contact the manufacturer/service (see Chapter 1.1).
3. If necessary, dispose of the load lifting magnet.

9.2 Disposal

Disposal of load lifting magnet

NOTICE ABOUT DISPOSAL

If the load lifting magnet can no longer be repaired or if it is no longer functional, it must be disposed of in accordance with the applicable legal provisions.

Disposal of packaging material

NOTICE ABOUT DISPOSAL

According to the Packaging Ordinance, the dealer must take back for re-use and/or ensure disposal of the packaging for its products that do not bear the symbol of a system for complete disposal (such as the Green Dot of the Duales System Deutschland AG).


Carl Stahl®
HEBETECHNIK