EN

Original operating instructions

Operating instructions
Load Lifting Magnet Type CSN

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Contents

1. Introduction

Before you use the load lifting magnet CSN 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 CSN. 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 CSN is called the load lifting magnet below.

1.1 Manufacturer/Service

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

1.2 EU declaration of conformity

Content of the document:

For the product designated below

Designation:	Load lifting magnet
Type:	CSN

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 Suessen

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

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

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 must be observed when handling the load lifting magnet. Instructions marked with a ⚠ symbol to prevent danger to people must be absolutely followed. 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, 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;
- During use, comply with the locally-applicable requirements for occupational safety and the work instructions of the operator;
- Consider the conditions on-site;
- Do not exceed the maximum load capacity;
- Check the minimum thickness of the material;
- Take into account 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!
- All damage that compromises safety must be immediately repaired;
- 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 load lifting attachment;
- Avoid strong vibrations and shocks;
- Persons with pacemaker or other medical equipment should never use the magnet without first consulting medical specialist.

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; 14°F to 176°F
- 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:

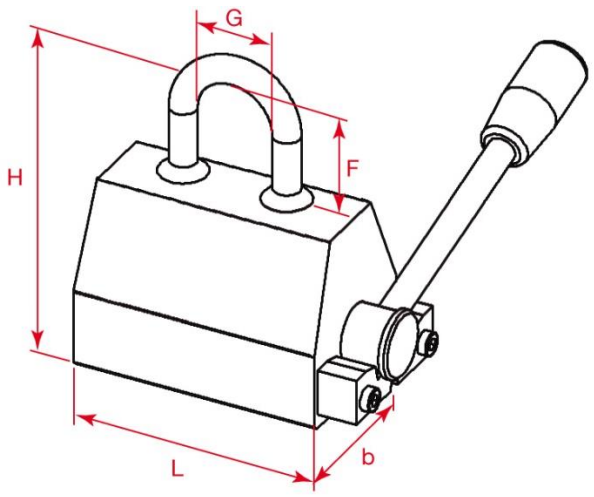
- Lift several loads at once;
- Exceeding the maximum load capacity;
- Horizontal lifting and lowering of loads;
- Conveying people and animals;
- Transporting fluids and hazardous materials;
- Breaking free stuck loads;
- Changes to the construction;
- If people linger under suspended load;
- In environments 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

Designation:	Load lifting magnet
Type:	CSN
Model:	CSN 150, CSN 300, CSN 600, CSN 1000, CSN 1500, CSN 2000

General information Flat material		**CSN 150**	**CSN 300**	**CSN 600**	**CSN 1000**	**CSN 1500**	**CSN 2000**
Load capacity	kg	150 kg	300 kg	600 kg	1000 kg	1500 kg	2000 kg
Required material thickness for material ST 37 for maximum load capacity	mm	25 mm	30 mm	30 mm	60 mm	80 mm	80 mm
General information Round material							
Load capacity	kg	65 kg	150 kg	300 kg	500 kg	750 kg	1000 kg
Min. material Ø	mm	40 mm	60 mm	65 mm	100 mm	150 mm	150 mm
Max. material Ø	mm	100 mm	200 mm	270 mm	300 mm	350 mm	350 mm



Tab.2. Technical data

5. Delivery and transport

5.1 Scope of delivery

Check the delivery to ensure it is complete.

Pieces	Item
1	Load lifting magnet
1	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 Transport

Delivery is made in appropriate packaging.

Always transport the load lifting magnet in suitable packaging.

5.3 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.1. Structure

Position	Designation
1	Suspension eye
2	Typeplate
3	Body
4	Lock block
5	Contact surface
6	Control lever

Tab.4. Structure and function

7. Use

7.1 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, 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.

7.2 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. Pull the control lever out of the locked position against the spring pressure. Activate the magnet by flipping the lever to “A.” The spring pressure now causes the lever to assume the locked position by itself. Check this! Only release the lever if the lever is in the end position. The magnet is now magnetized and the load can be lifted.

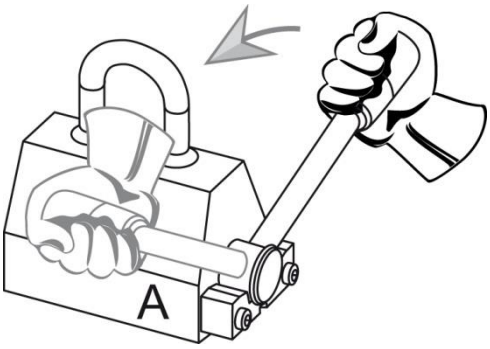


Fig.2. Lifting the load

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).

7.3 Lowering the load

To finish the lifting process, set the load down. Pull the lever out of the locked position against the spring pressure. Deactivate the magnet by flipping the lever to “B”. The spring pressure now causes the lever to assume the locked position by itself. Check this! Only release the lever if the lever is in the end position. The magnet is now demagnetized and can be removed from the load.

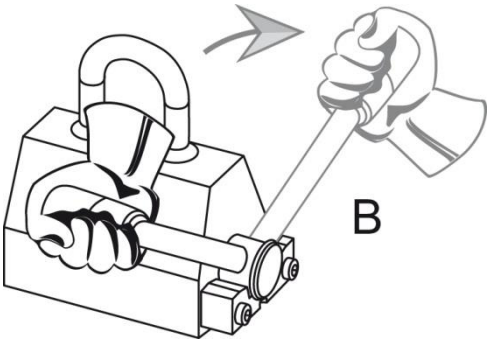


Fig.3. Lowering the load

7.4 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. The load capacity of the magnet in question also depends on the length, width, diameter, and wall thickness of the load to be lifted.

Load capacity for metal sheets, plates, and round material (for S 235JR [St37])

		Surface properties									
	Material thickness in mm	Clean/polished surface/air gap < 0.1 mm			Rusty, warm-rolled surface/air gap 0.1 - 0.3 mm			Uneven surface/air gap 0.3 - 0.5 mm			
		Max. dimension in mm	Max. load capacity in kg		Max. dimension in mm	Max. load capacity in kg		Max. dimension in mm	Max. load capacity in kg		
CSN 150			L>200 B>200	L>60 B>100		L>200 B>200	L>60 B>100		L>200 B>200	L>60 B>100	
	> 25	-	150	120	-	85	75	-	60	55	
	15	2000x500	130	110	1100x500	70	60	900x500	55	45	
	10	2500x500	120	75	1500x500	65	50	1200x500	50	40	
	4	2500x500	50	25	2300x500	40	17	1700x500	30	15	
	2	1500x500	20	6	1300x500	14	4	1200x500	13	4	
	Ø40-Ø100	Lmax.2500	65		Lmax.2000	50		Lmax.1500	35		
CSN 300			L>300 B>300	L>100 B>150		L>300 B>300	L>100 B>150		L>300 B>300	L>100 B>150	
	> 30	-	300	250	-	190	180	-	115	100	
	15	2000x1000	245	160	1400x1000	160	120	1000x1000	105	85	
	10	2500x1000	200	95	1500x1000	130	65	1200x1000	95	55	
	6	2200x1000	100	35	1800x1000	90	30	1500x1000	70	25	
	4	1800x1000	55	20	1800x1000	50	15	1300x1000	40	14	
	Ø60-Ø200	Lmax.3500	150		Lmax.3000	120		Lmax.2500	75		
CSN 600			L>400 B>400	L>120 B>245		L>400 B>400	L>120 B>245		L>400 B>400	L>120 B>245	
	> 30	-	600	520	-	430	400	-	270	260	
	20	2000x1500	465	380	2000x1250	390	310	1600x1000	255	210	
	15	2250x1500	430	240	2300x1250	340	200	1800x1000	220	160	
	10	2500x1500	285	120	2400x1250	240	100	2200x1000	185	85	
	8	2400x1500	225	90	2300x1250	180	70	2000x1000	130	55	
	6	2200x1500	155	60	2000x1250	120	45	2000x1000	100	35	
	Ø65-Ø270	Lmax.4000	300		Lmax.3500	240		Lmax.3000	160		
CSN 1000			L>500 B>500	L>145 B>310		L>500 B>500	L>145 B>310		L>500 B>500	L>145 B>310	
	> 60	-	1000	985	-	845	835	-	650	645	
	30	2450x1500	860	710	2000x1500	730	620	1900x1200	565	515	
	25	2850x1500	830	535	2400x1500	705	475	2250x1250	550	410	
	20	3200x1500	745	365	2750x1500	640	320	2600x1250	510	290	
	15	3300x1500	500	215	2900x1500	445	195	2800x1250	380	175	
	10	2750x1500	265	105	2550x1500	240	95	2650x1250	200	85	
	Ø100-Ø300	Lmax.4500	500		Lmax.4000	400		Lmax.3500	300		
CSN 1500			L>800 B>800	L>170 B>400		L>800 B>800	L>170 B>400		L>800 B>800	L>170 B>400	
	> 80	-	1500	1460	-	1420	1200	-	1020	980	
	50	3000x1200	1460	1250	2500x1200	1200	1050	2000x1200	960	900	
	30	3500x1200	980	430	3250x1200	900	390	2500x1300	780	350	
	20	3500x1400	760	310	3000x1600	750	290	2500x1750	695	270	
	15	3000x1500	540	195	3000x1500	530	180	2500x1400	420	160	
	Ø150-Ø350	Lmax.5000	750		Lmax.4500	700		Lmax.3500	600		
CSN 2000			L>800 B>800	L>170 B>500		L>800 B>800	L>170 B>500		L>800 B>800	L>170 B>500	
	> 80	-	2000	1950	-	1650	1600	-	1300	1250	
	50	3250x1500	1850	1600	2500x1500	1600	1350	2000x1500	1250	1150	
	30	3500x1500	1350	550	3250x1500	1150	500	2500x1500	1000	450	
	20	3500x1500	1100	400	3000x2000	1000	375	2500x2000	900	350	
	15	3000x1500	650	250	3000x1500	600	230	2000x1500	550	200	
	Ø150-Ø350	Lmax.5000	1000		Lmax.4500	900		Lmax.4000	800		

For a very rough surface or air gaps > 0.5 mm, please contact your supplier

L = length in mm, W = width in mm

Do not lift plates thinner than indicated in the chart.
When lifting tubes with a thin wall the length may be the limiting factor.

Tab.5. Lifting capacity

7.5 Material composition

An 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 %
S235	100
ST52	96
Cast steel	90
V2A 420F	50
Cast iron	45
Nickel	10

Tab.6. Material composition

8. Servicing

A load lifting magnet 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
Suspension eye	The suspension eye must be free of dust and dirt.	Clean
Body	The housing must be free of dust and dirt, and not bent.	Clean
Typeplate	The nameplate must be free of dirt and legible.	Clean
Lock block	The lock block must be free of dust and dirt.	Clean
Contact surface	The contact surface must be free of dirt and smooth.	Clean

Tab.7. Servicing

8.2 Inspection document

The test document serves as proof of the tests performed. In addition, all noted defects must be rectified and the evidence submitted to the authorities if required. The test document is attached as a separate document.

8.3 Tear-off test

A lifting magnet must be regularly checked for its tear-off force. To ensure process safety, we recommend an annual tear-off test in accordance with DIN EN 13155, with a safety factor of 3:1.

8.4 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.8. Maintenance/inspection plan

8.5 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
Suspension eye	Any type of deformation and wear	Take out of service and contact manufacturer/service
Body	Any type of deformation and wear	Take out of service and contact manufacturer/service
Typeplate	Legibility	Take out of service and contact manufacturer/service
Lock block	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.9. Inspection criteria

8.6 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 move 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)

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.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