Lashing chains

User instructions

These user instructions give a general overview as regards the use oflashing chains according to EN 12195-3. Principally, the relevant regulations and standards for load safety and our operating manual "General instructions for load safety in road transportation" apply for the safe transport of loads.

Selection and usage instructions

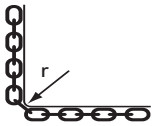
The required lashing force as well as the application and type of load to be secured must be considered when selecting lashing chains. The size, shape and weight of the load will determine the correct choice as well as the intended type of use and the transport environment. For stability at least two lashing chains must be used, and two more chains diagonally placed to ensure the load will not twist or slip.

- The lashing chain selected must be strong enough for the purpose and have the right length for the type of lashing.
- Fitting and removal must be planned before the start of the journey, and partial unloading during the journey must also be considered.
- The number of lashing chains needed must be calculated in accordance with EN 12195-1 or be calculated using our tested lashing tables.
- Only lashing chains with details of the pre-load force (STF) on the lashing tag may be used. The pre-load force is reached by applying a manual force on the tension lever of 50daN (approx. 50kg). Do not use mechanical aids such as rods or lever extensions. The high pre-load forces of the chain tensioning elements offer much higher values during lashing down than a lashing strap. However during the journey the chain can quickly lose its pre-tension force, for example due to the load settling, so that it has little or no strain. Therefore pre-load should be checked at short intervals during the journey. Due to the high pre-load forces, lashing chains should only be used to retain stable units or materials. Take note too of poor anti-friction properties of the chain on the load, especially on the edges. Chains can easily cause damage if they are tensioned over an unprotected load, so when lashing down, use suitable edge protectors to protect the chain and the load, and transfer the pre-load force to the tensioning element on the opposite side of the lashing chain by the chain sliding on the load edge.
- Before first commissioning make sure the lashing material and the factory certificate supplied correspond to the design ordered.
- Lashing chains are to be examined for obvious defects before and after use.
- Make sure that supplementary fitting components or tensioning elements that are not fixed to the lashing chain, actually do fit the lashing chain.
- Due to different behaviour and different length changes under load, different lashing materials (those made from man-made fibres) may not be used to lash the same load. Combinations of materials such as chain-strap within a lashing material are permitted but all lashing material for a load must have the same properties.

Use and applications

- Lashing chains must only be used by trained personnel.
- The lashing chain must not be exposed to chemical effects without consultation. Contact with acid environments is not permitted under any circumstances as it may make the chain brittle.
- Should such contact occur the chain must be washed in water and checked by an expert before reuse.
- Lashing chains may be used in temperatures ranging from -40°C to +200°C. Please check with us if they are to be used outside these temperatures.
- Avoid damage by keeping lashing chains away from the load or its edges.
- Do not overload, knot, roll over, crush or use lashing chains for lifting and pulling loads.
- Only tension untwisted lashing chains.
- Immediately take out of operation lashing chains with obvious defects such as bent links, high level of wear, damaged tensioning elements etc).
- When lashing down, a normal manual force of 50 daN is to be applied to the tensioning lever. They should not be pre-tensioned more than 0.5 x LC.
- Progressively and evenly pretension all lashing chains for direct lashing (as opposed to lashing down) until they are tensioned straight, do not sag and cannot unhook accidently, ensuring that the largest possible amount of lashing force is retained. Arrange as symmetrically a possible.
- Do not load lashing and chain shortening hooks on their tips as a safeguard against accidental unhooking.
- Do not allow tensioning and connecting elements to rest on edges to avoid bending. Rope slings should not be tensioned or pulled over sharp edges without protection.
- A sharp edge is given when the edge radius r is smaller than the diameter D of the lashing chain. In these instances, suitable edge protectors

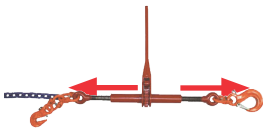
are mandatory. Attach the steel edge protection bracket with the safety chain on the lashing chain to protect against falling out during the journey!



- No supplementary extensions or devices may be attached on tensioning elements to achieve a higher pre-tensioning force.
- After shorter stretches and during the entire journey the pretension of the lashing chain, above all for lashing down, is to be checked and re-tensioned if necessary.

Steps

Lashing the load:



- Unscrew both threaded spindles of the tensioning element until the stop. Caution: an unscrewing safeguard against complete unscrewing of the thread is present and must be functional.
- Lay the lashing chain on the load and suspend the connecting elements in the lashing points / attachment points.

- Make a rough length adjustment with the shortening hook. Pretension the lashing chain as well as possible, so that enough tensioning distance remains for applying the pre-tensioning force.
- For slack chains, no autonomous unhooking of the lashing chain may occur from the shortening element or the lashing points. The safety catch in the shortening elements and the connecting elements must therefore be functional.
- Tensioning of the lashing chain takes place by turning the tensioning element with a ratchet lever.
- The tensioning elements are to be arranged so that they are not bent over the edges in a tensioned state.
- For diagonal lashing, the lashing strand should only be pre-tensioned until the chain no longer sags.
- When lashing down, pretension with a manual force of 50 daN to achieve the pre-tensioning force specified on the lashing tag.

Opening the lashing:

- Before opening you must make sure that the load is still secure without the lashing material attached and that the personnel or other people are not endangered by it falling down.
- If necessary, the slings already provided for further transportation are to be attached to the load to prevent it from falling down. Before starting to unload, the lashings must be loosened enough so that the load is free.
- Turn the ratchet tightener to the stop, unhook the chain from the shortening element and then remove the connecting element from the lashing points / sling points.

Storage

After use, the lashing chain must be stored safely (e.g. on truck secured against falling down) and as dry as possible. Caution if storing in places in the truck where the lashing chains are exposed to constant moisture or the spray from gritting salt in winter - rapid corrosion and a short service life are the result!

Cleaning

The lashing chain is to be cleaned before testing. The cleaning process may not generate any chemical damage (e.g. no acids / embrittlement), no impermissible temperature loads through burning off... etc. or possibly cover cracks or remove too much material (caution with sandblasting ...). We'll gladly advise you concerning this matter! Please provide the chains to us for testing in a clean state. This will save you considerable inspection costs!

Inspection, testing

Lashing materials are to be examined for obvious defects before and after every use. They must be taken out of operation immediately

- if they show signs of damage that could impair safety

or

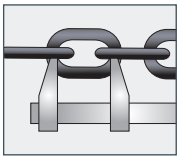
- also after extraordinary events that could have a damaging effect on the safety of the lashing material (e.g. overload, chem. influences, ...).

Further use of this lashing material is only permitted after possibly required repairs and inspection by an expert.
In addition, depending on usage conditions lashing materials must undergo an inspection by an expert at regular intervals, at least once a year. The inspections are to be documented.
Our recommendation: give a copy of the last test certificate to the driver. It is not mandatory but can be very helpful according to our experience, especially in neighbouring countries with all too precise checks!

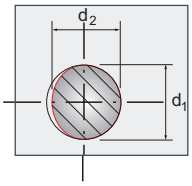
Rejection criteria

Chains and accessory parts

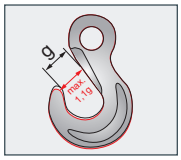
- If there is a chain link or an accessory on the chain with a lengthening of more than 5%.



- Strong degree of wear on chain links from friction, if the determined link thickness falls below the nominal thickness at any point by more than 10% (average of two measurements carried out at right angles to one another, d1 and d2).



- Cuts, notches, grooves, cracks, excessive corrosion (e.g. clearly visible rust scars), discolouration from heat, signs of subsequent welding or welding spatters (which are not easy to remove or leave discolourations behind), bent or twisted chain links and similar faults are detectable.
- Expansion of the hook by more than 5%. Hook lock must latch into the hook tip.
- Excessive corrosion as well as illegible component designations are further rejection criteria.



Tensioning element
- Cuts, notches, grooves, cracks, excessive corrosion
- Bent or missing components, as well as strong signs of wear

Labelling
- Illegible details on the tag
- Missing labelling tag

Repair and overhaul

Repair work may only be performed by expert personnel who have the required knowledge and capabilities using original spare parts. After repair, the original properties of the lashing material must be restored.

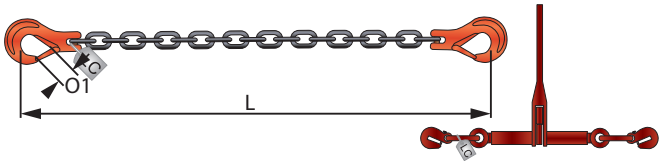
Documentation

The results of the inspections are to be recorded. It is recommended to have a test card, a log book or an table on a computer (spreadsheet).

Constructions and designations:

Partitioned lashing chains

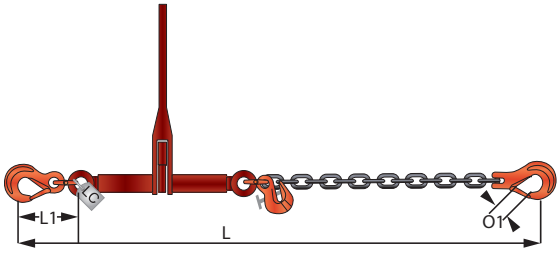
According to EN 12195-3, our partitioned lashing chains may only be used with a tensioner in accordance with EN 12195-3 (details of the pre-tensioning force on a lashing tag on tensioner, stop collar of the spindle and hook safety catch)!



Instructions on this can be found on the lashing tag of the lashing chain. The advantage of a partitioned lashing chain lies in the ease of handling or the tensioning elements can be fixed into the relevant required position. The user is responsible for the correct assignment of tensioning element and chain!
Further designs will be, as long as they meet the standard, gladly produced to your wishes.

Lashing chains complete

Lashing chain ready for use according to EN 12195-3 with integrated tensioning element. This prevents a mix up between chain and tensioning element. When choosing the chain, make sure that the hook, connecting links and tensioning elements do not lie on the edges. For lashing points which are not mounted on the loading surface, variants with the dimension L1 = 1 m are suitable.



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LC08-400-2-08-300-CSH-**-CGH-***-EGHSP

Length in cm

Chain thickness in mm:
08...8 mm
10...10 mm...

Design:
1...partitioned
2... complete

Grade
Usage temperature:
LC08...Grade 8 (400°)
LC10...Grade 10 (200°)
LC10...Grade 10 (380°)

Shortening option:
EGHSP

Chain length L2
(optional)

End fitting
CSH
EGHSP

Chain length L1

End fitting
CSH
EGHSP
ML
ESH