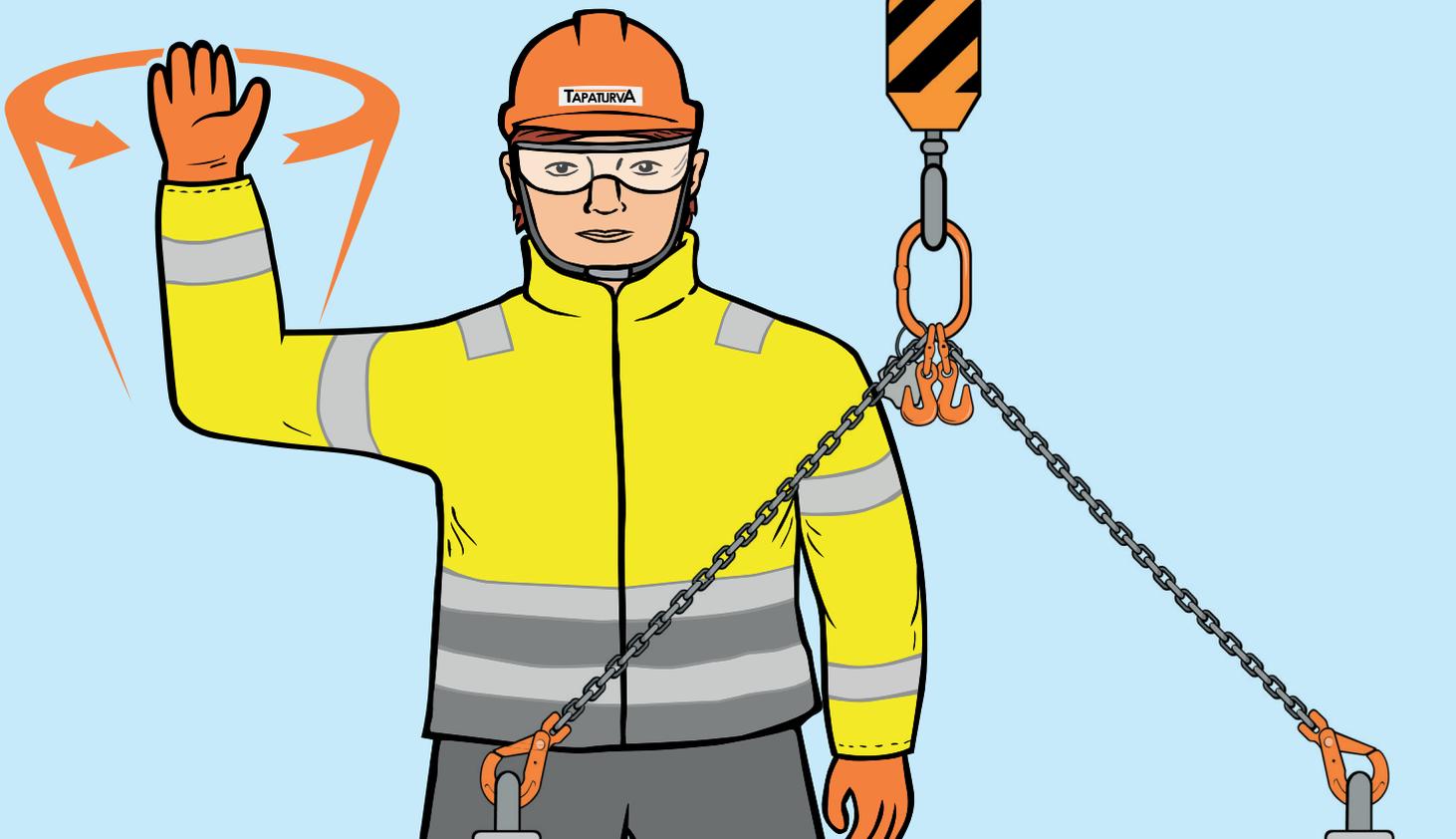




Eng.

Banksman's guide



TAPATURVA

A guide for securing
a load to a hoist or crane
used for installations on
a construction site

betoni

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This concrete industry banksman's guide is meant for drivers who work as banksmen, their employer or the person ordering the haulage work.

The purpose of the guide is to clarify the banksman's duties and to help design training. Even though the guide covers the responsibilities of various parties, it is primarily written to support persons working as banksmen.

Banksman's guide

Starting from 1 March 2020, working as a banksman on jobsites has required written authorisation from employers, if using a hoist or crane for installation. An employer must ensure that the person receiving the authorisation is competent in the duties of a banksman. There is no actual requirement for training, or each employer can decide what kind of training or competence is sufficient for granting the authorisation.

However, every supervisor who has granted such an authorisation should bear in mind that they are personally responsible for their policy and that it can be tried in court. Precision and self-criticism are a must.

We can consider the minimum requirement to be that a banksman is competent in:

- the general principles of lifting and hoisting, along with their safety requirements
- issues related to lifting loads, such as ensuring their balance and selecting the lifting accessories
- the features of the lifting accessories and inserts used in lifting and hoisting, and their visual inspection
- matters related to unloading
- fall protection and other workplace safety issues related to the job

The banksmen's written authorisation and activities are supervised by jobsite general contractors.

Only employees whose vision and hearing are normal, or normal with corrective measures (e.g. eyeglasses), can be authorised to secure a load. Additionally, the employee must also be capable of a banksman's duties with respect to other physical attributes (for example, if a person cannot raise their arms above their shoulders, they may not be capable of working as a banksman).

A person may not act as a banksman without their employer's written authorisation, even if they are capable of it.

Legal basis

(VA 403/2008, amendment effective 1 March 2020):

14a § Employer's written authorisation

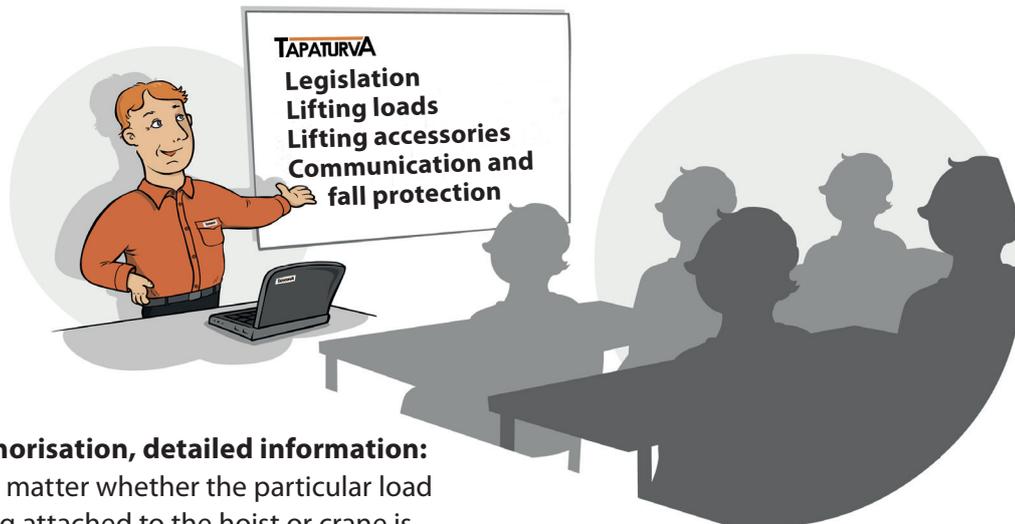
The employee must have a written authorisation from their employer to:

- 1) use a forklift;
- 2) operate a personnel lift;
- 3) attaching a load to a hoist or crane used for installations

Before granting the authorisation covered in Paragraph 1, an employer must ensure that their employee has sufficient abilities and skills to safely operate the work equipment or attach a load.

The provisions in Paragraph 1 about the employer's written authorisation also apply to operating at most a 25 metric ton capacity tower crane. Before granting authorisation, the employer must ensure that their employee has sufficient abilities and skills based on their training to operate the work equipment safely.

The point for the legislation is that you should not learn the dangers of lifting and hoisting the hard way.



Written authorisation, detailed information:

- It does not matter whether the particular load that is being attached to the hoist or crane is actually being installed. In other words, if the load were a waste bin, the person attaching the load must have written authorisation from their employer, if that particular hoist or crane is meant to be used for installations (e.g. on construction sites, a tower crane always requires an employer's written authorisation, regardless of what the load is)
- only the employer of the person attaching the load can grant the authorisation, not, for example, the entity ordering the transport or the construction site's general contractor. It is the general contractor's responsibility to make sure that the person attaching the load has a written authorisation from their employer and sufficient expertise to do so.
- self-employed haulers can write the authorisation for themselves
- in principle, there is no need for authorisation for loading cranes used to unload, even though they are used on the construction site. The situation changes, if a loading crane is used for installation

When deciding that a driver will also act as a banksman, you should ensure that the transport clause has been selected correctly. Additionally, ensure that there is an active insurance policy, in case the banksman's activities cause damage on the construction site (e.g. the load falling, damage to a hoisting accessory).

If the driver has been instructed to participate in hoisting by attaching the load, they are participating in work on the construction site and operate under the supervision of its management.

Thus, they must participate in construction site orientation as far as it is related to acting as a banksman. The construction site's general contractor determines the orientation's scope and method of implementation: the entity ordering the transport or the driver's employer should suggest options other than the traditional construction site orientation held in the mornings. For example, an orientation form can be used to guide the driver in relevant work-related matters when they arrive on the construction site for the first time. Things to include in the orientation might be, for example, the equipment that needs to be worn on site, the unloading zone and its fall protection, lifting and hoisting practices and restrictions, turning the vehicle around/leaving the construction site, traffic control practices when leaving the construction site, processing transport documents, the locations of the construction site office, personnel facilities, first aid stations, and fire extinguishing equipment, etc. (if not clearly visible), construction site contact persons and contact information, incident reporting practices, actions in the event of an accident, etc. The form may need to be signed and retained in the construction site archives.

Refusing to a work task

Drivers – like all other employees – have the right to refuse to a work task that poses a serious danger to themselves or others in the work area. A banksman may, for example, refrain from attaching slings if in danger of falling or if the lifting accessories are defective. The driver must also refuse to a task if they do not have written

authorisation from their employer to act as a banksman.

You must inform the construction site supervisors immediately when abstaining from work. The work must continue when the risk is eliminated, or the working conditions are shown to be safe.

A summary of the duties and responsibilities of various parties in lifting and hoisting

In legislation, sanctions are primarily aimed at supervisors, whose duties include understanding the risks associated with the work under various circumstances and instructing and supervising employees in performing that work safely. In addition to the employee's supervisor, the construction site's general contractor also has a legal responsibility for the aforementioned.

Every employer is obligated to take care of and inspect their equipment. It is the general contractor's duty to ensure that the equipment is appropriate. The general contractor can prohibit the use of equipment when deficiencies are found.

The **architect/engineer** is responsible for ensuring that the plans are safe to construct and that the designed elements are safe for use and transport. For example, the architect/engineer must design the lifting eyes to withstand the handling of the load per the instructions and calculate the load's centre of gravity and weight.

The architect/engineer provides the necessary information to carry out the plans for the work (e.g. installation plan for the elements, lifting work plan).

The **element manufacturer** is tasked with manufacturing the products according to the plans using the materials required by the architect/engineer. If it is necessary to deviate from the plans, it requires permission from the architect/engineer, and they will be involved in updating the documents attached to the product to reflect the new plans.

The element manufacturer prepares the product-specific instructions for moving, lifting, and installation.

Together with the driver, the manufacturer ensures that the products are loaded appropriately and that they can be unloaded safely. If necessary, they will create unloading instructions for the products, which are delivered to the construction site.

The **driver** will report anything that happens during transport that could affect the safe unloading of the products. They will provide the construction site with the order of unloading items and other unloading instructions and assist with the unloading (e.g. remove any restraints used to secure the load during transport).

The driver will only attach the lifting accessories if this has been agreed: if the driver engages in work that has not been agreed and this results, for instance, in material damages, the insurance company may be unwilling to pay compensation (in full).

The duties of the person acting as a banksman are to appropriately attach the visually inspected lifting accessories to the load and communicate their permission to lift per the construction site practices. If attaching the lifting accessories is unsuccessful (e.g. the lifting inserts are damaged), the load may not be lifted before the situation is rectified.

The **banksman's employer** (or supervisor) ensures that the banksman is competent and provides written authorisation. The person who has provided the authorisation is responsible for ensuring that the person acting as a banksman is mentally and physically suitable for that job, and understands the duties and risks associated with it. The banksman's employer provides them with the equipment necessary to perform their duties (helmet with chinstrap, safety glasses, at least Class 2 reflective clothing for the upper body, safety shoes, and a harness).

The **general contractor** supervises activities and also ensures that the site road and unloading zone are level, structurally sound, and otherwise suitable for the task at hand. The general contractor also ensures that the fall protection in the unloading zone is appropriate. In addition, the general contractor ensures that the banksman has their employer's written authorisation. However, the general contractor cannot issue authorisations to anyone other than their own employees.

Safety is achieved by everyone working together. Thus, in the event of an accident, potential negligence by the general contractor and other parties is investigated.

Unloading

The typical risks associated with unloading are loads tipping or workers falling from heights.

The necessary information about lifting and unloading are found in the installation plan for the elements. The party responsible for installing the elements creates the installation plan, and a structural engineer provides the information to prepare that plan.

At their worst, the consequences of a **load tipping** are life-threatening, and practically always result in material damage. Tipping can occur because of, e.g. an uneven platform, ground collapse, movement of the vehicle, collision with another vehicle, removing load restraints too early/in the wrong order, or the wrong unloading order.

You can prevent load tipping or its consequences by, e.g.:

- using a level and solid unloading zone designated by the construction site
- isolating the unloading zone from pedestrian and vehicle traffic. The vehicle being unloaded should also be highly visible, e.g. equipped with flashing yellow lights
- following the unloading order provided by the shipper/loader
- not removing the load restraints until the load is attached to the hoist

At their worst, the consequences of a **worker falling** are life-threatening, but it is more likely that they will suffer bone fractures, sprains, or bruises. A worker can fall, e.g. because of the load swaying/tipping, a ladder tipping, their grip slipping from the ladder, slipping/tripping, the ground collapsing, the vehicle moving, or a collision with another vehicle.

Employee falls from heights are prevented, e.g.:

- primarily with fixed fall protection, such as unloading station railings
- with personal fall protection (a harness with a shock absorbing lanyard, attached from behind and above the shoulder line)
- by using equipment other than extension ladders for ascent, e.g. portable step ladders
- ladder safety accessories according to the surroundings/conditions (hooks, spreaders, spikes, straps, etc.)
- by removing items posing a tripping hazard from the platform and pathway, such as the wood blocking used in transport and load securing equipment
- by making sure to take anti-slip measures on the platform, on top of the load and pathways
- safety footwear is available with slip-resistant soles
- by ensuring that the vehicle remains stationary, e.g. with wheel chocks, particularly in uncertain conditions
- by isolating the unloading zone from pedestrian and vehicle traffic. The vehicle being unloaded should be highly visible, e.g. equipped with flashing yellow lights.

Securing the load for transport and the unloading order

must be planned so that the load does not tip. In principle, the shipper of the load provides the instructions for this. You may not deviate from the shipper's instructions without a credible explanation or ensuring that the load will not tip.

Hoisting and lifting

The lifting plan describes how the hoisting and lifting will be carried out on the jobsite. Non-routine lifts require a separate written plan every time.

Risks of lifting operations

The typical risks of lifting operations are associated with the load falling, becoming entangled, or swinging, the lifting accessory becoming entangled, and materials falling from the load.

Typical mistakes in lifting operations:

- the lift angle is too high
- incorrect lifting accessory
- incorrectly attached lifting accessory
- unbalanced load being lifted, e.g. incorrectly shortened chains
- deviating from the lifting plan, e.g. four-point lift being carried out as a 2 or 3 point lift

The consequences of **falling loads or falling materials** are essentially always serious. Everyone can understand the hazard caused by a heavy load, but, for instance, a 50x100 piece of lumber falling from a great height can crush your shoulder. That is why you cannot be under a load. If work has to be conducted underneath the load or within the danger zone, the worker's safety must be reliably ensured.

The consequences of **loads or lifting accessories becoming entangled** can be serious, depending on what they are entangled with, and whether they knock something over, for instance. There are also reports of an entangled lifting accessory loosening and being flung into a worker's head.

A **swinging load** typically crushes fingers or limbs, but can also, for instance, knock over nearby workers or materials or cause them to fall.

The risks associated with lifting can be prevented, e.g.:

- with the careful preliminary planning of lifts and following these plans
- by visually monitoring the condition of lifting accessories during lifts and carrying out periodic inspections. If deficiencies are detected in the inspections or a periodic inspection is late, the lifting accessory may not be used. Conduct disposal/repairs according to construction site guidelines.
- by selecting the appropriate lifting accessory for the load (various lifting accessories are described later in this guide)
- by ensuring that there is no one and nothing in the danger zone during the lift (where the load may be entangled or swing)
- by ensuring that the lifting accessories are locked: the locking latch on a hook is closed, the grooves on the scissor clamp for hollow-core slabs are ice-free and clean, and the slab fits the clamp (different slab manufacturers have varying lifting grooves)
- by lifting balanced loads. If necessary, conduct as many test lifts as it takes to balance the load (shortening chains).
- by securing loads in a way that prevents materials from falling during the lift. Securing the load, e.g.:
 - with ratchet straps or covers
 - with a choke lift (lifting slings, round slings)
 - by following wind limits
 - by always lifting waste containers horizontally, even when empty (the crane operator or banksman may not be able to see, e.g. whether the container is completely empty,

- or if there is waste wedged inside or frozen to the container)
- by ensuring that no items are stuck/frozen to the load that may fall during the lift

Carrying out lifting and hoisting operations

You must know the weight of each load before lifting so that you can select the correctly rated lifting accessories. The lifting accessory's manufacturer specifies its terms of use. Large lifting angles may subject the lifting inserts to excessive forces and break them. Thus, when using a lifting angle of over 45° (a 90° angle between two slings when lifting a symmetrical load), you must ensure that the plan accounts for large angles. The lifting angle may not, however, exceed 60° (a 120° angle between two slings when lifting a symmetrical load). If there is a danger of exceeding the lifting angle, e.g. due to a lack of space or large load, you must use a lifting beam, for example.

The structural engineer designs the lifting inserts and thus also gives instructions for lifting the elements. If the elements have lifting

eyes or other lifting inserts (such as spherical head anchors or internally threaded anchors for loops), they will be used.

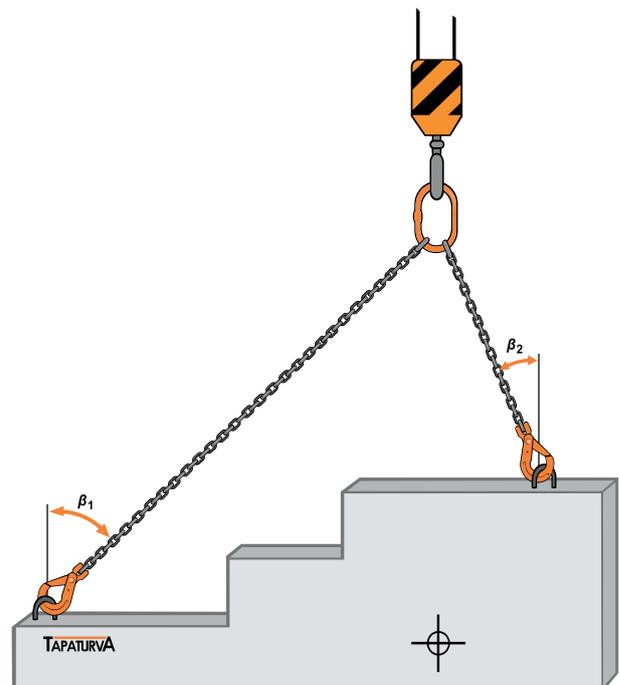
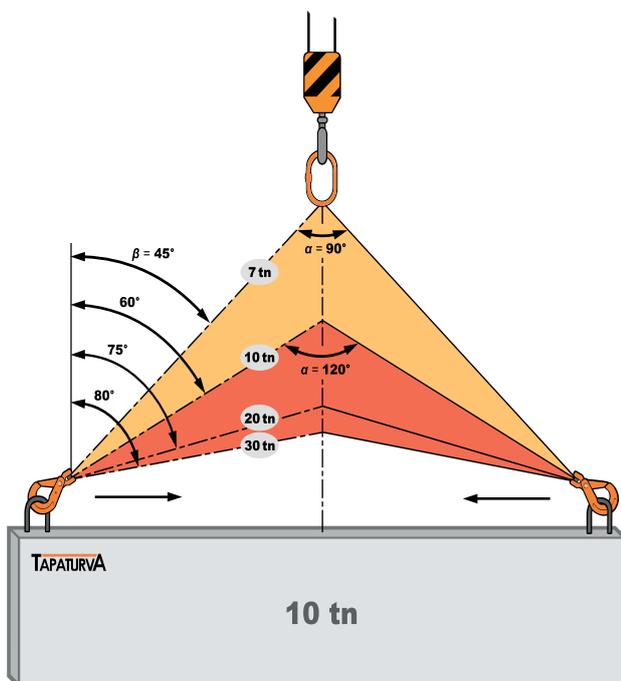
The person attaching the load must ensure that:

- the lifting accessory used is appropriate for the particular lift
- the lifting accessory is intact, based on visual inspection
- the lifting accessory can be attached reliably
- the lifting accessories are attached to the lifting inserts as planned
- all the load's lifting inserts are used (e.g. if there are 4 eyes in the load, all of them are in use)

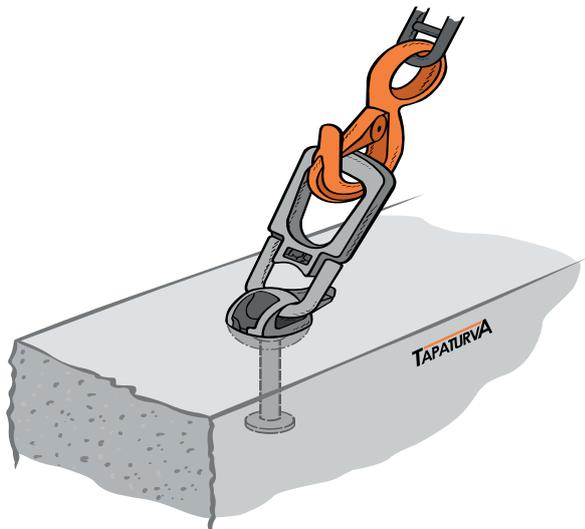
If you have doubts about any of the above, the lift should be prevented or stopped. If another person is also carrying out the lifts, also visually inspect their attachments.

Prior to attaching the load, ensure that the lifting inserts are functioning as designed and are intact, for example:

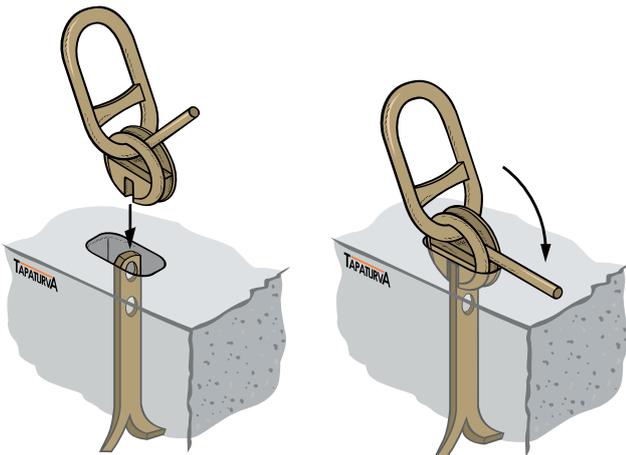
- the lifting eyes are not bent, broken, or clogged.
- the lifting eye reaches the bottom of the hook
- the hook and the lifting accessory/eye are the correct size to be used together. The eye, main



Left: the effect of the lifting angle on sling loads. Right: when lifting asymmetrical loads, the sling loads are different for each leg. In the figure, the right leg has a higher load than the left.



The 'nose' of the lifting clutch that is attached to spherical head anchors must make contact with the load surface; if the nose is not in contact with the load, lifting is prohibited. Lift straight up or in the direction of the nose.



The lifting clutch for an RR anchor must be in the down position.

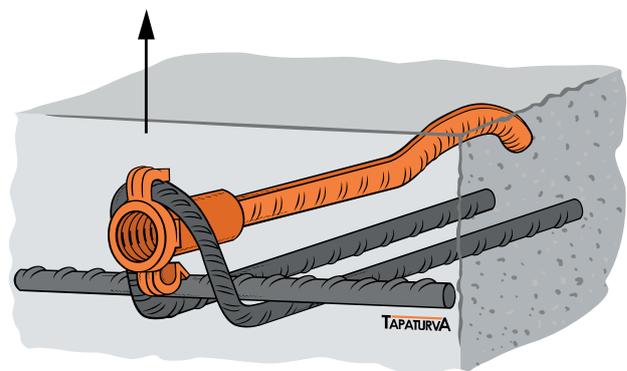


Pictures of various internally threaded anchors. The allowed lifting directions are determined by, among other things, the shape of the lifting inserts and reinforcement. Because the shape of the anchor and reinforcement are not visible from the surface of the finished element, you must follow the engineer/manufacturer's lifting directions!

- loop on the chain sling, etc. must fit the hook all the way at the bottom.
- threaded lifting accessories (e.g. wire loops, eye bolts) reach the bottom, and the internally threaded anchors are clean and the threads intact
- the locking mechanism for the hook closes
- the lifting grooves for hollow-core slabs are intact and clean. In the winter, you must ensure that the lifting grooves have not frozen during transport
- the anchors for lifting clutches are straight, and there is no dirt or ice inside the anchor or bowl that would interfere with its function

If the load contains lifting inserts that are unfamiliar to you: attach the load only when you have received reliable guidance on using the lifting insert.

Loads must always be balanced during lifts. You will conduct as many test lifts as necessary to determine the centre of gravity. This is important to achieve an even load on the lifting accessories, and also because it allows for the installation of the element (an element that is being lifted askew may not fit where it needs to be installed).



If a **lifting eye or other lifting insert** is broken or there is another problem with the lift, the load can only be lifted again after a reliable report. Permission for the lift can only be given by the author of the lifting plan, e.g. the structural engineer.

Elements that require lifting from horizontal to vertical positions, pillars, and non-routine lifts

All lifts are ultimately carried out within the constraints or instructions provided by the structural engineer. In addition, all non-routine lifts require a written risk assessment. Non-routine lifts are, e.g. lifts with two or more cranes, lifts in traffic (traffic control, stopping traffic), lifts in areas with blind spots or limited audibility, and other challenging lifts (or lifts that seem challenging).

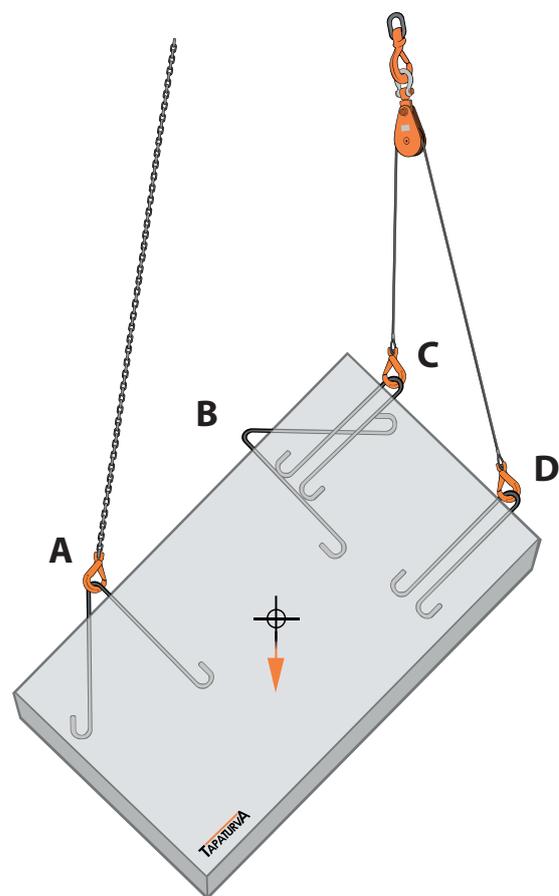
Among other things, the risk assessment for non-routine lifts will investigate:

- the effect of the planned lift on the surroundings (to the construction site, passer-bys, etc.)
- the potential effect of non-personnel on the planned lift
- possible accident scenarios, preventing them, or mitigating the consequences to an acceptable level (e.g. a load falling: ensure that there is no one underneath the load by carrying out the lift after hours)
- the effects of potentially predictable problems and protection from them (e.g. key personnel for the lift falling ill)
- preparing for accidents and guidance in case of accidents

The element installation plan includes instructions for those **elements that must be turned from horizontal to vertical positions**. Turning the element is done with two cranes or one mobile crane, primarily using the pulley in the crane/hoist that is doing the turning. If the driver participates in turning the element, it must be made clear to them (or they must be sure that they understand) how the element will be turned per the construction site practices: the lifting appliance/accessory lifting and the one turning cannot be mixed up.

When using two cranes, you must verify which crane is lifting and which is turning.

When using a single mobile crane, the element is lifted on a single boom with two winches. It is important that the banksman clearly understands which winch is used for lifting and which one for turning (winch 1 and winch 2). This is something that you should verify with the crane operator.



The pulley distributes the load evenly between eyes C and D for the entire duration of the lift. Usually eye B is removed before turning the element, because removing it requires working at height, e.g. on a boom lift.

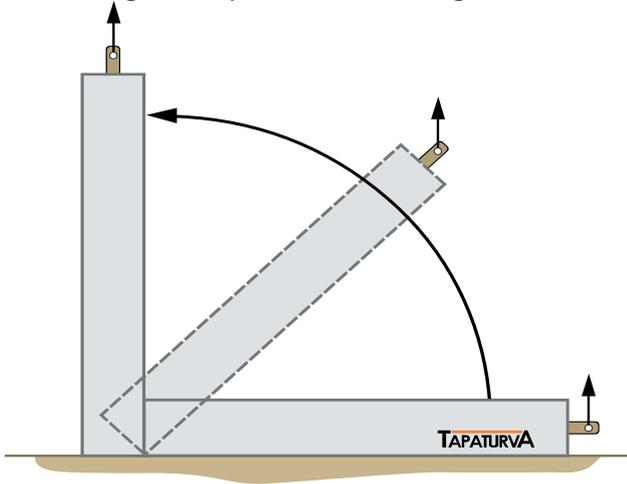
The element that needs to be turned may not be turned while braced on the ground: in addition to damage to the surfaces of the element, forces pushing in the direction where the element is weak could break it or the lifting eyes.

Columns and piles

Always follow the manufacturer's instructions when lifting columns, which may deviate from the following.

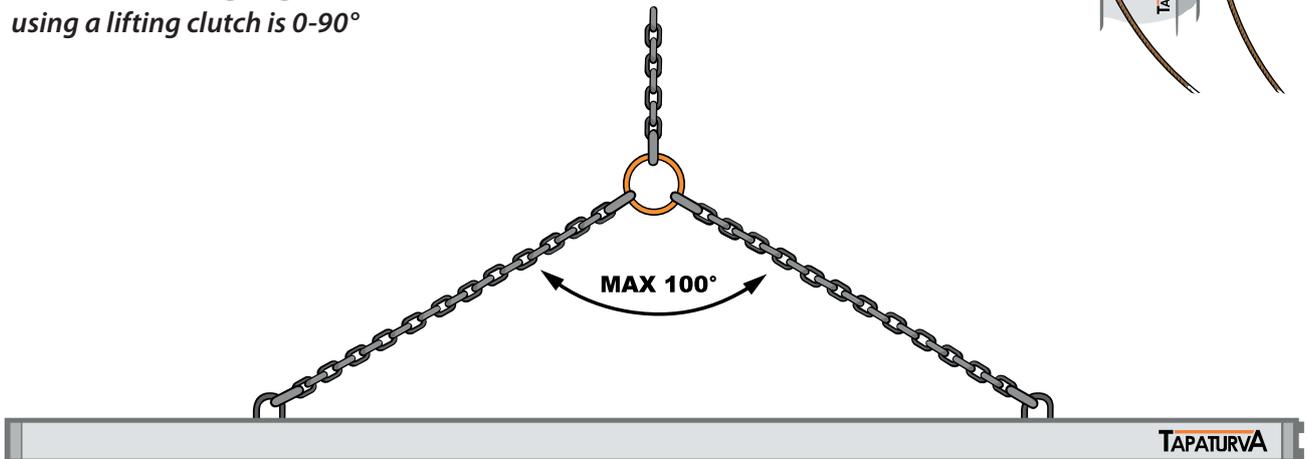
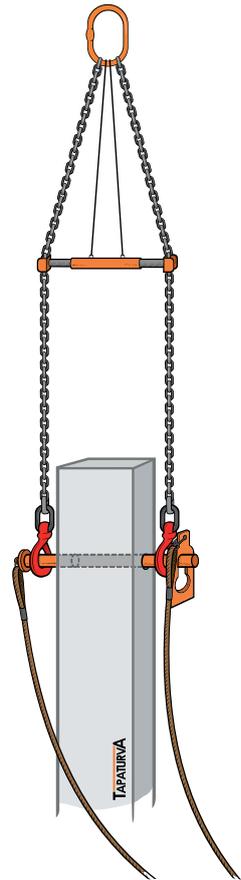
Columns are erected with, e.g.:

- a lifting clutch placed in the lifting anchor

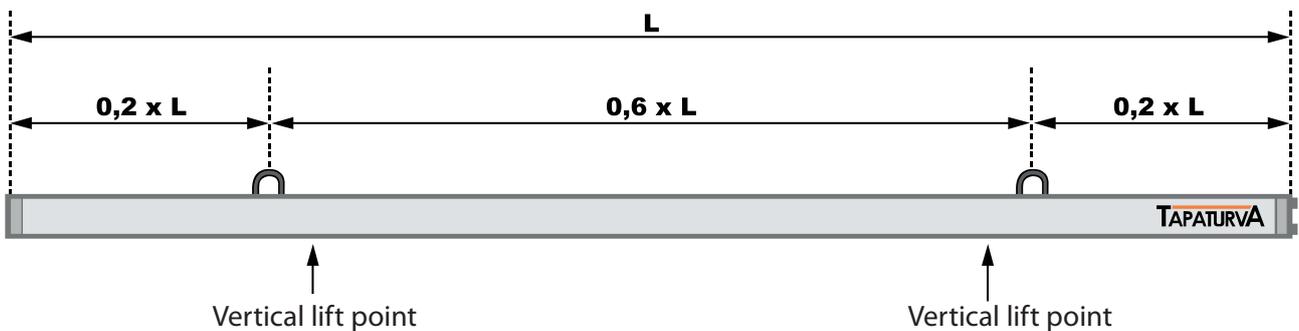


The allowed lifting angle for columns when using a lifting clutch is 0-90°

- a mounting shaft is placed in the mounting hole. A pin with a cord attached is placed on the end of the mounting shaft. The shaft is removed after the column is secured: the pin is removed with the cord, and the shaft is pulled out with the rope attached to the loop on the other end



The piles are unloaded using both lifting eyes.



Piles are erected by using a chain choker hitch on the pile shaft towards the inside from the lifting eyes (not towards the ends of the pile). You may not use the lifting eyes when erecting the pile.

Communication

Communication between banksmen and the crane operator occurs either with a radiophone or hand signals. The lift may not begin until all parties are ready.

Radiophone

You must make sure that you know how to use the radiophone before use. If necessary, you will be instructed in its use. You should note the following when using a radiophone:

- The person using a radiophone must have normal hearing. Bad hearing predisposes you to mishearing things, particularly in a noisy environment
- All lifting parties must speak the same language
- The phone line of a shortwave (SW) radiophone opens when the button is pressed. You must not press the button when listening. There are also voice-controlled SW radiophones
- SW radiophones have a small delay between pressing the button and the phone line opening. For example, count to 'one one thousand, two one thousand' in your head before you speak; otherwise, your first words may not be heard
- The message recipient is mentioned unambiguously – for example, the second crane of Company LLC may be FN2, and the banksman FA2. Simply saying 'lift' may cause several simultaneous lifts: A serious incident occurred in Helsinki when a crane operator named 'Kalle' followed a command that was meant for the other crane operator with the same name, who was 5 kilometres away.
- Radiophones may have spotty reception because of factors such as weather conditions, distance, terrain, or structures. Because of this, the recipient of a message confirms it by repeating its main content. If no such acknowledgement is heard, you can assume the message was not delivered
- Freezing temperatures shorten battery life. For example, you can keep the phone inside your jacket in cold weather and use a wireless

speakerphone to save the battery

- The terms used may not be confused under any circumstances, not even accidentally. For example, 'Lift'/'don't lift' are a bad pair, 'lift'/'stop' are better. Use the term 'danger' for critical emergency stops. The preferred way to give directions is to use the terrain and landscape features, e.g. 'towards the road'/'towards the beach' rather than 'right'/'left'
- If people who are not involved with the lift are heard on the same channel, you should ask them to leave or leave that channel yourself. Back-up channels must be known to everyone.

TABLE: Code words and their explanations under Government Decree 687/2015 (safety labelling and minimum labelling standards at workplaces).

Voice message code word	Explanation
Start	The command begins
Halt	Stop movement
Stop	Stop activity
Hoist	Hoisting the load
Lower	Lower the load
Forwards	Used together with corresponding hand signal
Backwards	Used together with corresponding hand signal
Right	Used together with corresponding hand signal
Left	Used together with corresponding hand signal
Danger	Emergency stop
Quickly	Speed up movement for safety reasons
Slowly	Slow down movement for safety reasons

Hand signals

Hand signals and their explanations under Government Decree 687/2015 (safety labelling and minimum labelling standards at workplaces).

Please note that your gestures must be broad, so that they can clearly be seen by the crane operator at distances/heights of up to tens of metres.



Start, follow my directions



Halt. Stop, stop movement



Stop activity



Raise the boom



Lower the boom



Extend the boom



Retract the boom



Hoist



Hoist slowly



Lower



Lower slowly



Vertical distance



Move forwards



Move backwards



Right



Left



Horizontal distance



Danger, emergency stop



Slow down:
show any movement with one hand, hold the other hand above the moving hand with the palm facing down (except lower slowly)

Lifting accessories

If a lifting accessory is unfamiliar to you, you may only use it after receiving reliable instruction on its use. You must not use a faulty lifting accessory.

You must visually inspect the lifting accessory's condition and markings before use: The CE marking, maximum load, and the date of manufacture or last inspection date, neither of which can exceed one year. If there are any deficiencies in the above, you may not use the lifting accessory.

You may not use an accessory that has been overloaded. Lifting accessories that have been overloaded may not even withstand their rated load. If you suspect having overloaded a lifting accessory, take it out of service.

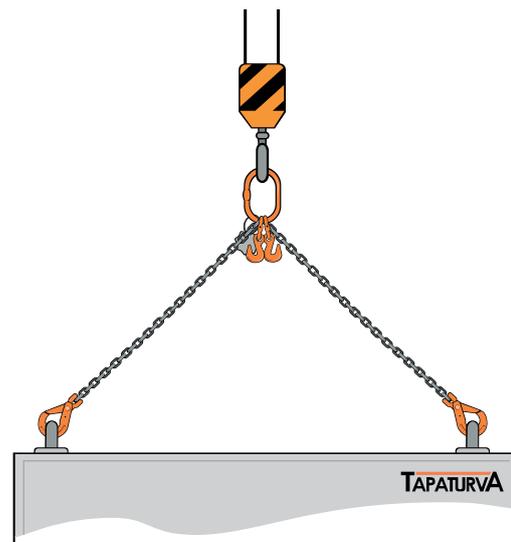
The time of inspection is indicated, for example, by stamping or writing the time on the lifting accessory (e.g. 05/20). A colour code is also used to indicate the inspection year. The below table shows the inspection colour recommendations:

YEAR	INSPECTION COLOUR
2020	Yellow
2021	White
2022	Green
2023	Orange
2024	Blue
2025	Yellow, etc...

Chain slings are chains that hang from the main link with single or multiple legs that attach to lifting inserts with hooks. The hooks must have a functional self-locking mechanism or locking latch.

If chain slings are defective, they need to be taken to be repaired.

If some hooks on the chain slings remain unused (e.g. four-legged chains used with only two eyes),



Position the locks on the hooks upwards so that the load is not applied to the locks, e.g. due to slipping, causing a risk of the load falling

the extra hooks are either attached to the main link or another chain. The chains may not swing freely during a lift (danger of entanglement --> chain is flung/knocks something over).



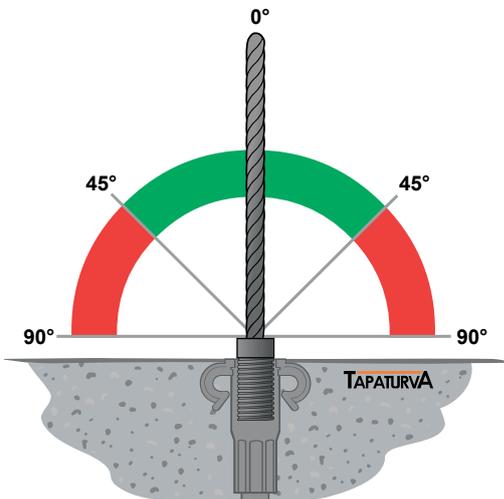
The markings on chain slings (maximum load and allowed lifting angles, CE marking, and often the periodic inspection) are typically found on the tag on the main link. If the tag/markings are missing or unreadable, you may not use the sling.



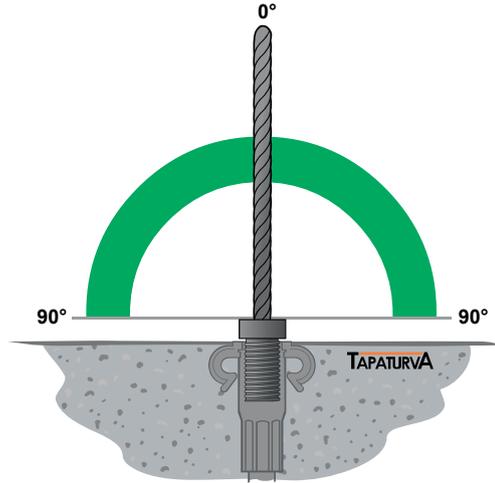
Chain slings are shortened with shortening hooks.

Wire lifting loops can be equipped with or without pressure plates or flares. The threaded wire lifting loop must be fully engaged in the anchor thread: if the threads do not fully engage, the lifting accessory will not carry the full load and it must not be used.

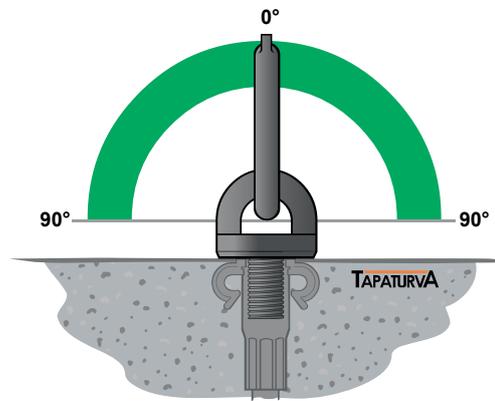
A wire lifting loop may not be used if permanent deformations are present.



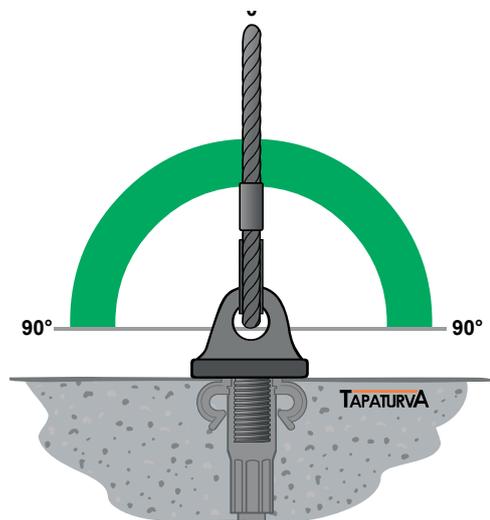
1



2



3



4

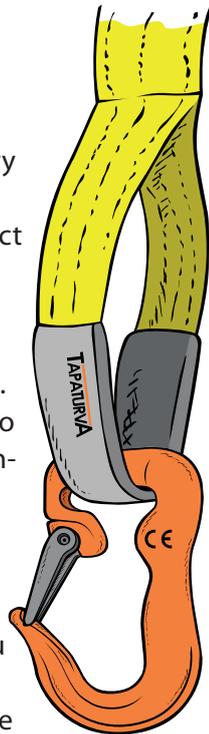
Picture 1, wire lifting loop. Picture 2, wire lifting loop with a flare/sleeve. Picture 3, swivel eye bolt with a pressure plate. Picture 4, a wire lifting loop with a pressure plate.

Loops with pressure plates and flares can be lifted at 90° angles, while without them, the lifting angles can only be 45°.

Lifting slings (lifting belts) are not recommended for use in lifting concrete elements, as the slings are easily damaged. However, if their use is necessary because of a lack of better options, it is important to inspect them during use.

When using lifting slings, you must ensure that the sling does not break from abrasion or cuts. You must not use lifting slings to lift a load with sharp edges without edge protection.

The load capacity of lifting slings is primarily affected by its method of use according to the figure below. Make sure you know the sling's load factors located on the blue label on one of the lifting loops.



Rejection criteria for lifting slings are, e.g.:

- cuts on the edges or across the sling
 - unravelling and holes
 - broken stitching
 - knots
 - paint or marker etc. on a load-bearing part
 - dirtiness: exposure to chemicals, oil, grease, concrete, colour changes, etc.
 - generally poor condition
 - over 10 years old
 - a frozen-solid sling is defrosted and can be put into service again, if it is otherwise intact
- If a lifting sling is defective, it is cut in half and disposed of as combustible waste.

Round slings are an O-shaped lifting accessory made of fibres within a protective cloth cover. It is particularly well suited for choke lifts because it tightens well around the load being lifted. The load factors for different lifting methods with round slings are similar to lifting slings.

You can add equipment to lifting slings that allow their use with, e.g. lifting eyes

	Straight lift M = 1,0	Choke lift M = 0,8	Basket lift M = 2,0	Angle lift $\beta = 0-45^\circ$ M = 1,4	Angle lift $\beta = 45-60^\circ$ M = 1,0	Angle lift $\beta = 0-45^\circ$ M = 0,7	Angle lift $\beta = 45-60^\circ$ M = 0,5
Loop lifting sling							
Lifting belt							



Lifting sling load factors (M) with different lifting methods



When using round slings you must make sure that it does not break from abrasions or cuts. You must not use round slings to lift a load with sharp edges without edge protection.

If a round sling is defective, it is cut in half and disposed of as combustible waste.

Rejection criteria for round slings are, e.g.:

- Holes in the protective cloth
- A 'lump' that can be felt inside the sling, fibres melted together
- knots
- dirtiness: exposure to chemicals, oil, grease, concrete, colour changes, etc.
- generally poor condition

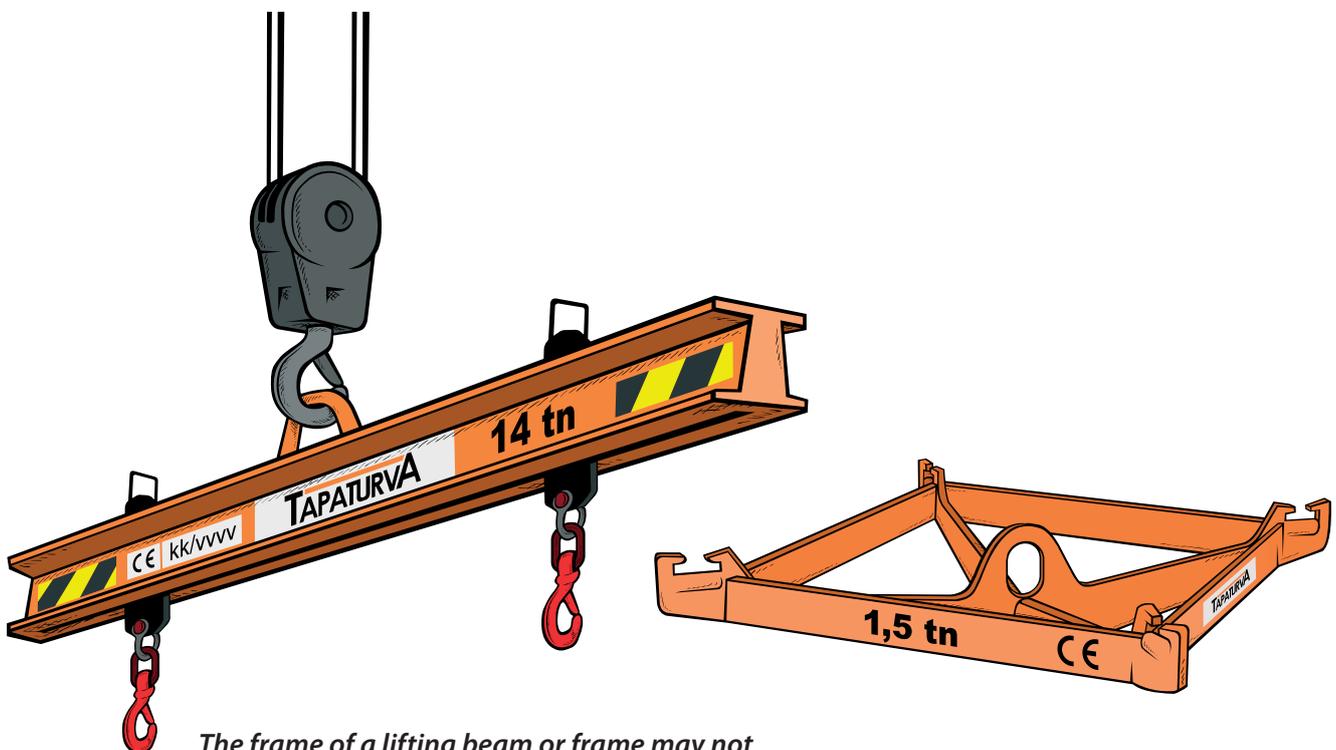
- over 10 years old
- a frozen-solid round sling is defrosted and can be put into service again, if it is otherwise intact

The mechanism in **scissor clamps for hollow-core slabs** must function flawlessly and the safety chain and its attachments must be intact.

Scissor clamps are attached to the lifting groove in a hollow-core slab in such a way, that the clamp locks properly. The safety chain is set tight. You must make sure ahead of time that the scissor clamp in use and the lifting groove of the slab fit together: not all hollow-core slab suppliers have the same profile for the lifting grooves.

A lifting beam and lifting frame can be used to attach lifting accessories for a straight lift. Some lifting beam models have adjustable lifting points which can be used to lift loads of varying sizes and to balance difficult, asymmetric loads.

A lifting frame is used, e.g. when flat loads have more than two lifting points.



The frame of a lifting beam or frame may not be bent. If the beam has an adjustable lift point, the locking grooves must be intact.

Other things to note when working as a banksman



Fall protection

In principle, fall protection is addressed with, e.g. the unloading station and its railings. Additional protection can be provided with harnesses attached to Skyhook anchors, for example.

A banksman must have their own personal harness. If there are no retractable lanyards available for use on the construction site, the banksman must have that equipment, too. You may not work with deficient fall protection.

You must be properly instructed in the use of fall protection equipment, because when used incorrectly, they may not be useful at all.

Fall protection equipment is inspected annually.

Traffic control

If a vehicle that is leaving the construction site is forced to drive into traffic blind (e.g. while backing up), the construction site must arrange for traffic control. The signaller must have Class 3 high visibility clothing, and, during the day, a 400 mm stop sign (closed to all vehicles). During darkness, a 200 mm illuminated sign is used.

Explanations of terms used in lifts

Choke hitch

A self-tightening attachment method for lifting accessories where the attachment (hitch) is passed through itself

Rotated element

An element that must be transported horizontally due to its great height and is rotated vertically at the construction site to be upright.

Lifting inserts

A fixed component in the load – e.g., a lifting eye where a crane hook or lifting accessory is attached

Machine tag

A machine plate on lifting accessories, typically on chain slings. The plate contains the statutory information about the lifting accessory. If there is no plate, or the markings are not visible, the lifting accessory must be sent in for maintenance

Main link

E.g. the link on a chain sling that is placed on the hook

Vemo

An internally threaded anchor that is used to secure walls and columns during installation. Because the term is sometimes also used for lifting anchors, make sure you have understood it correctly



Authorisation number: Date:

Employer's authorisation for the driver to attach a load to a hoist or crane used for installations

Driver's name:

Company:

Load types that the authorisation applies to:

.....

Validity period:

Signature of authorising person:

Printed name:

Job title in company:

The recipient of the load is responsible for the safety of the unloading zone, lifting routes, and lifting accessories and ensures that the driver receives an orientation and guidance on the area and equipment

When issuing the authorisation, the following requirements for attaching loads have been covered:

- mental and physical requirements
- risks associated with lifting operations and the unloading zone
- general unloading instructions
- general lifting instructions
- product and load-specific unloading and lifting instructions
- attaching and tying loads
- detaching a load and directing it out of a truck
- a load's centre of gravity and balanced lifting
- selecting a lifting accessory
- visually inspecting a lifting accessory
- signalling
- the use of radiophones
- taking action in emergencies (e.g. unloading situations, faulty load or accident)