Vertical transport
Cranes and Winches
Guidance

ECHO investment

Wszystko zaczyna się od Ciebie

Vertical transport

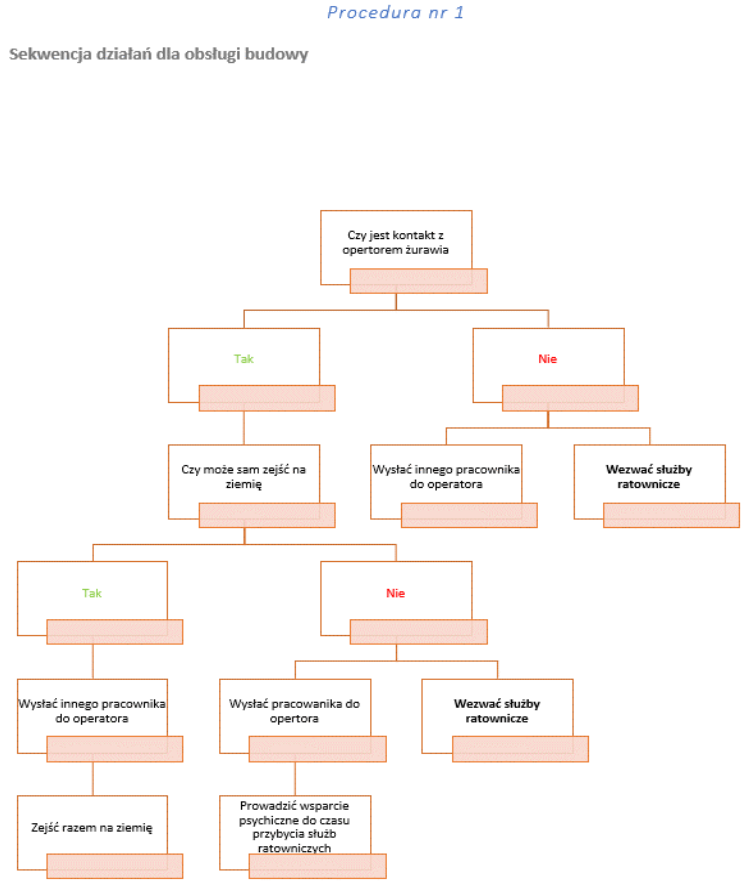
Vertical transport is a high risk-area. The basic legal requirements and the risks related to transport on construction sites are presented in this guidance. We are convinced that its best practice guidelines on proper behaviours and system-related solutions will help to maintain safety on Echo's construction sites.

Safety manual

§5.1. The employer, prior to allowing crane operators, signallers and slingers to work, shall make available for their permanent use information and instructions stated in the occupational health and safety regulations, as well as:

1) safety manual for transportation works,
2) evacuation plan from a crane cabin - and familiarize them with the provisions contained in these information and instructions.

Legal basis: "Regulation of the Minister of Entrepreneurship and Technology of October 22, 2018 on occupational health and safety when operating tower cranes and quick-assembly cranes".



Crane operator

§3. The crane operator can be a person who:

1) is at least 18 years old and holds a current certificate of crane operating qualification obtained on the basis of the provisions regarding the procedure for checking the qualifications required for operation and maintenance of technical equipment;
2) holds a current medical certificate confirming that there are no health contraindications to work in this position.

§4. The signaller or the slinger may be a person who is at least 18 years old and holds a medical certificate stating no health contraindications to perform work in these positions, respectively.

Legal basis: "Regulation of the Minister of Entrepreneurship and Technology of October 22, 2018 on occupational health and safety when operating tower cranes and quick-assembly cranes".

ECHO investment | Wszystko zaczyna się od Ciebie

Operation permission

Art. 63.1. Who authorizes a technical device to be used:

without receiving a decision of the competent technical supervision unit on permission of the device to operate or trade, contrary to the decision of the competent technical supervision unit to suspend the operation or withdrawal of technical equipment from trading, is subject to restriction of personal liberty or fine.

Legal basis: "Act of 21 December 2000 on technical supervision".

URZĄD DOZORU TECHNICZNEGO
Oddział w Warszawie

Protokół badania **okresowego** | Data badania: **31.01.2013**

Eksploatujący: 0111372
P.P.U.H. "J-R" RYSZARD JANKOWSKI
WARSZAWA, ZAOLZIAŃSKA 9 m. 4

Wytwórca: CORMACH

Nr fabr.: 511902 | Rok budowy: 2008

Miejsce badania: Warszawa ul. Augustówka

Numer ewidencyjny: **N3227000387** CE

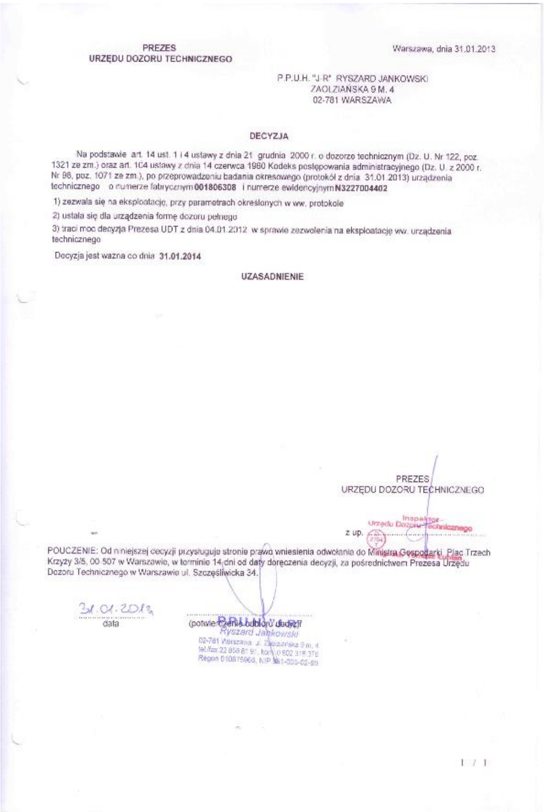
2. Wynik badania pozytywny.

1. Wyposażenie pomiarowe:
   - suwmiarka 150mm nr 27/09,
   - miara taśmowa 27/417.
2. Do prób użyto obciążenia o znanej masie, dostarczonego przez użytkownika.

4. Konserwujący obecny przy badaniu **) Ryszard Jankowski
Dokument potwierdzający kwalifikacje: K/27/186/05, K/27/187/05
5. Obsługujący obecny przy badaniu **) Ryszard Jankowski
Dokument potwierdzający kwalifikacje: O/27/161/04
6. Termin następnego badania: okresowe styczeń 2014

7. Potwierdzam obecność konserwującego (obsługującego*) i odbiór protokołu
Ryszard Jankowski

8. Pieczątka i podpis inspektora



PREZES
URZĘDU DOZORU TECHNICZNEGO

Warszawa, dnia 31.01.2013

P.P.U.H. "J-R" RYSZARD JANKOWSKI
ZAOLZIAŃSKA 9 M. 4
02-781 WARSZAWA

DECYZJA

Na podstawie art. 14 ust. 1 i 4 ustawy z dnia 21 grudnia 2000 r. o dozorze technicznym (Dz. U. Nr 122, poz. 1321 ze zm.) oraz art. 104 ustawy z dnia 14 czerwca 1960 Kodeks postępowania administracyjnego (Dz. U. z 2000 r. Nr 98, poz. 1071 ze zm.), po przeprowadzeniu badania okresowego (protokół z dnia 31.01.2013) urządzenia technicznego o numerze fabrycznym **001806308** i numerze ewidencyjnym **N3227004402**

1) zezwala się na eksploatację, przy parametrach określonych w ww. protokole

2) ustala się dla urządzenia formę dozoru pełnego

3) traci moc decyzja Prezesa UDT z dnia 04.01.2012 w sprawie zezwolenia na eksploatację ww. urządzenia technicznego

Decyzja jest ważna do dnia **31.01.2014**

UZASADNIENIE

PREZES
URZĘDU DOZORU TECHNICZNEGO

z up. ....

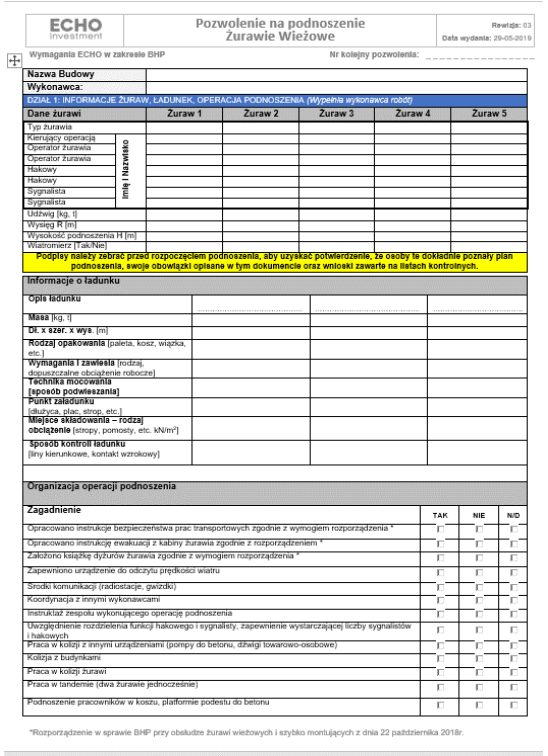
POUCZENIE: Od niniejszej decyzji przysługuje stronie prawo wniesienia odwołania do Ministra Gospodarki, Plac Trzech Krzyży 3/5, 00 507 w Warszawie, w terminie 14 dni od daty doręczenia decyzji, za pośrednictwem Prezesa Urzędu Dozoru Technicznego w Warszawie ul. Szczęśliwicka 34.

31.01.2013
data

(potwierdzenie odbioru decyzji)

Lifting permission

Permission for lifting is issued prior to starting works by the Lifting Coordinator appointed at each Echo's construction site.



ECHO investment — Pozwolenie na podnoszenie Żurawie Wieżowe

Rewizja: 03
Data wydania: 29-05-2019

Wymagania ECHO w zakresie BHP

Nr kolejny pozwolenia: _____

Nazwa Budowy	
Wykonawca:	

DZIAŁ 1: INFORMACJE ŻURAW, ŁADUNEK, OPERACJA PODNOSZENIA *(Wypełnia wykonawca robót)*

Dane żurawi		Żuraw 1	Żuraw 2	Żuraw 3	Żuraw 4	Żuraw 5
Typ żurawia						
Kierujący operacją	Imię i Nazwisko					
Operator żurawia						
Operator żurawia						
Hakowy						
Hakowy						
Sygnalista						
Sygnalista						
Udźwig [kg, t]						
Wysięg R [m]						
Wysokość podnoszenia H [m]						
Wiatromierz [Tak/Nie]						

Podpisy należy zebrać przed rozpoczęciem podnoszenia, aby uzyskać potwierdzenie, że osoby te dokładnie poznały plan podnoszenia, swoje obowiązki opisane w tym dokumencie oraz wnioski zawarte na listach kontrolnych.

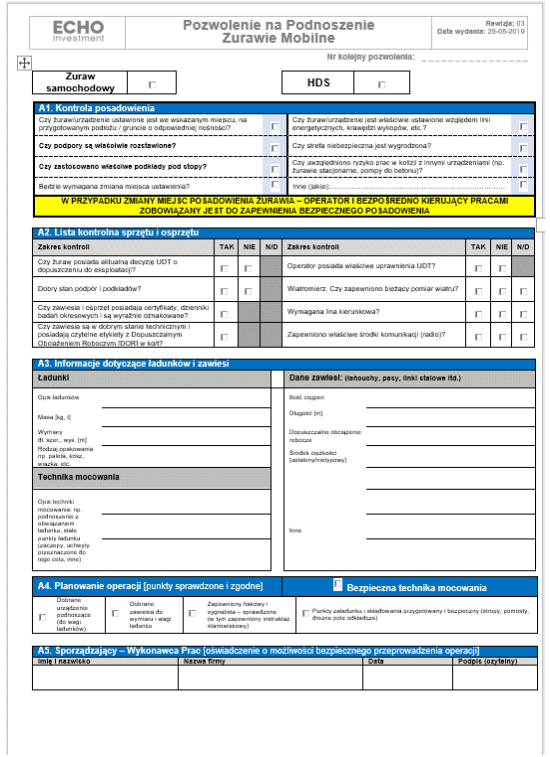
Informacje o ładunku

Opis ładunku			
Masa [kg, t]			
Dł. x szer. x wys. [m]			
Rodzaj opakowania [paleta, kosz, wiązka, etc.]			
Wymagania i zawiesia [rodzaj, dopuszczalne obciążenie robocze]			
Technika mocowania [sposób podwieszania]			
Punkt załadunku [dłużyca, plac, strop, etc.]			
Miejsce składowania – rodzaj obciążenie [stropy, pomosty, etc. kN/m²]			
Sposób kontroli ładunku [liny kierunkowe, kontakt wzrokowy]			

Organizacja operacji podnoszenia

Zagadnienie	TAK	NIE	N/D
Opracowano instrukcje bezpieczeństwa prac transportowych zgodnie z wymogiem rozporządzenia *	☐	☐	☐
Opracowano instrukcję ewakuacji z kabiny żurawia zgodnie z rozporządzeniem *	☐	☐	☐
Założono książkę dyżurów żurawia zgodnie z wymogiem rozporządzenia *	☐	☐	☐
Zapewniono urządzenie do odczytu prędkości wiatru	☐	☐	☐
Środki komunikacji (radiostacje, gwizdki)	☐	☐	☐
Koordynacja z innymi wykonawcami	☐	☐	☐
Instruktaż zespołu wykonującego operację podnoszenia	☐	☐	☐
Uwzględnienie rozdzielenia funkcji hakowego i sygnalisty, zapewnienie wystarczającej liczby sygnalistów i hakowych	☐	☐	☐
Praca w kolizji z innymi urządzeniami (pompy do betonu, dźwigi towarowo-osobowe)	☐	☐	☐
Kolizja z budynkami	☐	☐	☐
Praca w kolizji żurawi	☐	☐	☐
Praca w tandemie (dwa żurawie jednocześnie)	☐	☐	☐
Podnoszenie pracowników w koszu, platformie podestu do betonu	☐	☐	☐

*Rozporządzenie w sprawie BHP przy obsłudze żurawi wieżowych i szybko montujących z dnia 22 października 2018r.



ECHO investment — Pozwolenie na Podnoszenie Zurawie Mobilne

Rewizja: 03
Data wydania: 29-05-2019

Nr kolejny pozwolenia: _____

Żuraw samochodowy ☐ HDS ☐

A1. Kontrola posadowienia

Czy żuraw/urządzenie ustawione jest we wskazanym miejscu, na przygotowanym podłożu / gruncie o odpowiedniej nośności?	☐	Czy żuraw/urządzenie jest właściwie ustawione względem linii energetycznych, krawędzi wykopów, etc.?	☐
Czy podpory są właściwie rozsztywnione?	☐	Czy strefa niebezpieczna jest wygrodzona?	☐
Czy zastosowano właściwe podkłady pod stopy?	☐	Czy ubezpieczono rynko prac w kolizji z innymi urządzeniami (np. Żurawie stacjonarne, pompy do betonu)?	☐
Będzie wymagana zmiana miejsca ustawienia?	☐	Inne (jakie):	☐

W PRZYPADKU ZMIANY MIEJSC POSADOWIENIA ŻURAWIA – OPERATOR I BEZPOŚREDNIO KIERUJĄCY PRACAMI ZOBOWIĄZANY JEST DO ZAPEWNIENIA BEZPIECZNEGO POSADOWIENIA

A2. Lista kontrolna sprzętu i osprzętu

Zakres kontroli	TAK	NIE	N/D	Zakres kontroli	TAK	NIE	N/D
Czy żuraw posiada aktualną decyzję UDT o dopuszczeniu do eksploatacji?	☐	☐		Operator posiada właściwe uprawnienia UDT?	☐	☐	
Dobry stan podpór i podkładów?	☐	☐		Wiatromierz. Czy zapewniono bieżący pomiar wiatru?	☐	☐	☐
Czy zawiesia i osprzęt posiadają certyfikaty, dzienniki badań okresowych i są wyraźnie oznakowane?	☐			Wymagana linia kierunkowa?	☐	☐	☐
Czy zawiesia są w dobrym stanie technicznym i posiadają czytelne etykiety z Dopuszczalnym Obciążeniem Roboczym (DOR) w kat?	☐			Zapewniono właściwe środki komunikacji (radio)?	☐	☐	☐

A3. Informacje dotyczące ładunków i zawiesi

Ładunki

Opis ładunków

Masa [kg, t]

Wymiary dł. x szer., wys. [m]

Rodzaj opakowania np. paleta, kosz, wiązka, etc.

Technika mocowania

Opis techniki mocowania: np. podnoszenie z oświadczeniem ładunku, stałe punkty ładunku (zaczepy, uchwyty przeznaczone do tego celu, inne)

Dane zawiesi: (łańcuchy, pasy, linki stalowe itd.)

Ilość cięgien

Długość [m]

Dopuszczalne obciążenie robocze

Środek ciężkości [asymetryczny/niesymetryczny]

Inne

A4. Planowanie operacji [punkty sprawdzone i zgodne]

Bezpieczna technika mocowania

☐ Dobrano urządzenie podnoszące (do wagi ładunku).

☐ Dobrano zawiesia do wymiaru i wagi ładunku

☐ Zapewniony hakowy i sygnalista – sprawdzono (w tym zapewniony instruktaż stanowiskowy)

☐ (Punkty załadunku i składowania przygotowany i bezpieczny (stropy, pomosty, dnione pole odkładcze))

A5. Sporządzający – Wykonawca Prac (oświadczenie o możliwości bezpiecznego przeprowadzenia operacji)

Imię i nazwisko	Nazwa firmy	Data	Podpis (czytelny)

In connection with vertical transportation, the following documents are in binding in Echo: "Permission for lifting Tower Cranes" and "Permission for lifting Mobile Cranes".

Signaller and Slinger requirements

§10. The signaller and the slinger use clothing or equipment elements that are visible from a crane's cabin and that distinguish them from other employees.

Legal basis: "Regulation of the Minister of Entrepreneurship and Technology of October 22, 2018 on occupational health and safety when operating tower cranes and quick-assembly cranes".

Signaller and Slinger requirements

The signeller or the slinger may ba a person who:

- is over 18 years old
- completed instruction in the position and obtained a positive exam result,
- holds current medical certificate ,
- completed current OHS training,
- **communicates in the same language as the operator.**

Signaller and Slinger requirements

§6. It is unacceptable for one person to work at the same time as the crane operator, the signaller or the slinger.

- The signaller observes the load and the environment, contacts with a crane operator;
- The slinger links, guide the load (cable), unlinks;
- §9.1. The slinger gets know the load, determines its volume, location of the center of gravity, location of attachment points and uses an appropriate element to attacht and sling.

Legal basis: "Regulation of the Minister of Entrepreneurship and Technology of October 22, 2018 on occupational health and safety when operating tower cranes and quick-assembly cranes".

Before starting transport, Slinger’s duties

- Organize or arrange a place where transported loads will be stored.
- Prepare necessary aids, such as appropriate slings, grippers and pads
- Check that slings used are proper (WLL) - lifting capacity, expiry date, technical condition and correctness of other markings).
- Perform a lift test of the load to the height of approx. 50 cm and check the correctness of the attachment and the load’s stability of.
- When turning elements, be very careful and follow your supervisor's instructions.

When transporting the load, Slinger's duties

Guide the load to a destination in the last phase of transport using the safest methods.

Use the correct sling angle (maximum sling angle - 120 °).

Report any accident at work to your supervisor and leave the workplace in the condition in which the accident occurred.

When transporting the load, Signaller's duties

§7.1. The signaller and the crane operator communicate in an understandable way using a communication device when a crane operates.

§8.1. The signaller determines a path of the load being moved, observes the load during transport and gives appropriate instructions.

2. In the event of a hazardous situation, the signaller suspends transport works and warns of a danger.

Legal basis: "Regulation of the Minister of Entrepreneurship and Technology of October 22, 2018 on occupational health and safety when operating tower cranes and quick-assembly cranes".

When transporting the load, Signaller's duties

- Plan how to suspend the load and its route. Make sure that a path is not blocked. Check the communication system with the crane operator (radio communication).
- Remember that the crane operator has only the right to respond to his signals, except for "alarm", that can be signalized by any employee.
- Precisely and clearly indicate to the crane operator the path of movement and storage of the load.
- Warn co-workers about a danger during the transport operation.
- Observe the transport process at all times.

Communication: Signaller - Crane operator

§7.1. The signaller and the crane operator communicate in an understandable way using a communication device.
2. In case of the communication device failure referred to in para. 1, the signalman communicates with the crane operator using manual signals referred to in § 22 of Annex 1 to the Regulation of the Minister of Labor and Social Policy of 26 September 1997 on general health and safety regulations (Journal of Laws from 2003 item 1650, from 2007 item 330, from 2008 item 690 and from 2011 item 1034), no longer than until the end of the started operation.

Legal basis: "Regulation of the Minister of Entrepreneurship and Technology of October 22, 2018 on occupational health and safety when operating tower cranes and quick-assembly cranes".

When transporting the Slinger is forbidden to:

- ☒ Use unauthorized slings, badly made, from accidentally selected materials
- ☒ Use damaged or worn slings
- ☒ Use hooks with the excessive throat opening when transport operations (over 10% in relation to the minimum - initial dimension)
- ☒ Overload slings over WLL
- ☒ Exceed the allowable opening angle (120 °) of the sling flexible connector
- ☒ Stay under the load or on its way, unless other special regulations allow it
- ☒ Secure loads dangerously in such a way that it can slide out or move in an uncontrolled manner
- ☒ Connect sling flexible connectors incorrectly

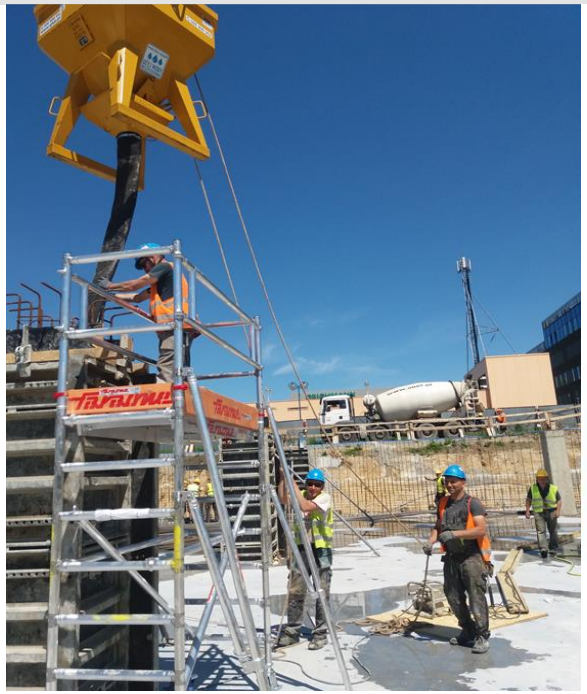
When transporting the load the Slinger is forbidden to:

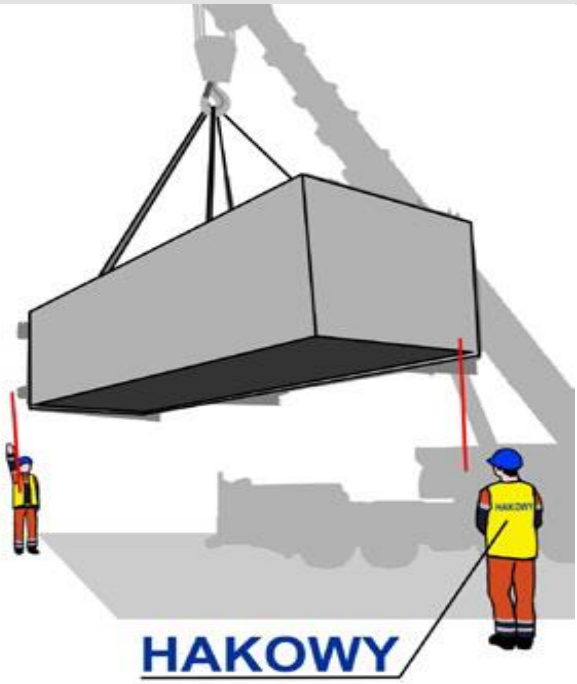
- ☒ Determine weight or sling capacity at a guess
- ☒ Lift the loads with a slanted position of crane ropes or the load pressed, buried in the ground or frozen to the ground
- ☒ Move sharp-edged loads without using safety pads
- ☒ Move or transport people on the transported load
- ☒ Store loads not in line with applicable storage rules and regulations
- ☒ Allow unauthorized lifting
- ☒ Leave a workplace without notifying the operator, and in the case of prolonged absence - without the consent of the supervisor
- ☒ Make knots on ropes and chains and connect steel ropes along their lengths

When trabsporting the load the Slinger is forbidden to:

- ☒ **Pull/lift**
  frozen to the ground/pressed/blocked elements
- ☒ **Lift rapidly in the first and last phase of transporting**

§9.1.
2. Holding the grappled load during its movement by the slinger is allowed only with suitable means to give a proper direction of the load.





Legal basis: "Regulation of the Minister of Entrepreneurship and Technology of October 22, 2018 on occupational health and safety when operating tower cranes and quick-assembly cranes".

After working the Slinger should:

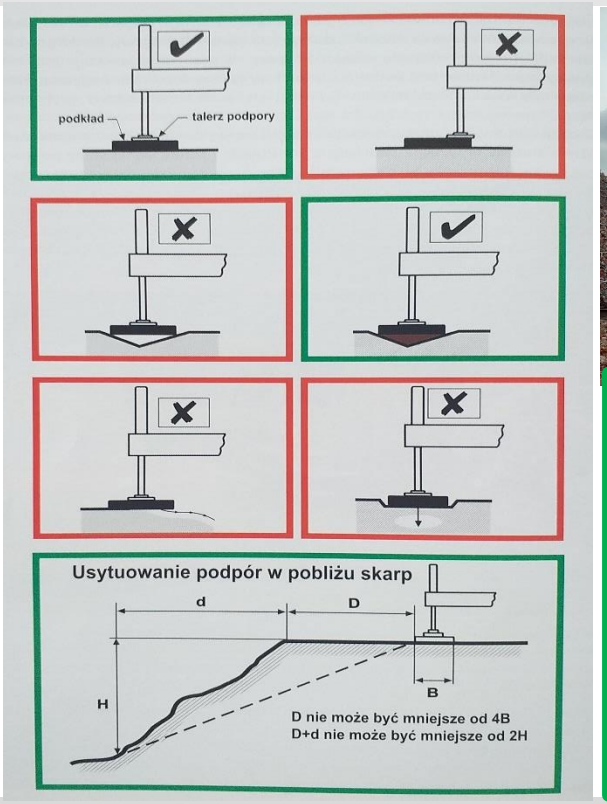
Check that all used slings and other auxiliary equipment (grabbers etc.) are undamaged.

Withdraw unusable slings and accessories for scrapping.

Organize slings and other transport aids and store them in a place designated for this purpose.

Systemic pads

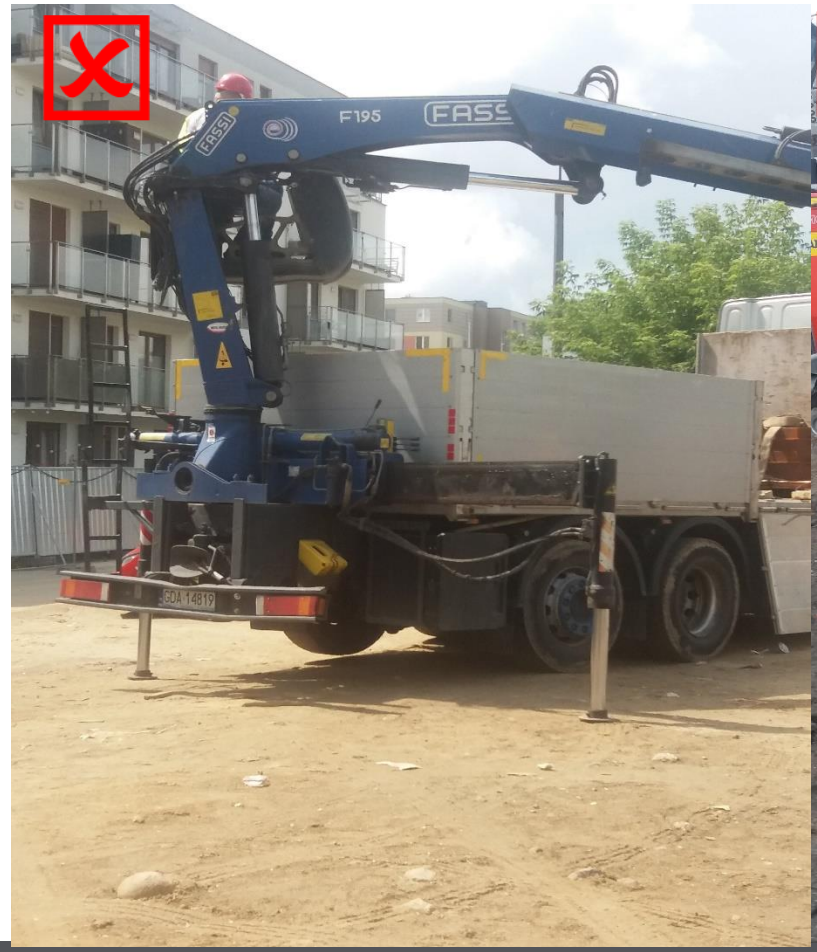
Before starting work, verify the bed where the crane will be located and maintain safe distances from the edge of the excavation.



In Echo, we pay attention to the use of systemic pads for the feet of stabilizers of mobile cranes at construction sites.

Improper support for mobile cranes

Lack of pads under the crane's feet or loose squared timbers may lose stability and the crane may fall down.



Loss of crane stability

Loss of stability and overbalancing of the crane

This danger can be a consequence of:

- wrong foundation of the crane, e.g. lack of pads for supports on the unpaved, weak ground, without using pads,
- lifting pressed, blocked material (e.g. frozen to the ground, jammed with other stored materials),
- collisions with buildings

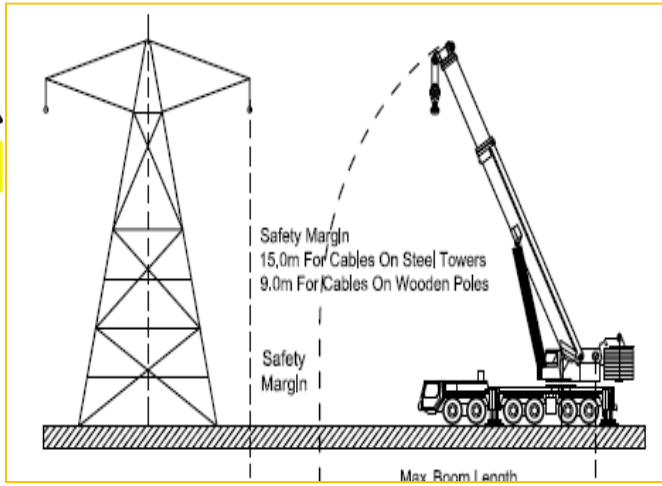
Power lines

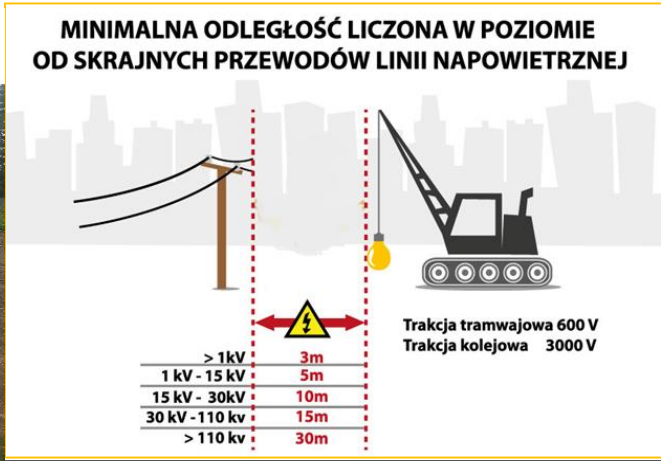
Cranes working within power lines.

ATTENTION:

All overhead lines and other electrical devices should be treated as active until it is not clearly defined by the power line operator that they are disabled and safe.

Operation of variable location cranes near overhead power lines may be subject to permissible distances.

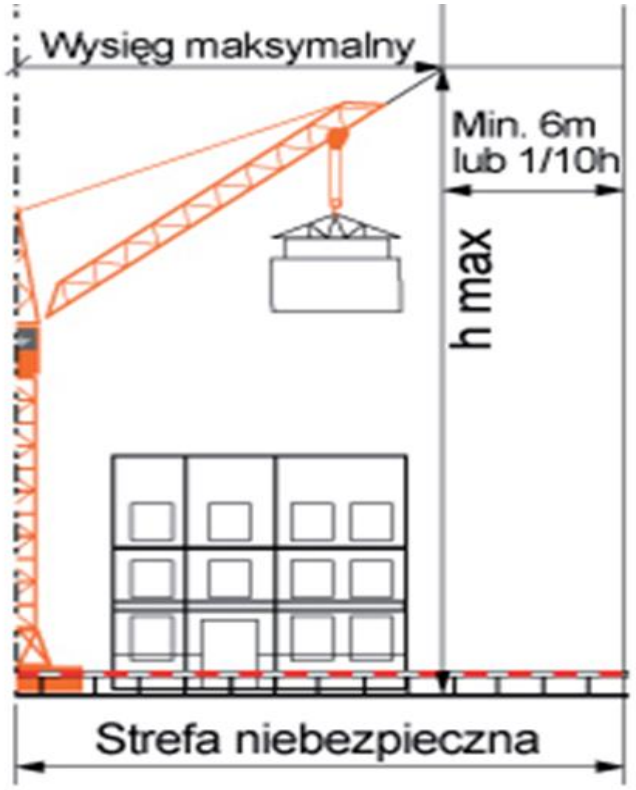




Danger zone

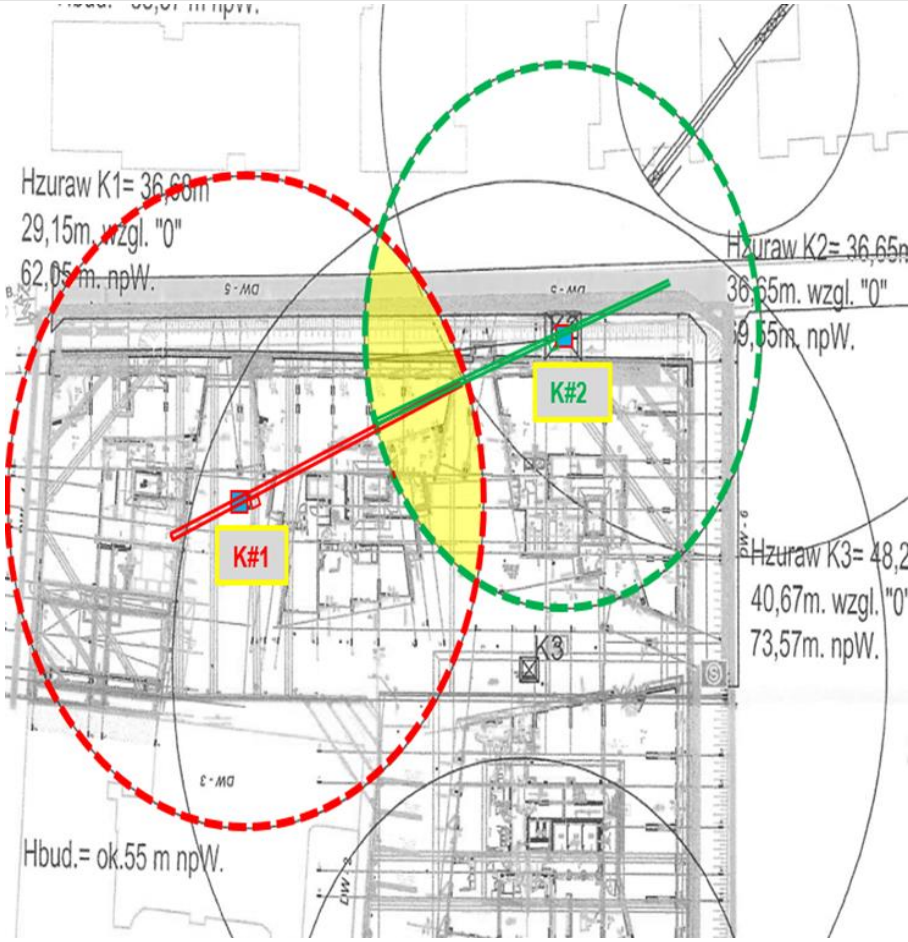
The danger zone, in its lowest linear dimension calculated from a plane of the building, not be less than 1/10 of the height of the items may fall down, but not less than 6 m.

Legal basis: "Regulation of the Minister of Entrepreneurship and Technology of October 22, 2018 on occupational health and safety when operating tower cranes and quick-assembly cranes".



Crane work in collision conditions

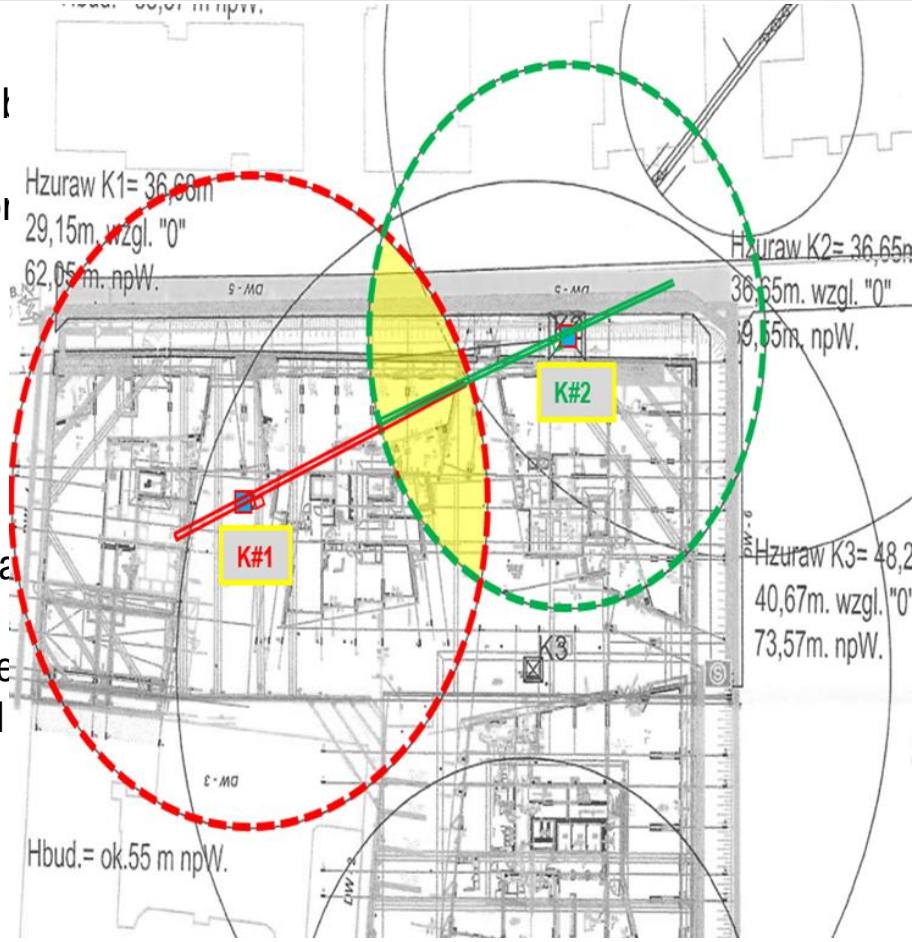
16.1. In the case of the crane operation in collision conditions, creating the possibility of the crane or the load coming into contact with another crane or object, the crane is operated in line with the instructions developed in this respect specifying:
1) lines and marking of working area and possible collision, together with a drawing;
2) the indication of the measures used to prevent or warn against work in a collision zone;
3) traffic priority;
4) work zones only with slow movements;
5) the method of effective signal transmission and the method of communication between the crane operator and the signaller;
6) the way of coordinating the work of cranes;
7) conditions of conduct in case of failure or accident;



Crane work in collision conditions

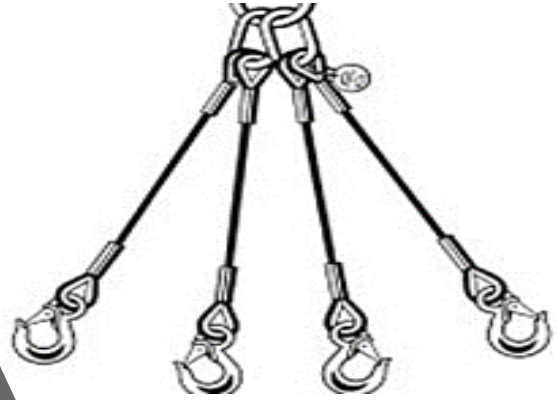
§16.1.
8) The method of issuing the crane work permit in collision conditions, signed b a person appointed by a person managing employees in a specific area where works related to the use of the crane are performed, or a person designated for that purpose;
9) The wind speed at which crane operators should stop working if there are risks related to crane operation in collision conditions.
2. The instruction referred to in para. 1, contains the signature card referred to para. 4.
3. In the event of two or more cranes operating in collision conditions, crane operators shall be provided with a communication device referred to in § 7 para 1, and an additional communication device.
4. In the event of crane operation in collision conditions, the crane operator, the signaller and the slinger shall become acquainted with the instructions referred to in para. 1 and confirms this fact with their own signature on the signature card.

Legal basis: "Regulation of the Minister of Entrepreneurship and Technology of October 22, 2018 on occupational health and safety when operating tower cranes and quick-assembly cranes".



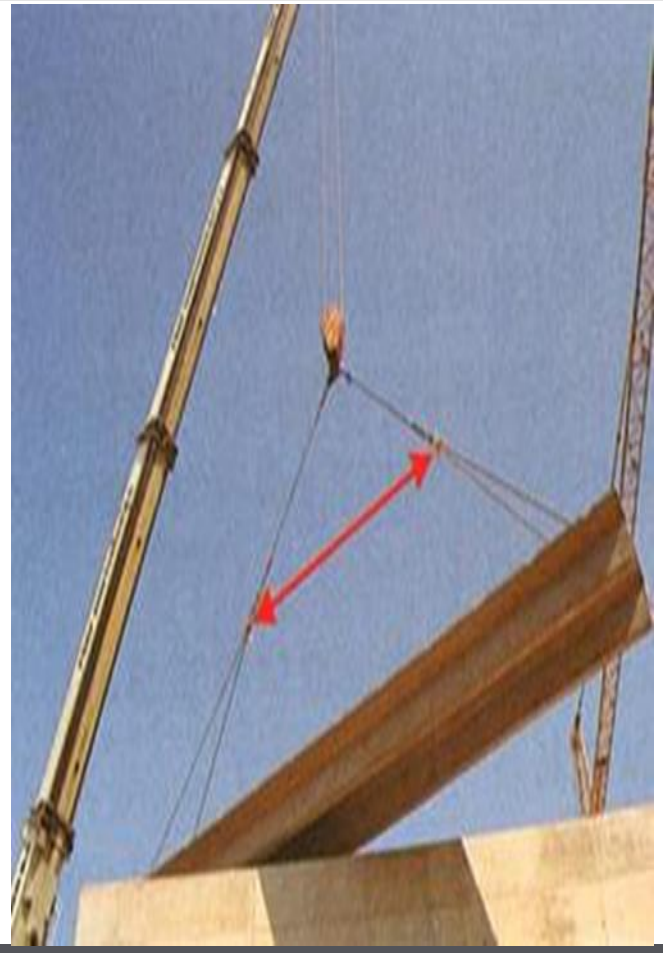
ECHO investment | Wszystko zaczyna się od Ciebie

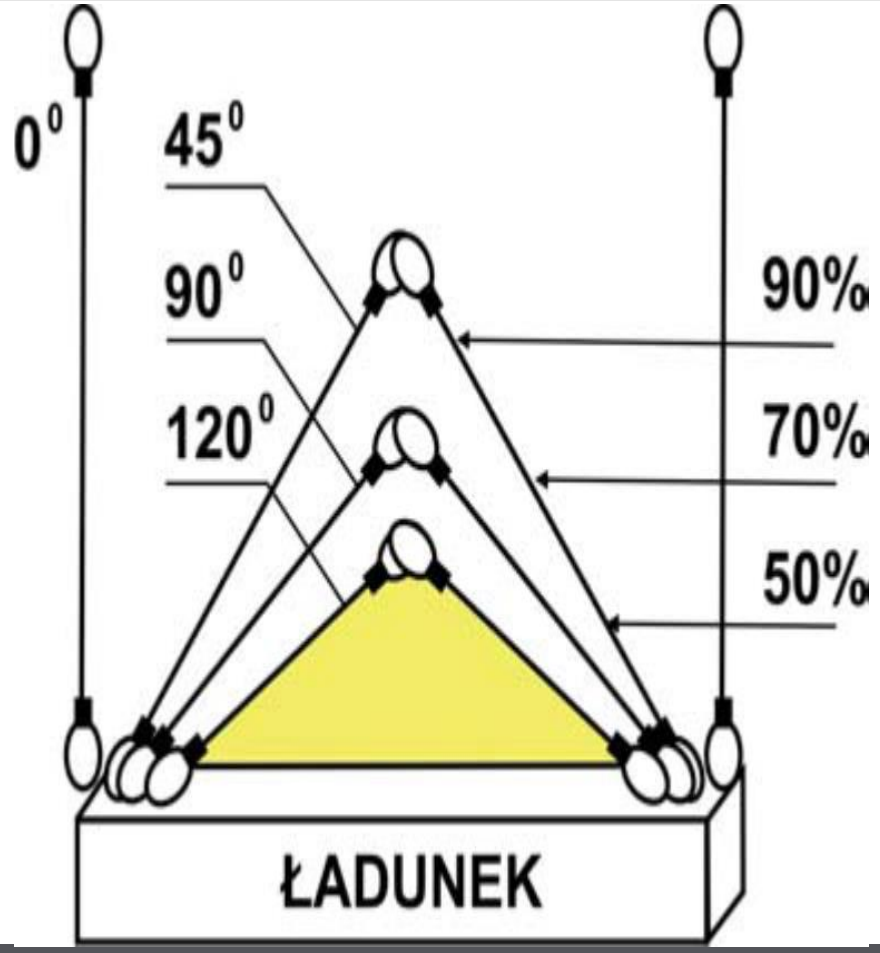
Slings Hooks Erection Bracing

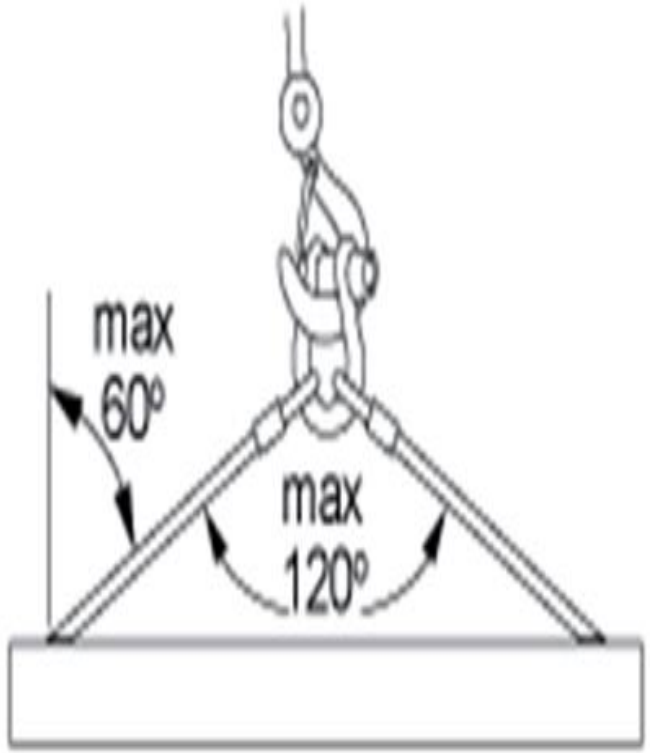


Slings are called auxiliary hook lifting equipment used for suspending, tying or supporting loads

Working Load Limit (WLL) of the sling



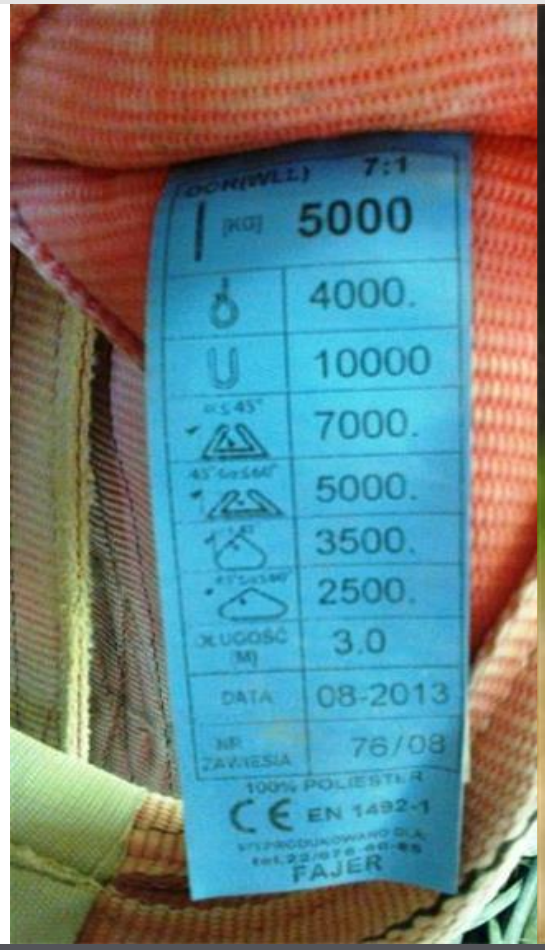




Slings marking

The sling marking should contain the following data:

- Manufacturer's name,
- Working Load Limit (WLL) - calculated as the maximum working load limit for one flexible connector in vertical lifting and at an angle of 45 'for multi-leg slings,
- CE mark,
- Number of flexible connectors,
- Code number
- Optional - the type of material from which it was made.



Securing transported materials

When transporting formwork girders, they must also be fastened with a transport belt.

Materials with sharp edges that can damage slings should be secured with additional plates.

Slings inspections

The technical condition of slings should be monitored to the extent and within the time limits specified in the operation and maintenance documentation.

Current:
inspection of the technical condition of the sling before the start of each shift.

Periodic:
checking the technical condition and measuring wear as well as assessing the wear of sling elements,
If no inspection dates are specified in the operation and maintenance documentation, they should be carried out,
periodically - at least once every 12 months.

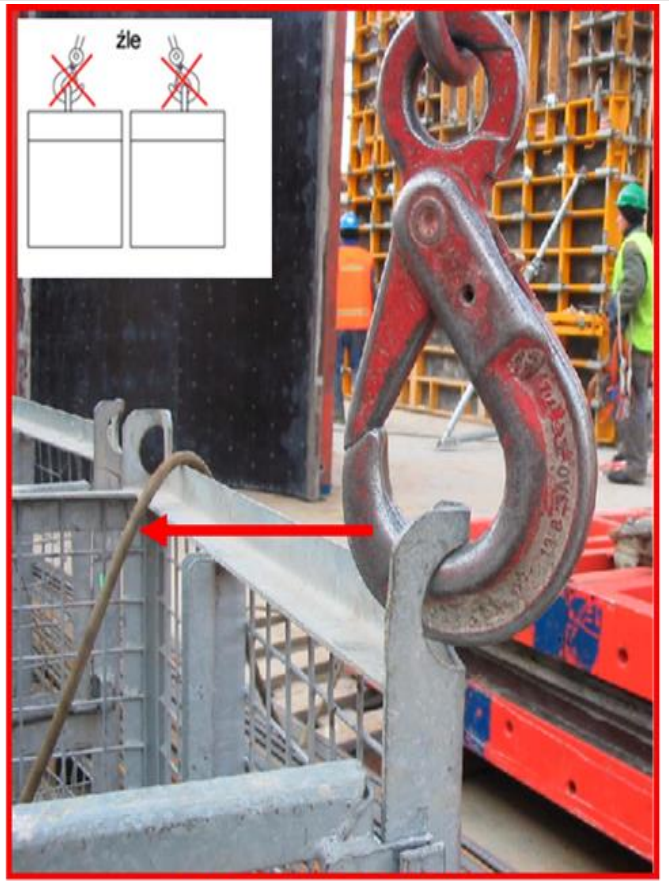
Ad hoc:
visual inspection of the condition of the sling according to the situation.

Test conditions:
- extension of operation
- extension of operation at reduction of permissible load capacity
- sling repair
- sling scrapping

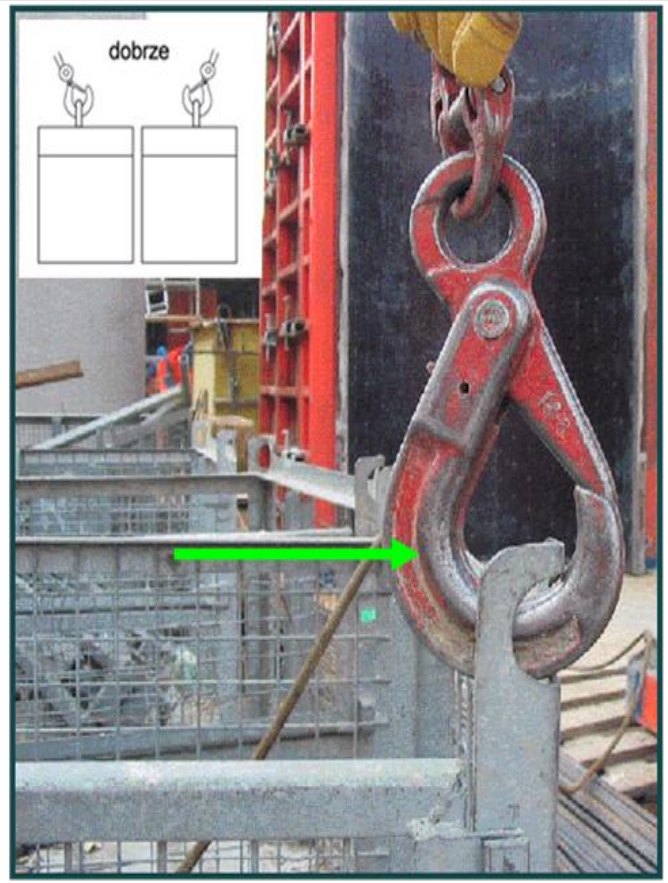
Conformity certification and acceptance tests:
- performed by an independent Slings Testing Laboratory

Installation of sling hooks on loads

When installing sling hooks, set the corner of the hook in the grapple outwards. This will prevent the hook from sliding out of the grapple.

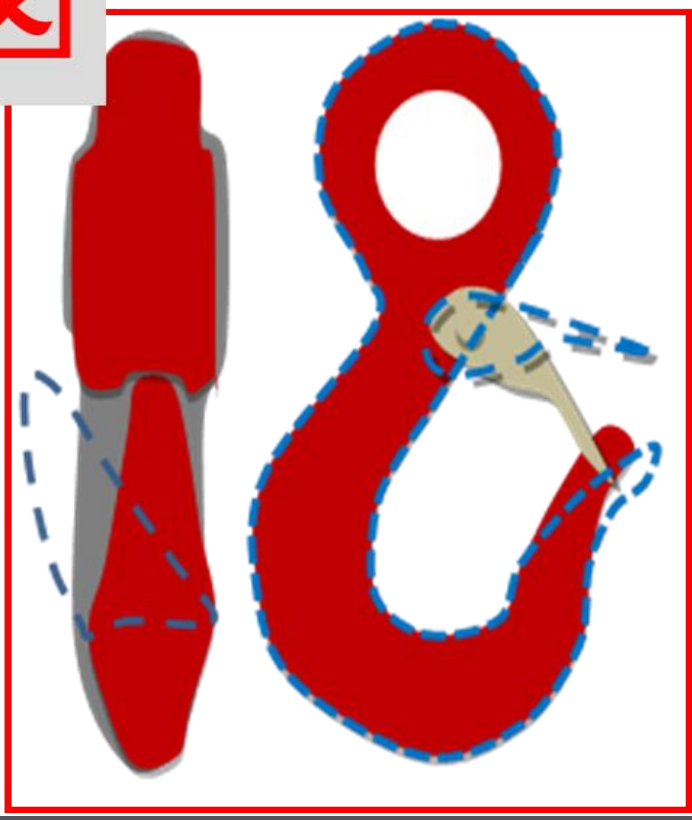


NIEPRAWIDŁOWO



PRAWIDŁOWO

Inspections of connecting components and hooks

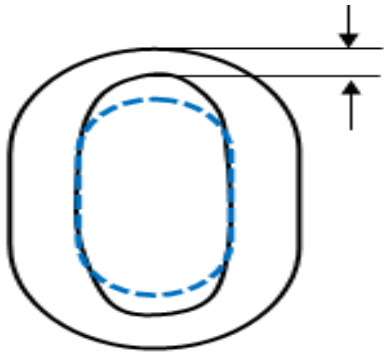


Sling damage









Belt slings:
Missing or illegible markings, a broken loop, a cut edge of the sling, a cut of carrier fibers, a cut of guide fibers, an open seam.

Rope slings:
Loop damage, strand rupture, deformation, crushing, precreasing, corrosion.

Chain slings:
Chipping, cuts, mechanical wear, welding sparks, remelting, deformation, overload, corrosion.

Transportation of bulk materials and girders

Transportation of wastes and bulk materials is carried out by self-unloading containers.

Pay special attention that containers are not overfilled.

Use of containers only in line with the manufacturer's instructions.

Daily inspection of technical condition of a container with particular regard to slings and a self-unloading device.

Girders should be additionally fastened with a belt.

During transportation an additional protection can be a net.

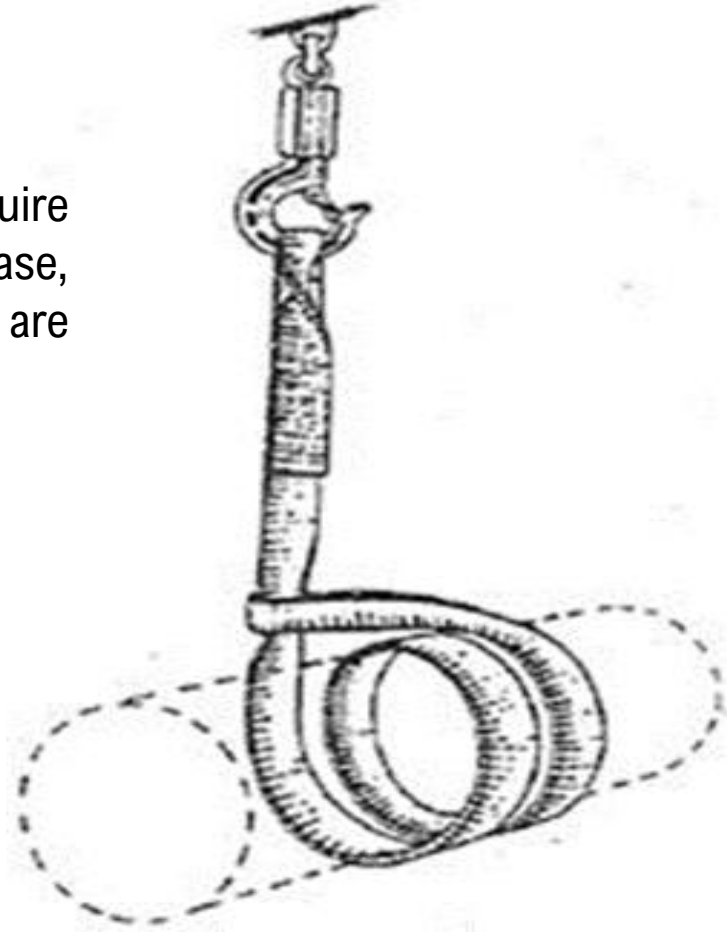
Unloading platforms (outriggers)

For transporting materials, use transport system platforms (outriggers).

Old-type transport platforms do not have connections bracing floor props. As a result, they are not resistant to being hit by horizontal force on the side of the outrigger (they may lose stability).

Security methods when transporting loads

The double tie-up method does not require an additional strapping belt. In this case, transport belts of the right length are necessary.



Reinforcing bar bundle transport

When transporting reinforcing bar bundles, a minimum of 2 slings should be used. The load should be double tied at an equal distance (1/3) from the end of the bars on both sides.

Certified steel cables should be used for transport.

The load requires a directional rope.

If tangled reinforcement bundles have been delivered to a construction site, it is neccessary to submit a complaint to their manufacturer.

Technical gases transport

Cylinders with technical gases should be transported only in special baskets.

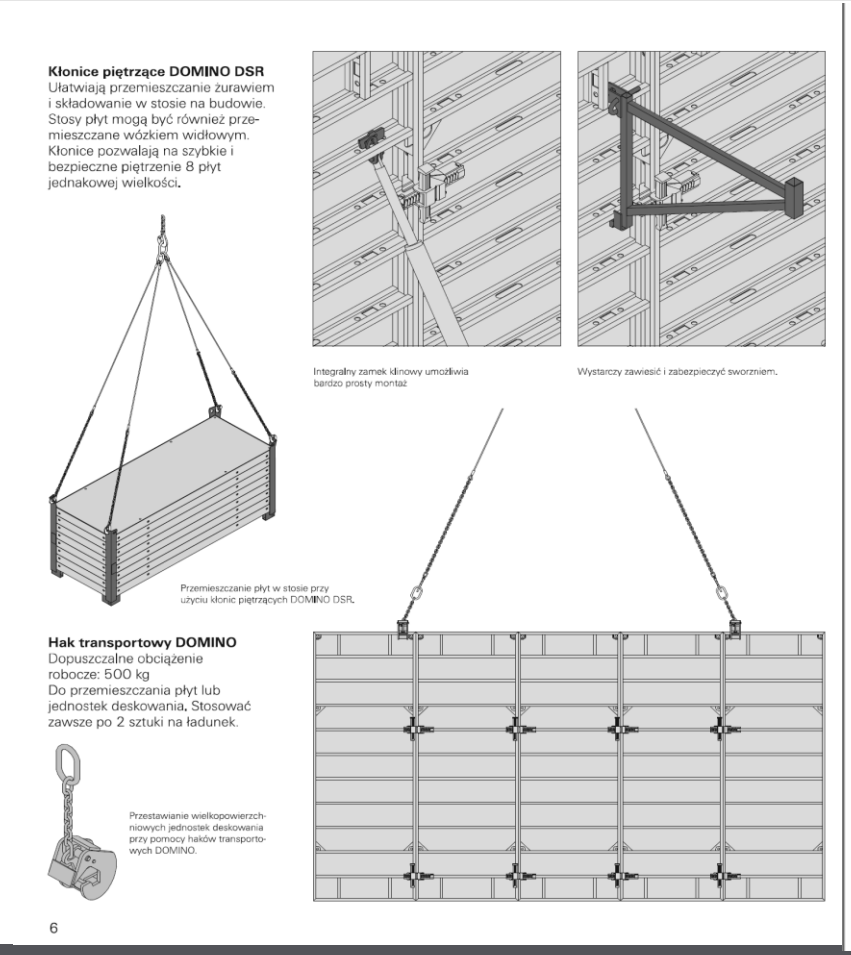
It is forbidden to transport cylinders with a tie and a handle by the collar because it may damage the cylinder or pull out a cylinder valve and cause an explosion.

Transport of silicates

For transporting silicates, use special forks or transport claws with an additional safety chain or a net, or other means in line with the manufacturer's manual.

Formwork transport

Formwork should be transported in accordance with the formwork manufacturer's instructions.



Kłonice piętrzące DOMINO DSR
Ułatwiają przemieszczanie żurawiem i składowanie w stosie na budowie. Stosy płyt mogą być również przemieszczane wózkiem widłowym. Kłonice pozwalają na szybkie i bezpieczne piętrzenie 8 płyt jednakowej wielkości.

Integralny zamek klinowy umożliwia bardzo prosty montaż

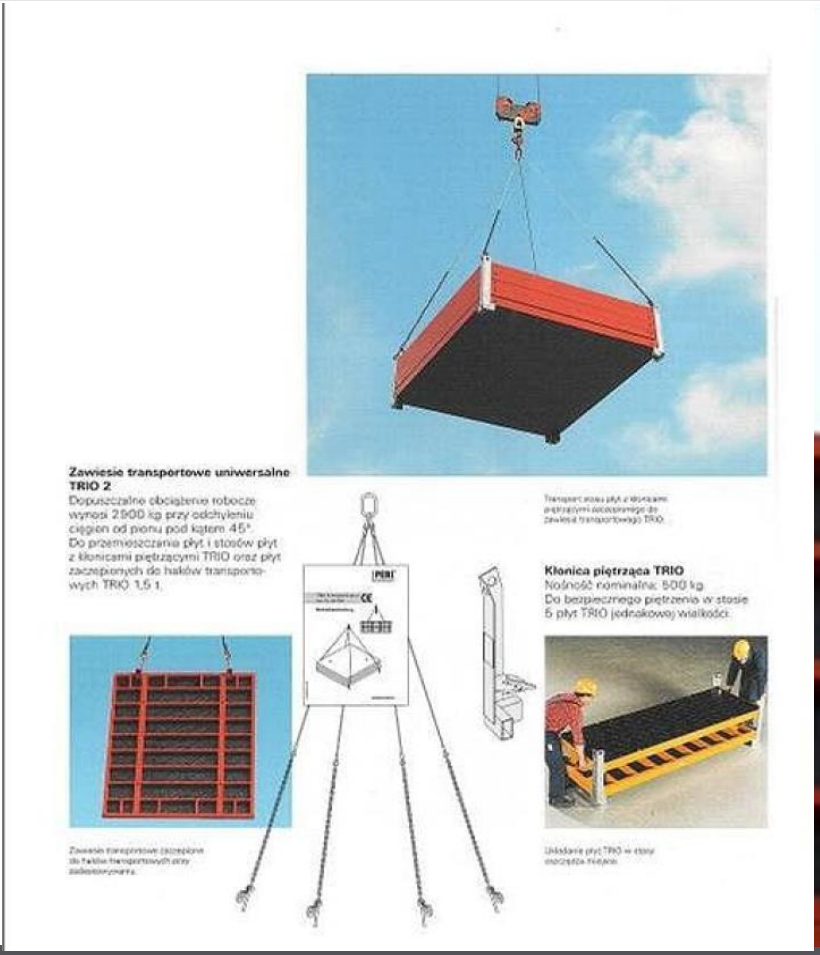
Wystarczy zawiesić i zabezpieczyć sworzniem.

Przemieszczanie płyt w stosie przy użyciu kłonic piętrzących DOMINO DSR.

Hak transportowy DOMINO
Dopuszczalne obciążenie robocze: 500 kg
Do przemieszczania płyt lub jednostek deskowania. Stosować zawsze po 2 sztuki na ładunek.

Przestawianie wielkopowierzchniowych jednostek deskowania przy pomocy haków transportowych DOMINO.

6



Zawiesie transportowe uniwersalne TRIO 2
Dopuszczalne obciążenie robocze wynosi 2900 kg przy odchyleniu ciągłen od pionu pod kątem 45°. Do przemieszczania płyt i stosów płyt z kłonicami piętrzącymi TRIO oraz płyt zaczepionych do haków transportowych TRIO 1,5 t.

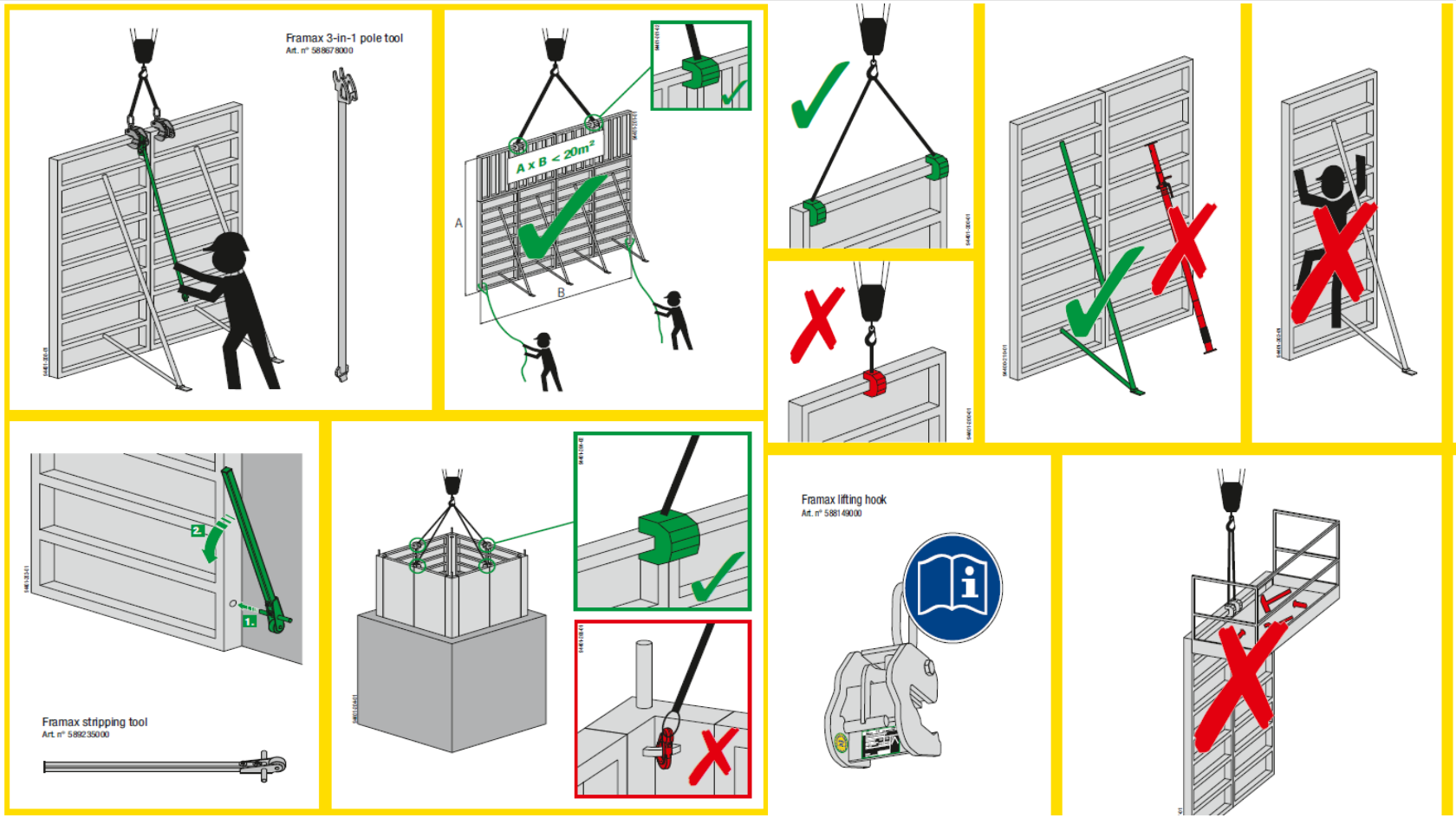
Transport stosu płyt z kłonicami piętrzącymi zabezpieczonego do zawiesia transportowego TRIO

Kłonica piętrząca TRIO
Nośność nominalna: 500 kg
Do bezpiecznego piętrzenia w stosie 6 płyt TRIO jednakowej wielkości

Układanie płyt TRIO w stosy

Formwork transportation

Use hooks and lifting slings recommended by the manufacturer.



Special purpose lifting slings

Clamping grippers

Self-clamping grippers are intended for lifting and transporting individual metal sheets.

Jaw grippers

Grippers for transporting blocks, pipes, rails and round elements made of various materials.

Grapple grippers

They are used for lifting and transporting materials stored on pallets using overhead cranes, cranes or hoists.

Spreader beams

Spreader beams (beam slings) are special slings used for lifting and transporting long elements of significant weight.

Transportat of bulky materials

Pipes with a diameter of 400 mm and bigger and pipes in bundles - works can be carried out with a crane, for this use a two-leg sling and a traverse with two strands of soft rope, e.g. cotton-hemp. Do not use slings made of metal ropes or chain slings.

The use of traverses, special holders and directional ropes

Rescue baskets / stretchers

Transport stretchers are used to evacuate injured persons from hard-to-reach places at construction sites.

Improper vertical transport practices

Crane transport of unreinforced concrete residues with stirrups placed in it threatens to fall materials from height and is prohibited.

Vertical transport – concreto baskets

When transporting a concrete mixture in buskets, a container sleeve should be rolled up. This will prevent concrete residues falling from height.
Accessories for slings (shackles) should also be checked.

Transport of supports and formwork elements

Transport baskets cannot be overloaded.

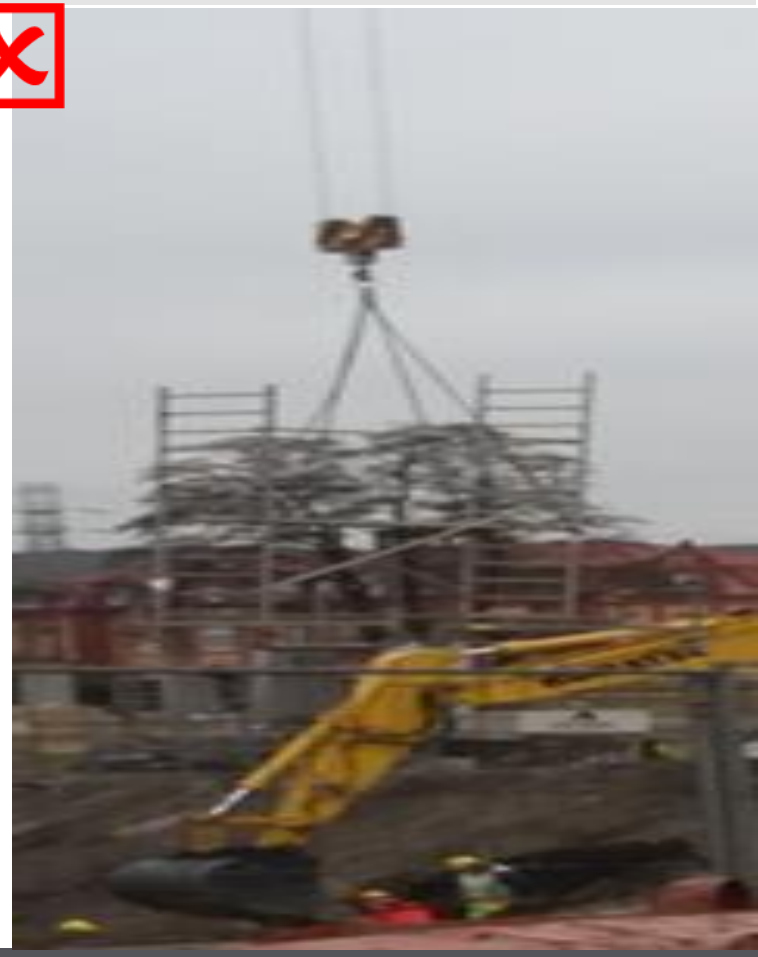
Formwork supports should be stored maximally up to height of a rack and should be additionally fastened with a belt.

Transport of materials in open baskets with a belt

Materials transported in open baskets should be additionally fastened with a belt.

Scaffolding transport

Due to the risk of falling off individual elements at height, the crane transport of lightweight mobile tower scaffolding is forbidden. The only exception is when a manufacturer allows it and it is included in DTR (Operation and Maintenance Manual).



Container transport

When unloading and loading containers, avoid climbing onto the roof of the container.

Use a ladder to secure another person to attach and remove hooks.

Vertical transportat: manual and mechanical

Current requirements of UDT (Technical Supervision Office) regulations

Hoists, winches are subject to technical supervision. Hoists, winches, fixed-base cranes with single-phase electric drive with a lifting capacity up to 1000 kg as well as general purpose hoists and winches with manual drive of all mechanisms with a lifting capacity up to 2000 kg are subject to simplified supervision.

For devices with a load capacity of up to 250 kg, simplified supervision has been established. The devices are not required to be registered in UDT (Technical Supervision Office) and tested. Operating permissions are not required. Maintenance must be provided by persons with appropriate qualifications. It is neccessary to remember to provide proper operation according to the device documentation.

Vertical transport: manual and mechanical

The throat of the hook must not be left open, as this may cause transported materials to fall from height.

The fully functioning hook should have a closing latch.

Vertical transport: manual and mechanical

Technical conditions for installing and operating winches on scaffolds

In the case of scaffolding installation, the lifting capacity of material handling equipment must not exceed 1.5kN (~150 kg).

The scaffolding except for the anchoring scheme should be additionally supported where the boom is fixed (at least two points should be additionally anchored in this place: at the level of the bolt (upper part of the frame) of the fixed arm and under the platform).

If the boom is moved to a higher level, the plumb bob with the winch should be additionally anchored every 2 meters of scaffolding height.

It is required to test anchoring force - the anchor should carry the pull-out load of min. 2,5 kN, if a manufacturer of the scaffolding or the winch has not given a higher value.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Działaj

Many thanks for your attention!

Stay Safe!

If any questions please do not hesitate to contact with Echo's EHS team.