TEREX®

GLOBAL CRANE TRAINING

AC200-1 OPERATION

Reeving

Reeving Content

Reeving

General Notes

The safety of the crane is endangered by incorrect reeving.

Every configuration is assigned a corresponding reeving number that is shown in the load capacity tables supplied.

Work only in accordance with the reeving numbers listed!

The corresponding reeving number must be set on the load limit device (IC-1).

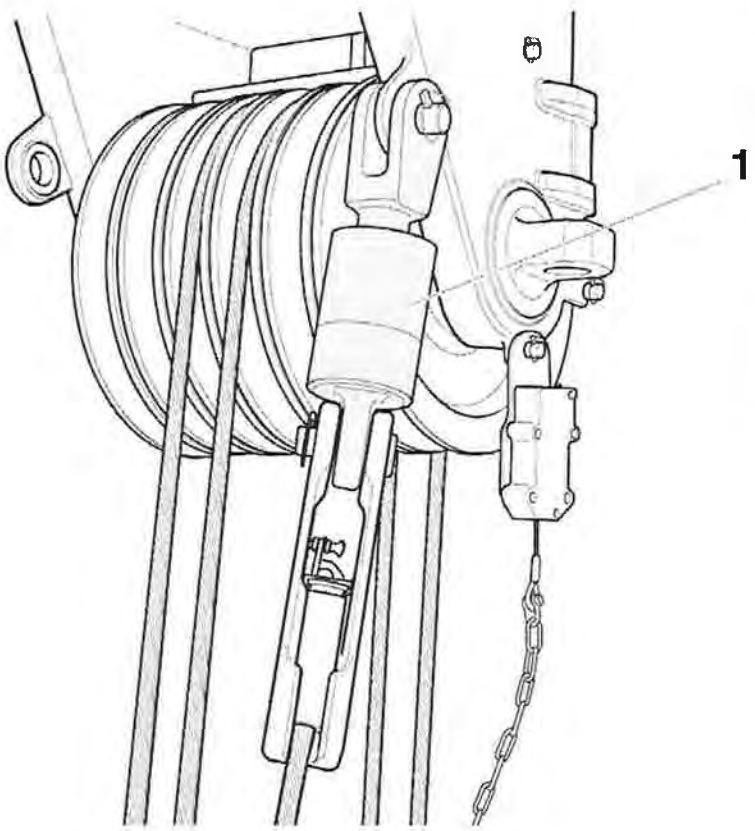
Unless otherwise specified in the load capacity tables, the number of reevings must not be lower than 2 rope lines.

If, however, single line reeving is required, the lifting capacities specified in the table must be reduced by 20%.

This also applies when the lifting capacity is less than the maximum permitted cable tension per strand (see Notes on Crane Operation).

When fitting a new hoist rope, which has never been placed under load, twisting problems can occur. For this reason, we recommend that a spin stabilizer be used (1).

Transport dimensions spin stabilizer			Approx. weight
Length	Width	Height	
mm (in)	mm (in)	mm (in)	kg (lbs)
350 mm (13.8 in)	80 mm (3.2 in)	80 mm (3.2 in)	8.0 kg (17.6 lbs)



If a spin stabilizer (1) is fitted to the rope attachment point of the main boom head, the length of the chain of the shift weight of the hoist limit switch (up to the bottom edge of the hoist limit switch) must be AT LEAST approx. 1500 mm *(59 in) (see "a" in figure Z 55 732). Only then is it ensured* that the switch off of "Raise hoist" is carried out by the hoist limit switch within a sufficient distance of the lowest point of the main boom head. Otherwise there is risk of damage!

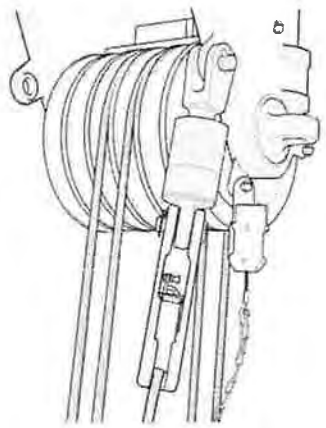
If the chain is not long enough for this, the additional chain which is supplied with the spin stabilizer must be fitted as an

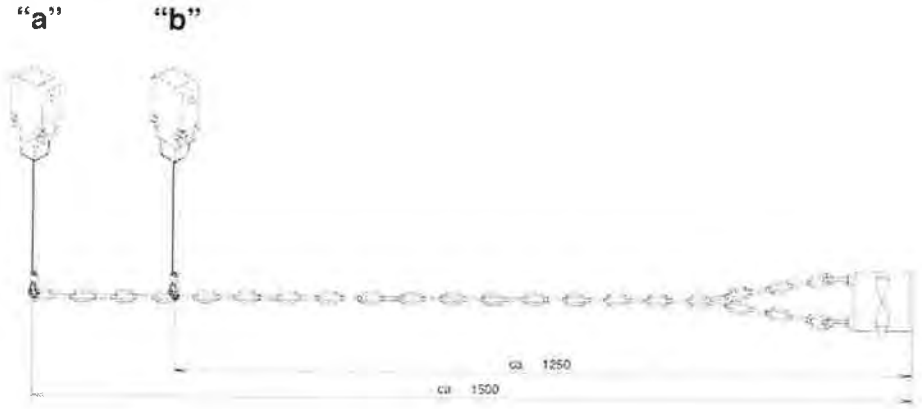
extension.

If a spin stabilizer is not fitted to the rope attachment point

of the main boom head, the length of the chain of the shift weight of the hoist limit switch (up to bottom edge of the hoist limit switch) must be AT LEAST approx. 1250 mm *(49 in) (see "b").*

In order to achieve maximum hoist heights, a longer chain could be used once it is shortened. However, the length must always be at least 1250 mm *(49 in). RISK OF DAMAGE!*





Load Lifting Equipment

If a load is to be raised with the crane, so-called **load lifting devices are required to raise the said load. These are:**

– Carrying Equipment

Carrying equipment is permanently connected to the crane. This includes:

– hoist ropes (1)

– hook blocks (3)

– Load handling devices

Load handling devices are equipment, for example lifting beams, that are not part of the crane. They are connected to the carrying equipment and take up the load.

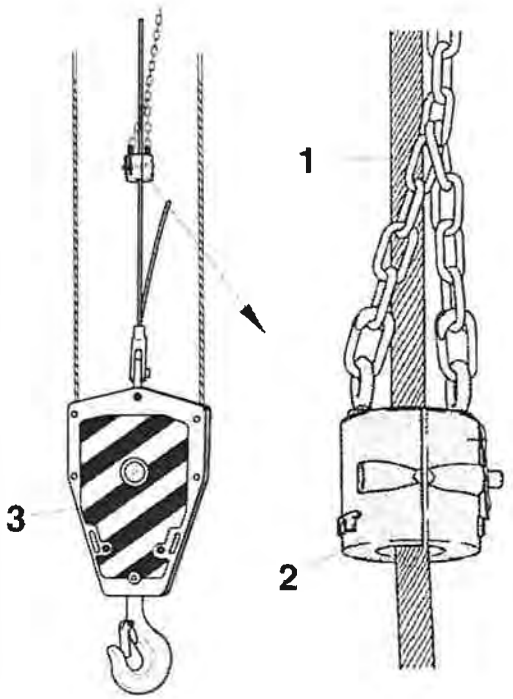
Their selection and subsequent safe operation of the crane are the responsibility of the crane operator.

– Lifting tackle

Lifting tackle is equipment, e.g. sling ropes, which does not belong to the crane. They connect the carrying equipment and load or carrying equipment and lifting devices.

Their selection and subsequent safe operation of the crane are the responsibility of the crane operator.

To ensure that the load handling equipment is used correctly the individual national regulations, must be observed.



Hoist Ropes

General Notes

Information on how to handle ropes safely and correctly is contained in the lubrication and maintenance instructions for the chassis.

When reeving there is a risk of becoming caught and entangled in the head– and deflection rollers as well as in the hook blocks !

Proceed with appropriate caution and make sure that the safety guards and intake guards are fitted.

Risk of overloading and accidents!

If a rope has to be replaced, the new rope must satisfy the technical parameters of the original rope, for example with regard to rope diameter, nominal tensile strength, calculated breakage force, minimum breakage force, type of lay etc. in accordance with the rope certificate in the crane logbook.

If this is not the case, the operational reliability of the crane in the normally permitted lifting capacity range is no longer guaranteed!

The length of the ropes of hoist 1 and hoist 2 is 345 m *(1132 ft)* each.

Rope End Connections

Risk of accidents!

If the rope connection is not made correctly as described below, the hook block / load could fall!

Rope end connection with press fitting

The rope end connection with press fitting is made up of the following elements:

(1) – Locking pin and mushroom handle

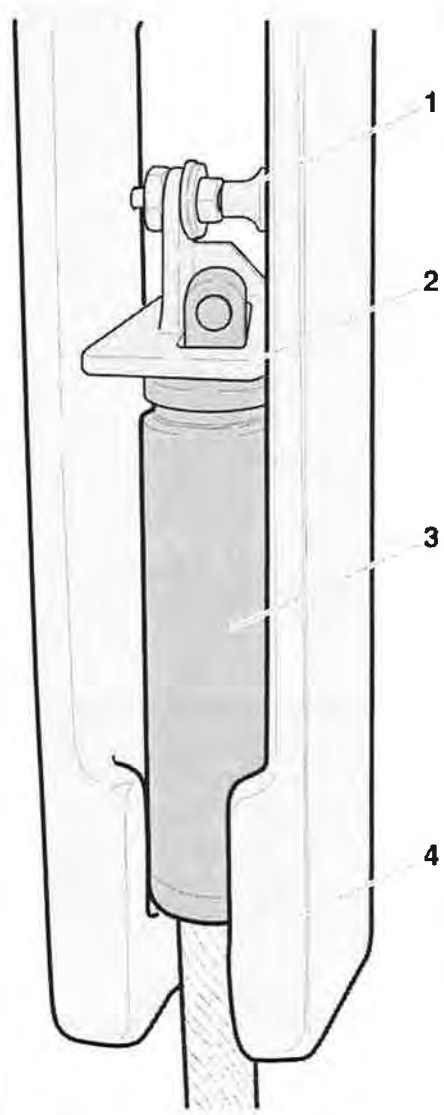
(2) – Protect trap

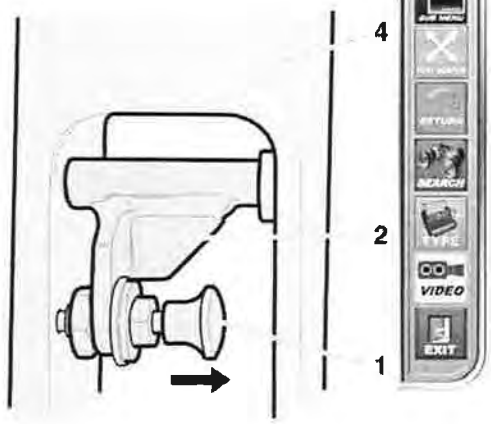
(3) – Press fitting on the end of the hoist rope

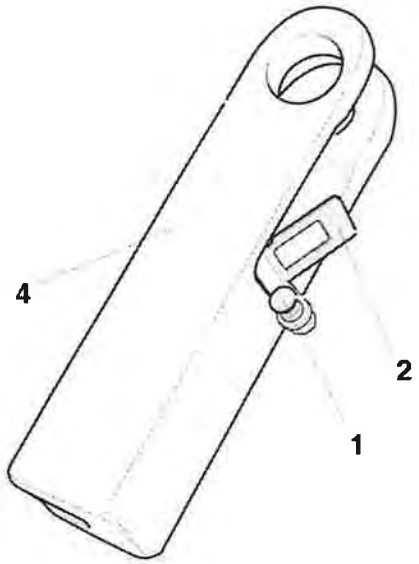
(4) – Rope pocket

Proceed as follows to make the rope end connection as described below.

1. Release the locking pin (1) from the lock at the corresponding bore hole of the rope pocket (4) by pulling its domed head handle against the spring resistance, and fold out the safety flap (2).







2. Attach hoist rope with press fitting (3) to rope pocket (4).
3. Fold over the safety flap (2) on the mushroom handle of locking pin (1) into position "lock" and allow the locking pin (1) to lock in the corresponding hole of rope pocket (4).
Safety flap (2) prevents the press fitting being released from the rope pocket when the hoist rope is not under load (e.g. when the hook block is set down suddenly on the ground).

Risk of accidents!

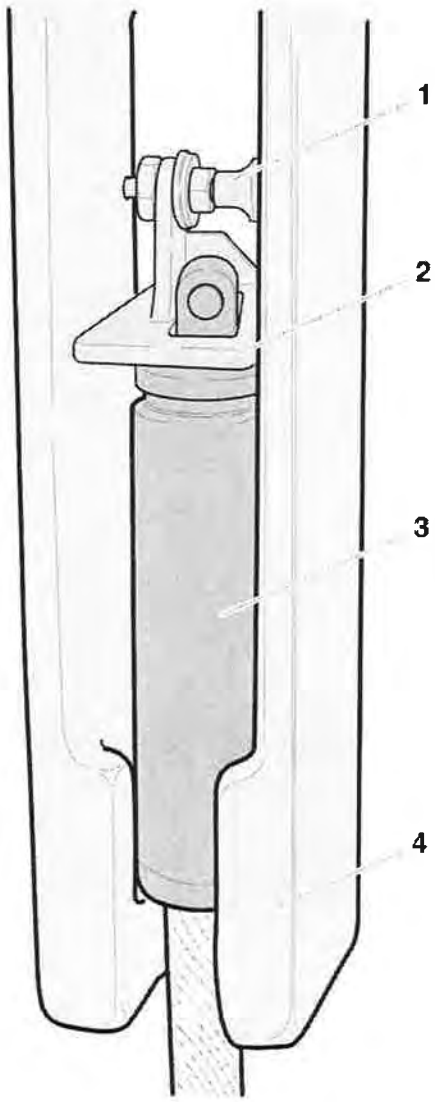
The hoist rope may only be placed under load later when the press fitting (3) is secured with safety flap (2) and the locking pin (1) is locked in place.

In the design that is described and shown, the rope pocket

may only be used for low twisting / non-twisting ropes.

Before reeving a hoist rope with press fitting all rope protection arrangements such as rollers or bolts on the deflection rollers or idlers to be reeved must be removed or opened.

If this is not done the hoist rope cannot be drawn through with the press fitting or may cause damages.



Rope end connection without press fitting

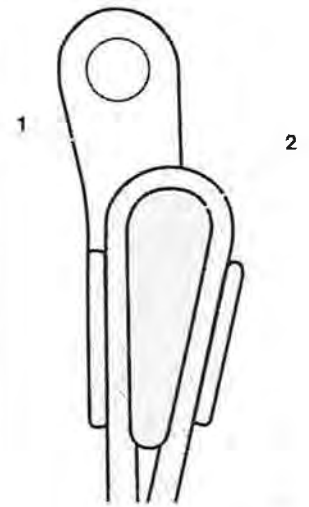
The illustrations of the rope socket (1) and the cable clip (3)

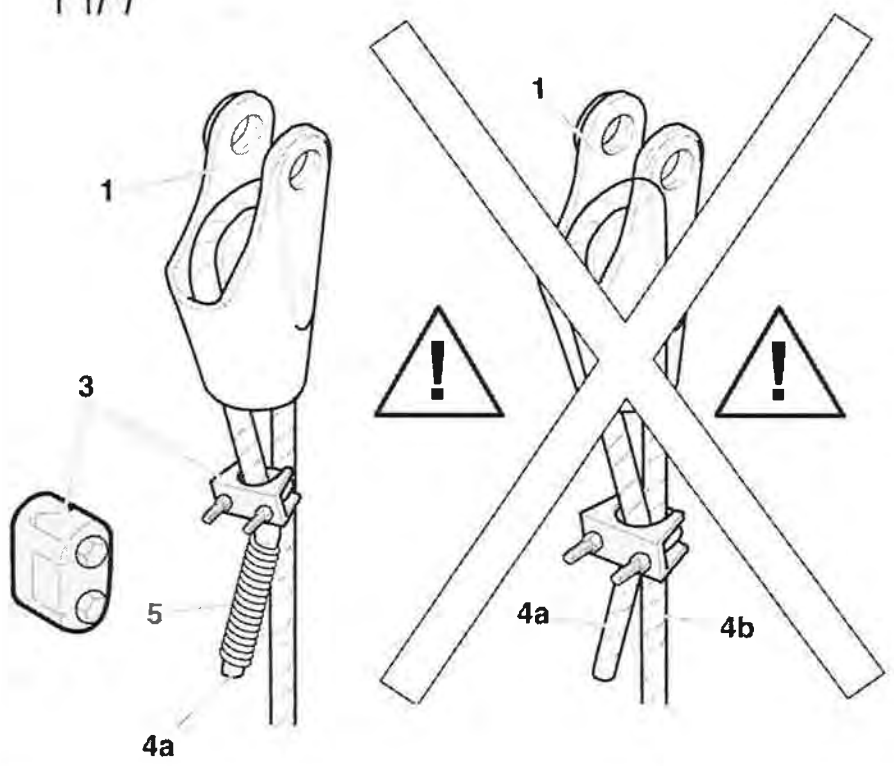
are principle drawings and do not correspond exactly with the components supplied by the crane manufacturer.

Use only original parts supplied by the crane manufacturer.

In order to fit the rope socket (1), first the free rope end is pulled through the conical rope pocket, laid in a loop and then pulled out of the rope pocket again. The rope key (2) is laid into the rope loop and the hoist rope is pulled through the rope socket (1), so that the free end juts out by approx. 8 times the width of the rope diameter.

Danger of the load and / or the hook block falling down!





Using a cable clip (3), the "unloaded" rope end (4a) is now secured where it comes out of the rope socket at a distance of approx. 3 times the width of the rope, so that the hoist rope is not pulled through.

The free end is connected with Litz wire (5) ø1.5 mm (*0.06 in) from* the rope clamp to prevent the hoist rope from being pulled through.

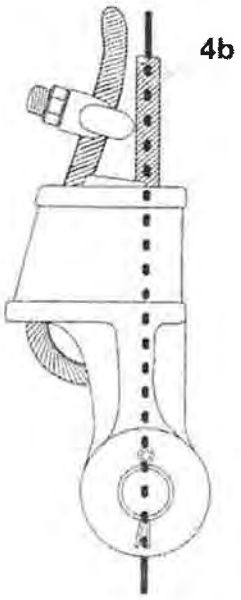
Risk of damage to the rope!

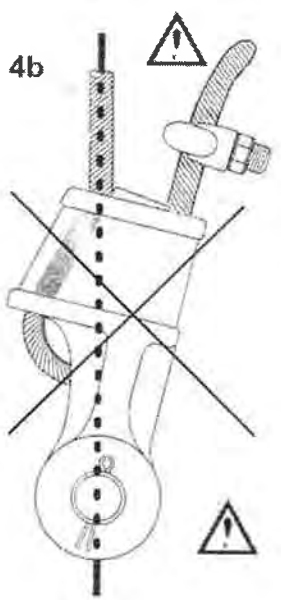
The cable clip may not be attached in such a way that it connects the "loaded" (4b) and "unloaded" ropes (4a) with each other.

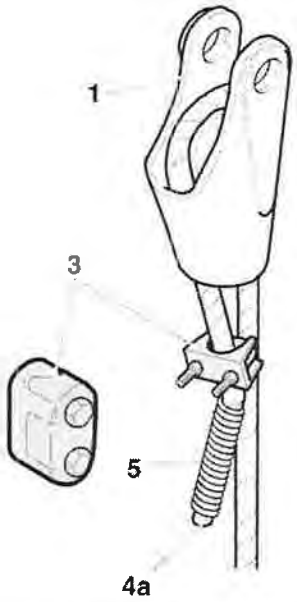
When fitting the rope socket you must make sure that the "loaded" rope (4b) runs through the rope socket in such a way that the tension force's line of action runs exactly through the fastening pin without bending the cable when the end connection is loaded.

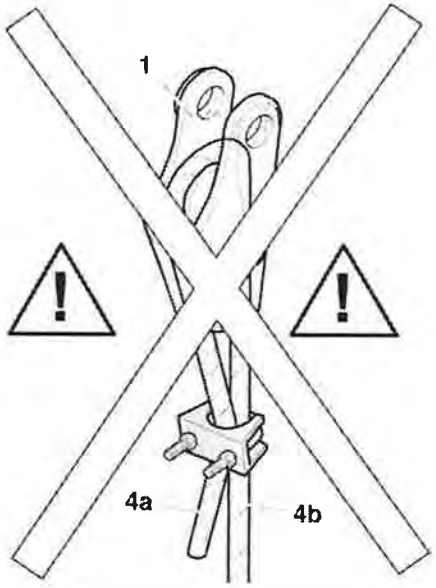
When fitted incorrectly, the end connection will align itself whenever loaded so that the tension force's line of action runs through the fastening pin, bending the highly loaded "loaded" rope of the cable at the rope pocket exit every time.

On one hand, this reduces the maximum transmittable tension force of the end connection, on the other hand the pressure coupled with the frequent bending within a very small radius creates a premature wear of the rope cables in this area, so that the end connection can fail prematurely even when there are only small tension forces.









Reeving / Unreeving the Hoist Rope

Reeving

Before reeving and before starting crane work, check the status of all accessible ropes (including the end connections), winches and sheaves.

1. Position the hook block beneath the main boom head so that it is stable.

Risk of overturning!

Work may only be carried out on the hook block (reeving and unreeving) when it is set down and stable on solid ground.

2. Remove bolts for rope guard (11) from the hook block and fold out the rope protection plate (12).
3. Remove the bolt for the rope guard (13) from the main boom head.
4. Guide the hoist rope from the hoist via the main boom to the guide sheave (E1) on the main boom head.

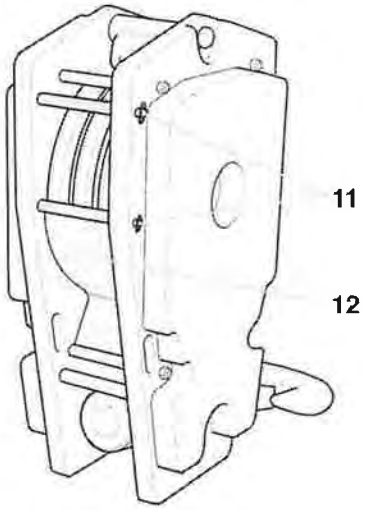
Guide sheave (E2) is optional.

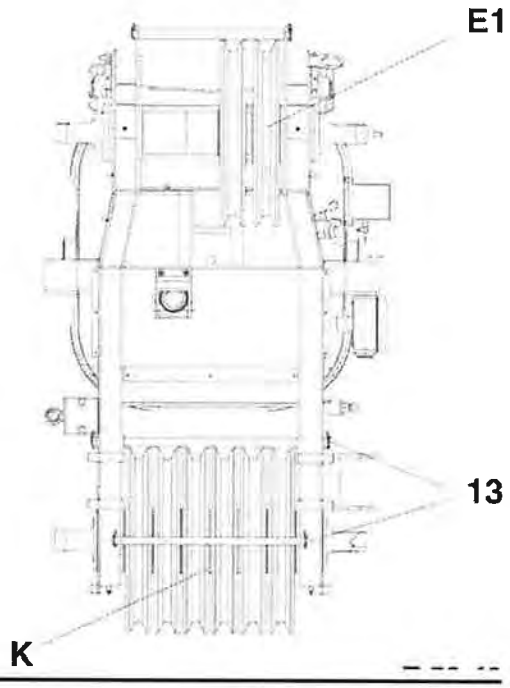
While the crane operator is using the hoist, the hoist rope must be guided by a helper to prevent slack rope from forming.

If it is unavoidable for personnel to walk on the main boom during this procedure, suitable safety measures must be put in place.

There is a risk of accidents as a result of slipping / stumbling on the main boom or if the hoist is incorrectly operated.

5. Guide the hoist rope via guide sheave (E1) to the sheaves (K) in the main boom head and reeve in accordance with the corresponding reeving.
6. Fit the bolt for rope guard (11) on the hook block and (13) reattach on the main boom head and secure. To this end the rope protection plate (12) must be folded in again on the hook block.
7. Fit rope end into rope socket (if this has not already been done).





8. Bolt the rope socket or rope pocket to the corresponding fixing point:
- with uneven number of rope strands fixing point on the hook block (FU,)
- with even number of rope strands fixing point on the main boom head, here: right side

9. Release the shift weight of the hoist limit switch from the transport position ("A"), remove both clip pins and pull the two halves (2a) and (2b) of the shift weight apart.

10. Guide the separated halves of the shift weight around the hoist rope and secure again with clip pins.

The condition shown in picture must be shown.

The shift weight should be fitted on the "resting" rope. This avoids wearing of the hoist rope and shift weight.

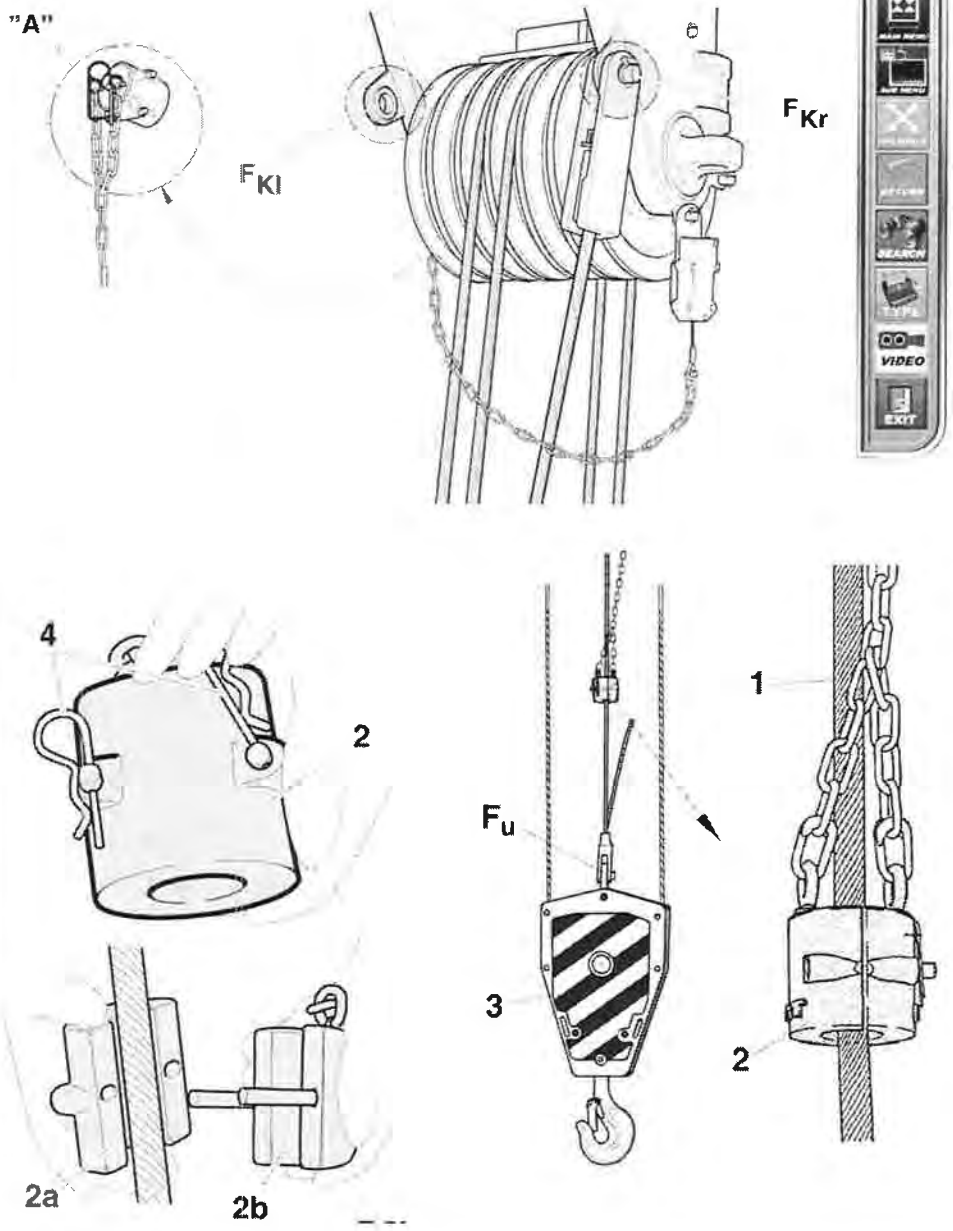
The "resting" rope is the rope line that goes to the fixing point:

Make sure that the shift weight is hanging free. Only then is it guaranteed to function properly.

RISK OF DAMAGE!

If the shift weight of the hoist limit switch is not - as described - fitted on the hoist rope, the hoist stroke limitation does not work.

There is a risk of damage to the rope, sheave and shift weight.



Unreeving

In principle, unreeving is carried out in the same as reeving, only in the reverse order.

In particular pay attention to the following points:

- Tipping over of the stationary hook block

Risk of overturning!

Work may only be carried out on the hook block (reeving and unreeving) when it is set down and stable on solid ground.

- Sudden release of the hoist rope end from the hook block

Risk of accidents!

When unreeving, the hoist must be operated carefully and the hoist rope wound slowly.

The area around the hook block must be kept clear at all times.

- Watch the winding pattern of the hoist rope when reeling in the rope. There must be no slack rope.

Hook Blocks

Definition

In DIN 15002 the hook block is defined as the "multiple line suspension of carrying equipment with a hook".

A single-line suspension would be referred to as a hook suspension gear. As this differentiation is not relevant for the following general contexts, only the description "hook block" is used.

Only hook blocks may be used which have been obtained from the crane manufacturer.

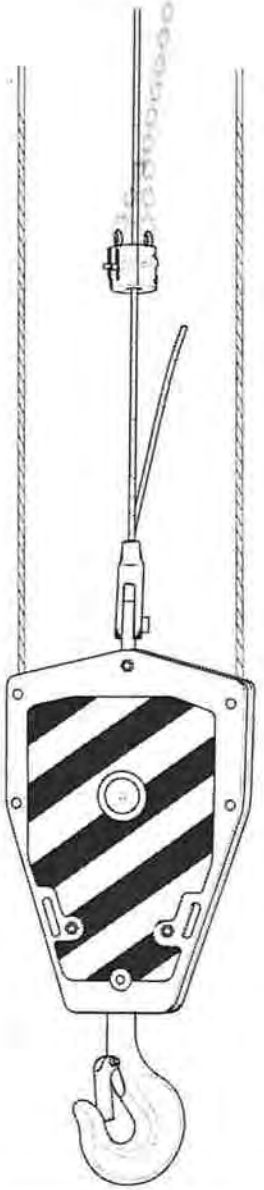
The use of other hook blocks is only permitted following consultation with the crane manufacturer.

Markings

The following details must be permanently and legibly marked on

hook blocks:

- Warning marking
- Manufacturer or supplier
- Year of construction
- Type, if type designation applies
- Factory or serial number
- Permitted load
- Rope diameter
- Drive group
- Dead weight.



Operation

When reeving there is a risk of persons becoming caught and dragged into equipment and crushing near rotating and moving components on the hook blocks !

Proceed with appropriate caution and make sure that the safety guards and intake guards are fitted.

In particular the following points must be observed:

– The personnel (person attaching/detaching the load) must be qualified and conversant with the handling of hook blocks and must be wearing suitable protective clothing.

When attaching and disconnecting the load, particular care should be taken as a result of swinging loads or hook blocks.

Once the load has been attached or released, the fitter must leave the slewing or hazardous area immediately.

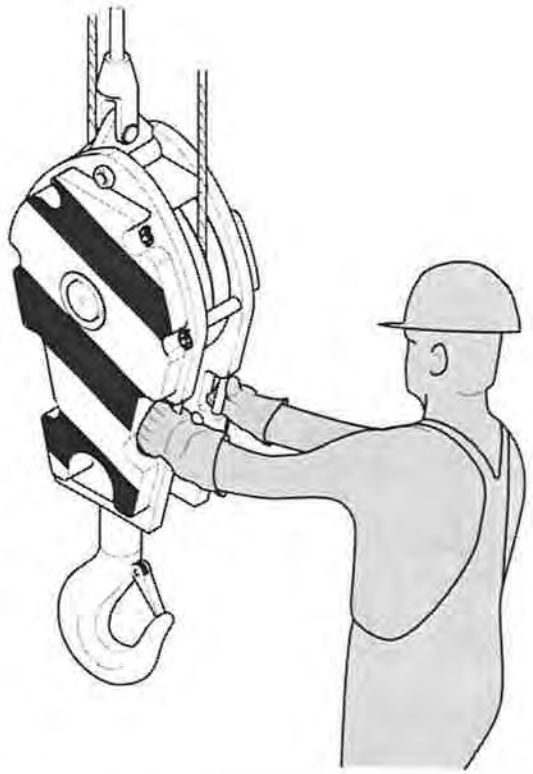
The fitter must be easily recognizable to the crane operator.

The fitter must wear one or more means of identification e.g. jacket, helmet, special collars, armbands, signaling discs.

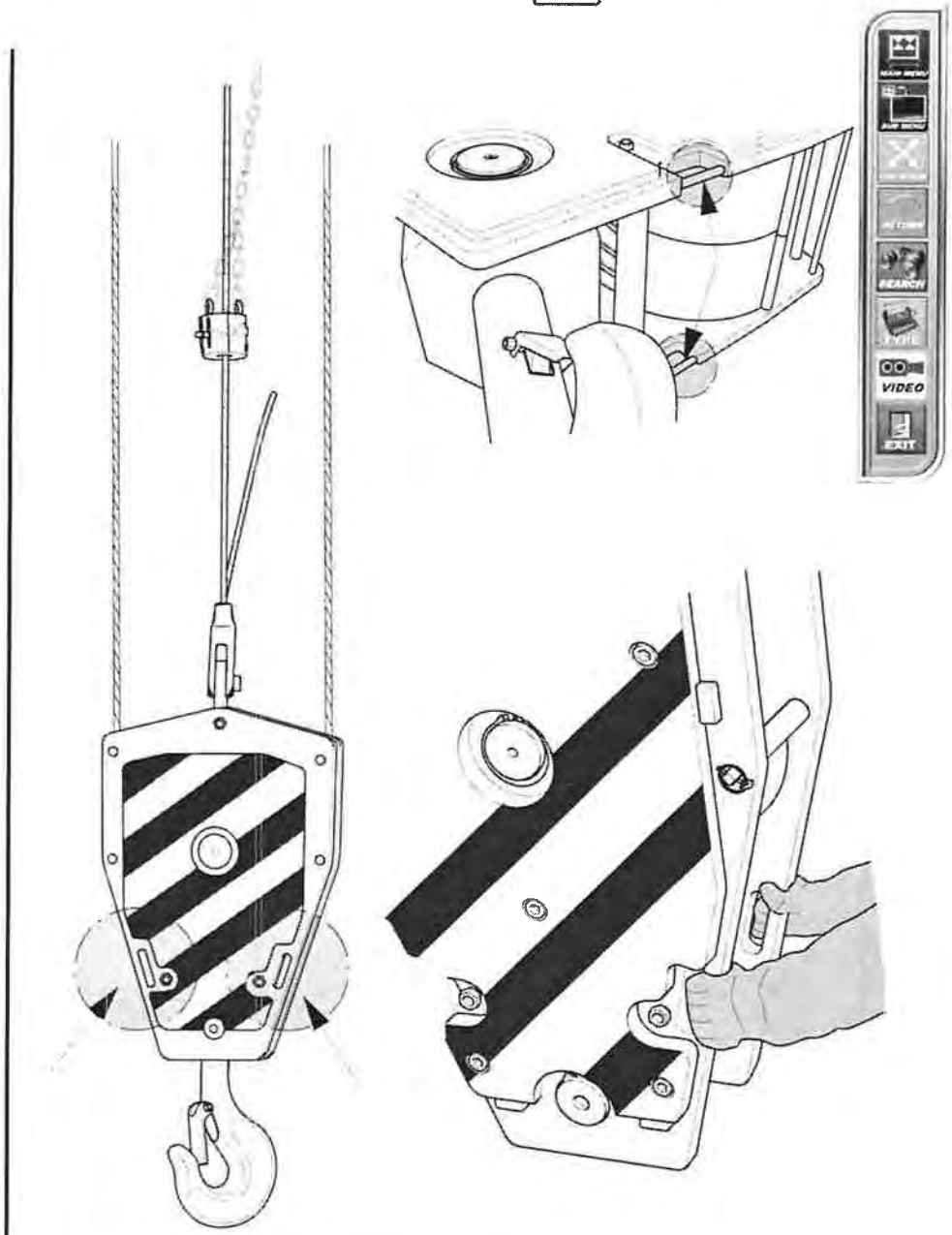
These items of recognition must be of a distinctive color and preferably all in the same design and must be worn/carried exclusively by the person connecting up the load.

Before starting movements of the winches (raising or lowering) all persons must leave the danger zone in the proximity of the rope drums and sheaves.

The crane operator must have visual contact with the operating personnel and must give a warning signal before starting the crane movements.



- Touch the hook block **only using the handrails provided.**
The hands must be **KEPT CLEAR of the following areas:**
* between the sheaves, side plates and covers.
* in the area of the fixing points (sometimes of a folding design), the hook, the hook nut, the lifting beam or the protecting cages.
- Make sure that items of clothing do not get caught in rotating parts.
- Work on the hook block may only be carried out (i.e. reeving),
when it is set down in a **stable position on firm ground.**
Risk of overturning!
Be aware that the hook block could still tip over however!
Proceed with appropriate caution!
- Only use the hook block for lifting in the vertical direction. Pulling sideways is not permitted.
- Place the hook block under load slowly and evenly.
No sudden loads! No one-sided loads!
- Always fit the load / load handling device in the middle of the hook (hook jaw), never at the tip.
- Never load only one side of the twin hook.
Welding on the hook block is prohibited.

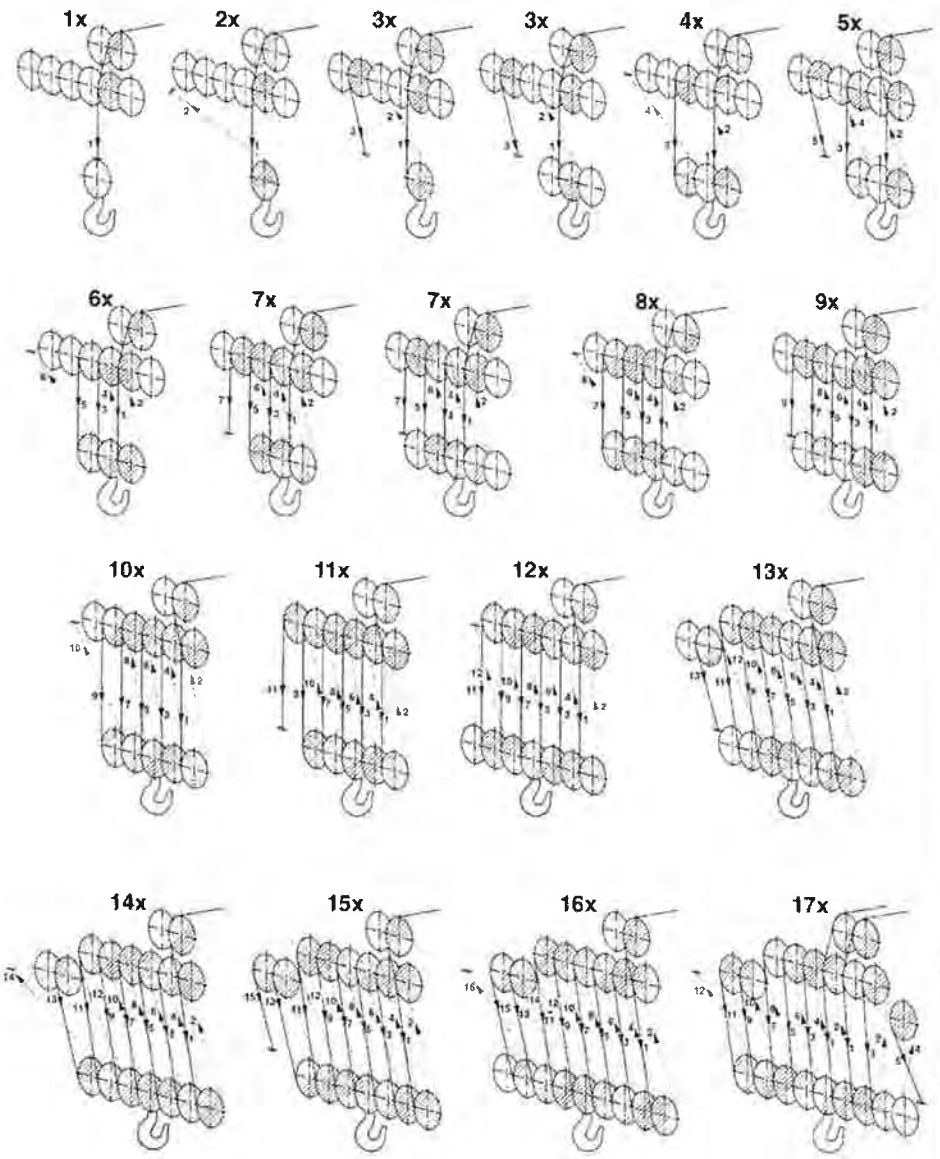


Hook Block Types / Transport Dimensions / Weights

Hook block type	Description	Hook size *	Transport dimensions		
			Length	Width	Height
			mm (in)	mm (in)	mm (in)
200-9/21-D	9-sheaves, twin hook, weight 1900 kg *(4190 lbs)*, with double-sided HD attachment or with one-sided HD attachment (max.16 falls)	40	2100 mm (82.7 in)	680 mm (26.8 in)	1000 mm (39.4 in)
160-7/21-D	7-sheaves, twin hook, weight 1500 kg *(3307 lbs)* , with one-sided HD attachment max. 15 falls without HD attachment max. 12 falls	32	1900 mm (74.8 in)	680 mm (26.8 in)	750 mm (29.5 in)
125-5/21-D	5-sheaves, twin hook, weight 1125 kg *(2480* lbs) max. 11 falls,	32	1900 mm (74.8 in)	680 mm (26.8 in)	550 mm (21.7 in)
80-3/21-E	3-sheaves, single hook, weight 850 kg *(1874 lbs)* max. 7 falls	20	1800 mm (70.9 in)	680 mm (26.8 in)	350 mm (13.8 in)
80-3/21-D	3-sheaves, twin hook, weight 850 kg *(1874* lbs) max. 7 falls,	20	1750 mm (68.9 in)	680 mm (26.8 in)	450 mm (17.7 in)
	3-sheaves, twin hook, weight 1150 kg *(2535 lbs)* with removable weight elements**, max. 7 falls	20	1750 mm (68.9 in)	680 mm (26.8 in)	350 mm (13.8 in)
32-1/21-E	1-sheave, single hook, weight 600 kg *(1323 lbs)*, max. 3 falls	10	1650 mm (65.0 in)	680 mm (26.8 in)	300 mm (11.8 in)
32-1/21-D	1-sheave, twin hook, weight 600 kg *(1323* lbs), max. 3 falls	10	1550 mm (61.0 in)	680 mm (26.8 in)	300 mm (11.8 in)
12.5-0/21-E	Hook suspension gear, weight 350 kg *(772 lbs)*	5	950 mm (37.4 in)	350 mm (13.8 in)	350 mm (13.8 in)
12.5-0/21-E	Hook suspension gear, weight 350 kg *(772 lbs)* with removable weight elements**	5	950 mm (37.4 in)	400 mm (15.8 in)	400 mm (15.8 in)

* Hook size in accordance with DIN 15401 (single hook) or DIN 15402 (twin hook)

** If there are removable weight elements on a hook block and they are fitted, they must be screwed or bolted on tightly, depending on the design, and secured against falling off.



The weights of the hook blocks, hook suspension gear, lifting devices, etc. must be deducted from the working loads in the tables.

Reeving the Hoist Rope on the Main Boom Head

The safety of the crane is impaired by incorrect reeving!

This is why you must follow the reeving examples.

Other reeving configurations would disrupt the function of the load limit device.

The following hook blocks can be used:

The weights of the hook blocks, hook suspension gear, lifting devices, etc. must be deducted from the working loads in the tables.

Only use original hook blocks suitable for this crane. If you wish to use other hook blocks, you must first contact our customer service departments.

Reeving the Hoist Rope on the Main Boom Head with Auxiliary Sheaves (HD attachment, optional)

Risk of accidents!

Only the original HD attachment of the crane manufacturer for this crane type may be used!

For the use of other additional equipment the crane operator carries sole responsibility.

Information on Transport and Attachment Points

Attachment Points

Risk of accidents!

There are no attachment points welded to the HD attachment. For this reason, it must be attached with a looping tackle.

The actual attachment procedure must be undertaken with the utmost care.

RISK OF ACCIDENTS!

The parts must not swing out or dangle at an angle when they are raised. If necessary, lifting chains fitted with shortening claws must be used.

The securing equipment must be supplied by the customer.

Transport Dimensions / Weights

	Transport dimensions			Approx. weight
	Length	Width	Height	
	mm (in)	mm (in)	mm (in)	kg (lbs)
HD attachment 2–sheave	1125 mm (44.3 in)	243 mm (9.6 in)	613 mm (24.1 in)	91.0 kg (200.6 lbs)
Sheave for double–sided HD attachment	524 mm (20.6 in)	524 mm (20.6 in)	80 mm (3.2 in)	15.7 kg (34.6 lbs)

Fitting and Removal of One-Sided Fitted HD Attachment

In the standard design there are 6 sheaves on the axle (2) of the main boom.

For reevings above 12 falls, it is possible to attach additional sheaves (3, HD attachment).

Stand the main boom axis (2) on its end, push on HD attachment (3) and secure with bolt (1) as shown.

Secure the bolts (1) on both sides with locking pins (5).

To reeve the hoist rope on the HD attachment (3) the three rope locking pins (4) can be removed.

Immediately after fitting the hoist rope all 3 rope locking pins (4) must be fitted again and locked.

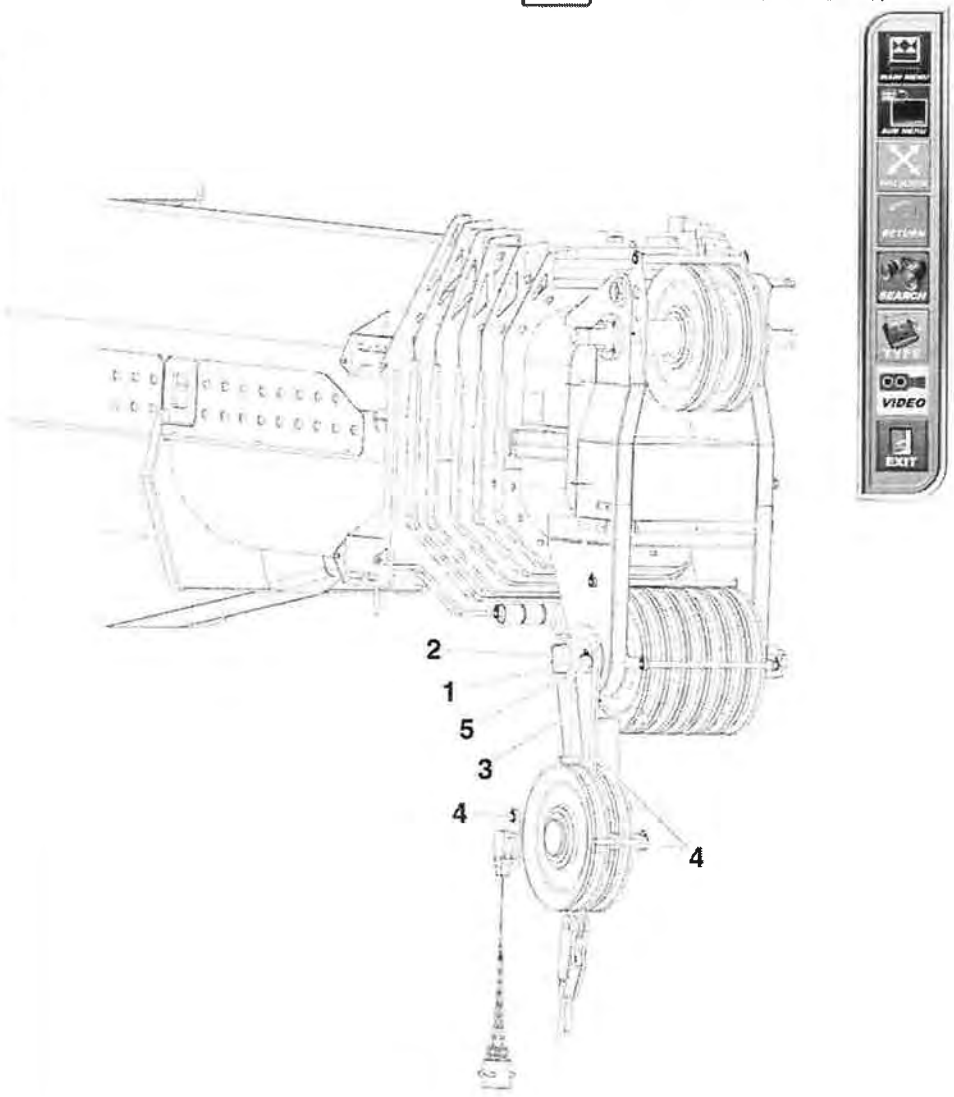
The HD attachment is removed in the same way, in the reverse order.

When using the heavy duty device, you must move the hoist limit switch from the head and hang it onto the heavy duty equipment.

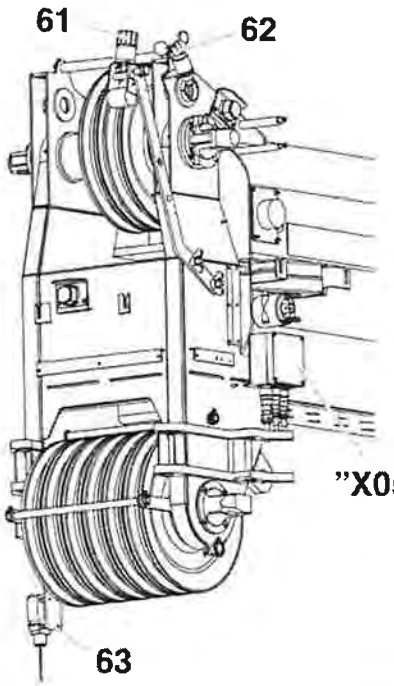
The existing forelock must be used for locking.

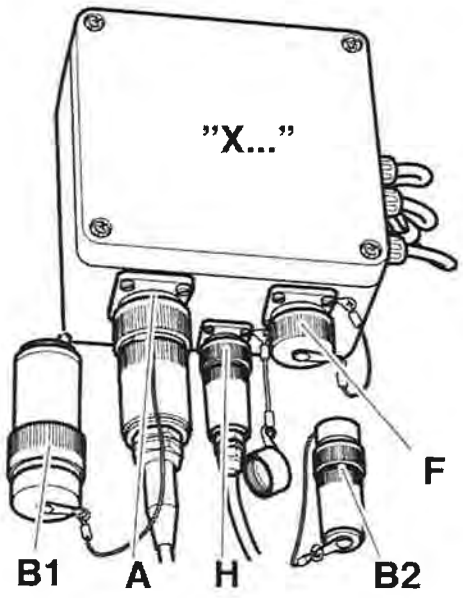
Only the heavy duty equipment supplied by the crane manufacturer may be used.

The crane manufacturer is not responsible for possible accidents or damage caused by the use of incorrect optional equipment.



Fitting and Removal of Double sided Fitted HD attachment
In the standard design there are 6 sheaves on the axle (2) of the main boom.
For the heavy duty equipment mounted at both sides, there are additional sheaves mounted to the left and right side of the main boom head. The hook block is reeved with the hoist rope of the hoist 1 and the hoist rope of the hoist 2. This means that 17−foldreeving is possible with the hook block "Type 200".
Only the heavy duty equipment supplied by the crane manufacturer may be used.
The crane manufacturer is not responsible for possible accidents or damage caused by the use of incorrect optional equipment.
Risk of rope damage!
The fact that two hoist ropes are reeved at the same time for this reeving can cause slight crooked positions of the hook block. This is not permitted.
For this reason an additional person must observe the behavior of the hook block from the outside and, if the hook block is in a crooked position, he must instruct the crane operator to straighten the hook block again by driving the corresponding movement!
Connecting the hoist limit switches / Electrical safety chain
In the event of a reeving in which two hoist ropes are participating, two hoist limit switches on the "X0550" junction box on the left-hand side of the main boom head must also be connected.
To connect the first hoist limit switch, see description of the "Electrical safety chain" in section 10 ("Safety devices").
An adapter cable is connected for the purpose of connecting the second hoist limit switch to Connection "A". The second hoist limit switch is connected to the free end of the adapter cable.





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