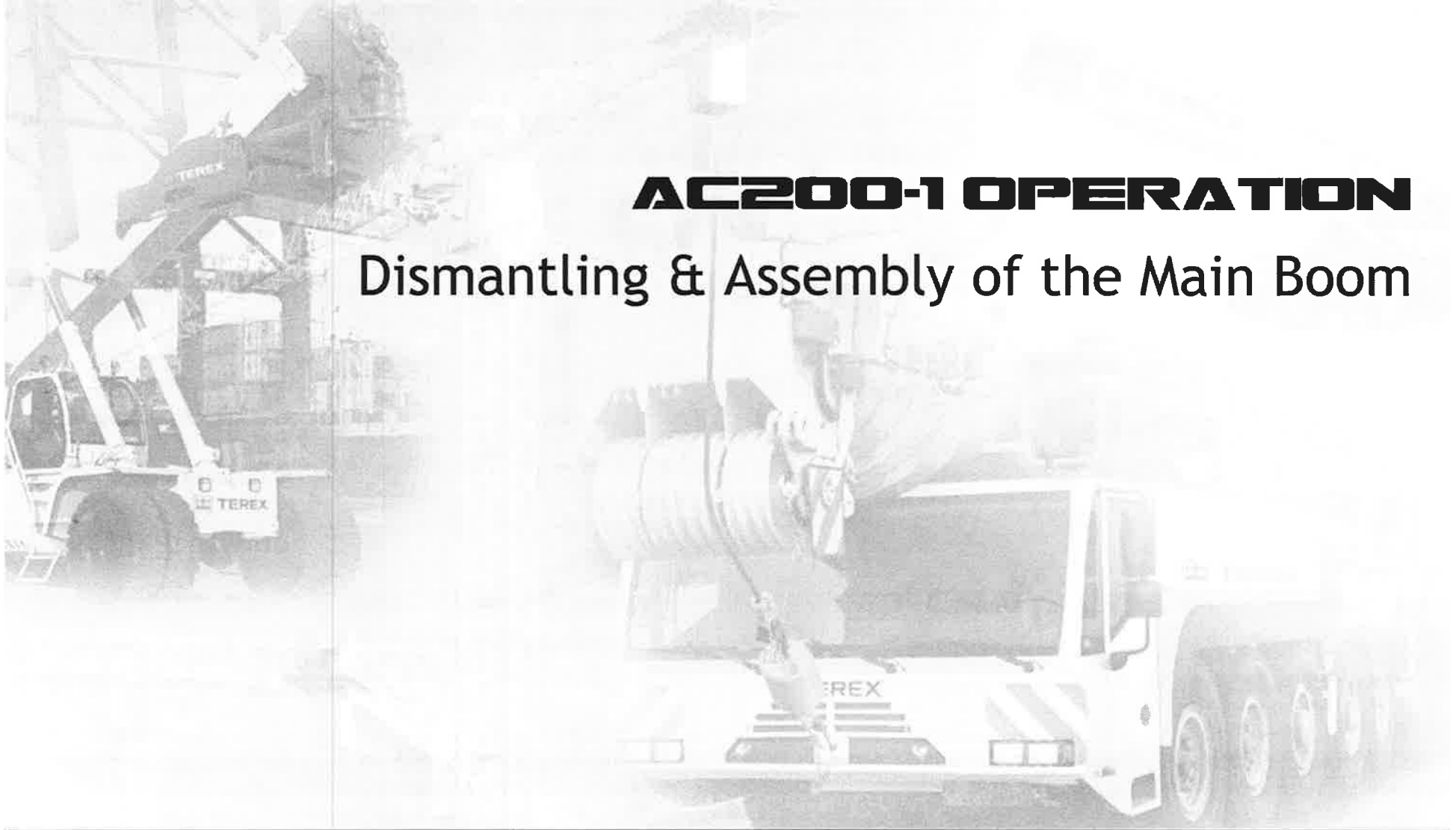




GLOBAL CRANE TRAINING

AC200-1 OPERATION

Dismantling & Assembly of the Main Boom



Dismantling & Assembly of the Main Boom Content



Content	Pg.	Content	Pg.
General	3		
Dismantling the boom	4		
Assembly of the boom	15		

Dismantling and Assembly of the Main Boom (Optional)

In the course of assembling and dismantling the main boom there is the danger of being crushed:

- between the main boom base and bearings.
- between the main boom and superstructure frame.

This is why no person is permitted in the danger zone!

All assembly work is to be carried out with the help of suitable equipment (ladders, lifting platforms, frames, auxiliary crane).

Should it not be possible to carry out work either using such equipment or from the ground, then the assembling personnel must protect themselves with suitable means (e.g. safety belt) against the RISK OF FALLING !

It is especially prohibited to spend any time in the area where there is the risk of the attached load (main boom) falling in the course of assembling (dismantling)!

General

The main boom can be removed from the superstructure with the auxiliary crane for repair purposes or in order to reach certain axle loads.

The transport configuration without the main boom is described in the operating instructions for the crane chassis.

Before starting to dismantle or assemble, pay special attention to the following:

- Before the main boom is dismantled or assembled, the crane's counter weight must be removed. The crane must be stabilized in the course of this procedure, in accordance with the configuration for the counter weights.
- Before the main boom is dismantled, the telescopic units must be retracted completely and pinned.
- The crane must **always be supported on outriggers (outrigger span at least 8.2 m x 2.8 m (26.9 ft x 9.2 ft)) for the actual** dismantling and assembly of the main boom.

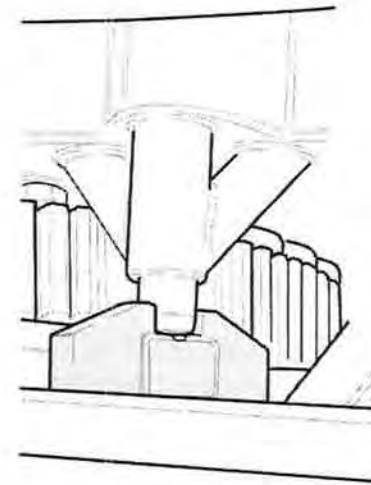


Dismantling the Main Boom

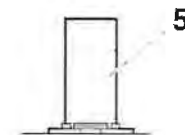
The dismantling of the main boom can be divided into 3 steps: preparations for dismantling, pulling the luffing cylinder head pin and extracting the boom foot pin /taking off the main boom. These working steps must be carried out in the sequence listed.

Preparation for dismantling

1. Stabilize crane and align horizontally (counterweight removed).
2. Un-reeve bottom hook block or hook suspension gear and wind hoist cable on to cable drum, secure hoist rope end.
3. Lift main boom over luffing gear. Rotate superstructure so that the main boom faces the rear and insert the mechanical superstructure locking device. Operate switch **(74)** to do so. For further information on pinning and fixing the superstructure to the carrier see section "Rotating" in "Preparations for rotating".
4. Use open lashing strap to mount luffing cylinder support mount to the designated attachment devices at the rear end of the chassis frame.
5. Fully lower the main boom so that the luffing cylinder is lying on the luffing cylinder support.
6. Close the safety stop valve on the side of the luffing cylinder.



74



5

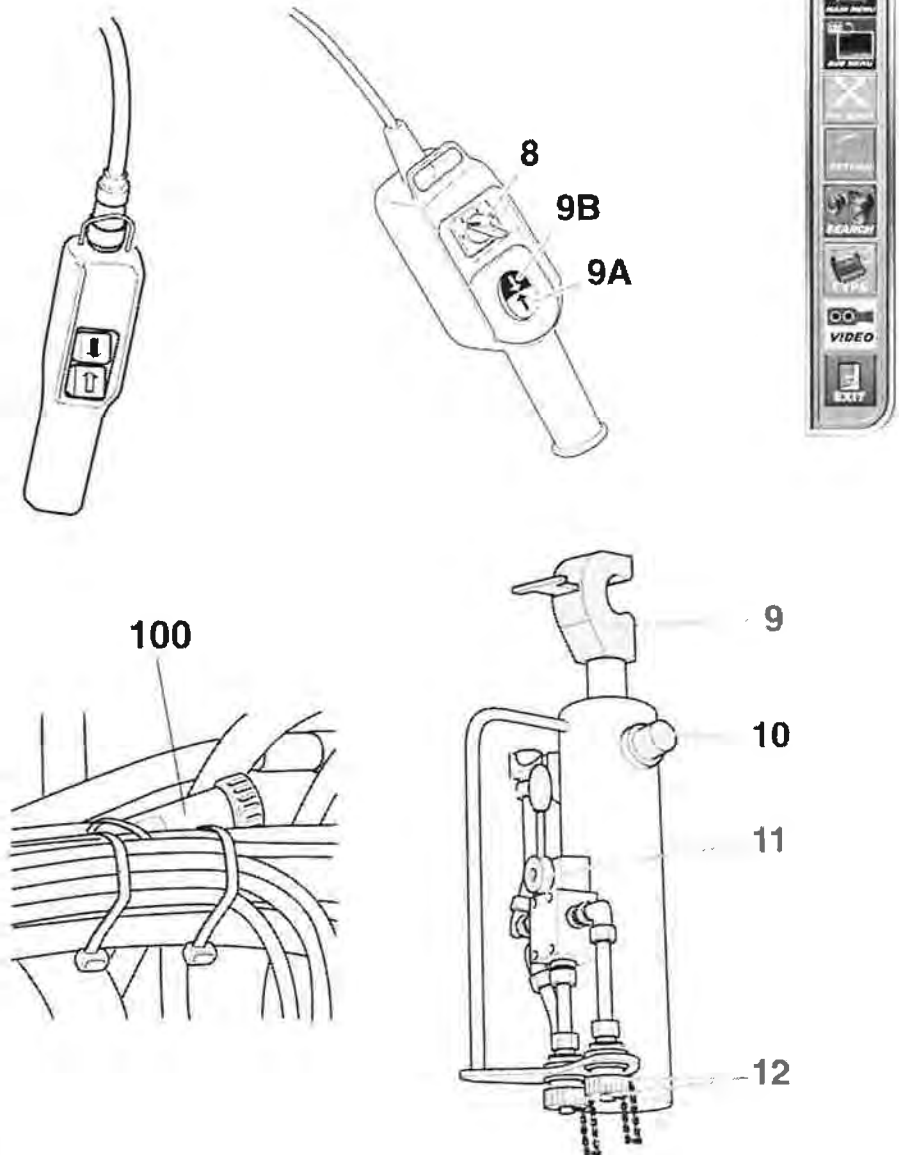


7. Insert remote control into plug (100) in the hydraulic carrier on the right- hand side of the machine.

In order to be able to operate the mobile hydraulic cylinder, a remote control must be inserted in the corresponding connection in the hydraulic carrier.

If a movement is to be carried out with the mobile hydraulic cylinder, an assistant must activate the switch in the relevant remote control.

Depending on the design of the crane, either the remote control in figure or the remote control in figure must be activated.



8. Using an auxiliary crane, hang the main boom with 4 auxiliary reeving ropes onto the top head axles on the boom head and onto the attachment shackles on the boom foot.

The weight of the main boom is approx. 21 t (46.3 kip).

Select the auxiliary crane and the auxiliary ropes in accordance with the rope forces that occur (see below).

The centre of gravity of the main boom is about 5970 mm (19.6 ft) from the main boom base bearing in the direction of the pulley head.

The length of the lifting gear (provision of material for customers) can be taken from the diagram opposite. If necessary, adjust the length to fit a minimally differing centre of gravity.

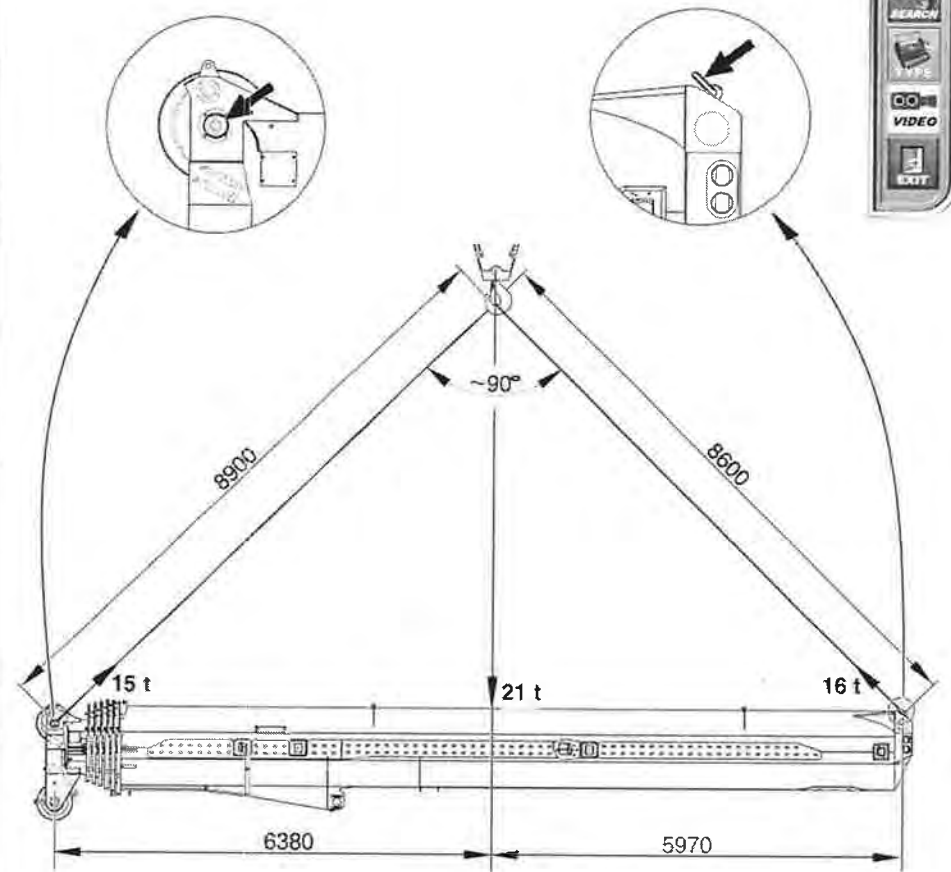
The ropes must be arranged in such a way that, in the extreme case, the total load can also be held securely by just 2 ropes.

There are – for the specified angles of the sling ropes – the following maximum rope forces per rope:

front : approx. 15 t (33 kip) (according to head weight of approx. 10 t (22 kip))

rear : approx. 16 t (35.3 kip) (according to foot weight of approx. 11 t (24.3 kip)).

9. Pull auxiliary ropes tight with auxiliary crane.



10. Release hydraulic connections **B1**, **ST**, **P**, **L**, **T** and **B2** and electric connections of the main boom on the back of the superstructure frame.

Please make sure that the designation signs for the hydraulic connections are attached to the hose and connection.

Otherwise, mark the hydraulic connections before disconnecting.

Connecting and disconnecting hydraulic connections is only ever permitted in the depressurized condition, in other words, the superstructure engine must not be running.

Retracting the Luffing Cylinder Head Pin

1. In order to extract the connecting bolt main boom / luffing cylinder, you must use a mobile hydraulic cylinder.

In the following, this connecting pin is called the luffing cylinder head pin.

To do so, insert the mobile cylinder into the receptacle on the connecting bolt so that the support elements (10) of the mobile cylinder lie in the inner bearing points (7).

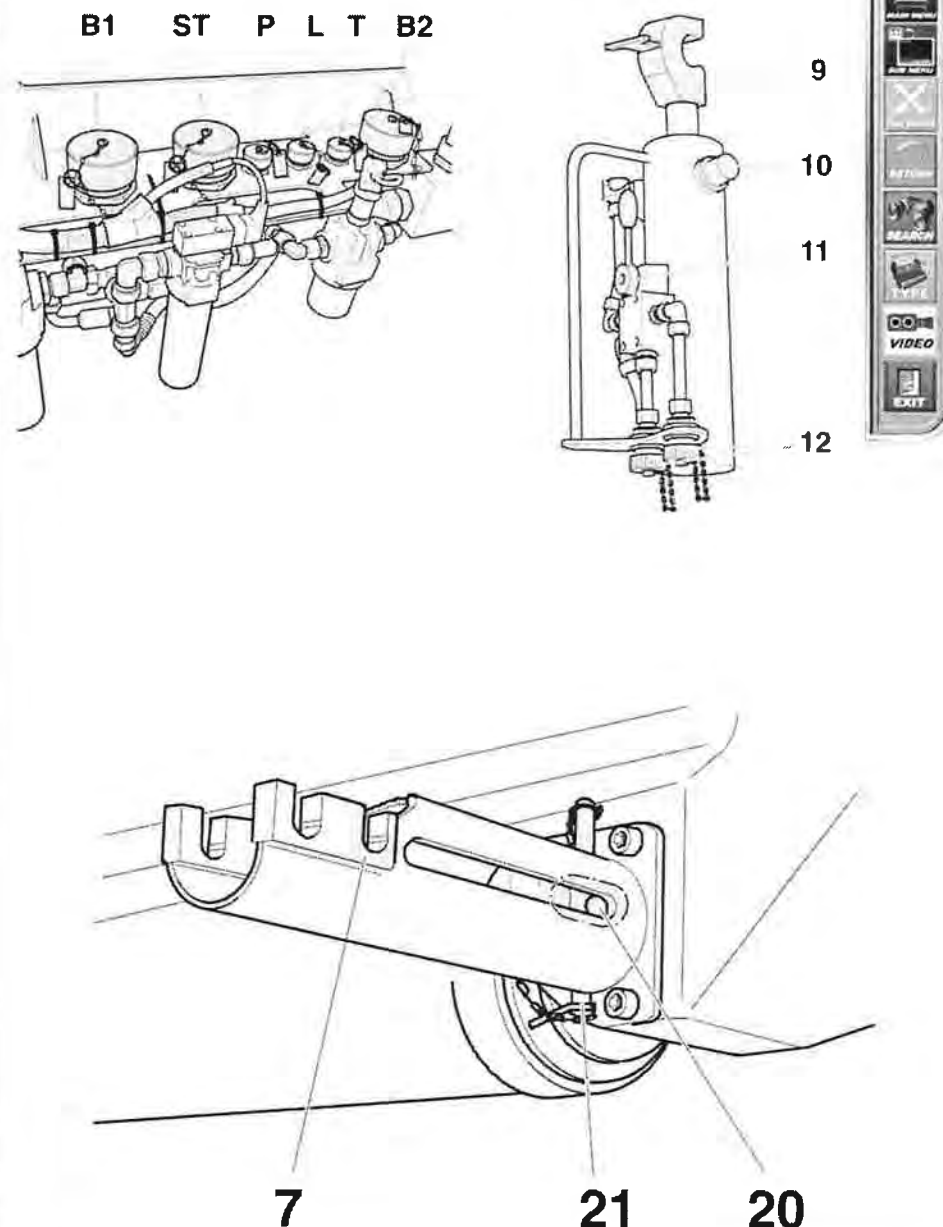
Danger of tipping!

When relieving the mobile cylinder there is the danger of it over turning in the course of all of the working procedures described as follows: the mobile cylinder could tip over to the rear out of the locating shell.

Risk of crushing!

In the course of inserting the mobile cylinder there is the danger of being crushed between the mobile cylinder and the mounting plate. Please act carefully.

The weight of the mobile cylinder is approx. 20 kg (44 lbs)



2. Connect the mobile cylinder hydraulically. To do so, first connect both supplied hydraulic hoses (L = 11 m (36.1 ft)) with the connections **P, T (12) of the mobile cylinder**.

Then connect the free hose ends to the corresponding connections **P and T on the back of the superstructure frame**. These are the same connections with which normally also **P and T of the main boom are connected**. Connect the identically marked connections.

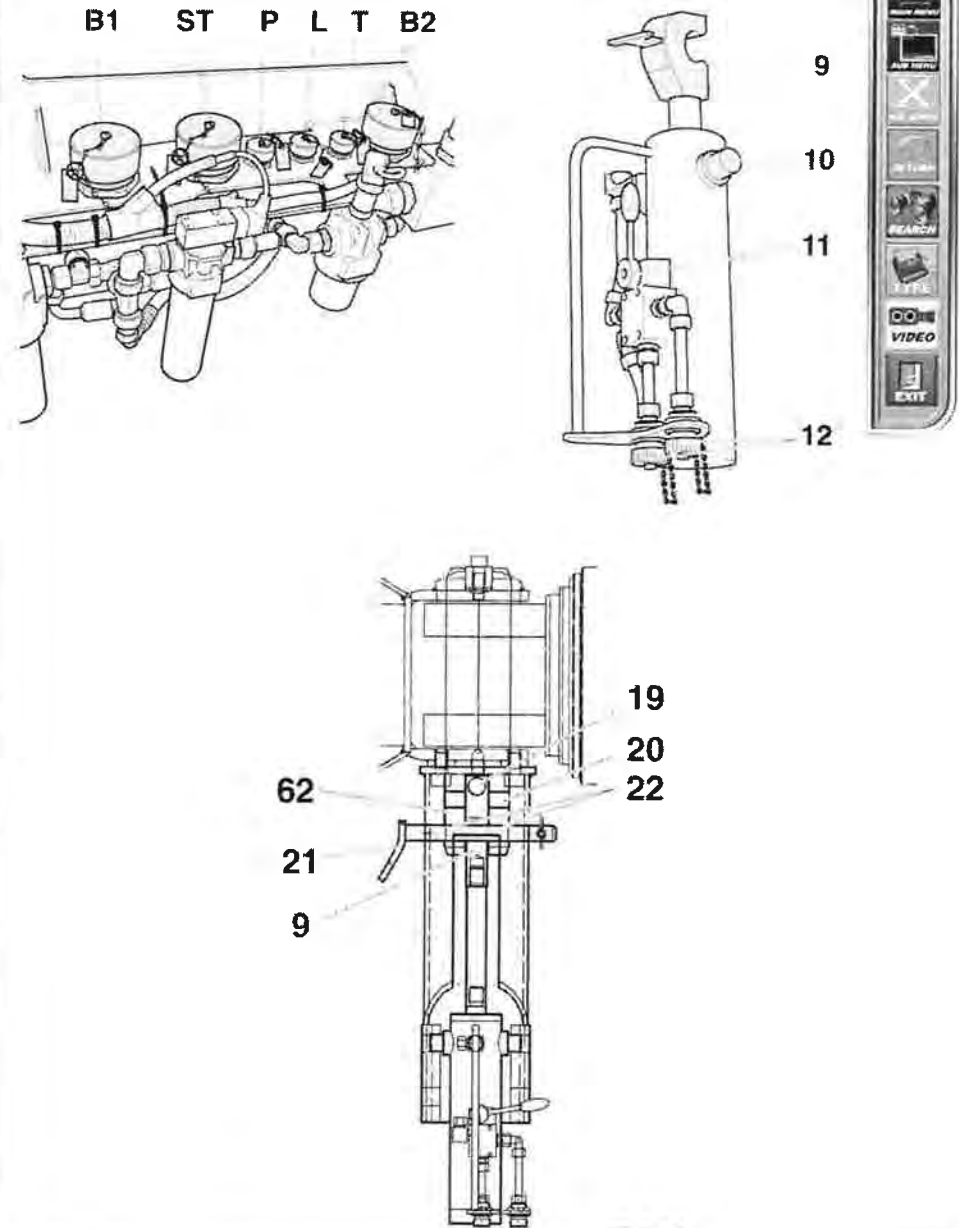
Make sure in each case that the hydraulic connections have been connected correctly, i.e. that the couplings open properly.

Connecting and disconnecting hydraulic connections is only ever permitted in the depressurized condition, in other words, the superstructure engine must not be running.

3. Start superstructure engine.

4. By activating the control lever (11), drive the clamshell in the piston rod of the mobile cylinder (9) into the corresponding groove of the luffing cylinder head pin (62). **Extend the mobile cylinder until the groove of the clamshell (9) and the most exterior hole (22) of the luffing cylinder head pin (62) correspond with each other.**

5. Guide the pin (21) that has been pulled out of the vertical locking position (19) through the slots of the mounting plates so that it passes through the outermost bore hole (22) of the luffing cylinder head pin (62) main boom / luffing cylinder and through the groove of the clamshell. Secure pin (21) again with the fore lock.



(I+II)

6. Fully retract the cylinder rods by activating the control lever on the mobile cylinder (61) accordingly, pulling out the luffing cylinder head pin (62).

(II)

7. Remove pin (21), thereby disconnecting luffing cylinder head pin (62) and mobile cylinder (61).

(III)

8. Move mobile cylinder (61) on to the outer bearing points (8) of the mounting plate. Extend mobile cylinder until the groove of the clamshell (9) and the inner bore of the luffing cylinder head pin (62) correspond.

9. Stick pin (21) through the slots of the mounting plate, the inner bores of the luffing cylinder head pin (62) and the groove of the clamshell (9) and secure.

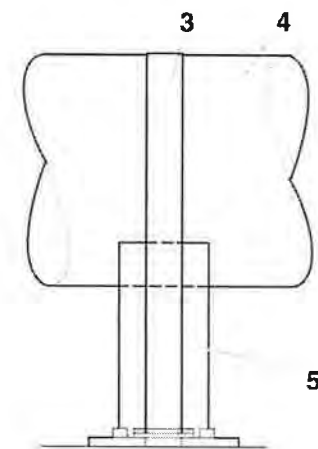
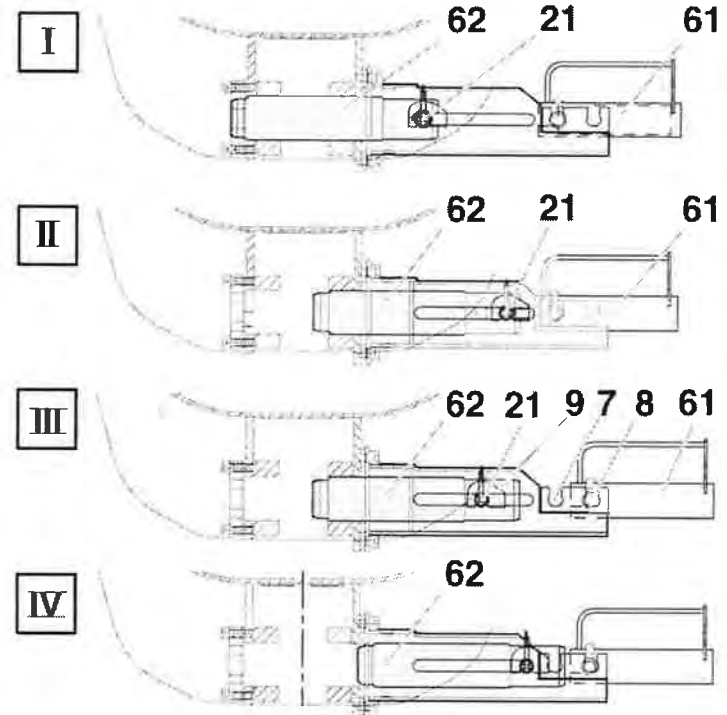
(IV)

10. Extract the whole luffing cylinder head pin (62).

11. Switch off superstructure engine and disconnect hydraulic hoses from mobile cylinder. Remove mobile cylinder and have it ready for further use in order to extract the boom foot pin.

12. Lash luffing cylinder (4) on to luffing cylinder support (5) with lash strap (3).

After dismantling the main boom, bring the luffing cylinder head pin into the transport position.



Extracting the Boom Foot Pin / Lifting the Main Boom
 Especially the operations listed in the following that are necessary to draw out the main boom foot pin must be carried out with special care and in accordance with all necessary safety measures because there is a repeated risk of stumbling and falling.

1. The connecting pin main boom / superstructure is also extracted using the mobile hydraulic cylinder. In the following, this connecting pin is called boom foot pin.

To do so, insert the mobile cylinder (62) in the pin extracting device on the left-hand page of the superstructure frame (crane cab side) so that the support elements (10) of the mobile cylinder are inserted in the inner bearing points (B).

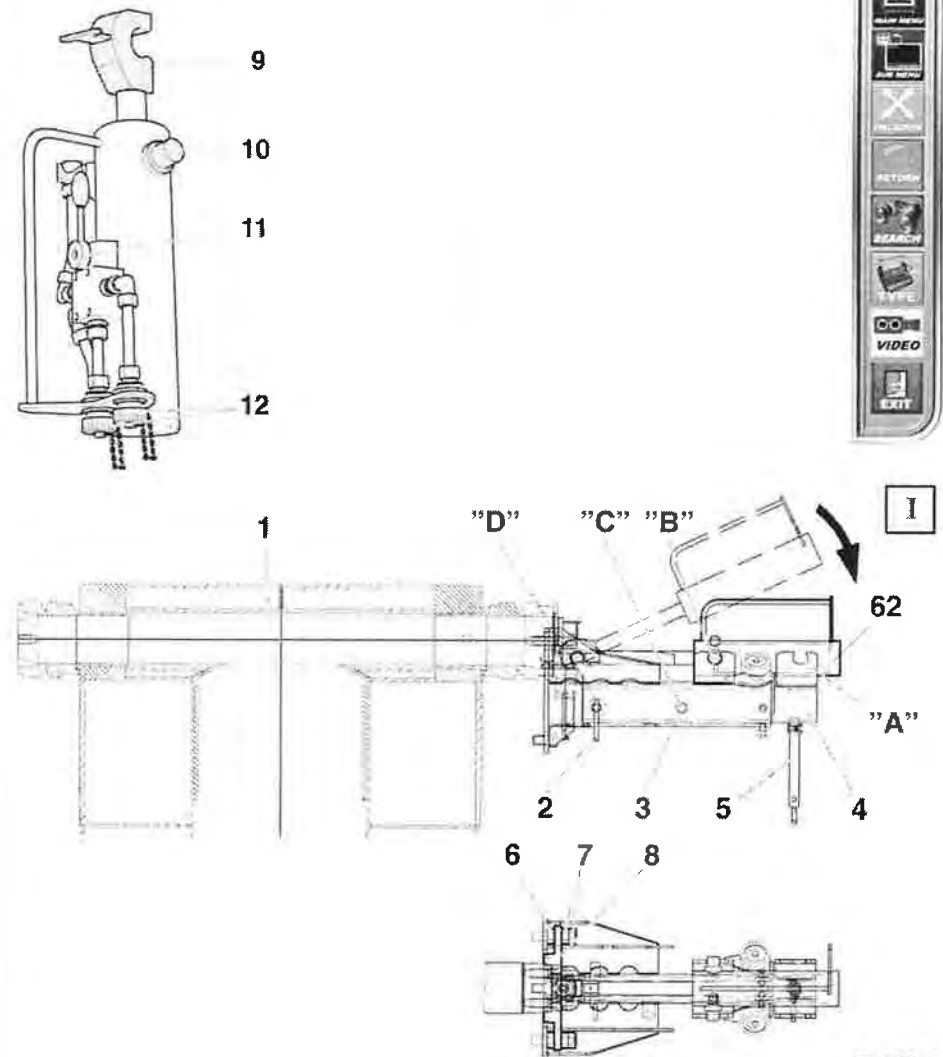
The pin extractors extractable.

With this step, the pin extracting device is used in the retracted condition: the extractable part (4) is inserted in the basic carrier which is fitted on the superstructure frame (3) and is inserted through the bolt (2) in point (D).

Risk of crushing!

In the course of inserting the mobile cylinder there is the danger of being crushed between the mobile cylinder and the mounting plate. Please act carefully.

The weight of the mobile cylinder is approx. 20 kg (44 lbs)



2. Connect the mobile cylinder hydraulically. To do so, first connect both supplied hydraulic hoses (L = 11 m (36.1 ft)) with the connections **P, T (12) of the mobile cylinder**.

Then connect the free hose ends to the corresponding connections **P and T on the back of the superstructure frame**. These are the same connections with which normally also **P and T of the main boom are connected**. **Connect the** identically marked connections.

Make sure in each case that the hydraulic connections have been connected correctly, i.e. that the couplings open properly.

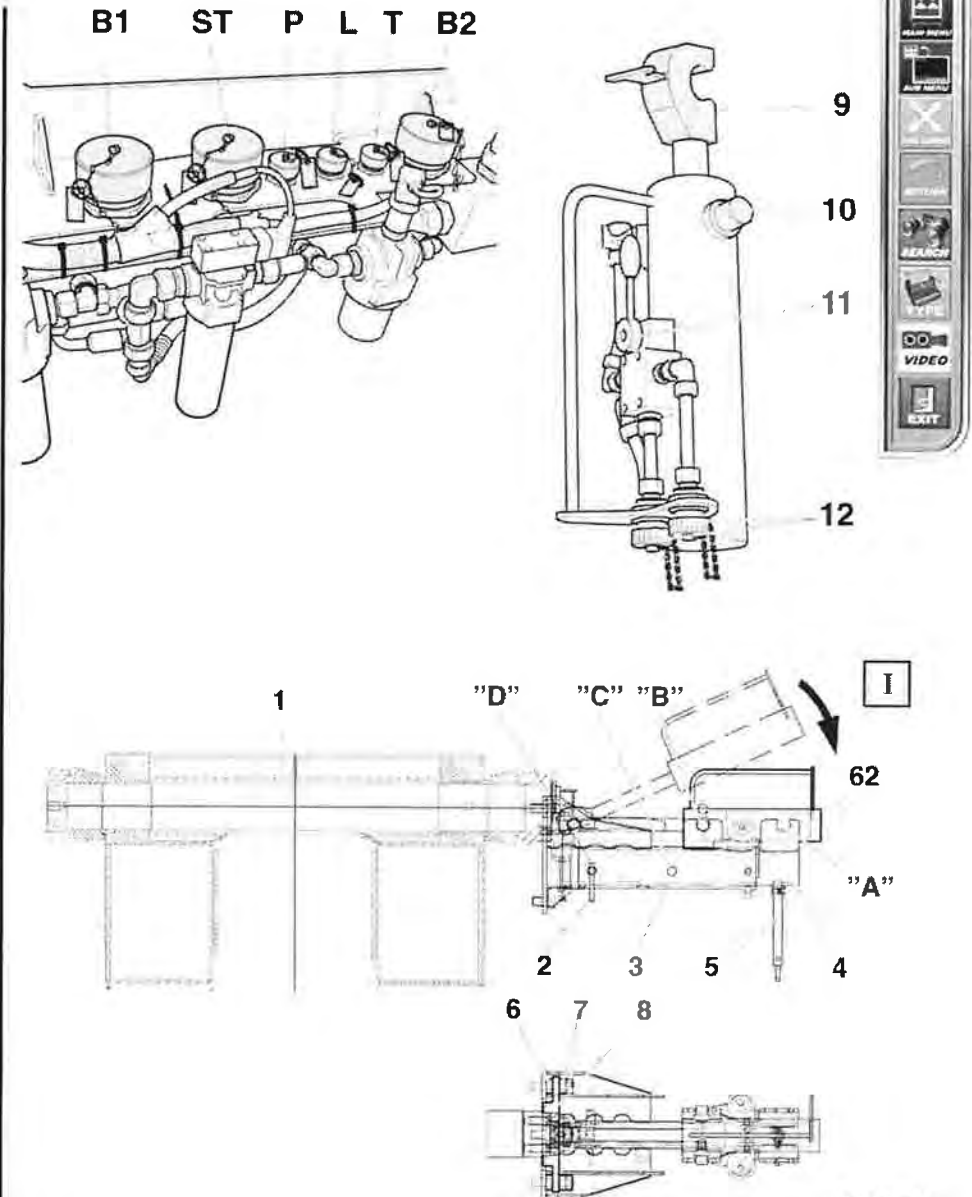
Connecting and disconnecting hydraulic connections is only ever permitted in the depressurized condition, in other words, the superstructure engine must not be running.

3. Remove lock nuts (7) from the axle holder (8). The fixing nuts (6) remain fitted. These nuts (6) serve to secure the entire pin extracting device.

The axle stirrup (8) remains screwed fast to the boom foot pin (1) and is designed in such a way that the mobile cylinder can later be attached in order to pull.

4. Start superstructure engine.

5. Extend the mobile cylinder by operating the control lever (11). The mobile cylinder is raised out of the bearing points (B) of the pin extracting device. To ensure that the groove of the clamshell (9) can be latched into the axle stirrup (8), the mobile cylinder must be held at an angle. Now the mobile cylinder must be extended until the support elements (10) can be put back on to the bearing points (B) of the pin extractor. Set down mobile cylinder on to the bearing points (B) of the pin extractor



(II)

6. By operating the control lever of the mobile cylinder (61) **accordingly**, retract cylinder rods completely thereby extracting the boom foot pin (1).

7. Fit retaining rope (14) **between the pin extracting device and the boom foot pin (1) (on the axle stirrup (8))**.

(III)

8. Move mobile cylinder (61) **on to the outer bearing points (A)** of the pin extractor. To do so extend the mobile cylinder until the support elements (10) **fit on to the bearing points (A)**. The changed length lifts the mobile cylinder diagonally out of the pin extractor. The groove of the clamshell (9) **thereby remains** attached to the axle holder (8).

(IV)

9. Retract the cylinder rods completely by operating the control lever on the mobile cylinder (61) **accordingly thereby further** extracting the boom foot pin (1).

(IV)

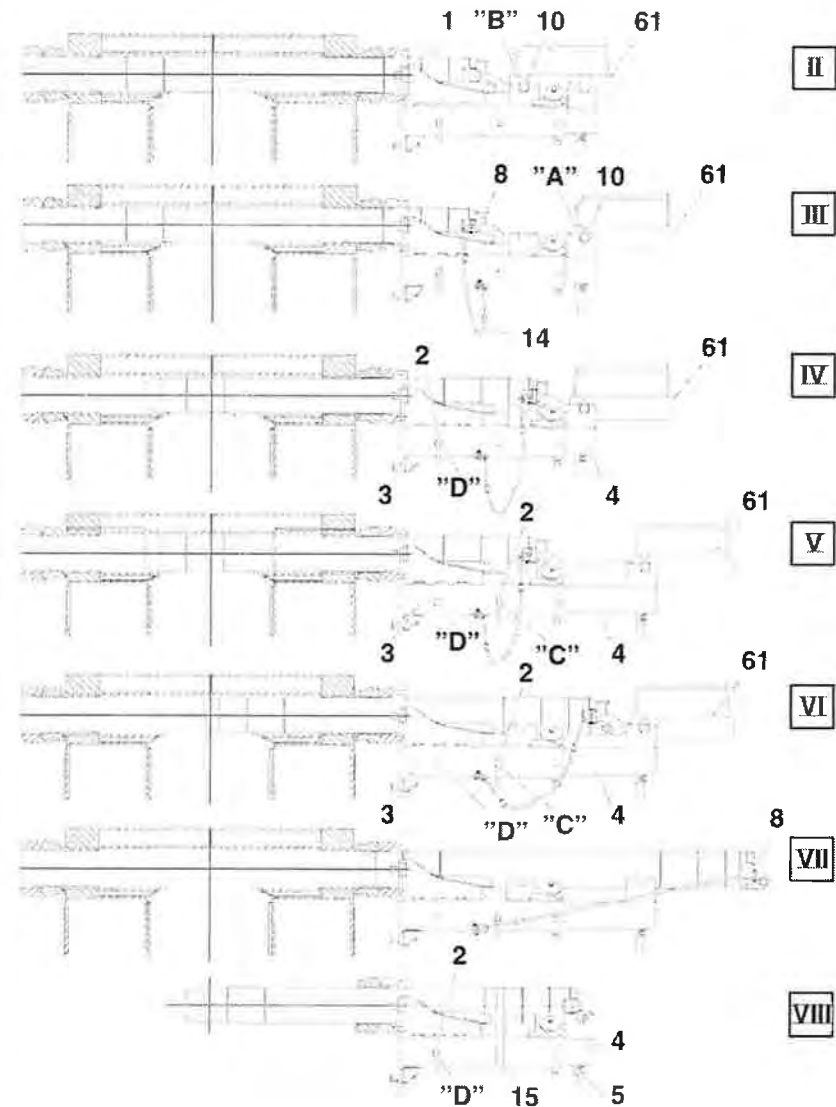
10. The connecting pin (2) that is **between the fixed part (3) and the extractable part (4) of the pin extractor is now pulled out** of the locking point (D) **and set down**.

(V)

11. By operating the control lever on the mobile cylinder (61) **accordingly**, extend cylinder rod, thereby extending the extractable part (4) **of the dismantling device until the connecting pin (2) can be connected to the locking point (C)**. Insert connecting pin (2) in pinning point (C). To do so, the extractable part (4) of the pin extractor might have to be raised a little.

(VI)

12. Retract the cylinder rods completely by operating the control lever on the mobile cylinder (61) **accordingly thereby further** extracting the boom foot pin (1).



13. Switch off superstructure engine and disconnect hydraulic hoses from mobile cylinder. Remove the mobile cylinder.

(VII)

14. Fit retaining rope (14) between the pin extracting device and the boom foot pin (1) (on the axle stirrup (8)).

Push the basic bolt manually over the guide rollers until the retaining rope is tensioned. The basic bolt is then lying on the pin extracting device and in the hole of the superstructure frame. The main boom can now be lifted out.

Danger of tipping

If the guide rope is not seated in the pin extracting device and the basic bolt, the basic bolt can slip backwards out of the pin extracting device.

15. Use the auxiliary crane to move main boom vertically out of the bearings of the main boom base and of the luffing cylinder and if required set it down on the transport vehicle.

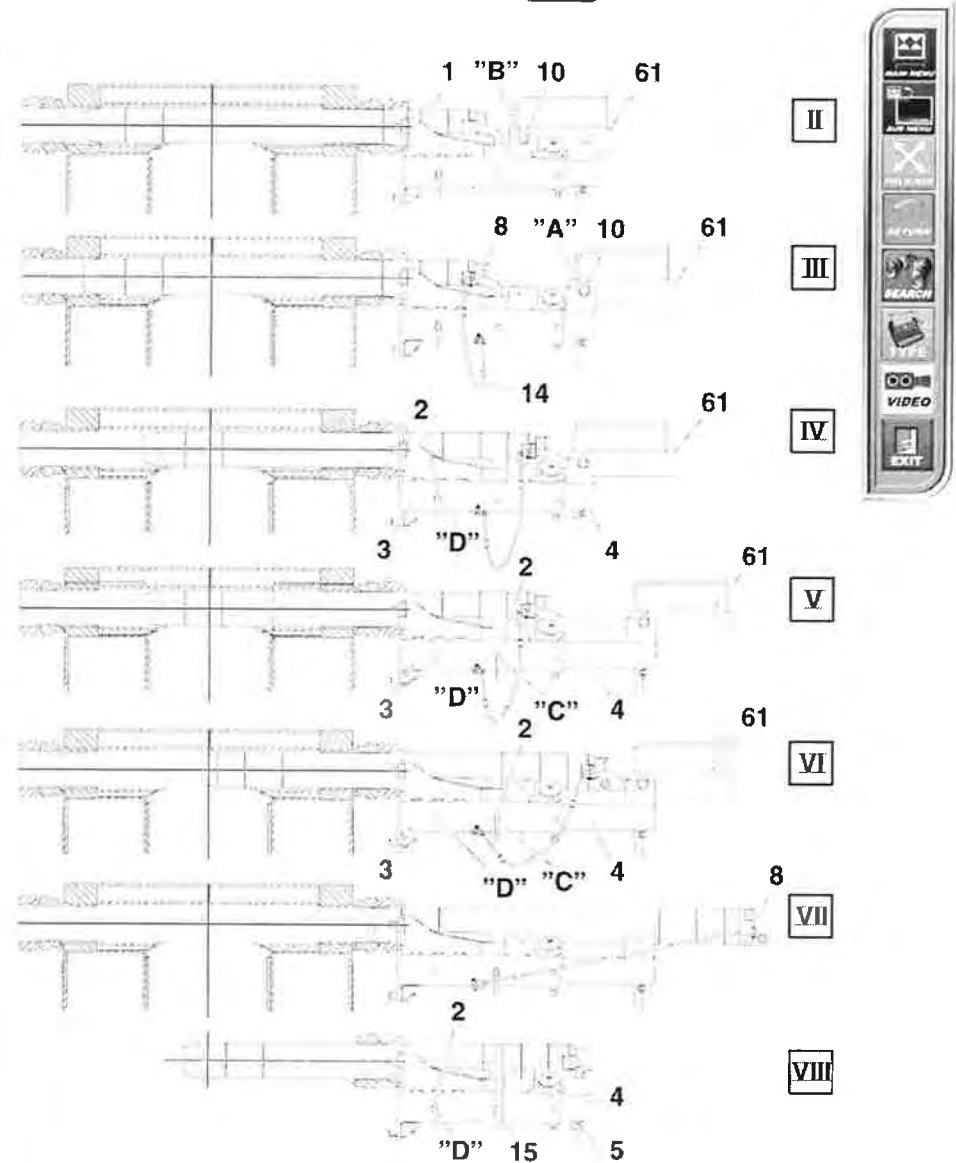
Risk of crushing!

When the main boom is raised there is the danger of being

crushed between the main boom and the superstructure frame or between the main boom and the rack on the ground or the rack of the transport vehicle.

Make sure that tilting of the main boom on the bearing points is avoided.

16. Remove lifting gear from main boom.



17. Bring boom foot pin in transport condition. To do so insert extractable part (4) of the dismantling device and fix connecting pin (2) to the locking point (D).

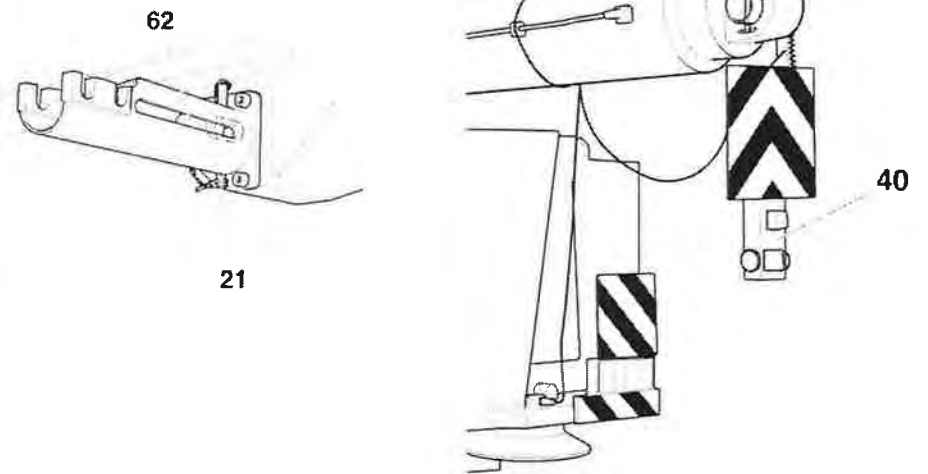
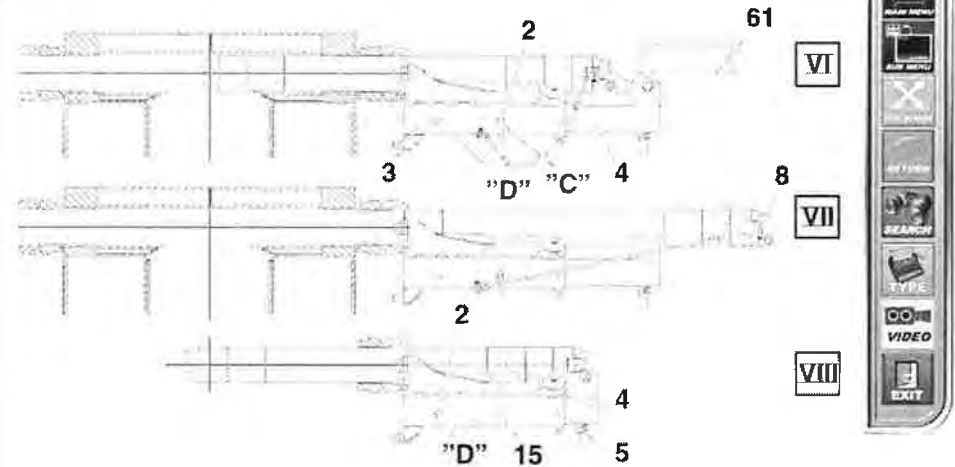
To do so the extractable part (4) of the pin extractor might have to be raised a little. Push boom foot pin by hand into the superstructure frame until the locking pin (5) can be inserted and secured.

Lash boom foot pin together with the dismantling device with lashing strap (15).

18. Bring luffing cylinder head pin in transport condition. To do so reinsert luffing cylinder head pin (62) completely. Fix pin (21) vertically.

19. Insert warning light (40) in the luffing cylinder head hole and secure. Plug in the electric supply lead on the rear of the vehicle in the corresponding socket.

To prevent the electric supply lead of the warning light being destroyed, it must be fastened to the luffing cylinder so that it does not fall onto the road surface.



Assembly of the Main Boom

The assembly of the main boom is done in the same way but in the opposite sequence as dismantling.

Make sure that:

- main boom base and luffing cylinder set up on their bearing correctly.
- the electric connections and hydraulic connections **B1, ST, P, L, T and B2** of the main boom are connected properly at the rear of the superstructure frame (plug and plug connections with the same designation, the hydraulic couplings must open correctly).

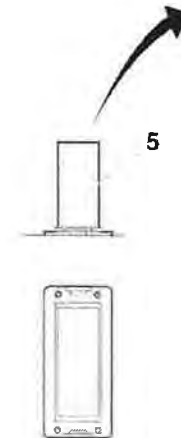
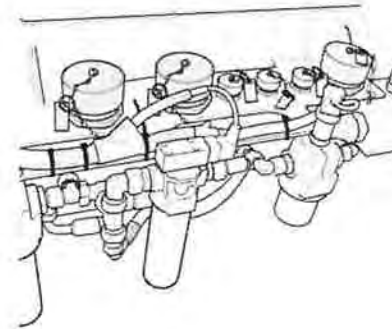
The diagram shows the connections on the superstructure frame with hydraulic hoses not connected to the main boom.

The mobile cylinder is used again for pushing in the bolts.

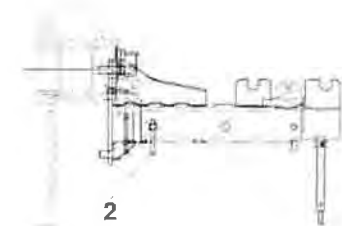
As soon as the main boom is assembled, the unloaded rocker cylinder frame (5) must be removed again and transported separately.

After reattaching of the main boom foot pin and the connecting pin main boom/luffing cylinder these pins must be secured unconditionally, (bottom left figure) shows the fixed locking pin (21) of the luffing cylinder head pin. Bottom right figure shows the axle stirrup bolted on the boom foot pin (6) with mounted lock nut (7).

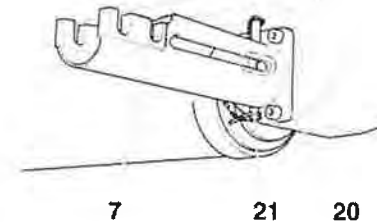
B1 ST P L T B2



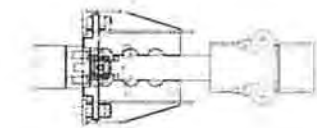
"D"



6 7 8



7 21 20



NOTES;

