

## **7 Rescue, towing, lashing, lifting by crane**

### **7.1 Rescue, towing, lashing**

#### **7.1.1 Rescue/towing of the articulated loader if the engine or drive has failed**

##### **CAUTION**

The articulated loader must not be tow-started. Any attempt to tow-start leads to damage.



##### **DANGER**

Secure the rescue location if it is on a public road.



##### **NOTE**

- Towing is only permitted to clear the area of use or a street.
- Preparation for towing depends on whether the engine has failed, thus causing a failure of the entire hydraulic system, or if only the drive has failed and the engine can drive the rest of the hydraulic system.



### 7.1.1.1 Towing the articulated loader if the engine has failed

- (1) Press the toggle switch for the hazard flasher (4-13/10).
- (2) Set the drive switch (4-12/6) to position "0".
- (3) Apply the parking brake (4-12/3).



#### CAUTION

If the rescue location is on a slope, wheel chocks must be placed on the sloping side of both front axle wheels in addition to applying the parking brake.



#### NOTE

The preparations described in steps (4) and (5) are only necessary if the rescue location is **not** on a public road:

- (4) Cover the bucket cutting edge and teeth with the bucket protector (5-2/arrow).
- (5) Insert the plug of the bucket protector into the socket (5-3/arrow).
- (6) Push the valve lever for the working hydraulics (4-12/5) beyond its pressure point into the forward position.
- (7) Using a suitable lifting device, e.g. a second articulated loader with an attached bucket, lift the bucket arm of the articulated loader to be towed until the bucket arm support can be inserted into the loader to be towed (7-1).

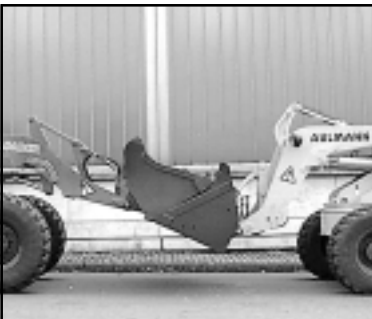


Figure 7-1

- (8) Insert the bucket arm support (1-1/arrow) and lower the bucket arm onto the bucket arm support.
- (9) Close the ball block valve (1-3/arrow) for the working and auxiliary hydraulics.
- (10) Attach the tow-bar to the loader to be towed (7-2/2) and to the towing vehicle.
- (11) Release the parking brake lever (4-12/3).
- (12) Release the brake. To do so, remove both screw plugs (7-3/1 and 7-3/2) from the housing (size 24).

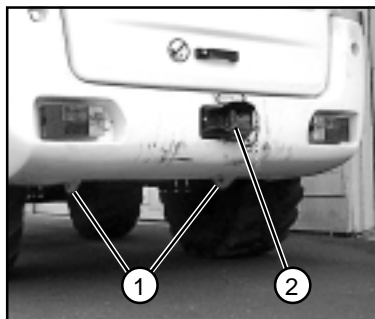


Figure 7-2

### NOTE

- The tools required are contained in the tool kit.
- Screw plug 7-3/2 has already been removed.
- Collect any oil that escapes.

- (13) Remove the sleeves (7-3/2 and 7-4/2) from the setscrews.
- (14) Tighten the lock nuts (7-4/3) (size 19).

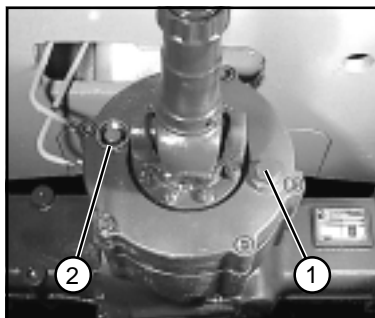


Figure 7-3

### CAUTION

The lock nuts must be tightened synchronously, i.e. tightening must be carried out in steps of half a revolution that are repeated synchronously for the two nuts to prevent the piston from getting jammed.

- (15) Push the sleeves (7-3/2 and 7-4/2) onto the setscrews again.
- (16) Screw in the screw plugs with an O-ring into the housing.

### CAUTION

After towing has been completed, restore the operating state of the brake.

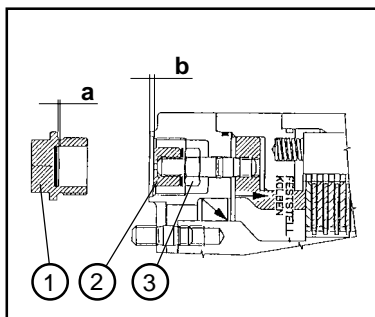


Figure 7-4

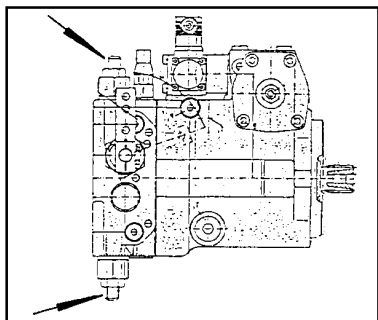


Figure 7-5

(17) Switch the hydrostatic drive motor to free oil flow before towing. For this purpose, screw in the set-screws at both high pressure relief valves (7-5/arrows) of the drive pump until they are level with the hexagon nuts (size 13) loosened beforehand. Then tighten the hexagon nuts.

## NOTE

After towing has been completed, loosen the hexagon nuts again. Screw the setscrews out of both high pressure relief valves until they stop. Tighten the lock nuts.

(18) Remove the chocks (if applicable).



## DANGER

- More power is required to steer if the engine has failed.
- Tow the loader at walking speed (2 km/h).
- The towing distance should not exceed 1 km.
- For a longer distance, the defective loader must be loaded onto a truck (for the lashing points, see 7-2/1, 7-2/2 and 7-6/1).
- The max. permissible load of the shunting and towing coupling (7-2/2) is 4.5 t horizontally in the longitudinal direction.
- The max. permissible load of the lashing points/load-bearing points (7-2/1 and 7-6/1) is 2.0 t at an assumed bracing angle of 45°.

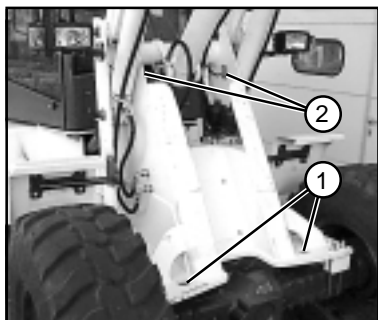


Figure 7-6

## NOTE

- If the failure has occurred some time ago, the hydraulic hoses (7-7/arrows) must be disconnected from the lifting cylinders before the lifting gear is attached. Collect the hydraulic oil that escapes in a drain pan of sufficient size.
- After towing has been completed, fill the lifting cylinders with hydraulic oil and deaerate them by raising and lowering the bucket arm several times.

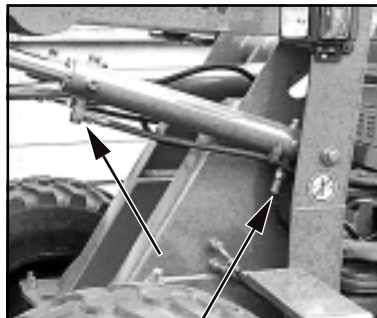


Figure 7-7

### 7.1.1.2 Towing the articulated loader if the drive has failed

- (1) Press the toggle switch for the hazard flasher (4-13/10).
- (2) Set the drive switch (4-12/6) to position "0".
- (3) Apply the parking brake (4-12/3).

## CAUTION

If the rescue location is on a slope, wheel chocks must be placed on the sloping side of both front axle wheels in addition to applying the parking brake.



## NOTE

The preparations described in steps (4) and (5) are only to be carried out if the rescue location is **not** on a public road:



- (4) Cover the bucket cutting edge and teeth with the bucket protector (5-2/arrow).

(5) Insert the plug of the bucket protector into the socket (5-3/arrow).

(6) Lift the bucket arm, insert the bucket support (1-1/arrow) and lower the bucket arm onto the bucket arm support by actuating the hand lever for the working hydraulics (4-12/5).

(7) Close the ball block valve (1-3/arrow) for the working and auxiliary hydraulics.

(8) Attach the tow-bar to the loader to be towed (7-2/2) and to the towing vehicle.

(9) Switch the hydrostatic drive motor to free oil flow before towing. For this purpose, screw in the setscrews at both high pressure relief valves (7-5/arrows) of the drive pump until they are level with the hexagon nuts (size 13) loosened beforehand. Then tighten the hexagon nuts.



#### NOTE

After towing has been completed, loosen the hexagon nuts again. Screw the setscrews out of both high pressure relief valves until they stop. Then tighten the hexagon nuts.

(10) Remove the chocks (if applicable).

(11) Release the parking brake (4-12/3).



#### DANGER

- With the engine running, tow the loader at walking speed (2 km/h).
- The towing distance should not exceed 1 km.
- For a longer distance, the defective loader must be loaded onto a truck (for the lashing points, see 7-2/1, 7-2/2 and 7-6/1).

- The max. permissible load of the shunting and towing coupling (7-2/2) is 4.5 t horizontally in the longitudinal direction.
- The max. permissible load of the lashing points/load-bearing points (7-2/1 and 7-6/1) is 2.0 t at an assumed bracing angle of 45°.

## **7.2 Lifting by crane**

The loader to be lifted must be prepared as follows:

- (1) Set the drive switch (4-12/6) to position "0".
- (2) Set transmission stage "I" (4-13/13) (only for fast loaders - » 30 km/h «).
- (3) Set hydraulic drive stage "I" (4-12/7).
- (4) Apply the parking brake (4-12/3).
- (5) Lift or lower the bucket arm until the lowest point of the bucket arm or of the bucket is at least 30 cm above the road (5-2).
- (6) Close the ball block valve for the working and auxiliary hydraulics (1-3/arrow).
- (7) Lock the doors.
- (8) Fold the outside mirror inwards.

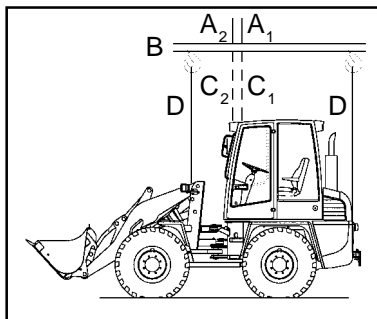


Figure 7-8

### CAUTION

The following items must be observed when lifting the loader by crane (Figure 7-8):

- The lifting point (A<sub>1</sub> - loader without standard bucket or A<sub>2</sub> - loader with standard bucket) of the lifting device (B) must be precisely vertically over the centre of gravity (C<sub>1</sub> or C<sub>2</sub>) of the loader so that the lifting device is **horizontally** above the longitudinal axis of the loader.
- The lifting gear (D) must lead vertically upwards from the lifting points of the loader (7-9/arrows and 7-10/arrows).

### DANGER

The lifting gear must have a lifting capacity of at least 3.0 t.

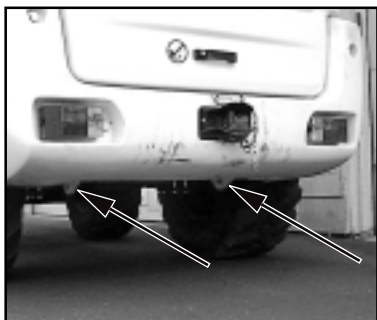


Figure 7-9



Figure 7-10