

# Operation

## 5 Operation

### 5.1 Checks before start-up

- Engine oil level (see Engine Operating Instructions)
- Brake fluid level
- Hydraulic oil level
- Tire pressure
- Profile depth
- Battery fluid level
- Lighting system
- Seat position
- Swivel mechanism blocking device, remove if necessary  
»only if work is to be commenced«
- Bucket arm support (1-1/arrow); remove if unnecessary
- Open ball block valve for working and auxiliary hydraulics  
if necessary » only if work is about to begin «
- General status of loader, e.g. leaks
- Check that
  - a first aid kit
  - a warning triangle
  - a warning flashlight
 are available.

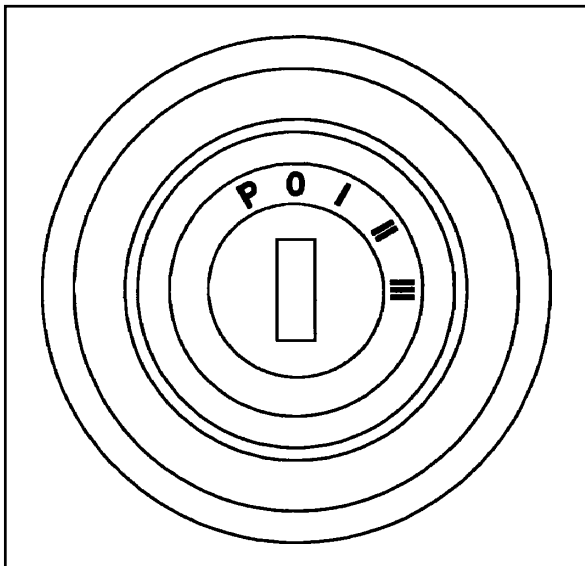


Figure 5-1

### 5.2 Starting up

#### 5.2.1 Starting the diesel engine

- (1) Pull the lever for the parking brake (4-10/8).
- (2) Set the drive switch (4-10/3) to position "0" (starter interlock!).
- (3) Insert the ignition key into the starter switch (4-11/19) and turn the key clockwise to the position "I" (5-1).

#### NOTE

- The control lamp for battery charging, the parking brake indicator lamp and the engine oil pressure lamp light up. The fuel gauge, the engine oil temperature gauge and the operating hour meter function.
- Start the engine in the neutral position.

- (4) Turn the ignition key clockwise to position "III". As soon as the engine starts, release the ignition key.



#### NOTE

- If the engine has not started after two attempts, determine the cause using the malfunction table in the Engine Operating Instructions (section 7.1).
- For operation at extremely low temperatures, see the Engine Operating Instructions.
- The clogging indicator (4-11/23) may light up prematurely after a cold start. It will go out when the hydraulic oil warms up. Operate the loader at a **low** speed until the indicator lamp (4-11/23) goes out. Never subject the loader to full loads in this state.

## 5.2.2 Winter operation

### CAUTION

If the outside temperature is below 0 °C, the machine must be properly "warmed up" to avoid damage to certain assemblies. To do so, actuate all cylinders (lifting, tipping and swivelling cylinders) for some time (depending on the ambient temperature) with the machine idling.



Proper operation of the machine can only be guaranteed even for subzero temperatures if the following measures have been taken:

### 5.2.2.1 Fuel

At low temperatures, paraffin precipitating from the fuel can cause the fuel system to clog up.

For this reason, always use winter diesel fuel (suitable for temperatures down to -15 °C) when the outside temperature is below 0 °C.

### NOTE

The fuelling stations normally start offering winter diesel fuel in good time before the cold season starts. Often, they offer diesel fuel that can be used down to temperatures of -20 °C (super-grade diesel fuel).

If the temperature is below -15 °C or -20 °C, paraffin oil must be added to the diesel fuel. For the mixture ratio, refer to the diagram (5-2).

- I = Summer diesel fuel
- II = Winter diesel fuel
- III = Super-grade diesel fuel

### CAUTION

Only mix the ingredients in the tank! First, fill in the required amount of paraffin oil, then top up with diesel fuel.

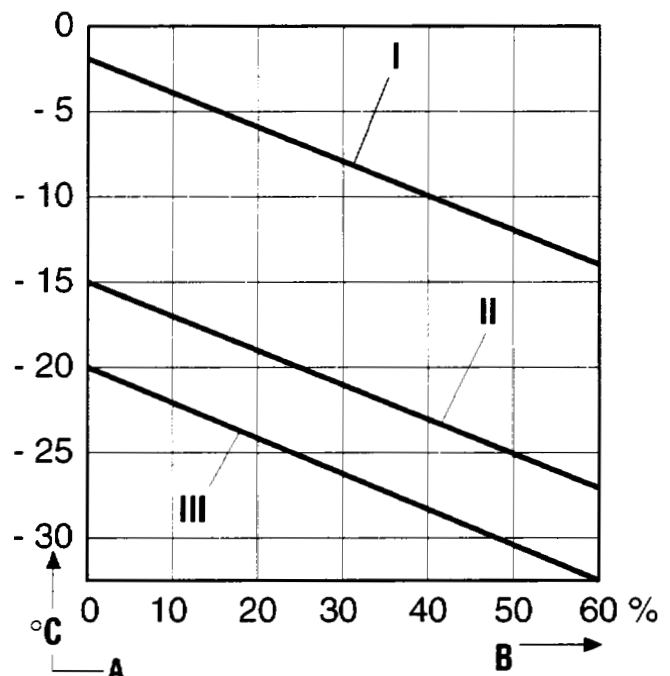


Figure 5-2

### 5.2.2.2 Engine oil change

See the operating instructions for the engine and the operating instructions for the machine (section 8.2.4).

### 5.2.2.3 Changing the oil in the hydraulic system

### CAUTION

The viscosity of the hydraulic oil changes according to the temperature; therefore, the ambient temperature in the place where the machine will be used determines what viscosity class (SAE class) must be chosen. If the hydraulic oil used matches the expected ambient temperature, optimum operating conditions can be attained. Therefore, use hydraulic oil of an appropriate grade if required.



See section 8.2.6 for the oil change procedure required for the hydraulic system.

### 5.2.2.4 Anti-freezing agent for the windshield washer system



#### CAUTION

If the temperature is expected to drop below 0 °C, add a sufficient amount of anti-freezing agent to the water in the windshield washer system (4-9/2) to prevent it from icing up.  
Heed the instructions provided by the manufacturer for the mixture ratio.

### 5.2.3 Driving the loader on public roads



#### CAUTION

- Driving on public roads is **only** permitted with a standard, multi-purpose or lightweight material bucket (1,0 m<sup>3</sup>) and **only** with bucket protection. The front-end excavator may also be transported if it has been lashed down in the bucket.
- The maximum permissible speed is 30 km/h with the driving light switched on. The driving light only serves to illuminate the road.
- The driving steps of the distributor transmission may only be selected when the loader is at a standstill and only if the travel direction switch (4-10/3) is set to "0" (only for fast loaders).

The driver of the loader must possess a valid driver's license.

The driver must carry his driving license (original) with him as well as the operating permit (original).

Before driving on public roads, the following safety measures for public road traffic are to be taken:

#### 5.2.3.1 Transporting a bucket

- (1) Lower the bucket arm until the lowest point of the bucket arm or the bucket is at least 30 cm above the road (5-3).
- (2) Close the ball block valve for the working and auxiliary hydraulics (1-2/arrow).

#### CAUTION

When closed, the hand levers for the ball block valves are perpendicular to the direction of flow. This prevents the bucket arm from being lowered and the bucket from tipping while driving.



Figure 5-3

(3) Block the swivel mechanism by inserting the blocking wedge (1-3/arrow) in the swivel blocking device (1-4/arrow) and secure it using the spring cotter pin.

(4) Cover the bucket cutting edge and teeth with the bucket protector (5-3/arrow).

(5) Insert the plug of the bucket protector into the socket (5-4/arrow).

(6) Check that the lighting system functions correctly.

(7) Close both doors.

(8) Switch the change-over lever of the steering system to "rear axle steering" (4-9/4).

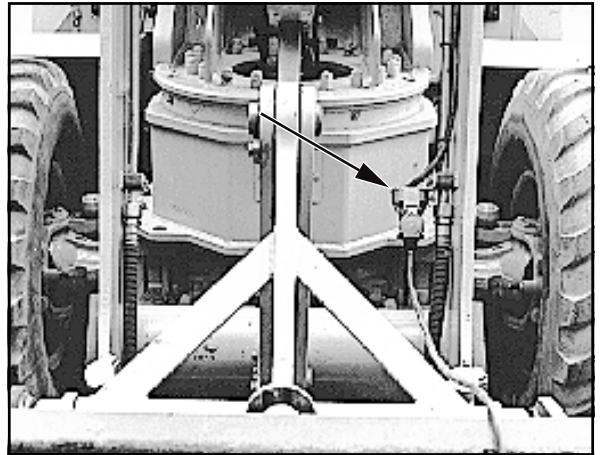


Figure 5-4

### DANGER

- Driving on public roads with the bucket filled is forbidden.
- The working lights must be switched off (4-11/1).

(9) Release the parking brake (4-10/8).

(10) Set the gear shift to "II" (4-11/13) - only for fast loaders.

### CAUTION

The driving steps of the distributor transmission may only be selected when the loader is at a standstill and only if the travel direction switch (4-10/3) is set to "0" (only for fast loaders).



(11) Preselect hydraulic travel speed II (4-10/1).

(12) Preselect the travel direction (4-10/3).

(13) Press the accelerator pedal (4-8/2).

### CAUTION

- The service brake is activated by depressing the brake pedal (4-8/3).
- Changing the travel direction during driving is **not** allowed to avoid any danger to other road users.



### 5.2.3.2 Transport of an excavator in the bucket

(1) Pick up the front-end excavator with totally closed backhoe as described in section 6.2.2.

(2) Swivel the sufficiently lifted bucket arm to the left till it stops.

(3) Swing the shaft of the front-end excavator (in or out) using the hand lever for additional hydraulics (4-9/5) until the markings (5-5/1) match.

(4) Swivel the bucket arm into the drive direction.

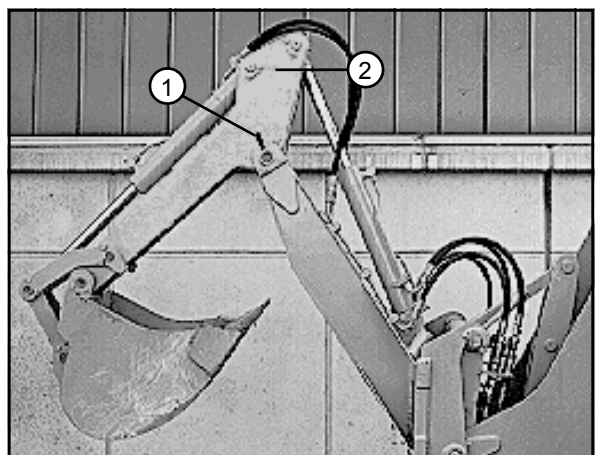


Figure 5-5

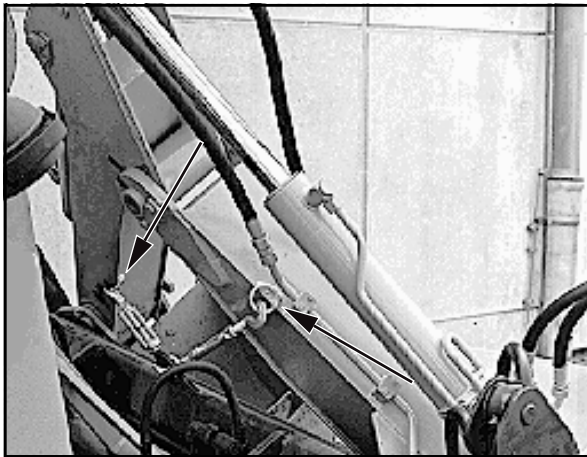


Figure 5-6

- (5) Put the front-end excavator on solid ground (see section 6.2.2).
- (6) Pick up the front-end excavator with suitable lifting gear (5-5/2) and put it into the bucket.
- (7) Use two turnbuckles to fasten the front-end excavator in the bucket (5-6/arrows).
- (8) Lift the bucket with the secured front-end excavator (see section 6.1.1 or 6.2.1). Tilt it until the excavator almost touches the shift lever of the loader (5-7/arrow).
- (9) Lower the bucket arm until the lowest point of the bucket arm or the bucket is at least 30 cm above the road (5-3).
- (10) Close the ball block valve for the working and auxiliary hydraulics (1-2/arrow).

### CAUTION

When closed, the hand levers for the ball block valves are perpendicular to the direction of flow. This prevents the bucket arm from being lowered and the bucket from tipping while driving.

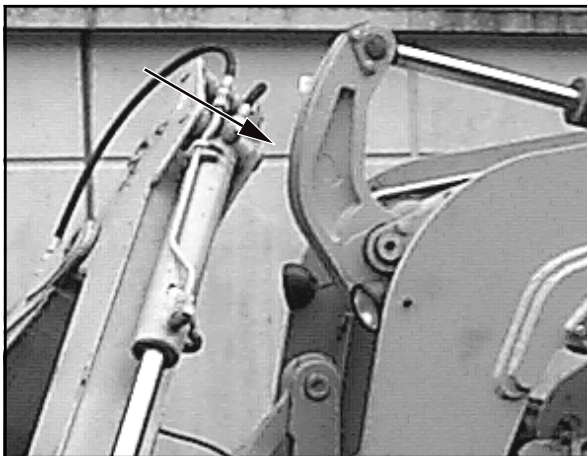


Figure 5-7

- (11) Block the swivel mechanism by inserting the blocking wedge (1-3/arrow) in the swivel blocking device (1-4/arrow) and secure it using the spring cotter pin.
- (12) Cover the bucket cutting edge and teeth with the bucket protector (5-3/arrow).
- (13) Insert the plug of the edge protector into the socket (5-4/arrow).
- (14) Check that the lighting system functions correctly.
- (15) Close both doors.
- (16) Switch the change-over lever of the steering system to "rear axle steering" (4-9/4).

### DANGER

Make sure to switch off the working lights (4-11/1).

- (17) Release the parking brake (4-10/8).
- (18) Set the gear shift to "II" (4-11/13) - only for fast loaders.

### CAUTION

The driving steps of the distributor transmission may only be selected when the loader is at a standstill and only if the travel direction switch (4-10/3) is set to "0" (only for fast loaders).

- (19) Preselect hydraulic travel speed II (4-10/1).
- (20) Preselect the travel direction (4-10/3).
- (21) Actuate the accelerator pedal (4-8/2).

### NOTE

The loader starts. The driving speed is determined by the position of the accelerator pedal.

### CAUTION

- The service brake is activated by depressing the brake pedal (4-8/3).
- Changing the driving direction during driving is **not** allowed to avoid any danger to other road users.



### 5.2.4 Working with the loader

Normally, all work is executed in hydraulic drive stage "II" (4-10/1) and a transmission step that matches the working conditions (4-11/13) (only for fast loaders).

#### CAUTION

The driving steps of the distributor transmission may only be selected when the loader is at a standstill and only if the travel direction switch (4-10/3) is set to "0" (only for fast loaders).



For special tasks which ask for a more sensitive control of the speed or a higher engine speed at reduced travel speed, hydraulic drive stage "I" (4-10/1) can be selected. The travel speed can thus be reduced to 6 km/h.

To attain full performance, the combined action of propulsion and of the hydraulic loader functions is necessary. It is up to the operator to control the available power using the accelerator, the inching function and the hand lever for the hydraulic loader functions.

#### NOTE

The hydraulic travel speed can be switched from I to II or vice versa while driving. However, switching from hydraulic travel speed II to I when driving at high speeds is not recommended since the loader is then braked very abruptly.



- (1) Close both doors.
- (2) Release the parking brake (4-10/8).
- (3) Preselect the gear travel speed (4-11/13) (only for fast loaders).
- (4) Preselect the hydraulic travel speed (4-10/1).
- (5) Select the desired travel direction (4-10/3).
- (6) Press the accelerator pedal (4-8/2).

#### NOTE

- The travel speed and the thrust force are altered exclusively by depressing the accelerator pedal.
- When driving up gradients, the travel speed decreases in spite of full throttle in favor of the thrust force.
- The thrust forces and travel speeds are the same in forward and reverse direction.







Figure 5-8

### CAUTION

- The hydraulic quick-change device must only be **locked** if an attachment has been mounted.
- If the control lamp for the hydraulic oil temperature (4-11/23) lights up during operation, the loader must be switched off immediately, the cause must be determined by a hydraulics expert and the malfunction must be eliminated.

### DANGER

If it is necessary during special types of work to drive with the bucket arm swiveled, the bucket or the attachment must be kept close above the wheel and the travel distance must be kept as short as possible. If because of rough terrain a wheel is raised off the ground by the stabilizer equipment, the bucket arm must be briefly swiveled in the direction of travel so that the axle lock is deactivated.



Figure 5-9

## 5.2.5 Heating and ventilation system

### 5.2.5.1 Adjusting the amount of air

- (1) Turn the rotary switch (5-8/arrow) for the blower to position 0, 1 or 2, depending on the amount of air desired.

- (2) Adjust the direction of the air flow by means of the lateral nozzles (5-9/arrow).



Figure 5-10

### 5.2.5.2 Switching on the heater

- (1) Depending on the heating requirement, turn the ball valve (5-10/arrow) into a vertical or horizontal position.

### NOTE

Lever vertical - warm.

Lever horizontal - cold.

- (2) Adjust the amount of air as described under 5.2.5.1.



### 5.3 Stopping loader operation

#### 5.3.1 Parking the loader

- (1) Stop the loader on solid ground; if possible, not on a slope.
- (2) Place the bucket or the front-mounted attachment on the ground.
- (3) Set the drive switch (4-10/3) to "0".
- (4) Apply the parking brake (4-10/8).

#### **DANGER**

If parking on a slope or gradient cannot be avoided, wheel chocks must be used and placed on the sloping side of the front axle wheels **in addition to** applying the parking brake.



#### 5.3.2 Switching off the engine

#### **CAUTION**

If the diesel engine is very hot, let the engine idle for a short time before switching it off.



Turn the ignition key to the left to the "0" position (5-1) and remove the key.

#### **NOTE**

In the "P" position, the parking light and the dashboard illumination remain switched on.



#### 5.3.3 Switching off the heating and ventilation system

- (1) Shut off the warm air supply (5-10/arrow).
- (2) Turn the rotary switch (5-8/arrow) to the "0" position.

#### 5.3.4 Leaving the loader

- (1) Secure the ball hand lever for the working and auxiliary hydraulics (1-2/arrow).
- (2) Remove the ignition key and lock the doors.

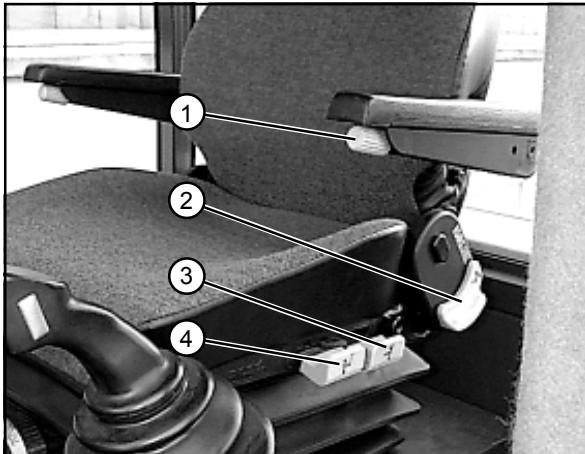


Figure 5-11

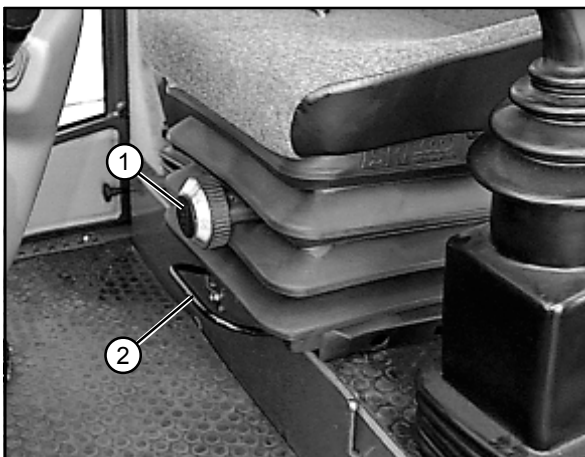


Figure 5-12

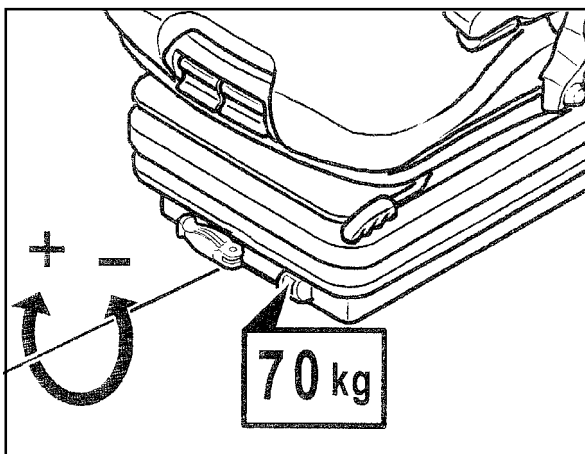


Figure 5-13

### 5.4 Adjusting the operator's seat

#### 5.4.1 Isri seat

(1) Adjust the inclination of the backrest or swing forward the back support using the hand lever (5-11/2).

(2) Adjust the rear seat height and tilt by lifting the hand lever (5-11/3).

(3) Adjust the front seat height and tilt by lifting the hand lever (5-11/4).

(4) The seat suspension may be adjusted to the driver's weight (40 ... 130 kg) using the hand wheel (5-12/1).

(5) Adjust the height of the arm rest by turning the knob (5-11/1).

(6) If necessary, readjust the position of the valve levers for the working hydraulics (4-10/9) and the auxiliary hydraulics (4-9/6).

(7) The operator's seat may be adjusted in the horizontal direction to suit the driver's requirements by lifting the handle (5-12/2) and moving the seat forward or backward.

#### 5.4.2 Grammer seat

##### (1) Weight adjustment:

Adjust the seat to the driver's weight by actuating the weight adjustment lever. The set driver's weight is visible in the inspection window (5-13).

### (2) Height adjustment:

The height can be adjusted in several steps. Lift the driver's seat to the desired height until it can be heard to engage. The seat returns to the lowest position when it is lifted over the topmost position (stop) (5-14).

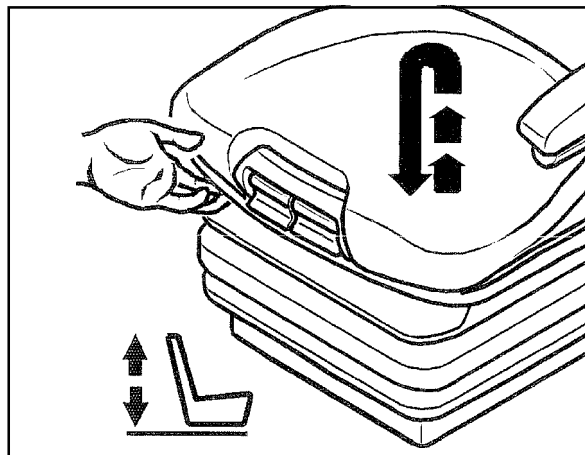


Figure 5-14

### (3) Armrest inclination:

Turn the handwheel (5-15/arrow) to adjust the armrest in longitudinal direction.

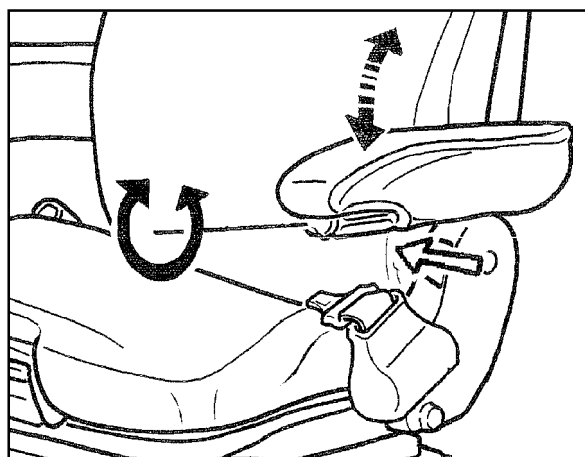


Figure 5-15

### (4) Armrests:

If desired, you can swing the armrests to the rear and adjust their height.

To adjust the armrest height, remove the round cap (5-16/ arrow) in the covering.

Loosen the hex nut (wrench size 13 mm), set the armrest as desired and tighten the nut again. Push the removed cap onto the nut again.

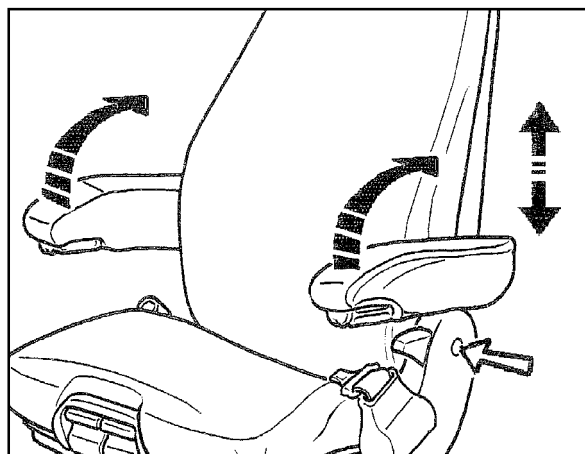


Figure 5-16

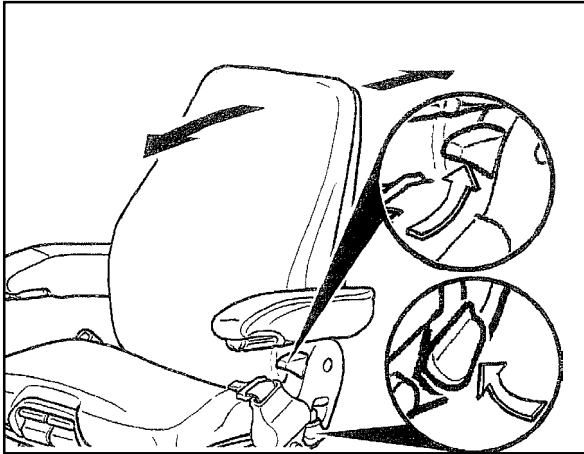


Figure 5-17

### (5) Adjusting the backrest:

Use the locking lever (5-17/arrow) to adjust the backrest.

#### NOTE

The locking lever must engage in the desired position. It must be impossible to move the backrest to another position when the lever has engaged.

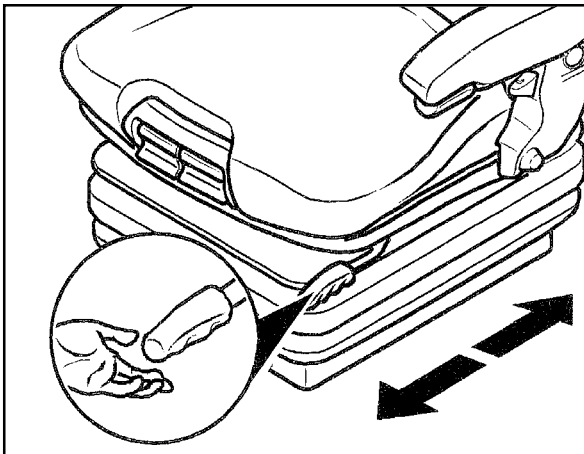


Figure 5-18

### (6) Longitudinal adjustment:

You can adjust the seat in longitudinal direction when you pull the lever (5-18) upwards.

#### NOTE

The locking lever must engage in the desired position. It must be impossible to move the driver's seat to another position when the lever has engaged.

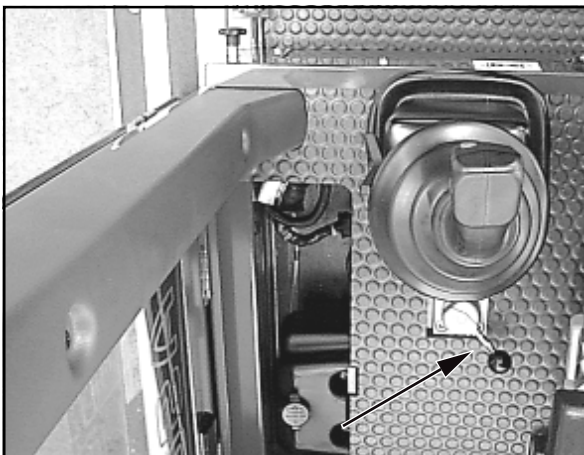


Figure 5-19

## 5.5 Changing the steering

### CAUTION

- The wheels of the rear axle must be straight before operating the change-over switch (5-19/arrow).
- The steering may only be changed when the **machine is stationary**. For changing the steering, move the hand lever forward (rear-axle steering) or backward (four-wheel steering).