

## **Description**

### 4 Description

#### 4.1 Overview

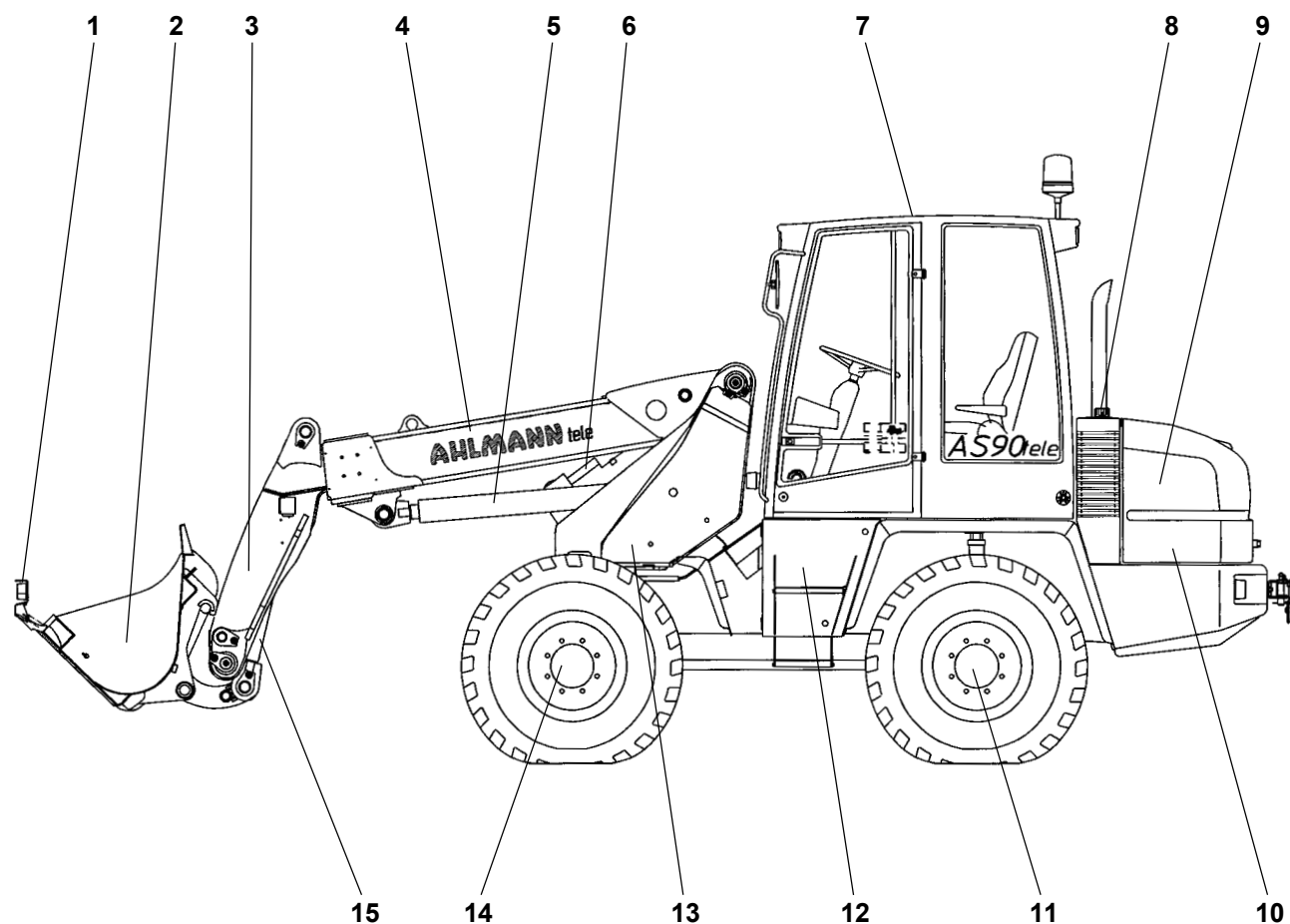


Figure 4-1

- 1 - Bucket protection
- 2 - Bucket/attachment
- 3 - Telescope head
- 4 - Telescope arm
- 5 - Lift cylinder
- 6 - Compensation cylinder
- 7 - Driver's cab
- 8 - Hydraulic oil reservoir / filler neck
- 9 - Drive motor
- 10 - Battery compartment (right loader side)
- 11 - Rear axle
- 12 - Tool box
- 13 - Revolving seat
- 14 - Front axle
- 15 - Tip cylinder
- 16 - Fuel tank, steps at right loader side (not shown)

## 4.2 Loader

### 4.2.1 Undercarriage

The axial piston pump for the hydraulic drive is driven by the diesel engine. Pressure hoses for extremely high pressure connect the axial piston pump with the axial piston engine. The axial piston motor is flanged to the axle distribution gear. The torque of the axial piston engine is transmitted by the cardan shaft to the front and rear axles, both with planetary gears.

#### CAUTION

The maximum speed of the axial piston engine is governed by settings made at the factory. Any adjustment will render the warranty invalid.



The front axle is equipped with a self-locking differential (locking value 45%).

The series rear axle comes without self-locking differential. A self-locking differential (locking value 45%) is special equipment.

### 4.2.2 Tyres

The following tyres are permitted:

16/70 - 20  
400/70 - 20  
405/70 R 20

All four tyres are of equal size. For the running direction, if applicable, see Fig. 4-2.

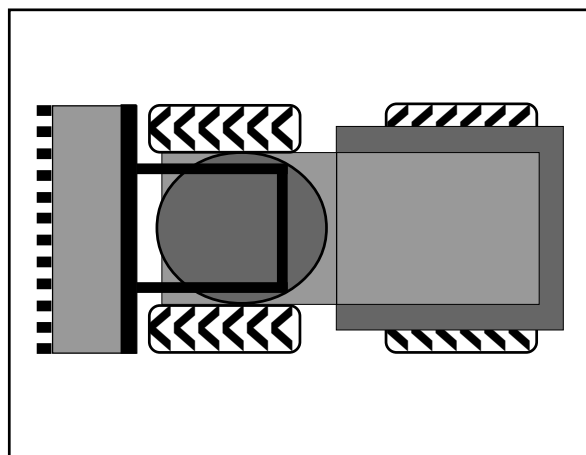


Figure 4-2

### 4.2.3 Steering system

The power for the hydrostatic steering system is supplied via a priority valve from a gear-type pump. With a minimum of effort on the steering wheel, the oil flow is directed by a steering unit into the steering cylinder.

Four-wheel and rear-wheel steering can be selected by way of a toggle valve.

#### Emergency steering

The hydrostatic steering system can also be used in a limited way if the diesel engine fails. The loader can be steered using a considerable amount of manual effort.

#### NOTE

See chapter 7, "Towing the loader".



### 4.2.4 Brake system

#### Service brake/ inching

The service brake is operated via a double pedal (4-8/3). It is a fully hydraulic wet lamella brake in the front axle. When stepping on the pedal, an inching leverage releases the drive pump pilot pressure into the tank and then builds up the hydraulic pressure in the main brake cylinder. The hydrostatic drive consequently supports the service brake. As a rule, the accelerator is used for accelerating and decelerating during operation. The continuously adjustable inching function is required if a high lifting speed (high diesel engine speed) is required at low driving speeds (inching).

#### Parking brake

The loader features a manually operated parking brake. The parking brake is operated with a hand lever (4-10/4) located to the right of the driver's seat that acts on the wet lamella brake in the front axle via a Bowden cable. The control lamp (4-11/27) lights up when the parking brake is applied, and the drive motor is electrically switched off.

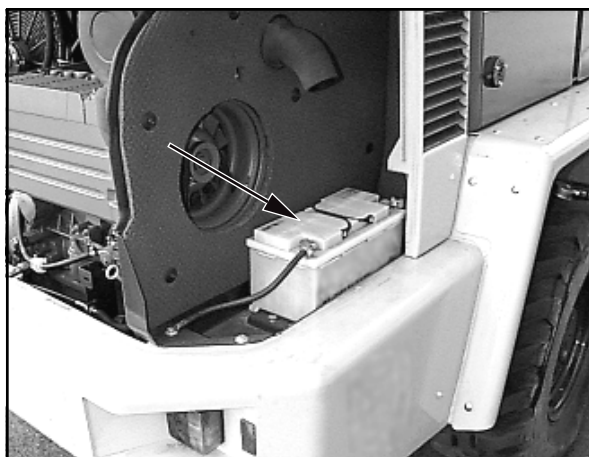


Figure 4-3

### 4.2.5 Battery

The battery compartment contains a maintenance-free battery (4-3/arrow) according to DIN with an increased cold start performance. The battery is to be kept clean and dry. Lightly grease the terminals with acid-free and acid-resistant grease.

#### CAUTION

Electric welding operations may only be performed if the battery main switch (4-10/7) has been pulled out.

### 4.2.6 Fuel supply system

The fuel tank is located on the right frame side bar. An electrical fuel gauge (4-11/7) in the operator's cabin monitors the fuel level in the tank. The filler neck (4-4/arrow) is located on the right side in the cabin access area.



Figure 4-4

### 4.2.7 Air filter device

Dry air filter device with safety cartridge and dust discharge valve.

### 4.2.8 Lift, tip and telescoping devices

Via a servo valve a double-acting gear-type pump drives

- one lift cylinder
- one tip cylinder
- a telescope cylinder (a compensation cylinder)

All movements of the telescope arm, the telescope, the bucket, the attachments and the quick-change device are controlled from the operator's seat by pilot valves. These pilot valves provide continuous speed control from "slow" to "fast".

#### **4.2.9 Swivel unit and axle support**

Two single-acting swivel cylinders are fed by a separate gear-type pump via a servo valve. The revolving seat is connected to the cylinders by a chain drive and is thus completely free of play. Swivelling can be carried out simultaneously with lifting of the bucket arm without mutual interference.

The telescope arm's swivelling radius is 90° to the right or to the left.

If the telescope arm is swivelled more than approx. 30°, the axle support system is automatically activated. The load-side support cylinder that affects the rear axle is subjected to hydraulic pressure by the force of the load via the support valve, counteracting the swivelled load.

#### **NOTE**

The axle support is deactivated when swivelling back.



#### **4.2.10 Floating position**

The loader is equipped with a floating position function that allows work such as levelling (grading) on uneven ground to be performed. It is activated by moving the hand lever for working hydraulics (4-10/9) beyond its pressure point to the frontmost position. The hand lever remains in this position until it is pulled back.

#### **DANGER**

The floating position may only be activated when the telescope arm is in the lowermost position.



#### **4.2.11 Lifting device suspension**

(option)

When the loader must be driven over larger distances, especially with a loaded bucket, the lifting device suspension (4-11/15) should be activated to avoid resonant motion. This becomes even more important with increasing unevenness of the terrain and increasing speed of the loader.

#### **4.2.12 Pipe break safety device**

(option)

A pipe break safety valve is installed underneath each lift and tip cylinder. In the event of a pipe or hose break in the lift and/or tip system, the movements of the telescope arm and the tipping rod are blocked until the damage is repaired.

### 4.2.13 Swivel restriction

(option)

The loader is equipped with a swivel restriction that prevents swivelling by more than 30° to the left and right while the telescope is extended. This swivel restriction can be enabled or disabled with a toggle switch in the dashboard (4-11/14).

#### 1. With swivel restriction enabled:

- Swivelling by 90° to the left and right is possible while the telescope is retracted.
- When the telescope arm is swivelled by more than 30° to the left or right, the telescope can be extended only if the swivel restriction is disabled.
- Swivelling by 30° to the left and right is possible while the telescope is extended.

#### 2. With swivel restriction disabled:

- Swivelling by 90° to the left and right is possible for all telescope positions.
- When the telescope is extended and the telescope arm is swivelled by more than 30° to the left or right and the swivel restriction is enabled in this position, only safe working movements are possible.
  - Retract telescope and
  - swivel to a straight forward position.



### DANGER

Disable the swivel restriction for light levelling work only.

### 4.2.14 Load indicator

(option)

The load indicator (4-5) continuously informs the driver of the current load state of the telescope loader.

#### Function check:

When turned on, the unit automatically performs a self test.

Correct function: All LEDs light up briefly, and a continuous beep is heard.

### CAUTION

The loader must not be operated until the load indicator is fully operable if errors are found during the function check.

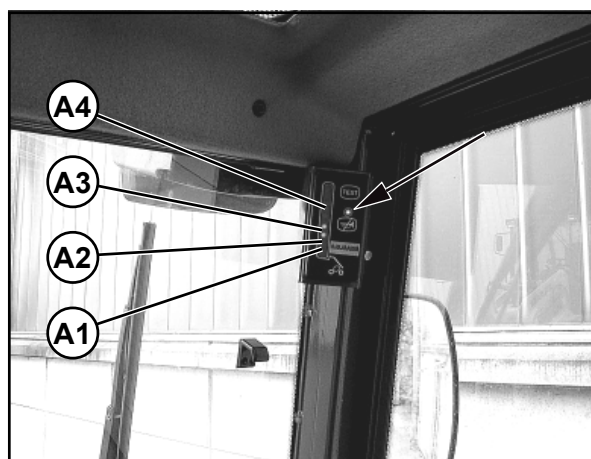


Figure 4-5

#### Visual/acoustic load indicator

- **4 green LEDs (4-5/A1)**  
The telescope loader operates safely.
- **2 yellow LEDs (4-5/A2)**  
The telescope loader is near its maximum permissible capacity.
- **1 red LED (4-5/A2)**  
The telescope loader has reached its maximum permissible capacity. At the same time, a warning beep is heard (can be disabled: 4-5/arrow). The warning beep is enabled only when the unit is turned off and on again.

### - 1 red LED (4-5/A4)

The telescope loader has exceeded its maximum permissible capacity. At the same time, a warning beep is heard (can be disabled: 4-5/arrow). The warning beep is enabled only when the unit is turned off and on again. To perform safe hydraulic movements only: retract telescope and move swivel unit to a straight forward position.

### 4.2.15 Overload cut-off

(option)

Use the switch (4-6/1) to enable or disable the overload cut-off.

#### - Switch to position "B"

Overload cut-off is disabled. Only the visual/acoustic load indicator is in operation and indicates the load state.

#### - Switch to position "A"

Overload cut-off is enabled. When LED » A4 « is lit, the working hydraulics is automatically cut-off (except for during retracting).

The telescope loader can be returned to the safe range by retracting the telescope cylinder (4-10/10); the working hydraulics is then fully operable again.

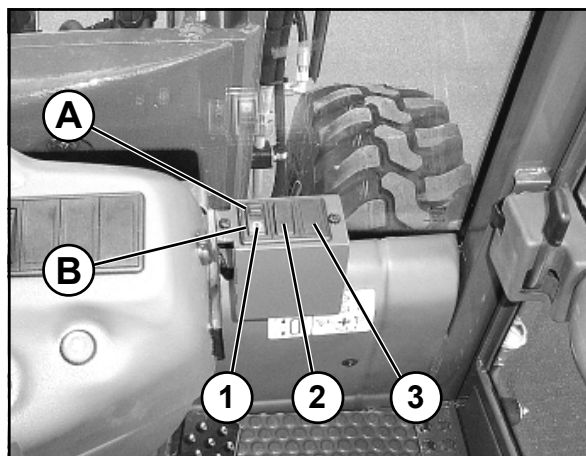


Figure 4-6

### NOTE

- The swivel restriction (4-11/14) can be disabled while the overload cut-off is enabled.
- With the swivel restriction disabled, swivelling is possible by 90° to the left and to the right, and the telescope can be retracted and extended in any swivel position.



### NOTE

Controls (toggle switches/pushbuttons) in Fig. 4-6:

- Item 1 Overload cut-off (option)
- Item 2 Dump interlock (option)
- Item 3 free



### 4.2.16 Equipment

#### Driver's cabin

Standard ROPS design with ECC conformity certificate. Comfortable entry and exit from both sides, good all-round vision, lockable doors, sun visor, front and rear windshield wipers/washers, rear window heater, multi-speed heating/ventilation system and fresh air filter. A protection against dropping objects (FOPS) is available as option.

#### Driver's seat

The driver's seat has a hydraulic suspension and is provided with weight compensation. Horizontal and seat height positioning as well as for backrest and seat inclination permit optimum individual adaptation. The seat belt, the fold-up arm rests and the ergonomically formed seat and back rest assure a safe and comfortable seat position.



Figure 4-7

### 4.3 Wheel change

- (1) Park the loader on a hard surface.
- (2) Set the drive switch (4-10/12) to "0".
- (3) Apply the parking brake (4-10/4).

#### (4) When changing a wheel on the front axle:

- Lift and mechanically prop up the telescope arm [e.g. by inserting the telescope arm support (option) (1-1/arrow)] and lower the telescope arm until it rests on the telescope arm support.
- Block the swivel unit. To do this, remove the blocking wedge (1-3/arrow) from the holder, insert it into the swivel block (1-4/arrow) and secure it with the spring locking lever.

#### (4) When changing a wheel on the rear axle:

Lower the attachment to the ground.

- (5) Turn the ignition key (4-11/19) to the left to position "0".
- (6) Secure the hand lever for the working and auxiliary hydraulics (1-2/arrow).
- (7) Ensure that the loader does not roll away by securing it on one of the wheels of the axis in both driving directions. The wheel that does **not** have to be changed is to be secured.
- (8) Loosen the wheel nuts of the wheel to be changed so that they can be turned manually.
- (9) Fit a suitable jack (minimum capacity 3.0 tons) from the side under the axle bridge in the vicinity of the axle fixture so that it is centred and cannot slip (4-7). Lift the front/rear axle until the wheel does not have any contact to the ground.



### DANGER

- Secure the jack by a suitable support to prevent it from sinking into the ground.
- Make sure that the jack is fitted correctly.

- (10) Loosen the wheel nuts completely and remove them.
- (11) Lower the loader slightly with the jack until the wheel bolts are free.
- (12) Push the wheel from the wheel hub by moving it back and forth. Remove the wheel and roll it aside.
- (13) Mount the new wheel onto the planetary axle.



### NOTE

- Pay attention to the profile position.
- If the profile position of the spare tyre does not fit, the spare tyre may only be used temporarily until a suitable tyre can be fitted.

- (14) Tighten the wheel nuts by hand.
- (15) Lower the front/rear axle using the jack.
- (16) Tighten the wheel nuts to 500 Nm with a torque wrench.



### CAUTION

Retighten the wheel nuts after the first 8-10 operating hours.



### 4.4 Controls

- 1 - Lock lever for steering column adjustment
  - to the front/rear
  - in axial steering column direction
- 2 - Accelerator
- 3 - Double pedal for service brake/ inching
- 4 - Swivelling pedal
- 5 - Spirit level
- 6 - Steering column switch
  - to the front: Turn signal, right
  - to the rear: Turn signal, left
  - up - Low beam
  - down - High beam
  - pushbutton - Signal horn

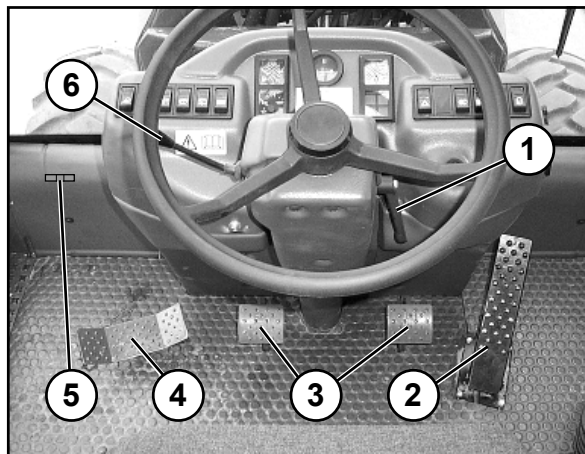


Figure 4-8

### To the left of the driver's seat:

- 1 - Door handle
- 2 - Switching lever for steering
- 3 - Water tank for windshield washer system
- 4 - Maintenance door

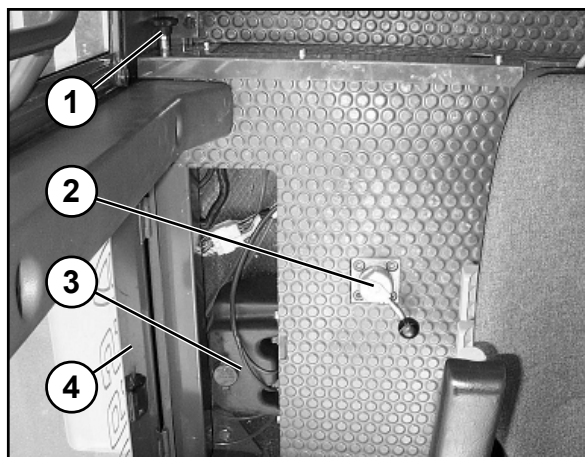


Figure 4-9

### To the right of the driver's seat:

- 1 - Door handle
- 2 - Pilot valve for auxiliary hydraulics
- 3 - Handwheel for console adjustment
- 4 - Hand lever for parking brake
- 5 - Holder
- 6 - Maintenance door
- 7 - Battery main switch
- 8 - Compensation tank for brake fluid
- 9 - Pilot valve for working hydraulics
- 10 - Actuator for telescope cylinder
  - Retract telescope
- 11 - Actuator for telescope cylinder
  - Extend telescope
- 12 - Drive switch:
  - forward/0/reverse
- 13 - Hydraulic drive stages:
  - right - Stage I: slow
  - left - Stage II: fast

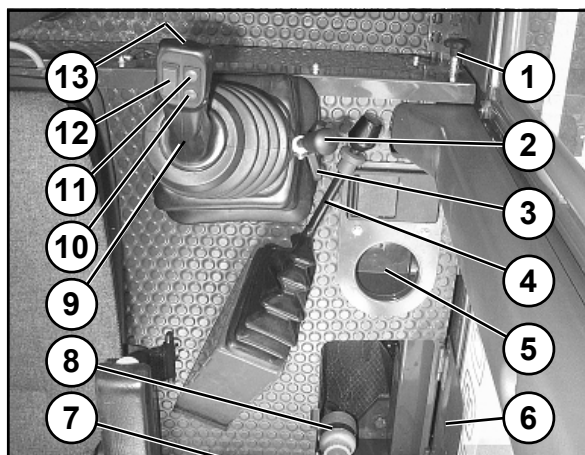


Figure 4-10

## 4 Description

**AHLMANN**

### 4.5 Instrument panel

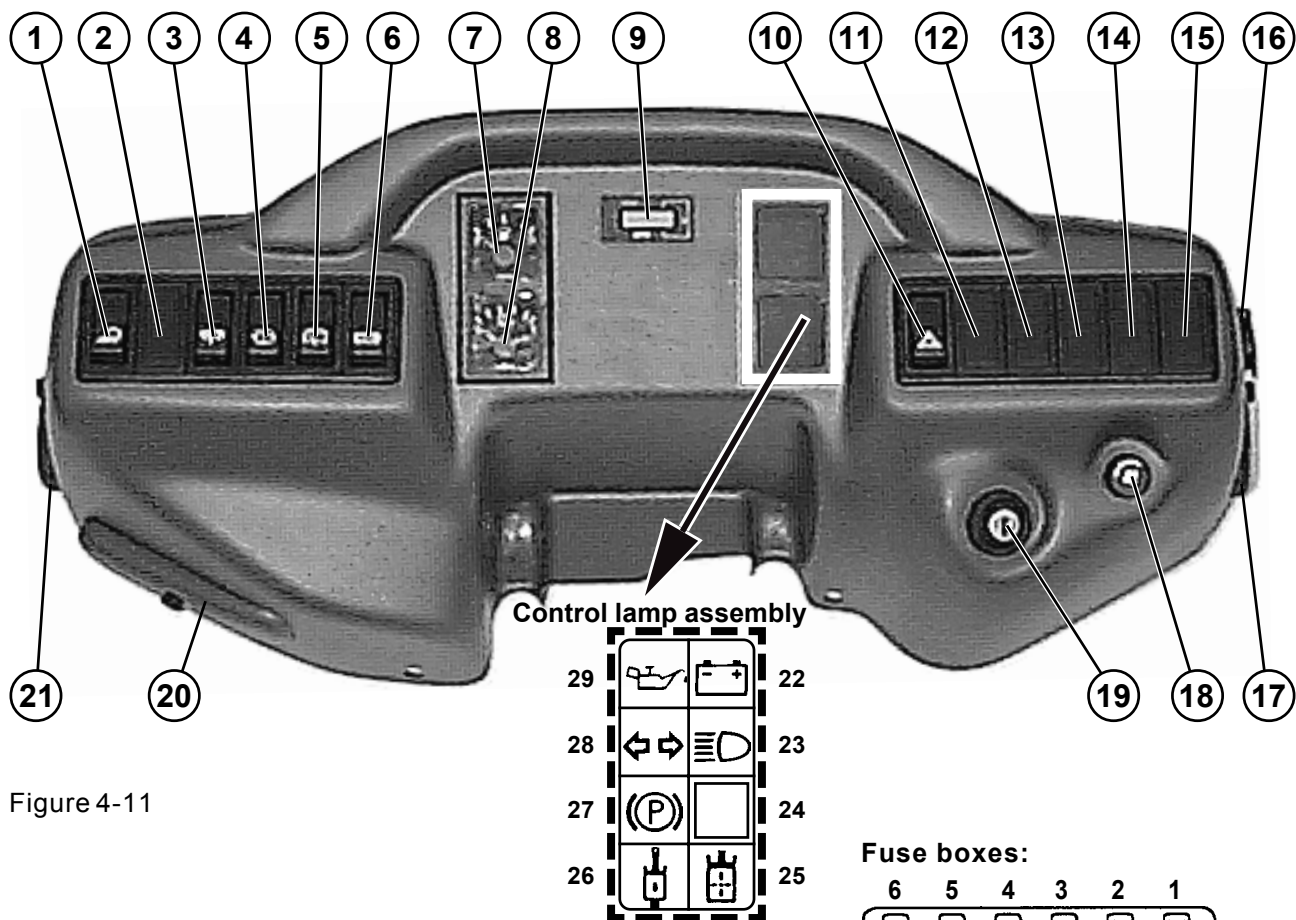
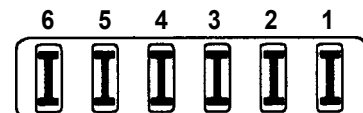


Figure 4-11

- 1 - Toggle switch for work lights
- 2 - Pushbutton for releasing the quick-change device
- 3 - Toggle switch for front interval wiper
- 4 - Toggle switch for front washer
- 5 - Toggle switch for rear wiper/washer
- 6 - Toggle switch for rear window heater
- 7 - Fuel gauge
- 8 - Engine oil temperature gauge
- 9 - Operating hours meter
- 10 - Toggle switch for hazard flasher system
- 11 - Toggle switch for warning beacon (option)
- 12 - Toggle switch for driving lights
- 13 - Gear shift pushbutton (only for fast loaders - 30 km/h)
- 14 - Toggle switch for swivel restriction release
- 15 - Toggle switch for lifting device suspension (option)
- 16 - Socket
- 17 - Fuse box (FC)
- 18 - Rotary switch for heater/ventilation system
- 19 - Starter switch
- 20 - Fuse box (FB)
- 21 - Fuse box (FA)
- 22 - Battery charge indicator lamp
- 23 - Control lamp for high beam
- 24 - free
- 25 - Hydraulic oil filter clogging indicator
- 26 - Control lamp for hydraulic oil temperature
- 27 - Control lamp for parking brake
- 28 - Control lamp for directional indicator
- 29 - Control lamp for engine oil pressure

option = Optional equipment

#### Fuse boxes:



#### Fuse box (item 17)

1	Traction drive	7.5 A
2	Hydraulics	20.0 A
3	Rear window heater	30.0 A
4	Fan, blower	20.0 A
5	Windshield wiper/washer	20.0 A
6	Engine shut-off	5.0 A

#### Fuse box (item 20)

1	Tail light, left, Parking light, left	5.0 A
2	Tail light, right, Parking light, right	5.0 A
3	High beam	15.0 A
4	Low beam	15.0 A
5	Telescope function	15.0 A
6	Instrument lighting	5.0 A

#### Fuse box (item 21)

1	Brake lights	5.0 A
2	Turn indicator	7.5 A
3	Hazard flasher	15.0 A
4	Warning beacon (opt.), radio (opt.), interior lighting	10.0 A
5	Plug socket, signal horn	20.0 A
6	Working lights	20.0 A

opt. = optional equipment