1 Introduction

You decided to buy a Terex **TL160** Wheel Loader.

The confidence placed in this model will be rewarded by the efficient and economical performance of the machine.

These Operating Instructions contain all information necessary for the correct use of the machine.

They are intended for use by personnel responsible for operation, maintenance, repair, and supervision of the machine.

Please read them carefully before putting the machine into operation and make sure that they are kept at hand at all times.

Should you need further explanations or should anything be unclear, please contact your dealer immediately.

Special equipment and attachments are not included in these Operating Instructions.

We reserve the right to make improvements on the machine within the scope of impending technical developments, without incurring any obligation to change these Operating Instructions.

Attention

Any modifications of Terex products and their equipment using extras and work attachments which are not included in our product range require our written approval. If our approval is not sought, our warranty expires, as does our product liability for any resulting consequential damage.

Please state the vehicle type and vehicle identification number when making inquiries or orders, and in all written correspondence.

Attention

The vehicle identification number of the machine is stamped onto the type label (1/1) *.*

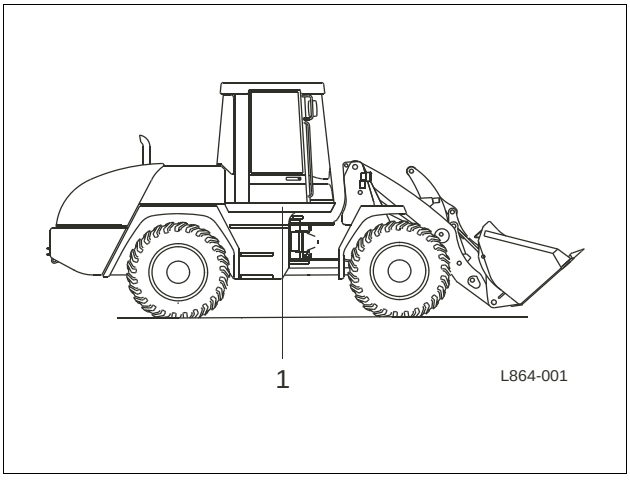
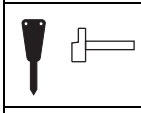
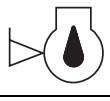
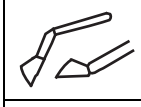
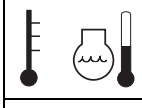
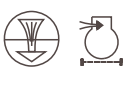
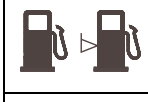
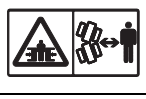


Fig. 1 Type label

1.5 Pictograms

The following Table explains the meaning of the pictograms which may be attached to your machine.

Symbol	Description		Symbol	Description
	Danger to life			Horn
	On machine: Caution, safety distance In Operating Instructions: Danger of injury/machine damage			Direction indicator LT/RT
	Attention			Working floodlight(s)
	Battery charge indicator			High-beam indicator
	Preheating			Rotating beacon
	Engine oil pressure			Hazard warning system
	Engine oil temperature			Hydraulic rock breaker
	Engine oil level			Working hydraulics shut-off
	Coolant temperature			Unlocked
	Coolant level			Locked
	Air filter			Float position
	Fuel, fuel level			On machine: Safety distance
	Hydraulic oil Hydraulic oil level			Danger of injury
	Hydraulic oil temperature			Danger of crushing

Tab. 1 Pictograms on the machine

2.9 Driving

Before putting the earth-moving machine into operation, the driver's seat, mirrors and operator controls must be adjusted so as to ensure safe working.

A safety belt (seat belt), if installed, must always be fastened.

The windows must be clean and free of ice.

Driving tracks must be designed so as to ensure smooth, safe operation, i.e. they must be sufficiently wide, on ground which has as few slopes as possible and sufficient carrying capacity.

Downhill tracks must be set out in such a way that earth-moving machines can be safely braked.

Before driving downhill, the appropriate gear for the terrain must be selected and the gear lever not be moved during downhill travel (road or off-road gear).

On steep drops and uphill gradients, the load must be carried on the uphill side, if possible, in order to increase stability.

The carrying capacity of bridges, cellar roofs, vaults, etc. must be verified before the earth-moving machine can drive over them.

The internal dimensions of constructions must be noted before entering underground passages, tunnels, etc.

It is the plant operator's responsibility to ensure that equipment such as first-aid box, warning triangle, hazard lights are kept with the earth-moving machine according to the traffic regulations valid in the user’s country and that the driver has the appropriate license as required by the national traffic laws of the country in question.

Outside areas covered by general traffic regulations, e. g. on factory premises, traffic regulations should be applied in the proper manner. This should also apply with regard to drivers’ licenses.

2.10 Working Operation

Daily before commencing work and after every change of work attachments, the machine operator must check the correct fastening of the work attachment as well as the correct lock of the quick-attach system (QAS). Work attachments are to be carefully moved at low height. During this check nobody must be allowed to remain in the danger zone of the earth-moving machine.

The machine operator may only swing the work equipment over occupied drivers' seats, operator consoles and workplaces of other machines if these are protected by canopies (FOPS).

If a cabin does not have the required protection, the driver of this vehicle must leave the operator’s stand while the work equipment is being swung overhead.

The vehicles must be loaded in such a manner as to ensure that there is no overloading and no material can be lost as long as the machine is moving. The vehicle must be loaded from the lowest possible height.

At dumping points, earth-moving machines may only be operated if suitable measures have been taken to prevent rolling or falling.

2.11 Guides

Guides must be easily recognizable, e.g. by means of reflective clothing. They must remain within the machine operator’s field of vision.

While guiding the machine, guides shall not be given other jobs which may distract them from their task.

3 Technical Specifications

3.1 Views

3.1.1 Dimensioned drawing with bucket, directly mounted

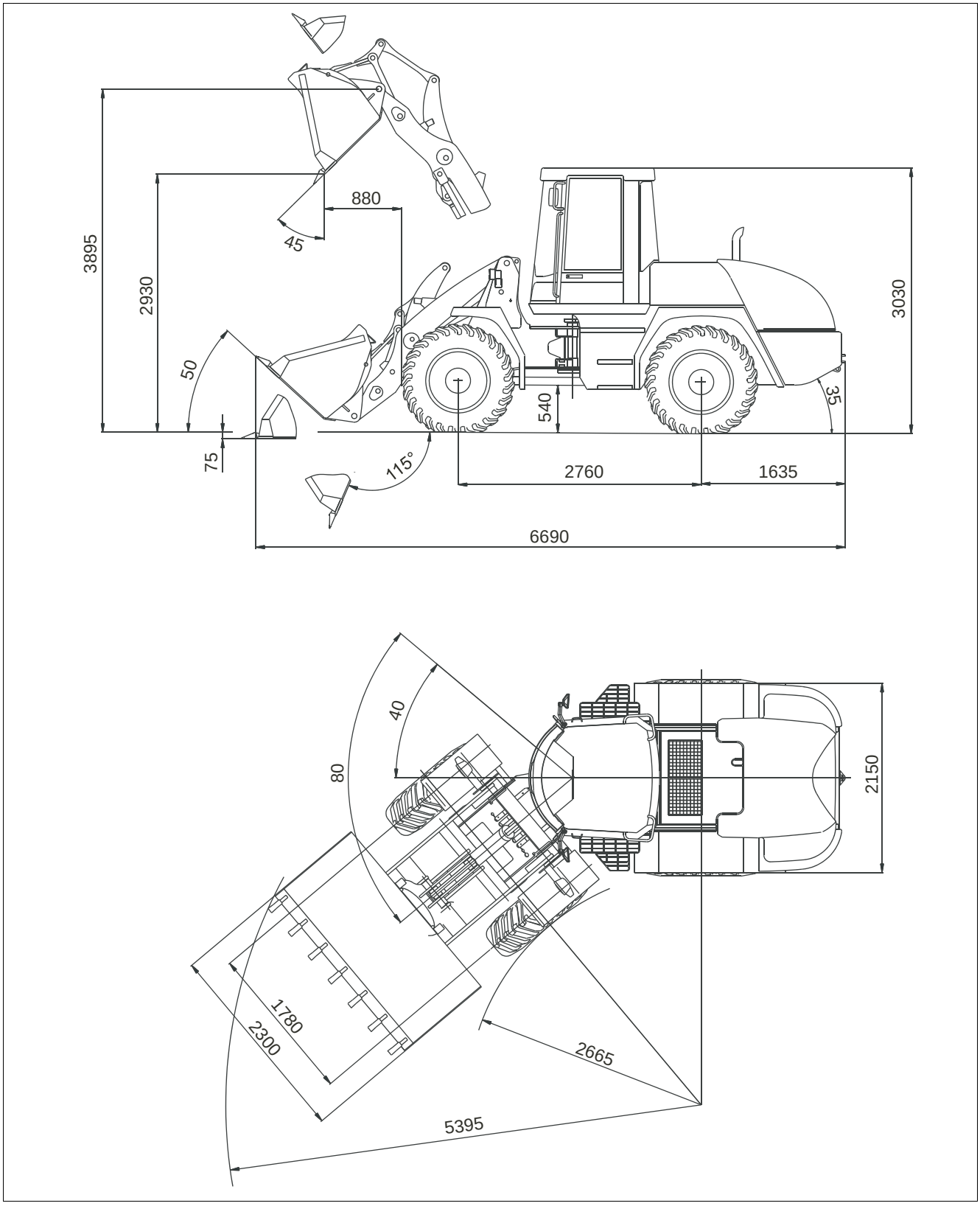


Fig. 2 Dimensioned drawing with bucket and tires 15.5 R 25

3.12 Dimensions and weights

Dimensions and weights	
Operating weight, standard equipment[1]	approx. 9200 kg
Total length, standard bucket on ground (quick-attach system / directly mounted)	6730 / 6690 mm
Total width	2300 mm
Total height (cabin roof)	3030 mm
Wheel base	2760 mm
Tire tread with, FR / RR	1780 mm
Rear overhang angle	35°
Ground clearance below propeller shaft	540 mm
Turning radius at outside edge of bucket in transport position (quick-attach system/ directly mounted)	5410 / 5395 mm
Turning radius at inside edge of tires	2665 mm

Tab. 15 Dimensions and weights - Specifications refer to general-purpose bucket and 15.5 R 25 tires

1 according to ISO 6016

Front loader installation	Quick-attach system	Direct mounting
Width of bucket	2300 mm	2300 mm
Capacity to DIN/ISO 7546 (max. density = 1.8 t/m^3)	approx. 1.5 m³	approx. 1.6 m³
Payload in bucket	2700 kg	2880 kg
Dump height at 45° dump angle	2890 mm	2930 mm
Dump reach at max. dump height	910 mm	880 mm
Max. bucket hinge pin height	3895 mm	3895 mm
Tilt-back angle	50°	50°
Dump angle at max. dump height	45°	45°
Digging depth, horizontal bucket	100 mm	75 mm
Lift capacity at ground level[1]	85.5 kN	85.5 kN
Ripping force at cutting edge of bucket[1]	83.2 kN	86 kN
Tipping load, straight[1]	6575 kg	6575 kg
Tipping load, articulated[1]	5780 kg	5780 kg
Work cycle time, "Lift"	5.7 s	5.7 s
Work cycle time “Dumping in uppermost position – IN”	3.7 s	3.7 s
Work cycle time “Dumping in uppermost position – OUT”	2.0 s	2.0 s
Work cycle time “Dumping in upper position”	1.4 s	1.4 s

Tab. 16 Dimensions and weights - Specifications refer to general-purpose bucket and 15.5 R 25 tires - Stability conforms to DIN 24094

1 according to ISO 8313

Buckets	Width mm	Capacity, heaped [1] m^3	Max. density (γ) t/m^3
Bucket	2300	1.5 / 1.6	1.8
Bucket with bolt-on cutting edge	2300	1.5 /1.6	1.8
Earth bucket	2300	1.7 / 1.8	1.6
Earth bucket with bolt-on cutting edge	2300	1.7 / 1.8	1.6
Multi-purpose bucket	2300	1.25 / -	1.6
Multi-purpose bucket with bolt-on cutting edge	2300	1.25 / -	1.6
Light-material bucket with bolt-on cutting edge	2300	2.2 / -	1.2
Light-material bucket with bolt-on cutting edge	2500	2.6 / -	0.8
High-tip bucket	2300	1.5	1.2

Tab. 17 Bucket dimensions

1 Quick-attach system / directly mounted

4.2 Display elements and operator controls

Attention

The following list includes non-standard equipment!

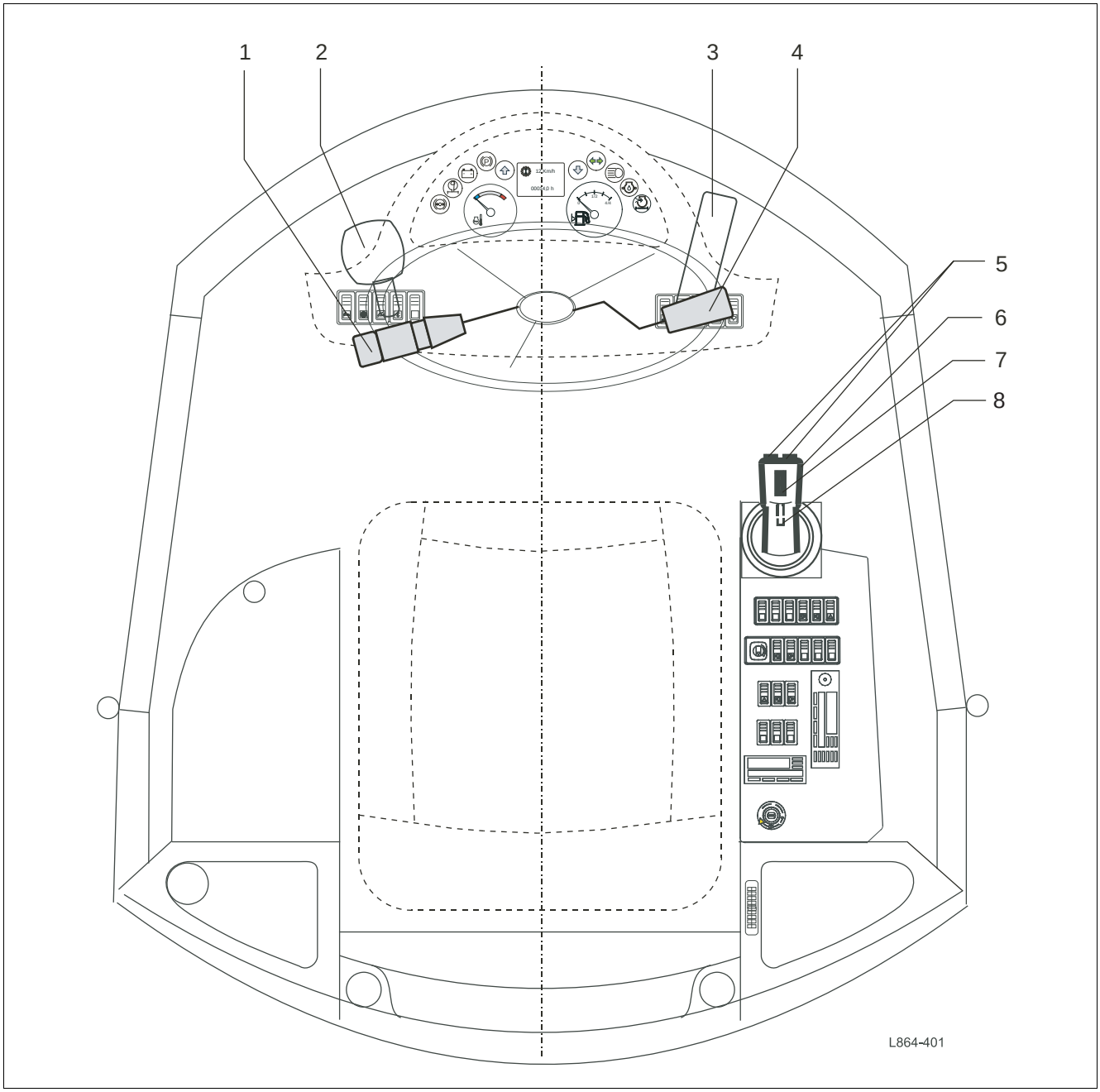


Fig. 8 Operator controls

4.4 Driver's seat / Steering wheel tilt adjustment

The comfort seat is spring-mounted with oil-pressure operated shock absorbers and lap belt.

The seat meets international quality and safety standards in compliance with ISO 7096 and ISO 6683 (Fig.12).

1. Horizontal adjustment
2. Weight adjustment
3. Seat back adjustment
4. Armrest (option)
5. Vertical adjustment

- Raising seat: Raise seat until it clicks audibly into place.
- Lowering seat: Raise seat as far as the stop; the seat then sinks to its lowest position.

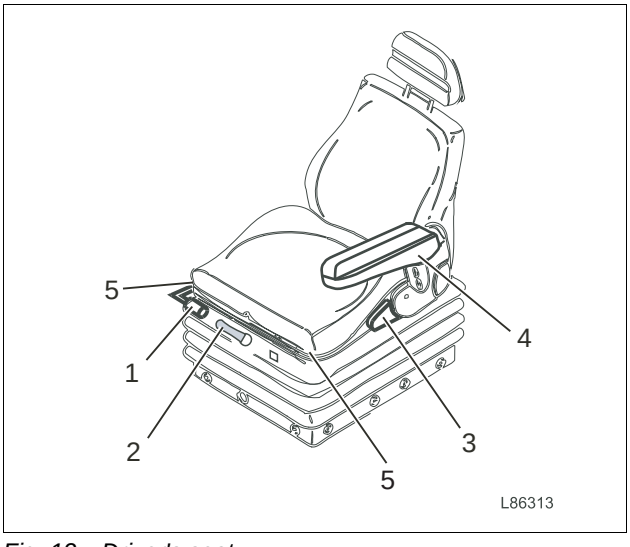


Fig. 12 Driver's seat

Tilt adjustment of steering wheel

- Push down lever (13/4).
- Adjust steering-wheel tilt.
- Release lever.

Height adjustment of steering wheel (option)

- Push up lever (13/4).
- Adjust steering-wheel height.
- Release lever.

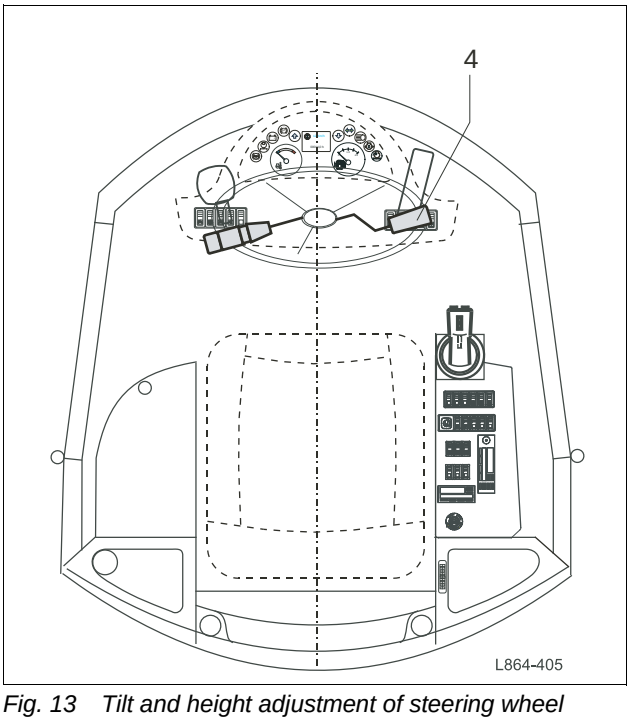


Fig. 13 Tilt and height adjustment of steering wheel

4.8.4 Driving on roads

- Before driving on open roads, the following points have to be observed:

Endangerment of road-traffic

due to missing equipment.

Ensure that the wheel loader is equipped as stipulated by the regulations authorizing the use of vehicles for road traffic in the user's country.

- Empty the bucket and tilt back completely.
- Attach the protective device onto the front bucket edge.
- Secure the side-dump bucket with socket pins.
- Completely retract the high-tip bucket.
- Fold up the forks of the fork lift attachment, lock in place and secure against lateral shifting.

Danger to life

due to rigid forks.

- *Rigid forks must be dismounted before driving on public roads!*

- Raise the lift frame as far as the height color mark (22/1) until sufficient ground clearance is secured.
- Set the travel direction preselection rocker switches on the joystick (23/7) and on the instrument panel (23/36) to "0" (neutral position).
- Switch off the working hydraulics (23/35).

Attention

Only press when machine is stationary!

- Check the function of the direction indicators, hazard warning lights, horn, low/high beam.
- Close the cabin door.

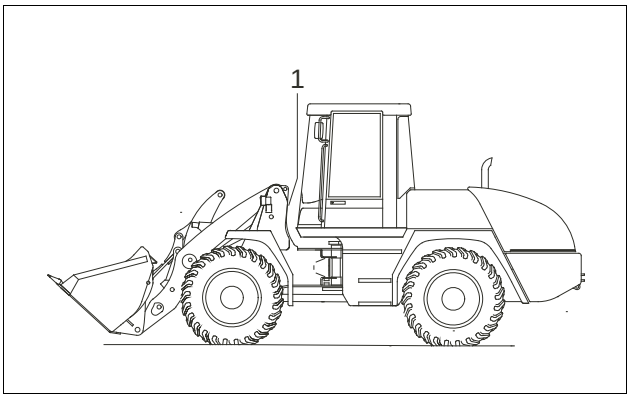


Fig. 22 Height color mark

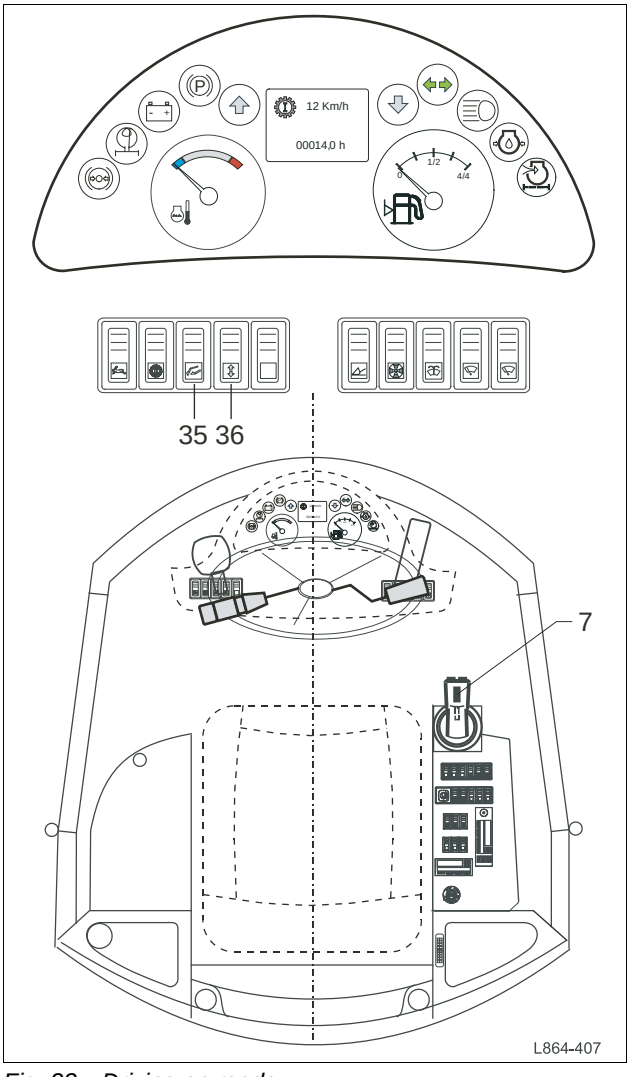


Fig. 23 Driving on roads

Procedure for changing work attachments with hydraulic quick-attach system (option)

- Lower the work attachment onto the ground and position so that it cannot tilt.
- Switch off the diesel engine.
- Switch on the ignition.
- Operate the push-button switches (27/5) for pressure relief.
- In case of hydraulically controlled additional tools: Release the hydraulic connections on both distributor blocks.
- Ball valve in position “Unlock quick-attach system” (Fig. 28).
- Start the diesel engine.
- Unlock the quick-attach system (27/5) and move out of the work attachment.
- Take up new work attachment and lock by pressing the push-button switch (27/5).

Danger to life

due to incorrectly fastened work attachments.

- *Perform a visual check to ensure that the quick-attach system is correctly locked.*

- Switch off the diesel engine.
- Switch on the ignition.
- Operate the push-button switches (27/5) for pressure relief.
- Ball valve in position “Quick-mount hitch locked” (Fig. 28).
- Connect the hydraulically operated work attachment to the connection of the additional control circuit.

Machine damage

due to additional control circuit which has not been switched off.

- *The additional control circuit* (27/*53) must be switched off unless a hydraulically operated additional attachment is connected.*

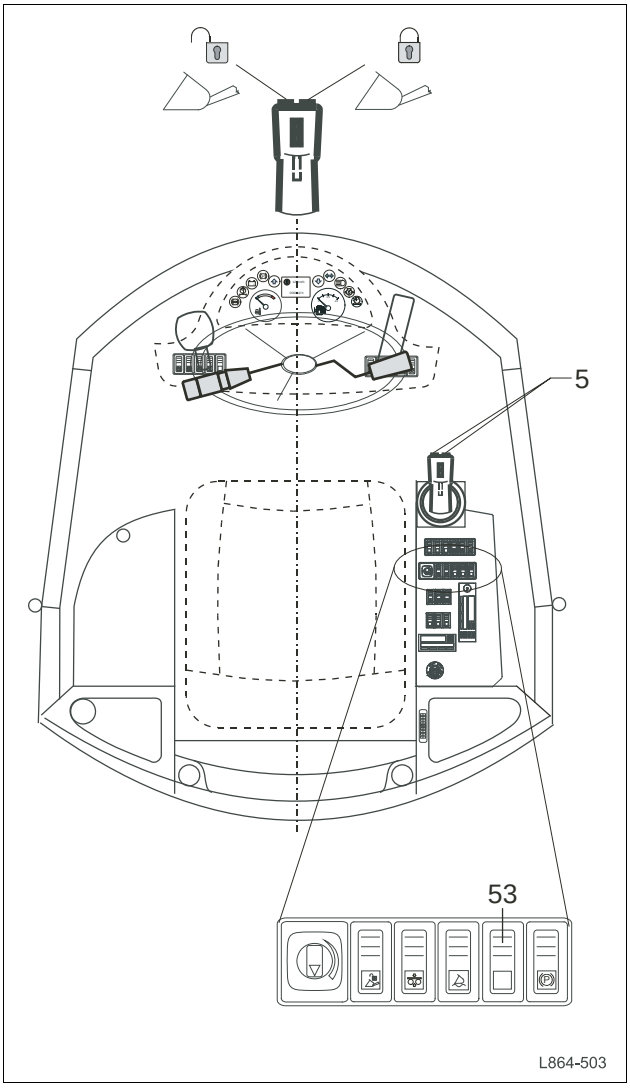


Fig. 27 Operating the quick-attach system

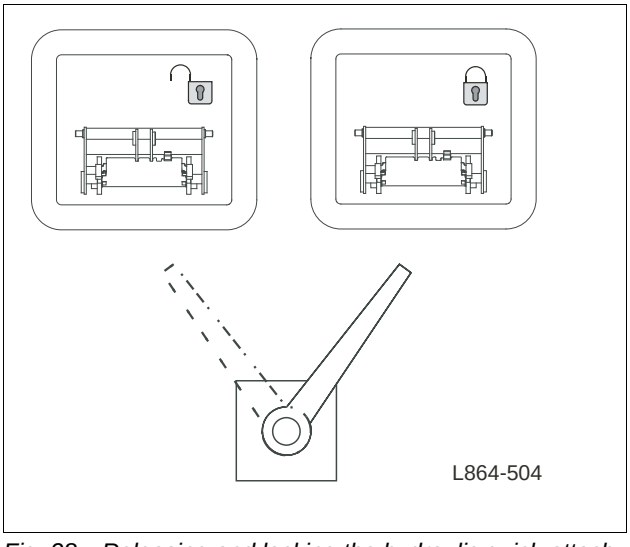


Fig. 28 Releasing and locking the hydraulic quick-attach system

7.7 Checking, maintenance and inspection plans

7.7.1 Initial inspection (Handing-over inspection)

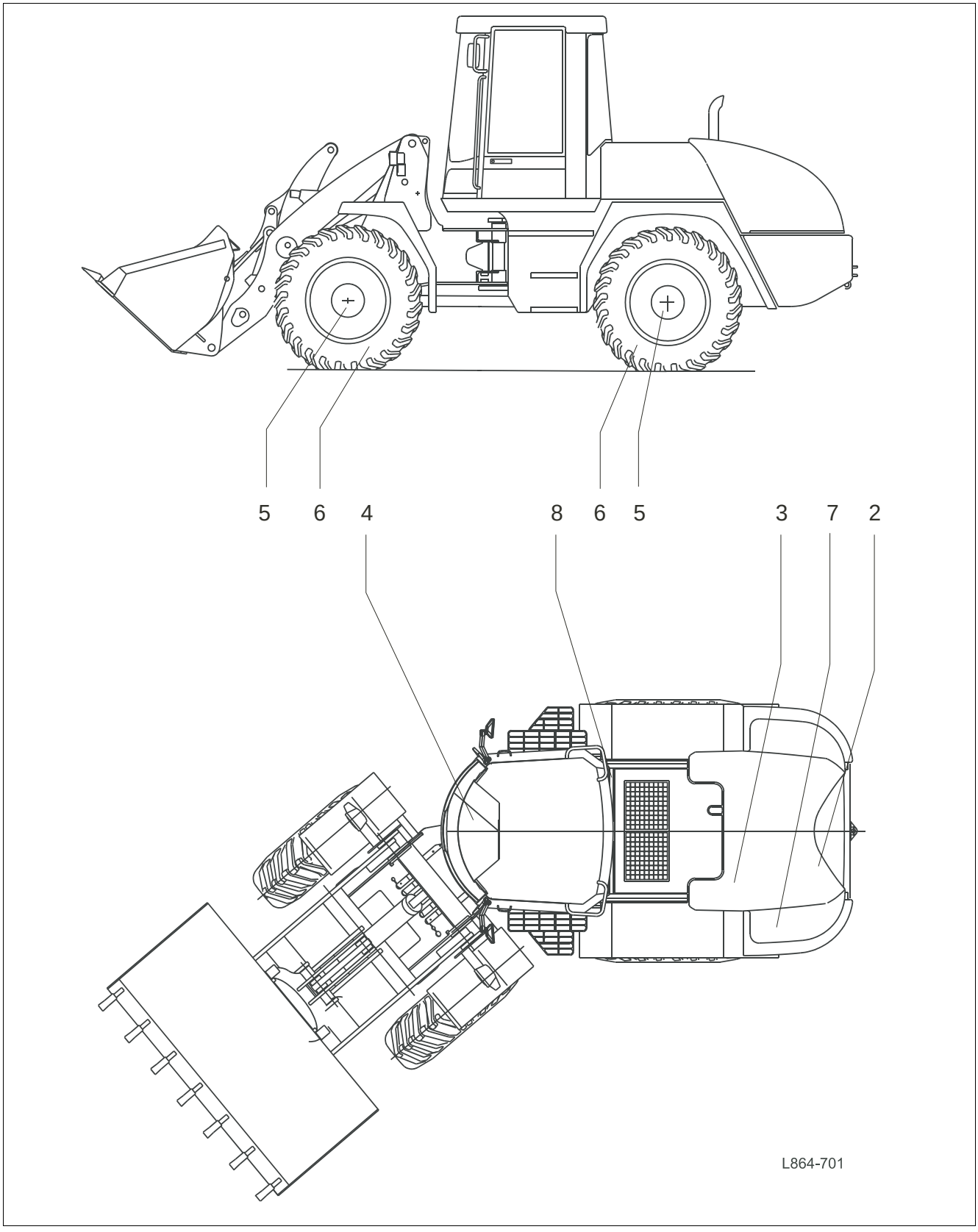


Fig. 35 Initial inspection

7.8.4.4 Cleaning cooling fins in case of extreme exposure to dust

The combined cooler features a fan (46/1) with hydrostatic drive (46/2).

Due to the automatic reverse of the running direction of the fan, the cooler fins are automatically cleaned at regular intervals.

If there is increased exposure to dust, the cooler fins are subject to premature contamination.

Machine damage

due to strong accumulation of dust.

- *Clean the cooler fins in due time to prevent overheating of the engine and/or the hydraulic oil.*

- Press the engine cooler fan changeover switch (47/39).

The fan briefly runs in the opposite direction. The cooling fins are cleaned.

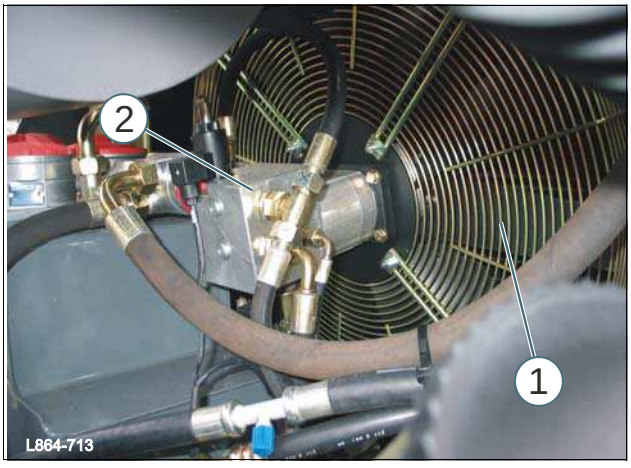


Fig. 46 Engine cooler fan

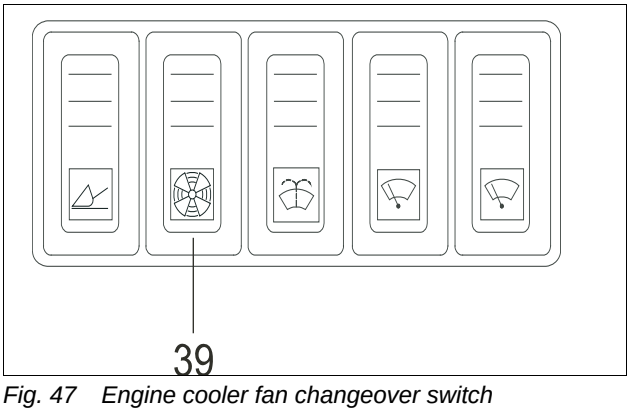


Fig. 47 Engine cooler fan changeover switch

7.8.4.5 Cleaning cooling fins in case of strong exposure to dust

Machine damage

due to strongly contaminated cooler.

- *Clean the cooler fins in due time to prevent overheating of the engine and/or the hydraulic oil.*

- If necessary, e.g. in case of an oiled combined cooler, clean with cleaning agents or a steam jet device.
- After cleaning, run the engine until it reaches operating temperature to allow the combined cooler to dry.

Attention

- *Collect the detergent and waste water in a suitable container and dispose of according to regulations!*
- *Ensure that no substances hazardous to water reach the sewerage or water systems.*

- Connect the bleeder hose to the first bleeder screw (64/2) of the rear axle and route it into the collection bottle.
- Open the bleeder screw (64/2) until the brake fluid (hydraulic oil) escapes without bubbles.
- Remove the bleeder hose and re-tighten the bleeder screw.
- Connect the bleeder hose to the second bleeder screw (64/2) of the rear axle and route it into the collection bottle.
- Open the bleeder screw (64/2) until the brake fluid (hydraulic oil) escapes without bubbles.
- Remove the bleeder hose and re-tighten the bleeder screw.
- Connect the bleeder hose to the bleeder screw on the inch valve of the hydraulic “Travel” pump and route it into the collection bottle.
- Open the bleeder screw until the brake fluid (hydraulic oil) escapes without bubbles.
- Remove the bleeder hose and re-tighten the bleeder screw.
- Re-mount the cover on the front-end.

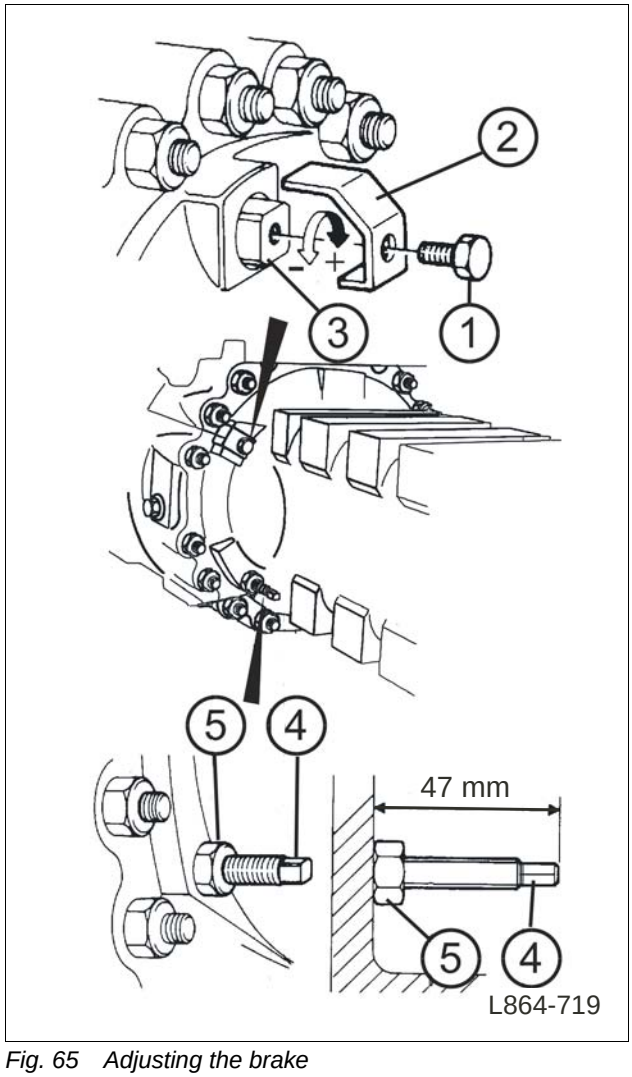


Fig. 65 Adjusting the brake

7.8.9.3 Adjusting the brake disc play

- Place the machine on a level surface and secure it with chocks to prevent it from rolling away.
- Release the hand brake

Do not switch off the engine!

- Remove the screw (65/1) along with the retaining fixture (65/2) on the left-hand brake of the front axle.
- Move the adjusting device (65/3) to the left (anti-clockwise) until the stop.
- Move the adjusting device 3 full turns to the right (clockwise).
- Re-install the retaining fixture. The play between the brake discs is now adjusted.
- Adjust the remaining brakes of the other axle side and the rear axle.

7.8.9.4 Adjusting the spring-loaded cylinder

- Slacken counternut (65/5).
- Adjust the mechanical unlocking mechanism (65/4) to 47 mm.
- Re-tighten counternut.
- Adjust the spring-type actuators of the other brakes accordingly.

7.9 Immobilization

7.9.1 Preservation (temporary immobilization)

Machine damage

due to damage from storage (e.g. corrosion damage) during shutdown periods over three months.

- *Perform the preservation measures.*

Preservation measures:

- We recommend keeping the machine in a dry, dust-free room during the storage period.
- Thoroughly clean the inside and outside of the machine, including the engine.
- Lubricate the machine according to the lubrication plan.
- Check the oil levels of all assemblies such as axles, transmission(s), etc. and top up if necessary.
- Check the hydraulic oil level and top up if necessary.
- Repair any paint damage.
- Fill the diesel tank completely, to prevent corrosion of the tank walls.
- Check the antifreeze level in the coolant and adjust if necessary.
- Perform all preservation measures specified in the Diesel Engine Operating Instructions.
- Check the tire pressure according to the prescribed value and protect the tires from direct sunlight.
- Treat bare piston rods with a commercially available anti-corrosion agent.
- Remove and clean the battery and keep it according to regulations in a dry - in winter, frost-proof - room. Coat connections with a little pole grease.
- Seal off the air intake opening of the air filter system and the exhaust pipe opening.

7.9.2 During immobilization

When the machine is out of use for 6 months, after this time all assemblies must be brought to operating temperature and maneuvered for approx. 15 minutes.

- Beforehand, the anti-corrosion coat must be removed from the piston rods, and the openings of the air filter system and the exhaust pipe freed.
- After the maneuvering cycle, preserve the machine once more as previously described.

7.9.3 After immobilization

Before putting the machine into operation once more, the following measures must be carried out:

- Anti-corrosion coat must be cleaned from the piston rods.
- Seal off the air intake opening of the air filter and the exhaust pipe opening.
- Remove the air filter insert, check its condition and replace if necessary.
- Clean the machine with a neutral detergent.
- Check and, where required, re-charge and re-install the battery.
- Carry out all measures for putting the diesel engine back into operation listed in the Engine Operating Manual.
- If the machine has been out of use for more than 6 months, the oil in the assemblies such as axles, transmission(s), etc. must be changed.
- If hydraulic oil filters such as suction and return filters as well as breathers have been out of use for more than 6 months, they must be replaced.
- Lubricate the machine according to the lubrication plan.

Possible cause	Remedy
Transmission works in one direction only	
Switch for travel direction damaged	Repair or replace if necessary
Solenoid valve gets stuck or is damaged	Repair or replace if necessary
Power supply towards switch for travel direction or solenoid valve interrupted	Check and repair (incl. ground connection)
Pilot pressure too low on one side	Nozzles clogged, check, repair
High-pressure relief valve is faulty or incorrectly adjusted	Swap valves around. If machine now travels in the other direction, examine valve, clean and replace if necessary.
Transmission works in neither direction	
Too little hydraulic oil in tank	Top up oil to mark on dipstick
Mechanical connection to diesel engine faulty	Check, repair
Charge pump damaged, no charge pressure	Remove pump and examine, install new pump if necessary
Switch for travel direction damaged	Repair or replace if necessary
Solenoid valve for travel direction damaged	Repair or replace if necessary
Suction filter clogged	Replace filter
Suction line between tank and pump kinked	Check and eliminate kink
Power supply towards switch for travel direction and solenoid valve interrupted	Remedy cause of interruption
Internal damage to travel pump or travel motor	Replace units completely
Mechanical connection between travel motor and axle interrupted	Check, repair
Loader installation is not working	
Oil supply to pump interrupted	Check suction line and repair if required
Main pressure relief valve damaged	Check and replace if necessary
Hydraulic pump damaged	Check, repair or replace
Hydraulic pump drive mechanically interrupted	Check and repair

Tab. 31 Table of faults

10 Index