WACKER NEUSON

Operator's Manual

Wheel loader

WL52

Machine model	**RL50**
Date	**10/2014**
Document number	**1000331871**
Language	**[en]**

1.2 Warranty and liability

Information on warranty and liability

The CE mark shows that the machine has been manufactured in accordance with the applicable EC Directives.

Fig. 1

Information

The manufacturer/supplier shall be not liable for damage resulting from use other than designated. Alone the user/owner shall bear the risk. The Operator's Manual must always be on the machine or at the place of use. Store the Operator's Manual in the place provided for it on the machine (*Fig. 1*).

Exemption from warranty and liability

Despite taking great care, we cannot rule out the possibility of deviations from drawings or dimensions, calculation errors, printing errors or incompleteness in this Operator's Manual. Therefore, we shall accept no liability for the correctness and completeness of the information we have provided in this Operator's Manual. We warrant our products to be in perfect running condition within the framework of our General Terms and Conditions of Business. We basically do not offer any further guarantees. Any further liability beyond the scope of our General Terms and Conditions of Business is excluded.

Observe the following:

- Do not perform any modifications on the machine.
- Use only attachments approved by the manufacturer for the machine.
- The machine must only be put into operation, operated and serviced as described in the Operator's Manual.
- Use only the machine if all safety and protection devices are intact.
- Observe the monitoring systems during operation
- Repairs may only be performed by authorized service centers.
- Follow the instructions given in the Operator's Manual carefully.

Lifting gear applications

- The machine and the attachment must be certified for lifting gear applications.
- Observe the national regulations for lifting gear applications.
- Lifting gear applications are procedures involving raising, transporting and lowering loads with the help of lifting and fastening gear.
- The help of an accompanying person is necessary for fastening, guiding and removing the load.
- There must be nobody under the load.
- Stop the machine immediately and stop the engine if persons enter the danger zone.
- Use the machine for lifting gear applications ONLY if the mandatory lifting gear (for example a joint rod and load hook) and safety equipment (for example optical and acoustic warning devices, hose burst valve, stability table) is installed and functional.
- Use only lifting and fastening gear certified by a test/certification body, observe the inspection intervals (Use only chains and shackles. No belts, slings or cables).
- Do not use any lifting and fastening gear that is dirty, damaged or not of sufficient size.
- Do not interrupt the work process with a load attached.

Battery

- Batteries contain caustic substances (for example sulfuric acid). When handling the battery observe the specific safety instructions and regulations relevant to accident prevention.
- A volatile oxyhydrogen mixture forms in batteries during normal operation and especially during charging. Always wear gloves and eye protection when working with batteries.
- Do not perform battery maintenance near open flames.
- Perform battery maintenance only in well-ventilated areas (for example due to vapors harmful to health, explosion hazard).
- Starting the machine with battery jumper cables is dangerous if performed improperly. Observe the safety instructions regarding the battery.

Safety instructions regarding internal combustion engines

- Internal combustion engines present special hazards during operation and fueling.
- Failure to follow the warnings and safety instructions can cause serious injury or death.
- Keep the area around the exhaust system free of flammable materials.
- Check the engine and fuel system for leaks (for example for loose fuel lines). Do start or let the engine run in case of leaks.
- Breathing the exhaust fumes causes death very quickly.
- Engine exhaust contains gases you cannot see or smell (for example carbon monoxide and dioxide).
  - Never operate the machine in enclosed premises or areas (for example in pits), if there is no suitable ventilation (for example exhaust-gas filters, suction systems).
- Do not operate the machine in potentially explosive areas.
- Do not touch the engine, exhaust system and cooling system as long as the engine is still running or has not cooled down yet.
- Do not remove the radiator cap when the engine is running or hot.
- The coolant is hot, under pressure and can cause serious burns.

Bleeding the fuel system and refueling

- Do not bleed the fuel system or refuel near open flames.
- Bleed the fuel system and refuel only in well-ventilated areas (for example due to vapors harmful to health, explosion hazard).
- Wipe away fuel spills immediately (for example due to fire hazard, slipping hazard).
- Firmly close the fuel tank cap, replace a malfunctioning fuel tank cap.

Fields of application and use of attachments

The attachments will decide in the first place how the machine is used.

Note that not all the indicated attachments comply with local traffic regulations.

Observe the legal regulations of your country.

Information

In order to avoid damage to the machine, only the attachments listed in the table have been authorized for installation on the machine. Installing attachments that are not listed requires a release by the manufacturer of the machine, and an EBE (separate certification for vehicles, Germany) made out by the competent authority!

Permissible attachments

Description of attachment	Type	Dimensions	Capacity	Use
Lightweight material bucket	1000227534	1600 mm (62.99 in)	0.75 m³ (26.49 ft³)	Loosening, picking up, transporting and loading loose or solid material
	1000227536	1600 mm (62.99 in)	0.92 m³ (32.49 ft³)	
	1000227583	1700 mm (66.93 in)	0.80 m³ (28.25 ft³)	
	1000227585	1700 mm (66.93 in)	0.98 m³ (34.61 ft³)	
	1000227678	1800 mm (70.86 in)	0.85 m³ (30.02 ft³)	
	1000227795	1900 mm (74.80 in)	0.90 m³ (31.78 ft³)	
	1000227886	2000 mm (78.74 in)	0.95 m³ (33.55 ft³)	
	1000227942	2100 mm (82.67 in)	1.00 m³ (35.31 ft³)	
	1000227960	2200 mm (86.61 in)	1.05 m³ (37.08 ft³)	
	1000227991	2400 mm (94.49 in)	1.10 m³ (38.85 ft³)	
	1000228004	2500 mm (98.42 in)	1.15 m³ (40.61 ft³)	
	1000227486	1500 mm (59.06 in)	0.60 m³ (21.19 ft³)	
	1000227558	1600 mm (62.99 in)	0.65 m³ (22.95 ft³)	
	1000227637	1700 mm (66.93 in)	0.70 m³ (24.72 ft³)	
Earth bucket	1000227539	1600 mm (62.99 in)	0.55 m³ (19.42 ft³)	Loosening, picking up, transporting and loading loose or solid material
	1000227590	1700 mm (66.93 in)	0.58 m³ (20.48 ft³)	
	1000227684	1800 mm (70.86 in)	0.62 m³ (21.90 ft³)	
	1000227820	1900 mm (74.80 in)	0.66 m³ (23.31 ft³)	
	1000227816	1900 mm (74.80 in)	0.75 m³ (26.49 ft³)	
	1000227541	1600 mm (62.99 in)	0.55 m³ (19.42 ft³)	
	1000227593	1700 mm (66.93 in)	0.58 m³ (20.48 ft³)	
	1000227687	1800 mm (70.86 in)	0.62 m³ (21.90 ft³)	
	1000227823	1900 mm (74.80 in)	0.66 m³ (23.31 ft³)	
	1000227798	1900 mm (74.80 in)	0.75 m³ (26.49 ft³)	

Description of labels

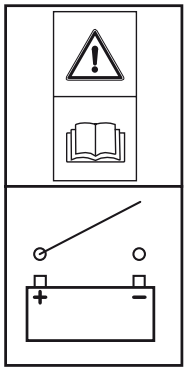


Fig. 18

Information label H1: Battery master switch

The battery disconnect switch is located here.

➥ *–Battery master switch on page 5-9*

Located in the cabin at the right behind the operator seat.

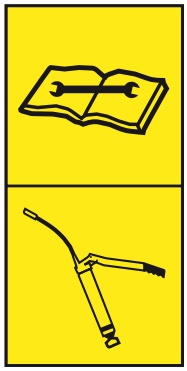


Fig. 19

Information label H2: Lubrication

Lubricate all lubrication points every 20 operating hours.

➥ *–Lubrication plan on page 7-12*

Located on the front chassis section near the oscillating articulation.

Fig. 20

Label H3: cabin

Do not tilt the cabin if the doors are open, otherwise they are damaged. Close the doors before tilting the cabin.

➥ *–Raising the cabin sideways on page 7-16*

Located on the left and right on the cabin doors.

Fire extinguisher (option)

Fig. 33

The fire extinguisher is not included in the machine's standard equipment.

Subsequent installation must be performed by an authorized service center.

See *Fig. 33* for the installation position of the fire extinguisher.

Operate the fire extinguisher according to the instructions on the fire extinguisher.

4.2 Overview of control elements

Description of control elements

This chapter describes the controls, and contains information on the function and handling of the indicator lights and controls.

The pages stated in the table refer to the description of the controls.

Description of machine display

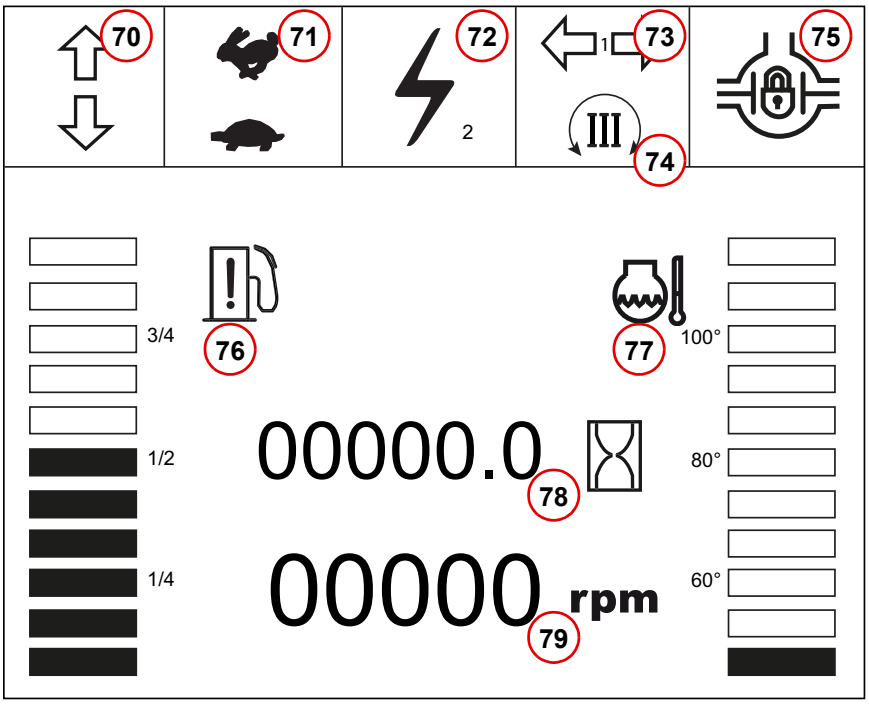


Fig. 47

Machine display	
70	Travel direction indication
71	Travel mode Indication
72	Indication of electrical connection (option)
73	Trailer turn indicators
74	Indication of continuous operation of 3rd control circuit
75	Differential lock indicator
76	Fuel level indication
77	Engine temperature indicator
78	Operating hours readout
79	Engine speed readout

NOTICE

The machine display gives visual and acoustic signals.

If an intermittent acoustic signal sounds:

► The cause is indicated in the machine display.

If a continuous acoustic signal sounds:

► The cause is indicated in the machine display, park the machine in a safe place and stop the engine.

4.4 Preparations

Information on putting the machine into operation

- Read and understand the Operator's Manual before putting the machine into operation!
- Operate the machine only from the operator seat!
- Pay attention to all safety instructions.
- Have qualified personnel instruct you before using the machine for the first time. Perform test runs on open terrain.
- Check the condition of the machine before starting machine travel.
- Have the machine checked by qualified personnel before putting it into operation again after it has been out of operation over a longer period of time.

Tips on how to achieve optimal output

- Avoid loading the diesel engine at idling speed.
  ➥ Avoid low-load operation (less than 20 % load).
- Strictly observe maintenance intervals and perform (or have performed) the mandatory maintenance.

Requirements and information for the operating personnel

- The machine may only be put into operation by authorized personnel that has been instructed.
- The operating personnel must have read and understood this Operator's Manual before putting the machine into operation.
- Only use the steps and handholds when entering and leaving the cabin.
- Face the machine as you enter and leave it.
- Never use the controls or movable lines and cables as handholds.
- Keep the footholds and handholds clean to ensure a safe hold at all times; immediately remove dirt, such as oil, grease, earth, snow or ice.
- The machine may only be put into operation when the operator is seated.
- Fasten the seat belt.
- Never get on a moving machine. Never jump off the machine.
- Before leaving the machine, lower the loader unit, stop the diesel engine and apply the parking brake.
- Carrying or transporting accompanying persons in the cabin and/or on the machine is prohibited.
- The machine may only be used in technically perfect condition in accordance with its designated use and the instructions set forth in the Operator's Manual, and only by safety-conscious persons who are fully aware of the risks involved in operating the machine.
- Always observe the warning and information labels, and the load diagrams (for example pallet forks) of the loader unit.
- Immediately replace (or have replaced) damaged or illegible warning and information labels with new ones.

5 Operation

5.1 Steering system

Steering modes

The oscillating articulation is ensured by means of double-action hydraulic cylinders.

If the steering wheel is turned to the left, the machine is steered to the left:

➥ Machine travels to the left.

If the steering wheel is turned to the right, the machine is steered to the right:

➥ Machine travels to the right.

5.2 Accelerator actuation

Accelerator pedal

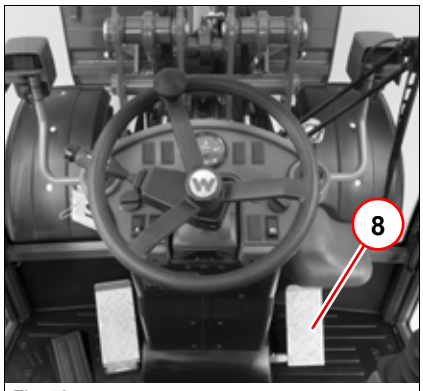


Fig. 53

The engine speed is set continuously with accelerator pedal **8**. This affects the work movements of the loader unit and the attachments, the hydraulic functions of the attachments and the travel speed.

Dirt accumulation and objects in the area of the accelerator pedal can result in malfunctions.

Information

Maximum speed depends on the speed range selected!

Speed control

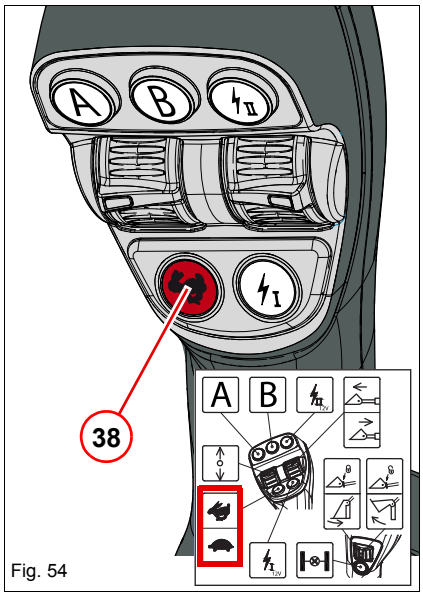


Fig. 54

Speed ranges

The machine has two speed ranges

Speed range	Travel speed	Recommended for activity
Creep gear	0 – 7 kph (0 – 4.35 mph)	For work requiring precise speed adjustment
High speed	Standard: 0 – 20 kph (0 – 12.4 mph) Option: 0 – 30 kph (0 – 18.6 mph)	For long-haul travel

Changing speed range

Press push button **38**:

➥ The speed range changes from creep gear to high speed, or from high speed to creep gear (*– see “Travel mode” on page 5-5*).

5.6 Lights/signaling system

Working lights

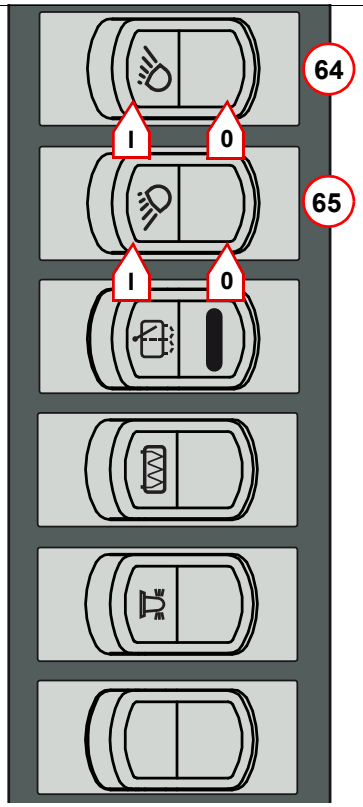


Fig. 64

WARNING

Accident hazard due to blinded motorists!

Other motorists can be blinded by the working lights.

► Always switch off the working lights on public roads.

► Adjust the working lights so that other motorists are not blinded during work operation.

The machine is equipped with front and rear working lights.

The working lights are operated with switches **64** and **65** in Switch panel 7 (on the right on the cabin roof).

Operating the front working lights

- Press switch **64** to position I.
  ➥ The front working lights are switched on.
- Press switch **64** to position 0.
  ➥ The front working lights are switched off.

Operating the rear working lights

- Press switch **65** to position I.
  ➥ The rear working lights are switched on.
- Press switch **65** to position 0.
  ➥ The working lights go out.

Falling objects

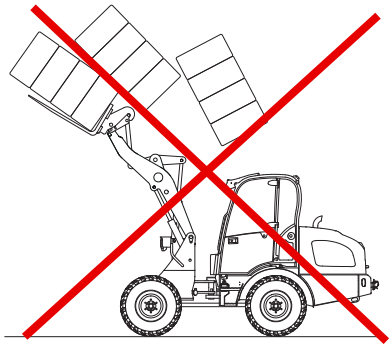


Fig. 80 :

WARNING

Injury hazard due to material falling from a raised loader unit!

Falling loads (for example, large bales or stacks of bales) can cause serious or fatal injury.

- ► Never transport several large bales or boxes at the same time!
- ► Stacking loads with machines that are not equipped with a protective roof or cabin is prohibited.
- ► Only work with a raised loader unit when the machine is at a standstill.
- ► Do not tilt in the attachment to the limit with a raised loader unit.

Loader unit control lever

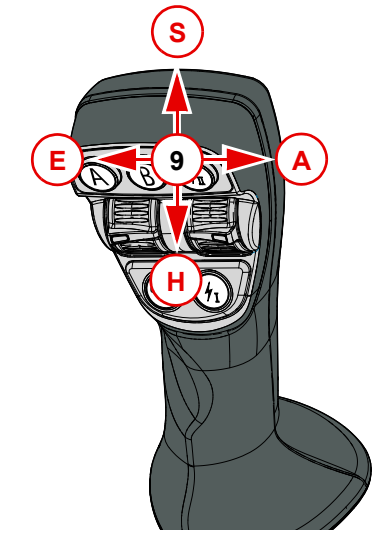


Fig. 81

Control lever **9** (*Fig. 34*) controls the work movements of the loader unit. Control lever is located to the right of the operator seat.

Information

The float position of the loader unit is located on the “Lower” function. The control lever automatically returns to the middle position when it is released (except if it is in the float position).

If the machine is equipped with electrically unlockable counterbalance valves, press the float position switch **49** first. Otherwise operation is not possible with the loader unit in float position!

Loader unit

- Move control lever **9** toward H.
  - ➥ The loader unit is raised.
- Move control lever **9** toward S.
  - ➥ The loader unit is lowered.

Attachment

- Move control lever **9** toward E.
  - ➥ The attachment tilts in.
- Move control lever **9** toward A.
  - ➥ The attachment tilts out.

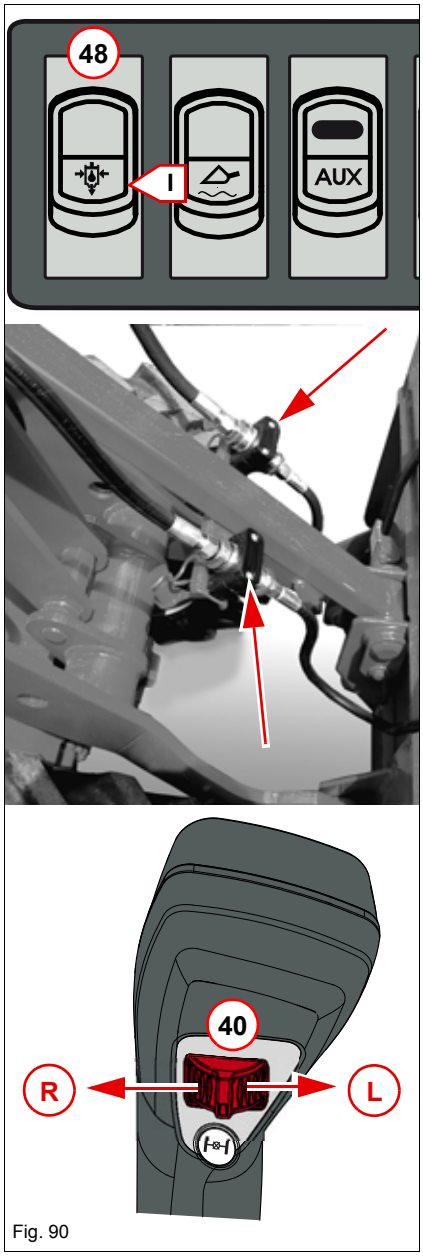


Fig. 90

Coupling:

Switch **48** is located in Switch panel 3.

1. Press switch **48**.
   ➥ The pressure on the hydraulic connections on the loader unit is released.
2. Remove the protective caps from the loader unit connections. To do this, press the connections forward together with the hydraulic hose.
3. Remove the protective caps from the hydraulic connections of the attachment.
4. Press the hydraulic connections of the attachment into the openings of the hydraulic connections on the loader unit.
5. Check whether the hydraulic connections are engaged correctly.
   - To do this, pull on the hydraulic hoses of the attachment. The hydraulic connections must not be released as you do so.
6. Check the hydraulic system of the attachment and the hydraulic connections for leaks. To do this, carefully actuate the hydraulic connections on the loader unit with scroll wheel **40**.

Uncoupling:

1. Press switch **48**.
   ➥ The pressure on the hydraulic connections on the loader unit is released.
2. Place a receptacle under the hydraulic connections to collect any oil as it drains.
3. Release the hydraulic connections. To do this, press the connections on the loader unit forward together with the hydraulic hose. Pull on the hydraulic hose of the attachment at the same time.
4. Fit the protective caps onto the hydraulic connections.
5. Lay the hydraulic hoses over the attachment.

Information on working with the pallet forks

WARNING

Injury hazard due to falling loads with a raised and extended loader unit!

Falling loads (for example, large bales or stacks of bales) can cause serious or fatal injury.

- ► Stacking loads with machines that are not equipped with a protective roof or cabin is prohibited.
- ► Only work with a raised loader unit when the machine is at a standstill.
- ► Do not tilt in the attachment to the limit with a raised loader unit.

WARNING

Accident hazard due to pallet fork arms!

Pallet fork arms can cause serious injury or death during machine travel on public roads.

- ► Remove pallet fork arms before performing machine travel on public roads and transport them separately.
- ► Raise foldable pallet fork arms before performing machine travel on public roads.

Designated use

The pallet forks are used for raising, transporting and setting down loads. Any other use of the pallet forks is not in accordance with its designated use. The pallet forks consist of the fork frame and forks. The forks must always be used in pairs as delivered. The operator must receive special training for using the pallet forks.

Installing the pallet forks

➥ *– see “Re-equipping attachments” on page 5-28*

Control elements

Operate the pallet forks with control lever **9** .

➥ *– see “Loader unit control lever” on page 5-21*

Operation

➥ *– see “Operation” on page 5-34*

Information

Practice using the pallet forks before working with them for the first time.

Central lubrication system

The central lubrication system automatically lubricates the lubrication points of the machine.

The LED of the central lubrication system illuminates for 1.5 seconds after switching on the starter to indicate functional readiness of the controls. It stays lit during the entire lubrication procedure.

The integrated electronic control unit has a data memory for saving the times that have been set or that have elapsed. The time is taken and saved if the starter is switched off during lubrication or during a break. The remaining lubrication time or break time is read from the memory upon switching the starter on again, and lubrication is resumed where it was interrupted.

Lubrication time control

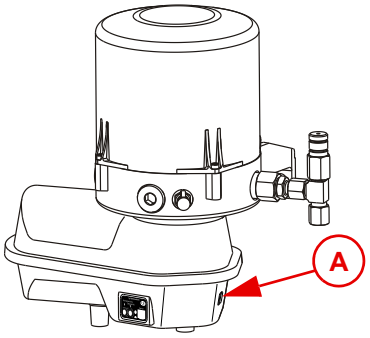


Fig. 117

NOTICE

Water penetrating into the controls of the central lubrication system can destroy them.

► Always close the cover correctly, otherwise water can penetrate into the controls and destroy them.

Break and lubrication times can be set with the time-dependent control of the central lubrication system. Break times are the periods between two lubrication times.

Information

Pressing push button A on the side of the pump starts intermediate lubrication at any given time if the starter is switched on. This also serves as a functional check.

► The pump then immediately starts with the lubrication cycle. The lubrication or break time that has elapsed so far or that has been saved is reset and starts over again.

► A lubrication system malfunction can also be reset by pressing the intermediate lubrication switch, and the pump restarts lubrication.

5.14 Putting out of operation/back into operation

Putting the machine out of operation

The measures indicated below refer to putting the machine out of operation and back into operation again after a longer period of time.

1. Park the machine as described in chapter *Securing the machine*!
2. Jack up the machine so that the tires do not touch the ground any more.
3. Release the parking brake.
4. Fully lower the loader unit.
5. *Releasing residual pressure in the hydraulic system* and set the control lever to the zero position.
6. Spray an anticorrosion agent onto bare metal parts of the machine (for example piston rods of hydraulic cylinders if they are not retracted).
7. Preserve the engine.

Preserving the engine

1. Clean the engine with a high-pressure cleaner in a suitable place.
2. Run the engine until it reaches operating temperature.
3. Drain the engine oil and dispose of it in an environmentally friendly manner.
4. Fill anti-corrosion oil into the engine.
5. Drain the fuel from the tank.
6. Create a mixture of 90 % fuel and 10 % anti-corrosion oil and fill it into the fuel tank.
7. Let the engine run 10 minutes at idling speed and then stop it.
8. Crank the engine several times by hand to preserve the cylinders and combustion chambers.
9. Remove the fan belt and wrap it for storage protecting it from air and light.
10. Spray an anticorrosion agent onto the running surfaces of the pulleys.
11. Close the intake and exhaust openings of the engine.

NOTICE

Observe the Operator's Manual of the engine.

Crane-lifting the machine

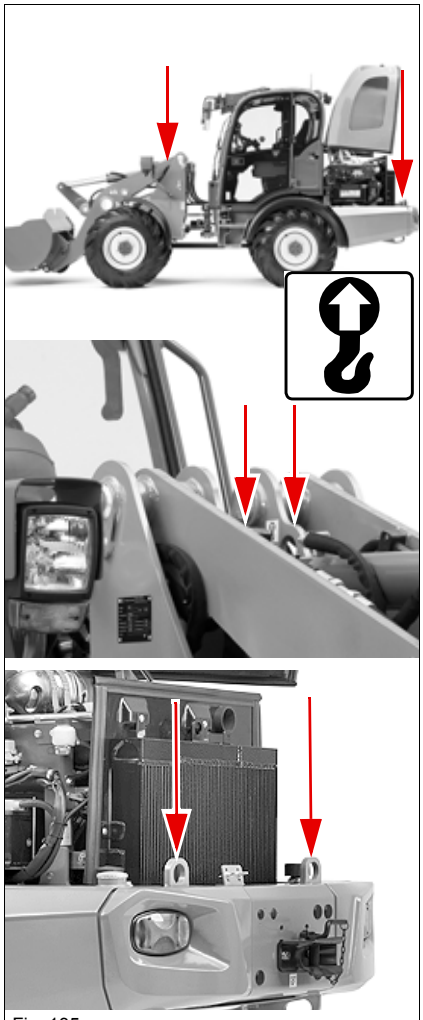


Fig. 135

Safety instructions regarding crane-lifting

In order to avoid an injury or accident hazard, observe the following instructions when loading the machine!

- Seal off the danger zone.
- The crane and the lifting gear must have suitable dimensions.
- Take into account the machine's overall weight.
- Use only tested ropes, belts, hooks, shackles (screw and socket pins with lockable brackets) for fastening the machine.
- Have loads fastened and crane operators only guided by experienced persons.
- The person guiding the crane operator must be within sight or sound of him.
- The crane operator must observe all movements of the load and the lifting gear. Secure the machine against unintentional movement.
- The crane operator may move a load only after making sure that the load is safely fastened and nobody is within the danger zone, or after receiving a signal from the persons attaching or securing loads.
- The load must not be fastened by winding the lifting rope or chain around it.
- Bear in mind the load distribution (center of gravity) when fastening the lifting gear.
- Load the machine only with the standard bucket empty and in transport position.
- Ensure that no one is in or on the machine.
- Stay clear of a raised load.
- Pay attention under all circumstances to the safety instructions in chapter *Crane-lifting on page 2-13* and to the information in the "Erdbaumaschinen (earth moving machinery)" leaflet of the German employers' liability insurance association for construction engineering.

Crane eyelets

For hitching the lifting gear, use only the slinging points identified with the labels (*Fig. 135*).

Work to be performed (please mark with a cross) after 30 operating hours
Check the gearbox, engine and hydraulic system for leaks
Check the hydraulic, water and engine oil radiator for dirt
Check the coolant level and antifreeze
Check the tension and condition of the V-belt
Check the hoses and pipes for secure seating
Check the routing of the hoses and pipes
Check the piston rods of the hydraulic cylinders
Check the routing of Bowden cables and electric cables
Retighten all bolts; pay particular attention to the engine mounting, axle mountings and cardan shaft
Check the instruments and acoustic warning devices
Check the electrical system
Check the brake/inching pedal and parking brake, adjust if necessary
Check the steering system
Check the light system (if equipped)
Check the idling speed
Check the valve clearance, adjust if necessary (Perkins 1004-4 only)
Check the door and engine cover locking mechanism for correct operation
Check the protective ROPS structure
Check the tire condition
Replace the engine oil and engine oil filter
Clean the air filter, replace it if necessary
Replace the hydraulic oil return filter
Perform grease lubrication according to the lubrication plan
Lubricate the cardan shaft
Lubricate with oil: all levers, Bowden cables and hinges
Check all oil levels, add oil if necessary

7.5 Cleaning and maintenance

Information on cleaning and maintenance

CAUTION

Injury hazard due to a dirty machine!

A dirty machine can cause injury.

- ► Follow the daily maintenance plan.
- ► Remove dirt in particular from the handholds, footholds and control elements.

NOTICE

Damage to machine due to cleaning work.

- ► Pay attention to the lower side in particular when cleaning the machine. Do not allow dirt to collect on the engine or gearbox.
- ► Ensure that the spaces between the radiator fins are clean and not blocked.
- ► Do not damage the radiator fins when cleaning with a high-pressure cleaner.
- ► Always cover the intake connection of the air filter before washing the engine.
- ► Do not clean sensitive electrical components (instrument panel, alternator, compact connectors, control levers, etc.) with a high-pressure cleaner.

Environment

Avoid environmental damage

- ► Clean the machine in a suitable place where the dirty waste water can be collected in an environmentally friendly manner.
- ► Collect contaminated water and dispose of it in an environmentally friendly manner.

Environment

Possible environmental damage.

- ► Avoid releasing antifreeze and coolant.
- ► Collect antifreeze and coolant, and dispose of them in an environmentally friendly manner.

Information

Adapt the water/coolant mixture to the local conditions and to the work site of the machine.

- ► – see “Fluids and lubricants (overview)” on page 7-14.
- ► – see “Coolant” on page 9-9.

Checking/adding coolant

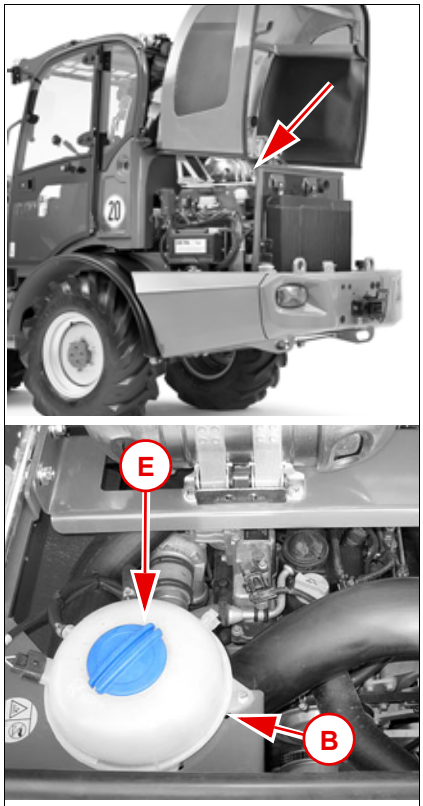


Fig. 147

Check the coolant level regularly. The check markings “Max” and “Min” are located on reservoir B.

Ensure that enough antifreeze is added to the coolant at all times, including in summer, since the antifreeze also prevents corrosion inside the radiator and the engine.

Preparations

1. Park the machine on firm, level and dry ground.
2. Apply the parking brake.
3. Lower the loader unit to the ground.
4. Stop the engine.
5. Wait one minute.
6. Open the engine cover.

Checking the coolant level

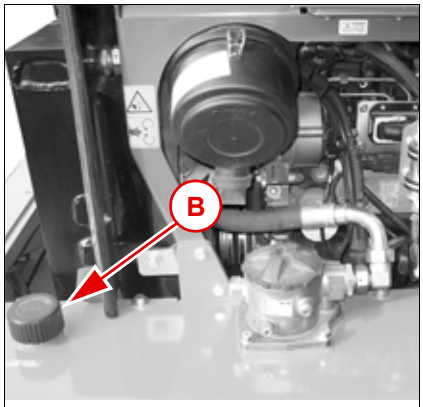
➥ The coolant level must be between the “Min” and “Max” markings.

Adding coolant

Add coolant if the coolant level is below the “Min” marking:

1. Open coolant filler inlet E.
2. Add coolant.
3. Check the coolant level.
   - If necessary, continue adding coolant until reaching the “Max” marking.
4. Close the coolant filler inlet.

Checking the hydraulic oil level



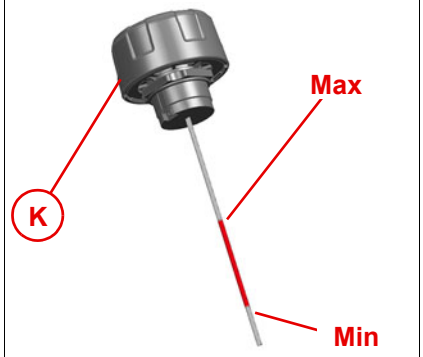


Fig. 159

The hydraulic oil reservoir is located on the right side of the rear section and is accessed by opening the engine cover.

Preparations

1. Park the machine on firm, level and dry ground.
2. Apply the parking brake.
3. Lower the loader unit to the ground.
4. Stop the engine.
5. Wait one minute.
6. Open the engine cover.

Checking the hydraulic oil level

1. Unscrew the breather filter.
   ➥ Pressure is released from the reservoir.
2. Pull out the hydraulic oil dipstick K.
   - The hydraulic oil dipstick is located on the lower side of the breather filter.
3. Wipe the hydraulic oil dipstick with a clean and lint-free cleaning cloth.
4. Insert the hydraulic oil dipstick in the opening of the hydraulic oil reservoir.
   - Do not screw in the breather filter as you do so!
5. Pull out the hydraulic oil dipstick.
6. Check the hydraulic oil level.
   ➥ The hydraulic oil level must be between the “Min” and “Max” markings.
7. Re-insert the hydraulic oil dipstick and tighten the breather filter.

Adding hydraulic oil

NOTICE

Risk of technical damage.

► Use the correct oil type, see chapter *Fluids and lubricants (overview) on page 7-14*.

► Carefully open the hydraulic oil filler neck to release the pressure in the hydraulic oil reservoir.

Add hydraulic oil if the hydraulic oil level is below the “Max” marking.

1. Unscrew the breather filter.
   ➥ The residual pressure in the hydraulic oil reservoir is released.
2. Add hydraulic oil.
3. Check the hydraulic oil level.
   ➥ The hydraulic oil level must be between the “Min” and “Max” markings.
4. Screw in the breather filter.

7.17 Braking system

Information on the braking system

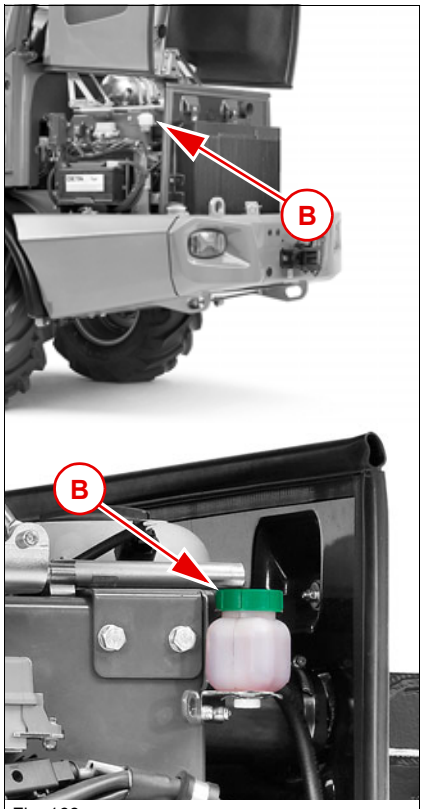


Fig. 168

WARNING

Accident hazard due to malfunctioning brakes! Malfunctioning brakes can cause serious and fatal accidents!

Brakes are crucial to safety. Incorrect maintenance can cause brake failure. **All repair work on the braking system must be performed by the trained personnel of a qualified service center.**

- ► Check the brake function once a day.
  There is a malfunction if the brake fluid level drops from check to check.
- ► Do not operate the machine with malfunctioning brakes.
- ► Have the braking system regularly checked by trained and experienced personnel on the occasion of the inspections.

Checking the brake-fluid level

Brake-fluid reservoir B is located on the left under the engine cover. The check marks “MAX” and “MIN” are located on the side of the reservoir.

Do not operate the machine any more if the brake fluid level in the brake-fluid reservoir has dropped below the marking “MIN”. Operate the machine again only after an authorized service center has checked and released the machine.

Error codes

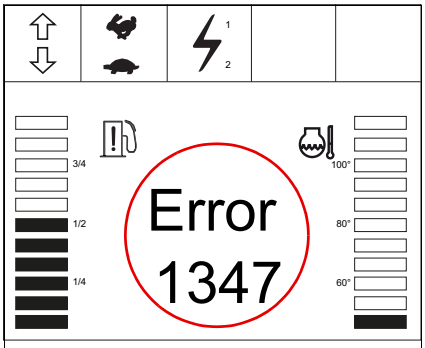


Fig. 174

If the machine electronics issue an error, an error code is displayed in the indicating instrument. Make a note of the error code before stopping the engine. Some error codes do not appear any more after switching off the starter, even though the error may still be present. Contact an authorized service center if an error code appears that is not listed in the table.

NOTICE

Failure to observe the error codes can cause serious technical damage!

- ► Proceed as specified in the error code table.
- ► Get in touch with a service center if the error persists in spite of proceeding as specified.
- ► Make a note of error codes that are not listed and inform the service center of them.

SPN code	Error description	Remedy
0097	Water in fuel	*Water separator maintenance on page 7-23*
0100	Oil pressure too low or too high	*Stopping the engine on page 4-38* *Checking the engine oil level on page 7-24*
0107	Dirty engine air filter	*Checking/cleaning/replacing the main engine air filter on page 7-31*
0110	Coolant temperature too high	*Stopping the engine on page 4-38* *Checking/adding coolant on page 7-27* *Cleaning the cooling system on page 7-28*

9.10 Coolant

Important information on coolants

Check the coolant level regularly. The coolant must cover the radiator fins. Ensure that enough antifreeze is always added to the coolant, even in summer. The antifreeze also prevents internal corrosion of the radiator and the engine.

Coolant compound table

Outside temperature	Water	Antifreeze
Up to °C	% by volume	% by volume
4 °C (39.2 °F)	99	-
−10 °C (14 °F)	79	20
−20 °C (−4 °F)	65	34
−25 °C (−13 °F)	59	40
−35 °C (−31 °F)	55	45
−42 °C (−43.6 °F)	50	50

9.11 Noise emissions

Noise values

Overview of noise values	dB(A)
Average sound power level **LwA**	100.3
Guaranteed sound power level **LwA**	101
Specified sound pressure level **LpA**	78