MECALAC

AS50

FIN: Valid from W09S45E01DBA08797...

Service manual
Status: 26.10.2015

Product	SERIES AS50
FIN	as from W09S45E01DBA08797
Publisher	MECALAC Baumaschinen GmbH Am Friedrichsbrunnen 2 D-24782 Büdelsdorf Tel: +49 (0)4331 351 325 Fax: +49 (0)4331 351 491 E-Mail: info@mecalac.com www: www.mecalac.com
Foreword	This operating manual contains all the information and instructions required for the correct execution of service tasks required for the wheel loader. Read this service manual before commencing the tasks and always keep it to hand for reference.
Validity	This Service manual applies togther with the operating manual of the Mecalac AS50.
Suggestions and comments	...regarding this documentation or the wheel loader can be sent to the above-mentioned address.
Most recent amendment	26.10.2015

Contents

1 Notes for the Reader

In this chapter you will find information regarding the use of the Service manual:

1.1 Validity

This service manual contains information and rules of conduct for service work on the AS50. Read this service manual carefully before the first service. Always use the service manual when performing service tasks. Store the service manual at a central point and to hand for the responsible technical personnel. In accordance with current usage in the industry, the term wheel loader is used in this service manual.

This Service manual applies, in conjunction with the operating manual, to the respective wheel loader of the AS50 SERIES.

This service manual applies to technical personnel.

1.2 Illustrations

The illustrations in this service manual show the wheel loader in partially simplified form.

1.3 Accentuated text

In this service manual, important information is highlighted by symbols or special formatting. The following examples illustrate the most important types of highlighting.

1.3.1 Pictograms

Pictograms used

Pictogram	Meaning
	Further useful information.
	Conditions that must be fulfilled in order to perform an action
	Tools or material required in order to perform an action.

1.3.2 Safety Note

Safety instruction: Special note for an informatory section

Explanation of the note.

- The dot identifies measures that relate to the note.

1.3.3 Safety instructions

Safety Instruction

To ensure the safe implementation, ensure compliance with the following steps:

1. First step of a safety instruction
   ! Important note regarding a safety instruction
2. Second step of a safety instruction.
   ↪ The result of this step.

✓ The safety instruction is complete, the goal of the of a safety instruction has been achieved.

1.3.4 Warning notes

DANGER

Warning of injuries leading to fatality

Failure to observe the safety instruction will result in serious damage to health, including death.

➔ The arrow identifies a precautionary measure you have to take to avoid the hazard.

WARNING

Warning: Serious Injuries.

Failure to observe the warning can cause serious damage to health, or even death.

➔ The arrow identifies a precautionary measure you have to take to avoid the hazard.

CAUTION

Warning: Injuries.

Failure to observe the warning can result in serious damage to health.

➔ The arrow identifies a precautionary measure you have to take to avoid the hazard.

NOTICE

Warning: Damage to property.

Ignoring the warning instructions can result in serious damage to the wheel loader or in its surroundings

➔ The arrow identifies a precautionary measure you have to take to avoid the hazard.

1.3.5 Guideline

Carry out the following steps: = Start of a set of instructions.

1. First step in a sequence of operations.

   `Required settings . . . . . Setting values`

2. Second step in a sequence of operations.

➥ The result of this step.

✓ The operation is complete, the goal has been achieved.

2 Description

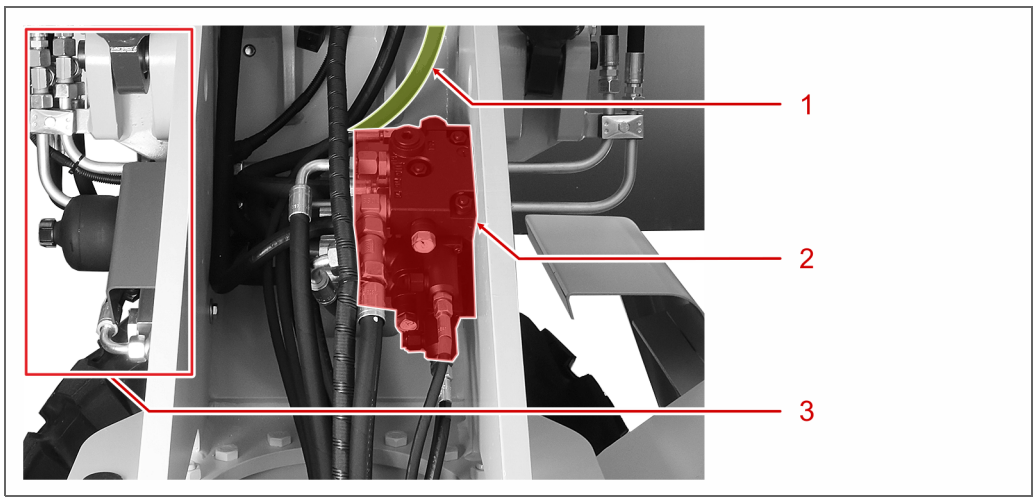
2.1 Front section

The bucket arm and the valves required for the control of the hydraulic cylinders are located on the front section. The valves are controlled hydraulically or electrically. Due to the mechanical design of the wheel loader, the supply and control lines are subjected to high mechanical loading. Care must be taken that the lines are always fixed to the front and rear sections of the vehicle. The lines must be able to move freely without touching other components between the attachment points.

All valves and hydraulic hoses must be checked for leaks at regular intervals, see "Checking hydraulic hose lines" (page 31).

2.1.1 Overview

The valve block is located behind a protective plate.

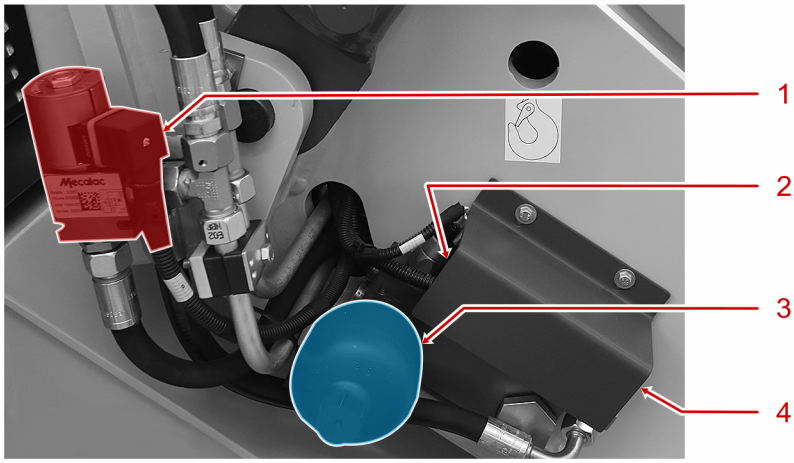


Overview - Front section | Hydraulic hoses and valves

Key

No.	Designation	Function
1	Hydraulic hose	See Chapter "Hydraulic hoses" (Page 21).
2	Bucket valve block	Valves for control units for lifting, lowering, tipping and dumping the bucket
3	Extract	See "Extract" (Page 10)

2.1.2 Extract



Overview - Front section | Hydraulic hoses and valves

Key

No.	Designation	Function
1	Solenoid valve	Serves to control the lifting unit suspension.
2	Switch	Tests the pressure of the nitrogen accumulator. The solenoid valve is shut in the event of over-pressure.
3	Nitrogen accumulator	Provides suspension for the hydraulic system.
4	Solenoid valve	Serves to control the lifting unit suspension.

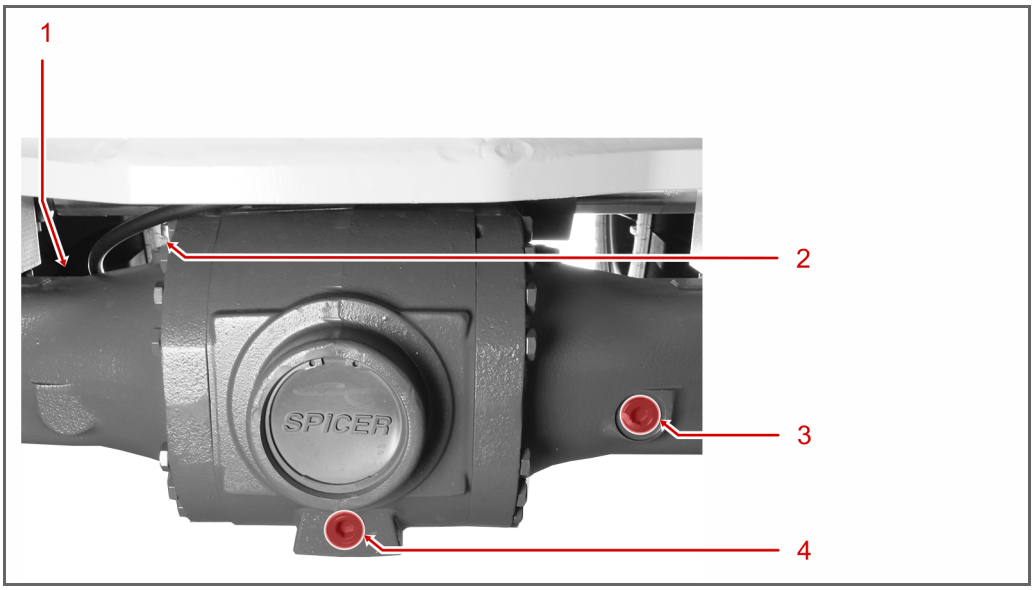
3 Service tasks

In this chapter you will find information regarding service tasks for technical personnel:

- Checks (Page 11)
- Repair work (Page 24)
- Changing the consumables (Page 54)
- Lubrication (Page 75)

3.1 Checks

3.1.1 Checking the front axle oil level



Location of the bolts on the front axle

Key

No.	Designation
1	Inspection and filler plug
2	Axle vent valve
3	Inspection and filler plug
4	Drain plug

Requirement

- The wheel loader is warmed up.
- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The parking brake is applied.
- The ignition key has been removed.
- The bucket arm is raised.
- The bucket arm support is installed.

Tools required:

- Allen key, SW 12
- a sufficiently large oil drip tray
- Protective gloves
- Suitable, fresh gearbox oil, if necessary

WARNING

Health hazard posed by gearbox oil!

The gearbox oil is hazardous to health. Frequent skin contact can be carcinogenic.

➔ Avoid continuous skin contact with the gearbox oil.

➔ Always wear gloves when carrying out this job.

NOTICE

Environmental hazard posed by gearbox oil!

The used gearbox oil of the wheel loader is hazardous to the environment!

➔ Dispose of the used gearbox oil according to the local statutory provisions,

➔ Catch the draining gearbox oil in a suitable container.

➔ Prevent the gearbox oil from entering the soil.

Carry out the following steps:

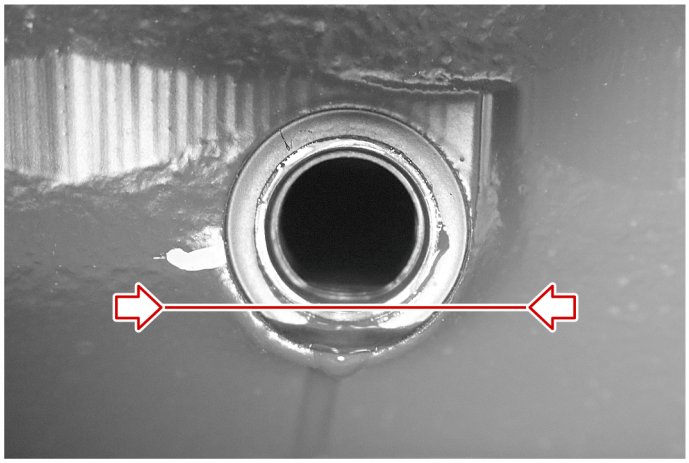
1. Place an oil drip tray beneath the front axle.

➥ The oil drip tray prevents the gearbox oil from penetrating the subsoil.

2. Unscrew the inspection and oil filler plug by means of an Allen key.

3. Catch any escaping gearbox oil in the oil drip tray immediately.
4. Check the oil level of the front axle.

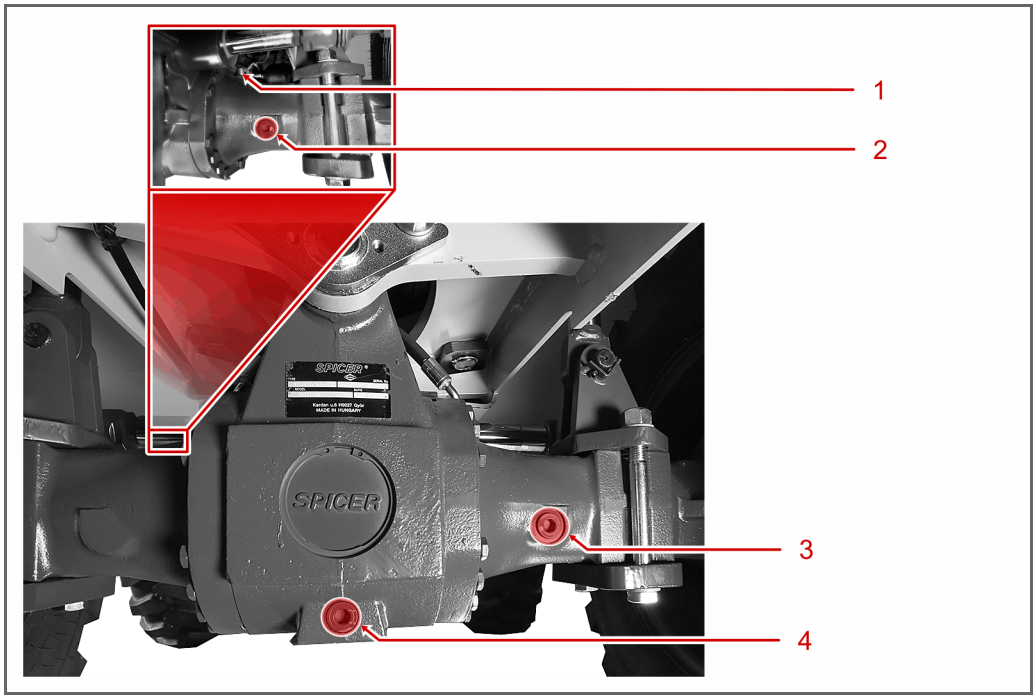
   ! The oil level must reach precisely below the lower edge of the inspection port .



5. If required, top up with fresh gearbox oil up to the lower edge of the inspection port .
6. Tighten the inspection and oil filler plug by using an Allen key.
7. Repeat steps **one** to **six** on the second inspection and oil filler plug, on the other side of the axle.
8. Dispose of the gearbox oil that has been collected, according to the local statutory provisions,

✓ Done.

3.1.2 Checking the rear axle oil level



Location of the bolts on the rear axle

Key

No.	Designation
2	Axle vent valve
1	Inspection and filler plug
3	Inspection and filler plug
4	Drain plug

Requirement

- The wheel loader is warmed up.
- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The parking brake is applied.
- The ignition key has been removed.

Tools required:

- Allen key, SW 12
- a sufficiently large oil drip tray
- Protective gloves
- Suitable, fresh gearbox oil, if necessary

WARNING

Health hazard posed by gearbox oil!

The gearbox oil is hazardous to health. Frequent skin contact can be carcinogenic.

➔ Avoid continuous skin contact with the gearbox oil.
➔ Always wear gloves when carrying out this job.

NOTICE

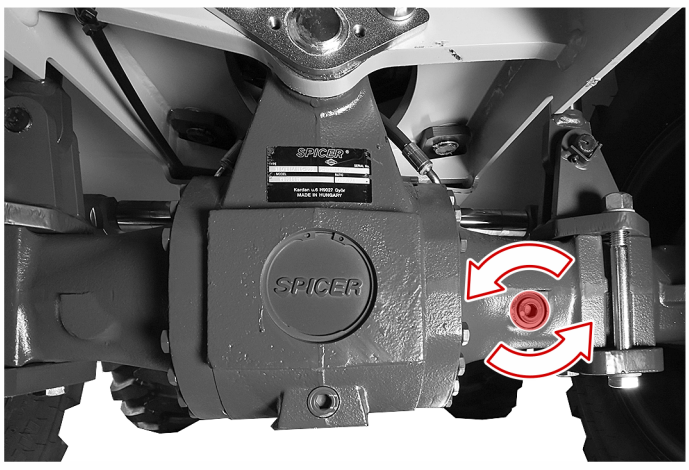
Environmental hazard posed by gearbox oil!

The used gearbox oil of the wheel loader is hazardous to the environment!

➔ Dispose of the used gearbox oil according to the local statutory provisions,
➔ Catch the draining gearbox oil in a suitable container.
➔ Prevent the gearbox oil from entering the soil.

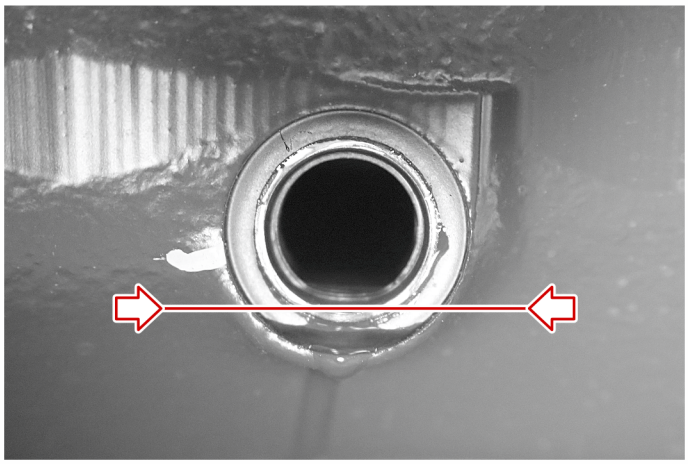
Carry out the following steps:

1. Place an oil drip tray beneath the rear axle.
   ➥ The oil drip tray prevents the gearbox oil from penetrating the subsoil.
2. Unscrew the inspection and oil filler plug by means of an Allen key.



3. Catch any escaping gearbox oil in the oil drip tray immediately.
4. Check the oil level of the rear axle.

   ! The oil level must reach precisely below the lower edge of the inspection port .



5. If required, top up with fresh gearbox oil up to the lower edge of the inspection port .
6. Using an Allen key, tighten the inspection and oil filler plug.
7. Repeat steps **one** to **six** on the second inspection and oil filler plug, on the other side of the axle.
8. Dispose of the gearbox oil that has been collected, according to the local statutory provisions,

✓ Done.

3.1.3 Checking the planetary gear oil level

Requirement

- The wheel loader is warmed up.
- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The parking brake is applied.
- The ignition key has been removed.

Tools required:

- Allen key, SW 12
- a sufficiently large oil drip tray
- Protective gloves
- Suitable, fresh gearbox oil, if necessary

WARNING

Health hazard posed by gearbox oil!

The gearbox oil is hazardous to health. Frequent skin contact can be carcinogenic.

➔ Avoid continuous skin contact with the gearbox oil.
➔ Always wear gloves when carrying out this job.

NOTICE

Environmental hazard posed by gearbox oil!

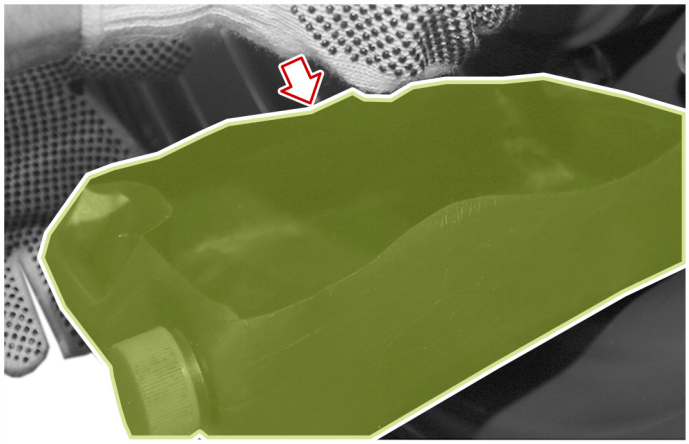
The used gearbox oil of the wheel loader is hazardous to the environment!

➔ Dispose of the used gearbox oil according to the local statutory provisions,
➔ Catch the draining gearbox oil in a suitable container.
➔ Prevent the gearbox oil from entering the soil.

Carry out the following steps:

1. Move the wheel loader so that the `Oil Level` fill level line of the planetary gear is horizontal.

2. Place an oil drip tray in the tyre rim.



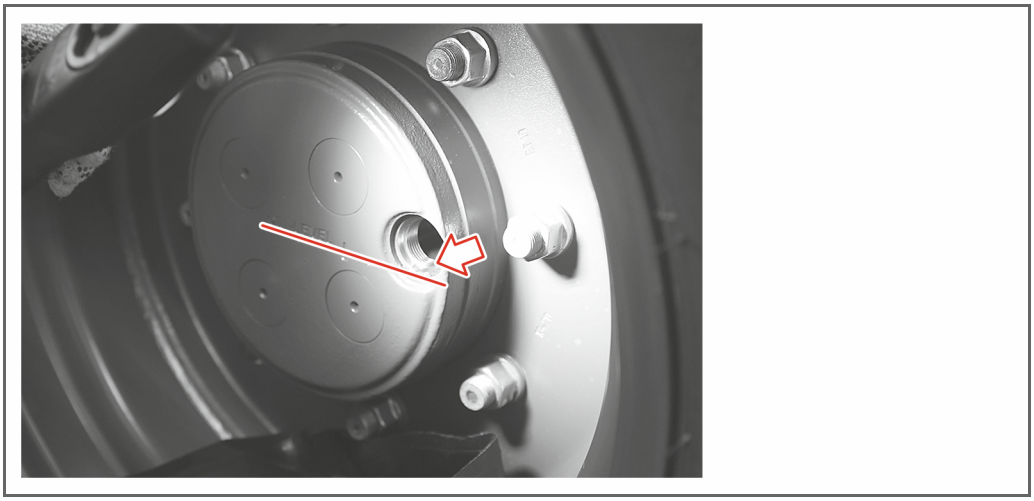
➥ The oil drip tray prevents the gearbox oil from penetrating the subsoil.

3. Unscrew the inspection and oil filler plug by means of an Allen key.

4. Catch any escaping gearbox oil in the oil drip tray immediately.

5. Check the oil level of the planetary gear.

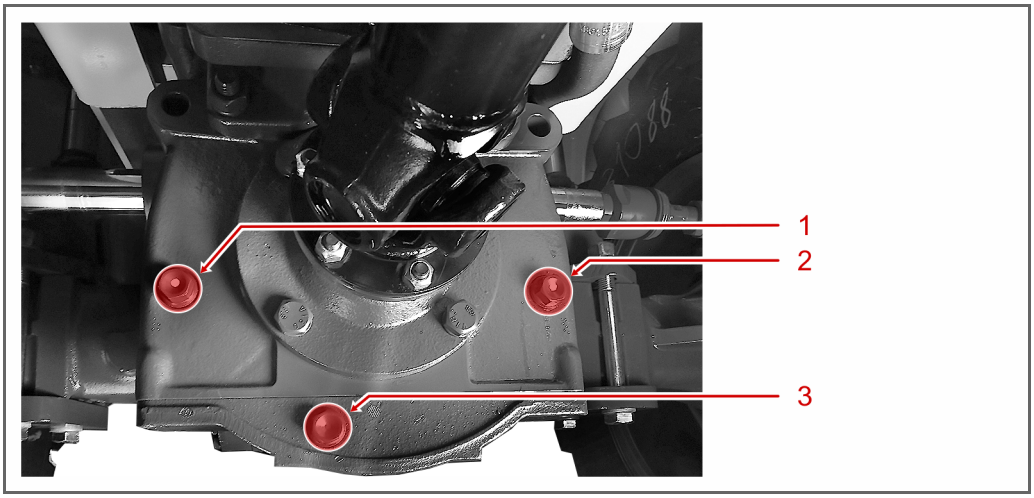
   ! The oil level must reach precisely below the lower edge of the inspection port .



6. If required, top up with fresh gearbox oil up to the lower edge of the inspection port .
7. Using an Allen key, tighten the inspection and oil filler plug.
8. Dispose of the gearbox oil that has been collected, according to the local statutory provisions,

✓ Done.

3.1.4 Checking the transfer case oil level



Location of the bolts on the transfer case

Key

No.	Designation
1	Inspection and filler plug
2	Inspection and filler plug
3	Drain plug

Requirement

- The wheel loader is warmed up.
- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The parking brake is applied.
- The ignition key has been removed.

Tools required:

- Wrench SW 17
- a sufficiently large oil drip tray
- Protective gloves
- Suitable, fresh gearbox oil, if necessary

WARNING

Health hazard posed by gearbox oil!

The gearbox oil is hazardous to health. Frequent skin contact can be carcinogenic.

➔ Avoid continuous skin contact with the gearbox oil.
➔ Always wear gloves when carrying out this job.

NOTICE

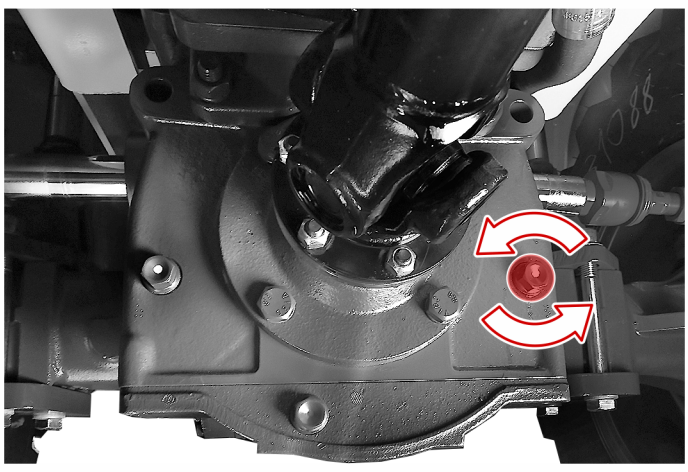
Environmental hazard posed by gearbox oil!

The used gearbox oil of the wheel loader is hazardous to the environment!

➔ Dispose of the used gearbox oil according to the local statutory provisions,
➔ Catch the draining gearbox oil in a suitable container.
➔ Prevent the gearbox oil from entering the soil.

Carry out the following steps:

1. Place an oil drip tray beneath the transfer case.
   ➥ The oil drip tray prevents the gearbox oil from penetrating the subsoil.
2. Using a square socket wrench unscrew the inspection and oil filler plug.



3. Catch any escaping gearbox oil in the oil drip tray immediately.
4. Check the oil level of the transfer case.
   ! The oil level must reach precisely below the lower edge of the inspection port .
5. If required, top up with fresh gearbox oil up to the lower edge of the inspection port .
6. Using a square socket wrench tighten the inspection and oil filler plug.
7. Dispose of the gearbox oil that has been collected, according to the local statutory provisions,

✓ Done.

3.1.5 Checking the electrical functions and connections

Carry out the following steps:

1. Test all electrical functions
2. Check that the electrical plugs and sockets are securely seated.
   ➥ Fuses
   ➥ Relays
3. Perform a visual inspection of the cable harnesses.
   ! Check that they are seated securely.
4. Measure the battery voltage.
5. Measure and check the functioning of the alternator.
6. Check that the main battery switch functions correctly.
7. Check that the body is electrically isolated.

✓ Done.

3.1.6 Hydraulic hoses

3.1.6.1 Requirements for the hydraulic hoses

Hydraulic lines must be checked within the framework of the service intervals. Take note of the detailed instructions of the national regulations (Germany BGR 237).

A recommendation as to the replacement intervals has been compiled on the basis of DIN 20066.

Depending on the demands made on the hoses, the specified replacement intervals can be extended. The replacement interval remains the responsibility of the operator.

Description of the replacement intervals of the hydraulic hoses

Demands on the hydraulic hose	Recommended replacement interval
Normal use	6 years (operating life, including a maximum of 2 years' storage)
Enhanced demands: • Increased time in use; for example multi-shift operation or brief cycle times of the machine or pressure impulses • Severe external and internal influences (via the medium) that markedly reduce the period of use of the hydraulic hose. • manually-operated hydraulic tools, for example portable shears in scrap yards.	2 years (operating life)

3.1.6.2 Checking the hydraulic hoses

Carry out the following steps:

1. Check all hydraulic hoses for leaks and mechanical damage.

   ! Detailed instructions are to be found in the national regulations (Germany: BGR 237).

2. Exchange damaged hydraulic hoses immediately.

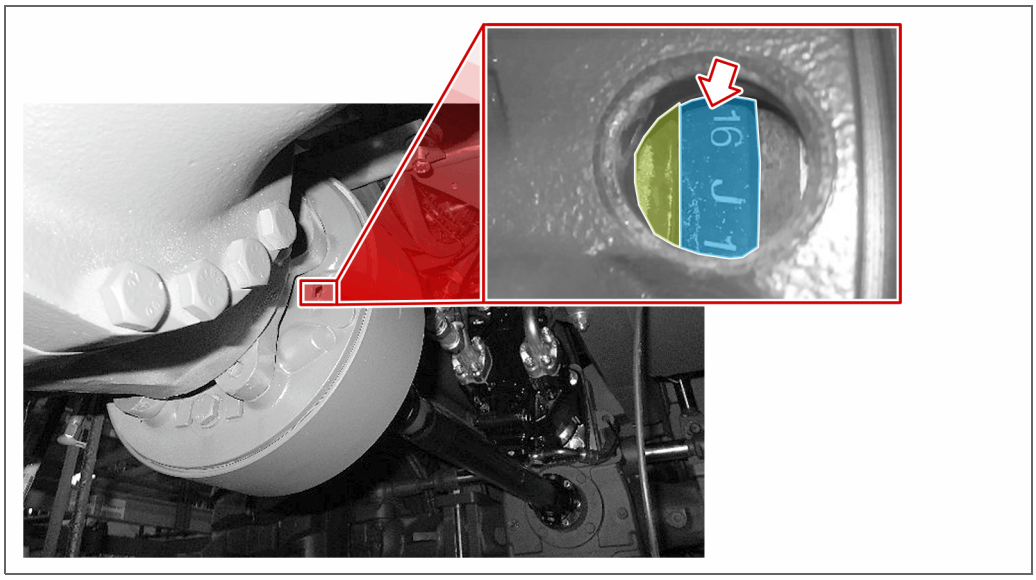
✓ Done.

Info

The recommended replacement intervals for the hydraulic hoses to be found in Chapter: “Service tasks“ > “Hydraulic hoses“ (Page 21).

3.1.7 Disc brakes - checking the pad thickness

This axle has an external drum brake.



Disc brakes - checking the pad thickness

Brake lining thickness:

- Maximum brake lining of the brake shoe is 7,0 mm.
- The minimum, after wear, is 3,0 mm.

3.1.8 Checking the parking brake

Requirement

- The wheel loader is standing on a horizontal surface.
- The ignition is switched on
- The wheel loader is secured against rolling away.

Tools required:

- Protective gloves

Carry out the following steps:

1. Set the hand-operated parking brake .

   ! The parking brake should become operative at the 3rd detent of the ratchet

   ➥ The parking brake tell-tale should light up at the 3rd detent of the ratchet.

2. Adjust the parking brake if necessary (See page 46: Setting the parking brake).

✓ Done.

3.2 Repair work

3.2.1 Changing a wheel

Requirement

- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The parking brake is applied.
- The direction of travel toggle switch must be in the neutral position.
- The ignition key has been removed.

Tools required:

- Two persons
- One jack suitable for the mass of the wheel loader
- A suitable base for the jack
- Safety block
- Protective gloves
- Wheel-brace
- A torque wrench
- A new wheel

Dismount the wheel

CAUTION

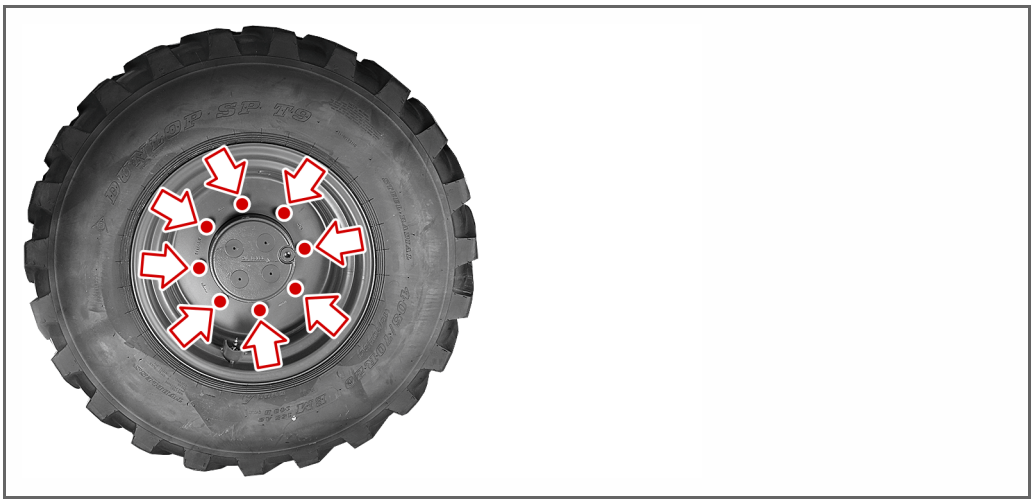
Hazard of crush injuries to limbs!

The tyre of the wheel loader is large and heavy. You can be crushed if it tips over!

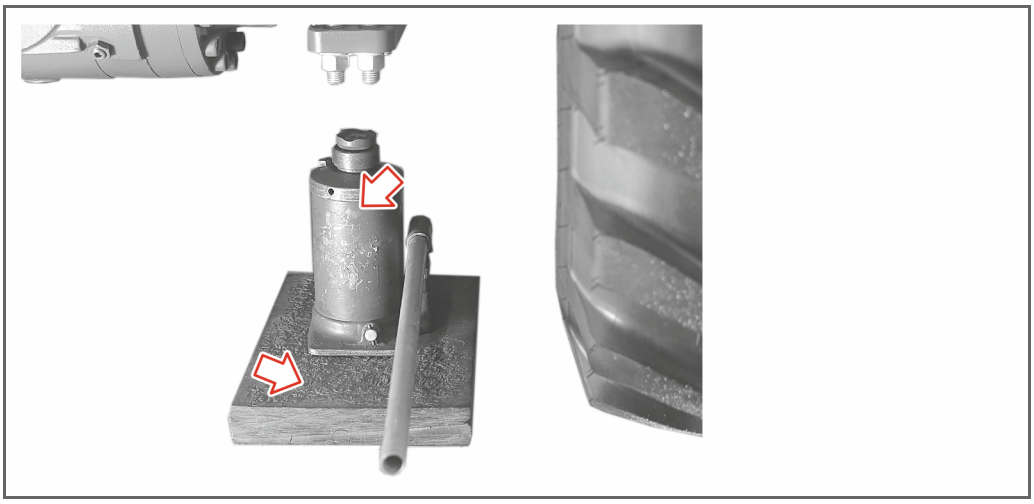
➔ Always wear protective gloves!
➔ Always wear safety shoes!
➔ Always work carefully!
➔ Always carry out a wheel change with two persons!

Carry out the following steps:

1. Using the wheel-brace loosen all eight wheel nuts by approximately half a turn.



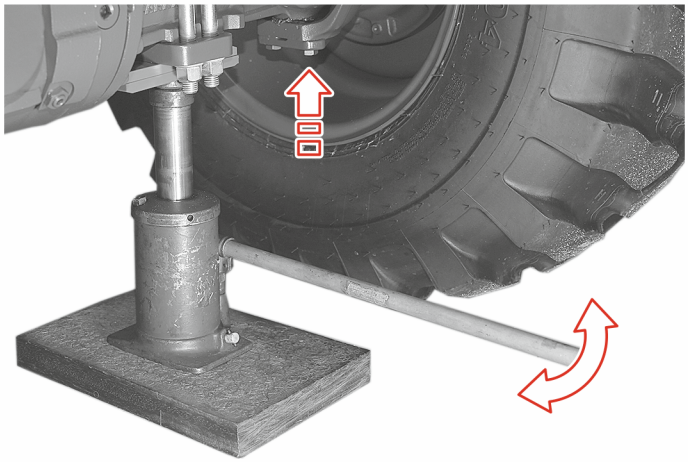
2. Position a suitable base beneath the jack below the jacking points of the axle of the wheel to be changed.



3. Place the safety blocks centrally on the upper end of the jack.

4. Using the jack lift up the wheel loader.

   ! The wheel must be lifted approximately one centimetre off the ground.



➥ The wheel has been lifted.

5. Using the wheel-brace remove all eight wheel nuts.

6. With two persons, carefully lift the wheel off the axle .

   The wheel has been dismounted.

Mounting the wheel.

Carry out the following steps:

1. With two persons, carefully lift the new wheel onto the axle .
2. Screw in the eight wheel nuts on the wheel loader.

   ! Only fasten the wheel nuts finger-tight.
3. Loosen the jack.
4. Remove the jack, the base and the safety blocks.

5. Tighten all eight wheel nuts to 500 Nm .

! For fastening, use a suitable torque wrench.

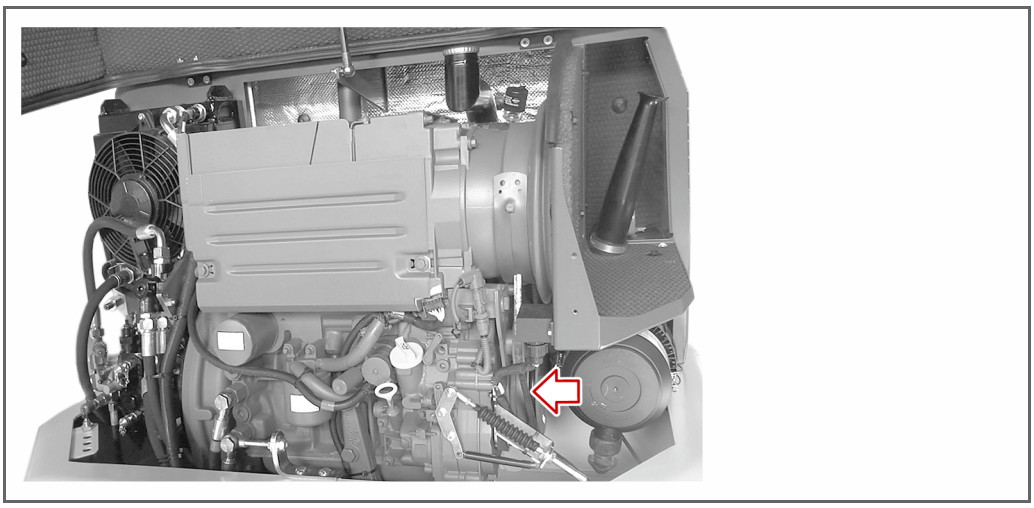
The wheel has been mounted.

✓ Done.

Info

After approximately ten hours of operation, re-tighten the wheel nuts of the wheel that has been changed.

3.2.2 Changing the V-belt



Location of the v-belt

Requirement

- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The diesel engine must be cold.
- The parking brake is applied.
- The ignition key has been removed.

Tools required:

- Protective gloves
- A new V-belt
- ratchet
- a long 1/2“ extension
- Wrench SW 17

Remove the V-belt

CAUTION

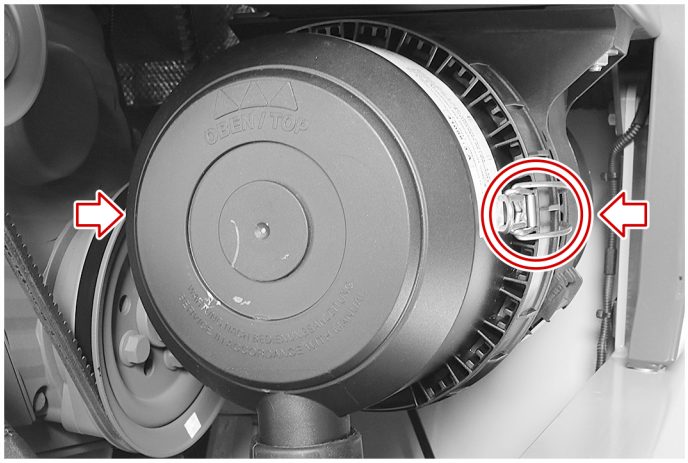
Hazard of injuries to limbs by crushing and cutting!

The interior of the engine compartment of the wheel loader is very cramped. You can be cut and crushed when performing maintenance tasks!

➔ Always wear protective gloves!
➔ Always work carefully!

Carry out the following steps:

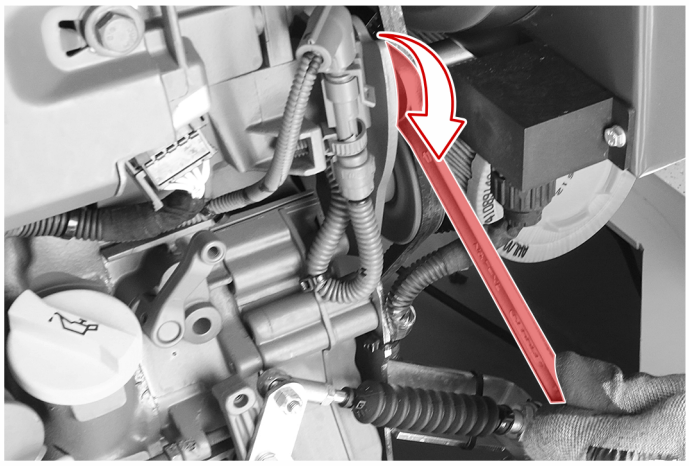
1. Open the two locking mechanisms of the air filter lid.



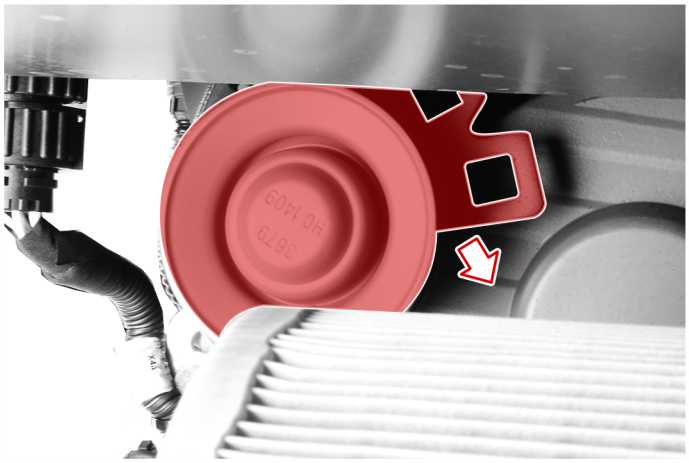
2. Remove the lid.

   ! Place the lid in a suitable place.

3. Loosen the mounting bolt with the aid of a socket wrench.



4. Turn the ‹TENSION PULLEY› of the ‹V-BELT ›to one side with the aid of a ratchet and an extension.



➥ The ‹V-BELT› is loosened.

5. Remove the ‹V-BELT›.

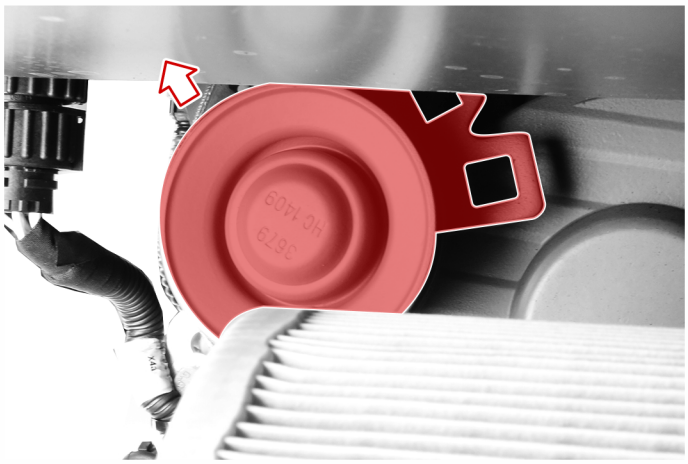
   The V-belt has been removed.

Installing the V-belt

Carry out the following steps:

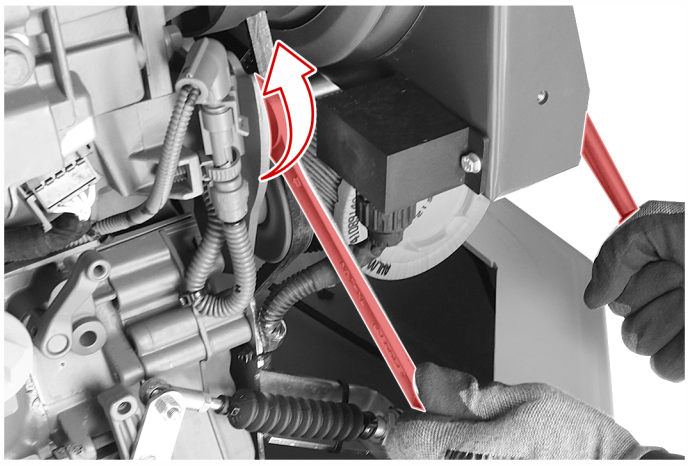
1. Put the new ‹V-BELT› in place.

2. Turn and hold the ‹TENSION PULLEY› in its original position with the aid of a ratchet and a long extension..

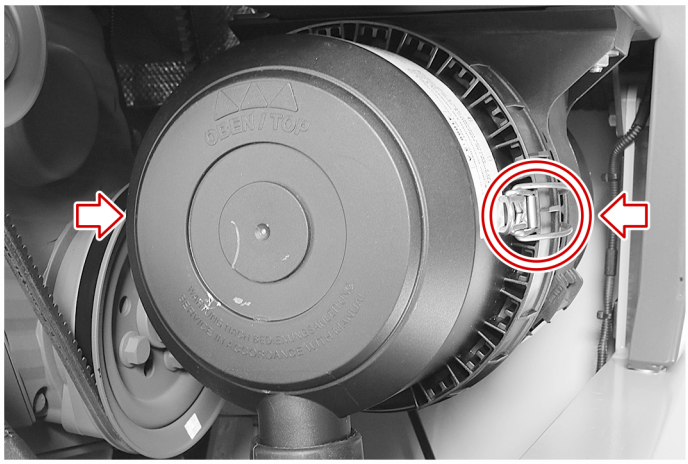


➥ The V-belt must be tensioned to the extent that it can only be twisted once through 90 degrees.

3. Fasten the mounting bolts with the aid of a socket wrench.



4. Re-install the lid.



The new V-belt has been installed.

✓ Done.

3.2.3 Changing the fuel filter

Requirement

- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The diesel engine must be cold.
- The parking brake is applied.
- The engine hood of the wheel loader is open.
- The ignition key has been removed.

Tools required:

- Strap wrench
- Protective gloves
- A new fuel filter
- Torx key T25

WARNING

Fire hazard due to ignition of the diesel fuel!

Burns may result. In addition, the wheel loader will be damaged by the fire!

➔ Smoking is prohibited when working on the fuel filter of the wheel loader!

➔ Immediately clean up any diesel fuel that has spilled.

WARNING

Health hazard posed by diesel fuel!

The diesel fuel is hazardous to health. Frequent skin contact can be carcinogenic.

➔ Avoid continuous skin contact with the diesel fuel.

➔ Always wear gloves when carrying out this job.

NOTICE

Environmental hazard posed by diesel fuel!

The diesel fuel used by the wheel loader is hazardous to the environment!

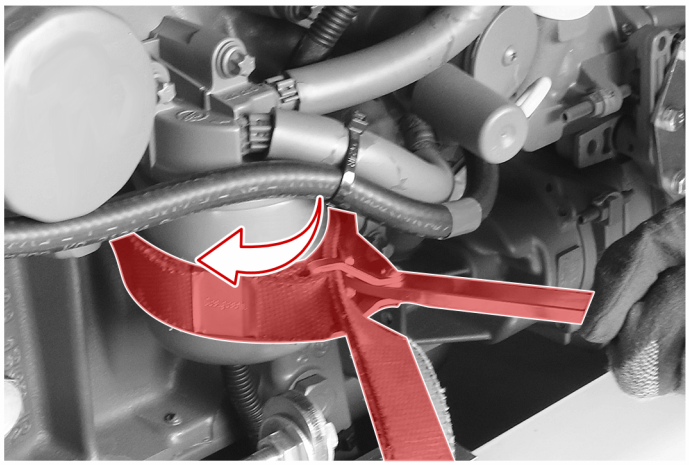
➔ Dispose of the diesel fuel according to the local statutory provisions,

➔ Catch the draining diesel fuel in a suitable container.

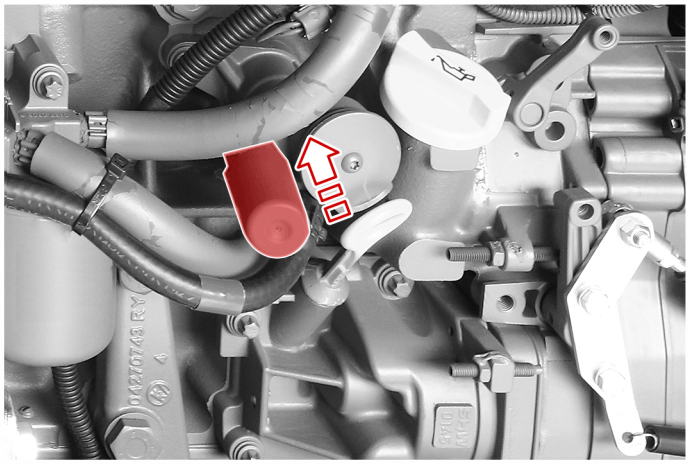
➔ Prevent the diesel fuel from entering the soil.

Carry out the following steps:

1. Place the strap of the strap wrench around the ‹FUEL FILTER›.
2. Loosen the ‹FUEL FILTER› with the aid of the strap wrench.



3. Carefully pull the ‹FUEL FILTER› from both the hose ends .
4. Fill the ‹FUEL FILTER› with clean fuel.
5. Screw the new ‹FUEL FILTER› onto the mounting.
6. Operate the manual fuel pump (10 - 20 times) until you detect a marked resistance.



7. Start the ‹DIESEL ENGINE›

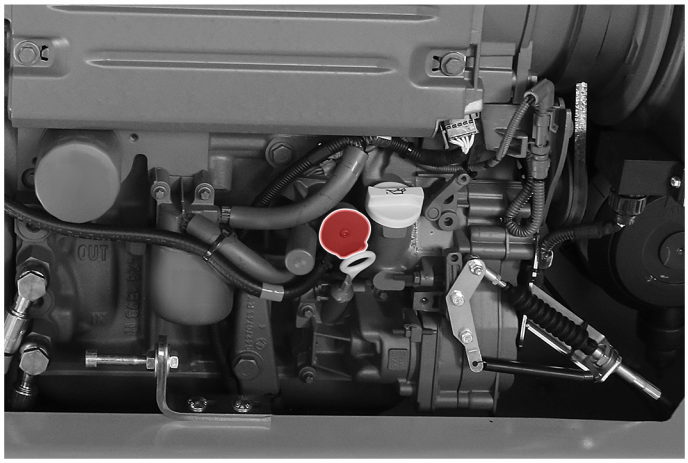
   ! Check the fuel filter for leaks while the diesel engine is running.

   The fuel pre-filter has been changed.

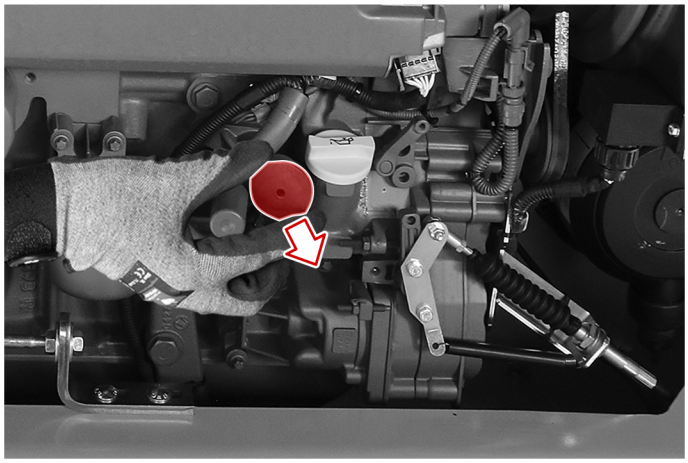
Cleaning the fuel sieve filter.

Carry out the following steps:

1. Unscrew the lid of the ‹FUEL SIEVE FILTER› with the aid of a Torx key.



2. Remove the ‹FUEL SIEVE FILTER›.



3. Clean the ‹FUEL SIEVE FILTER›.
4. Re-insert the ‹FUEL SIEVE FILTER› .
5. Fasten the lid of the ‹FUEL SIEVE FILTER› with the aid of a Torx key.
6. Operate the manual fuel pump.

   ! You must detect a marked resistance.

   The fuel sieve filter has been cleaned.

✓ Done.

3.2.4 Changing the fresh air filter

Requirement

- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The parking brake is applied.
- The bucket arm is moved completely to one side.

Tools required:

- Protective gloves
- two new fresh air filters
- Wrench SW 10
- a second person

Carry out the following steps:

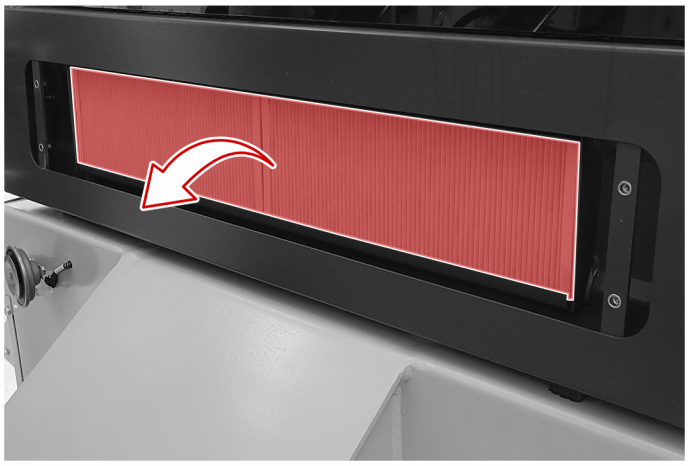
1. Remove the four protective caps of the bolts.

2. Unscrew the four attachment bolts of the protective plate with the aid of a wrench.

➥ The second person must hold the protective plate on the other side.

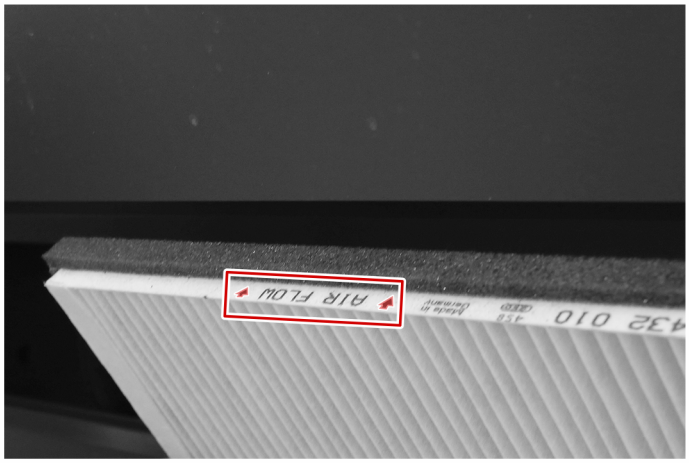
3. Together, lift off the protective plate of the ‹FRESH AIR FILTER› .

4. Carefully withdraw the old **‹FRESH AIR FILTER›** from the holder .



5. Push the new **‹FRESH AIR FILTER›** into the holder.

! When pushing it in, take care that the arrow on the fresh air filter points in the direction of the cab.



6. Place the protective cover of the **‹FRESH AIR FILTER›** onto the opening.

7. Using the wrench, refasten the two mounting screws on the left- and right-hand sides of the **‹FRESH AIR FILTER›** protective plate.

8. Fasten the four protective caps of the screws.

✓ Done.

3.2.5 Changing the hydraulic fluid filter

Requirement

- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The diesel engine must be cold.
- The parking brake is applied.
- The engine hood of the wheel loader is open.
- The ignition key has been removed.

Tools required:

- Protective gloves
- Wrench SW 13
- a sufficiently large oil drip tray
- A new hydraulic fluid filter

Remove the hydraulic fluid filter

WARNING

Health hazard posed by hydraulic fluid!

The hydraulic fluid is hazardous to health. Frequent skin contact can be carcinogenic.

➔ Avoid continuous skin contact with the hydraulic fluid.
➔ Always wear gloves when carrying out this job.

NOTICE

Environmental hazard posed by hydraulic fluid!

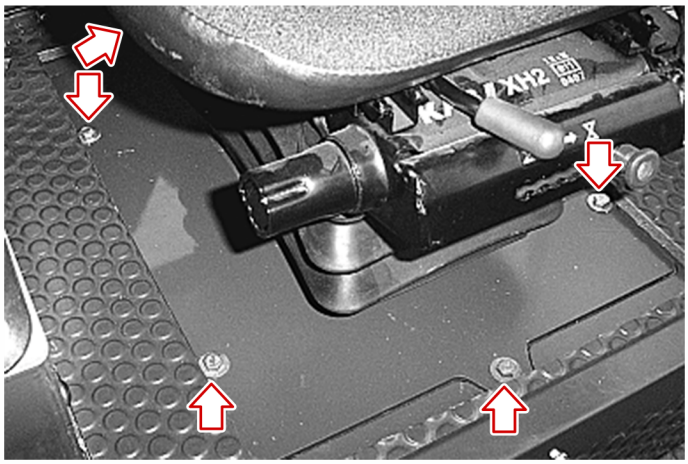
The used hydraulic fluid of the wheel loader is hazardous to the environment!

➔ Dispose of the used hydraulic fluid according to the local statutory provisions,
➔ Catch the draining hydraulic fluid in a suitable container.
➔ Prevent the hydraulic fluid from entering the soil.

Carry out the following steps:

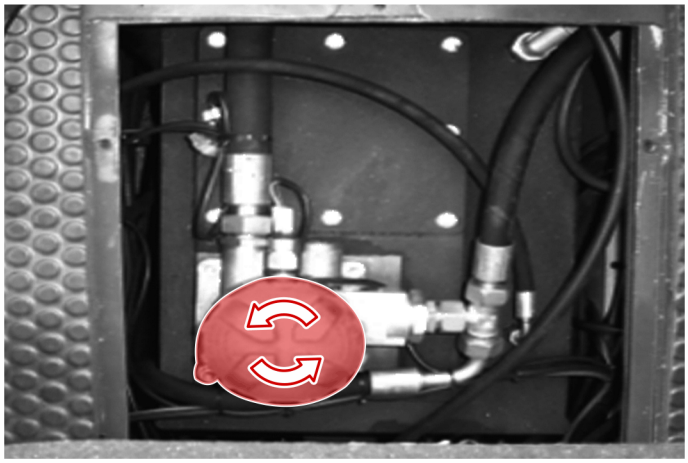
1. Place an oil drip tray in the cab.
2. Remove the rubber mat beneath the driver's seat.

3. Unscrew the six mounting bolts of the seat.



4. Bring the driver's seat to the lowest position.
5. Tip the driver's seat against the steering wheel.

   ! Secure the driver's seat against tipping back.
6. Unscrew the lid of the ‹HYDRAULIC FLUID FILTER› .



7. Withdraw the ‹HYDRAULIC FLUID FILTER› .
8. Allow the surplus hydraulic fluid to run into the ‹HYDRAULIC FLUID RESERVOIR› .
9. Place the ‹HYDRAULIC FLUID FILTER› in the oil drip tray.

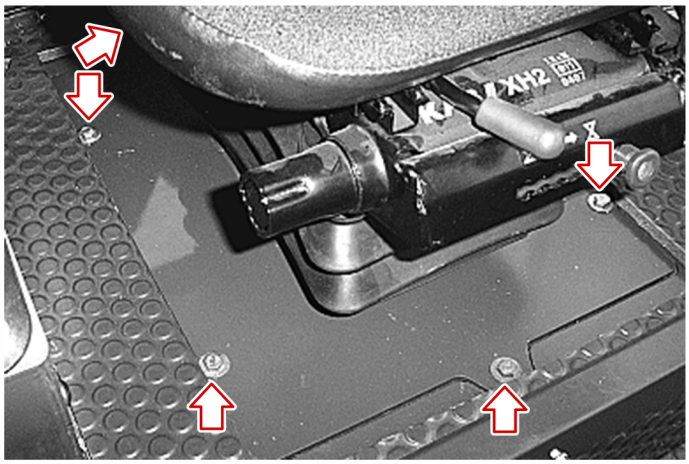
   The hydraulic fluid filter is dismounted.

Install the hydraulic fluid filter

Carry out the following steps:

1. Insert the new ‹HYDRAULIC FLUID FILTER› into the ‹HYDRAULIC FLUID RESERVOIR› .
2. Screw the lid back onto the ‹HYDRAULIC FLUID RESERVOIR›.
3. Tip the driver's seat back.

4. Re-fasten the six mounting bolts of the seat.



5. Replace the rubber mat beneath the driver's seat.
6. Remove the oil collection container.
7. Dispose of the gearbox oil that has been collected, according to the local statutory provisions,

   The hydraulic fluid filter is installed.

✓ Done.

Info

The clogging indicator can light up prematurely after a cold start. It does, however, go out as the hydraulic fluid warms up.

3.2.6 Changing the engine oil filter

Requirement

- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The diesel engine must be cold.
- The parking brake is applied.
- The engine hood of the wheel loader is open.
- The ignition key has been removed.

Tools required:

- Strap wrench
- Protective gloves
- A new engine oil filter
- a sufficiently large oil drip tray

Dismounting the engine oil filter

WARNING

Health hazard posed by engine oil!

The engine oil is hazardous to health. Frequent skin contact can be carcinogenic.

➔ Avoid continuous skin contact with the engine oil.

➔ Always wear gloves when carrying out this job.

NOTICE

Environmental hazard posed by engine oil!

The used engine oil of the wheel loader is hazardous to the environment!

➔ Dispose of the used engine oil according to the local statutory provisions,

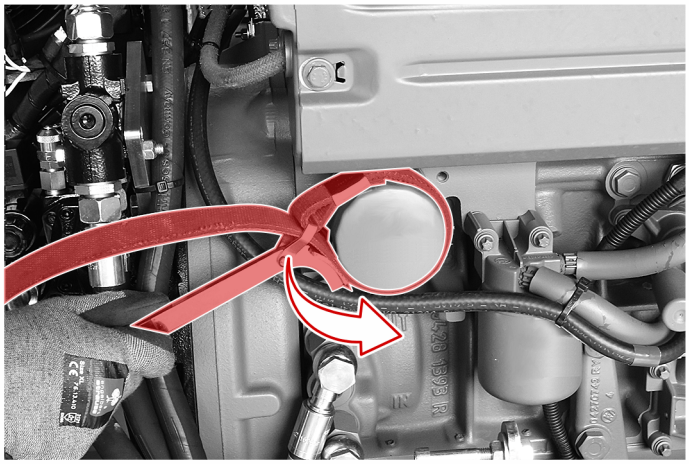
➔ Catch the draining engine oil oil in a suitable container.

➔ Prevent the engine oil from entering the soil.

Carry out the following steps:

1. Place the oil drip tray beneath the engine oil filter.
   ↪ The oil drip tray prevents the engine oil from penetrating the subsoil or entering the interior of the engine bay.
2. Place the strap of the strap wrench around the engine oil filter.

3. Loosen the engine oil filter with the aid of the strap wrench.



4. Carefully pull the engine oil filter from both the hose ends .

   The engine oil filter has been removed.

Install the new engine oil filter

Carry out the following steps:

1. Coat the surfaces of the new ‹ENGINE OIL FILTER› with fresh lubricating oil.
2. Screw the new ‹ENGINE OIL FILTER› into the mounting.
3. Fasten the ‹ENGINE OIL FILTER› by hand.
4. Check the oil level of the engine.
5. Dispose of the engine oil that has been collected according to the local statutory provisions.

   The new engine oil filter has been installed.

✓ Done.

3.2.7 Changing the air filter

Requirement

- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The diesel engine must be cold.
- The engine hood of the wheel loader is open.
- The ignition key has been removed.
- The parking brake is applied.

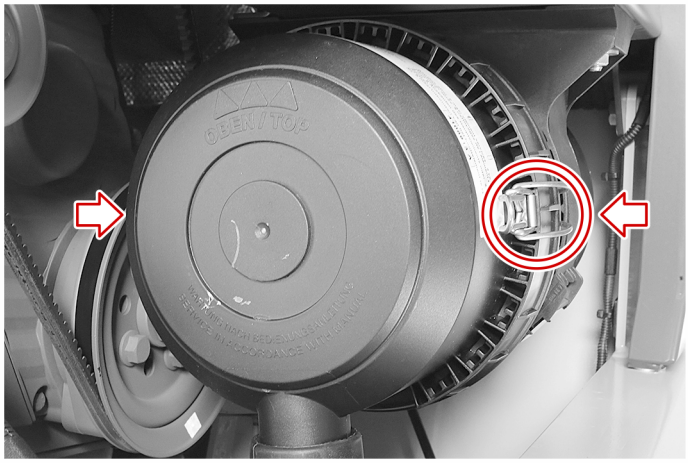
Tools required:

- A new air filter cartridge
- A new safety cartridge

Dismounting the air filter cartridge

Carry out the following steps:

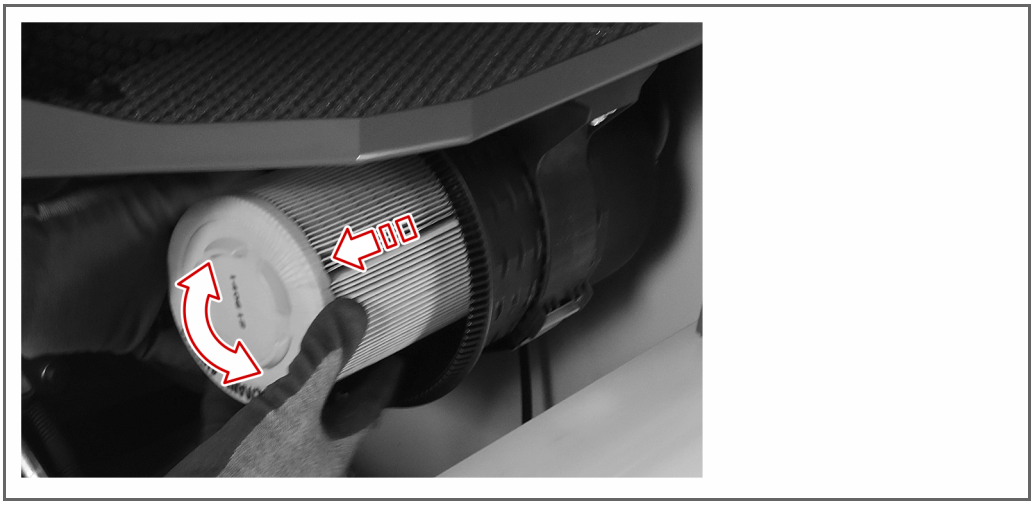
1. Open the three locking mechanisms of the lid.



2. Remove the lid.

3. Remove the filter cartridge.

   ! Loosen the filter cartridge with gentle rotating movements left and right.



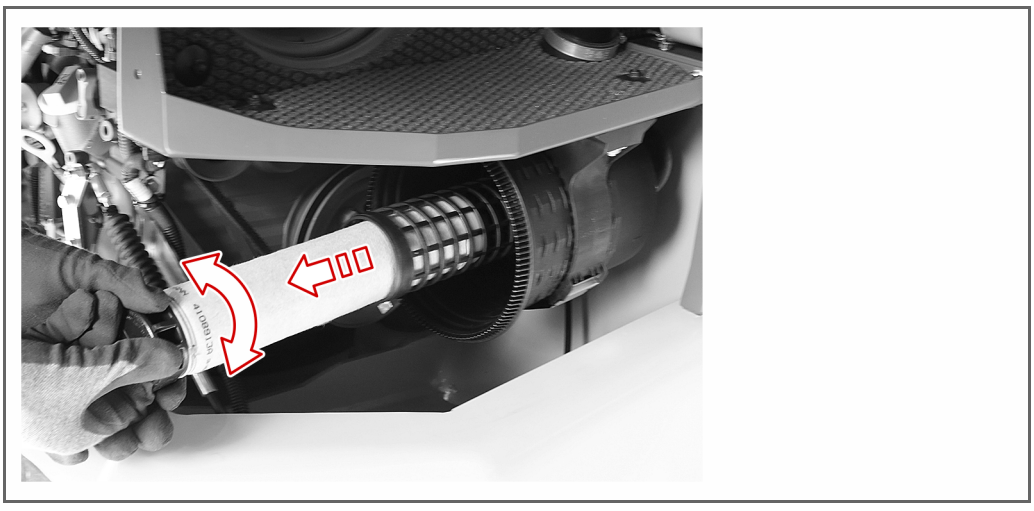
The air filter cartridge has been dismounted.

Exchanging the safety cartridge.

Carry out the following steps:

1. Remove the safety cartridge.

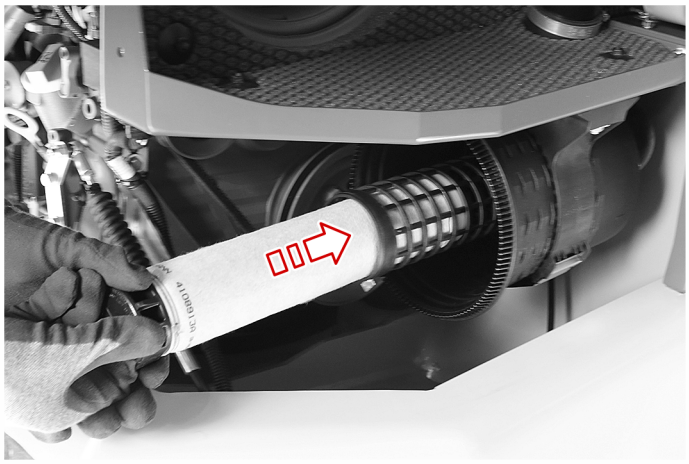
   ! Loosen the safety cartridge with gentle rotating movements left and right.



2. Check the interior of the filter housing for dust and dirt.

   ! If necessary, carefully clean the interior of the filter housing with a cloth.

3. Slide the new safety cartridge carefully into the filter housing.



The safety cartridge has been exchanged.

Re-install the air filter cartridge

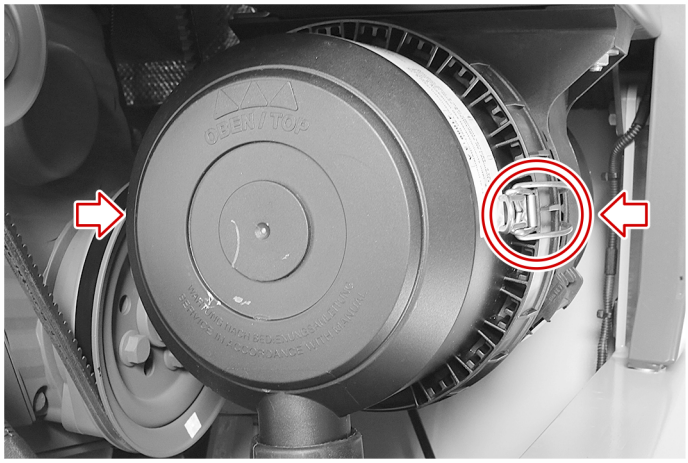
Carry out the following steps:

1. Slide the inspected filter cartridge back into the holder.

2. Re-install the lid.

! When remounting the lid, take care that the TOP marking faces **upwards** .

3. Secure the three locking mechanisms of the lid.



The air filter cartridge has been installed.

✓ Done.

3.2.8 Setting the parking brake

Requirement

- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The wheel loader is secured against rolling away.

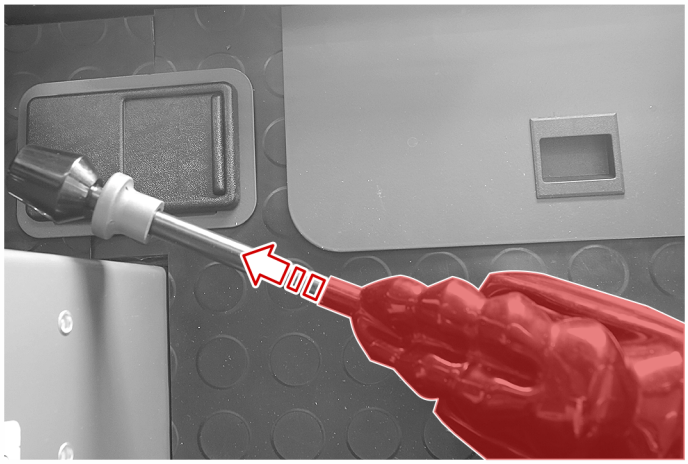
Tools required:

- Protective gloves
- Wrench SW 10
- Wrench SW 19

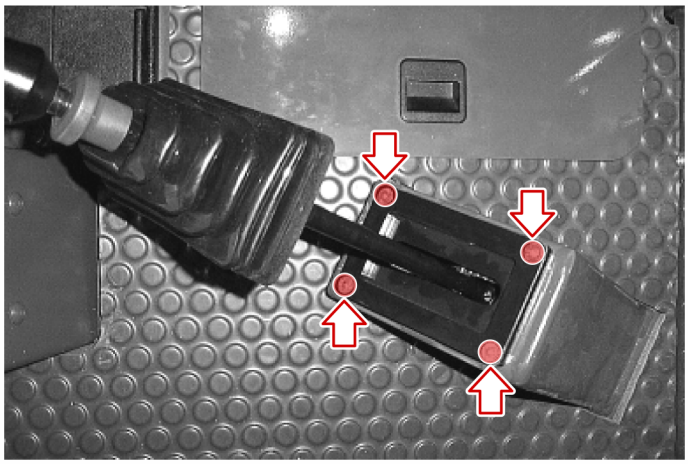
Removing and setting the parking brake

Carry out the following steps:

1. Slide the rubber sleeve up the handbrake lever.

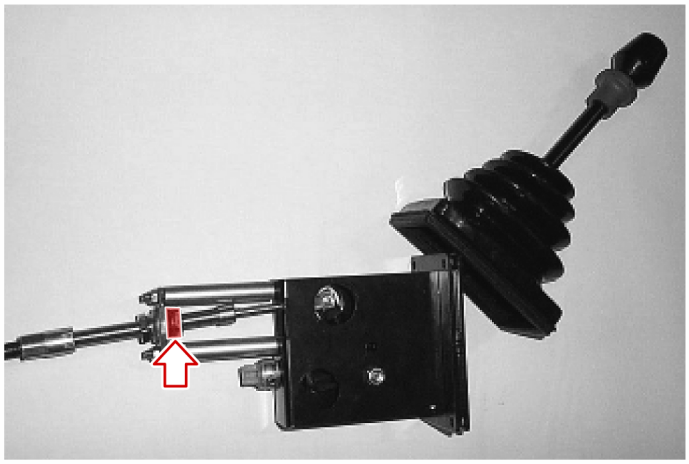


2. Unscrew the four mounting bolts with the aid of the wrench (SW 10).

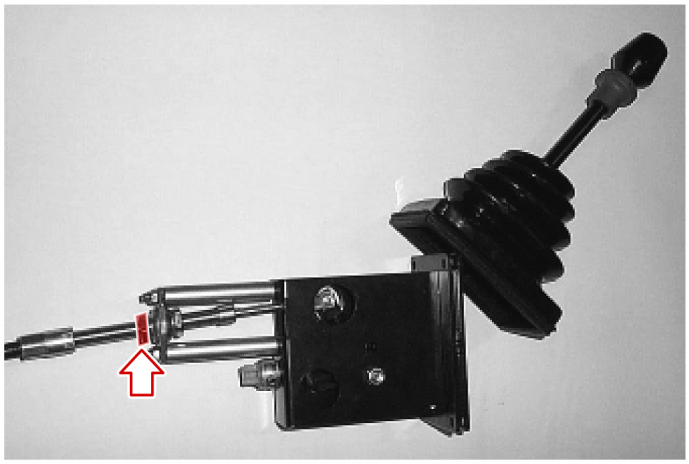


3. Pull out the handbrake lever with the linkage and Bowden cable.

4. Loosen the lock nut on the thrust bearing with a wrench.



5. Adjust the set screw up to the thrust bearing with a wrench.



6. Tighten the locknut.

   The parking brake has been set.

Installing the parking brake

Carry out the following steps:

1. Guide the handbrake lever with the linkage and Bowden cable back in.
2. Tighten the four mounting bolts with the aid of the wrench (SW 10).
3. Slide the rubber sleeve back down.
4. Perform a function check of the parking brake (See page 23: Checking the parking brake).

   The parking brake has been installed.

✓ Done.

3.2.9 Cleaning the radiator

Requirement

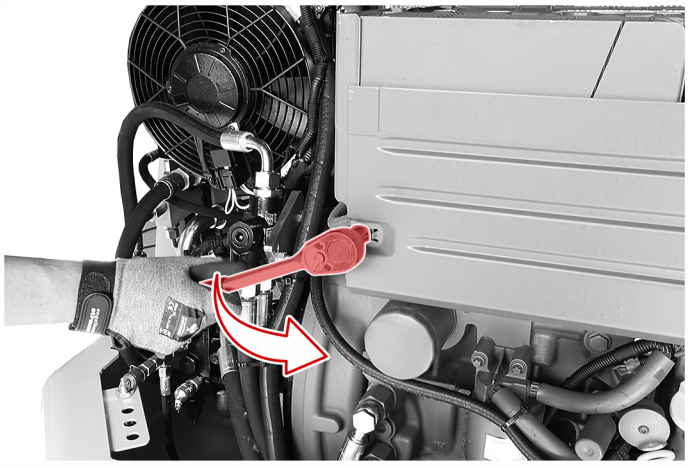
- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The diesel engine must be cold.
- The engine hood of the wheel loader is open.
- The ignition key has been removed.
- Wear protective glasses
- The parking brake is applied.

Tools required:

- Ratchet with No. 13 socket
- Compressed air cleaner
- Protective gloves

Carry out the following steps:

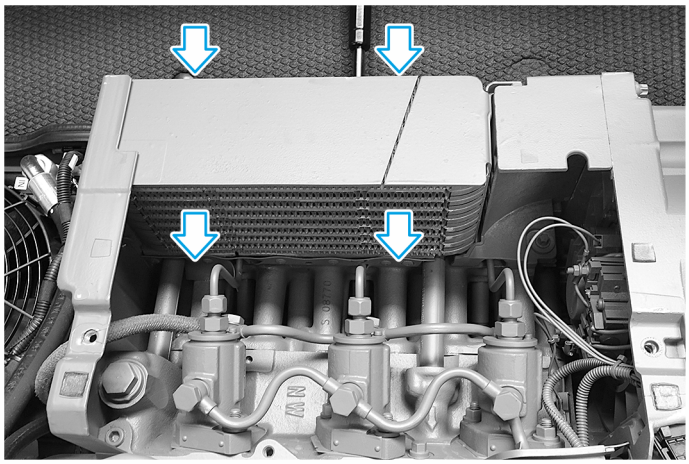
1. Loosen the two mounting bolts with the aid of a ratchet.



2. Place the guard plate in a suitable location.
3. Inspect the area behind the protective plate for leaks.

4. Clean the radiator with the aid of a compressed air cleaner.

! Blow the dust from the top to the bottom.



5. Fasten the protective plate with the two mounting bolts.

✓ Done.

3.2.10 Cleaning the hydraulic fluid cooler

Requirement

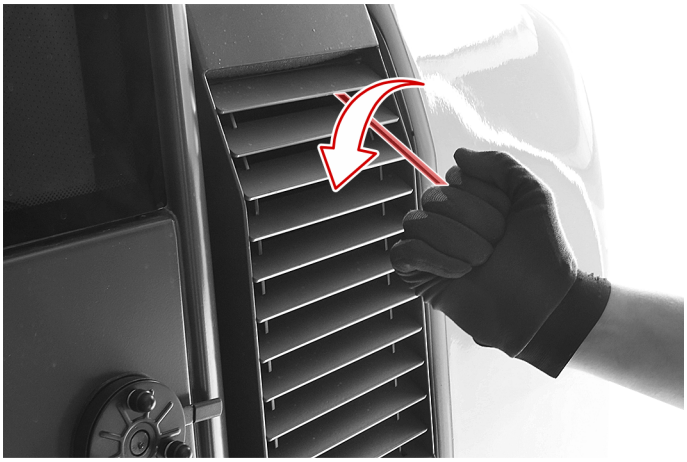
- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The diesel engine must be cold.
- The engine hood of the wheel loader is open.
- The ignition key has been removed.
- Wear protective glasses
- The parking brake is applied.

Tools required:

- Allen key, SW 5
- Compressed air cleaner
- Protective gloves

Carry out the following steps:

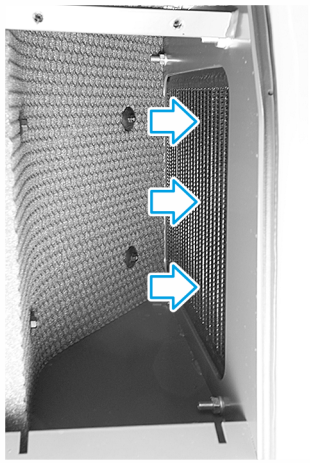
1. Loosen the two mounting bolts with the aid of the Allen key.



2. Place the protective plate in a suitable location.

3. Clean the radiator with the aid of a compressed air cleaner.

! Blow the dust from the opening in the direction of the engine bay.



4. Fasten the protective plate with the two mounting bolts.

✓ Done.

3.2.11 Setting the gas pedal (accelerator)

Requirement

- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The diesel engine must be cold.
- The engine hood of the wheel loader is open.
- The ignition key has been removed.
- The parking brake is applied.

Tools required:

- Wrench SW 13
- Protective gloves
- a second person

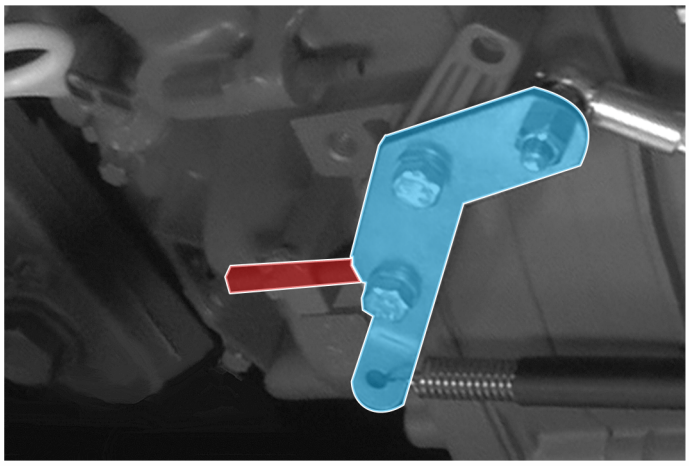
Carry out the following steps:

1. Loosen the lock nut on the set screw below the gas pedal by using a wrench (SW 13).

   ! The engine must be switched off.

2. Set the adjusting screw.

   ! When the gas pedal is fully depressed, the accelerator lever in the engine bay must be at the limit.



3. Tighten the lock nut with a wrench.

✓ Done.

3.3 Changing the consumables

3.3.1 Changing the engine oil

Requirement

- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The ignition key has been removed.
- The engine must be warm.

Tools required:

- a sufficiently large oil drip tray
- Protective gloves
- Bochumer plug

Draining the engine oil

WARNING

Health hazard posed by engine oil!

The engine oil is hazardous to health. Frequent skin contact can be carcinogenic.

➔ Avoid continuous skin contact with the engine oil.
➔ Always wear gloves when carrying out this job.

NOTICE

Environmental hazard posed by engine oil!

The used engine oil of the wheel loader is hazardous to the environment!

➔ Dispose of the used engine oil according to the local statutory provisions,
➔ Catch the draining engine oil oil in a suitable container.
➔ Prevent the engine oil from entering the soil.

Carry out the following steps:

1. Place an oil collection container beneath the sump.
2. Unscrew the protective cap of the oil drain plug.

3. Screw the Bochumer plug onto the oil drain plug.
   ↪ The engine oil begins draining.
4. Wait until the engine oil has drained completely.
5. Unscrew the Bochumer plug from the oil drain plug.
6. Screw the protective cap back onto the oil drain plug.

   The engine oil has been drained.

Topping up the engine oil

Carry out the following steps:

➔ Refill the engine oil.

The engine oil has been changed.

Performing the check

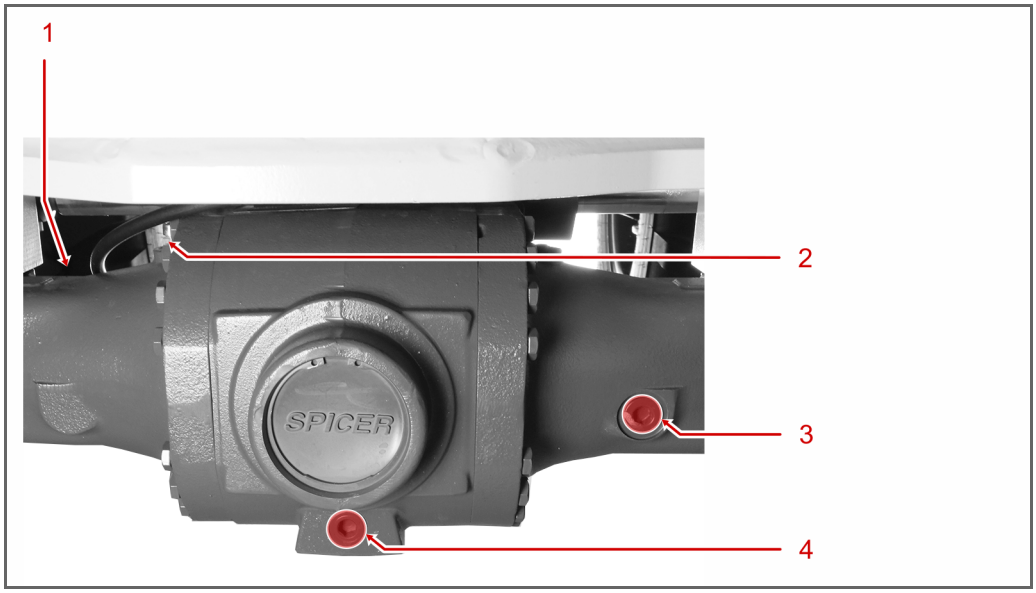
Carry out the following steps:

1. Switch on the diesel engine.
2. Allow the diesel engine to idle for a short while.
3. Switch off the diesel engine.
4. Inspect the sump and the oil drain plug for leaks.
5. Remove the oil collection container.
6. Re-install the sump guard on the wheel-loader with the aid of the two mounting screws.
7. Dispose of the engine oil that has been collected according to the local statutory provisions.
8. Check the oil level using the dipstick.

   The check is complete.

✓ Done.

3.3.2 Changing the gearbox oil of the front axle



Location of the bolts on the front axle

Key

No.	Designation
1	Inspection and filler plug
2	Axle vent valve
3	Inspection and filler plug
4	Drain plug

Requirement

- The wheel loader is warmed up.
- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The parking brake is applied.
- The ignition key has been removed.
- The bucket arm is raised.
- The bucket arm support is installed.

Tools required:

- Allen key, SW 12
- a sufficiently large oil drip tray
- Protective gloves
- Suitable, fresh gearbox oil

Draining the gearbox oil

WARNING

Health hazard posed by gearbox oil!

The gearbox oil is hazardous to health. Frequent skin contact can be carcinogenic.

➔ Avoid continuous skin contact with the gearbox oil.
➔ Always wear gloves when carrying out this job.

NOTICE

Environmental hazard posed by gearbox oil!

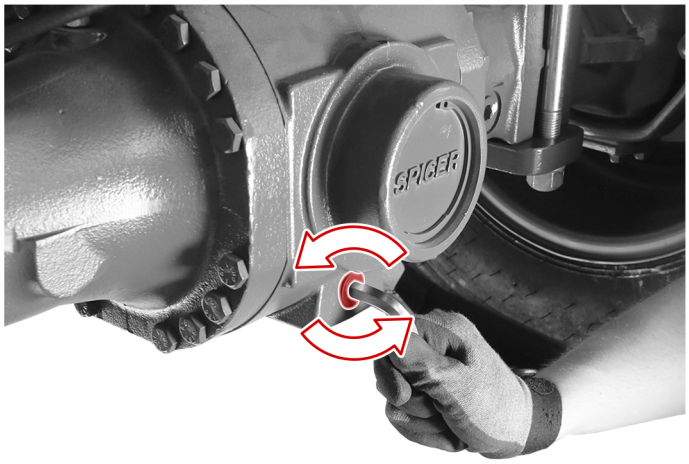
The used gearbox oil of the wheel loader is hazardous to the environment!

➔ Dispose of the used gearbox oil according to the local statutory provisions,
➔ Catch the draining gearbox oil in a suitable container.
➔ Prevent the gearbox oil from entering the soil.

Carry out the following steps:

1. Place an oil drip tray beneath the front axle.
   ➥ The oil drip tray prevents the gearbox oil from penetrating the subsoil.

2. Remove the drain plug using an Allen key square socket wrench.



➥ The gearbox oil drains immediately.

3. Wait until the gearbox oil has drained completely.

4. Using an Allen key, screw the drain plug into the front axle.

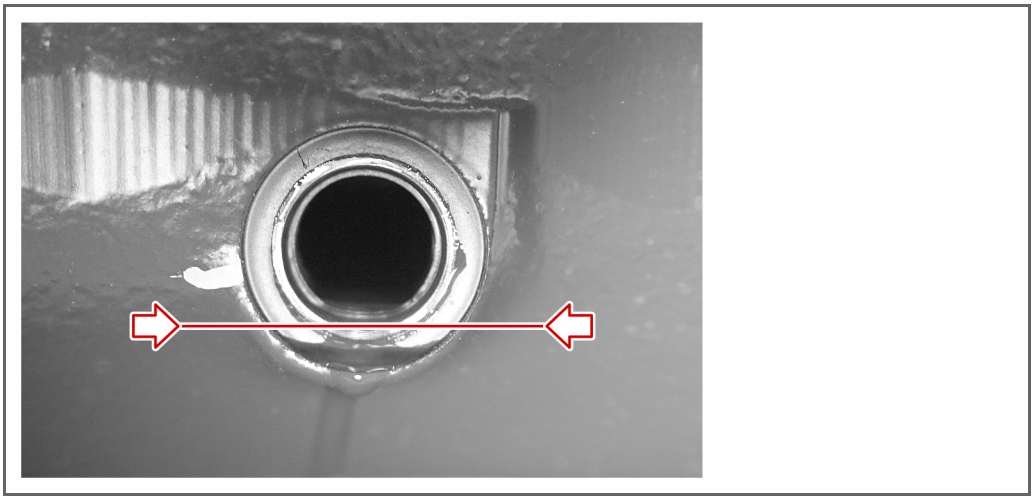
The gearbox oil has been drained.

Refilling the gearbox oil

Carry out the following steps:

1. Unscrew the two inspection and oil filler plugs by means of an Allen key.

2. Refill with fresh gearbox oil up to the lower edge of both inspection ports.



➥ Check the level at both inspection ports.

3. Tighten the two inspection and oil filler plugs by using an Allen key.

4. Dispose of the gearbox oil that has been collected, according to the local statutory provisions,

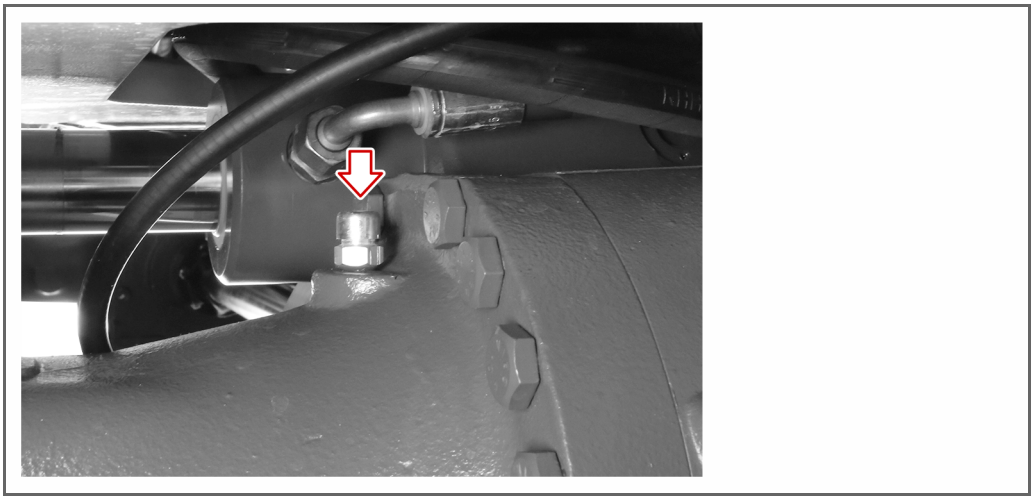
   The gearbox oil has been refilled.

Performing the check

Carry out the following steps:

1. Check that the ‹AXLE VENT VALVE› is free of contamination.

   ! If necessary, clean the axle vent valve .

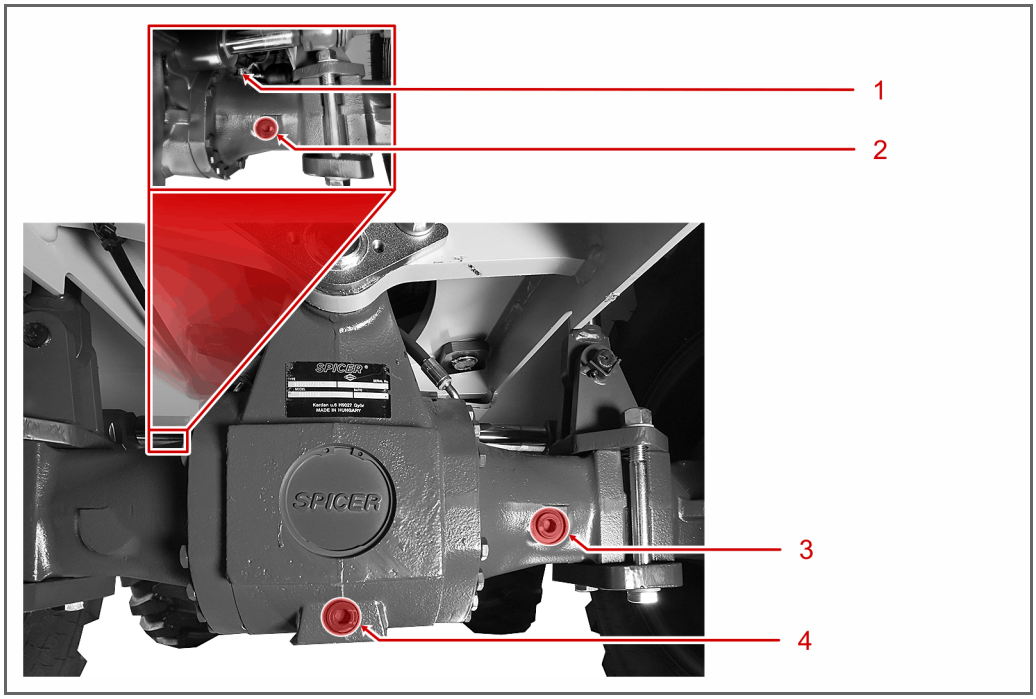


2. Inspect the rear axle and the oil drain bolt for leaks.

   The check is complete.

✓ Done.

3.3.3 Changing the gearbox oil of the rear axle



Location of the bolts on the front axle

Key

No.	Designation
2	Axle vent valve
1	Inspection and filler plug
3	Inspection and filler plug
4	Drain plug

Requirement

- The wheel loader is warmed up.
- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The parking brake is applied.
- The ignition key has been removed.

Tools required:

- Allen key, SW 12
- a sufficiently large oil drip tray
- Protective gloves
- Suitable, fresh gearbox oil

Draining the gearbox oil

WARNING

Health hazard posed by gearbox oil!

The gearbox oil is hazardous to health. Frequent skin contact can be carcinogenic.

➔ Avoid continuous skin contact with the gearbox oil.
➔ Always wear gloves when carrying out this job.

NOTICE

Environmental hazard posed by gearbox oil!

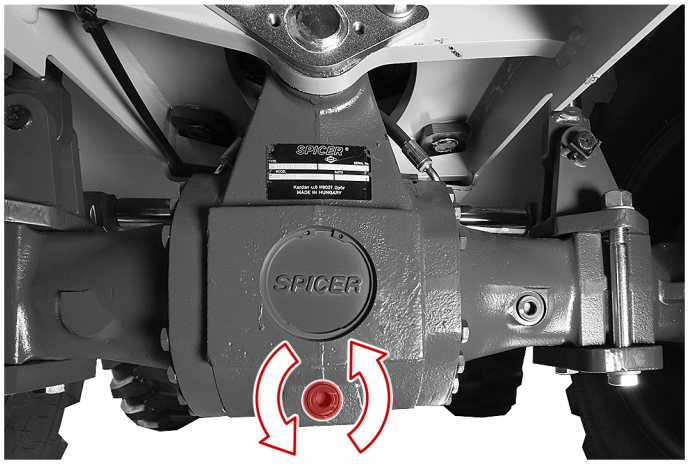
The used gearbox oil of the wheel loader is hazardous to the environment!

➔ Dispose of the used gearbox oil according to the local statutory provisions,
➔ Catch the draining gearbox oil in a suitable container.
➔ Prevent the gearbox oil from entering the soil.

Carry out the following steps:

1. Place an oil drip tray beneath the rear axle.
   ➥ The oil drip tray prevents the gearbox oil from penetrating the subsoil.

2. Remove the drain plug using an Allen key square socket wrench.



➥ The gearbox oil drains immediately.

3. Wait until the gearbox oil has drained completely.

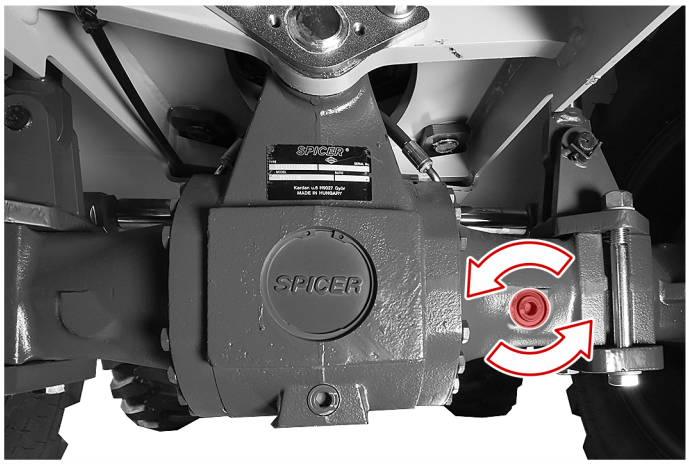
4. Using an Allen key, re-install the drain plug in the rear axle.

The gearbox oil has been drained.

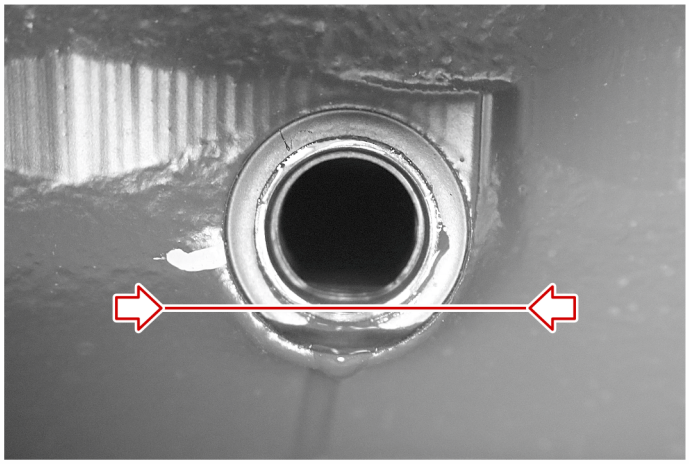
Refilling the gearbox oil

Carry out the following steps:

1. Unscrew the inspection and oil filler plug by means of an Allen key.



2. Refill with fresh gearbox oil up to the lower edge of the inspection port .



3. Using an Allen key, tighten the inspection and oil filler plug.
4. Dispose of the gearbox oil that has been collected, according to the local statutory provisions,

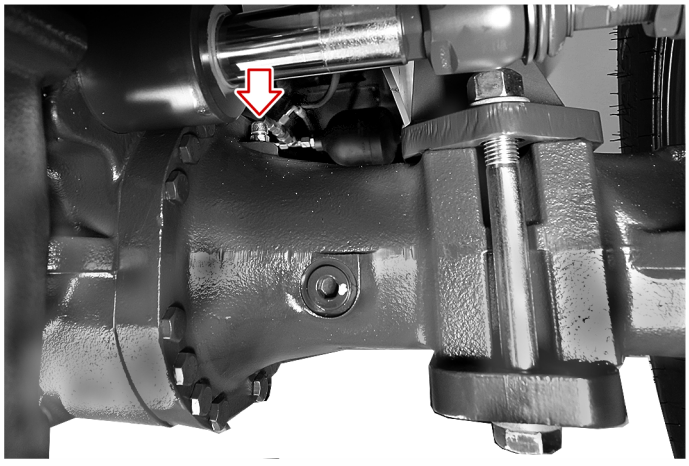
   The gearbox oil has been refilled.

Performing the check

Carry out the following steps:

1. Check that the ‹AXLE VENT VALVE› is free of contamination.

   ! If necessary, clean the axle vent valve .



2. Inspect the rear axle and the oil drain bolt for leaks.

   The check is complete.

✓ Done.

3.3.4 Changing the gearbox oil of the planetary gear

Requirement

- The wheel loader is warmed up.
- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The parking brake is applied.
- The ignition key has been removed.

Tools required:

- Allen key, SW 12
- a sufficiently large oil drip tray
- Protective gloves
- Suitable, fresh gearbox oil

Draining the gearbox oil

WARNING

Health hazard posed by gearbox oil!

The gearbox oil is hazardous to health. Frequent skin contact can be carcinogenic.

➔ Avoid continuous skin contact with the gearbox oil.
➔ Always wear gloves when carrying out this job.

NOTICE

Environmental hazard posed by gearbox oil!

The used gearbox oil of the wheel loader is hazardous to the environment!

➔ Dispose of the used gearbox oil according to the local statutory provisions,
➔ Catch the draining gearbox oil in a suitable container.
➔ Prevent the gearbox oil from entering the soil.

Carry out the following steps:

1. Move the wheel loader so that the inspection and oil filler plug of the planetary gearbox is at the lowest position.

2. Place an oil drip tray in the tyre rim.
   ➥ The oil drip tray prevents the gearbox oil from penetrating the subsoil.
3. Unscrew the inspection and oil filler plug by means of an Allen key.

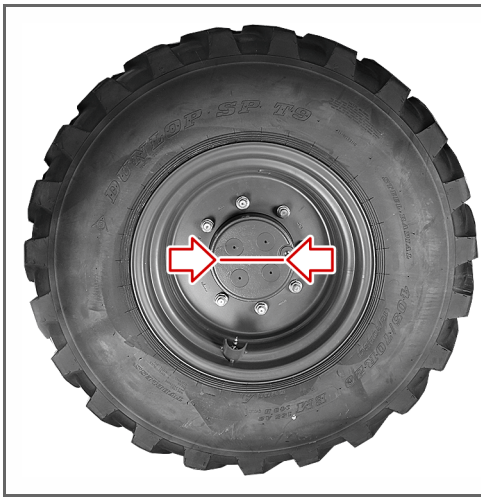
   ➥ The gearbox oil drains immediately.
4. Wait until the gearbox oil has drained completely.
5. Using an Allen key, re-install the inspection and oil filler plug in the planetary gearbox.
   ➥ Contamination by small quantities of spillage is thus avoided.

The gearbox oil has been drained.

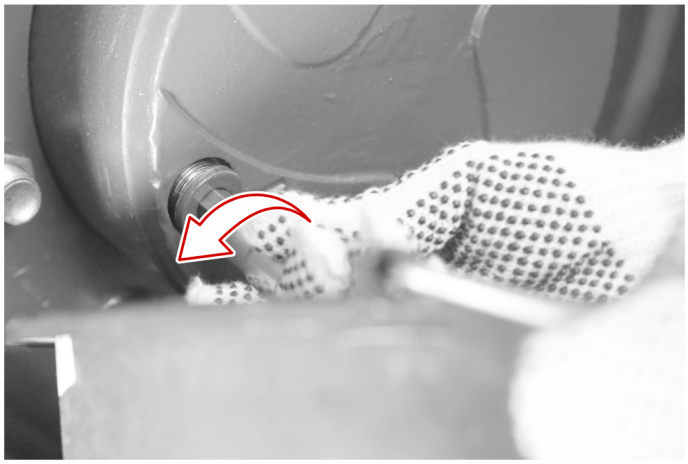
Refilling the gearbox oil

Carry out the following steps:

1. Move the wheel loader so that the **OIL LEVEL** fill level line of the planetary gearbox is horizontal.

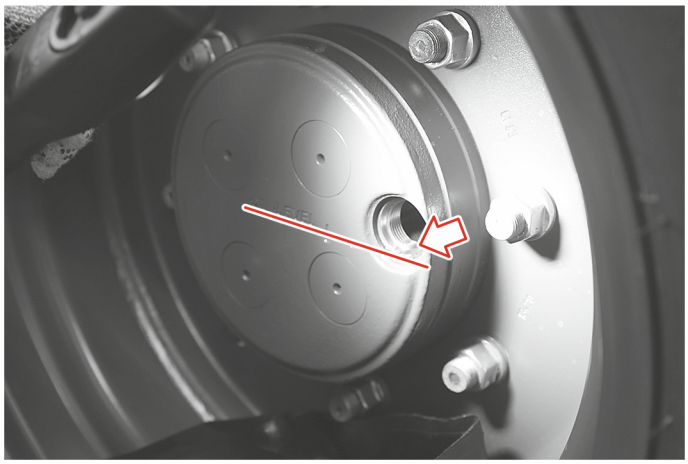


2. Unscrew the inspection and oil filler plug by means of an Allen key.



3. Fill with fresh gearbox oil in the inspection port.

   ! The oil level must reach precisely below the lower edge of the inspection port .

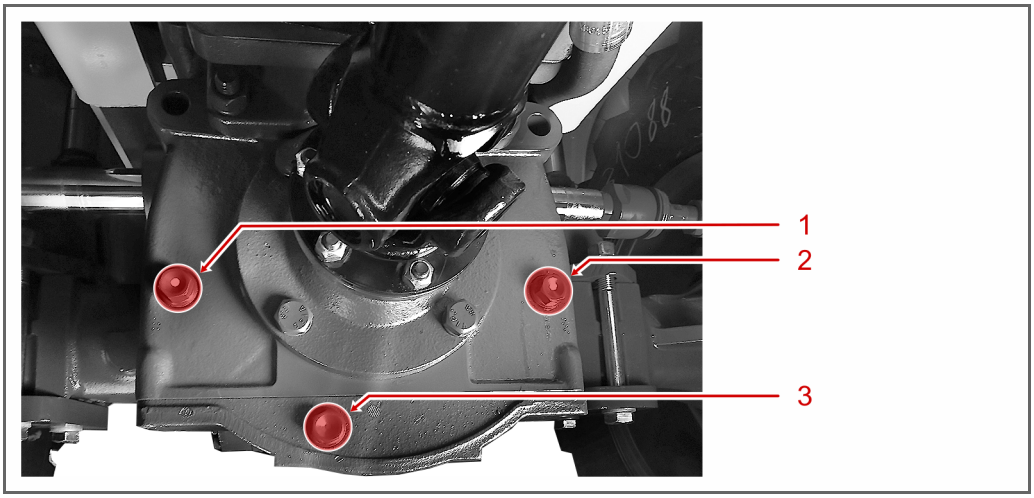


4. Using an Allen key, tighten the inspection and oil filler plug.
5. Wipe off any escaping gearbox oil with a cloth .
6. Dispose of the gearbox oil that has been collected, according to the local statutory provisions,

   The gearbox oil has been refilled.

✓ Done.

3.3.5 Changing the gearbox oil



Location of the bolts on the transfer case

Key

No.	Designation
1	Inspection and filler plug
2	Inspection and filler plug
3	Drain plug

Requirement

- The wheel loader is warmed up.
- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The parking brake is applied.
- The ignition key has been removed.

Tools required:

- Wrench SW17
- a sufficiently large oil drip tray
- Protective gloves
- Suitable, fresh gearbox oil

Draining the gearbox oil

WARNING

Health hazard posed by gearbox oil!

The gearbox oil is hazardous to health. Frequent skin contact can be carcinogenic.

➔ Avoid continuous skin contact with the gearbox oil.
➔ Always wear gloves when carrying out this job.

NOTICE

Environmental hazard posed by gearbox oil!

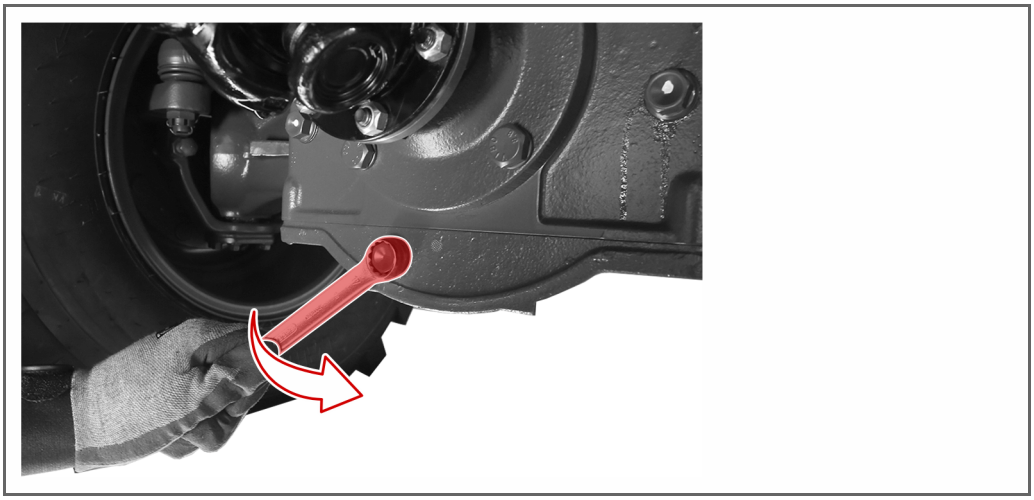
The used gearbox oil of the wheel loader is hazardous to the environment!

➔ Dispose of the used gearbox oil according to the local statutory provisions,
➔ Catch the draining gearbox oil in a suitable container.
➔ Prevent the gearbox oil from entering the soil.

Carry out the following steps:

1. Place an oil drip tray beneath the transfer case.
   ➥ The oil drip tray prevents the gearbox oil from penetrating the subsoil.

2. Using a square socket wrench remove the drain plug.



➥ The gearbox oil drains immediately.

3. Wait until the gearbox oil has drained completely.

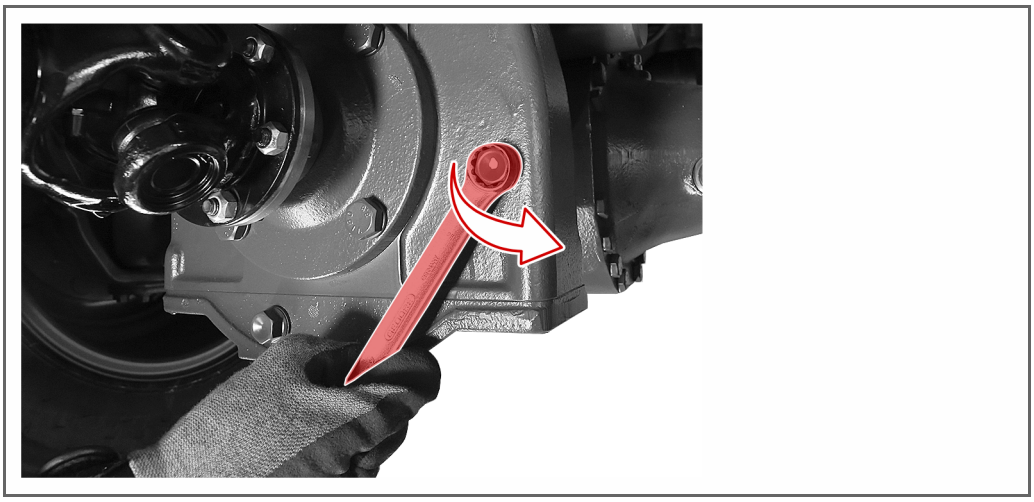
4. Using a ratchet and extension, tighten the drain plug.

The gearbox oil has been drained.

Refilling the gearbox oil

Carry out the following steps:

1. Using a square socket wrench unscrew both inspection and oil filler plugs.



2. Pour fresh gearbox oil into the transfer box.

! The oil level must reach precisely below the lower edge of the inspection port .

3. Using a square socket wrench tighten the inspection and oil filler plug.

4. Remove the oil collection container.

5. Dispose of the gearbox oil that has been collected, according to the local statutory provisions,

   The gearbox oil has been refilled.

✓ Done.

3.3.6 Refilling with diesel fuel

There is no diesel tank drain plug in this series.

Requirement

- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The ignition key has been removed.
- The parking brake is applied.

Tools required:

- Cloths
- Ignition key
- Protective gloves
- Scavenge pump
- a sufficiently large diesel fuel collection receptacle
- suitable fresh diesel fuel

Drain the diesel fuel

WARNING

Fire hazard due to ignition of the diesel fuel!

Burns may result. In addition, the wheel loader will be damaged by the fire!

- ➔ Refuel the wheel loader only once it has cooled down.
- ➔ Smoking `es strictly prohibited` when refuelling the wheel-loader!
- ➔ Immediately clean up any diesel fuel that has spilled.

WARNING

Health hazard posed by diesel fuel!

The diesel fuel is hazardous to health. Frequent skin contact can be carcinogenic.

- ➔ Avoid continuous skin contact with the diesel fuel.
- ➔ Always wear gloves when carrying out this job.

NOTICE

Environmental hazard posed by diesel fuel!

The diesel fuel used by the wheel loader is hazardous to the environment!

- ➔ Dispose of the diesel fuel according to the local statutory provisions,
- ➔ Catch the draining diesel fuel in a suitable container.
- ➔ Prevent the diesel fuel from entering the soil.

Carry out the following steps:

1. Using the ignition key, open the tank cap.

2. Use a diesel fuel catchment receptacle of adequate capacity.
   ➥ The diesel fuel collection container prevents the diesel fuel from penetrating the subsoil.
3. Guide the scavenge pump into the diesel fuel filler nozzle.
4. Operate the scavenge pump
5. Wait until the diesel fuel oil has been pumped out completely.
6. Remove the scavenge pump
   ➥ If necessary, clean the scavenge pump

   The diesel fuel has been drained.

Refilling diesel fuel

Carry out the following steps:

1. Carefully pour the diesel fuel into the tank.
2. Close the tank cap of the diesel fuel filling nozzle.
3. Wipe off any spilled diesel fuel with a cloth .
4. Dispose of the collected diesel fuel according to the local statutory provisions,

   The diesel fuel has been topped up.

✓ Done.

3.3.7 Changing the hydraulic fluid

Requirement

- The wheel loader is standing on a horizontal surface.
- The wheel loader is switched off.
- The bucket arm is lowered.
- If a bucket is mounted, this must be tilted.
- The engine hood of the wheel loader is open.
- The ignition key has been removed.

Tools required:

- Cloths
- Protective gloves
- A suitable funnel
- Suitable, fresh gearbox oil
- a sufficiently large hydraulic fluid drip tray
- Wrench SW 17

Drain the hydraulic fluid

WARNING

Health hazard posed by hydraulic fluid!

The hydraulic fluid is hazardous to health. Frequent skin contact can be carcinogenic.

➔ Avoid continuous skin contact with the hydraulic fluid.
➔ Always wear gloves when carrying out this job.

NOTICE

Environmental hazard posed by hydraulic fluid!

The used hydraulic fluid of the wheel loader is hazardous to the environment!

➔ Dispose of the used hydraulic fluid according to the local statutory provisions,
➔ Catch the draining hydraulic fluid in a suitable container.
➔ Prevent the hydraulic fluid from entering the soil.

Carry out the following steps:

1. Place an hydraulic fluid drip tray beneath the hydraulic fluid drain plug.
   ➥ The hydraulic fluid drip prevents the hydraulic fluid from penetrating the subsoil.

2. Unscrew the drain plug with a wrench.

➥ The hydraulic fluid begins draining.

3. Wait until the hydraulic fluid has drained completely.
4. Screw in the drain plug with a wrench.
5. Screw in the drain plug by hand.

   The hydraulic fluid has been drained.

Topping up the hydraulic fluid

Carry out the following steps:

1. Open the ‹CAP› of ‹HYDRAULIC FLUID FILLER NOZZLE›.

2. Using a suitable ‹FUNNEL› pour the ‹HYDRAULIC FLUID› into the open ‹HYDRAULIC FLUID FILLER NOZZLE›.
3. Manually close the ‹CAP› of the ‹HYDRAULIC FLUID FILLING NOZZLE›.
4. Wipe off any spilled ‹HYDRAULIC FLUID› with a ‹CLOTH› .

   The hydraulic fluid has been topped up.

✓ Done.

3.4 Lubrication

3.4.1 Lubrication plan

Wheel loader lubrication schedule AS50

Lubrication intervals	Part on wheel loader	Number of lubrication points
after 500 hours of operation	Turntable chain	See "Lubricating the turntable chain" (Page 76)
after 500 hours of operation	Support valve	See "Oiling the check valve" (Page 78)

3.4.2 Lubricating the turntable chain

Requirement

- The wheel loader is standing on a horizontal surface.
- The parking brake is applied.

Tools required:

- A second person who operates the wheel loader.
- Protective gloves
- Grease brush
- Multi-purpose grease
- Wrench SW 13

CAUTION

Hazard of injuries to limbs by crushing and cutting!

The engine bay of the wheel loader is very cramped. You can be cut and crushed when performing maintenance tasks!

➔ Always wear protective gloves!
➔ Always work carefully!

WARNING

Health hazard posed by lubricant!

The lubricant is hazardous to health. Frequent skin contact can be carcinogenic.

➔ Avoid continuous skin contact with lubricant oil.
➔ Always wear gloves when carrying out this job.

NOTICE

Environmental hazard posed by lubricant!

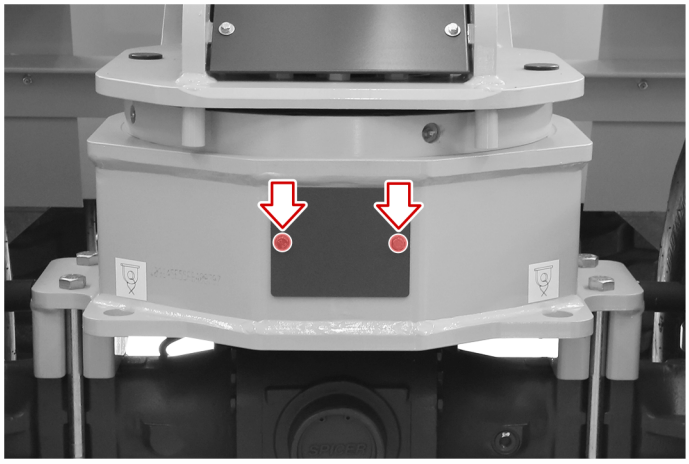
The lubricant used for the wheel loader is hazardous to the environment!

➔ Dispose of the used lubricant according to the local statutory provisions,
➔ Catch the draining lubricant in a suitable container.
➔ Prevent the lubricant from entering the soil.

Carry out the following steps:

1. Lift the bucket arm
2. Secure the bucket arm support.

3. Remove the protective plate.



4. Slowly move the bucket arm completely to the right and to the left once.

! While moving, lubricate the chain by means of the brush.

5. Install the protective plate.

✓ The turntable chain has been lubricated.

3.4.3 Oiling the check valve

Requirement

- The wheel loader is standing on a horizontal surface.
- The parking brake is applied.
- The wheel loader is switched off.
- The ignition key has been removed.
- The diesel engine must be cold.

Tools required:

- Protective gloves
- Standard maintenance oil

CAUTION

Hazard of injuries to limbs by crushing and cutting!

It is very cramped beneath the wheel loader.. You can be cut and crushed when performing maintenance tasks!

➔ Always wear protective gloves!
➔ Always work carefully!

WARNING

Health hazard posed by maintenance oil!

Maintenance oil is hazardous to health. Frequent skin contact can be carcinogenic.

➔ Avoid continuous skin contact with maintenance oil.
➔ Always wear gloves when carrying out this job.

NOTICE

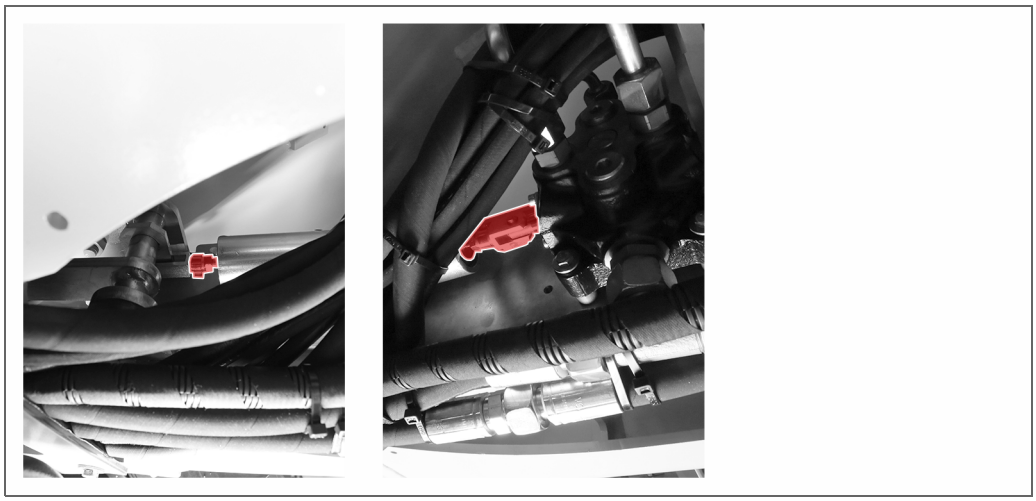
Environmental hazard posed by maintenance oil!

The maintenance oil used for the wheel loader is hazardous to the environment!

➔ Dispose of the maintenance oil according to the local statutory provisions,
➔ Catch the draining maintenance oil in a suitable container.
➔ Prevent the maintenance oil from entering the soil.

Carry out the following steps:

1. Check the areas for leaks.
2. Oil the check valve.



✓ The check valve has been oiled.

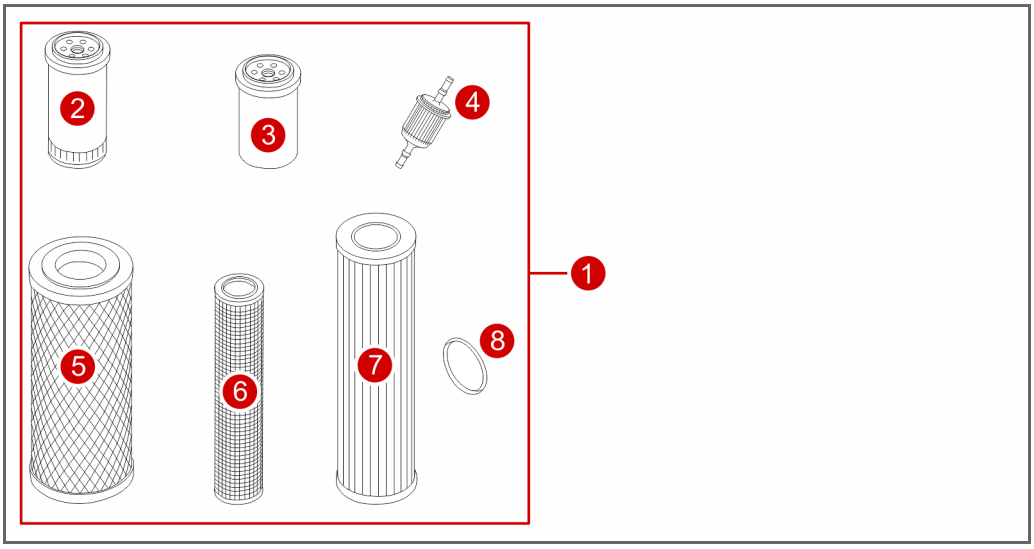
4 Circuit diagrams

Circuit diagrams can be obtained from Mecalac on request.

5 Annex

5.1 Spare Parts

5.1.1 Filter



Filter – overview

Key

No.	Designation	Mecalac TKZ
1	Filter set	4180710A
2	Engine oil filter	4109834A
3	Fuel filter	4195730A
4	Fuel pre-filter	4110672A
5	Air filter insert	4108914A
6	Safety cartridge	4108913A
7	Hydraulic fluid filter	4104787A
8	O-ring	4197692A

5.1.2 Consumables

Key

Designation	Quantity	Mecalac TKZ
Engine oil	6.5	23106886
Gearbox oil	14	23104578
Hydraulic fluid	70	23107305
Lubricating grease cartridge	1	4117807A

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