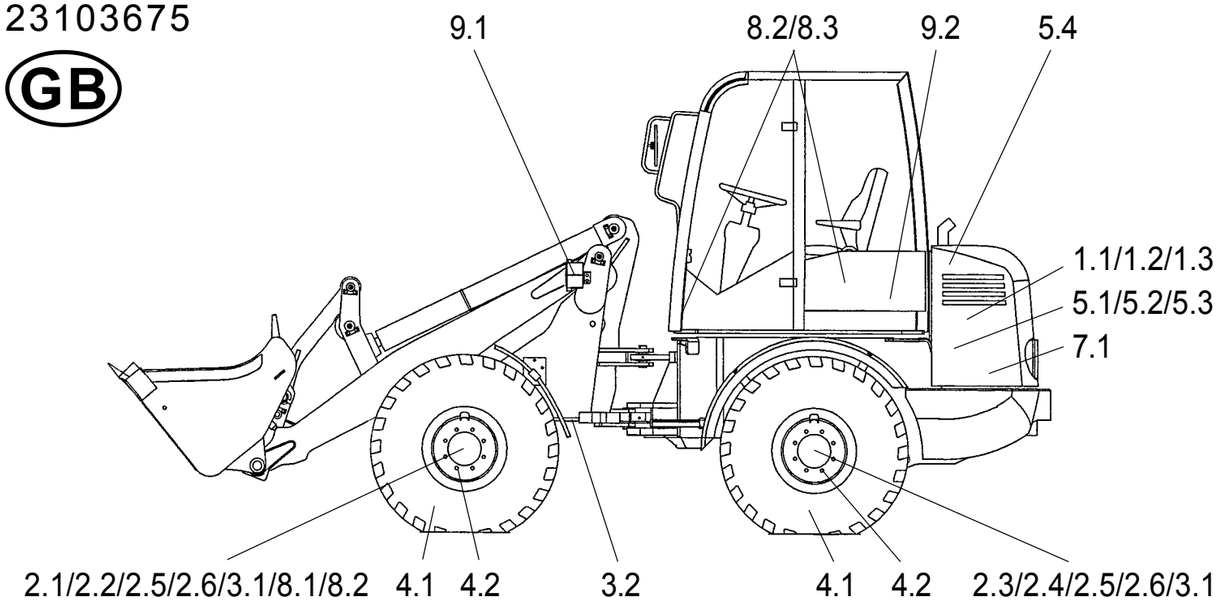
Maintenance

8 Maintenance Plan

23103675

GB



	Item	Designation	Specification	Viscosity	Filling amount
*	1	Motor oil	MIL-L-2104 C = API-CD	acc. to manufacturer	ca. 10 l with oil filter
*	2.2	Transmission oil with LS additive	MIL-L-2105 D = API-GL5-6-LS	SAE 85 W 90-LS	ca. 4.2 l (20 km/h) ca. 3.8 l (30 km/h)
*	2.4	Transmission oil with LS additive	MIL-L-2105 D = API-GL5-6-LS	SAE 85 W 90-LS	ca. 5.1 l (20 km/h) ca. 5.5 l (30 km/h)
*	2.6	Transmission oil	MIL-L-2105 D = API-GL5-6	SAE 85 W 90	ca. 2 x 0.9 l each
*	5.2	Hydraulic oil	DIN 51524 - HVLP 46	ISO VG 46, VI > 180	ca. 100 l
	6	Grease	DIN 51825 - KPF 1/2 N-20		as required
	7	Distilled water			as required
*	8	Mineral oil	DIN 51524 - HVLP 46	ISO VG 46, VI > 180	as required

Key to symbols

△ First oil change, first filter replacement
▲ First check; eliminate any determined problems
○ Check; eliminate any determined problems
◇ Change
* The markings, filling and check plugs are binding
Refer to operating instructions
STOP **Caution** When carrying out maintenance work, heed accident prevention regulations!

Grease points (indicated in red)

1. Grease bolts every 10 opreating hours with grease DIN 51825 - KPF 1/2 N-20.
2. Lubricate glide points as required and always after cleaning using grease DIN 51825 - KPF 1/2 N-20.

Oil lubrication points

3. Use MIL-L-2104 C engine oil to lubricate the joints and deflection levers every 50 operating hours.

Optional equipment: Biodegradable hydraulic oil

4. Ester-based synthetic hydraulic oil viscosity class ISO VG 46 VI > 180

⚠ **CAUTION !** Operate service brake with mineral oil only! →

Every x operating hours 10	50	500	1500	Item	Maintenance points (Max. permissible intervals or shorter (depending on use))
				1	**Engine**
○	△			1.1	Maintenance acc. to manufacturer
				1.2	Dry air filter system
	○				Activate dust removal valve
	○				Check maintenance display
				1.3	Replace filter element if maintenance display is red →
				2	**Axles / distribution gear**
	○			2.1	Front axle oil level check →
		△	◇	2.2	Front axle oil change →
	○			2.3	Rear axle with distribution gear Oil level check →
		△	◇	2.4	Rear axle with distribution gear Oil change →
	○			2.5	Planetary gear oil level check →
		△	◇	2.6	Planetary gear oil change →
				3	**Axles / cardan shaft / articulated pendulum joint**
	▲	○		3.1	Check fastening of axles (385 Nm)
	▲	○		3.2	Check fastening of cardan shaft (33 Nm)
				4	**Wheels and tires**
	○			4.1	Check air pressure
▲		○		4.2	Check fastening of wheel nuts (440 Nm)
				5	**Hydraulic system**
○				5.1	Oil level check (view glass)
			◇	5.2	Oil change →
	△		◇	5.3	Replace filter inserts, observe electr. control lamp →
○				5.4	Check and clean hydraulic oil cooler
				6	**Grease points (indicated in red)** →
				7	**Battery**
		○		7.1	Visual inspection
				8	**Brake systems**
				8.1	Service/parking brake: Function and visual check before starting work
○				8.2	Service/parking brake: Visually check compensation tank
		○		8.3	Service/parking brake: Check brake lining, adjust if necessary
				9	**Lighting system / fresh air filter**
				9.1	Function test before starting work
		○	◇	9.2	Check fresh air filter →

8 Maintenance

8.1 Notes regarding maintenance

DANGER

- The engine must be turned off.
- For work to be carried out under the bucket arm:
  - the bucket must be emptied or the attachment must be relieved,
  - the bucket arm must be mechanically propped up [e.g. by inserting the bucket arm support (option) (1-2/arrow)],
  - the ball block valve for the working and auxiliary hydraulics (1-2/arrow) must be closed.
- For work to be carried out in the area of the articulation joint, the articulation safeguard must be inserted (1-3/arrow).
- The loader must be secured against rolling by applying the parking brake (4-12/7) and by setting the drive direction switch (4-12/5) to position “0”. In addition, wheel chocks must be placed on both sides of one of the two wheels of the front axle.

CAUTION

- Change the oil when the units are lukewarm.
- Check the oil level when the loader is on level ground and when the bucket arm is in its lowest position.
- Replace damaged filter inserts and gaskets immediately.
- Clean force-feed lubrication nipples before lubricating.

NOTE

- For the maintenance work required, refer to the maintenance plan (page 8-1).
- Damage which is traceable to non-observance of the maintenance plan is not covered by the warranty.
- The lubricants listed in the maintenance plan can be used at ambient temperatures ranging from **-15° C** to **+40° C.**

CAUTION

For ambient temperatures below 15° C, refer to the description in chapter 5.2.2 “Winter operation”.

8.2 Maintenance work

8.2.1 Engine oil level check

See the operating instructions for the engine.

NOTE

The engine can be accessed via the engine hood.

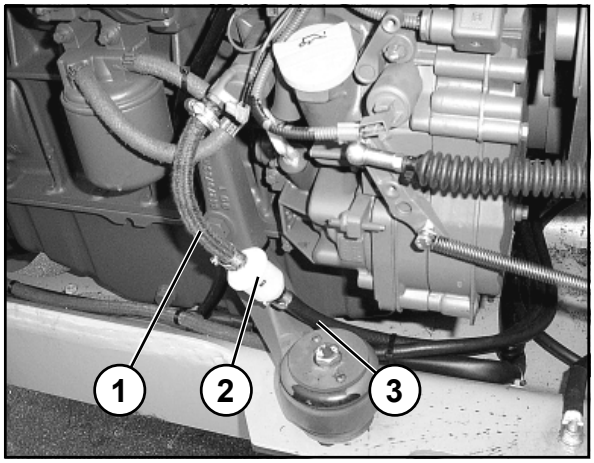


Figure 8-1

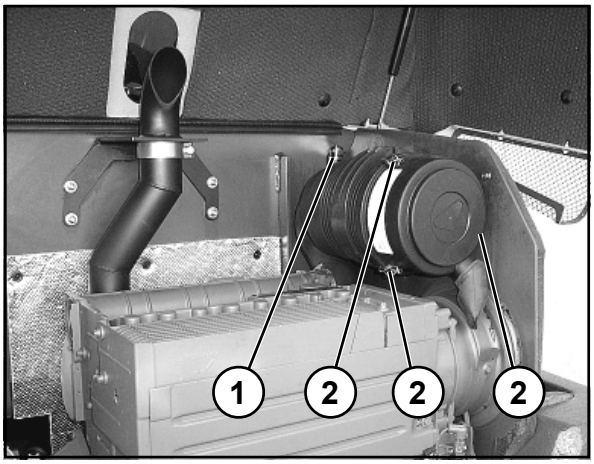


Figure 8-2

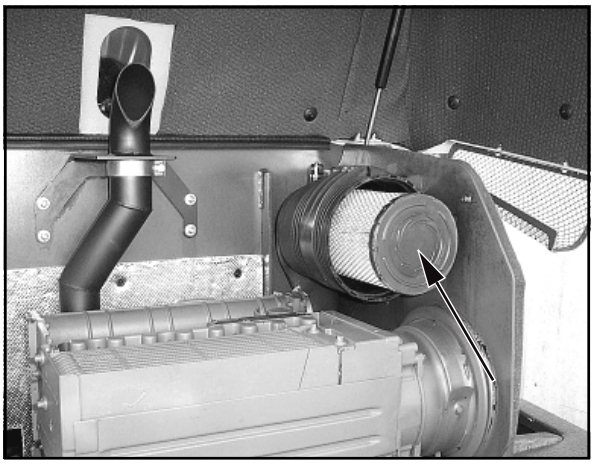


Figure 8-3

8.2.2 Engine oil change

See the operating instructions for the engine.

NOTE

The engine can be accessed via the engine hood.

8.2.3 Fuel prefilter replacement

NOTE

Maintenance (visual inspection) of the fuel prefilter must be carried out every **500 operating hours**. The fuel prefilter must be replaced when soiled, but at least once a year.

(1) Open the motor hood.
(2) Loosen the two clamps upstream and downstream of the prefilter (8-1/2).
(3) Bend the fuel line (8-1/1) on one side of the prefilter to prevent the fuel from escaping, pull the line off the old prefilter and immediately push it onto the new prefilter. Then bend and pull off the fuel line (8-1/3) on the other side of the prefilter and push it onto the new prefilter.

NOTE

- Collect any fuel that escapes.
- When installing the new prefilter, heed the flow direction.

(4) Fasten both clamps.
(5) Check for leaks.

8.2.4 Maintaining/replacing the air filter

NOTE

Maintenance of the filter cartridge is necessary when the red range is visible in the maintenance indicator (8-2/1) or after 12 months have elapsed, whichever is sooner.

(1) Open the motor hood.
(2) Loosen the three retaining clamps of the air filter lid (8-2/2) and remove the air filter lid.
(3) Pull out the filter cartridge (8-3/arrow) by carefully turning it back and forth.
(4) Clean the filter cartridge.

CAUTION

- For cleaning, use a compressed air gun to which a pipe (angled at 90°) has been attached. The pipe must be sufficiently long to reach the bottom of the cartridge. Use dry compressed air of no more than 5 bar to blow out the cartridge by moving the pipe back and forth in the interior of the cartridge. Cleaning can be stopped when dust formation ceases.

- Do not use petrol or hot liquids for cleaning.

(5) Use a hand-held lamp to check the cartridge paper and the rubber gasket of the filter cartridge for damage.
If the cartridge or the gasket is damaged, replace the cartridge.

(6) Carefully insert the filter cartridge.

(7) Install the air filter lid on the filter housing in such a way that the direction arrow in the marking "**OBEN-TOP**" points upwards. This ensures that the dust removal valve faces downwards.

NOTE

The dust removal valve must be checked from time to time and cleaned if necessary.

(8) When the indicator field becomes red (8-2/1), push the reset button. The field becomes clear.

CAUTION

Check all connection pipes and hoses of the air filter system for damage before starting the engine.

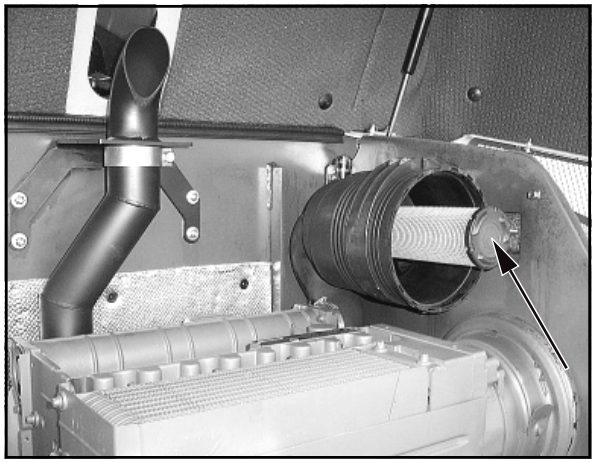


Figure 8-4

8.2.5 Replacing the safety cartridge

CAUTION

- The safety cartridge must not be cleaned.
- The safety cartridge must be replaced after the filter cartridge has been maintained/cleaned 5 times, but at the latest after two years.
- Make sure that no dirt or dust can enter the filter housing during replacement of the safety cartridge.

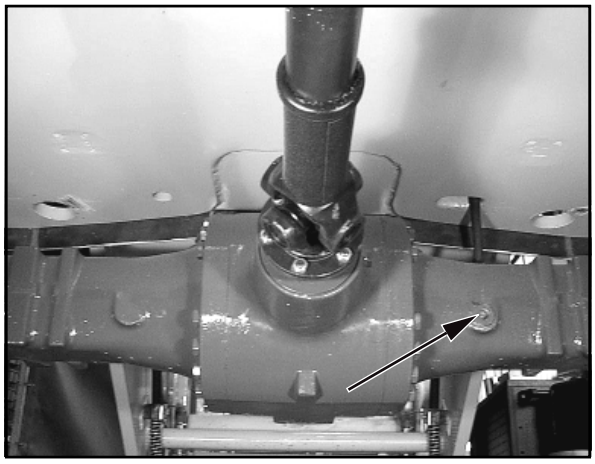


Figure 8-5

(1) Remove the filter cartridge (section 8.2.4).

(2) Pull out the safety cartridge (8-4/arrow) by carefully turning it back and forth and replace the safety cartridge and the filter cartridge with new cartridges.

(3) The remaining installation is performed as described in section 8.2.4 (6) - (8).

8.2.6 Front axle oil change

(1) Unscrew the plugs from the axle arch (8-5/arrow or 8-6/arrow).

NOTE

- The oil level must reach the plug bore.
- Collect any oil that escapes.

(2) Screw in the plug again.

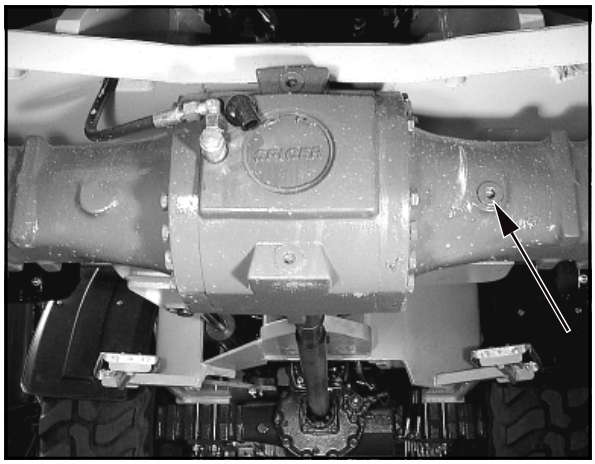


Figure 8-6

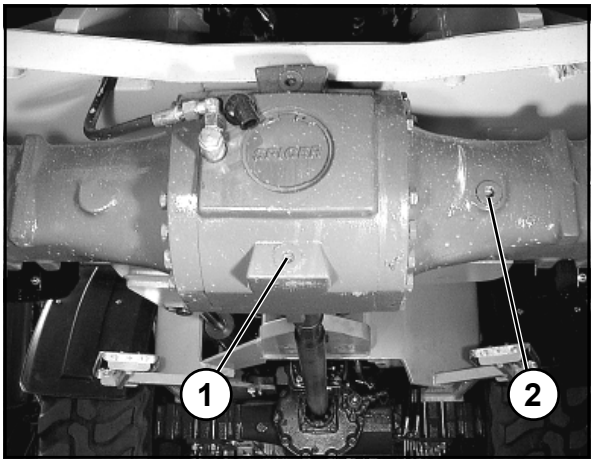


Figure 8-7

8.2.7 Front axle oil change

(1) Place a sufficiently large oil drain pan underneath.

(2) Unscrew the plugs from the axle arch (8-7/1, 8-7/2 and 8-8/arrow) and drain the oil.

CAUTION

Waste oil must be disposed of in such a way that it will not cause pollution!

(3) Screw in the plug (8-7/1) again.

(4) Fill in oil via the plug bore (8-7/2 or 8-8/arrow) until the oil level reaches the opening.

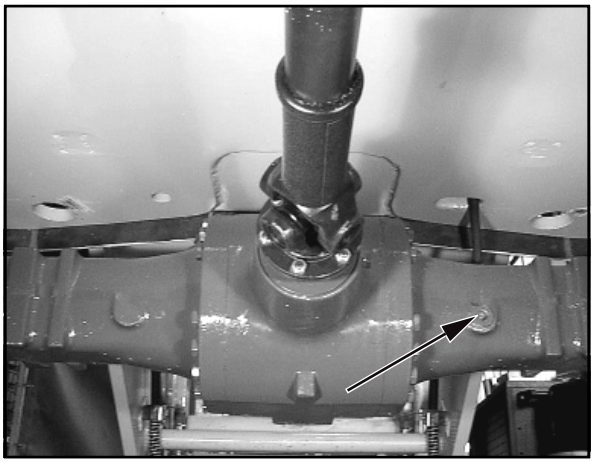


Figure 8-8

NOTE

- The vent valve of the axle (8-9/arrow) must be free from dirt.
- Details regarding the amount of oil required are given in the maintenance plan (page 8-1).
- After a few minutes, when the oil level has lowered, top up the oil until the oil level reaches the marked level and remains stable.

(5) Screw the plugs (8-7/2 and 8-8/arrow) back in.

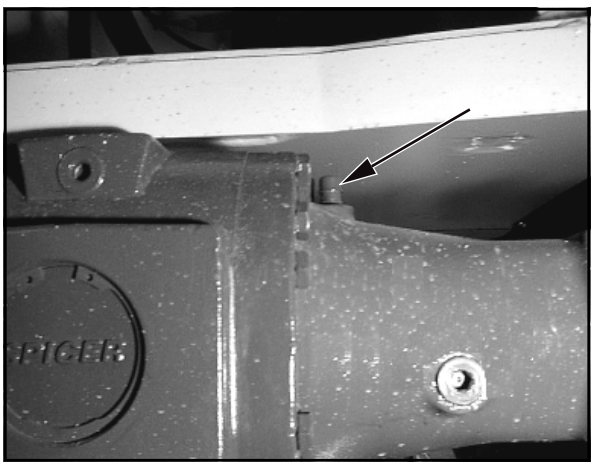


Figure 8-9

8.2.8 Rear axle oil level check

8.2.8.1 Slow loader » 20 km/h «

(1) Unscrew the plug from the axle arch (8-10/arrow).

NOTE

- The oil level must reach the plug bore.
- Collect any oil that escapes.

(2) Screw in the plug again.

(3) Unscrew the plug from the intermediate gear (8-11/arrow).

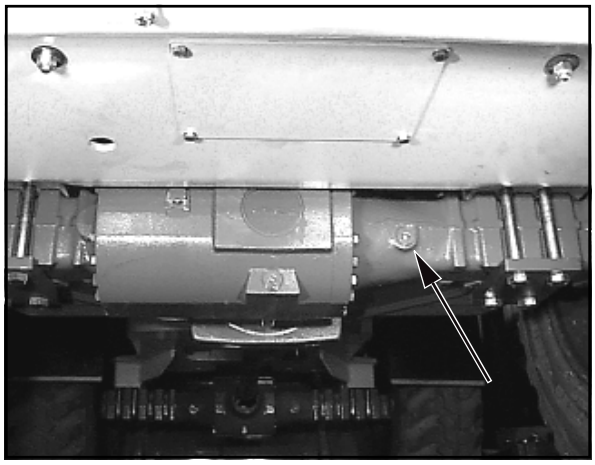


Figure 8-10

NOTE

- The axle arch and the intermediate gear do not have a common oil filling.
- The oil level must reach the plug bore.
- Collect any oil that escapes.

(4) Screw in the plug again.

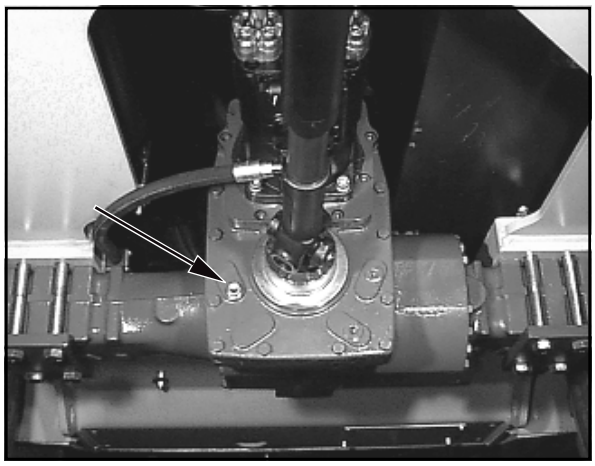


Figure 8-11

8.2.8.2 Fast loader » 30 km/h «

(1) Unscrew the plug from the axle arch (8-12/arrow).

NOTE

- The oil level must reach the plug bore.
- Collect any oil that escapes.

(2) Screw in the plug again.

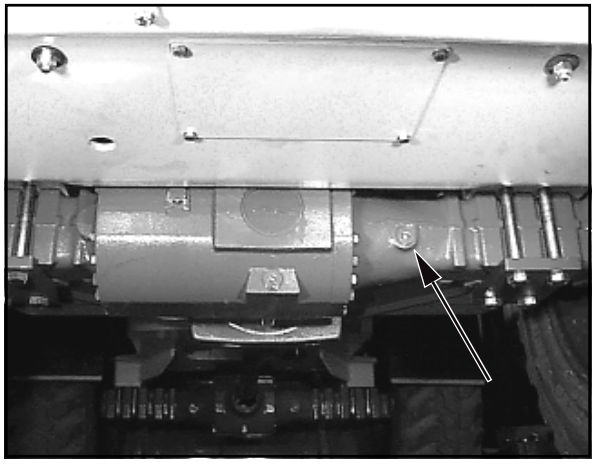


Figure 8-12

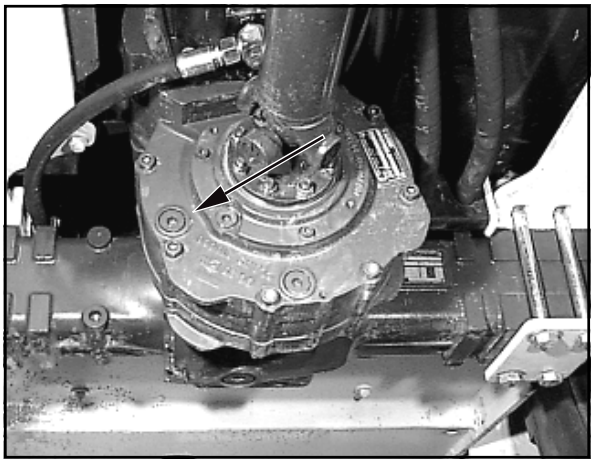


Figure 8-13

(3) Unscrew the plug from the distribution gear (8-13/ arrow).

NOTE

- The axle arch and the intermediate gear do not have a common oil filling.
- The oil level must reach the plug bore.
- Collect any oil that escapes.

(4) Screw in the plug again.

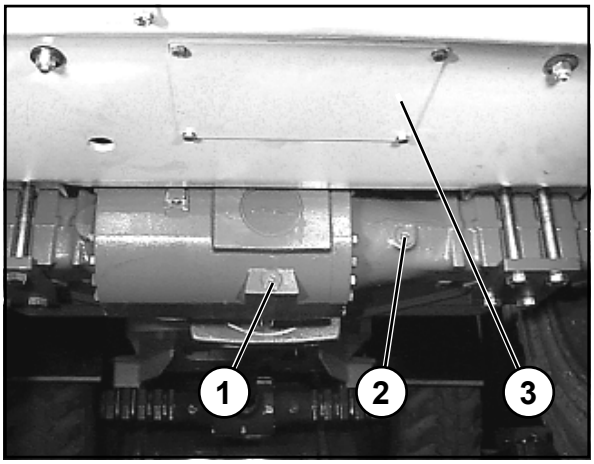


Figure 8-14

8.2.9 Rear axle oil change

8.2.9.1 Slow loader » 20 km/h «

(1) Place a sufficiently large oil drain pan underneath.

(2) Unscrew the plugs from the axle arch (8-14/1 and 8-14/2) and the intermediate gear (8-15/1 and 8-15/2) and let the oil drain out.

CAUTION

Waste oil must be disposed of in such a way that it will not cause pollution!

(3) Screw in the plugs for the axle arch (8-14/1) and the intermediate gear (8-15/2) again.

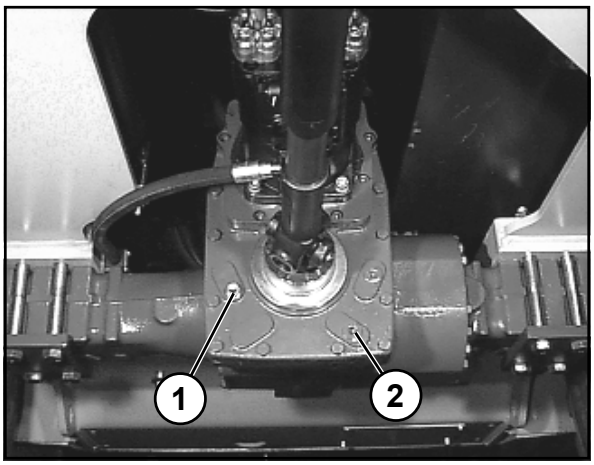


Figure 8-15

(4) Fill oil into the plug bore of the intermediate gear (8-15/1) until the oil level reaches the opening.

NOTE

- The axle arch and the intermediate gear do not have a common oil filling.
- Details regarding the amount of oil required are given in the maintenance plan (page 8-1).
- After a few minutes, when the oil level has lowered, top up the oil until the oil level reaches the marked level and remains stable.

(5) Screw in the plug of the intermediate gear (8-15/1) again.
(6) Fill oil into the plug bore of the axle arch (8-14/2) until the oil level reaches the opening.

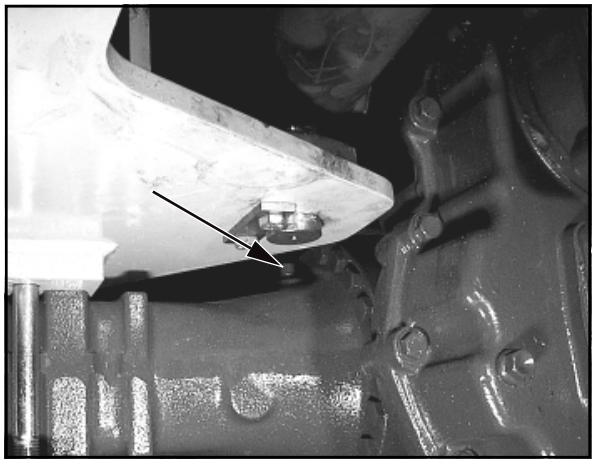


Figure 8-16

NOTE

- Details regarding the amount of oil required are given in the maintenance plan (page 8-1).
- After a few minutes, when the oil level has lowered, top up the oil until the oil level reaches the marked level and remains stable.
- The vent valve of the axle (8-16/arrow) must be free from dirt.

(7) Screw in the plug of the axle arch (8-14/2) again.

8.2.9.2 Fast loader » 30 km/h «

(1) Place a sufficiently large oil drain pan underneath the axle.
(2) Unscrew the plugs from the axle arch (8-17/1 and 8-17/2) and the distribution gear (8-18/1 and 8-18/2) and let the oil drain out.

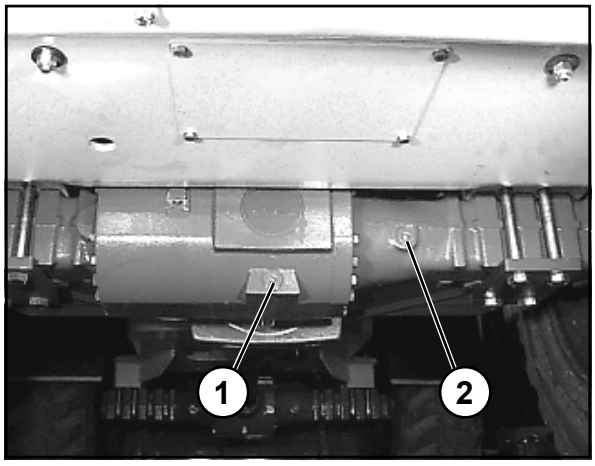


Figure 8-17

CAUTION

Waste oil must be disposed of in such a way that it will not cause pollution!

(3) Screw in the plugs for the axle arch (8-17/1) and the distribution gear (8-18/2) again.
(4) Fill oil into the plug bore of the distribution gear (8-18/1) until the oil level reaches the opening.

NOTE

- The axle arch and the distribution gear do not have a common oil filling.
- Details regarding the amount of oil required are given in the maintenance plan (page 8-1).
- After a few minutes, when the oil level has lowered, top up the oil until the oil level reaches the marked level and remains stable.

(5) Screw in the plug of the distribution gear (8-18/1) again.
(6) Fill oil into the plug bore of the axle arch (8-17/2) until the oil level reaches the opening.

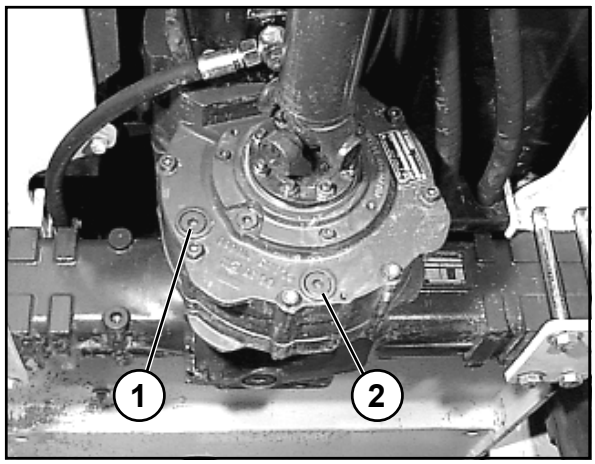


Figure 8-18

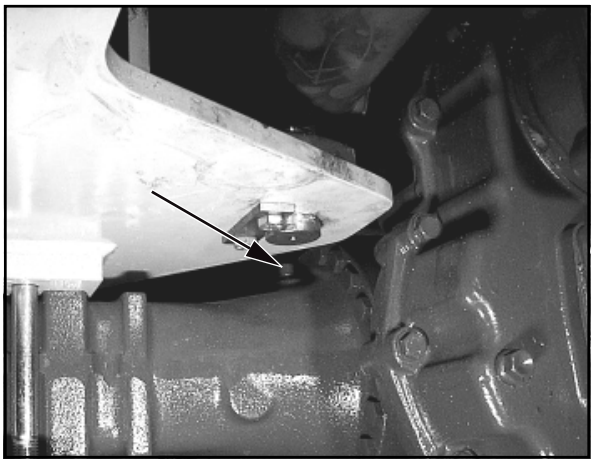


Figure 8-19

NOTE

- Details regarding the amount of oil required are given in the maintenance plan (page 8-1).
- After a few minutes, when the oil level has lowered, top up the oil until the oil level reaches the marked level and remains stable.
- The vent valve of the axle (8-19/arrow) must be free from dirt.

(7) Screw in the plug of the axle arch (8-17/2) again.

8.2.10 Planetary gear

(1) Move the loader until the marking line "OIL LEVEL" is horizontal and the plug is located above the top left of the marking line (8-20/arrow).

(2) Unscrew the plug.

Figure 8-20

NOTE

- The oil level must reach the plug bore.
- Collect any oil that escapes.

(3) Fit a new gasket and screw the plug back in.

8.2.11 Planetary gear oil change

(1) Move the loader so that the plug (8-21/arrow) is positioned at 6 o'clock.

(2) Place an oil drain vessel with a drain channel underneath the gear.

(3) Unscrew the drain plug and let the oil drain out.

CAUTION

Waste oil must be disposed of in such a way that it will not cause pollution!

Figure 8-21

(4) Move the loader until the marking line "OIL LEVEL" is horizontal and the plug is located above the top left of the marking line (8-20/arrow).

(5) Fill in oil via the plug bore until the oil level reaches the opening.

(6) Use a new gasket when screwing the plug back in.

8.2.12 Hydraulic system oil change

(1) Dismount the maintenance flap (8-14/3).

(2) Place an oil drain pan (min. capacity: 110 l) underneath the drain point.

(3) Unscrew the oil drain plug (8-22/arrow).

(4) Drain the oil into the drain pan.

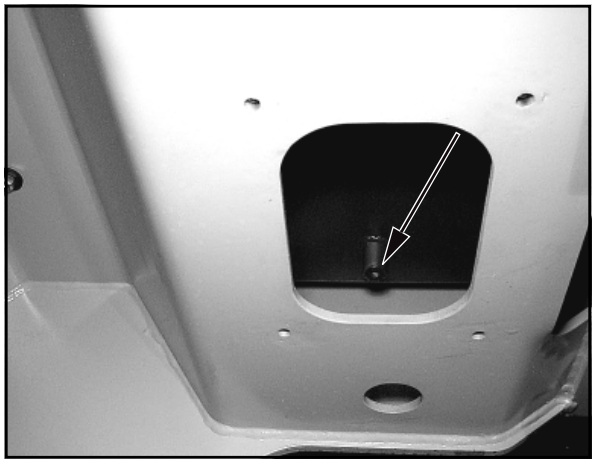


Figure 8-22

CAUTION

Waste oil must be disposed of in such a way that it will not cause pollution!

(5) Screw in the oil drain plug again.

(6) Change the hydraulic oil filter cartridge (section 8.2.13).

(7) Fill in oil into the filler neck (8-23/arrow).

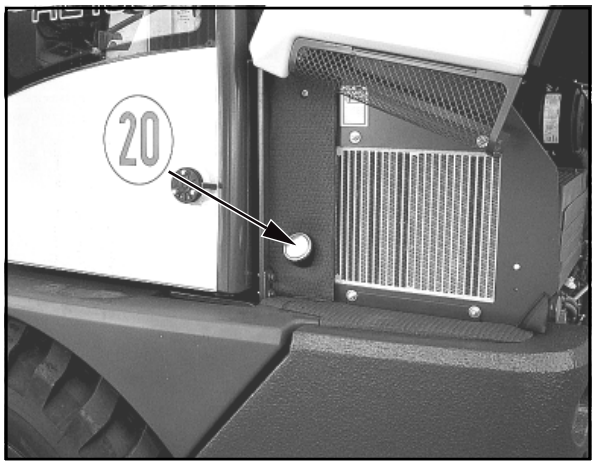


Figure 8-23

CAUTION

For those loaders which are fitted to run with biodegradable hydraulic oil (ester-based synthetic hydraulic oil of viscosity class ISO VG 46 VI > 180) - (designation can be found on the hydraulic oil reservoir and on the dashboard), only this type of oil may be used for oil changes.

Mineral and biodegradable hydraulic oils must **never** be mixed!
Biodegradable hydraulic oil must be changed every **1000 operating hours**.

Changing the oil type from mineral oil to biodegradable oil must be performed according to the VDMA 24 569 conversion guidelines!

CAUTION

Use only mineral oil for the service/parking brake!

(8) Check the oil level at the sight glass (8-24/arrow).

(9) Close the filler neck.

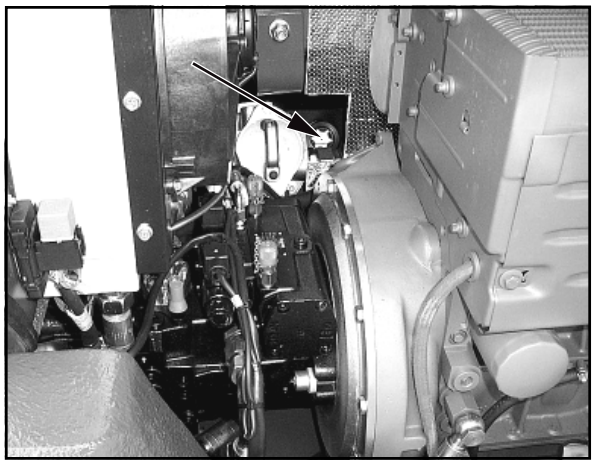


Figure 8-24

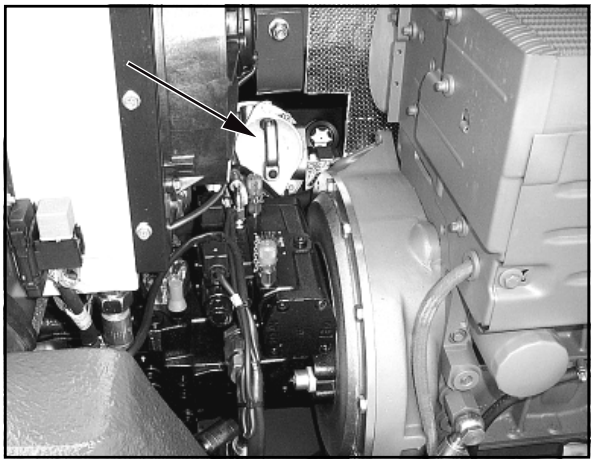


Figure 8-25

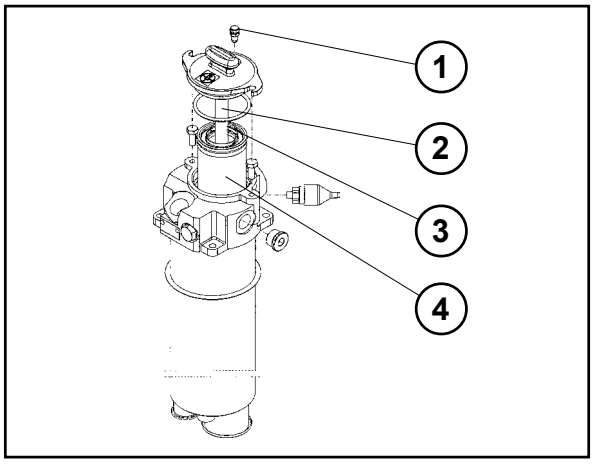


Figure 8-26

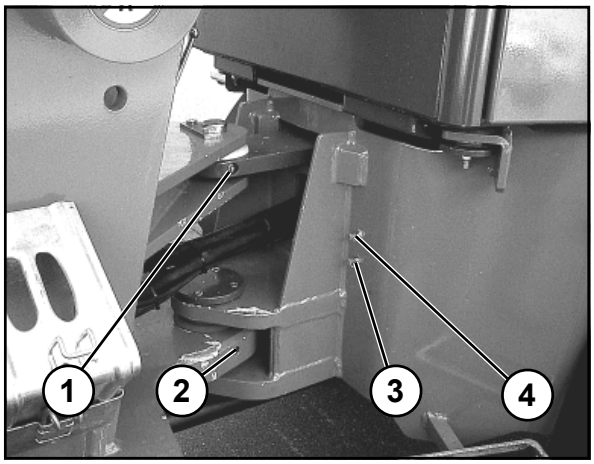


Figure 8-27

8.2.13 Hydraulic oil filter cartridge replacement

CAUTION

Replace the filter cartridge according to the maintenance plan or when the clogging indicator lamp (4-9/17) lights up.

NOTE

The clogging indicator may light up prematurely after a cold start. It will go out when the hydraulic oil warms up.

(1) Open the motor hood.
(2) Loosen but do not unscrew both screws of the hydraulic oil filter lid (8-25/arrow).
(3) Turn hydraulic oil filter lid with the magnetic tube (8-26/2) to the left and lift it out. Collect hydraulic oil dripping off.
(4) Swing up handle (8-26/3), slowly pull out the filter cartridge (8-26/4) and replace it with a new one.

CAUTION

- Collect any hydraulic oil dripping off when you pull out the filter cartridge.
- The used hydraulic oil filter cartridge must be disposed of in such a way that it does not cause pollution.

(5) Use a clean cloth to wipe the magnet tube (8-26/2) before fitting it back in.
(6) Refit the hydraulic oil filter lid with magnet tube and fasten it again.
(7) Connect ventilation hose to ventilation valve (8-26/1).
(8) Start the engine.
(9) Have an oil drain pan ready and open the ventilation valve.

NOTE

Keep the ventilation valve open until there are no more bubbles in the escaping oil.

(10) Close the ventilation valve.

8.2.14 Grease points

NOTE

The grease points are marked in red on the loader.

8.2.14.1 Articulated pendulum joint/ steering cylinder

CAUTION

Grease the bearings of pendulum support, articulated pendulum joint and steering cylinder every 50 operating hours.

Item 1 Pendulum support, front
Item 2 Articulated pendulum joint
Item 3 Pendulum support, rear:
Item 4 Steering cylinder, rear

CAUTION

The steering cylinder bearing (8-28/arrow) must be greased **every 50 operating hours**.

Figure 8-28

8.2.14.2 Bucket assembly AL 80, AL 100 and AL 100turbo

CAUTION

The bearing bolts/grease nipples of the bucket assembly (8-29 and 8-30) must be greased **every 10 operating hours.**

Item 1 + 2	Bucket assembly/quick-change device
Item 3 + 4	Quick-change device/tip lever
Item 5	Bucket assembly/pivot arm
Item 6	Bucket assembly/lift cylinder
Item 7	Pivot arm/tip cylinder
Item 8	Tip lever/pivot arm
Item 9 + 10	Bucket assembly/front end
Item 11	Front end/tip cylinder

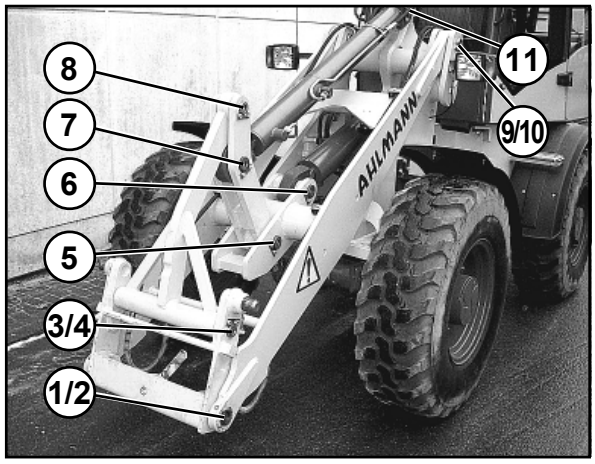


Figure 8-29

8-30/arrow Front end/lift cylinder

Figure 8-30

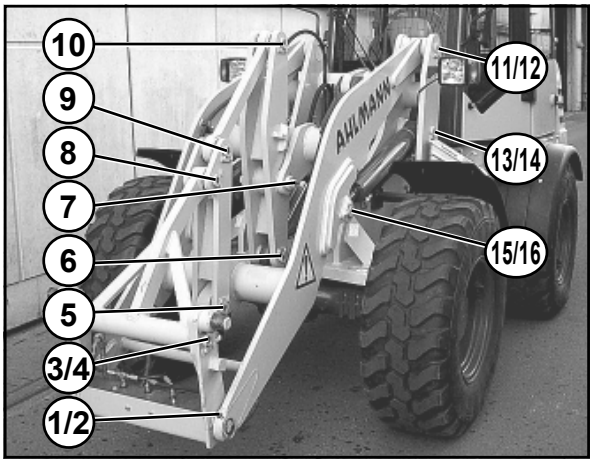


Figure 8-29a

8.2.14.3 Bucket assembly AL 120

CAUTION

The bearing bolts/grease nipples of the bucket assembly (8-29a and 8-30a) must be greased **every 10 operating hours.**

Item 1 + 2	Bucket assembly/quick-change device
Item 3 + 4	Quick-change device/tilt rod
Item 5	Bucket assembly/tip lever
Item 6	Pivot arm/tip cylinder
Item 7	Bucket assembly/pivot arm
Item 8	Tip lever/tilt rod
Item 9	Tip lever/reversing rod
Item 10	Reversing rod/pivot arm
Item 11 + 12	Bucket assembly/front end
Item 13 + 14	Front end/lift cylinder
Item 15 + 16	Bucket assembly/lift cylinder

Figure 8-30a

8-30a/arrow Front end/tip cylinder

Figure 8-31

8.2.14.4 Driver's cab door

CAUTION

The door hinges of the driver's cabin (8-31/arrows) must be lubricated **every 50 operating hours**.

NOTE

Lubricate the hinges on both doors of the driver's cabin.

8.2.14.5 Engine hood

CAUTION

The hinges of the engine hood (8-32/arrow) must be lubricated **every 50 operating hours**.

Figure 8-32

8.2.14.6 Multi-purpose bucket

CAUTION

The bottom bearing bolts of the multi-purpose bucket (8-33/arrow) must be greased **every 10 operating hours**.

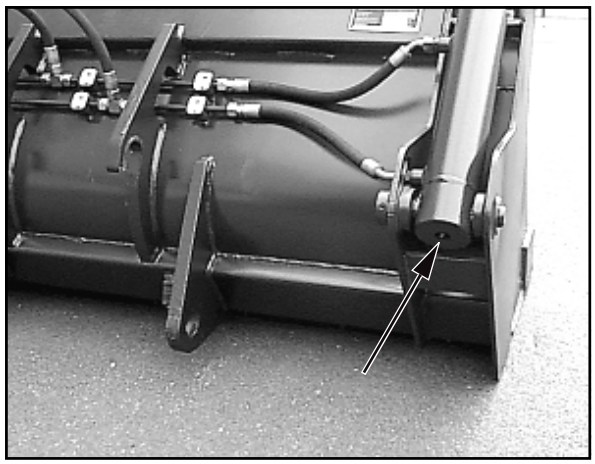


Figure 8-33

CAUTION

The bearing bolts of the multi-purpose bucket (8-34/arrows) must be greased **every 10 operating hours.**

NOTE

The bolts must be greased on both sides of the multi-purpose bucket.

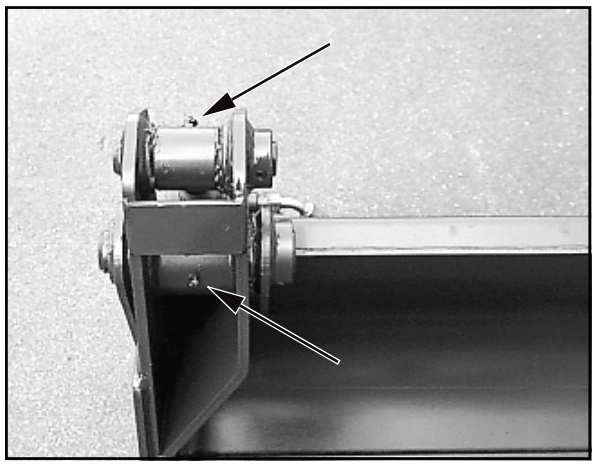


Figure 8-34

8.2.15 Oil lubrication points

Lubricate the following items with oil every 50 operating hours:
- The door locks,
- The hinges of the roof window,
- The Bowden cable and leverage of the accelerator pedal.

8.2.16 Replacing the starter battery

NOTE

The starter battery is a maintenance-free part according to DIN 72311, section 7. It is located to the right in the motor compartment.

(1) Open the motor hood.
(2) Remove the battery main switch (8-35/3).
(3) Loosen and remove the fastening screw (8-35/1) (size 17) of the battery holder.
(4) Fold up the cover caps (8-35/2) and disconnect and remove the terminals from the battery (size 13).

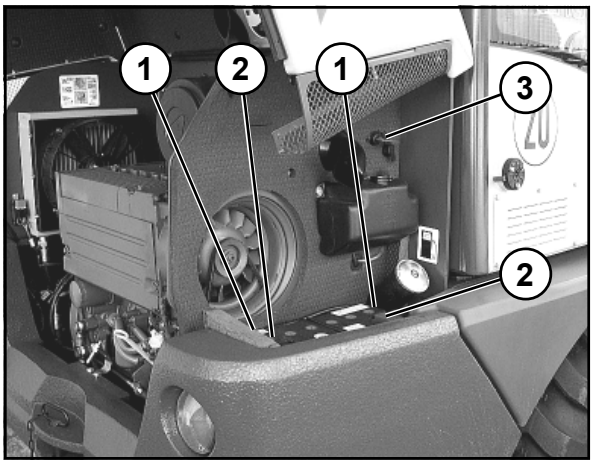


Figure 8-35

DANGER

Always remove the negative terminal first and then the positive terminal. Installation is in the reverse order.

(5) Remove the battery and replace it.
(6) Apply grease to the terminals before fastening them.
(7) Installation is in the reverse order.

DANGER

Make sure the fastenings are secure.

8.2.17 Checking/adjusting the service/ parking brake

DANGER

- The combined service/parking brake must be checked and, if necessary, adjusted every **500 operating hours**.
- All work on the brake system must only be carried out by authorized personnel.
- Oil loss (leaks) in the brake system must be immediately reported to authorized personnel.
- Operation of the loader must be stopped immediately if the pedal can be pressed down too far or the braking effect decreases noticeably.


Figure 8-36

(1) Check the brake's hydraulic oil level (8-36/arrow) and top up if necessary.
(2) Check the pedal travel.
(3) Check the entire system for proper functioning and absence of leaks (visual test).

NOTE

The service brake/parking brake is maintenance-free and therefore does not require any further check.

8.2.18 Maintaining/replacing the fresh air filter

NOTE

The fresh air filter is located at the right loader side in the vicinity of the rear side window.

(1) Loosen the six fastening screws (8-37/arrows) of the filter cover and remove the cover.

(2) Remove the filter cartridge (8-38/arrow) and clean it using “mild” compressed air.

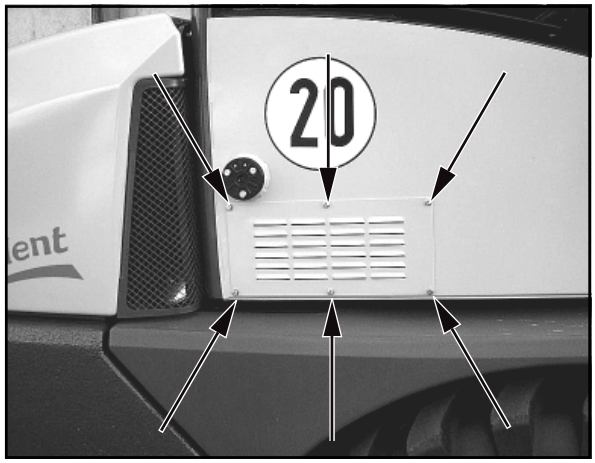


Figure 8-37

CAUTION

Do not use any petrol, hot fluids or compressed air for cleaning.

(3) Check the filter element for damage.

NOTE

The filter element must be replaced when it is damaged, but at least every **1500 operating hours.**

(4) Insert the filter element and install the filter cover.

Figure 8-38