Maintenance

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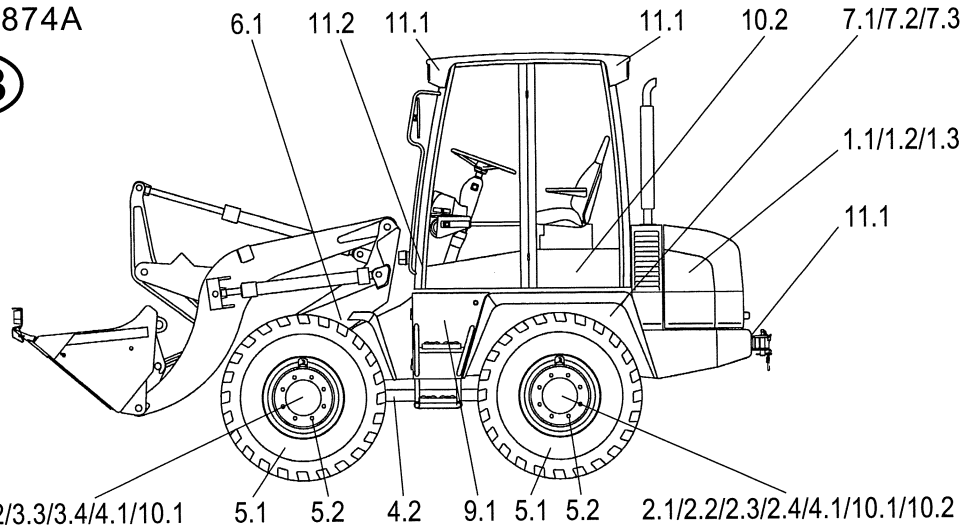

Item	Designation	Specification	Viscosity	Filling amount
* 1	Motor oil	MIL-L-2104 C = API-CD	acc. to manufacturer	ca. 6 l with oil filter
* 2.2	Transmission oil	MIL-L-2105 D = API-GL5-6 (with LS for locking differential)	SAE 85 W 90	ca. 4.5 l
* 2.4	Transmission oil	MIL-L-2105 D = API-GL5-6	SAE 85 W 90	ca. 2x 1.5 l
* 3.2	Transmission oil with LS addition	MIL-L-2105 D = API-GL5-6-LS	SAE 85 W 90-LS	ca. 4 l
* 3.4	Transmission oil with LS addition	MIL-L-2105 D = API-GL5-6-LS	SAE 85 W 90-LS	ca. 2x 1.5 l
* 7.3	Hydraulic oil (4)	DIN 51524 - HVLP 46	ISO VG 46, VI > 180	ca. 70 l
8	Grease	DIN 51825 - KPF 1/2 N-20		as required
9	Distilled water			as required
* 10	Brake fluid	DOT3 / DOT 4		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

Caution
When carrying out maintenance work, heed the accident prevention regulations!

Lubrication points (indicated in red)

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

Oil lubrication points

3. Lubricate joints and toggle levers every 50 operating hours wih engine oil MIL-L-2104 C.

Optional features: Biodegradable hydraulic oil

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

Every x operating hours — max. permitted intervals or shorter (depending on use)

10	50	500	1500	Item	Maintenance points
				1	**Engine**
○	△			1.1	Maintenance according to manufacturer's regulations
				1.2	Dry air filter system
	○				Activate dust removal valve
	○				Check maintenance display
				1.3	Replace filter element if maintenance display is red →
				2	**Rear axle with axle power shift gear**
	○			2.1	Check oil level in axle and power shift gear (control screw)
		△	◇	2.2	Change oil in axle and power shift gear →
	○			2.3	Check oil level in planetary gear (control screw)
		△	◇	2.4	Change oil in plan. gear →
				3	**Front axle**
	○			3.1	Check oil level in axle gear (control screw)
		△	◇	3.2	Change oil in axle gear →
	○			3.3	Check oil level in planetary gear (control screw)
		△	◇	3.4	Change oil in plan. gear →
				4	**Axles/ Cardan shaft(s)**
	▲	○		4.1	Check fastening of axles (800 Nm)
	▲	○		4.2	Check fastening of cardan shaft(s) (32 Nm)
				5	**Wheels and tyres**
	○			5.1	Check air pressure
▲		○		5.2	Check fastening of wheel nuts (300 Nm)
				6	**Ball bearing slewing ring (swivel loader only)**
	▲	○		6.1	Check fastening (300 Nm)
				7	**Hydraulic system**
	△	○	◇	7.1	Replace filter insert, observe electric control lamp →
○				7.2	Oil level check (sight glass)
			◇	7.3	Oil change
				8	**Lubrication points (indicated in red)** →
				9	**Battery**
		○		9.1	Visual check
				10	**Brake system**
				10.1	Service and parking brake: Take function and visual check before starting work
○				10.2	Service brake: visual check of compensation tank
		○		10.3	Check parking brake, adjust if required →
				11	**Lighting system / fresh air filter**
				11.1	Take function test before starting work
		○	◇	11.2	Check fresh air filter

8 Maintenance

8.1 Maintenance notes

DANGER

- The engine must be turned off.
- When working 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) (1-1/arrow)],
  - the ball block valve for the working and auxiliary hydraulics (1-2/arrow) must be closed,
  - the swivel mechanism is to be blocked (1-4/arrow).
- The loader is to be secured against rolling by using the parking brake (4-7/14) or by setting the drive direction switch (4-7/13) to the “0” position. In addition, wedges 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 the bucket arm is in its lowest position.
- Replace damaged filter inserts and gaskets immediately.
- Clean pressure lubrication fittings before lubricating.

NOTE

- All necessary maintenance work is to be taken from the maintenance plan.
- Damage which is traceable to non-observance of the maintenance plan is not covered by the guarantee.
- The lubricants mentioned in the maintenance plan may be used at an ambient temperature from **-15°** to **+40°C**.

CAUTION

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

NOTE

If a hose and/or pipe break occurs, the lid of the hydraulic oil filter (8-17/arrow) must be loosened because the loader does not have a locking cock that could prevent large amounts of hydraulic oil from escaping.

Figure 8-1

8.2 Maintenance work

8.2.1 Checking the engine oil level

See Engine Operating Instructions.

8.2.2 Checking the oil level in the axles

8.2.2.1 Rear axle

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

NOTE

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

(2) Replace the plug.

Figure 8-2

8.2.2.2 Planetary gear

(1) Move the loader until the marking line ”OIL LEVEL/ OELSTAND” is horizontal and the plug is located above the top left of the marking line (8-2/arrow).

(2) Unscrew the plug.

NOTE

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

(3) Replace the plug and fit a new gasket.

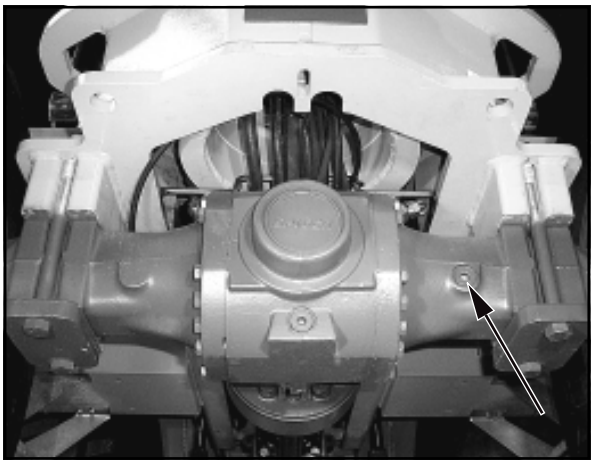

Figure 8-3

8.2.2.3 Front axle

(1) Unscrew the plug (8-3/arrow) from the axle arch.

NOTE

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

(2) Replace the plug.

8.2.3 Checking the oil level in the distribution gear

(1) Unscrew the plug (8-4/arrow) from the transmission housing.

NOTE

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

(2) Replace the plug.

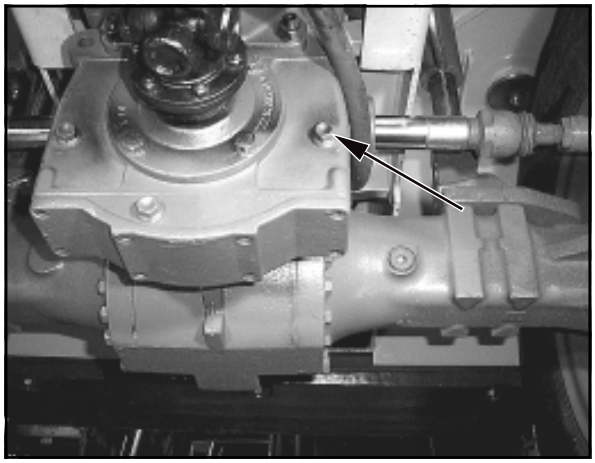

Figure 8-4

8.2.4 Checking the oil level in the hydraulic oil reservoir

(1) Park the loader in a level position.

(2) Place the bucket arm in its lowest position and tip the quick-change device.

(3) Open the motor cover.

(4) Check the oil level in the sight gauge.

NOTE

The oil level must be visible in the sight gauge (8-5/arrow). If necessary, fill oil into the filler neck (8-15/arrow).

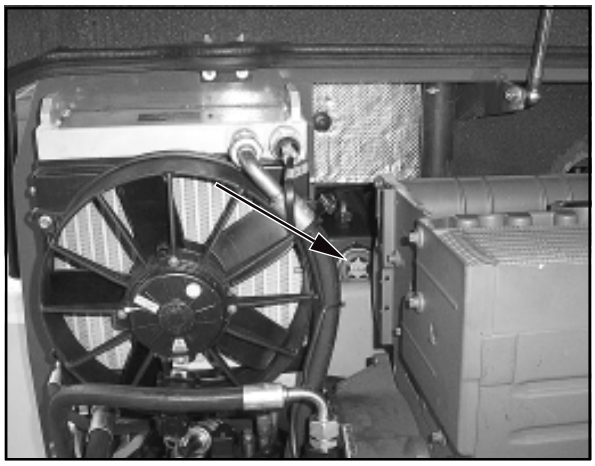

Figure 8-5

8.2.5 Changing the engine oil

NOTE

The oil drain plug is accessible from below and is located on the engine front (as seen in travelling direction).

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

(2) Unscrew the cover for access to the oil drain on the motor (8-6/arrow).

(3) Screw the drainage nozzle with hose from the tool box (4-1/10) to the oil drain.

(4) Remove the cover cap from the hose.

(5) Further procedures can be found in the Engine Operating Manual.

Figure 8-6

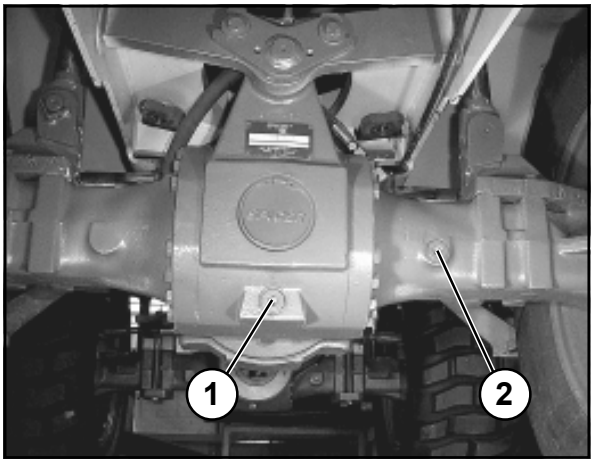

Figure 8-7

8.2.6 Changing the oil in the axles

8.2.6.1 Rear axle

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

(2) Unscrew the plugs from the axle arch (8-7/1 and 8-7/2) and the distribution gear (8-8/1 and 8-8/2) and let the oil drain out.

CAUTION

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

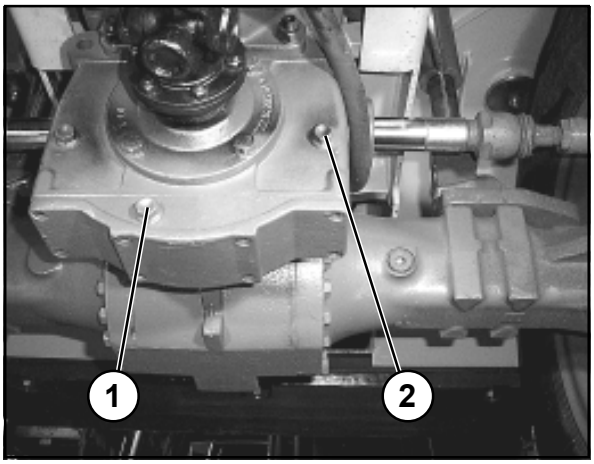

Figure 8-8

(3) Screw in the plugs for the axle arch (8-7/1) and the distribution gear (8-8/1) again.

(4) Fill in oil via the plug hole in the axle arch (8-7/2) and the distribution gear (8-8/2) until the oil reaches the opening.

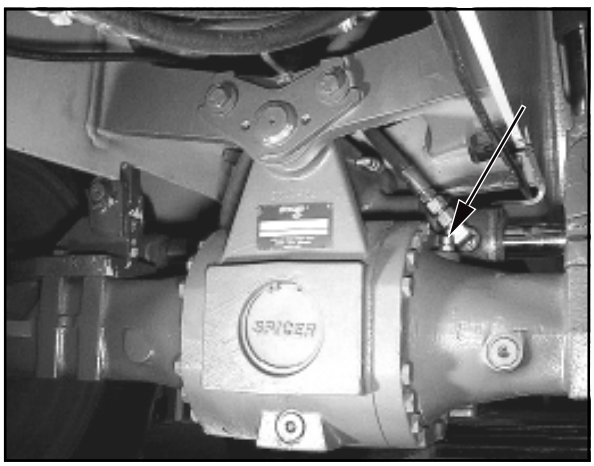

Figure 8-9

NOTE

- The axle ventilation valve (8-9/arrow) must be free of dirt.
- Information about the quantity of oil is in the maintenance plan.
- 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 plugs for the axle arch (8-7/2) and the distribution gear (8-8/2) again.

8.2.6.2 Planetary gear

(1) Move the loader so that the plug (8-10/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

Dispose of waste oil in an environmentally friendly manner.

(4) Move the loader until the marking line "OIL LEVEL/ OELSTAND" is horizontal and the plug is located above the top left of the marking line (8-11/arrow).

(5) Fill oil into the plug bore of the axle arch (8-11/2) until the oil level reaches the opening.

NOTE

- Information about the quantity of oil is given in the maintenance plan.
- After a few minutes, when the oil level has lowered, top up the oil until the oil reaches the marked level and remains stable.

(6) Use a new gasket when replacing the plug.

Figure 8-10

Figure 8-11

8.2.6.3 Front axle

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

(2) Unscrew the plugs from the axle arch (8-12/1 and 8-12/2) and drain the oil.

CAUTION

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

(3) Replace the plug (8-12/1).

(4) Fill in oil via the plug bore (8-12/2) until the oil level reaches the opening.

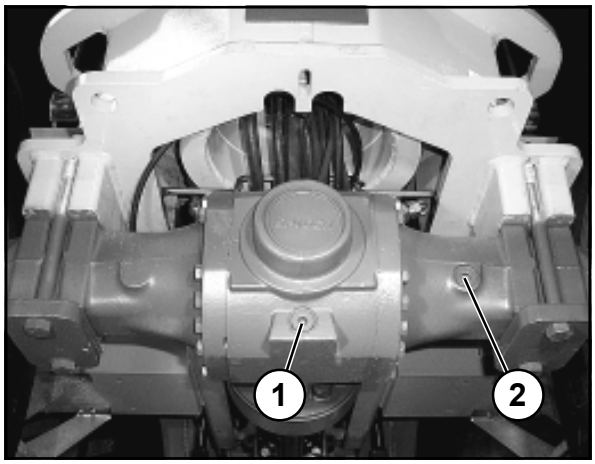

Figure 8-12

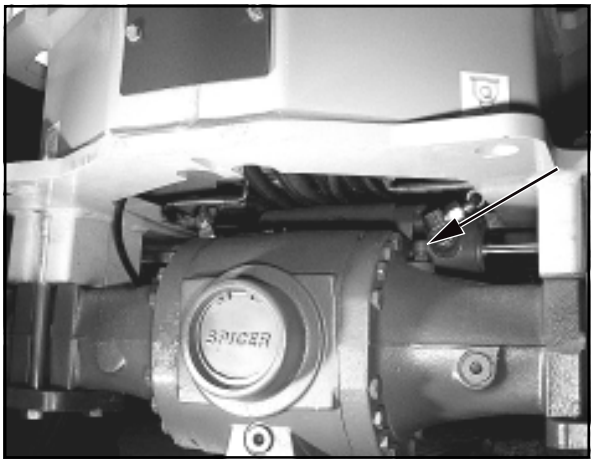

Figure 8-13

NOTE

- The axle ventilation valve (8-13/arrow) must be kept free of dirt.
- Information about the quantity of oil is in the maintenance plan.
- 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) Replace the plug (8-12/2).

8.2.7 Changing the oil in the hydraulic system

(1) Have an oil pan ready (at least 70 l).

(2) Unscrew the cover of the oil drain (8-14/arrow).

(3) Screw the drainage nozzle with hose from the tool box (4-1/10) to the oil drain plug.

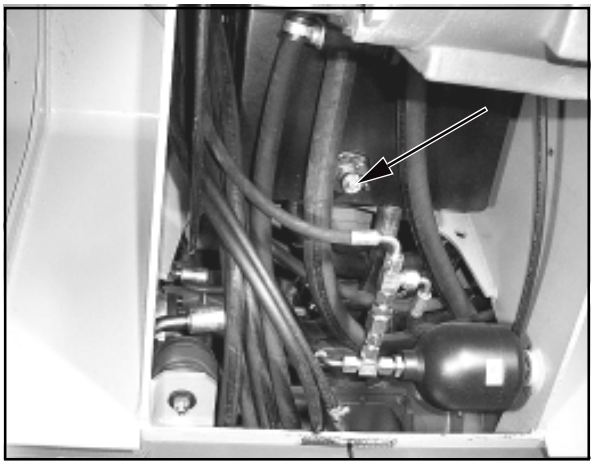

Figure 8-14

(4) Remove the cover cap from the hose.

(5) Drain the oil into the drain pan.

CAUTION

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

(6) Remove the nozzle with the hose and replace the cover on the hose.

(7) Replace the cover on the oil drain.

(8) Change the hydraulic oil filter insert (section 8.2.8).

(9) Fill in oil into the filler neck (8-15/arrow).

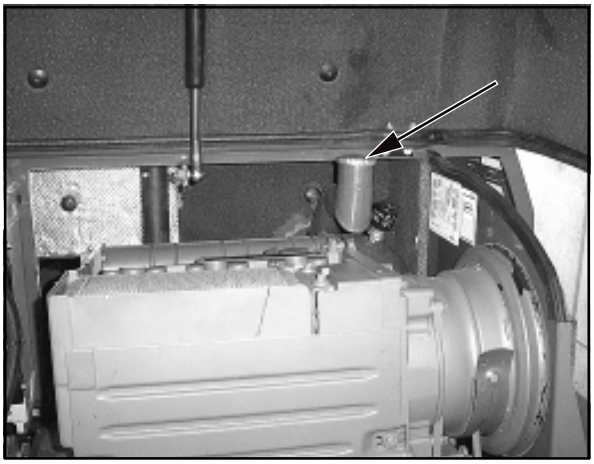

Figure 8-15

CAUTION

When changing the oil in machines filled with biodegradable hydraulic oil (synthetic ester-based hydraulic oil - viscosity class ISO VG 46 VI > 180) - (identification label is located on the hydraulic oil reservoir and on the dashboard), this type of oil must always be used.
Mineral and biodegradable oils must **never** be mixed!
Biodegradable hydraulic oil must be changed every **1000 operating hours**.
A conversion from hydraulic oil on mineral basis to a biodegradable oil must be carried out in accordance with the VDMA 24 569 conversion guidelines!

(10) Check the oil level at the sight glass oil gauge (8-5/ arrow).

(11) Close the filling nozzle.

8.2.8 Changing the back-flow suction filter insert/suction strainer

CAUTION

Change the filter insert according to the maintenance plan or when the clogging indicator lamp (4-8/23) lights up.

NOTE

The clogging indicator lamp may light up briefly after a cold start but will go out when the hydraulic oil has reached its operating temperature.

(1) Take out the rubber mats around the driver's seat.

(2) Unscrew the six screws that fasten the seat plate (8-16/arrows) to the left, right, front and rear.

(3) Push the driver's seat into the lowest position (chapter 5.4).

(4) Tilt the driver's seat against the steering wheel and secure it in this position.

(5) Loosen the lid of the hydraulic oil filter (8-17/arrow) and replace the filter cartridge by new ones.

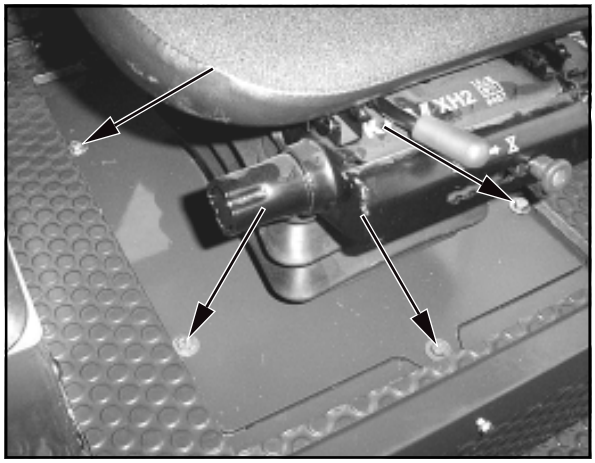

Figure 8-16

CAUTION

The replaced hydraulic oil filter cartridge must be disposed of in an environmentally friendly manner.

(6) Lock the lids of the hydraulic oil filter.

(7) Install driver's seat and put back the rubber mat again.

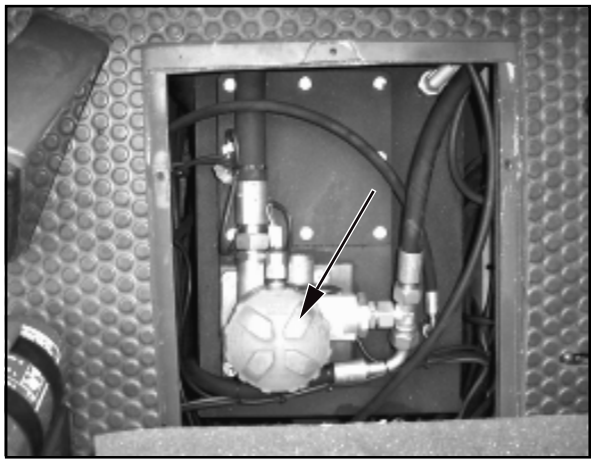

Figure 8-17

8.2.9 Maintaining/replacing the air filter

NOTE

Maintenance of the filter cartridge is necessary when either the red range is visible in the maintenance indicator (8-20/arrow) or after 12 months, whichever is sooner.

(1) Open the engine cover.

(2) Loosen the two spring-loaded catches on the air filter lid (8-18/arrow) and remove the air filter lid.

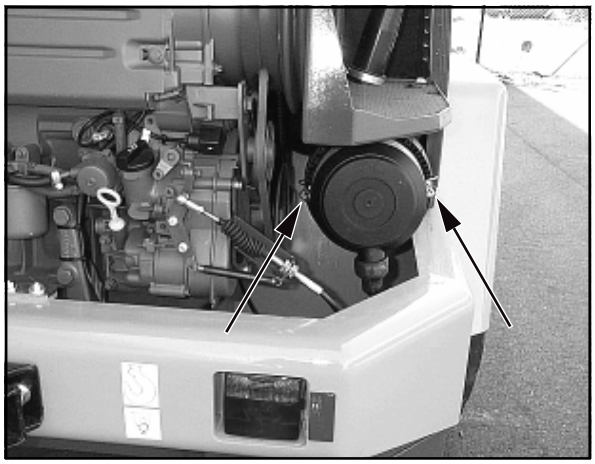

Figure 8-18

Figure 8-19

(3) Pull out the air filter cartridge (8-19/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 cartridge bottom. 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 may be stopped when dust formation ceases.
- Do not use petrol or hot liquid for cleaning.

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

(6) Carefully insert the filter cartridge.

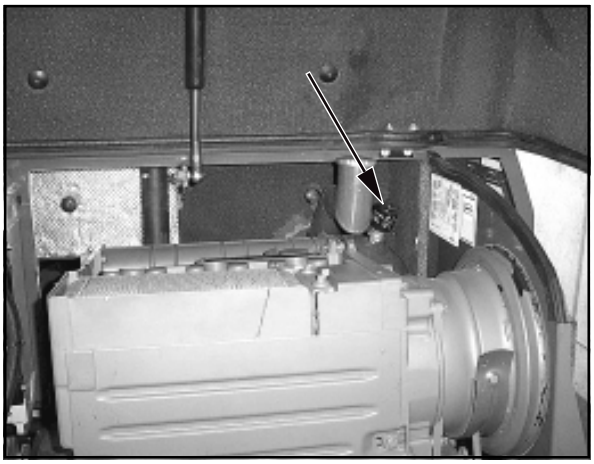

Figure 8-20

(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 is pointing downwards.

NOTE

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

(8) When the indicator field becomes red (8-20/arrow), 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.

8.2.10 Changing 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, at the latest after two years.
- Make sure that no dirt or dust can enter the filter housing during replacement of the safety cartridge.

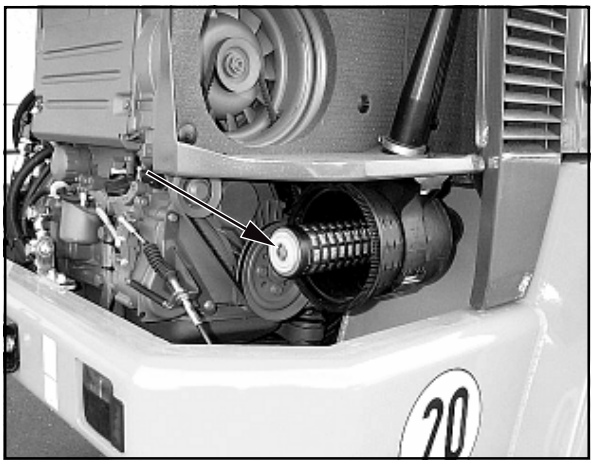

Figure 8-21

(1) Remove the filter cartridge (chapter 8.2.9).

(2) Pierce the seal of the safety cartridge (8-21/arrow) from the inside by using a screwdriver or similar tool and pull up both strips.

(3) Hold the filter cartridge by both strips and pull it out by carefully turning it back and forth. Replace the safety cartridge and the filter cartridge by new ones.

(4) The remaining installation is performed as described in section 8.2.9 (6)-(8).

8.2.11 Replacing the fuel filter

See the Engine Operating Instructions.

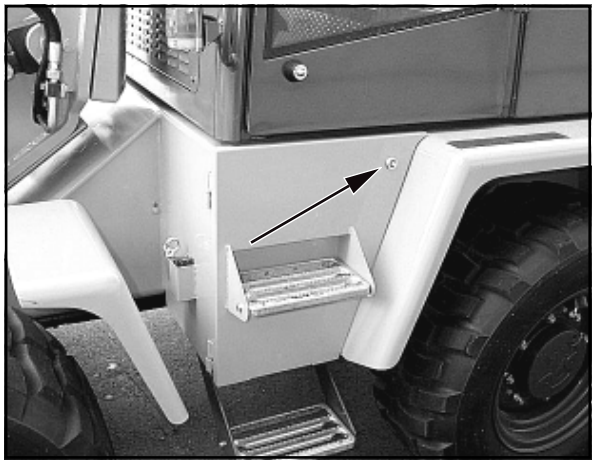

Figure 8-22

8.2.12 Exchanging the starter battery

NOTE

- The starter battery is a low maintenance part according to DIN 72311 T, section 7. It is located in the left-hand entrance area.
- Keep the battery dry and clean.

(1) Remove the battery main switch (4-6/10).

(2) Use a square wrench to open the maintenance flap (8-22/arrow).

(3) Remove the fastening screw (SW 17) (8-23/2) of the battery compartment.

(4) Loosen and remove the connecting cables (8-23/1) from the battery (SW 13).

DANGER

Always remove the negative pole cable first, then the positive cable. Installation is in the reverse order.

(5) Remove the battery and replace it.

(6) Before connecting, apply a thin layer of acid-proof grease on the battery terminals and the battery poles.

(7) Installation occurs in the opposite order.

DANGER

Make sure the fastenings are secure.

(8) Close and lock the maintenance flap.

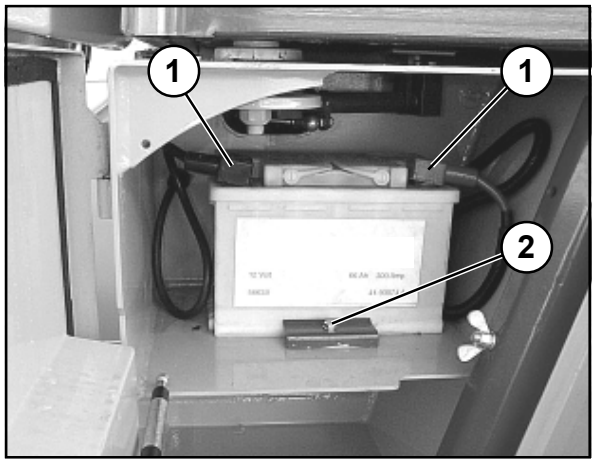

Figure 8-23

8.2.13 Maintaining/replacing the fresh air filter

(1) Lift and mechanically prop up bucket arm [e.g. by inserting the bucket arm support (option) (1-1/arrow)], Lower bucket arm until it rests on the bucket arm support and swivel all the way to the right or left.

(2) Loosen the four fastening screws (SW 13) (8-24/arrows) of the heater cover and remove the cover.

Figure 8-24

Figure 8-25

(3) Remove the filter elements (8-25/arrows) and clean them with pressurised air.

CAUTION

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

(4) Check the filter elements for damage.

NOTE

The filter elements must be replaced when they are damaged or every **1500 operating hours**.

(5) Insert the filter elements and install the heater cover.

Figure 8-26

8.2.14 Checking/adjusting the parking brake

CAUTION

All work on the brake system must only be carried out by authorized personnel.

(1) Pull the parking brake lever (8-26/arrow) and release it again (lowest position).

CAUTION

The parking brake should become effective on the third catch.

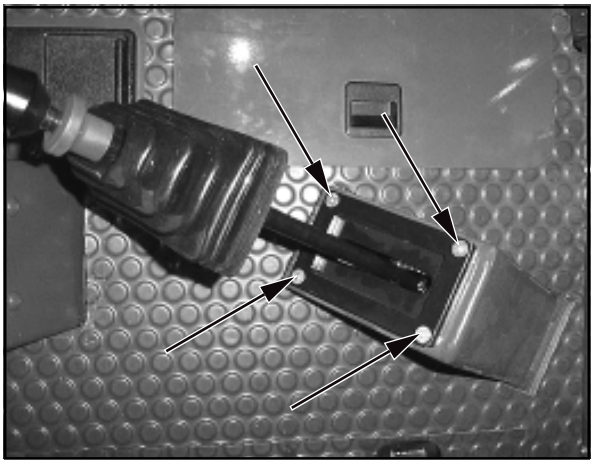

Figure 8-27

If the path of the parking brake until the parking brake becomes effective is significantly longer, the following work must be carried out:

(2) Push the rubber bellows on the parking brake lever upwards. Loosen the four fastening screws (8-27/arrows) and pull out the parking brake lever along with linkage and Bowden cable.

(3) Loosen the counter nut (8-28/2) at the support.

(4) Turn the adjusting nut (8-28/1) until it touches the support.

CAUTION

Check the brake lining thickness if necessary (see Repair Instructions).

(5) Perform a function check.

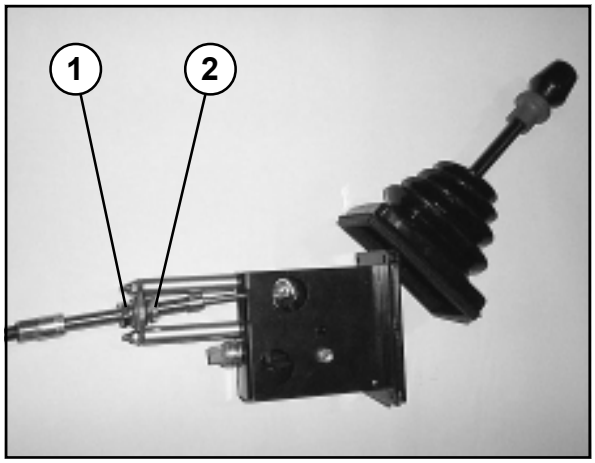

Figure 8-28

8.2.15 Checking/adjusting the service brake

DANGER

- All work on the brake system must only be carried out by 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.
- Oil loss (leaks) in the brake system must be immediately reported to authorized personnel.

(1) Check the brake hydraulic oil (4-6/6); add if necessary.

(2) Check the pedal travel.

(3) Visually check the entire system for correct functioning.

NOTE

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

8.3 Lubrication points

NOTE

The lubrication points are marked in red on the loader.

8.3.1 Rear axle pivot bolt (8-29/arrow)

CAUTION

- The rear axle pivot bolt must be lubricated every **50 operating hours**.
- Release the rear axle from load before lubricating the rear axle pivot bolts.

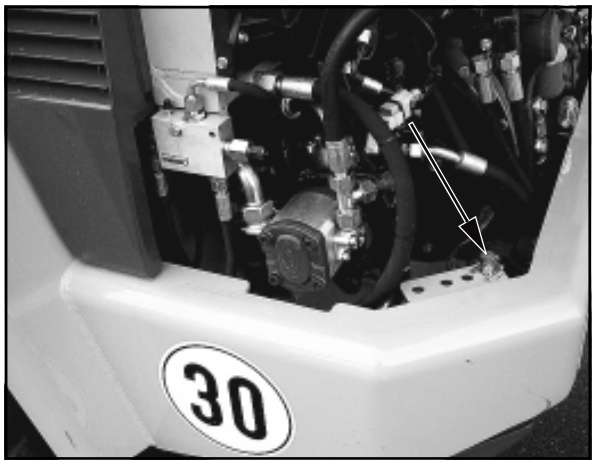

Figure 8-29

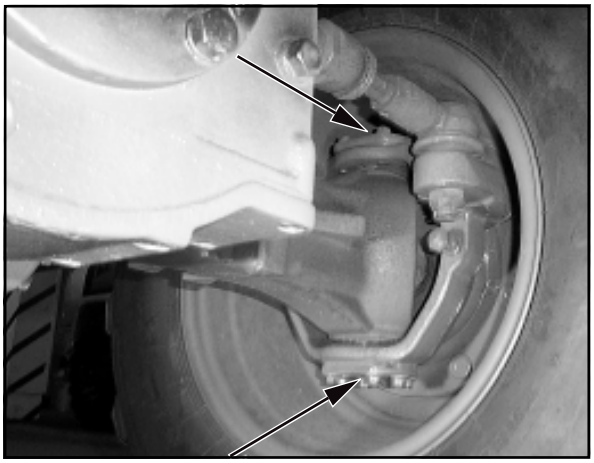

Figure 8-30

8.3.2 Rear axle (8-30/arrows)

CAUTION

The rear axle spindle bolts must be lubricated every **50 operating hours**.

NOTE

Lubricate the top and the bottom of the axle spindle bolts on both sides of the axle.

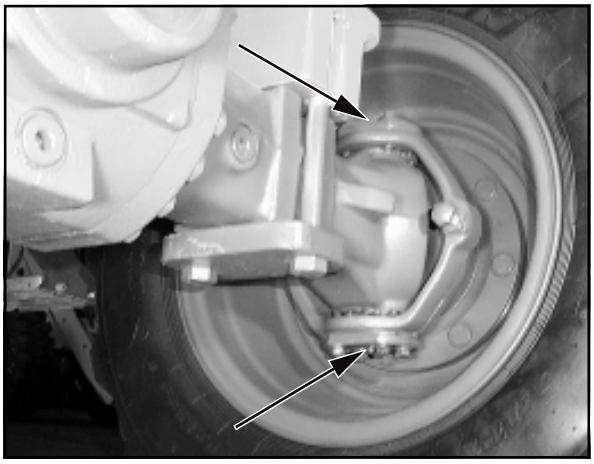

Figure 8-31

8.3.3 Front axle (8-31/arrows)

CAUTION

The rear axle spindle bolts must be lubricated every **50 operating hours**.

NOTE

Lubricate the top and the bottom of the axle spindle bolts on both sides of the axle.

Figure 8-32

8.3.4 Bucket motor

CAUTION

The bearing bols/lubrication points of the bucket motor must be lubricated every **10 operating hours**.

8-32/arrows Bucket motor/change device

8.3.5 Ball rotary connection

The grease should prevent abrasion, seal and protect against corrosion. For this reason, lubricate the support every **10 operating hours**, until grease escapes. When lubricating the ball rotary connection, swivel the bucket arm in 20° steps. In each position, lubricate all four grease nipples (8-33/arrows). Lubrication is required before and after the loader is removed from operation for a long period.

DANGER

- Before greasing, mechanically prop up the bucket arm [e.g. by inserting the bucket arm support (option) (1-1/arrow)], apply the parking brake (4-7/14) and set the drive direction switch (4-7/13) to "0".
- **During** swivelling, no one must be in the swivelling range of the bucket arm.

Figure 8-33

8.3.6 Driver cabin door (8-34/arrows)

CAUTION

The hinges of the driver cabin doors must be lubricated every **50 operating hours**.

NOTE

Lubricate the door hinges of both driver cabin doors.

Figure 8-34

8.3.7 Engine hood

CAUTION

The hinges of the engine hood (8-35/arrows) must be lubricated **every 50 operating hours.**

Figure 8-35

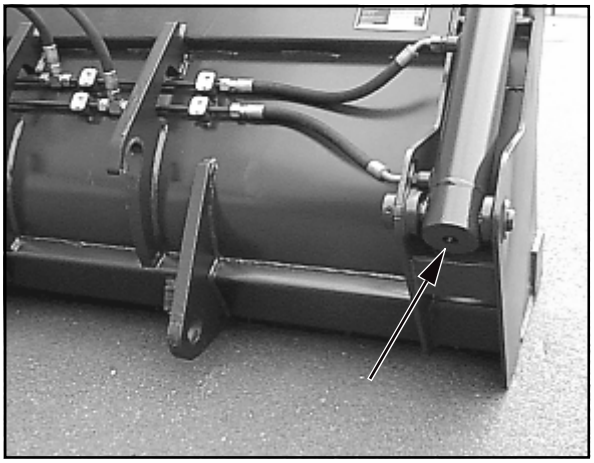

Figure 8-36

8.3.8 Multi-purpose bucket

CAUTION

The support bolts of the multi-purpose bucket must be lubricated every **10 operating hours**.

NOTE

Lubricate the bolts on both sides of the multi-purpose bucket (8-36/arrow).

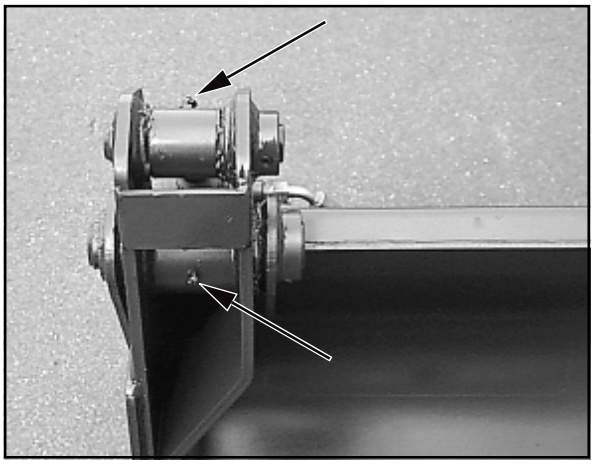

Figure 8-37

CAUTION

The support bolts of the multi-purpose bucket must be lubricated every **10 operating hours**.

NOTE

Lubricate the bolts on both sides of the multi-purpose bucket (8-37/arrows).