Maintenance

8 Maintenance schedule

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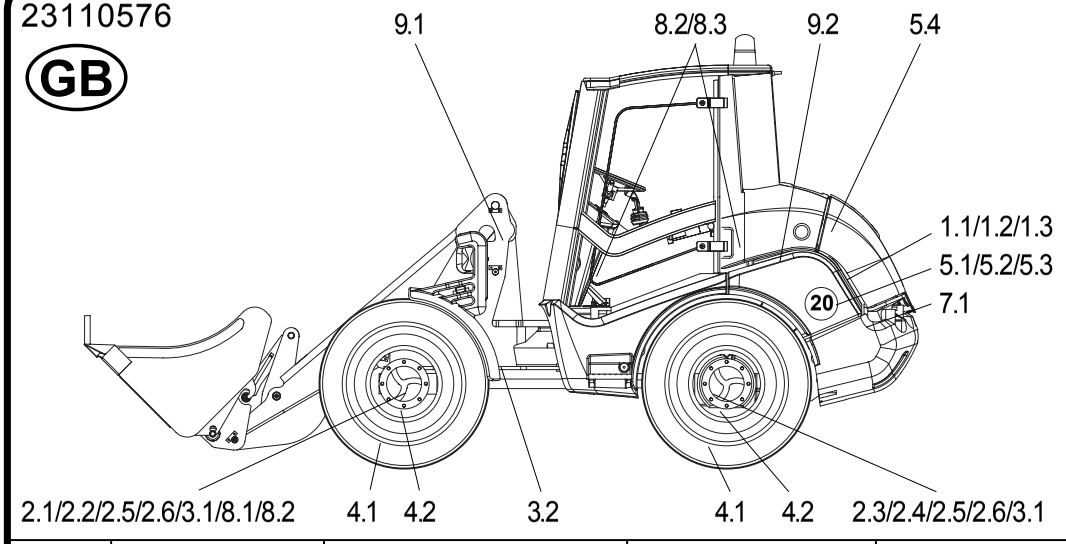

	Item	Designation	Specification	Viscosity	Filling amount
*	1	Motor oil	ACEA E7, E5, E3; API CI-4	acc. to manufacturer	ca. 8.5 l with oil filter
*	2.2	Transmission oil with LS additive	MIL-L-2105 B = API-GL5-6-LS	SAE 85 W 90-LS	approx. 4.2 l
*	2.4	Transmission oil with LS additive	MIL-L-2105 B = API-GL5-6-LS	SAE 85 W 90-LS	approx. 4.85 l
*	2.6	Transmission oil	MIL-L-2105 B = API-GL5-6	SAE 85 W 90	ca. 2 x 0.85 l each
*	5.2	Hydraulic oil	DIN 51524 - HVLP 46	ISO VG 46, VI > 180	approx. 60 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 faults found

○ Check

◇ Change

* The markings, filling and inspection plugs are binding

Refer to operating instructions

Caution

When carrying out maintenance work, heed accident prevention regulations!

Grease points (indicated in red)

1. Lubricate bolts every 10 operating 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 the service brake with mineral oil only!

Every x operating hours 10	50	100	200	500	1500	Pos.	Maintenance points (max. permissible intervals or shorter (depending on use))
						1	**Engine**
○		△		◇		1.1	Maintenance acc. to manufacturer
						1.2	Dry air filter system
○							Check filter element
				◇			Replace filter element
					◇		Replace safety cartridge (option)
						2	**Axles / distribution gear**
		○				2.1	Front axle oil level check
		△			◇	2.2	Change front axle oil
		○				2.3	Check oil level in rear axle with distribution gear
		△			◇	2.4	Change oil in rear axle with distribution gear
			○			2.5	Planetary gear oil level check
		△			◇	2.6	Change planetary gear oil
						3	**Axles / cardan shaft / articulated pendulum joint**
	▲			○		3.1	Check fastening of axles (710 Nm)
	▲			○		3.2	Check fastening of cardan shaft (35 Nm)
						4	**Wheels and tyres**
	○					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. indicator
○						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	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) (1-1/arrow)],
  - lock (4-8-/6) pilot valves for the working and auxiliary hydraulics (4-8/4 and 4-8/5).
- For work to be carried out in the area of the articulation joint, the articulation safeguard must be inserted (1-3/arrow).
  - Do not operate the steering while the articulation safeguard is in place.
- The loader must be secured against rolling by applying the parking brake (4-9/3) and by setting the drive direction switch (4-10/11) to position „0". In addition, wedges (8-1/2) must be placed on both sides of one of the two wheels of the front axle.

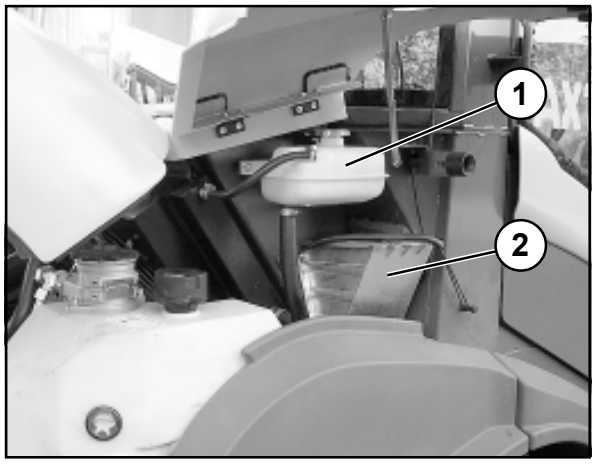

Figure 8-1

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 pressure lubrication fittings 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.**
- The compensation tank for coolant is located beneath the maintenance flap at the right of the loader (8-1/1).

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 Oil level check, engine

See the operating instructions for the engine.

8.2.2 Oil change, engine

See the operating instructions for the engine.

8.2.3 Maintaining/replacing the air filter

NOTE

- Maintenance (visual inspection) of the filter cartridge must be carried out every **10 operating hours**. According to the operating conditions, shorter intervals may apply.
- Clean the filter cartridge if necessary.
- Replace the filter cartridge every **500 operating hours**.

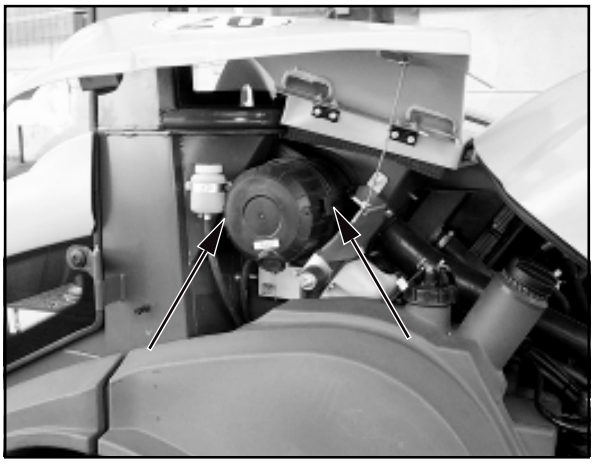

Figure 8-2

(1) Open the engine hood, then the maintenance flap on the loader's left side.

(2) Loosen the three retaining clamps of the air filter lid (8-2/arrows) 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.

Figure 8-3

(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 umbrella valve faces downwards.

CAUTION

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

8.2.4 Replacing the safety cartridge (option)

CAUTION
- The safety cartridge must not be cleaned.
- The safety cartridge must be replaced after the filter cartridge has been maintained/cleaned 3 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.

(1) Remove the filter cartridge (section 8.2.3).

(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 assembly is performed as described in section 8.2.3 (6) and (7).

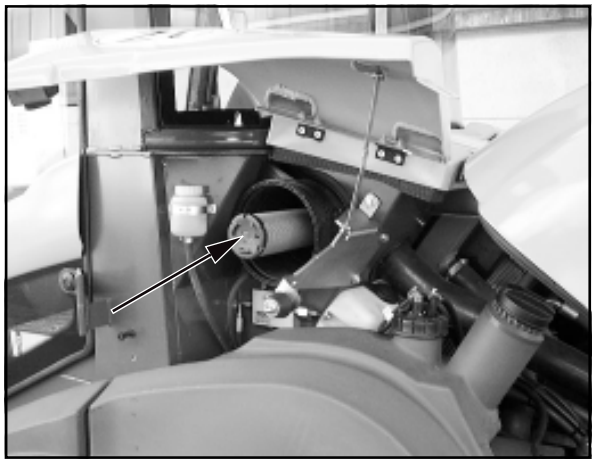

Figure 8-4

8.2.5 Oil level check, front axle

(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.

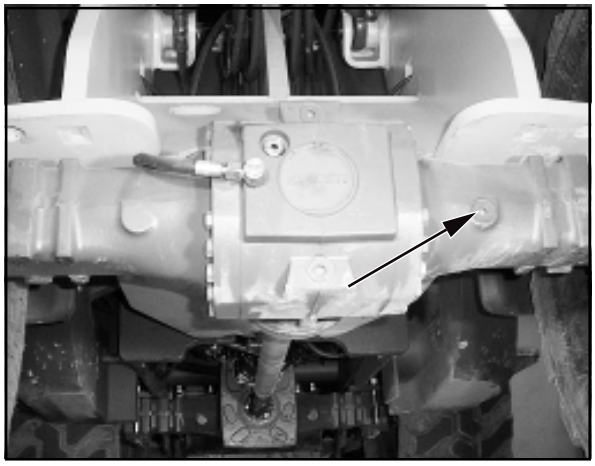

Figure 8-5

AX 700/20 km/h
AX 850/20 km/h

AX 700/30 km/h
AX 850/30 km/h
AX 1000

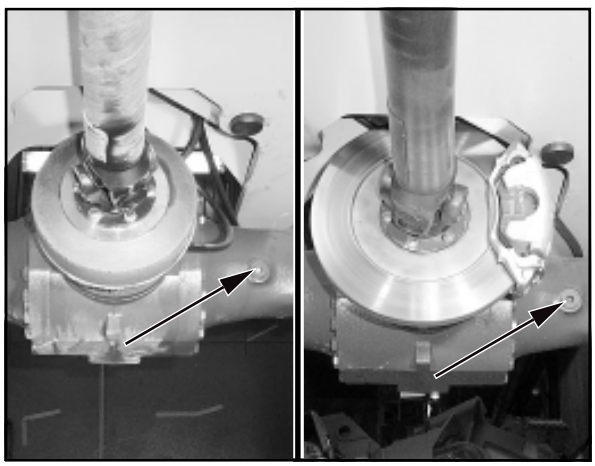

Figure 8-6

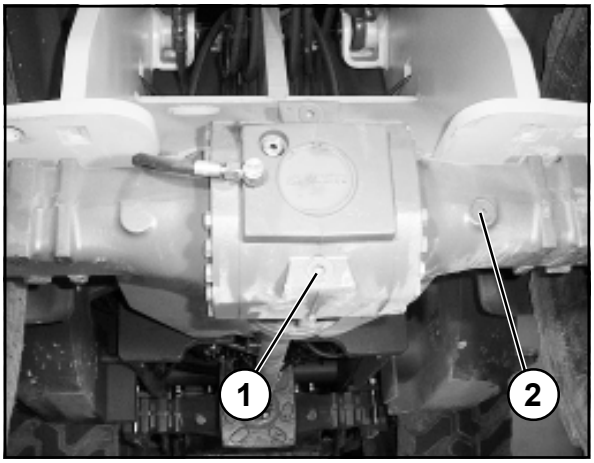

Figure 8-7

AX 700/20 km/h
AX 850/20 km/h

AX 700/30 km/h
AX 850/30 km/h
AX 1000

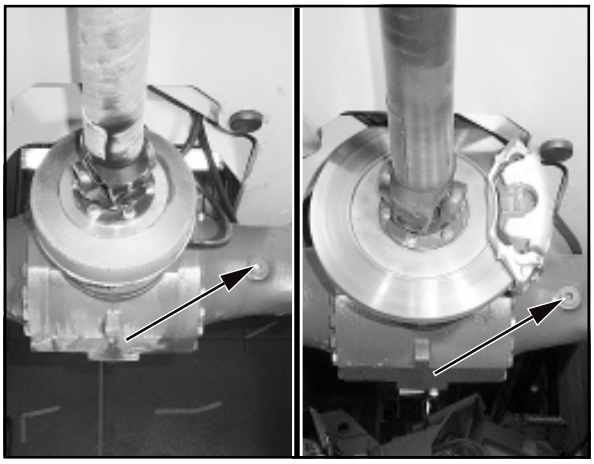

Figure 8-8

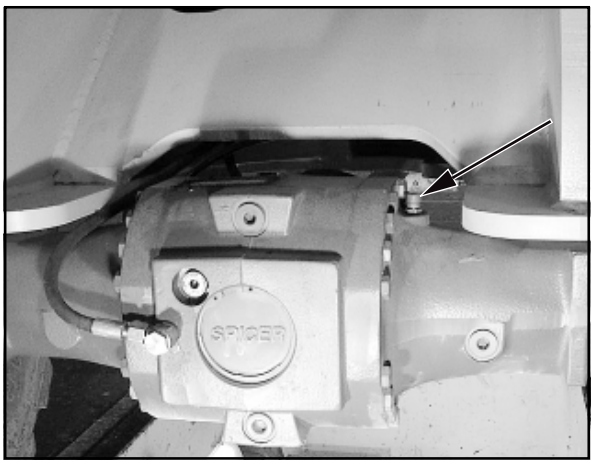

Figure 8-9

8.2.6 Oil change , front axle

(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.

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 reaches the marked level and remains stable.

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

8.2.7 Oil level check , rear axle

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

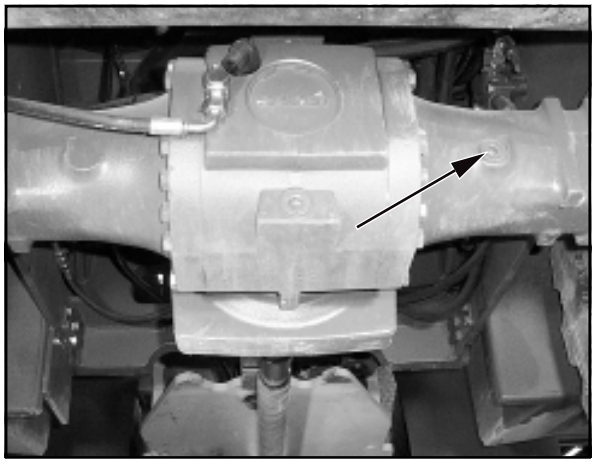

Figure 8-10

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

(2) Screw in the plug again.

(3) Unscrew the plug screw from the ancillary gear [AX 700/20 km/h and AX 850/20 km/h (8-11/arrow)] or distribution gear [AX 700/30 km/h, AX 850/30 km/h and AX 1000 (8-12/arrow)].

AX 700/20 km/h, AX 850/20 km/h

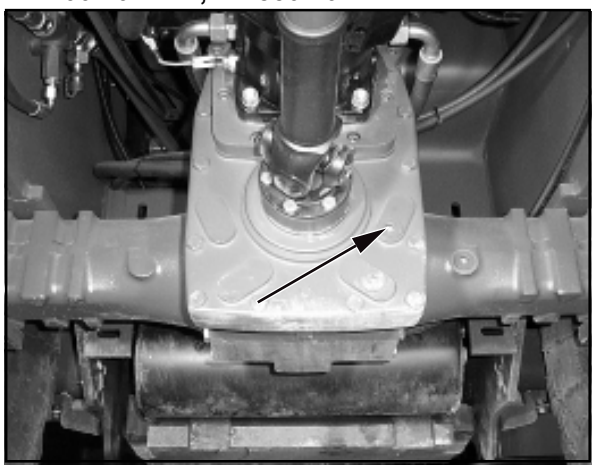

Figure 8-11

NOTE
- The axle arch and the ancillary/distribution 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.

AX 700/30 km/h, AX 850/30 km/h, AX 1000

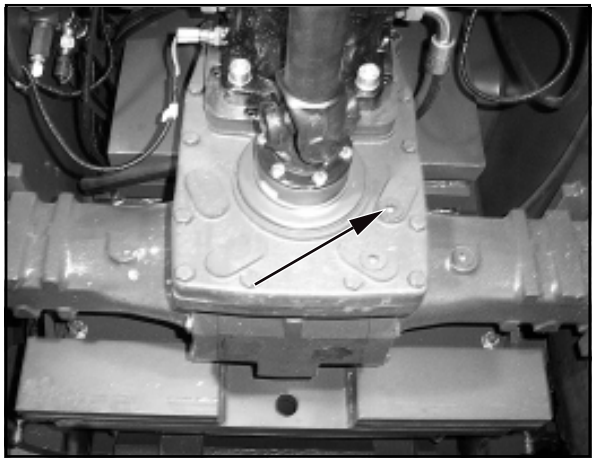

Figure 8-12

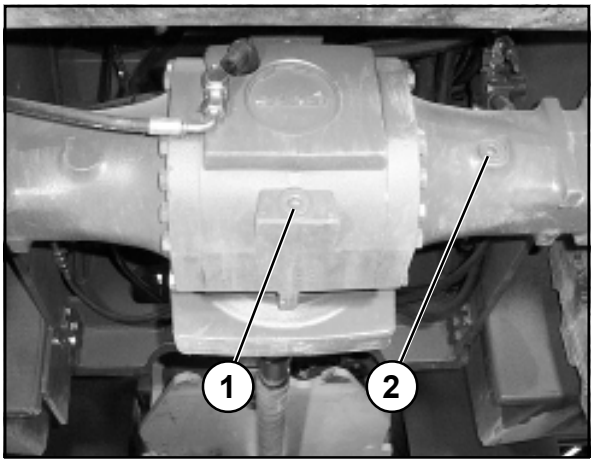

Figure 8-13

AX 700/20 km/h
AX 850/20 km/h

AX 700/30 km/h
AX 850/30 km/h
AX 1000

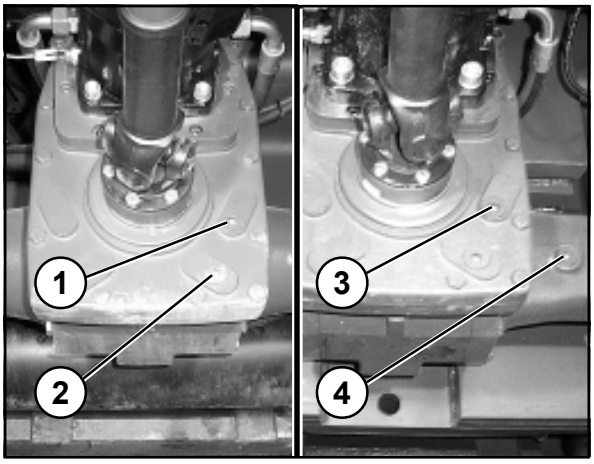

Figure 8-14

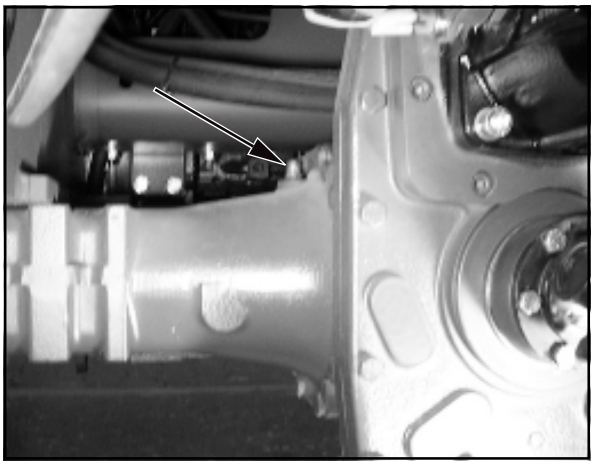

Figure 8-15

8.2.8 Oil change , rear axle

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

(2) Unscrew screw plug from the axle arch (8-13/1 and 8-13/2) and ancillary gear [AX 700/20 km/h and AX 850/20 km/h (8-14/1 and 8-14/2)] or distribution gear [AX 700/30 km/h, AX 850/30 km/h and AX 1000 (8-14/3 and 8-14/4)] 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 plugs for the axle arch (8-14/1) and the ancillary (8-14/2) or distribution gear (8-14/4) again.

(4) Fill oil into the plug bore of the ancillary (8-14/1) or distribution gear (8-14/3) until the oil level reaches the opening.

NOTE
- The axle arch and the ancillary/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 reaches the marked level and remains stable.

(5) Screw in the plug of the ancillary (8-14/1) or distribution gear (8-14/3) again.

(6) Fill oil into the plug bore of the axle arch (8-13/2) until the oil level reaches the opening.

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 reaches the marked level and remains stable.
- The vent valve of the axle (8-15/arrow) must be free from dirt.

(7) Screw in the plug of the axle arch (8-13/2) again.

8.2.9 Oil level check , 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 (8-16/arrow).

(2) Unscrew the plug.

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.

Figure 8-16

8.2.10 Oil change, planetary gear

(1) Move the loader so that the plug (8-17/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!

(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 (8-16/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.

Figure 8-17

8.2.11 Oil change, hydraulic system

(1) Open the motor hood.

(2) Place an oil drain vessel (at least 70 l) to the right below the counter weight.

(3) Unscrew the oil drain plug (8-18/arrow).

(4) Drain the oil into the oil vessel.

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 8.2.12).

Figure 8-18

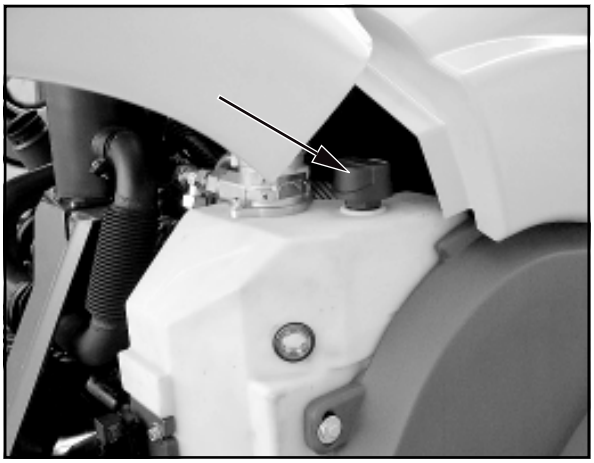

Figure 8-19

(7) Fill oil into the filler neck (8-19/arrow).

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

The service brake must be operated with mineral oil only!

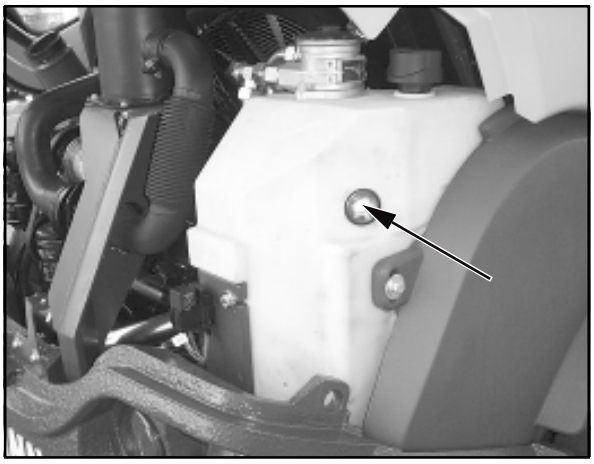

Figure 8-20

(8) Check the oil level at the sight glass (8-20/arrow).

NOTE

The oil level must be visible in the upper quarter of the sight glass (8-7/arrow). If necessary, fill oil into the filler neck (8-19/arrow).

(9) Close the filling nozzle.

8.2.12 Changing the hydraulic oil filter cartridge

CAUTION

Replace the filter cartridge according to the maintenance plan or when the (optional) clogging indicator lamp (4-9/13) lights up.

NOTE

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

Figure 8-21

(1) Open the motor hood.

(2) Unscrew the lid of the hydraulic oil filter (8-21/arrow or 8-22/1).

(3) Swing up pull tabs on the separator disc (8-22/3) and lift out the separator disc.

(4) Slowly pull out the filter cartridge (8-22/5) and replace it with a new one.

CAUTION
- Collect any hydraulic oil that drains or drips off when you lift out the separator disc and the filter cartridge.
- The used hydraulic oil filter cartridge and the O-rings must be disposed of in an environmentally compatible manner.

(5) Fit the separator disc with a new O-ring (8-22/4).

(6) Screw on the hydraulic filter lid with a new O-ring (8-22/2).

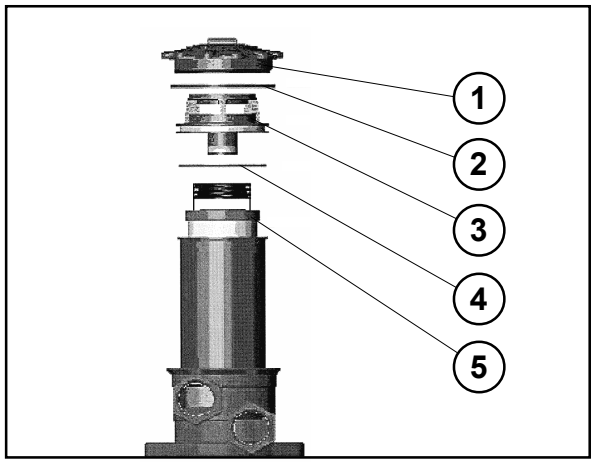

Figure 8-22

8.2.13 Grease points

NOTE
The grease points are marked in red on the loader.

8.2.13.1 Articulated pendulum joint/steering cylinder

CAUTION
Grease the pendulum bolt, the bearings of articulation bolt and steering cylinder **every 50 operating hours**.

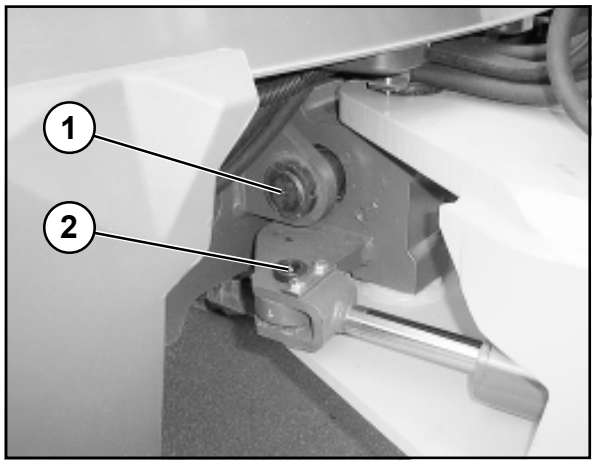

Figure 8-23

Figure 8-23/1 Pendulum bolt

Figure 8-23/2 Steering cylinder, rear

Figure 8-24/arrows Articulation bolt


Figure 8-24

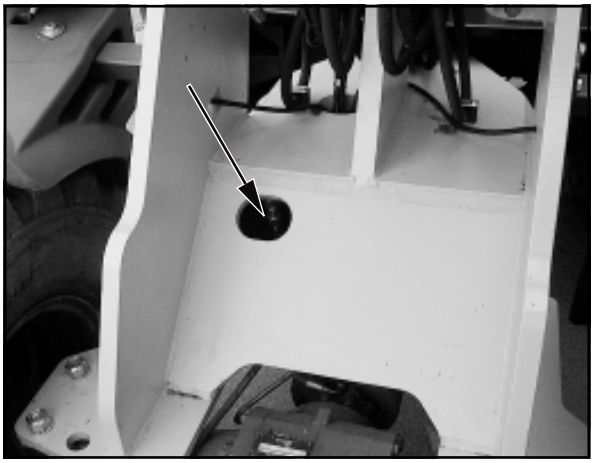

Figure 8-25

Figure 8-25/arrow Steering cylinder, front

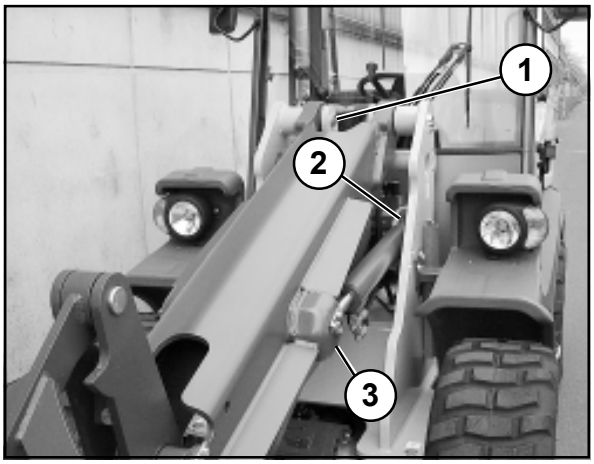

Figure 8-26

8.2.13.2 Bucket assembly

CAUTION

The bearing bolts/grease nipples of the bucket assembly (8-26 through 8-30) must be greased **every 10 operating hours**.

8-26/1 Bucket assembly/front end
8-26/2 Front end/lift cylinder
8-26/3 Bucket assembly/lift cylinder

NOTE

Grease the bearing points on both sides of the loader.

Figure 8-27

8-27/arrow Front end/tip cylinder

8-28/arrow Tip cylinder/deflection lever

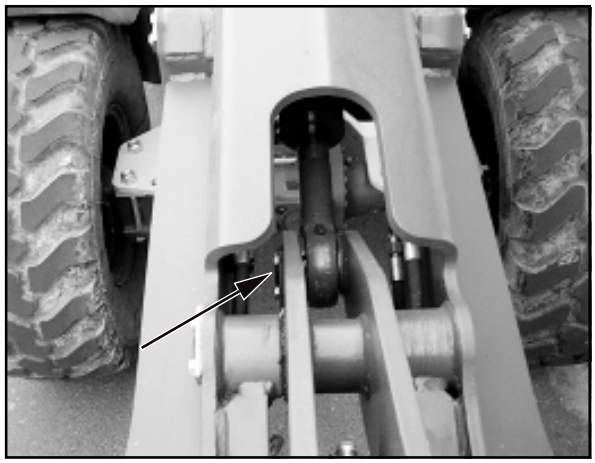

Figure 8-28

8-29/1 Bucket assembly/deflection lever
8-29/2 Quick-change device
8-29/3 Quick-change device/pivot arm
8-29/4 Deflection lever/pivot arm

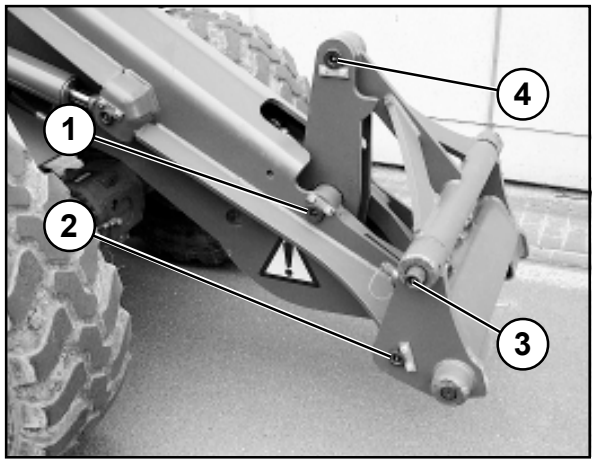

Figure 8-29

8-30/1 Bucket assembly/deflection lever
8-30/2 Quick-change device/pivot arm
8-30/3 Quick-change device

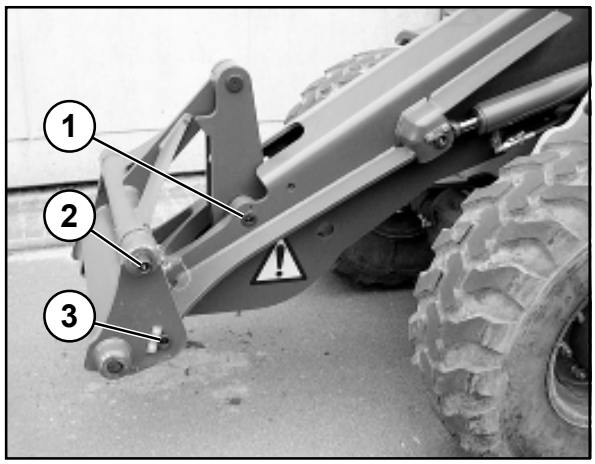

Figure 8-30

Figure 8-31

8.2.13.3 Driver's cab doors

CAUTION

The hinges of the doors of the driver's cabin (8-31/arrows and 8-32/arrows) must be lubricated **every 50 operating hours**.

Figure 8-32

Figure 8-33

8.2.13.4 Engine hood

CAUTION

The hinges of the engine hood (8-33/arrows) must be lubricated **every 50 operating hours**.

8.2.13.5 Multi-purpose bucket

CAUTION

The bearing bolts of the multi-purpose bucket (8-35/arrows) must be greased **every 10 operating hours.**

NOTE

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

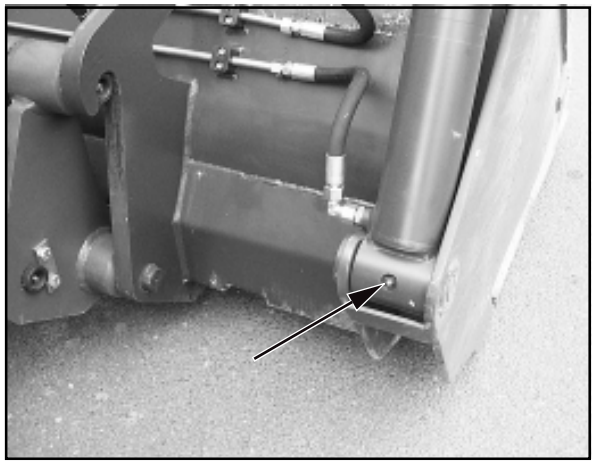

Figure 8-34

8.2.14 Oil lubrication points

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

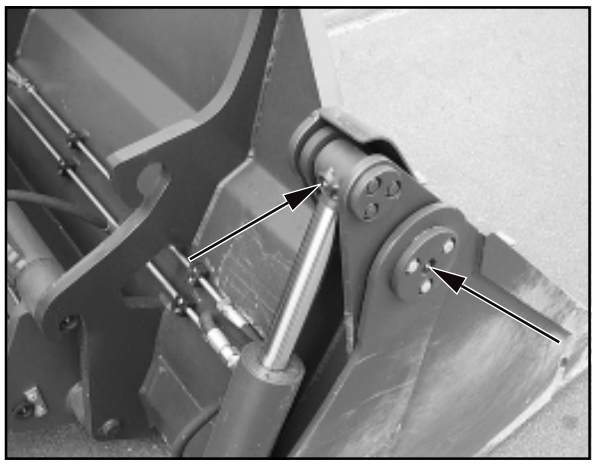

Figure 8-35

8.2.15 Replacing the starter battery

NOTE

The starter battery is a maintenance-free part according to DIN 72311, section 7. It is located behind the maintenance flap at the loader right.

(1) Opening the window: First pull the window handle inwards, then push it outwards. Finally lift the window handle out of its holder.

(2) Open the maintenance flap with a square wrench.

(3) Unlock the battery main switch (opt.) (8-36/1) by giving it 2 counter clockwise turns.

(4) Loosen and remove the fastening screw (8-36/3) (size 17) of the battery holder.

(5) Swing up the cover of the front terminal loosen and disconnect terminals (8-36/2) from the battery (size 13).

DANGER

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

(6) Remove the battery and replace it.

(7) Apply grease to the terminals before fastening them.

(8) Installation is in reverse order.

DANGER

Make sure the fastenings are secure.

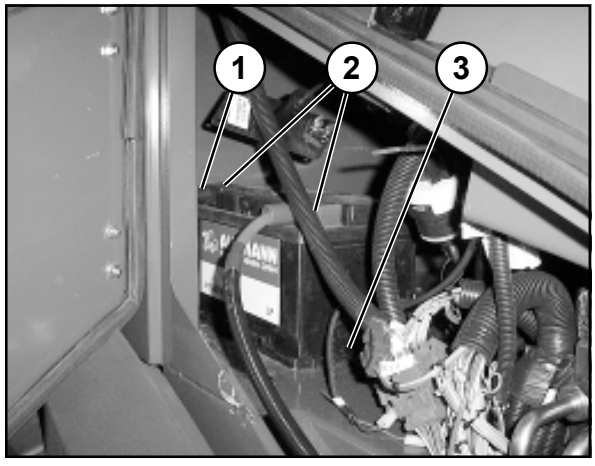

Figure 8-36

Figure 8-37

Figure 8-38

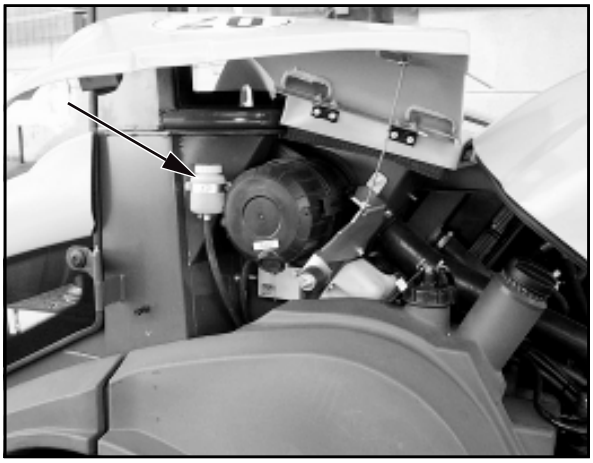

Figure 8-39

8.2.16 Maintaining/replacing the fresh air filter

NOTE

The fresh air filter is located in the driver's cabin underneath the seat plate.

(1) Tilt the backrest of the seat completely forward (5-9/4).

(2) Loosen the four screws (8-37/arrows) holding the seat plate.

(3) Pull or tilt the driver's seat with the seat plate all the way forward.

(4) Remove the filter cartridge (8-38/arrow) and clean it using "mild" compressed air.

CAUTION

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

(5) Check the filter element for damage.

NOTE

The filter element must be replaced when it is damaged (check **every 500 operating hours**), but at least **every 1500 operating hours.**

(6) Insert the filter element, push the seat plate into the assembly position and secure again.

8.2.17 Checking/adjusting the service/ parking brake

DANGER

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

(1) Check the fluid level on the compensation tank for brake hydraulic oil (8-39/arrow) and top up brake hydraulic oil if necessary.

(2) Check the pedal travel.

(3) Check the entire system for proper functioning and absence of leaks (visual test).