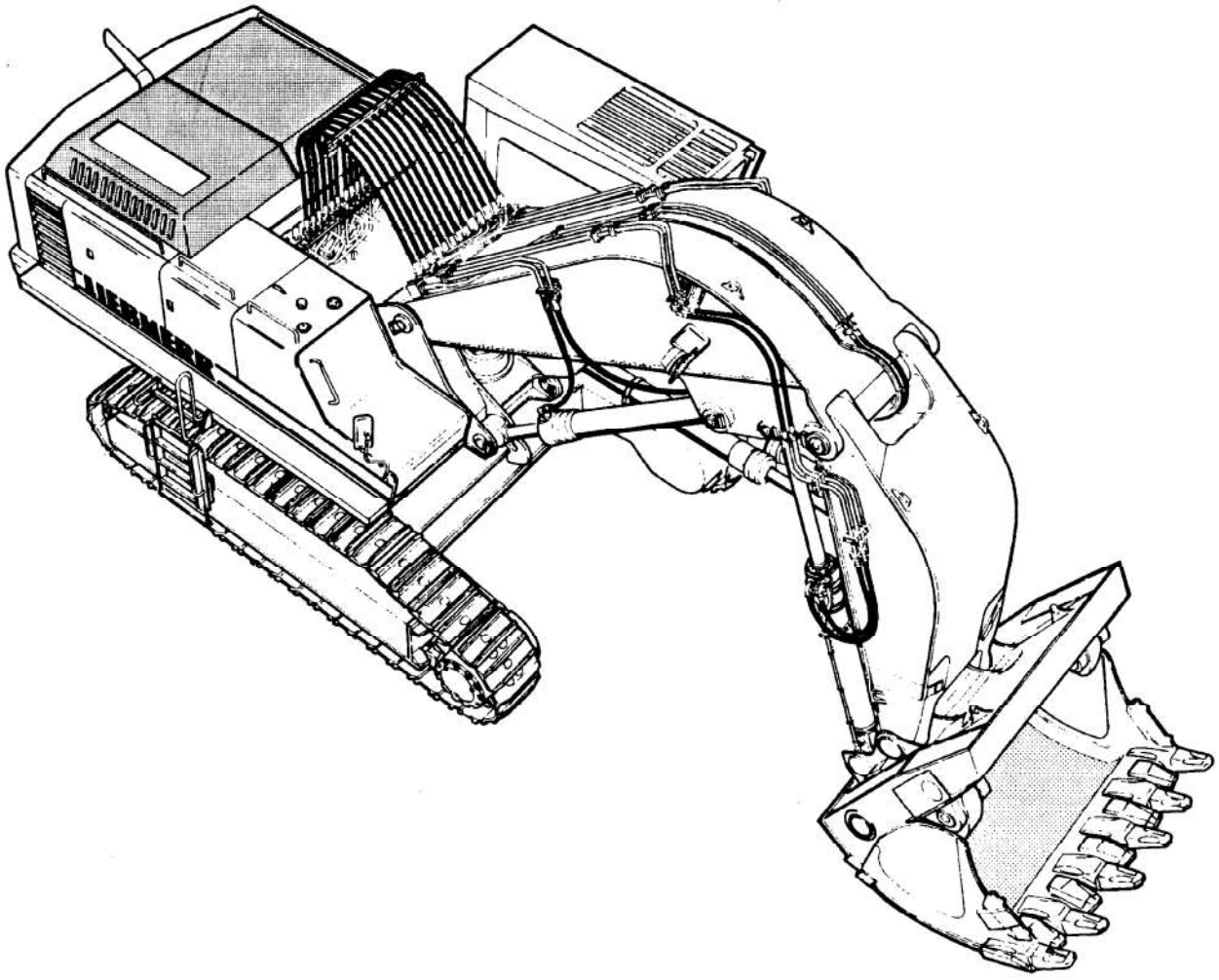
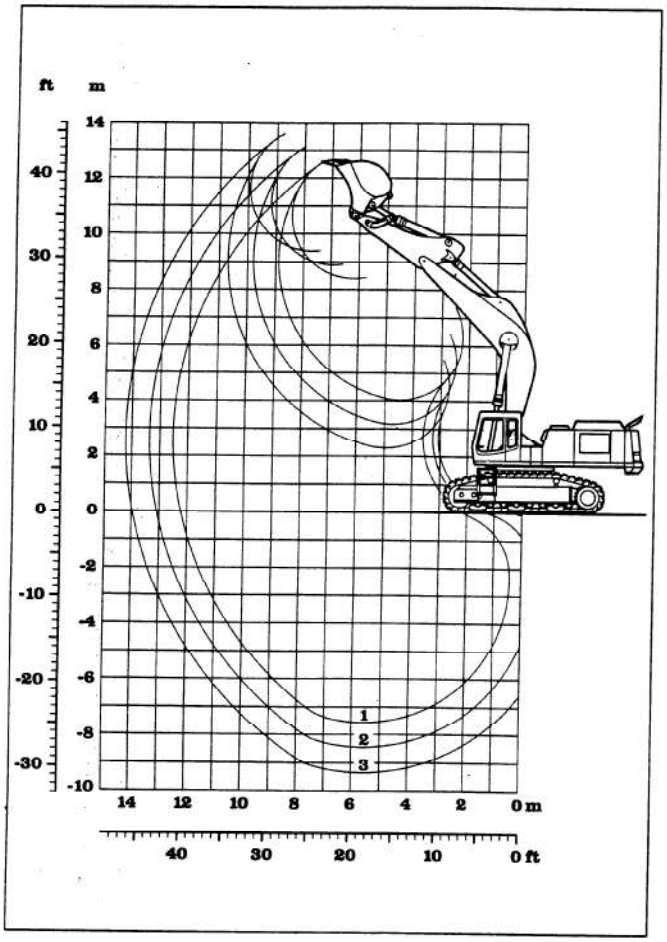
Operation and Maintenance Manual

R 974 B

Litronic





Digging envelope

1 with stick 2,90 m
2 with stick 3,80 m
3 with stick 4,70 m

Stick lengths		m	2,90	3,80	4,70
Max. digging depth		m	7,55	8,45	9,35
Max. reach at ground level		m	12,25	13,10	13,95
Max. dump height		m	8,40	8,90	9,40
Max. teeth height		m	12,60	13,10	13,95
Digging force		kN/t	335/34,1	283/28,8	246/25,1
Breakout force		kN/t	405/41,3	405/41,3	405/41,3

Operating Weight and Ground Pressure

Operating weight includes basic machine with 7,20 m gooseneck boom, 2,90 m stick and 5,20 m³ bucket.

Undercarriage		HD		HD-SL	
Pad width	mm	600	750	600	750
Weight	kg	78000	79100	79000	80100
Ground pressure	kg/cm²	1,31	1,06	1,17	0,95

Buckets

Cutting width	mm	1750[2]	1750[1]	1900[2]	1900[1]	2100[1]	2100[1]	2250[2]	2250[1]	2500[3]	2500[4]
Capacity ISO 7451	m³	3,60	3,80	4,10	4,30	4,60	4,80	5,20	5,80	6,60	7,00
Weight	kg	4050	3610	4250	3770	4680	4100	4160	4000	4410	4520
Suitable for material up to a specific weight of											
with stick 2,90 m	t/m³	–	–	2,20	–	2,00	2,00	1,80	1,65	1,50	1,35
with stick 3,80 m	t/m³	2,20	–	2,00	2,00	1,80	1,80	1,65	1,50	1,35	1,20
with stick 4,70 m	t/m³	–	1,80	–	1,65	–	1,50	1,35	1,20	–	–

1) Medium-duty bucket with teeth size V 61 SD (appropriate for materials up to classification 5, according to VOB, Section C, DIN 18300)
2) Heavy-duty rock bucket with teeth size V 61 RYL (appropriate for materials above classification 6, according to VOB, Section C, DIN 18300)
3) Loading bucket with teeth size 25 C
4) Coal bucket with teeth size 20 C

Backhoe Attachment with Gooseneck Boom 7,20 m

LIEBHERR-FRANCE S.A. 2, Avenue Joseph Rey, B.P. 287, F-68005 Colmar-Cedex, ☎ 03 89 21 30 30, Fax 03 89 23 81 58

With compliments:

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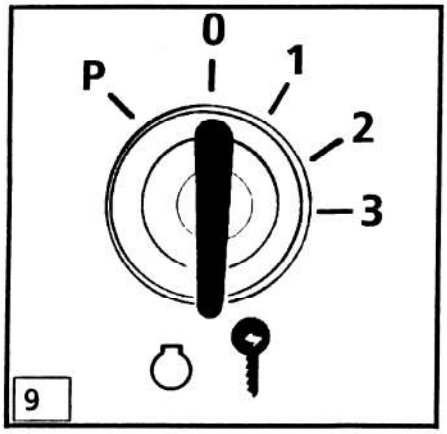
Additional safety guidelines for excavators fitted with a cab elevation

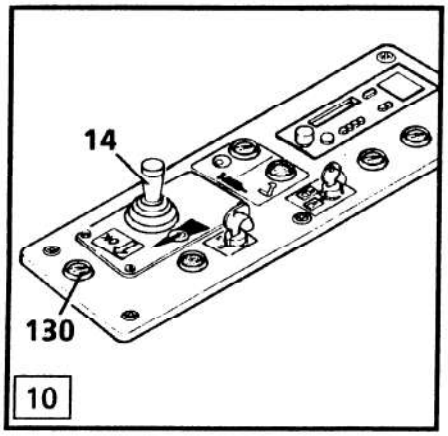
When operating an excavator with a cab elevation, observe the following safety instructions which complete the general safety information provided in the operation and maintenance manual for the machine.

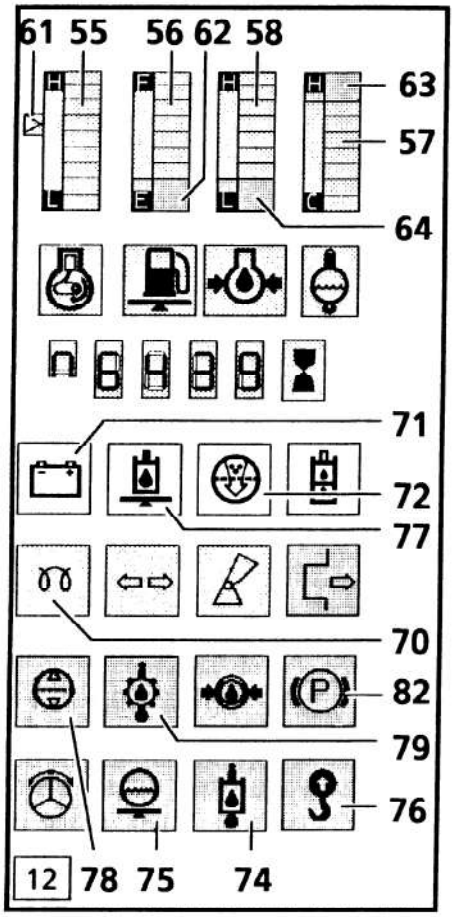
- Keep ladders, footsteps, handles and handrail in clean condition and always free them from mud, oil, grease, ice, snow or any other obstacles.
- To guarantee an easy opening of the cab door in all weather conditions, coat the rubber seals around the door with silicon oil or talcum every two months and more often if necessary. Regularly grease the hinges and lock of the cab door as well the fixing device of the door in opened position.
  During maintenance works, always wear safety glasses and proper protective clothes.
- To climb up or down the cab, the excavator must be parked on firm, flat and level ground and the uppercarriage must be swung so to align ladders and steps on upper and undercarriage.
- Face the excavator when climbing up and always hold on to the machine at three points, i. e. keep the contact with the access components at the same time with two hands and one foot or with one hand and the two feet.
- As soon as you can reach the handle of the door with your free hand unlock and open the door before climbing up any more .

  Keep and guide the door all the way with your hand and lock it in its opened position, making sure it is securely fixed in this position, so it can not be slammed by the wind.

  Take care to keep yourself apart from the slewing range of the door during the whole of its opening motion.
  Some external influences, and especialy the wind, may make the opening of the door uneasy.
- Go on climbing up, always holding yourself by three points, enter the cab and seat down to the seat.
  If applying fasten the seat belt. Unlock the door using the unlocking lever and close the door holding it by the handle designed for this purpose.
  Only thereafter lower the safety lever and start the machine.
- It is essential to have your seat belt fastened if you want to operate the machine with the cab door opened.
  Should the belt be missing on your machine, so you must compulsorily get one installed before you start working with opened cab door.
- Before climbing down the cab, you must make sure the machine is parked on a flat, firm and level ground and the ladders and steps are aligned on upper and undercarriage.
- Then open the cab door and lock it in opened position and make sure it is securely fixed in this position.
  Be aware of difficult weather conditions and anticipate their possible consequences. The wind for example could slam the cab door.
- If necessary unfasten the seat belt.
- Carefully begin climbing down, facing the machine and always holding the contact at three points, until you reach the height where you can close the cab door in the best conditions, keeping yourself apart from its slewing range and guiding it with the hand until closed.
  If you want so lock the door and take away the key.
- Slowly and carefully go down to the floor.







DIESEL ENGINE OPERATION

IGNITION KEY POSITIONS (Fig. 9).

-0- Off
-1- Contact position
-2- Preheat (must be hold in position)
-3- Start

ENGINE SPEED CONTROL LEVER (THROTTLE CONTROL LEVER) :

The speed control lever (Fig. 10, pos. 14) makes it possible to ajust the engine speed to any desired value within the whole RPM range.
The arrow (Fig. 12, pos. 61) on the indicator light lights up, when the engine is running in the ECO-speed range. In this range, the engine runs at somewhat reduced speed and output at utmost fuel efficiency.

TO ENERGIZE THE ELECTRICAL SYSTEM

Turn the key to pos. 1 .
Check the function of the indicator lights (Fig. 12).

Make sure that all indicator lights and gauges work, this means indicator lights 61 and 70 to 82 should light up about 3 seconds and at the same time, indicators 55 to 58 should actuate.

STARTING THE ENGINE AT AMBIENT TEMPERATURES TO -12° C (10° F)

- Increase the engine RPM a little via control lever 14 (fig. 10).
- Turn the ignition key to starting position 3.
If the ignition key is longer than 10 seconds in position 1, return the key to 0 position before turning to position 3, or current flow to the starter will be interrupted.
- As soon as the engine is running, release the key and lower the engine RPM.

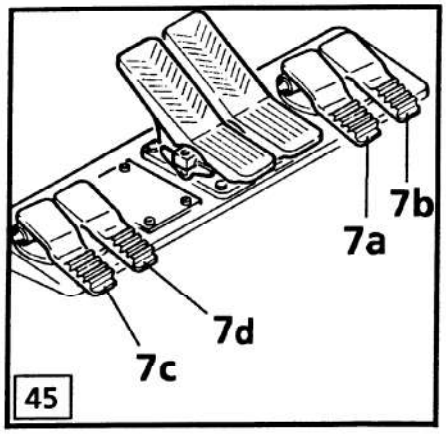
The engine can not be cranked for more than 10 seconds !

If the engine does not start, repeat the starting procedure at one minute intervals to allow the starter motor to cool off.

STARTING THE ENGINE WITH FLAME GLOW PLUG AT AMBIENT TEMPERATURES BELOW -12° C (10° F)

Starting the engine with the flame glow plug improves starting the engine at low temperatures.

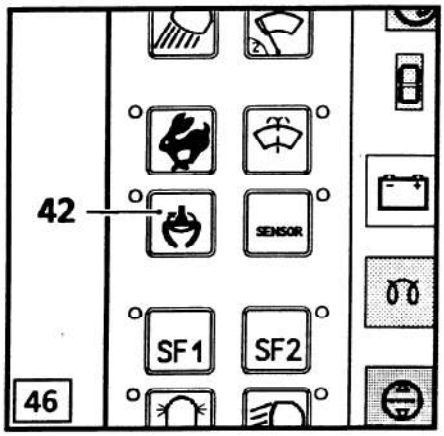
Slightly increase the engine RPM via throttle control lever 14 (Fig. 10).



CONTROL OF HYDRAULIC HAMMER
(optional equipment)

The hydraulic hammer is actuated via the pedal either 7c or 7d of the left pilot control (fig. 45).

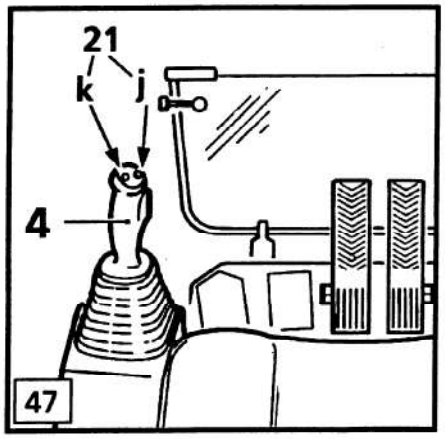
Notice :
Before using an hydraulic hammer, the three way valve 8 (fig. 52) must be turned to position B and the key switch 93 on the rear control desk must be switched to the position "hammer".
After removing the hydraulic hammer and before using the cylinder of the special equipment, turn the three way valve 8 to position A and the key switch 93 to position "cylinder".



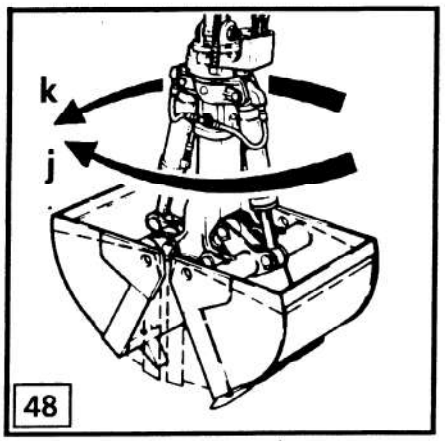
CONTROL OF A ROTATING GRAPPLE
(optional equipment)

The hydraulically rotating grapple is controlled via a solenoid valve using a separate hydraulic circuit.

To actuate this added attachment, switch 42 is used.



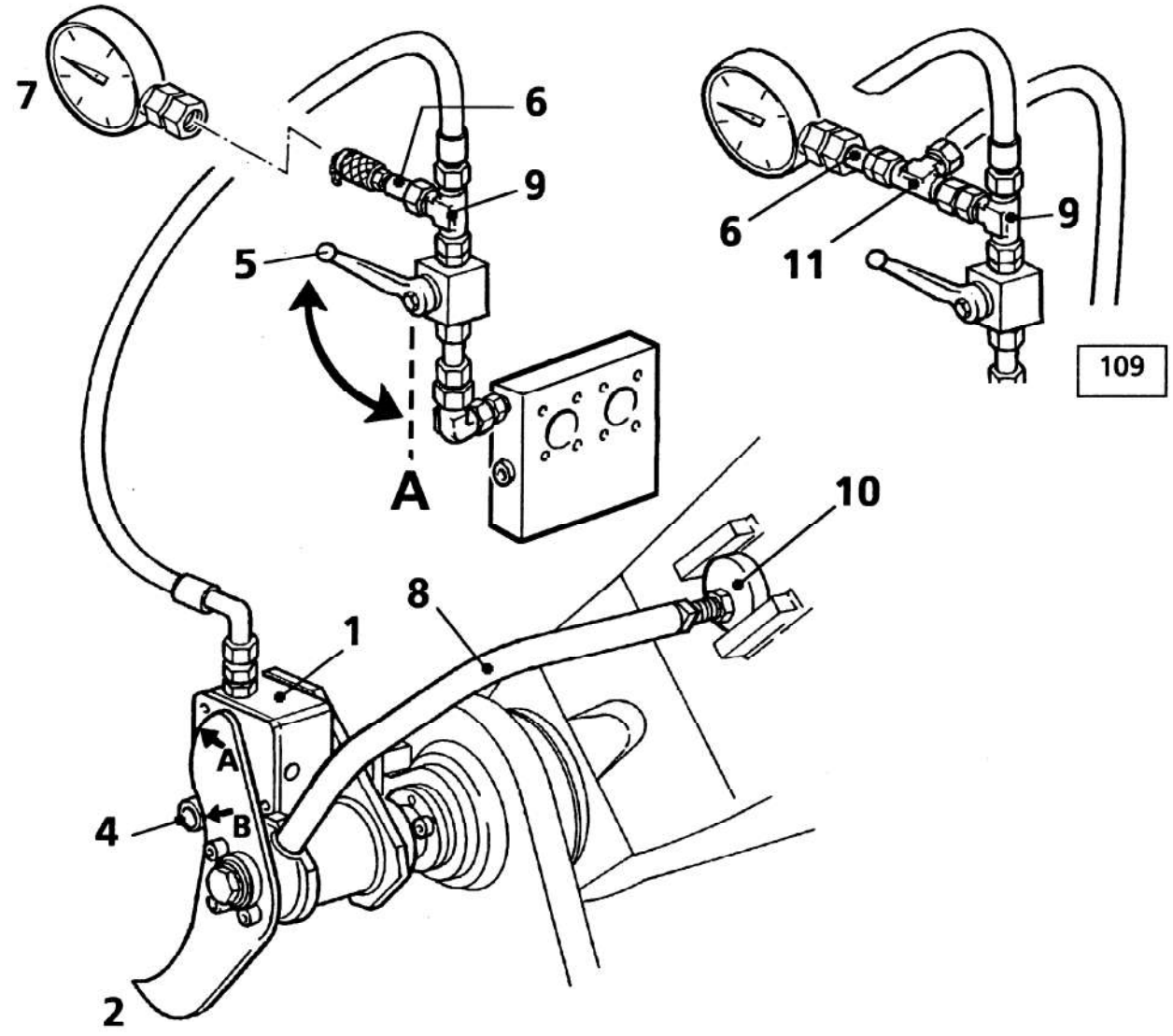
The grapple rotation is controlled via the both push buttons 21 in the left joystick handle 4. *



If the right button 21J is pushed, the grapple will rotate clockwise.

If the left button 21K is pushed, the grapple turns counterclockwise.

The grapple rotates until the buttons are released.



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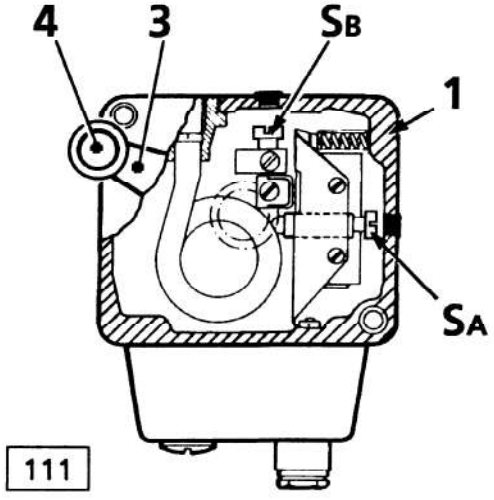

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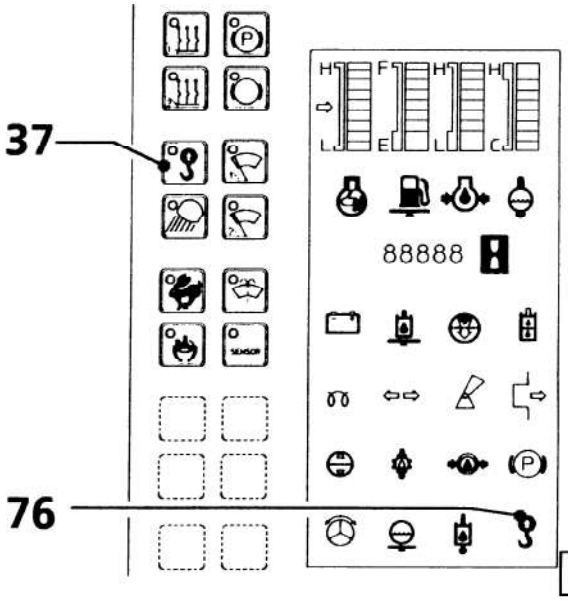

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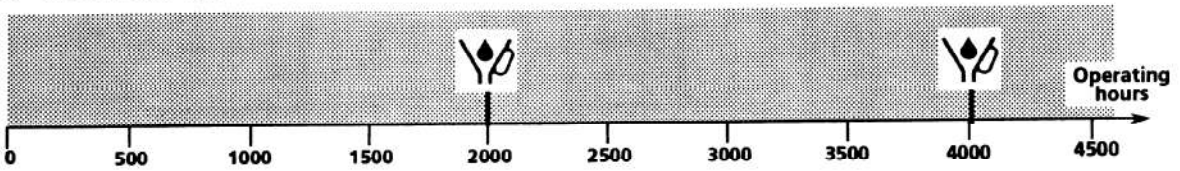
Hydraulic oil change intervals

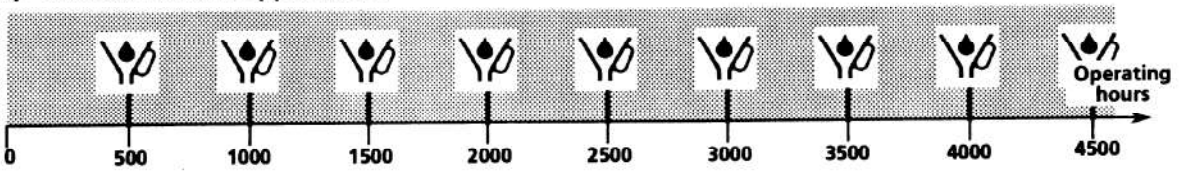
1. Oil changes in preset intervals

Note: **Oil changes in preset intervals are only permitted for mineral oils. When using environmentally friendly hydraulic fluids, oil sample analysis reports must be used to determine the time of the oil change, see §2.**

a) In standard applications



b) In dust intensive applications

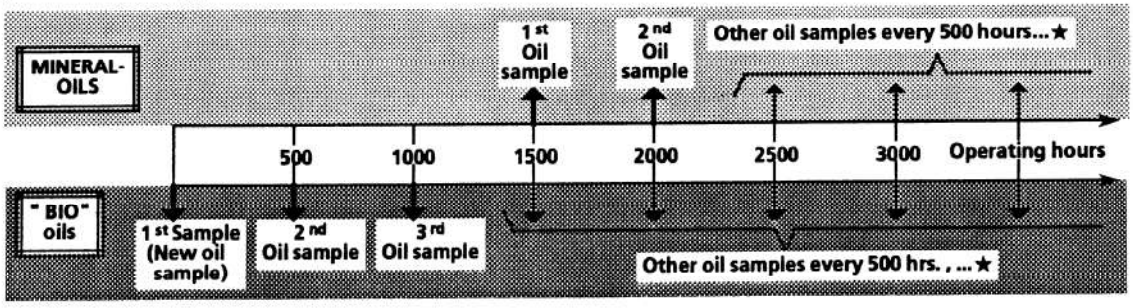


2. Optimized oil change intervals determined through oil sample analysis reports

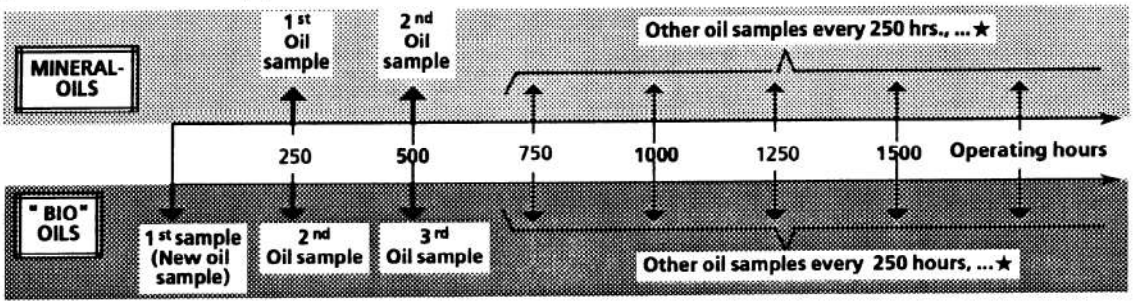
Use this procedure to take oil samples in preset intervals. The intervals may be extended between two oil changes as long as the properties of the oil are still satisfactory.
The time when the oil must be changed is determined by the lab report.

LIEBHERR recommends to submit the oil samples to "WEAR - CHECK" for oil analysis.
A kit for 6 complete analysis at WEAR - CHECK is available : Id. No. 7018368 (The kit contains the sample containers, documentation, shipping container and oil sample hose).
A hand pump is required to take the oil sample, and should be ordered separately (Id. No. 8145666).

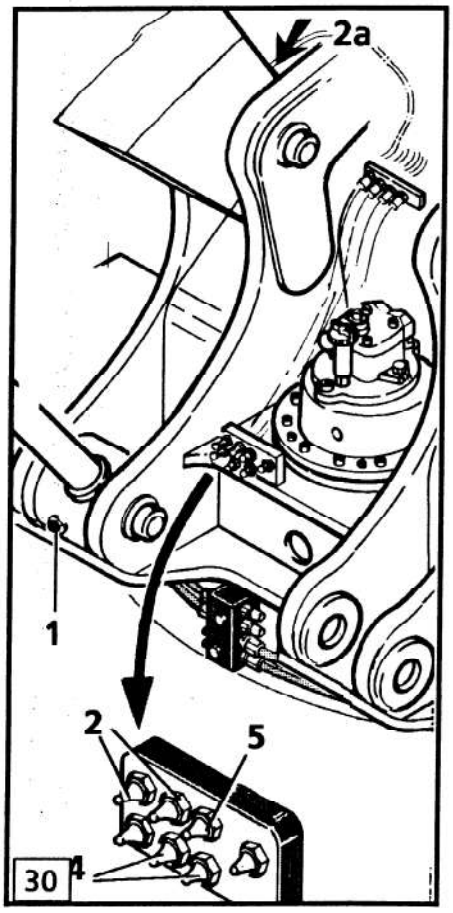
a) In standard applications

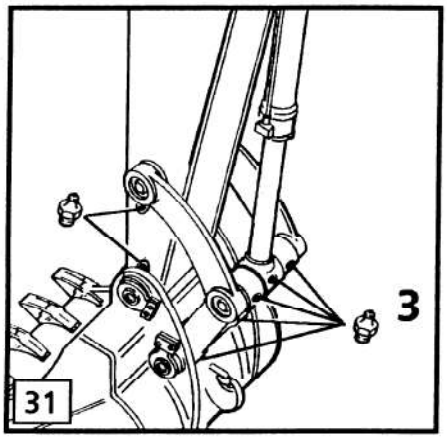


b) In dust intensive applications



★ . . .time for oil change determined by lab report





LUBRICATION OF ATTACHMENT BEARING POINTS

The bearings boom cylinder / upper frame, respectively boom / upper frame (2a) are greased via fittings 1 (fig.30) respec. via the fittings 2 on the lube plate in the upper's middle.

The remaining bearing points in the area boom and stick are combined into both lube fittings 4 (Fig. 30), via two metering devices.

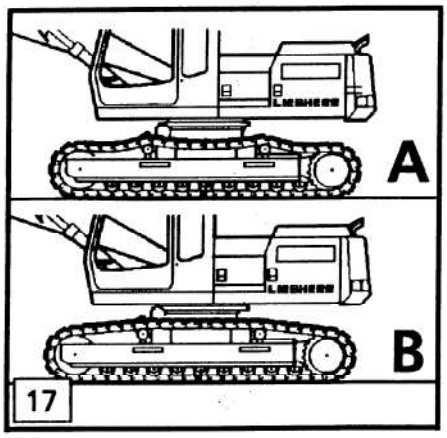
With shovel attachment, the bearing points in the area of the shovel back are connected to the lube fitting 5 via an additional metering device.

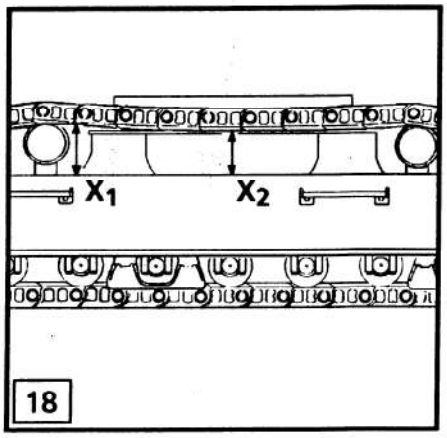
These devices distribute a metered amount of grease to each connected bearing, when pressing grease into the fittings 4 and 5.

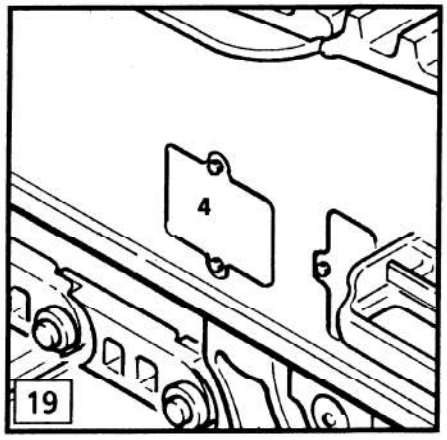
On the bucket, the different grease fittings are installed separately (fig. 31, pos. 3).

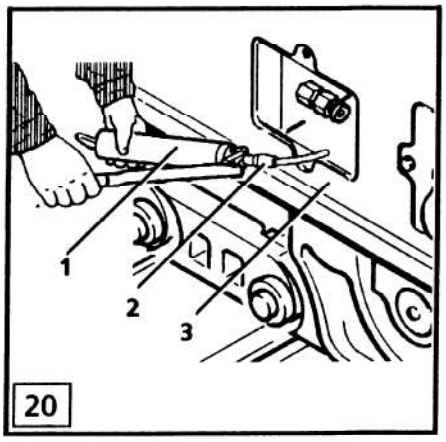
To lubricate the attachment, add grease daily or at every shift change on every grease fitting, until clean grease runs out of the corresponding bearing points.

See the lubricant chart for grease specification









THE TRACK COMPONENTS

The tracks are maintenance free until the track pads or flanges need to be reconditioned or replaced.
The lifetime seals in carrier rollers, track rollers and idlers increase the life expectancy of the tracks and protect from dirt and contamination .

However, even though the track is virtually maintenance free, the following points do need to be checked.

TIGHTENING THE TRACK TENSION

Fig. 17 A shows a track, that is not tightened properly, Fig. 17 B shows a track that is tightened properly.

The track tension needs to be checked regularly due to normal wear of the tracks, and tightened, if necessary.

The track chain tension is correct when the slack between both carrier rollers is about 1.2" (30 mm).

To check the chain slack (fig. 18) :

- measure X_1, distance between running surface of carrier roller and top of sideframe
- measure X_2, distance between chain link and top of sideframe
- calculate chain slack = $X_1 - X_2$.

To tighten a track :

Remove the access cover (Fig. 19, pos. 4) on the side frame of the undercarriage.

Attach a special fitting 2 to grease gun 1 (Fig. 20).
Connect the grease gun to cylinder 3.

Pump grease into cylinder 3 until the track chain is properly tensioned.

To release track tension, carefully release some grease from the grease cylinder by loosening and turning the grease fitting counterclockwise.

⚠ DANGER

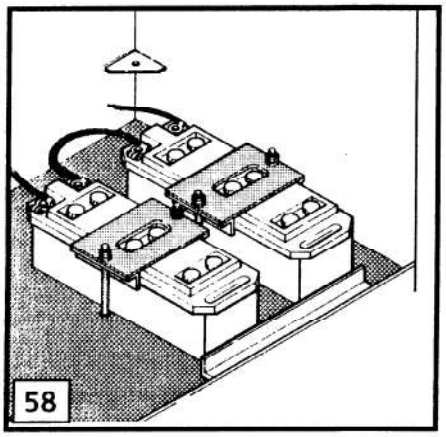
When adjusting the chain tension, keep your head clear of the access hole. The grease cylinder is under high pressure and the chain will sag.
Grease is under high pressure and might squirt out.

THE ELECTRICAL SYSTEM

To insure troublefree operation of your machine, the electrical system must be in good condition. The gauges, indicators and components of the electrical system should be checked daily for proper function.
Always replace burnt out fuses and bulbs. DO NOT repair fuses.
Check for bare and damaged wires which could cause damage to the electrical system or a fire. Check for loose, dirty or corroded connections.

IMPORTANT :

When performing repairs on the electrical system, or before using an arc welder on the machine, the negative battery terminal should be disconnected first and reconnected last.
Cover the electrical components (especially the alternator) when washing the excavator to protect it from water.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BATTERY MAINTENANCE

In order for the batteries to function properly, it is important to keep them clean at all times.

The battery poles and cable clamps in particular should be cleaned regularly and then coated with acid resistant grease (Fig. 58).

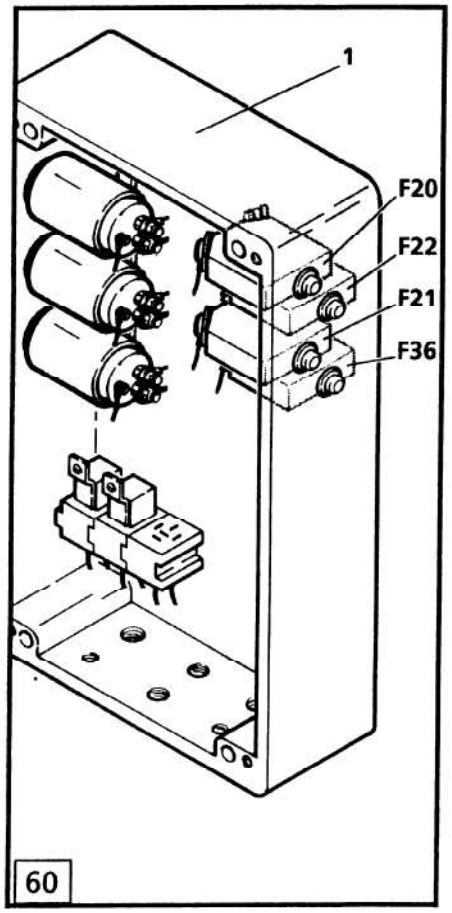
To check the electrolyte level, open battery compartment door, lift up rubber cover and remove caps.
The electrolyte level should be 1/2" (10 - 15 mm) above the plates.
If the electrolyte level is low, add distilled water.

Regularly check the specific gravity with a hydrometer. A fully charged battery should have a value of 1.28 kg/l (31.5°).

Batteries with a lower value should be recharged. Reinstall caps, check mounting security of batteries and close the battery compartment door.

⚠ WARNING

Wear protective gloves and safety glasses when handling batteries!
Keep sparks and open flame away from battery.
Battery fumes are highly flammable and explosive.
Batteries contain acid which should not be touched. In case of contact, flush with water and get medical attention.



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ARRANGEMENT OF THE CIRCUIT BREAKERS AND FUSES

The mains circuit breakers F 20, F 21, F 22 and F 36 are located in the electrical box mounted next to the hydraulic pumps (fig. 60).

All other fuses are located on the printed circuit in the electrical box of the left joystick (Fig. 64). Remove the four screws and lift off the cover to get to the box.

⚠ WARNING

Use only original replacement fuses. If fuses blow frequently, the defect in the affected circuit must be checked and corrected. Never repair a blown fuse!