KOBELCO

OPERATOR'S MANUAL

LOADER BACKHOE

750
760
860

Reprint 07-2005

3518831M1-00 NA

Serial Numbers

Attention ! Make a note of the serial numbers of your machine and always quote them in any communication with your local distributor.

Machine serial number (figure 1)

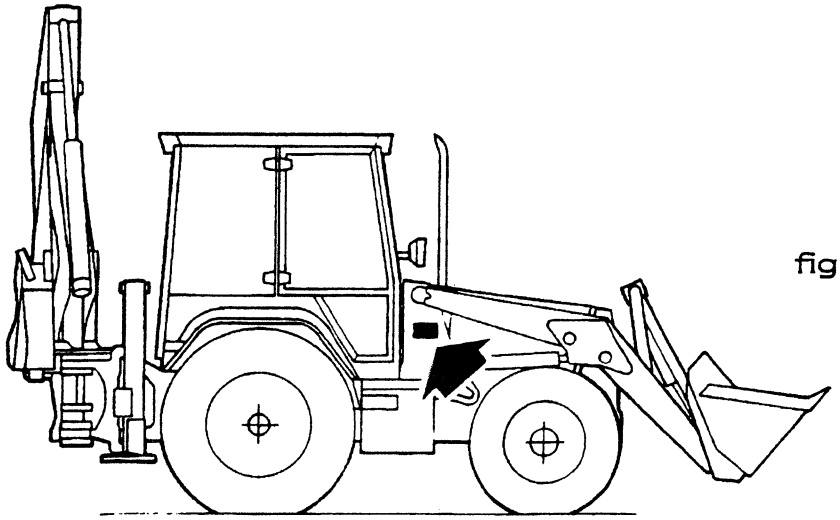


figure 1

Engine serial number (figure 2)

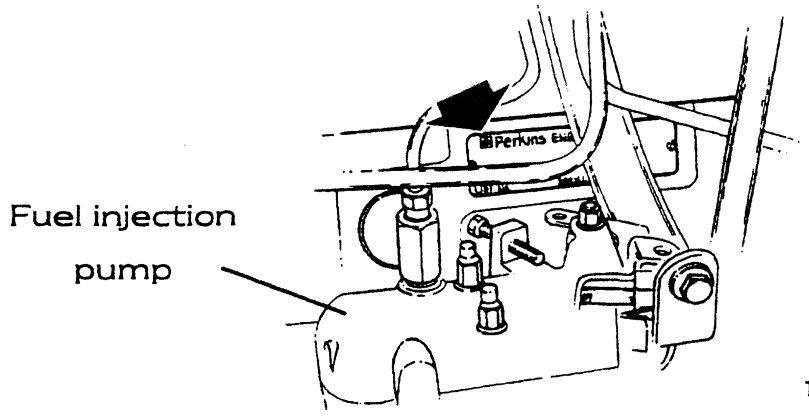


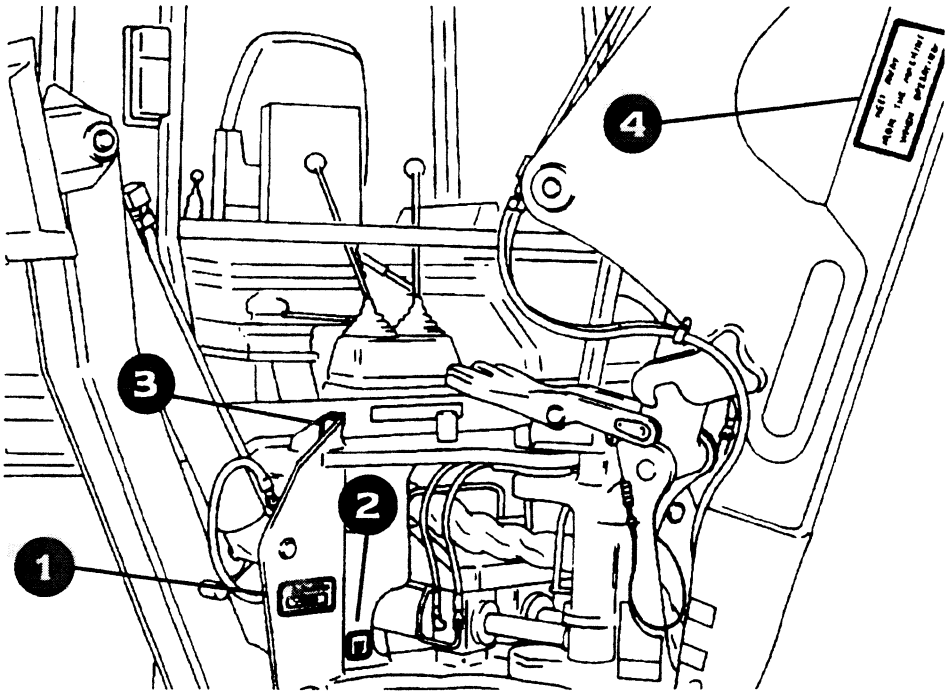
figure 2

(left side of engine)

Safety Decals

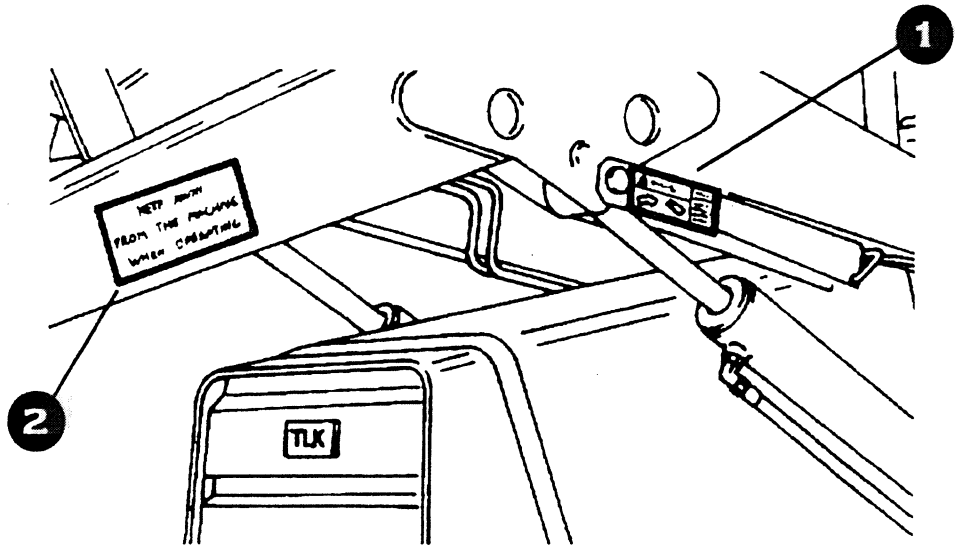
Attach new safety decals if the old decals are destroyed, lost, painted over or cannot be read. When parts are replaced that have decals, make sure you attach a new decal to each new part. New decals are available from your local dealer.

Before starting work each day, make sure that you can read all the safety decals. If you need to clean a decal, use a cloth, water and soap, do not use solvent, gasolene etc.

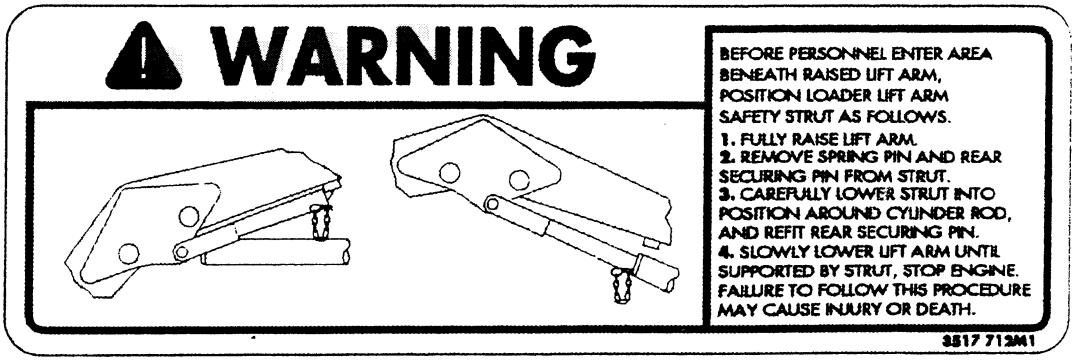


1. Backhoe Crush Zone - Part Number 3517693M1, left and right side of rear chassis.

Safety Decals



1. Loader Safety Strut - Part Number 3517712M1, loader lift arm safety strut



2. Machine Operating - Part Number 3516523M2, left and right loader lift arms.

General Dimensions

Dimensions - Center Mount Machines (figures 5 and 6)

The following dimensions apply to a 4 WD machine equipped with standard loader bucket, 19.5L x 24 rear tires and 12.5/80 x 18 front tires, except where specified differently.

All dimensions are in mm with (feet and inches)

A	Overall length in transport position (safety locks in place)	7271	(23' 10")
B	Wheel base	2130	(7')
C	Height to top of backhoe - standard dipper	3715	(12' 2")
	- extendable dipper	3786	(12' 5")
D	Height to top of cab/rops	2771	(9' 1")
	Maximum width -		
E	Over loader bucket	2385	(7' 10")
F	Over stabilizer feet	3815	(12' 6 1/4")
G	Track - rear	1716	(5' 7 1/2")
	front 2 WD	1697	(5' 6 3/4")
	front 4 WD	1788	(5' 10 3/8")
H	Ground clearance, minimum (under battery box)	443	(1' 5 7/16")

Specifications

Fuel system and air cleaner

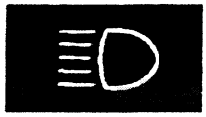
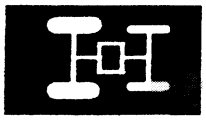
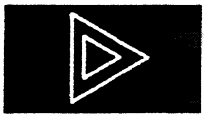
Fuel lift pump	AC Delco with manual priming lever.
Fuel filter	Separate agglomerator and filter units. Filter has a replaceable filter element and a glass bowl for secondary separation of sediment/ water .
Fuel injection pump	CAV distributor type with mechanical governor.
Engine speeds (no load)	Low idle 750 rev/min
	Maximum 2420 rev/min
Injectors	CAV nozzles and holders
Cold-starting aid	CAV Thermostart
Air filter	2 stage, dry paper element, with additional safety element. Air filter restriction warning lamp on main instrument panel. A pre-cleaner is fitted to some models.

Cooling system

Engine coolant	Water/air radiator with pump assisted thermo syphon circulation.
Temperature	Thermostat opens 77 - 82°C (170 - 180°F)
System pressure	0.7 bar (10 lbf/in^2)
Engine lubricating oil	Oil/air type cooler mounted in front of water radiator.
Powershuttle / steering system	Oil/air type cooler mounted in front of water radiator.
Hydraulic oil cooler	Oil/air type cooler mounted in front of water radiator.
Air conditioning condenser	Mounted in front of oil coolers.
Fan belt tension	13 - 19 mm ($^1/_2$" - $^3/_4$") measured midway between fan pulley and crankshaft pulley. Twin belts fitted with air conditioning.

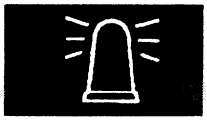
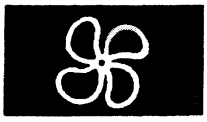
Instruments and Controls

Front Instruments and Controls (figure 11)

Item	Symbol	Description
10.		Warning lamp - shows when headlamps are on MAIN BEAM
11.		Switch - front windshield wash/wipe. Three position switch
		- Off - Wipe (switch in center position) - Wash/wipe (press and hold the switch - release switch to return to wipe only)
12.		Switch - 4 wheel drive. Glows when 4 wheel drive is selected.
13.		Not used
14.		Switch - Hazard warning

Instruments and Controls

Side Control Panel (figure 16)

Item	Symbol	Description
15.		Switch - rear worklamps.
16.		Switch - rotating beacons (if fitted)
17.		Switch - Air Conditioning (if fitted). The fan must also be switched on. **Caution** - failure to switch on the fan will result in ice forming on the evaporator and expansion valve, with the consequent loss of air conditioning performance.
18.		Switch - horn
19.		Switch - heater fan, with 3 positions: OFF, low speed, high speed. (cab machines only)
20.		Cab heater, temperature control - cab machines only. Turn this control off (fully counter-clockwise) when using air conditioning.
21.		Not used.

Doors and side windows

Both cab doors feature main windows which can be opened independently of the door frame. Both the front and rear, side windows, are equipped with a similar type of catch and are opened in the same manner.

Front/rear window closed (figure 22)

Ensure the handle fully engages the striker pin, pull the window closed, then push the handle down.

Front/rear window partially open (figure 23)

Lift the handle and push out and down to lock the window partially open.

Front/rear window fully open (figure 24)

From the closed position lift the handle horizontal, then swing it backwards to disengage it from the striker pin, open the window through 180° and secure it in the rubber restraint on the rear/front window.

Door opening and access to the cab is not affected by the position of either front or rear windows.

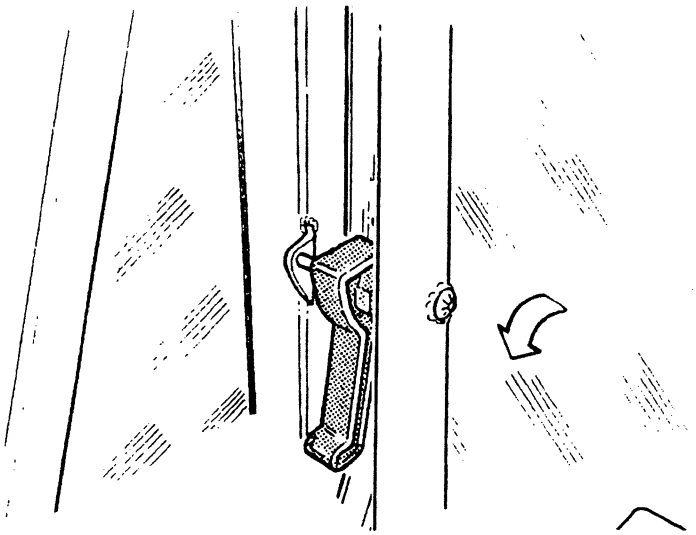


figure 22

Instruments and Controls

Backhoe controls (figure 31)

ISO control sequence

Functions operated by Lever 1

A 

Lever moved sideways towards center of machine will swing the backhoe to the right (clockwise).

B 

Lever moved sideways away from center of machine will swing the backhoe to the left (counterclockwise).

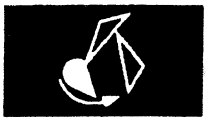
C 

Lever pulled towards the operator will move the dipperstick towards the machine.

D 

Lever pushed away from the operator will move the dipperstick away from the machine.

Functions operated by Lever 2

E 

Lever moved sideways towards center of machine crowds the bucket.

F 

Lever moved sideways away from center of machine dumps the bucket.

G 

Lever pulled towards the operator will lift the backhoe boom.

H 

Lever pushed away from the operator will lower the backhoe boom.

Driving the Machine

Normal starting

1. Always be properly seated in the driving position, with all controls in neutral before attempting to start the engine.
2. Ensure parking brake is engaged.
3. Ensure the loader levers are in neutral.
4. Ensure gearshift lever and direction control switch are in neutral.
5. Set hand throttle to minimum speed setting.
6. Switch the hydraulic system to 'low flow', (Item 29 figure 18) this is particularly useful during cold starts.
7. Depress throttle pedal half way down.
8. Turn start key clockwise to operate the starter motor. When the engine starts, release the key and reduce engine speed to 1000 rev/min. after 1 or 2 seconds.

To stop the engine, turn the start key to the OFF (fully counterclockwise) position

Cold weather starting

The cold start aid is a CAV Thermostart installed to the engine inlet manifold.

WARNING

In no circumstances use ether, or other volatile starting fluid when a Thermostart unit is fitted. Starting fluid can explode and cause injury or death.

Steps 1 to 7 are the same as for normal starting.

8. Turn the key to the "heat" position to activate the Thermostart, and hold there for 15 seconds.
9. Turn the key to the "start" position to crank the engine while the Thermostart is still activated.

Safety Precautions

Do not exceed lift capacity of loader.

Do not use the loader for crane duties unless the appropriate modifications have been made to comply with local regulations.

Do not use either loader or backhoe as a brake except in emergency.

Ensure trucks or hoppers are sited on flat level ground, for safe loading.

Do not drive the machine against solid objects. If a load is too great to move use alternative operating techniques which work the machine within its capacity.

Ensure the swivel seat is securely latched in the appropriate operating position.

Where local regulations require seat belts to be fitted ensure they are in good condition. Always use the seat belt when operating the loader.

In the event of a malfunction or change in the behaviour of the machine during operation, stop the machine immediately and lock it. Take necessary precautions to ensure that the machine is not used until in a safe and reliable state.

Always keep the loader bucket low especially when travelling across rough or sloping ground. On sloping terrain, always adapt your travelling speed to the prevailing ground conditions. Never shift to a lower gear on a slope but always before reaching it.

Contact with high voltage power lines or underground cables can cause serious injury or death from electrocution. Before you drive or operate in such areas, tell the power or utility company what you are going to do. You must have the power disconnected or keep a safe working distance from the lines or cables. You must know the safe working distance from high voltage power equipment and must know any federal state/provincial or local safety codes or regulations

Safety Precautions

Do not use the backhoe for crane duties unless the appropriate modifications have been made to comply with local regulations.

Do not use either loader or backhoe as a brake except in emergency.

Never stand or walk on the edge of excavations, especially if they are not supported.

Never stand or operate the machine under over-hanging banks.

Uncontrolled machine movement can cause injury. Before turning the operator seat around for backhoe operation, select neutral 'N' with the column switch and the gear shift lever then apply the parking brake.

Be alert and know the location of others working in the same area. Keep all others persons away from your machine. Injury or death can result if you do not follow these instructions. Before operating the backhoe in an area where your visibility is reduced, always install guard rails and warning signs to keep other persons away from your machine.

Contact with high voltage power lines or underground cables can cause serious injury or death from electrocution. Before you drive or operate in such areas, tell the power or utility company what you are going to do. You must have the power disconnected or keep or keep a safe working distance from the lines or cables. You must know the safe working distance from high voltage power equipment and must know any federal state/provincial or local safety codes or regulations.

In the event of a malfunction or charge in the behaviour of the machine during operation, stop the machine immediately and lock it. Take necessary precautions to ensure that the machine is not used until in a safe and reliable state.

Operation of the Backhoe

Excavating on slopes (figure 48 showing a sideshift machine)

Wherever possible start excavating at the top of the slope and work downhill.

Warning!

REMEMBER that you cannot make use of the loader bucket for added stability when working across a slope therefore reduce the payload and avoid swinging a fully loaded bucket at full reach to the downhill side of the machine - it may tip over.

When working across a slope, move the backhoe to a central position and then make full use of the backhoe stabilizers to level the machine. A vertical trench can be dug on gradients of up to 8°. Pile the soil on the uphill side of the trench.

To dig vertical trenches on slopes over 8° use the loader to cut out a small terrace, as illustrated, piling the soil on the lower side to provide a firm support.

NOTES

Attachments

Transport pin (figure 55)

Fully retract the dipperstick and fit the transport pin (1) whenever the vehicle is driven on the highway and when using:-

900 mm (36 inch) trench bucket

200 litre (7 ft^3) ditch digging bucket

Rock breaker

When using the telescopic action of the dipperstick, the transport pin must be clipped into the external stowage bracket (2).

Caution - When using the, extendable dipperstick the following precautions must be observed.

To improve the stability of the machine:

- Machines may have each of the rear tires filled with liquid ballast
- The loader bucket should be in contact with firm level ground.
- The dipperstick must not be extended while the backhoe bucket is in contact with the ground, but may be retracted in this state, for instance, when ditch cleaning.
- The dipperstick must be fully retracted for sidewall digging operations.

Do not exceed the rated lift capacity of the particular backhoe and attachment fitted.

Highway Safety Precautions

Lifting and tie-down points (figure 63)

Lifting points - 4 in total (2 each side of the machine)
A frame-type, load-spreader must be used in conjunction with these lifting points

Tie-down points - 6 in total (3 each side of the machine)

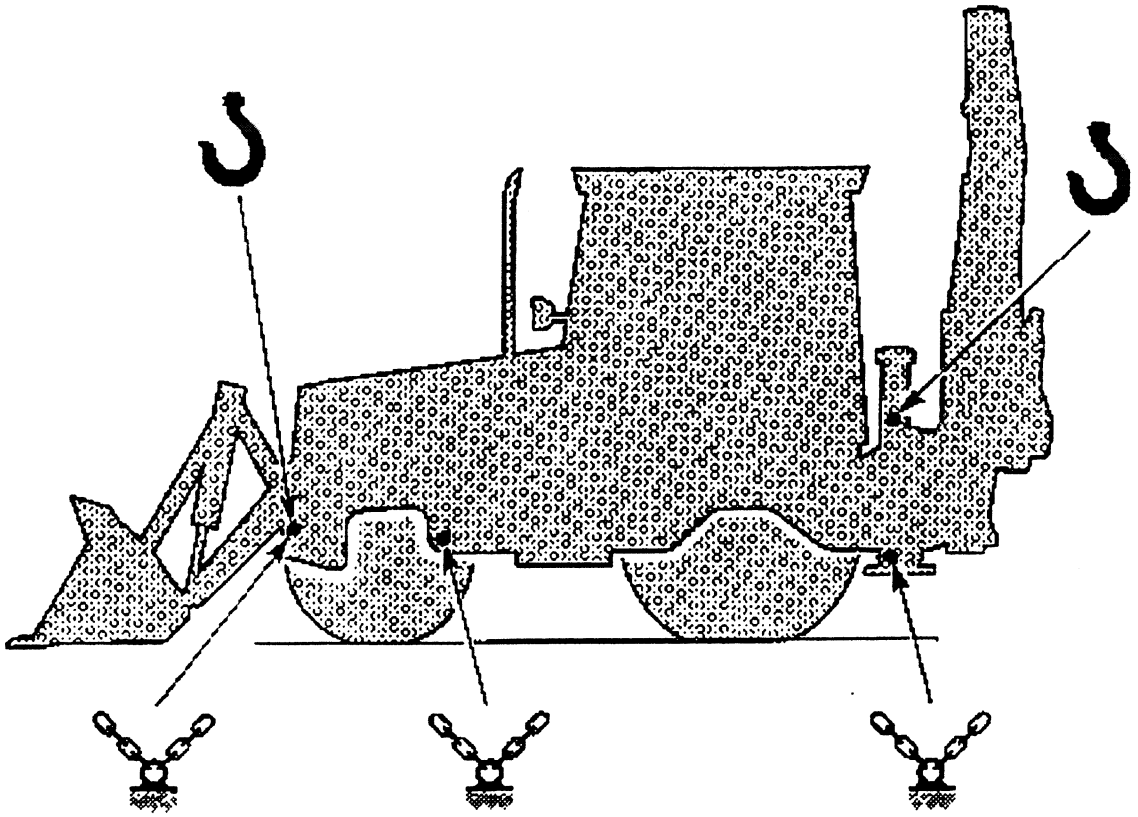


figure 63

Cooling System

Service period: **As required**

Check anti-freeze solution

The machine leaves the factory with the cooling system filled with an anti-freeze/water solution giving frost protection down to MINUS 34°C (-30°F), along with corrosion protection.

Anti-freeze will generally retain its full properties for 12 months, when the coolant should be drained by removing both drain plugs, one on the right side of the cylinder block behind the fuel lift pump (figure 68) and the other on the front, bottom right corner, of the radiator.

Refill using fresh water/anti-freeze solution in a concentration suitable for the lowest anticipated temperature. Use only approved anti-freeze to spec. BS 6580 (Part No. 3621 139 M1).

Always use clean rain water (low mineral content) when refilling the cooling system and if anti-freeze is not being used then a corrosion inhibitor should be added.

Attention !

- If anti-freeze is not used during freezing conditions the cooling water must be drained after work to prevent serious engine damage.
- Do not use cooling system anti-freeze in the screen washer system, it will damage paintwork.
- Where a cab heater is fitted, the cooling system must be filled with the appropriate antifreeze solution.

mixture	amounts of antifreeze		freezing commences		frozen solid	
%	litres	pints	°C	°F	°C	°F
33	5.2	10.9	-19	- 2	-36	-33
50	7.9	16.7	-36	-33	-48	-54

Fuel System

Service period: **500 hours**

Change fuel filter (figure 76)

1. Clean outside of fuel filter assembly, then remove tap (1) and drain fuel from the filter bowl.
2. Remove bolt (2) and dispose of old filter cartridge (3) and thoroughly clean the glass bowl (4).
3. Re-assemble with a new filter cartridge and seals. Do not over-tighten bolt (2).
4. Eliminate air from the system by operating the priming lever for approximately 2 minutes.

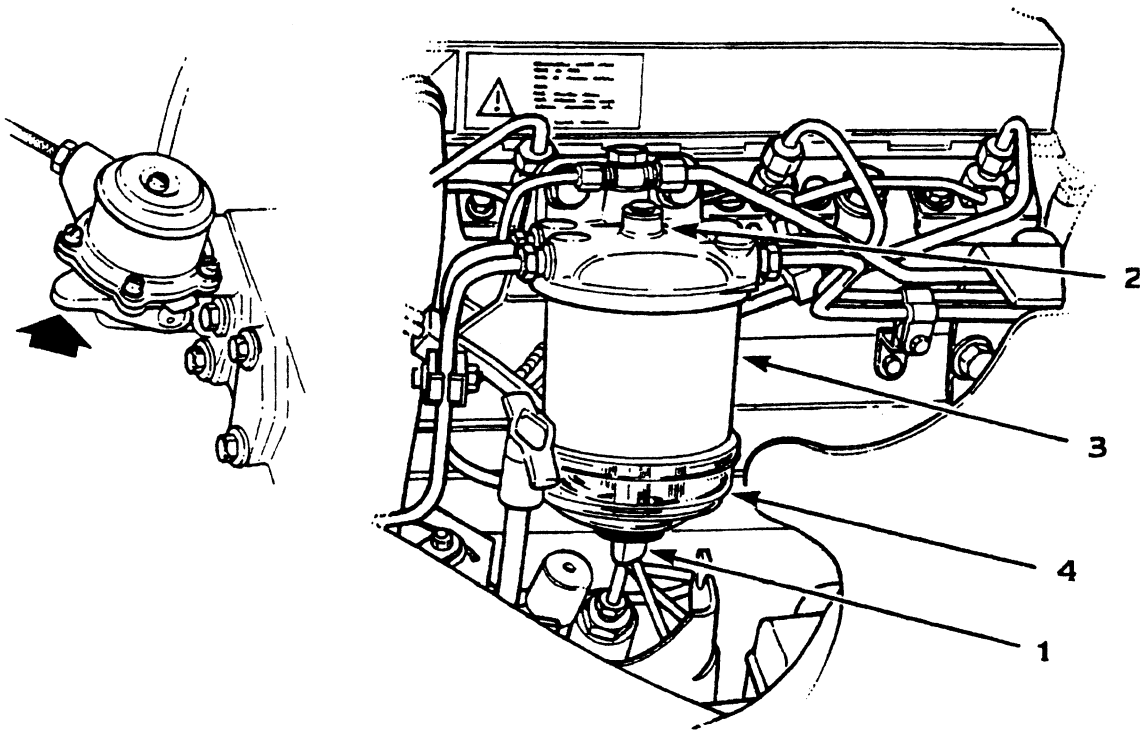


figure 76

Hydraulic System

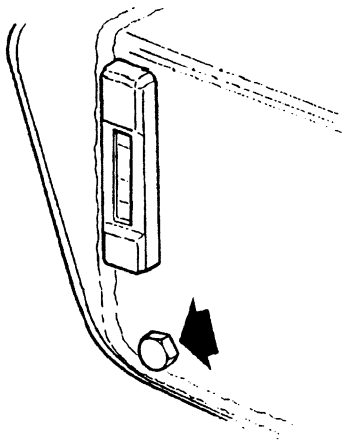
Service period: **1000 hours**

Change hydraulic oil, and filter

Drain the hydraulic oil (figure 83)

1. Park machine on level ground and turn the wheels to full right lock
2. Lower the backhoe stabilizers until they are fully extended.
3. Raise the loader beams, fully crowd the bucket and open the clamshell of the 7 in 1 bucket (if fitted).
4. Raise the backhoe boom and dipperstick to full height.
5. Stop the engine.
6. Remove the reservoir drain plug and filler cap, and allow the oil to drain into a suitable container.
7. Carefully lower the dipperstick and then the boom to the ground.
8. Raise the stabilizers until the tires settle on the ground.
9. Slowly lower the loader beams onto the safety strut. Close the clamshell and dump the bucket. The maximum amount of oil will now be drained from the system.
10. Remove the radiator grille and open the hood.
11. Refit the reservoir drain plug securely.

figure 83



Steering and Front Axle

Service period: **250 hours**

Grease 4 WD front axle (figure 95)

Grease universal joints. 4 wheel drive axles only

Turn wheels to full lock for access to universal joints. 2 fittings each side.

Check front axle oil levels

Refer to "Change front drive axle oils" for the level plugs and procedures to be followed.

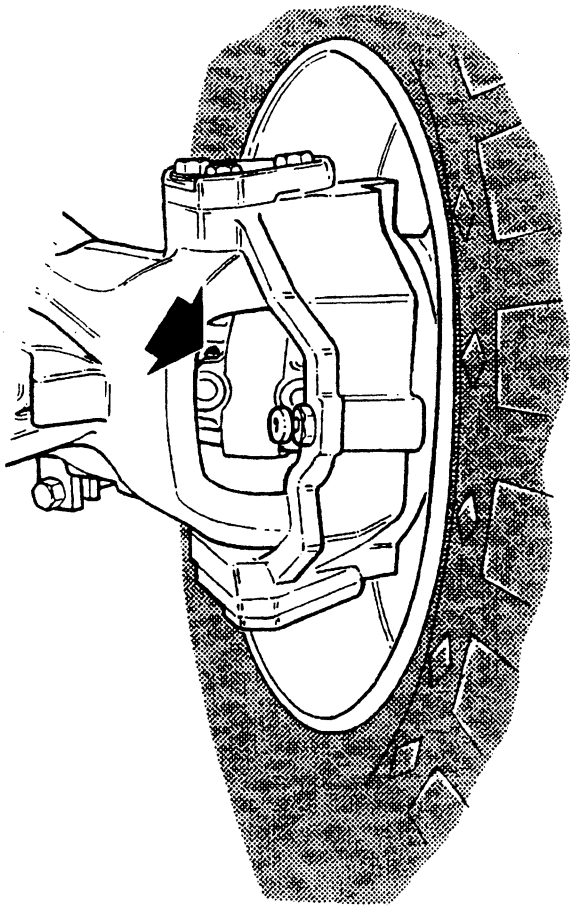


figure 95

Transmission

Service period: **1000 hours**

Change transmission oil and clean the intake screen
(figure 100)

1. Park the machine on level ground. Raise the loader beams and fit the safety strut.
2. Use only the correct grade of oil, detailed in the LUBRICATION section of this book.
3. Position a drain tray, capable of holding at least 30 litres (6.6 gals) of oil, under the drain plug, below the main output shaft. Remove the drain plug and drain all oil.
4. Refit drain plug.

Wheels and Tires

Tire Safety

- Much energy is stored within tires, particularly when combustible gases are formed inside the tire as a result of external fire. Do not approach an overheated tire closer than 15 metres (50 feet) directly behind the tread, or 500 metres (1640 feet) to the side.
- Do not mount wider than normal tires on standard rims as this can cause tire bead failure, sidewall separation, premature rim failure or excessive center-tread wear.
- Always check compatibility of tires and rims especially if replacing original-fit tires with imported tires or tires of different construction (radial or cross-ply).
- Wheel rims can fail if the wrong tires are fitted to them with consequent risk of serious injury or death.
- Tire rim and tube (if fitted) must be perfectly clean when refitting and use only french chalk or approved lubricant.
- Use only french chalk when refitting tubed tires as solutions of some soaps or household detergents will cause internal bonding and premature punctures.
- When preparing calcium chloride solution for liquid ballast always slowly add calcium chloride to water, stirring until dissolved.

Never pour water on calcium chloride, as considerable heat is generated along with vigorous 'boiling' activity which may cause spillage and chemical burns.

- Always deflate tires before removing objects which have penetrated the tire carcass.
- Never use antifreeze, silicones or petroleum based lubricants when refitting tires.

Electrical System

Key to Wiring Diagram Section A (figure 111)

1. Battery
2. Starter motor
3. Fuse # 12 - 15 amp
4. Switch - front horn
5. Horn - front
6. Fuse # 5 - 15 amp
7. Fuse # 8 - 15 amp
8. Fuse # 9 - 25 amp
9. Switch - RTD enable
10. Relay - RTD, mechanical controls
11. Solenoid - RTD
12. Switch - RTD cancel
13. Switch - front horn
14. Horn - front
15. Cigar lighter
16. Interior light
17. Radio
18. Switch - part of relay #5 see diagram D
19. Switch - air con. on
20. Switch - fan, heater/air con.
21. Thermostat - air conditioning
22. Clutch - air con. compressor
23. Fan - heater/air con.
24. Switch - side and headlights
25. Fuse # 18 - 15 amp
26. Fuse # 19 - 15 amp
27. Light - speedo
28. Light - right side light
29. Light - tachometer
30. Light - fuel/water temp gauge
31. Light - No. plate
32. Light - No. plate
33. Light - right tail
34. Light - left tail
35. Light - left side front
36. Light - left dip beam
37. Light - right dip beam
38. Light - left main beam
39. Light - right main beam
40. Light - main beam warning
41. Light - in-drive warning
42. Fuse # 20 - 15 ampFuse # 21 - 15 amp
44. Switch - part of relay #1
45. Switch - START
46. Alternator

Circuit diagram break points

1.1	A	Feed to fuse #5
	B	Feed from key switch
1.2	A	Feed from starter motor + terminal
	B	Feed to fuse #4, 10, 11
2.1	A	Feed from alternator output terminal
	B	To display module
2.2	A	Feed from alternator output terminal
	B	To hydraulic management unit
3.1	A	Feed from fuse #22
	B	To warning alarm light and buzzer
3.2	A	Feed to fuse #16
	B	Feed from starter motor + terminal
6.1	A	Feed from fuse #22
	B	Feed to alarm light and buzzer
6.2	A	Feed from key switch
	B	Feed to fuses #1, 3, 5, 13, 14, 15, 17, 22, 24