FIATALLIS®

operation maintenance repair manual

CRAWLER LOADER

59823801

Reprinted

BEN 7.16

AVOID ACCIDENTS

Most accidents, whether they occur in industry, on the farm, at home or on the highway, are caused by the failure of some individual to follow simple and fundamental safety rules or precautions. For this reason MOST ACCIDENTS CAN BE PREVENTED by recognizing the real cause and doing something about it before the accident occurs.

Regardless of the care used in the design and construction of any type of equipment there are conditions that cannot be completely safeguarded against without interfering with reasonable accessibility and efficient operation.

A careful operator is the best insurance against an accident.
The complete observance of one simple rule would prevent many thousand serious injuries each year.
That rule is:

Never attempt to clean, oil or adjust a machine while it is in motion.

WARNING

On machines having hydraulically, mechanically, and/or cable controlled equipment (such as shovels, loaders, dozers, scrapers, etc.) be certain the equipment is lowered to the ground before servicing, adjusting and/or repairing. If it is necessary to have the hydraulically, mechanically, and/or cable controlled equipment partially or fully raised to gain access to certain items, be sure the equipment is suitably supported by means other than the hydraulic lift cylinders, cable and/or mechanical devices used for controlling the equipment.

CALIFORNIA

Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

INTRODUCTION

This manual is a guide for a correct use and a good maintenance of the loader.
It may be considered a good help even for the most skilled operator. It should always follow the loader.
Always carefully follow the instructions given herein; the pictures will give you an additional easy guide for proper operation and checkings. A good maintenance may improve by 100% the performance of your loader and extend its service life.
Your and other people's safety depends on a proper maintenance and use of this loader.
A careful operator is the best guarantee to prevent accidents.
However proper the design of any type of machine is, situations might be faced that cannot be guaranteed by the design itself without decreasing operating efficiency.
Since BENATI's aim is to technically improve at any time the machines produced, the manufacturers reserve the right to modify at any moment the specifications of their machines and therefore they do not answer for any difference that might exist between the specifications contained herein and those of the loader delivered.

INDEX OF CONTENTS

3. MAINTENANCE

1. INSTRUCTIONS TO THE OPERATOR

1.1. IDENTIFICATION OF THE LOADER

To facilitate a fast and efficient handling in case of possible breakdown, always please specify following details:
a) Model of loader
b) Loader serial number
c) Diesel engine serial number
d) Number of hours worked
e) Purchase date
May we suggest to fill-in above details upon delivery of the loader as to have them available at once whenever the need arises.

Location of serial number plates

The plate which shows the serial number and the model of the loader is located on the R/H side of machine between boom hinge pins and lift cylinder (fig. 1).

Fig. 1

The serial number of diesel engine is located on a plate attached to the injection pump (fig. 2).

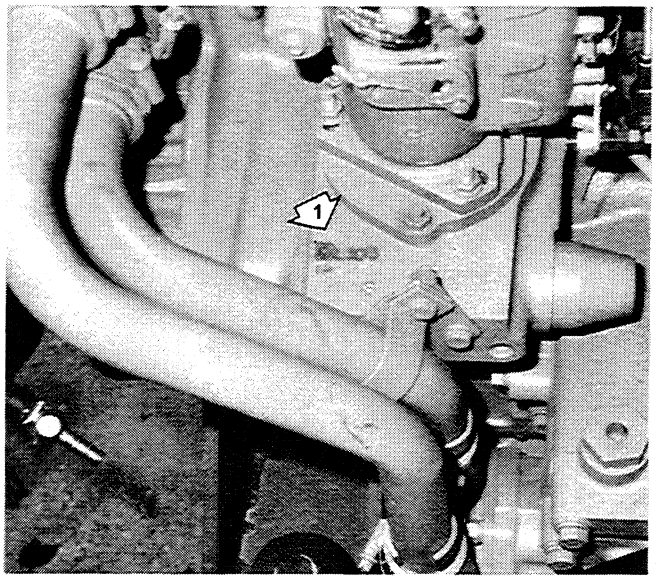

Fig. 2

1.2. SAFETY PRECAUTIONS

A good operator always adopts the necessary precautions to secure full safety both for himself and for his workmates. Any lack of attention should be avoided to prevent accidents to people and damages to the machine and attachments. To work with full safety, following precautions and general rules should be strictly followed.

1) First carefully read this manual as to become familiar with the characteristics, the operation, the routine maintenance, the performances and limits of the machine.
2) Get accustomed with the location and operation of all controls, instruments and hazard devices.
3) Only the operator should be on the machine while in operation; never carry passengers.
4) Before commencing work, test horn and safety devices.
5) Start engine only from operator's station.
6) Be sure the control levers are in the neutral before starting the engine.
7) Never carry out any mechanical adjustment while the loader is in motion.
8) Never carry out repairs whatsoever in the hydraulic system when this is under pressure or the loader is in motion.
9) Never get on or get off the loader whilst it is in motion.
10) Always try to park the loader on level ground; should it be necessary to park it on a slope, do it at right angle as to the slope.
11) Never operate loader controls unless you are sitting in the operator's station.
12) Never leave the machine without disengaging controls by means of the safety lever. When leaving the machine unattended, remove starter key.
13) As long as possible stop the loader on a level ground and apply the parking brake: remove starter key then shut the cab door.
14) Never refuel when the engine is running.
15) Keep cab floor free from grease, mud and ice to prevent slipping.
16) Do not clean or repair or lubricate whilst the loader is in motion.
17) Tighten all nuts, bolts and caps as indicated in the maintenance routine intervals.
18) Always be watchful of bystanders when operating the loader.
19) Never operate on gradients which might affect the stability of the machine.
20) When transporting loads, keep the bucket loaded as near to the ground as possible to secure a good stability.
21) Always inspect the area you are working on as to verify the presence of possible sinking or slippery ground.
22) Never lit loads over bystanders or lorry cabs.
23) Before reversing, be sure the area at the rear is not unstable and operate acoustical signal.
24) The bucket should never be used as a brake, except in emergency.
25) Always check overhead clearance, mainly electric cables.
26) Engage the most suitable gear when moving down-hill: never coast in neutral.
27) Lower the bucket to the ground when the loader is not operating and, in any case, before leaving the cab.
28) Any time it is necessary to carry out maintenance work with the loader boom raised, fit a safety bar and operate control levers to relieve the hydraulic system of pressure.
29) Never rely on the hydraulic system to lift the machine as to carry out maintenance or repair works under the loader.
30) Maintain a low speed when crossing ditches, rough terrain or slopes.
31) Always be sure the working area is clear of bystanders.
32) Be sure nobody is standing under loader boom when bucket is raised.
33) Always inspect the working area before you start working to ascertain the location of possible pipings and electrical or telephone lines.
34) When towing, always use a cable of adequate size and in good conditions: avoid snapping as this could brake the cable.
35) Do not wear flapping clothes as these might get caught in the loader controls.
36) Do not smoke whilst refuelling.
37) When checking engine coolant level, loosen the radiator cap very slowly as to relieve pressure especially when the engine is running.
    Never pour cold water directly on hot engine.
38) Always clean carefully the windscreen and cab windows to secure a good visibility.
39) Regularly check instruments readings.
40) Should it be necessary to start the engine in an enclosed area, be sure to provide an adequate ventilation to avoid danger of gassing.
41) Do not drink alcoholic or drinks use drugs which could make you sleepy.
42) Never attempt to carry out repairs if you are not familiar to do so.
43) Never forget that operator's caution is the best guarantee to prevent accidents.

1.3. CONTROLS AND INSTRUMENTS

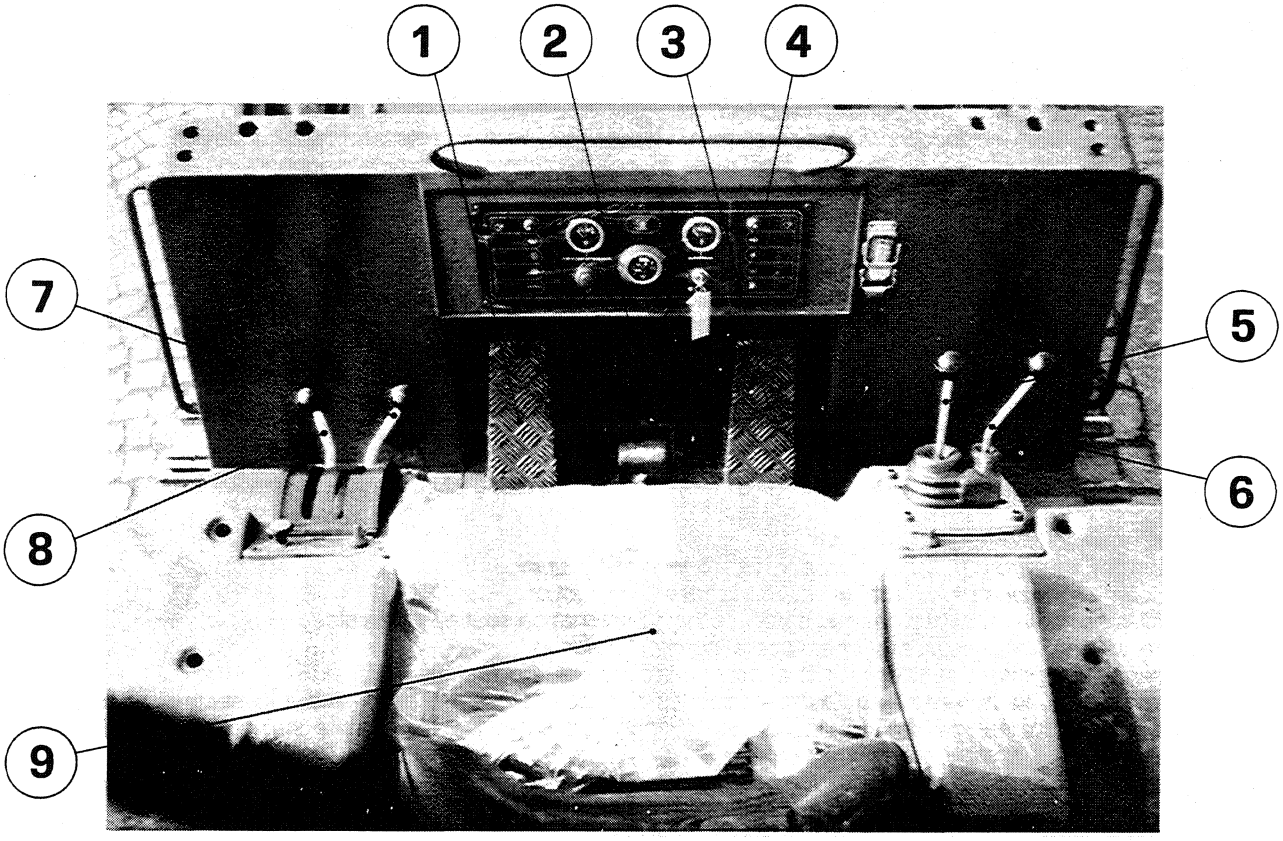

Fig. 3

1) L.H. STEERING PEDAL
2) SERVICE BRAKE PEDAL
3) R.H. STEERING PEDAL
4) DASHBOARD
5) BOOM AND BUCKET OPERATION CONTROL LEVER
6) RIPPER OPERATION CONTROL LEVER
7) SPEED CONTROL LEVER
8) ACCELERATOR LEVER
9) OPERATOR'S SEAT

1.3.1. Description and operation of instruments

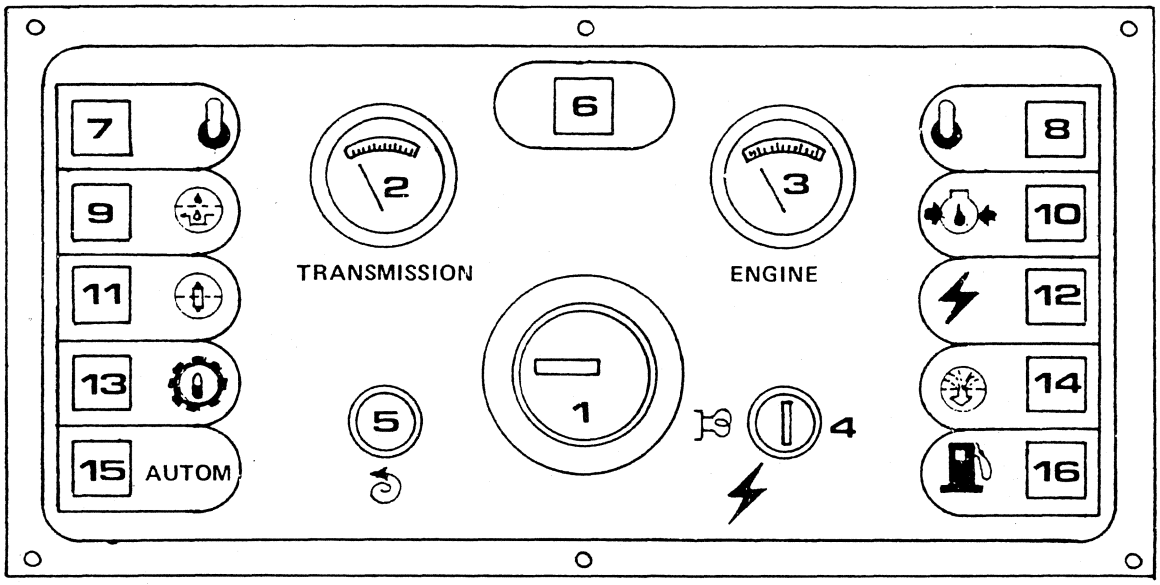

Fig. 4

1 - Hourmeter (Pos. 1 – fig. 4).
The hourmeter is to be utilized as a guide to schedule routine maintenance operations and checks indicated in this manual. The hourmeter operates only if ignition key is inserted.

2 - Transmission temperature gauge (Pos. 2 – fig. 4).
This gauge indicates hydraulic oil temperature inside the transmission. The maximum transmission operating temperature is 95°; in case transmission oil temperature exceeds this value immediately stop machine.

3 - Diesel engine coolant temperature gauge (Pos. 3 – fig. 4).
This gauge indicates engine coolant temperature. Maximum operating temperature is 103°, whenever temperature exceeds this value lower engine RPM but do not necessarely stop engine.

4 - Ignition key and glowplug preheating (Pos. 4 – fig. 4).
Turning key clockwise, at first position (⚡) electric circuits will be energized, at second position ( ) glowplug for engine preheating will be activated.

5 - Engine start push button (Pos. 5 – fig. 4).
Pressing this button, with ignition key (Pos. 4 – fig. 4) in first position (⚡), will cause the engine to start.

6 - Glowplug operating warning light (Pos. 6 – fig. 4).
When ignition key is in second position ( ) and therefore glowplug is activated, this warning light will be on.

7 - Rear working light switch and warning light (Pos. 7 – fig. 4).
Actuating this switch the rear working light will operate which will be monitored by the corresponding warning light.

8 - Front working light switch and warning light (Pos. 8 – fig. 4).
Actuating this switch the front working light will operate which will be monitored by the corresponding warning light.

9 - Valve assembly protection filter clogging warning light (Pos. 9 – fig. 4).
If this warning light lights up the filter that protects the valve assembly has become clogged and needs to be replaced.

10 - Engine oil pressure warning light (Pos. 10 – fig. 4).
This warning will light up when the ignition key is turned in 1st position ( ) and when engine is stopped, but it should go out when engine is running. In case it lights with running engine immediately stop engine.

11 - Hydraulic oil filter clogging warning light (Pos. 11 – fig. 4).
Should this warning light light up this means that hydraulic oil filter in reservoir is clogged and needs to be replaced.

12 - Battery charge warning light (Pos. 12 – fig. 4).
This warning light should go on when ignition key is turned to 1st ( ) position with stopped engine and should go out when engine runs.
Whenever it lights up while engine is running this means that battery is not charged and or generator does not work.

13 - Safety lever engaged warning light (Pos. 13 – fig. 4).
It safety lever (Pos. 4 – fig. 5) is engaged this warning light will light up.

14 - Air cleaner clogging warning light (Pos. 14 – fig. 4).
This warning light will light up whenever the engine air cleaner cartridge is clogged and therefore needs to be replaced.

15 - Proximity switches warning light (Pos. 15 – fig. 4).
This warning light will light up to monitor that bucket and lift proximity switches are operating.

16 - Fuel level warning light (Pos. 16 – fig. 4).
This warning light will light up when fuel is in reserve and therefore refuelling is needed.

17 - Electric horn actuating button (Pos. 5 – fig. 5).
Pressing this button will actuate electric horn.

1.3.2. Description and operation of controls

Speed control (Pos. 1 – fig. 5).
This sole lever controls forward or reverse propel and drive speed. Pushing the lever forward (A fig. 5) the machine will travel forward and drive speed will increase proportionally to the stroke the lever goes (fig. 5A).
Pulling the lever backward (B fig. 5) the same will happen but in reverse.

Accelerator lever (Pos. 2 – fig. 5).
Pulling (D) this lever engine RPM will increase. Pushing the lever until the end of its stroke (C) engine RPM will decrease until idling.

Parking brake lever (Pos. 4 – fig. 5).
Bringing the lever in vertical position (E) will engage parking brake.
Bringing the lever in horizontal position will release parking brake.

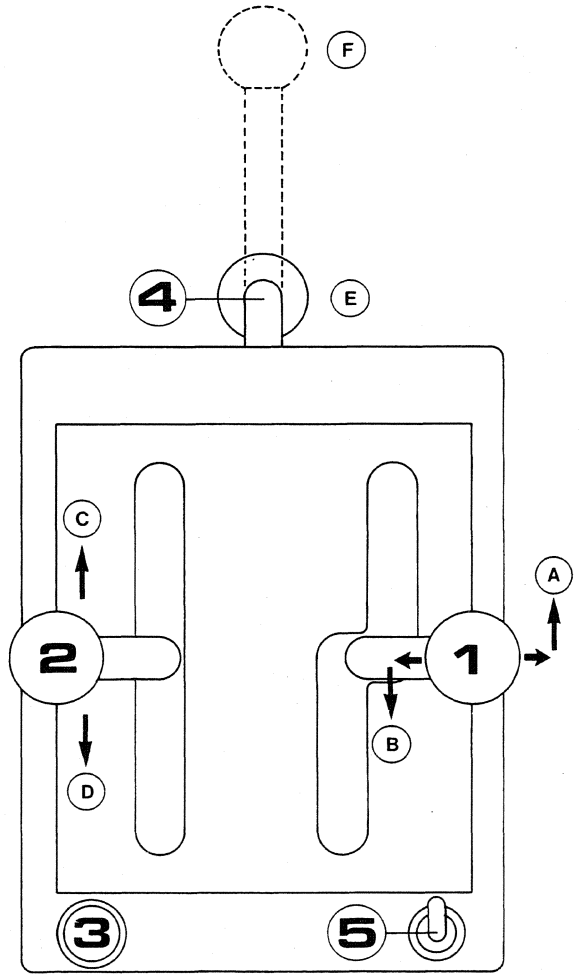

Fig. 5

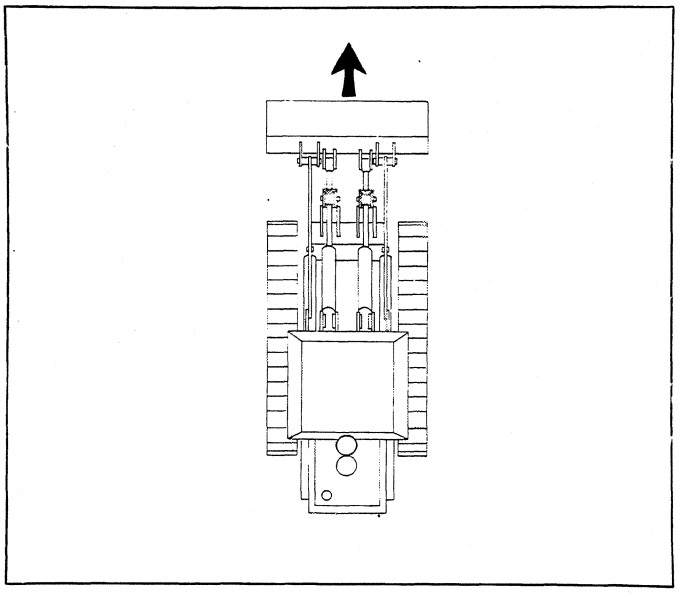

Fig. 5A

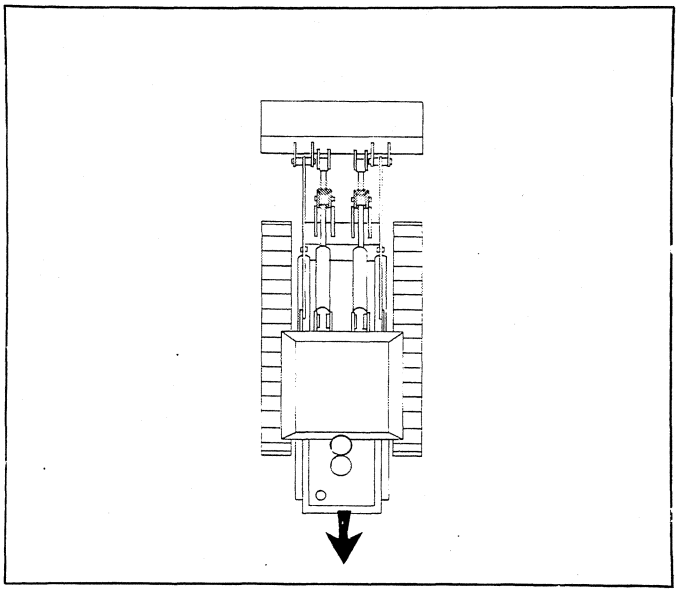

Fig. 5B

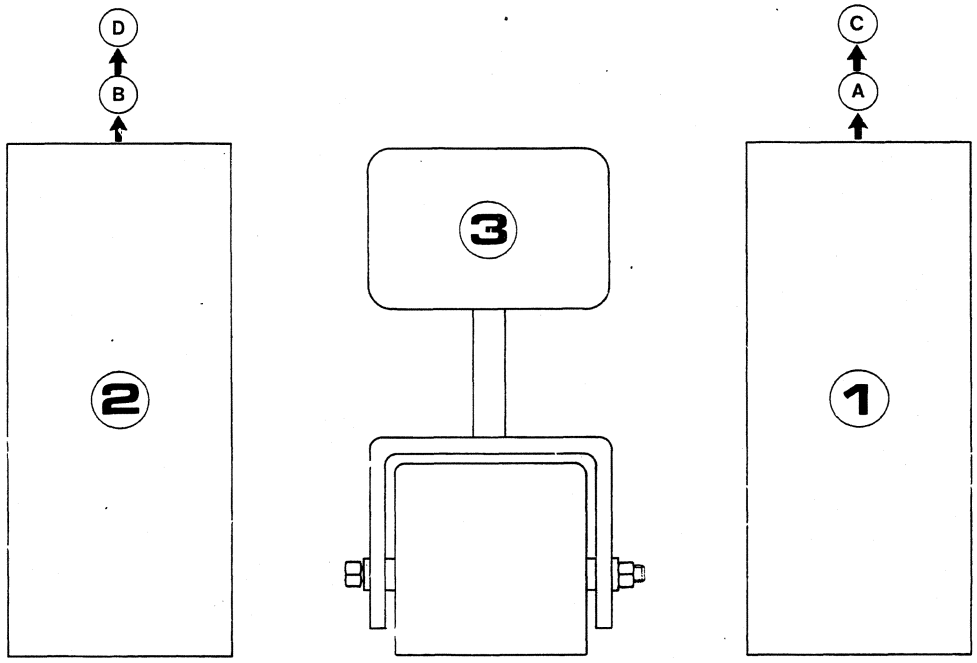

Fig. 6

Right pedal (Pos. 1 – fig. 6).
Gradually depressing the right pedal (A) the machine will steer to the right with a steering radius proportional to the stroke of the pedal (fig. 6A).
Fully depressing the pedal (C) the R.H. trackchain will reverse so making the machine turn rightwards on its own axis (fig. 6C).
If fully depressing both right and left pedal the machine will stop.

Left pedal (Pos. 2 – fig. 6).
Gradually depressing the left pedal (B) the machine will steer to the left with a steering radius proportional to the stroke of the pedal (fig. 6B).
Fully depressing the pedal (D) the L.H. trackchain will reverse so making the machine turn leftwards on its own axis (fig. 6D).
Fully depressing both right and left pedals will make the machine stop.

Central pedal (Pos. 3 – fig. 6).
Depressing this pedal will make the service brake system operate.

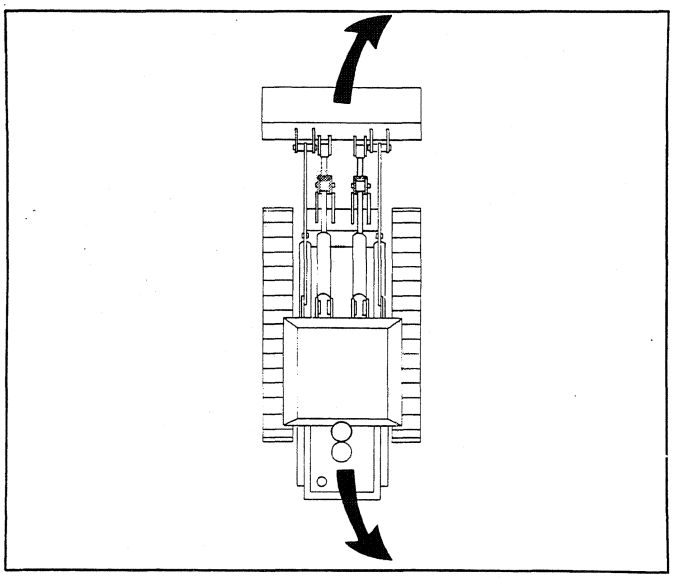

Fig. 6A

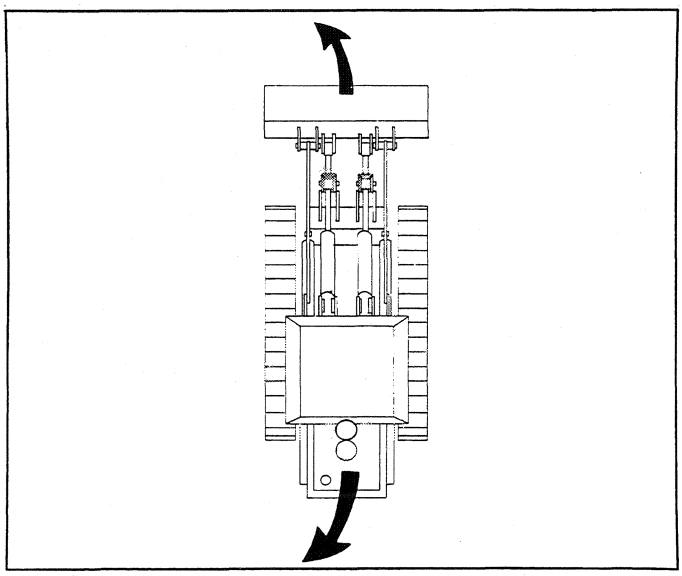

Fig. 6B

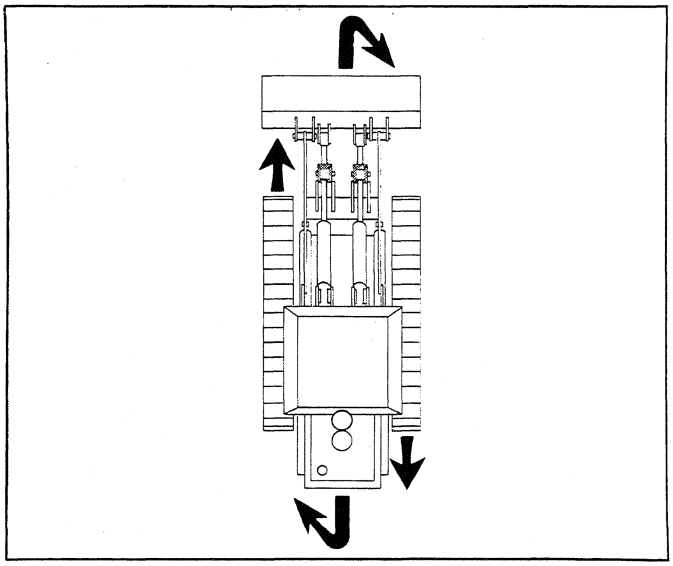

Fig. 6C

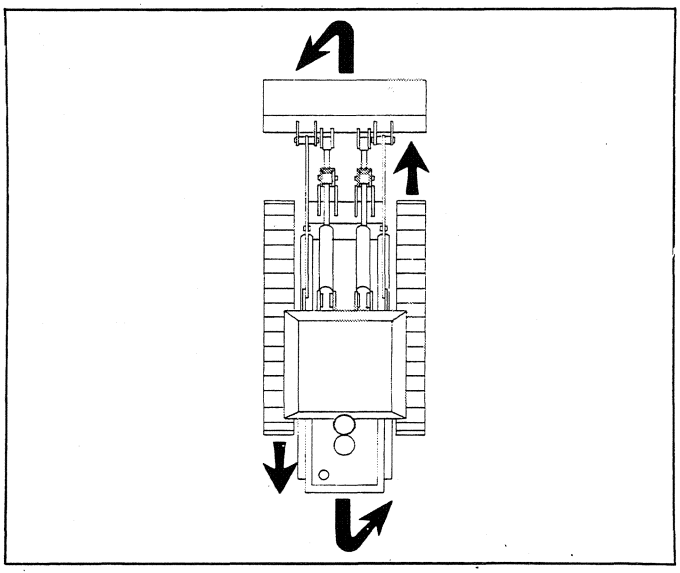

Fig. 6D

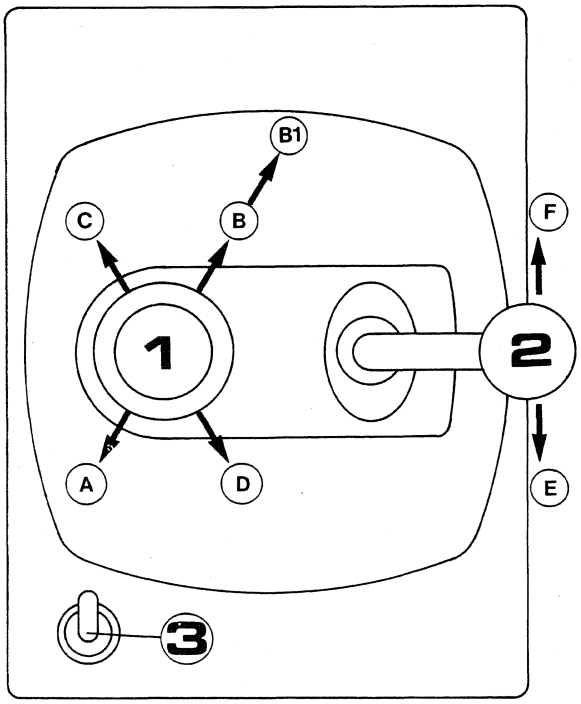

Fig. 7

Boom and bucket control lever (Pos. 1 – fig. 7).
Shifting the lever into position (A) will make the boom lift (fig. 7A).
Shifting the lever into position (B) will make the boom lower (fig. 7B).
Shift the lever into position (B1) for floating (fig. 7B1).
Shifting the lever into position (C) will cause the bucket to open (fig. 7C).
Shifting the lever into position (D) will cause the bucket to close (fig. 7D).

Ripper control lever (Pos. 2 – fig. 7) (OPTIONAL).
Push lever into position (F) for ripper lowering (fig. 7F).
Pull lever into position (E) for ripper lifting (fig. 7E).

Boom and bucket proximity switches operation button (Pos. 3 – fig. 7).
Actuating this button will engage and disengage the proximity switches (Pos. 3 – fig. 8 and Pos. 2 – fig. 9). Their operation is monitored by the warning light (Pos. 15 – fig. 3) on dashboard.

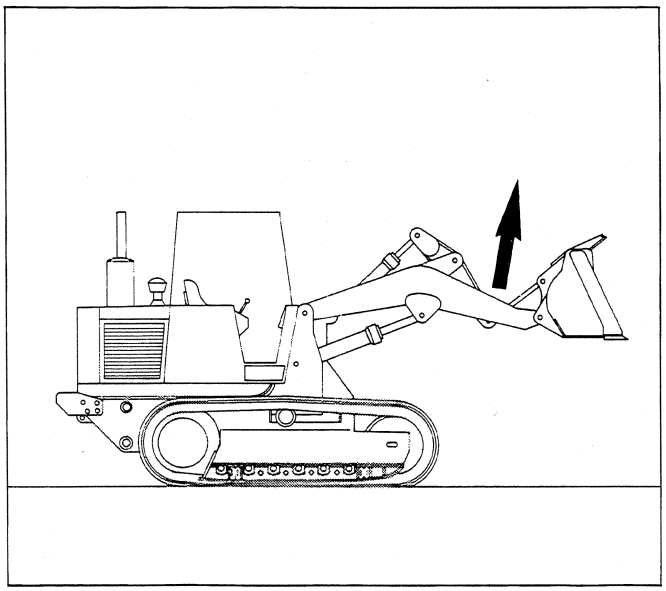

Fig. 7A

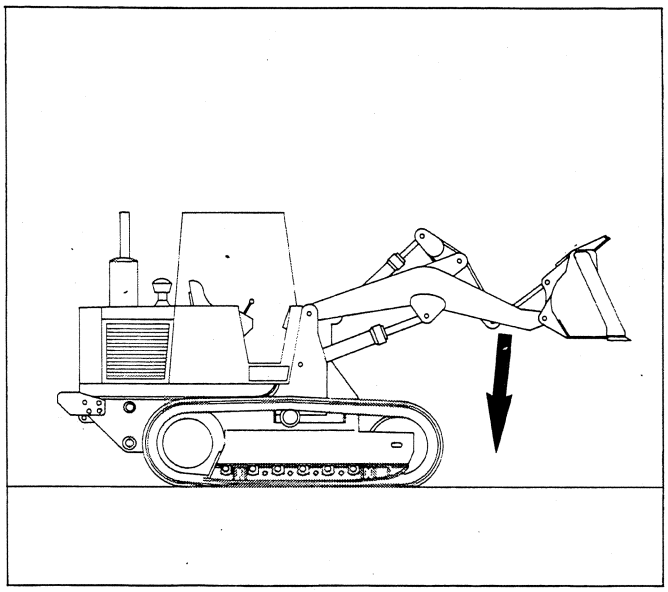

Fig. 7B

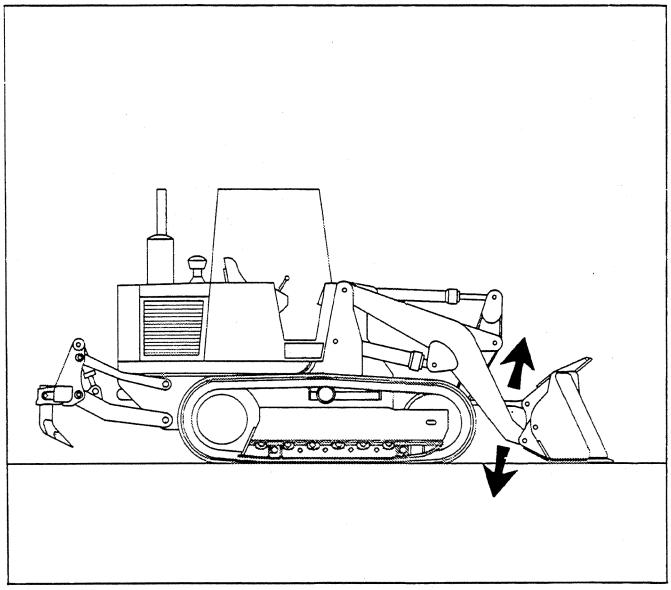

Fig. 7B1

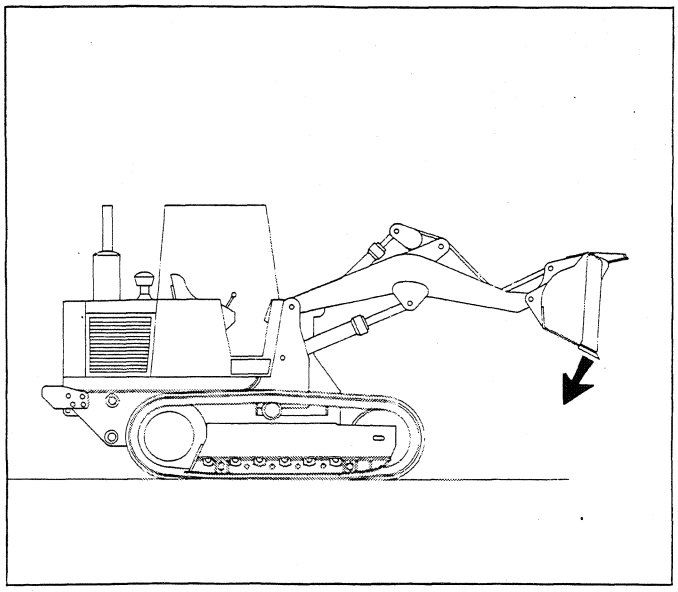

Fig. 7C

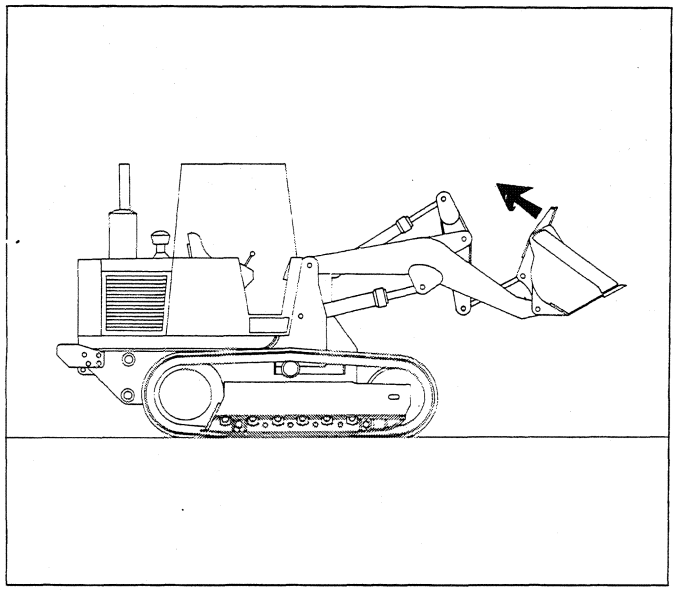

Fig. 7D

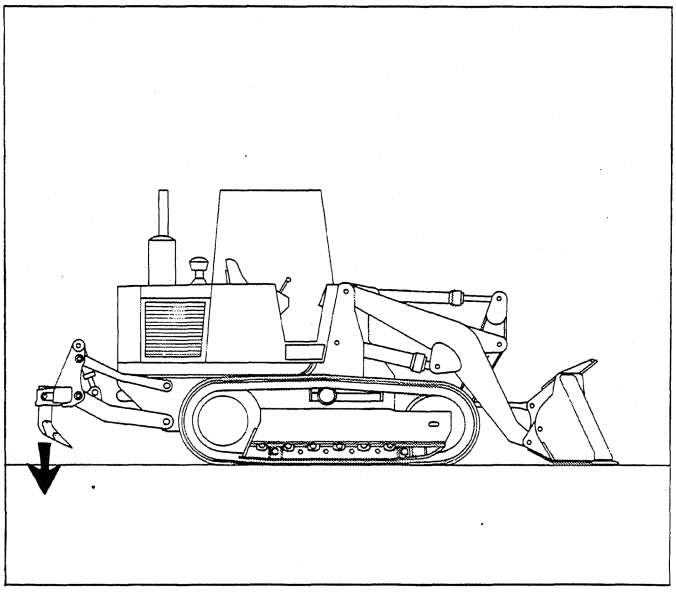

Fig. 7E

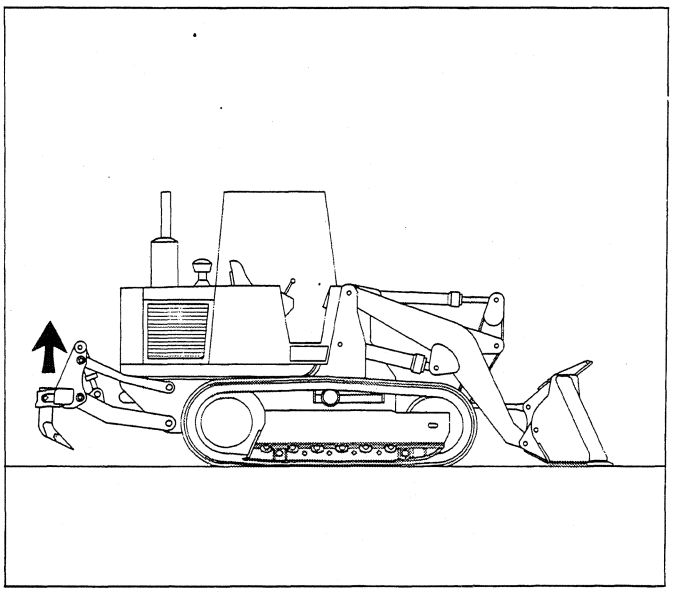

Fig. 7F

1.3.3. Description and operation of proximity switches.

The proximity switches (Pos. 3 – fig. 8 and Pos. 2 – fig. 9) are fitted in order to:

1) automatically interrupt boom lift when the preset height is reached. This height is adjustable by placing the proximity switches in the different openings (Pos. 2 – fig. 8).
2) automatically interrupt bucket closing as soon as bucket edge is parallel to ground level.
   This will be achieved as soon as the plates (Pos. 1 – fig. 8 and Pos. 1 – fig. 9) will meet the proximity switches and so enter their magnetic field.

N.B.
Whenever the proximity switches do not operate correctly make sure that their positioning is correct i.e. in exact correspondance to fig. 10.

The proximity switches are released through a switch (Pos. 3 – fig. 7) whilst the warning light that monitors their operation should go out.

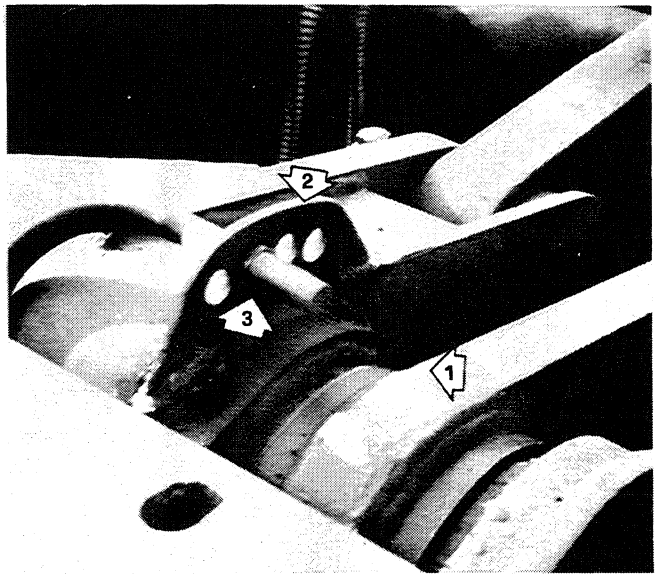

Fig. 8

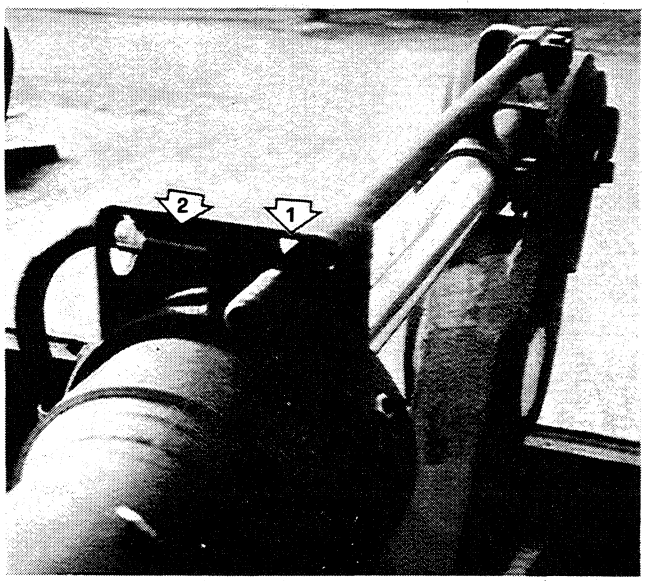

Fig. 9

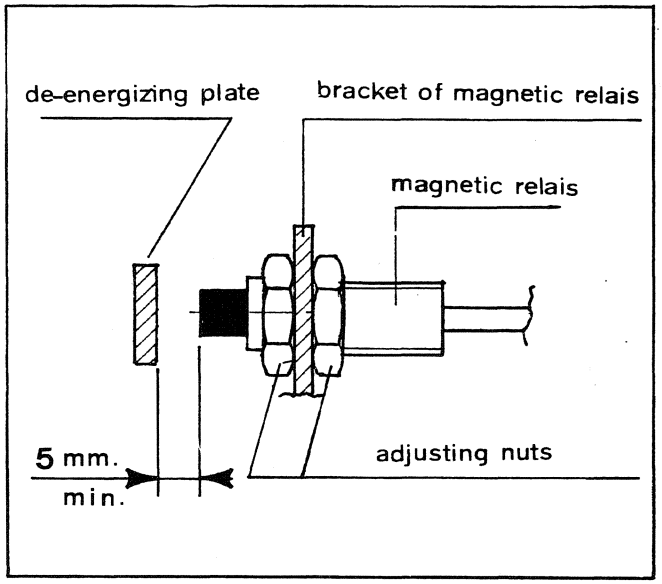

Fig. 10

Fig. 11

1.3.4. Operator's cab and compartment with accessories

Open cab with the aid of handle (1 fig. 11) while holding the handhold (2 fig. 11) for easy access. To open the door from inside push handle (1 fig. 12).

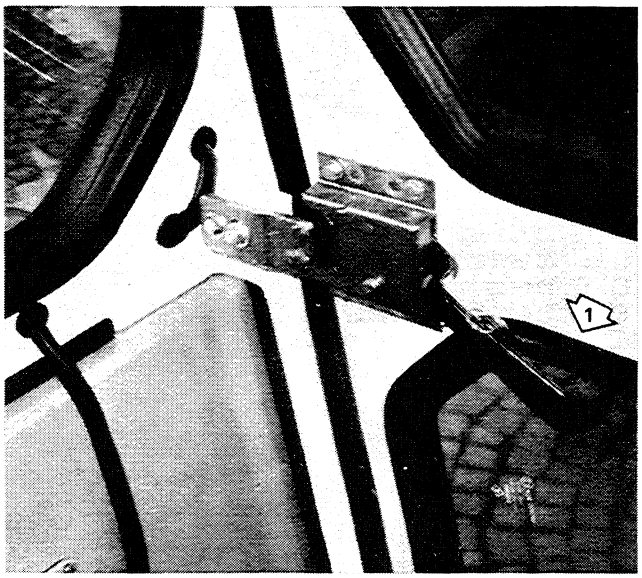

Fig. 12

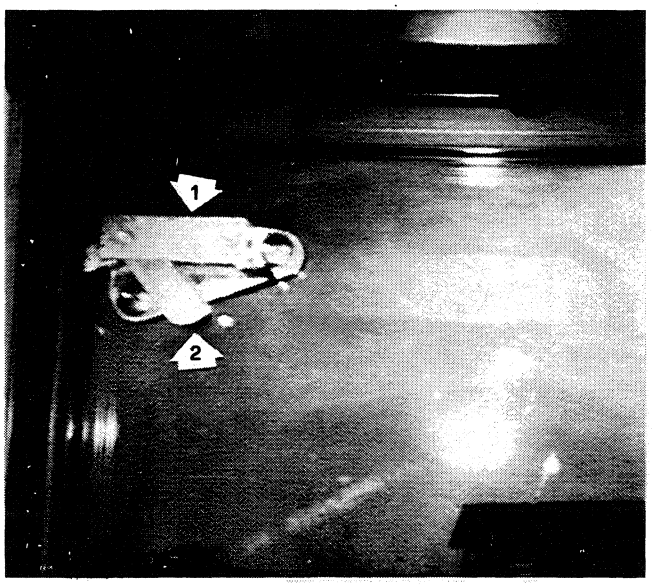

Fig. 13

The rear window can be opened releasing the handles (1 fig. 13), lifting the glass slightly upwards, pressing the buttons (2 fig. 13) then pulling the glass down.

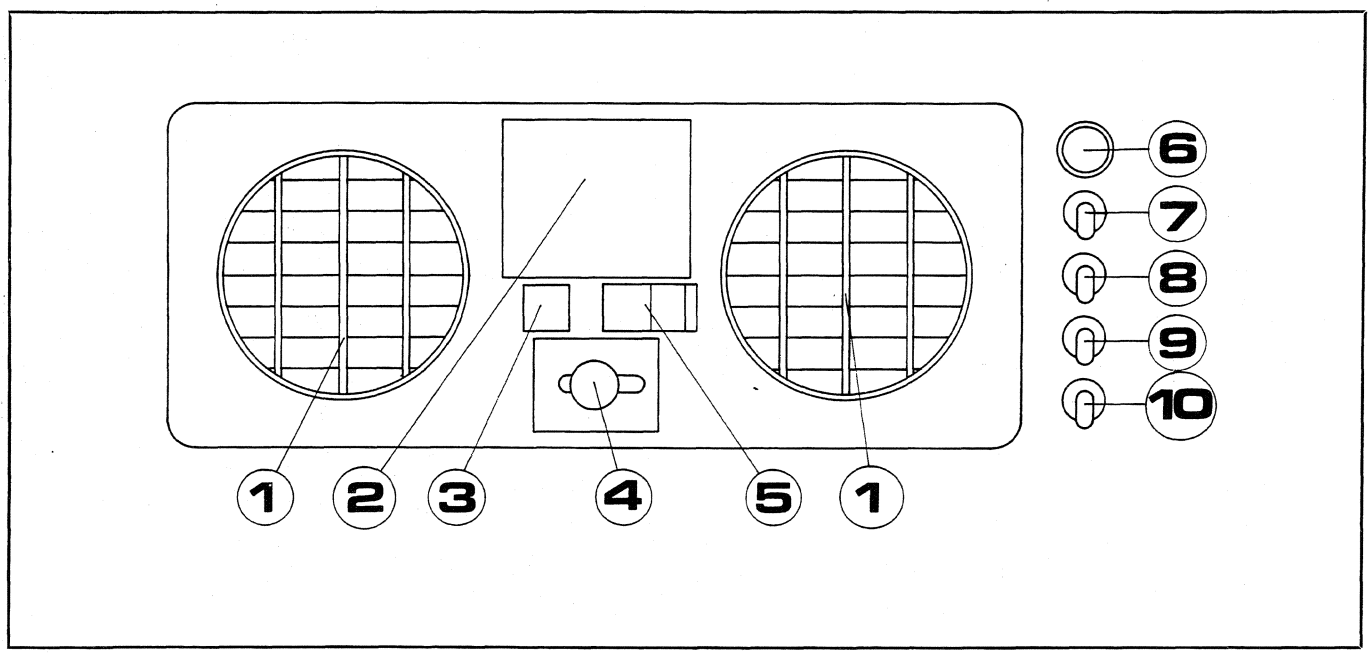

Fig. 14

Upper cab instrument panel
1) Air flow openings (adjustable)
2) Cab light
3) Warning light
4) Hot-cold air flow adjuster
5) Switch-fan
6) Cigarette lighter
7) Switch-windshield wipers
8) Switch-for optionals
9) Switch-windshield washer
10) Switch-flashlight

At the cab rear part a filter for air cleaning is located. If necessary to clean it remove bolts (Pos. 1 – fig. 15) and take cover off.

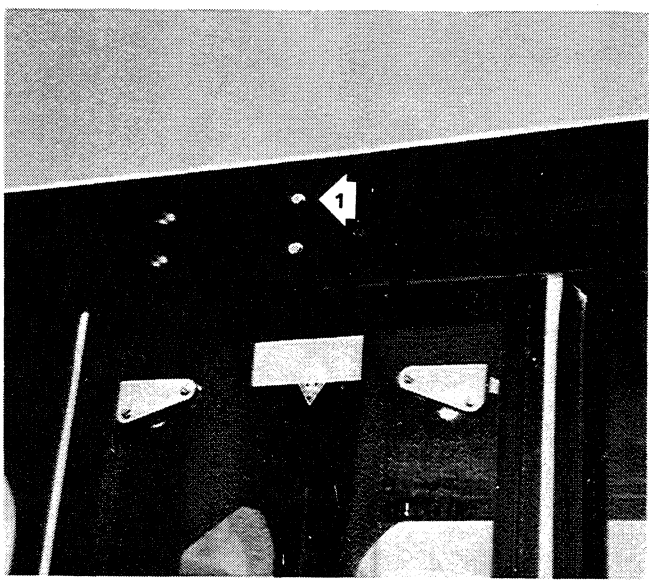

Fig. 15

1.3.5. Connection of heating equipment

On the Diesel engine two taps are located (Pos. 1 – fig. 16) (Pos. 1 – fig. 17) to which the two ducts are connected that route the coolant water from the engine to the heater inside the cab. Open taps to make the water circulate.

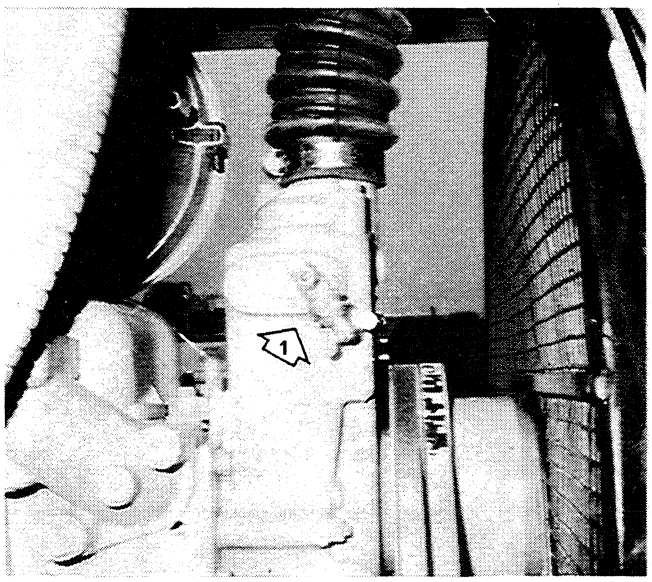

Fig. 16

1.3.6. Operation of heating equipment

For the operation of the heating equipment make sure that the two taps (Pos. 1 – fig. 16) (Pos. 1 – fig. 17) are opened, then turn knob (Pos. 4 – fig. 14) to adjust hot air flow.

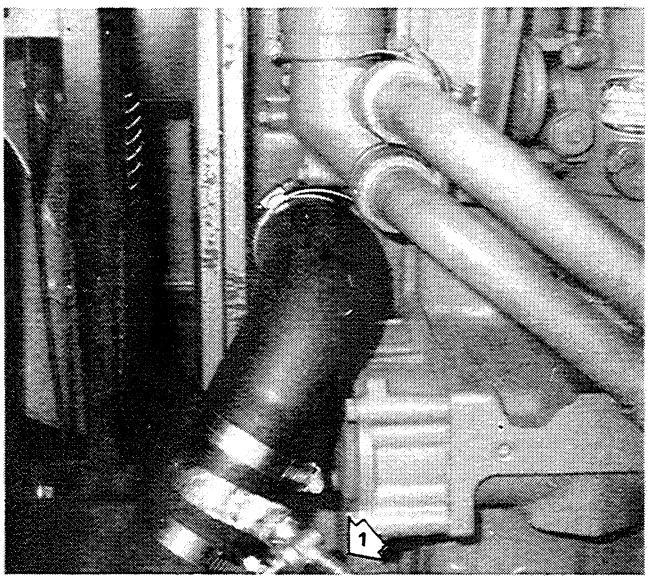

Fig. 17

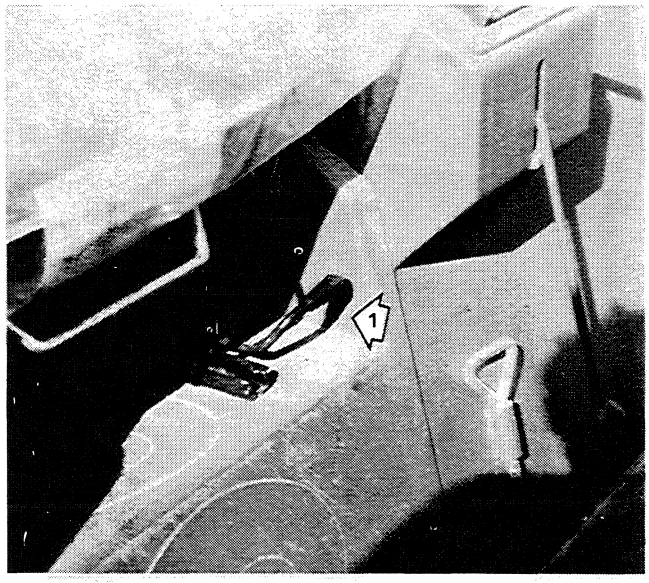

Fig. 18

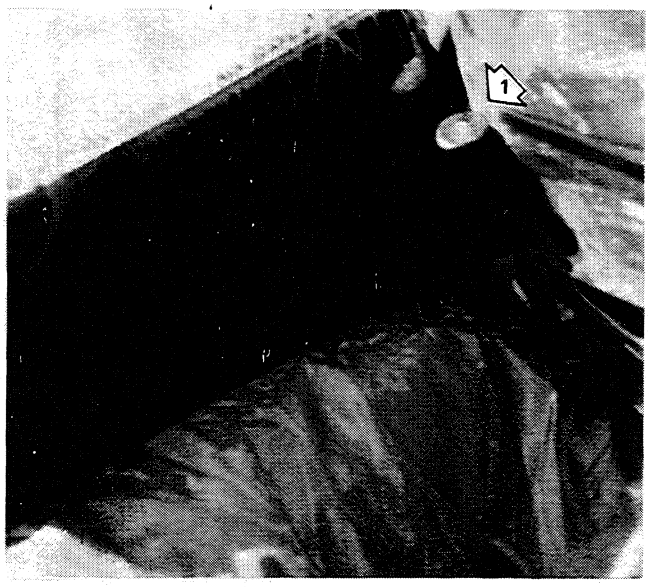

Fig. 19

1.3.7. Adjustment of operator's seat

Seat sliding is adjustable acting on lever (Pos. 1 – fig. 18). The back of the seat is adjustable with the aid of lever (Pos. 1 – fig. 19).

1.4. COMMISSIONING OF LOADER, STARTING AND STOPPING

1.4.1. Preventive inspections before starting the engine

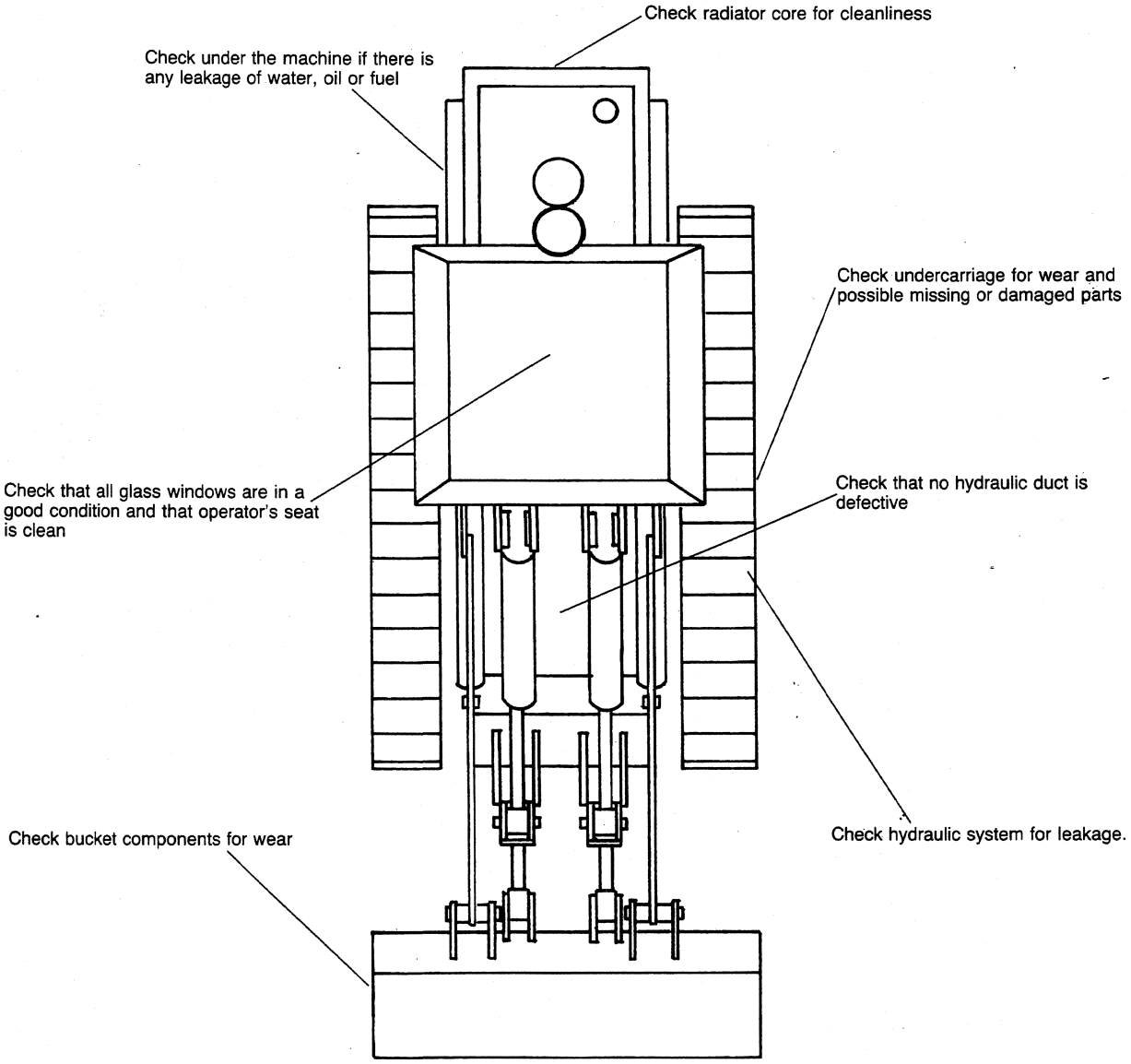

Fig. 20

1) Check engine oil level. This must be between the minimum and maximum notch.
2) Check radiator coolant level.
3) Check battery electrolyte level.
4) Check fuel level and make sure that there is enough fuel for at least a whole working day.
5) Check hydraulic oil level.

1.4.2. Starting the Diesel engine

Above 15° C

1) Make sure that speed-control lever is in neutral position.
2) Turn ignition key (⚡).
3) Pull accelerator lever until about half of its stroke.
4) Push start button.
5) Release starting button as soon as engine runs.

Below 15° C

1) Make sure that speed-control lever is in neutral position.
2) Turn ignition key to position (🔥) and keep the key so for about 20 seconds.
3) Turn ignition key into position (⚡).
4) Pull accelerator lever until about half of its stroke.
5) Push start button.
6) Release starting button as soon as engine runs.

1.4.3. Starting the engine with the aid of slave batteries

1) Make sure that slave batteries tension corresponds to standard battery tension.
2) Connect slave batteries to standard batteries connecting positive to positive poles and negative to negative poles.
3) After starting of the engine disconnect slave batteries taking care to not interrupt connections to standard batteries.

1.4.4. After the engine starts

1) Keep engine RPM low until engine oil warning light will have switched off (Pos. 10 – fig. 4). Whenever this warning light does not go out, immediately stop the engine and investigate.
2) Make sure that battery charge warning light has switched off (Pos. 12 – fig. 4).
3) Keep engine under low load for at least five minutes.
4) Actuate hydraulic services under no load a few times to ease the hydraulic oil to get on temperature.
5) Check instruments for correct operation.
6) Release parking brake.

1.4.5. Engine stopping

In case of stopping the engine please note following:

1) If the engine has been operating under severe load conditions it is advisable not to stop it at once but to let it run under no load for a few minutes to let it cool down to normal operating temperature.
2) To stop the engine decrease engine RPM by pushing the accelerator lever (Pos. 2 – fig. 5) until the end of its stroke (C).
3) Pull engine stop knob (Pos. 3 – fig. 5) upward.
4) Check that engine oil pressure warning light and battery charge warning light light up.
5) Turn ignition key to position 0.
6) Apply parking brake (Pos. 4 – fig. 5).

ATTENTION:
Always take the key with you when you leave the machine.

1.4.6. Daily precautions after use of loader

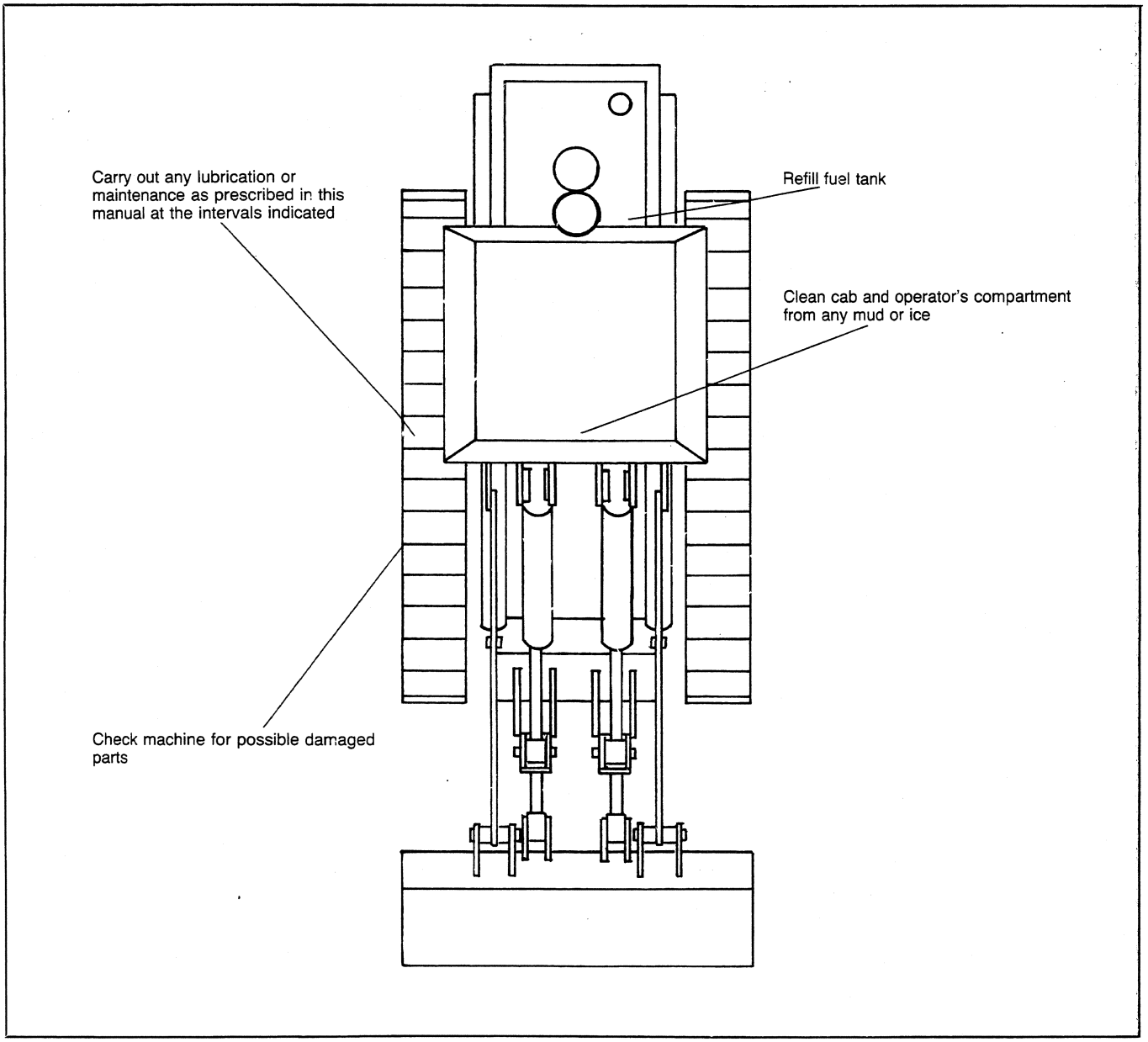

Fig. 21

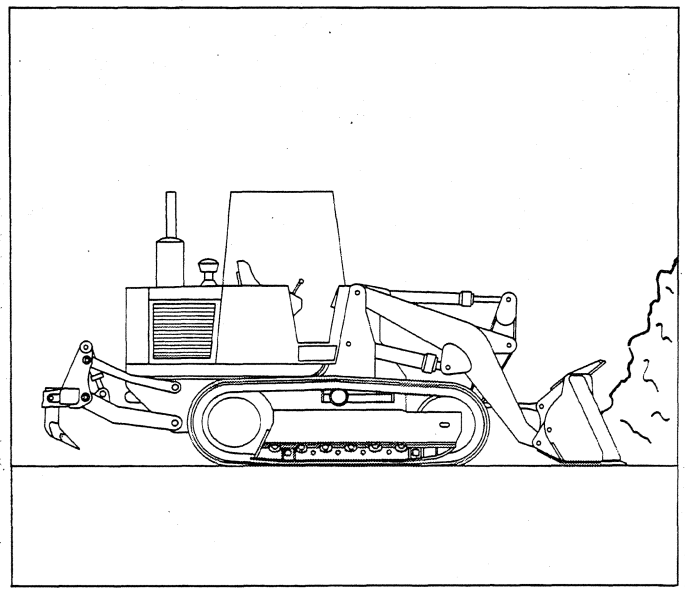

Fig. 22

1.5. LOADER OPERATING HINTS

Stockpiling (fig. 22).
Position bucket parallel to terrain, almost at ground level. Do not take a run-up but crowd the bucket into the stockpile availing of tractive power and hydraulic circuit thrust.
Operate bucket control for easier crowding. Close the bucket only when it is fully filled.

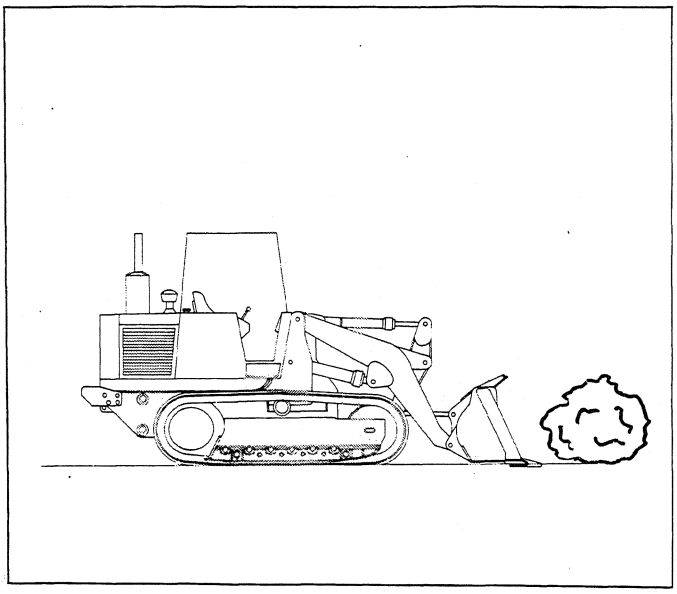

Fig. 23

Loading boulders.
To load boulders we recommend use of a bucket with teeth. In case of loading of big boulders it is advisable to first dump a bucket full of crushed rock into the hauling unit.
For any type of hard material we recommend the use of a bucket with teeth (fig. 23).

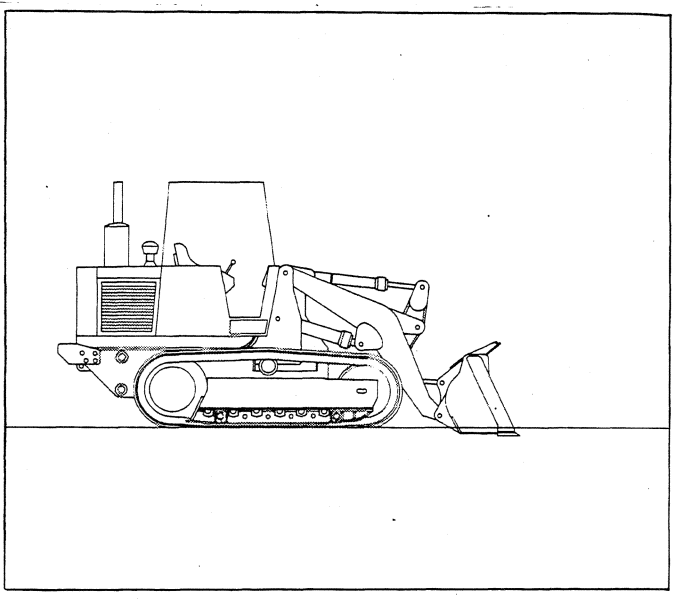

Fig. 24

Site stripping.
Slightly tilt bucket forward when starting the job (fig. 24). As soon as the bucket has crowded into the terrain return it to a position parallel to ground level (fig. 24A). Rack the bucket back only when fully filled.

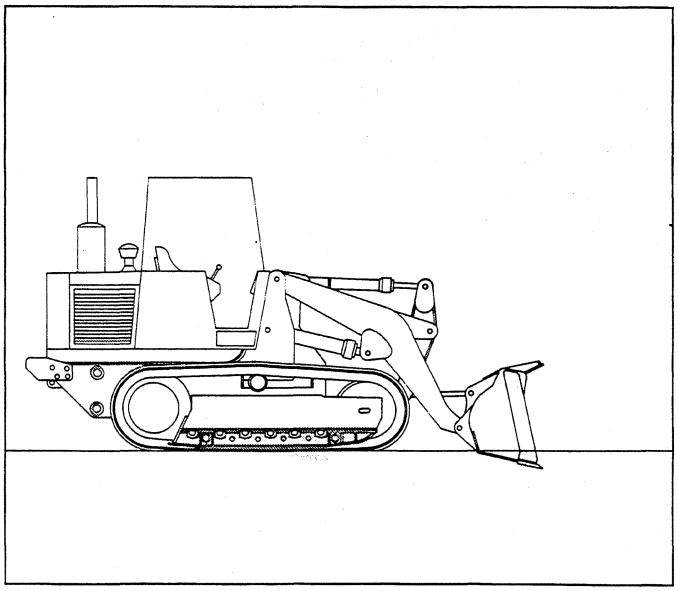

Fig. 24A

Dumping at max height.
When dumping material at max height (for instance dumping into lorries) we recommend to carry out quick opening and closing movements of the bucket without abrupt limit stops that might cause damage to the hydraulic cylinders (fig. 25).

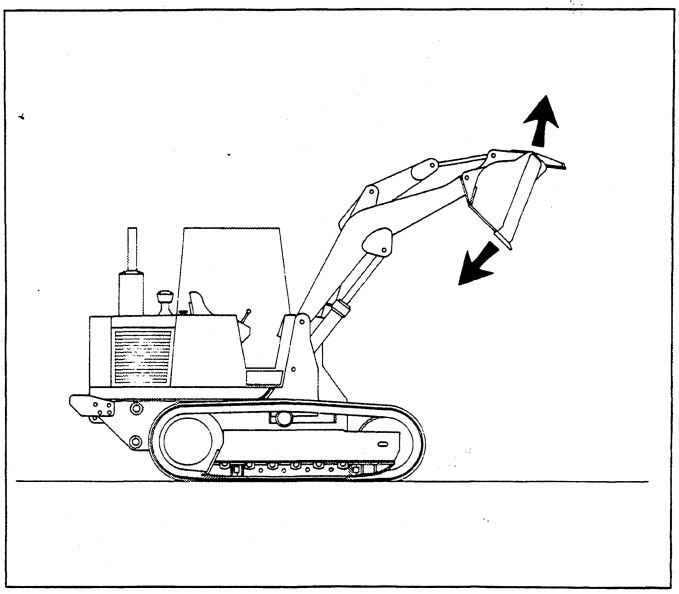

Fig. 25

Down times.
Use down times to clean and level working area (fig. 26).

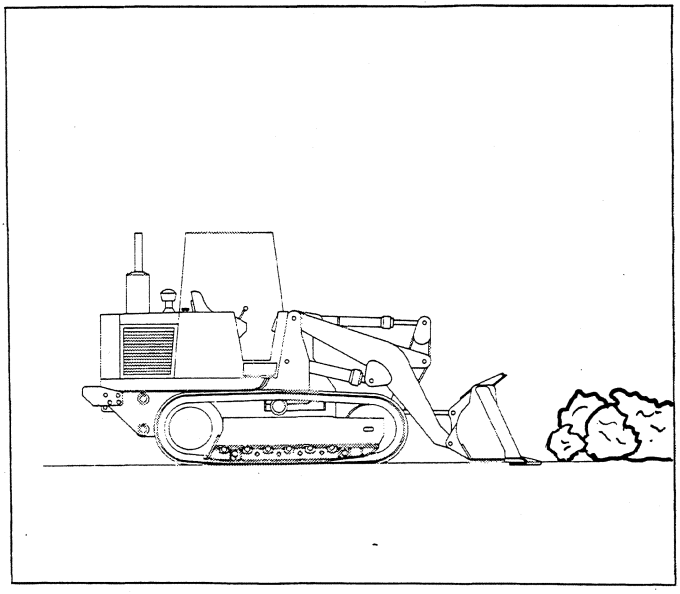

Fig. 26

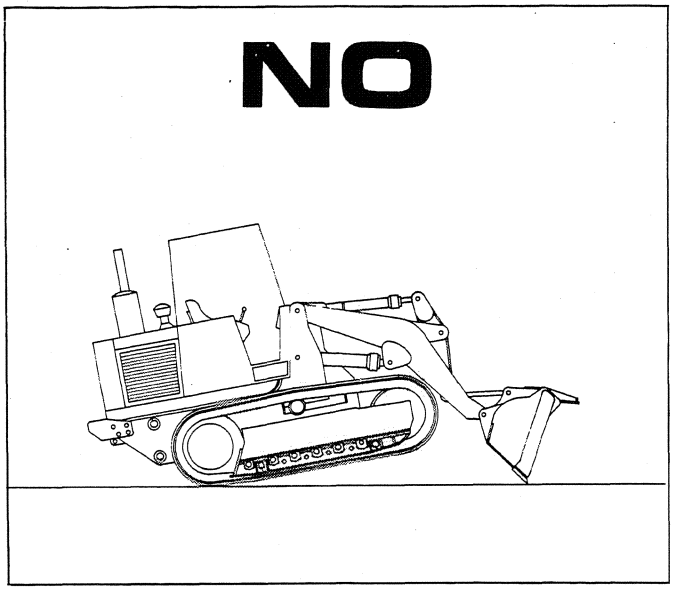

Fig. 27

Do not lift the machine using the bucket.
It is absolutely forbidden to lift the machine with the bucket and to get under it to carry out maintenance or repairs (fig. 27).

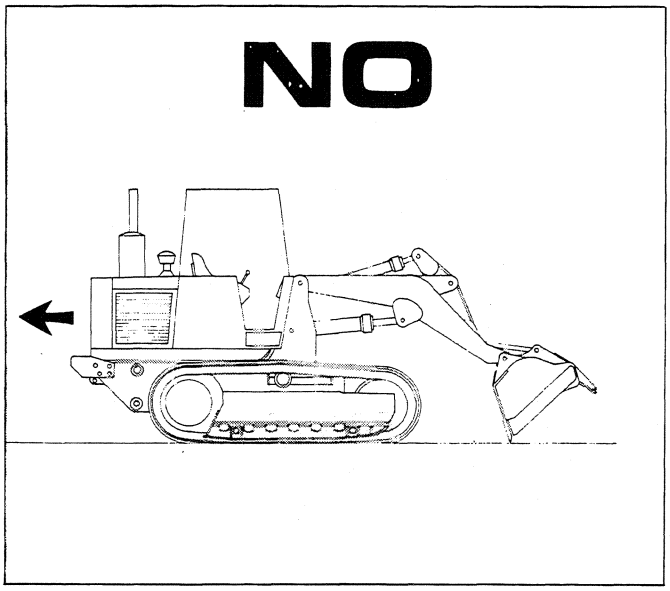

Fig. 28

Backfilling.
When backfilling the back of the bucket must be parallel to ground level.
Avoid backfilling with bucket tilted forward and driving in reverse gear (fig. 28).

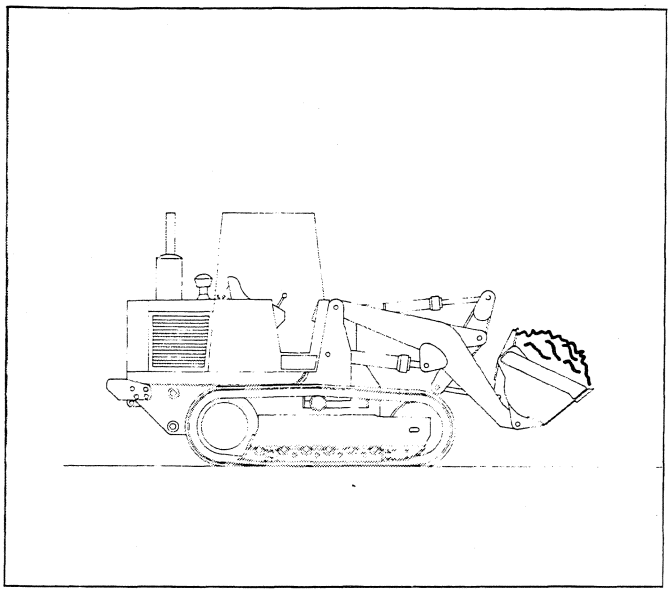

Fig. 29

Keep bucket low.
When moving with a load in the bucket always keep the bucket low for best stability and visibility (fig. 29).

Travelling down a slope with bucket loaded.
When negociating a descent with full bucket it is recommended to proceed in reverse gear.

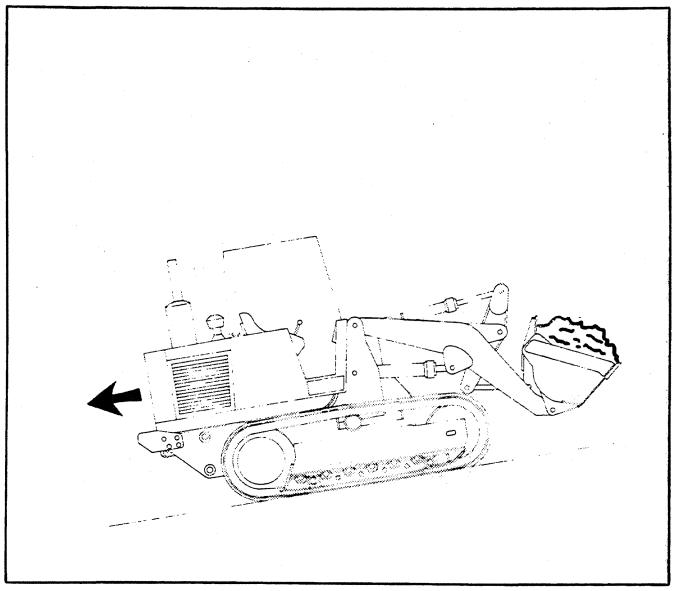

Fig. 30

Do not keep the bucket tilted forward.
When starting to crowd into the stockpile do not keep the bucket tilted forward (fig. 31).

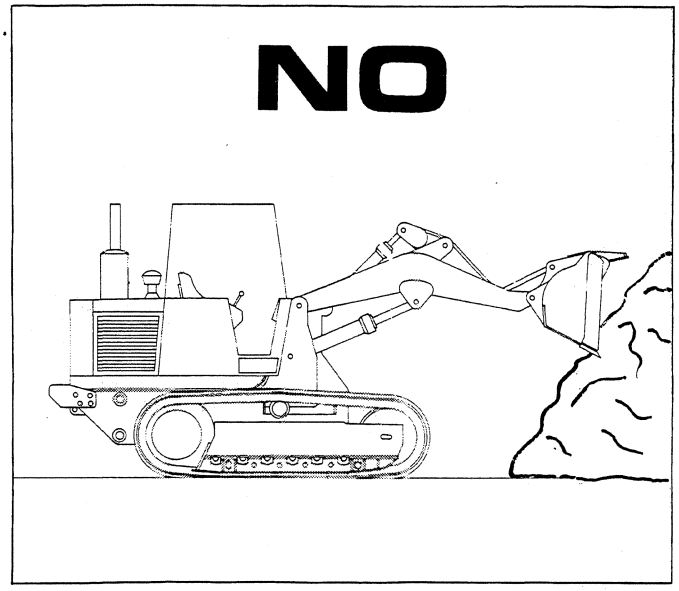

Fig. 31

Cutting the face.
When cutting the face of the bank proceed with only half a bucket at a time (fig. 32).

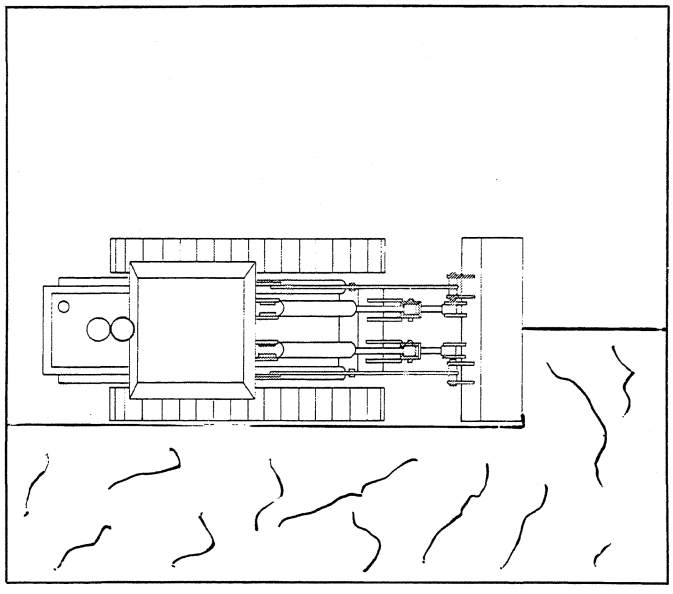

Fig. 32

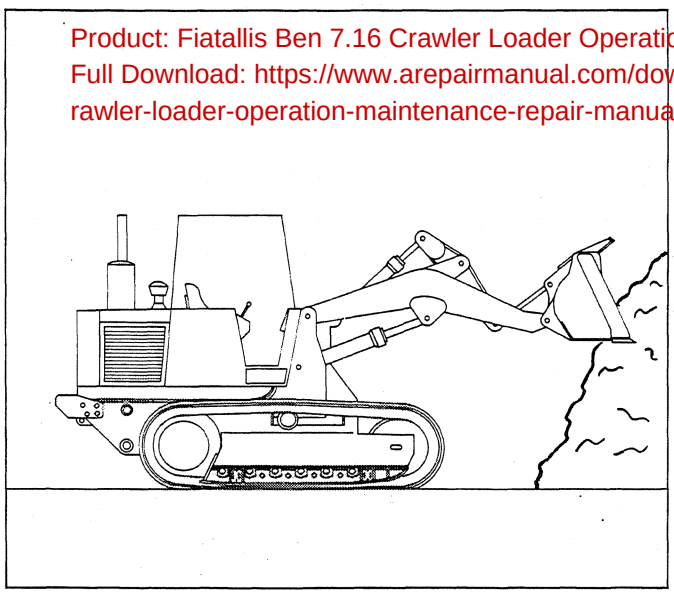

Fig. 33

Stockpiling hard material.
When stockpiling hard material start from the upper part of the heap (fig. 33).

1.5.1. Loader operation

For a correct use of the loader always strictly observe following norms:
1) Start working only after having ensured that all machine components perform well.
2) Select gear, direction and engine RPM according to actual job conditions.
3) Release parking brake.
4) Shift speed control lever forward or backward (according to direction wanted) bearing in mind that a longer stroke of the lever corresponds to higher drive speed, engine RPM remaining constant. Therefore higher or lower drive speed depends both on the speed lever and on the accelerator lever.

1.5.2. Stopping the loader

To stop the loader do following:
Decrease engine RPM shifting the accelerator lever (Pos. 2C fig. 5), brake through central brake pedal (Pos. 3 fig. 6) and bring speed control lever (Pos. 1 fig. 5) into idling position.

1.5.3. Steering

Depressing the righthand pedal the loader will steer to the right; when depressing the lefthand pedal the loader will steer to the left.

Important:
When depressing one of these pedals completely the movement of the corresponding trackchain will be reversed and therefore the machine will turn on its own axis i.e.: fully depressing R.H. pedal the machine will turn on its own axis to the right whilst fully depressing L.H. pedal the machine will turn on its own axis to the left.
When fully depressing both pedals the machine will come to a stop.