OPERATOR'S MANUAL

SV208

SV210

SV212

SV216

SV223

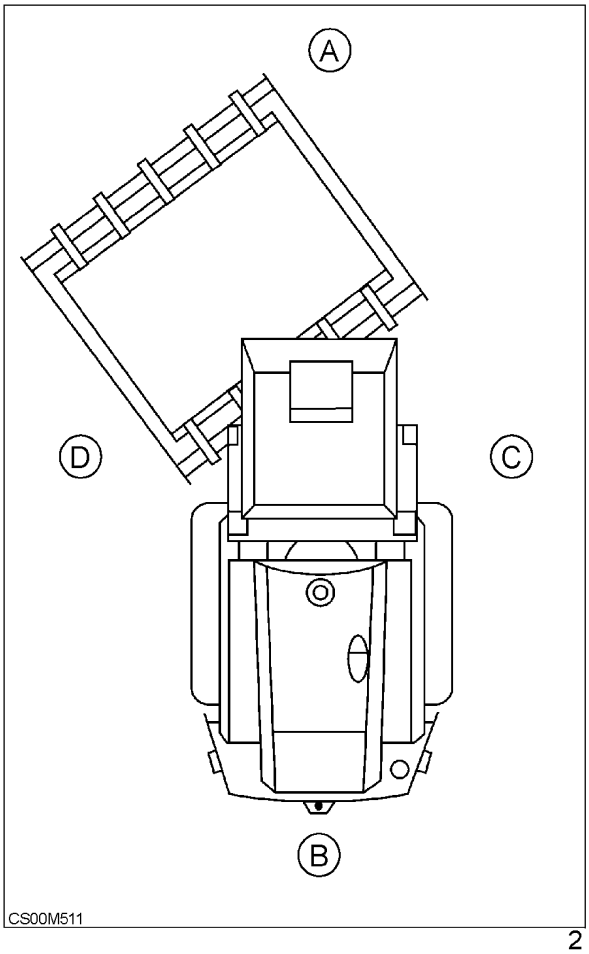
SV228

CASE

RIGHT, LEFT, FRONT AND REAR OF THE MACHINE

As used in this manual, the terms "right", "left", "front" and "rear" indicate the sides of the machine as seen from the operator's seat.

A. FRONT
B. REAR
C. RIGHT-HAND SIDE
D. LEFT-HAND SIDE



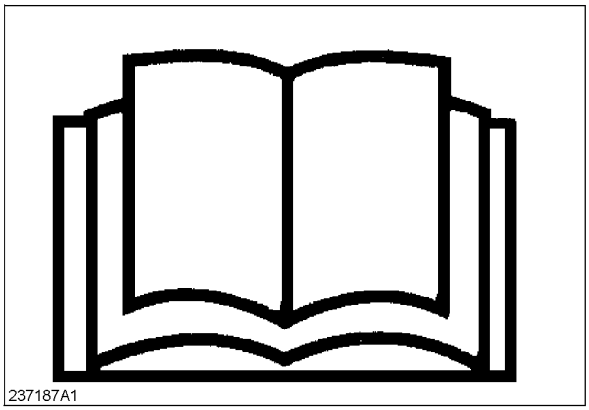
2

ROPS PROTECTIVE STRUCTURE

1. Never try to weld or to straighten a ROPS protective structure.
2. Do not modify the ROPS protective structure in any manner, since any modification, such as welding, drilling, cutting, addition of accessories or any damage undergone due to an impact or the machine turning over reduces the protection provided by the structure.
3. Replace the ROPS protective structure if it has been subject to an impact or if the machine has turned over. Never try to repair it.
4. If you use the machine without a ROPS protective structure and if the machine turns over, you are exposing yourself to serious or fatal bodily injury. Only remove the ROPS protective structure for maintenance operations or when replacing it. Never use the machine until the ROPS protective structure has been installed.

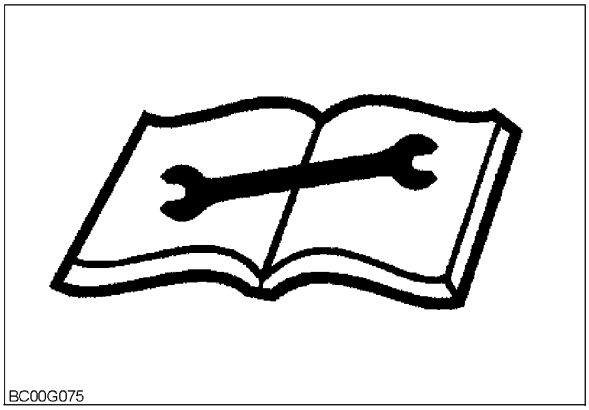
READ OPERATORS MANUAL

Decals which diplay the "Read Operators Manual" symbol are intended to direct the operator to the Operators Manual for further information regarding safety, maintenance, adjustments and/or procedures for specific areas of machine. When a decal displays the following symbol refer to the Operators Manual.



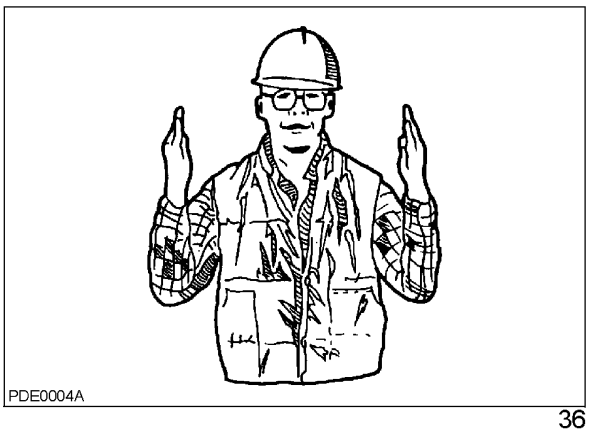
9

When a decal displays the symbol shown below, refer to the appropriate page of the Service Manual.



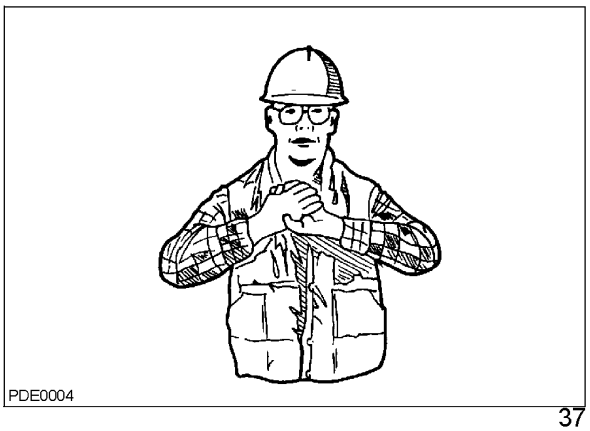
10

GO THIS FAR



36

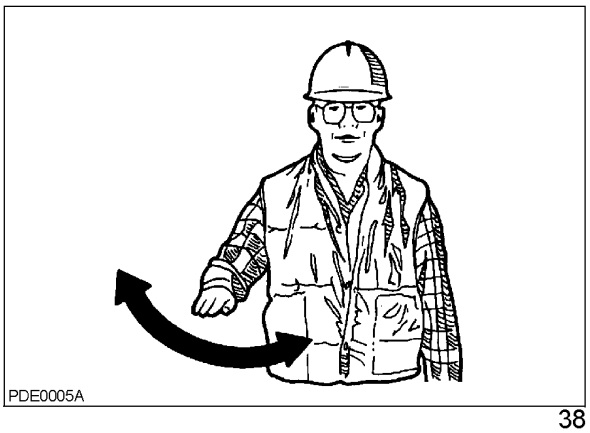
ALL STOP AND HOLD



37

STOP

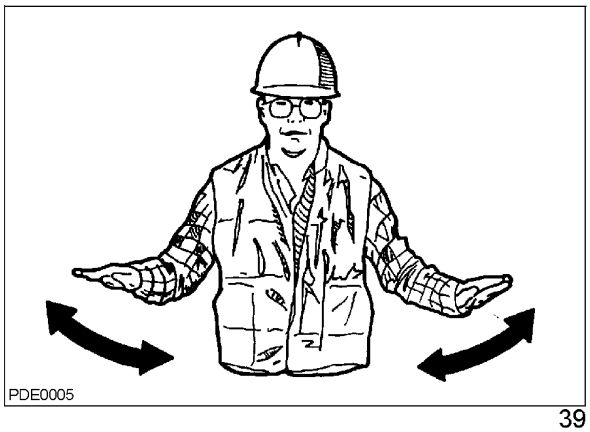
Wave hands back and forth.



38

EMERGENCY STOP

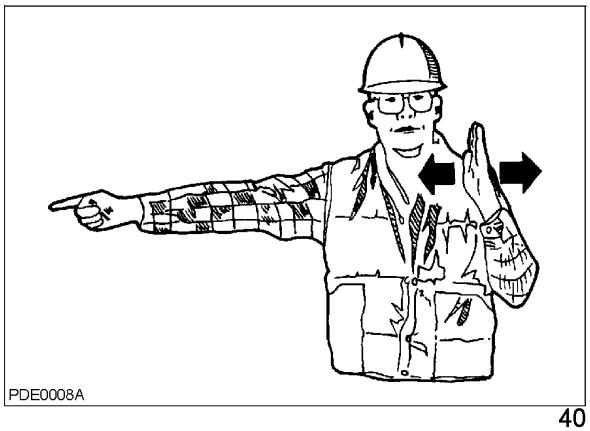
Wave hands back and forth.



39

TURN THE MACHINE TO THE LEFT

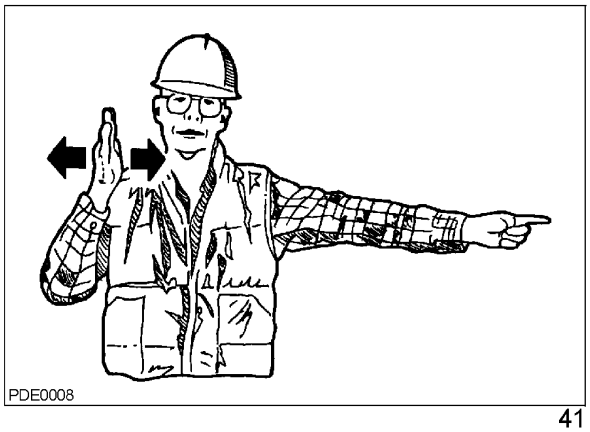
To stop movement, stop moving hand and clench fist.



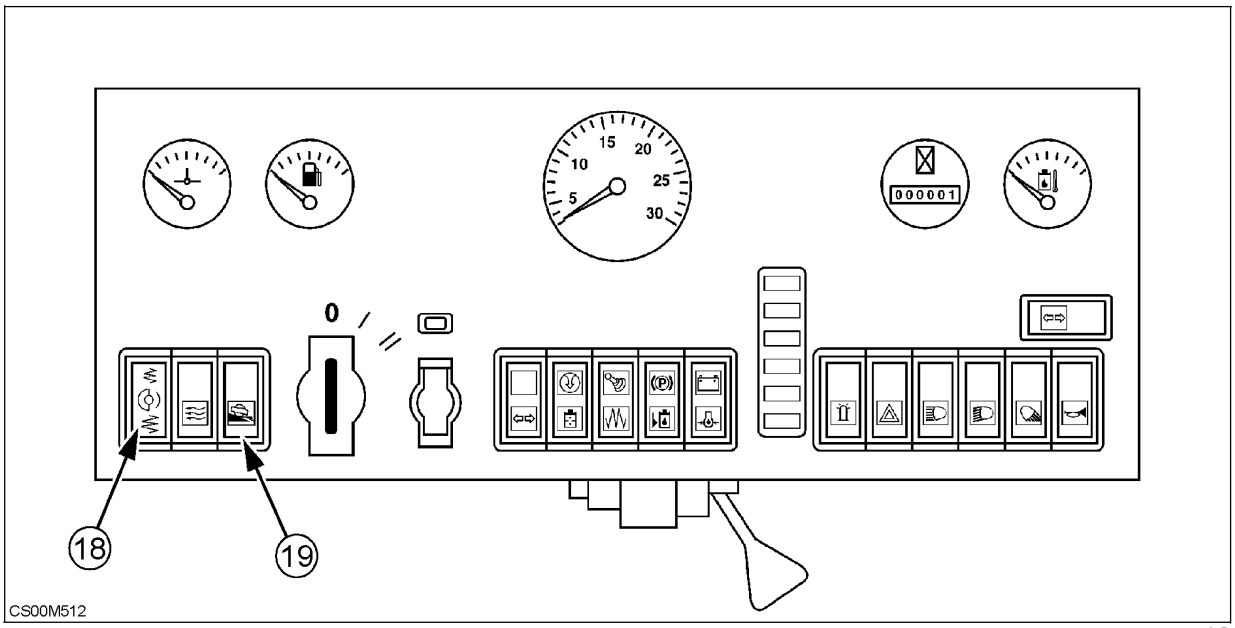
40

TURN MACHINE RIGHT

To stop movement, stop moving hand and clench fist.



41



10

18. DRUM VIBRATION SELECTOR CONTROL

This two-position control is used to select two types of drum vibration. When the switch is pushed forwards, low amplitude vibration with high percussion frequency is obtained. When the switch is pressed backwards high amplitude vibration with low percussion frequency is obtained. The vibration system is switched on by means of the push-button (35), see "Right-hand arm control functions".

19. DRUM ANTI-SLIP CONTROL

OR

19. DRUM AND WHEEL ANTI-SLIP CONTROL (ASC) (optional) (except **SV208**/**SV210**)

This two-position control is used to select the drum anti-slip function or the drum and wheel anti-slip function (optional). When the switch is pushed forwards, the drum anti-slip function or the drum and wheel anti-slip function (optional) is inoperative. When the switch is pushed backwards, the drum anti-slip function or the drum and wheel anti-slip function (optional) is obtained and the switch lights up.

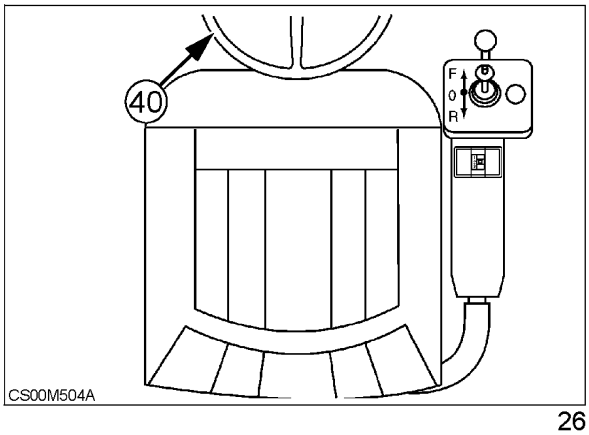
IMPORTANT: *This control should only be used when the machine is being loaded onto a trailer or the machine is driving on rough ground. See "Transporting the machine" and "Driving the machine on rough ground" in the "Operating Instructions" Section. Before engaging the anti-slip function, make sure the travel speed switch (36) is in low speed position and never use the drum vibration control (35) to engage drum vibration. See "Right-hand arm control functions".*

ACCESSORY FUNCTIONS

STEERING WHEEL

The steering wheel (40) is used to steer the machine either to left or right, using the central articulation. Avoid using the steering wheel when the machine is stationary, since there is a risk of damaging the tires and the roller.

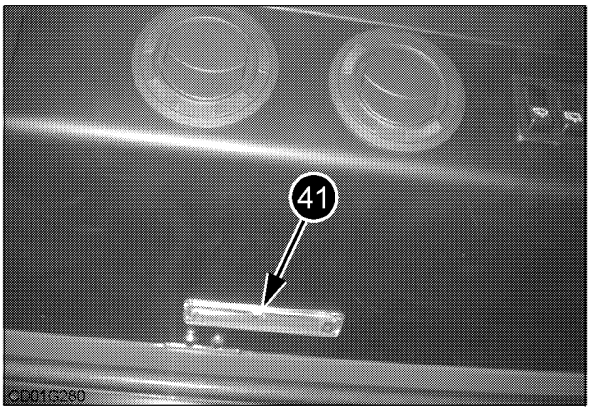
IMPORTANT: *Before moving the machine make sure that the central articulation is not locked.*



26

OPERATOR'S COMPARTMENT LIGHTING (CAB VERSION)

Located at the upper front right-hand side of the operator's compartment, the lighting (41) is controlled by a switch incorporated in the lamp base.

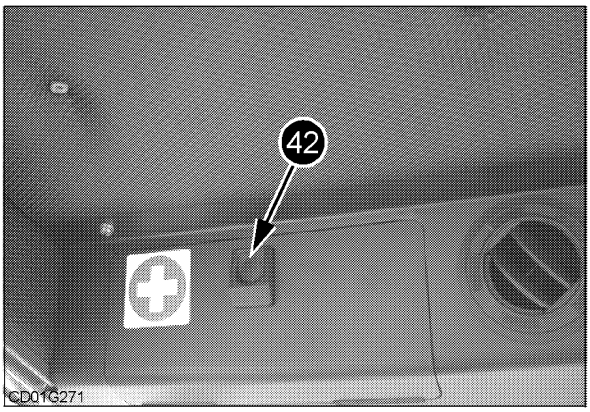


27

STORAGE COMPARTMENT

Located at the upper front left-hand side of the operator's compartment, this storage compartment (42) is used for the first-aid kit and is to be used among other things for storing the technical documentation and the conformity declarations of the machine.

IMPORTANT: *Make sure the first-aid kit is always complete and regularly check the expiry date.*



28

SECTION 3

OPERATING INSTRUCTIONS

BEFORE OPERATING THE MACHINE

⚠ WARNING ⚠

Do not operate this machine until you have first read and understood the instructions and warnings shown in this manual.
Observe the operating instructions shown in this chapter, since any other use without the prior agreement of the manufacturer is considered to be forbidden.

Before operating the machine, observe the following instructions:

1. Check the levels (engine oil, hydraulic fluid and cooling system) and make sure that the various fluids correspond to the conditions of use. See "Fluids and lubricants" in the "Servicing Intervals/ Lubrication/Fluids" Section.
2. Perform the daily maintenance operations. See the "Servicing Intervals/Lubrication/Fluids" Section.
3. Check all round the machine, identify any leaks and inspect the hoses. Tighten or replace where necessary. See the "Maintenance/Adjustments" Section.
4. Before performing any work in the hours of darkness, check that the lighting and signalling systems are operating correctly.
5. Check the correct operation of the windshield wipers.
6. Check the condition and pressure of the tires. See "Tires and wheels" in the "Maintenance/ Adjustments" Section.
7. Clean the steps and access handles. The presence of grease, oil, mud or ice can cause accidents. Make sure they are always clean.
8. Clean or change safety decals which are no longer legible. See "Decals" in the "To the owner/ Safety" Section.
9. Make sure the engine hood is closed correctly.
10. Make sure the cab doors and the side compartment are closed correctly.
11. Remove anything which can obstruct visibility. Clean the window glasses and rear view mirrors.
12. Make sure that no objects or tools are on the machine or in the operator's compartment.
13. Be aware of the possibilities for evacuating the machine (emergency exit via the left-hand door) in the event that access via the right-hand door is impossible.
14. Make sure that the left-hand door is not locked.
15. Make sure that no-one is under or on the machine. The operator must be alone on the machine.
16. Be aware of work-site safety measures.
17. Holes, obstacles, debris and other dangers on the work site can cause serious bodily injury. Inspect and identify all possible risks before driving the machine into a new working area.
18. Before starting the engine, warn of your presence by sounding the horn.
19. Never start the engine in any other manner than that shown in this manual.

OPERATING THE MACHINE

⚠ WARNING ⚠

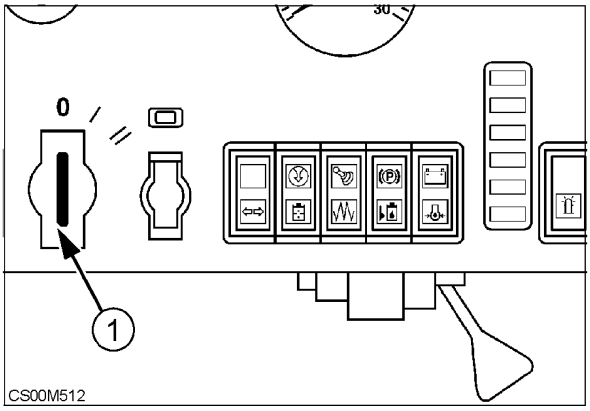
Check the correct operation of all the controls and all the safety devices in a safe, unobstructed area before starting work.

When operating the machine observe the following instructions:

1. Start the engine, taking into account the weather conditions. See "Starting the engine".
2. Regularly consult the hourmeter to observe the servicing intervals. See the "Servicing Intervals/ Lubrication/Fluids" Section.
3. If the machine is used under particularly severe conditions (dusty or corrosive environment, etc.) reduce the length of the servicing intervals.
4. If this machine is new or if the engine has been reconditioned, see "Run in period".

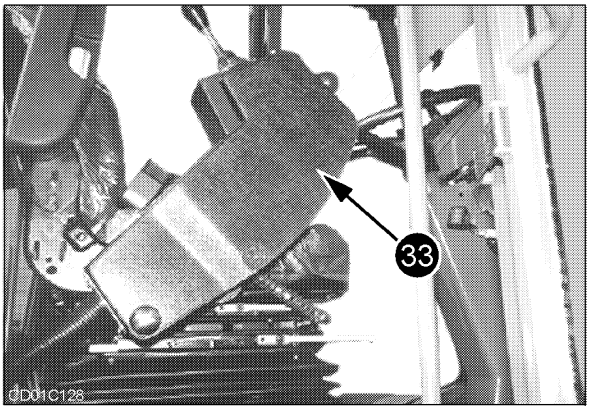
PARKING THE MACHINE

1. Place the machine on flat, level ground, away from any soft area, excavation or poorly shored cavity.
2. Place the drum in line with the machine.
3. Raise the dozer blade and locked it mechanically (if equipped) (except **SV208/SV210**).
4. Switch off all the accessories (windshield wipers, heater, etc.) which were operating.
5. Shut down the engine, see "Shutting down the engine" and remove the starter switch key (1).



22

6. It is mandatory to raise the right-hand arm (33).

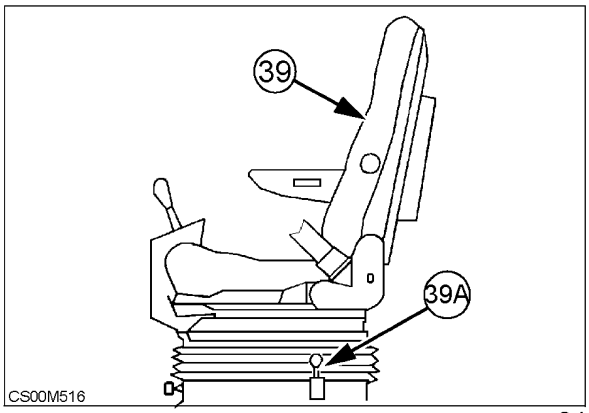


23

7. Operate the lever (39A) to unlock the operator seat pivot (39) and pivot the seat to the right until it engages. Leave the operator's compartment.

⚠ WARNING ⚠

Never jump down from the machine. To get down from the operator's compartment, always face the machine and use the steps and access handles.



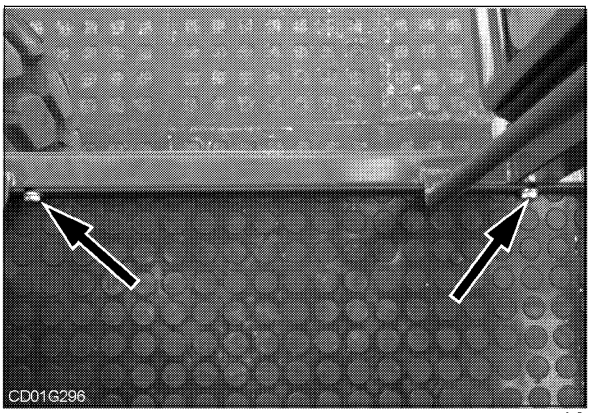
24

CAB REMOVAL AND INSTALLATION

IMPORTANT: *Use lifting equipment which is capable of supporting the weight of the cab.*

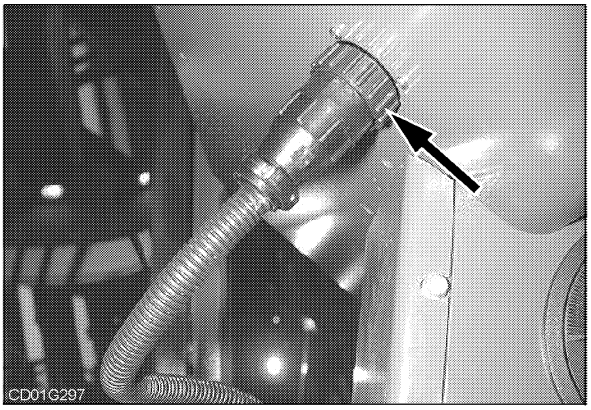
REMOVAL

1. Remove the cab mounting hardware.



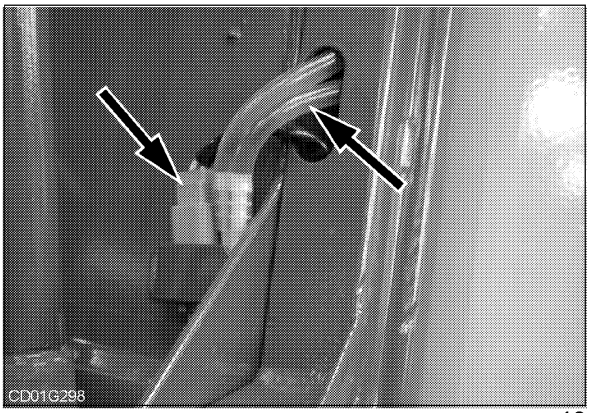
46

2. Disconnect the electrical connector between the steering column and the front windscreen.



47

3. Disconnect the windshield washer electrical installation and hose.
4. Make sure nobody is standing near the cab or in the operating area.
5. Use the lifting points on top of the cab to raise it and lower it to the ground.



48

INSTALLATION

1. Use the lifting equipment to lower the cab onto the machine.
2. Reconnect all items previously disconnected.
3. Install and tighten all the cab mounting hardware.

TOWING THE MACHINE

In the event of a failure, the machine can be towed for a short distance, but first make sure it can be towed without causing further damage. Where possible, carry out any necessary repairs on the spot or consult your Dealer.

⚠ WARNING ⚠

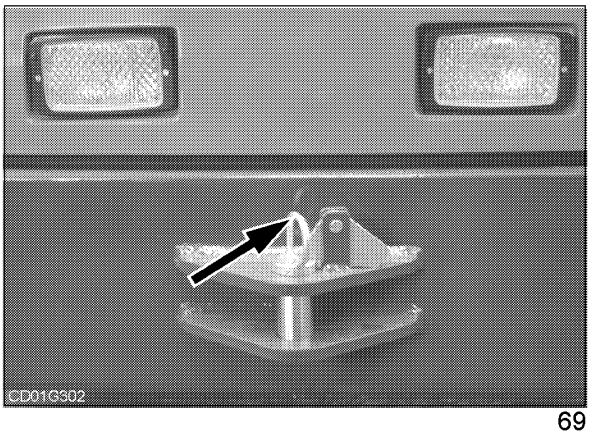
Towing is a delicate maneuver which is always carried out at the risk of the user. Where possible, carry out the repairs at the site. The machine must be towed very slowly, over a short distance and only if it is really unavoidable. The operator must be the only person on the machine when towing. Make sure that nobody else is on the machine or within its working range.

TOWING POINTS

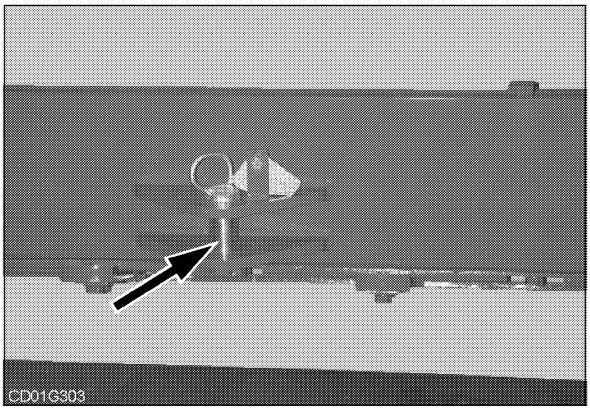
The machine has two towing points, one at the rear, on the fuel tank and the other in front, on the drum chassis. The rear towing point has a pin held in position by a safety clip. This pin can also be used for the front towing point.

To prevent the machine from skidding during the towing operation, all brakes must be released.

IMPORTANT: *The machine towing points must not be used for hauling trailers, tank, etc.*



69



70

OPERATING THE MACHINE IN SPECIAL CONDITIONS

TRAVEL OVER HARD OR COMPACTED GROUND

When the machine is traveling over compacted ground or small rocks with the drum vibrating, there may occur a momentary loss of contact with the ground due to the phenomenon known as "vibro impact".

This phenomenon causes vibrations in the machine chassis and in the operator's compartment. To help overcome this problem, either increase your travel speed or modify the level of vibration by selecting a lower frequency.

Increasing vibration in the operator's cab can also be encountered when traveling over ground which is becoming more and more compact as the machine advances.

⚠ WARNING ⚠

When working in conditions where personnel are exposed to excessive vibrations, it is the foreman's responsibility to modify the working process to avoid all corporal risks for the operator.

OPERATING THE MACHINE AT LOW TEMPERATURES

In winter, good compaction results will depend on the amount of water and fine particles of matter in the ground. The lower the temperature, the more difficult it will be to obtain satisfactory results.

When temperatures are below 0°C (32°F), it is possible, where necessary, to work with the machine, on condition that the ground is not frozen through. Never try to compact materials which are frozen solid.

PREPARING THE MACHINE FOR USE AT LOW TEMPERATURES

1. Check the density of the coolant.
2. Use engine oil which is suitable for use in the prevailing temperature range.
3. Use hydraulic oil of the correct viscosity.
4. Replace the drum oil by an oil which is suitable for use in the prevailing temperature range.
5. Check the battery charge level.

For the engine to start correctly at low temperatures, the batteries must be properly charged. To gain 4°C (39.2°F) or 5°C (41°F) on the starting temperature limit, warm the batteries beforehand by leaving them in a room where the temperature is 20°C (68°F).

The minimum temperature for the engine coolant is 60°C (140°F).

Do not operate the machine until the engine has reached normal working temperature. Cover the radiator partially if necessary.

OPERATING THE MACHINE AT HIGH ALTITUDES

The engine will also suffer power losses at high altitudes, this being due to the drop in the atmospheric pressure and the specific gravity of the air.

Altitude	Power loss
500 m (1640 ft)	3%
1000 m (3281 ft)	6%
1500 m (4921 ft)	10%
2000 m (6562 ft)	15%
2500 m (8202 ft)	21%
3000 m (9843 ft)	28%

At altitudes above 1500 m (4921 ft), if the engine emits black smoke, contact your Dealer.

OPERATING THE MACHINE IN VERY DUSTY CONDITIONS

Shorten the service intervals for the air filter, the oil cooler, the hydraulic circuit and the operator's compartment anti-dust filter. See the "Servicing Intervals/ Lubrication/Fluids" Section.

OPERATING THE MACHINE IN CLOSE PROXIMITY OF BUILDING, UNDERGROUND CONDUITS AND CABLES

It is mandatory to assess the effect of vibrations produced by the machine before using it to determine whether any damage will be caused.

HYDRAULIC FLUID

Use high quality hydraulic fluid which is suitable for use at high pressures.
Type of fluid:
Hytran Ultra oil

TRANSMISSION OIL

Use extreme pressure type oil of the API GL5 category.

SAE 80W/90: (-10°C to +30°C) (14°F to +86°F)

GREASE

Use extreme pressure grease of the CASE molydisulfide category.

FUEL

Use fuel which is to ASTM (American Society for Testing and Materials) D975 standard.

Use grade No. 2 fuel. The use of other types of fuel can result in a loss of power and may cause high fuel consumption.

When the temperature is very cold, the use of a mixture of No. 1 and No. 2 fuel is permitted. See your fuel vendor for winter fuel requirements in your area.

If the temperature falls below the fuel cloud point (point at which wax begins to form) the wax crystals will cause power loss or will prevent the engine from starting.

IMPORTANT: *In cold weather, fill the fuel tank at the end of the day's work, in order to prevent the formation of condensation.*

Long storage can lead to the accumulation of impurities and condensation in the fuel. Engine trouble can often be traced to the presence of water in the fuel.

The storage tank must be placed outside and the temperature of the fuel should be kept as low as possible. Drain off water and impurities regularly.

ANTI-FREEZE/ANTI-CORROSION

Use anti-freeze in all seasons to protect the cooling system from corrosion and all risk of freezing.

For areas where ambient temperature is over -36°C (-32.8°F), use a blend of 50% ethylene-glycol based anti-freeze.

For areas where the temperature is below -36°C (-32.8°F), it is advisable to use a blend of 40% water and 60% anti-freeze.

ENGINE

SERVICE SPECIFICATIONS

Engine oil level check ..... Every 10 hours or daily
Oil change ..... Every 250 hours or every 6 months
Oil filter replacement ..... Every 250 hours or every 3 months
Type of oil ..... See "Lubricants and fluids"
Oil capacity (**SV208**, **SV210**) ..... 11.2 litres (2.95 gal US)
Oil capacity (**SV212**, **SV216**) ..... 16.3 litres (4.3 gal US)
Oil capacity (**SV223**, **SV228**) ..... 14.3 litres (3.78 gal US)

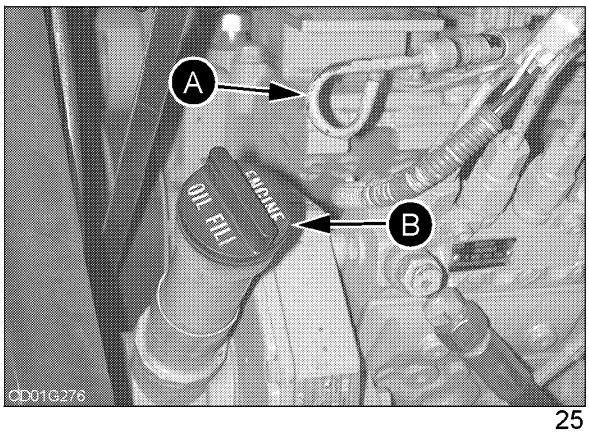
LEVEL

1. Park the machine on flat, level ground, stop the engine and remove the starter switch key.
2. When the engine has been stopped for five minutes, remove the dipstick (A), wipe it with a clean cloth and replace it in the guide tube as far as it will go. Then take it out again.
3. If the oil level is below the mark (L) (minimum), remove the oil filler cap (B), add oil up to the mark (H) (maximum) on the dipstick (A) and then replace the oil filler cap (B).

NOTE: *The level should not be higher than the mark (H) (maximum) on the dipstick (A).*

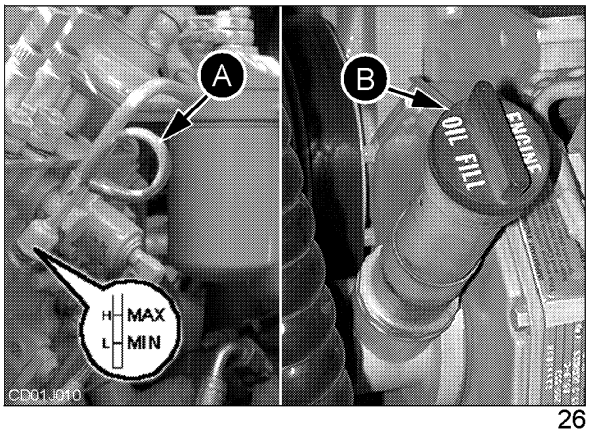
4. Wait for approximately one minute before using the dipstick (A) to check the level again.

SV208, SV210



25

SV212, SV216, SV223, SV228

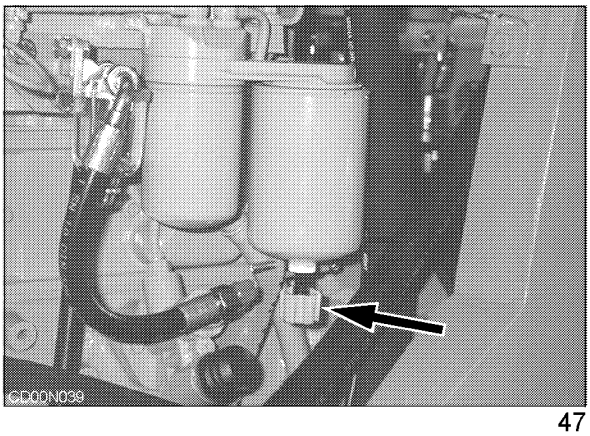


26

BLEEDING THE SEDIMENT FILTER

If dirt or water has got into the fuel system then it will be necessary to bleed the sediment filter.

Place a receptacle of a suitable capacity under the filter, loosen the valve under the filter approximately four turns and allow the soiled fuel to drain. Tighten the valve as soon as clean fuel is seen.

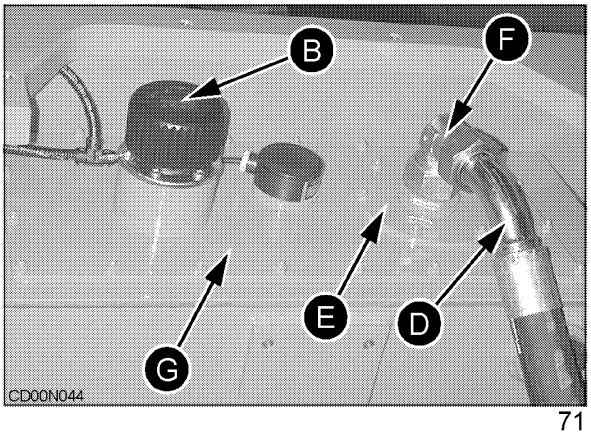


47

5. Remove the suction hose (D), the cover (E) with the suction pipe (F) and the strainer.
6. Check the condition of the reservoir. Clean the reservoir and rinse it with clean hydraulic fluid if foreign matter is found inside. For better accessibility, the cover (G) and filler cap (B) may be removed.
7. Clean the strainer with diesel fuel and dry it with compressed air. Replace the strainer if it is damaged.

IMPORTANT: *Be sure to protect your face before using compressed air.*

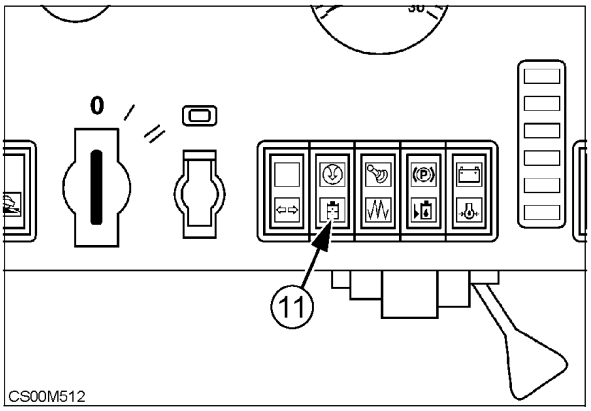
8. Replace the sealing and install the cover (G) and filler cap (B) if they have been removed.
9. Install the strainer and the cover (E) with the suction pipe (F) and the suction hose (D). Check the condition of the seals and clean or replace them, if necessary.
10. Replace the hydraulic filter. See "Hydraulic filter replacement".



71

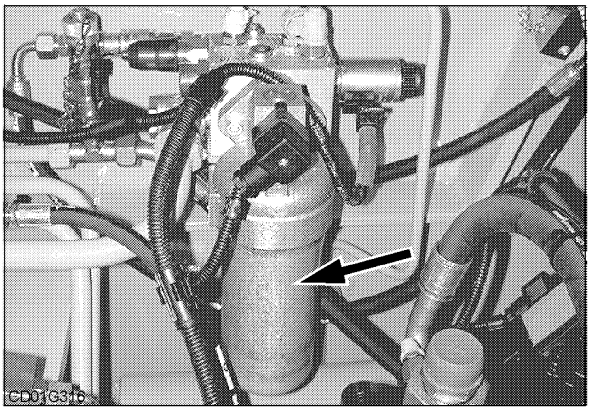
HYDRAULIC FILTER CARTRIDGE REPLACEMENT

Irrespective of the normal, 2000 hours replacement interval for the hydraulic filter, it is also necessary to replace it if the hydraulic fluid is changed, or any of the hydraulic components (cylinders, pump etc.) are replaced ... In addition replace the hydraulic filter, if the warning lamp (11) on the front console comes on.



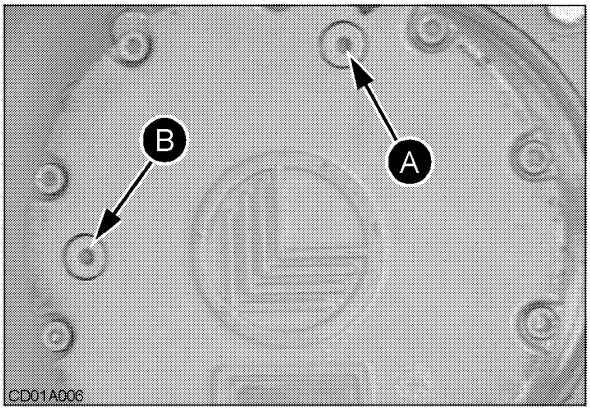
72

1. Change the filter cartridge on the filtration block.



73

6. When draining is completed, start the engine and move the machine so the plug (A) is in the upper position.
7. Shut down the engine and remove the starter switch key.
8. Fill with suitable oil via the orifice (A) until the oil comes up to the edge of the orifice (B).
9. Replace the plug seals.
10. Install the plugs (A) and (B).
11. Repeat steps 2 to 10 for the other reduction gear.



94

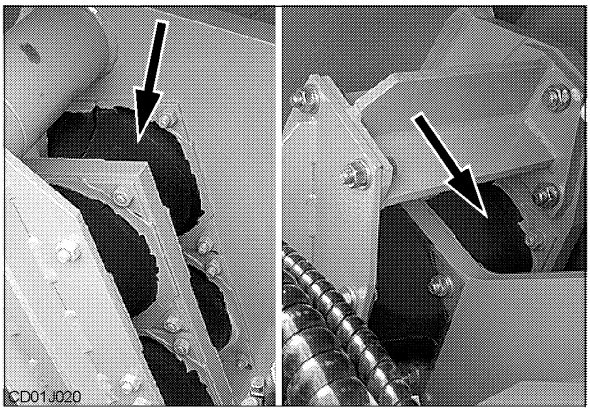
SHOCK ABSORBERS/MOUNTING BLOCKS

SERVICE SPECIFICATIONS

Check ..... Every 1000 hours or once a year

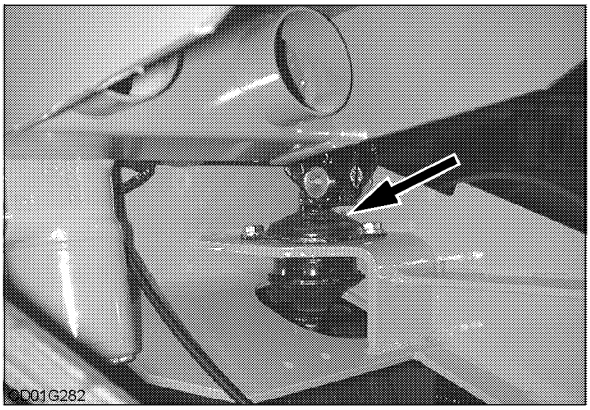
Check the condition of the various shock absorbers and mounting blocks shown below (rubber, metal components, hardware, etc.)

DRUM



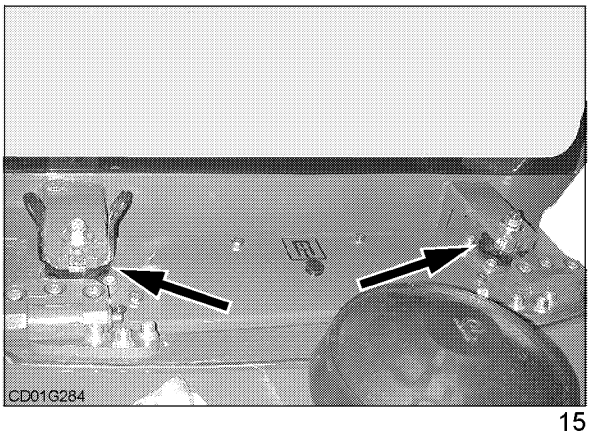
13

OPERATOR'S COMPARTMENT (front)



14

OPERATOR'S COMPARTMENT (rear)



15

DRUM VIBRATION FREQUENCY

SERVICE SPECIFICATIONS

Check ..... Every 2000 hours or every 2 years

CHECK

The drum vibration frequency should be checked while the machine is traveling and the drum is vibrating.

1. Connect a frequency measuring instrument to the shock absorber plate on the drum (to obtain this instrument, see your Dealer) and take the reading.
2. The frequency values should be:

   For **SV208/SV210** models:

   - with high amplitude: 30 Hz (1800 vpm)
   - with low amplitude: 40 Hz (2400 vpm)

   For **SV212** model:

   - with high amplitude: 32 Hz (1920 vpm)
   - with low amplitude: 35 Hz (2100 vpm)

   For **SV216** model:

   - with high amplitude: 29 Hz (1740 vpm)
   - with low amplitude: 35 Hz (2100 vpm)

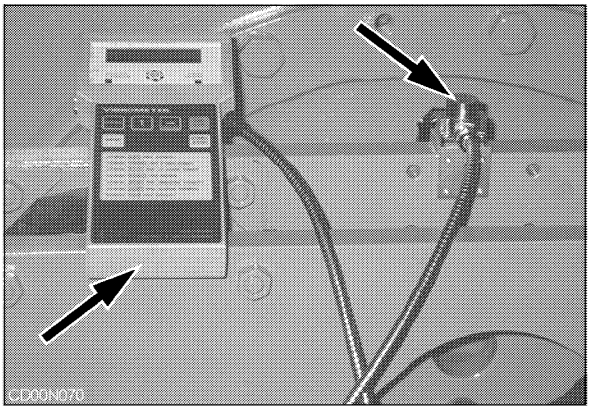
   For **SV223/SV228** models:

   - with high amplitude: 28 Hz (1680 vpm)
   - with low amplitude: 34 Hz (2040 vpm)

IMPORTANT: *Be careful not to invert the frequencies. Low frequency must correspond to high amplitude and vice-versa.*

3. If the values measured by the test instrument are not in conformance with those shown above, then adjustment should be made. Contact your Dealer.

IMPORTANT: *It is imperative to observe the values specified by the manufacturer.*



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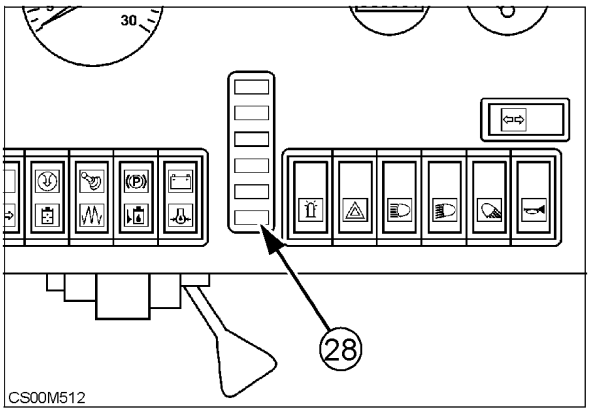
SECTION 6

ELECTRICAL SYSTEM

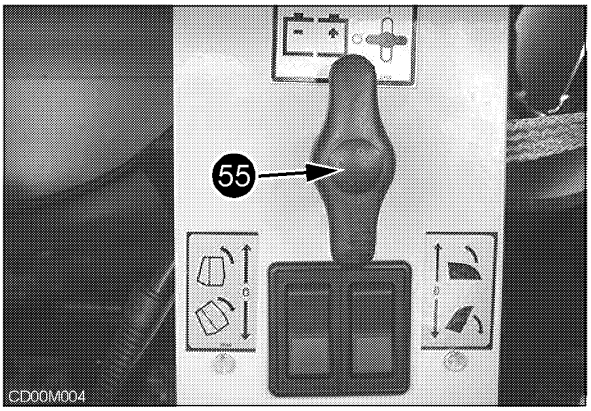
FUSES

The fuses are located in the compartment (28) in the front console.

IMPORTANT: *Before changing a fuse, place the battery master switch (55) in horizontal position (system switched off). Never replace a fuse with a fuse of different amperage.*



1



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F1 (Upper fuse) Front and rear work lamps, front parking lights and tail lights, auxiliary work lamps, instrument illumination, lifting the hood and operator's compartments, illumination of license plates ..... 20 A

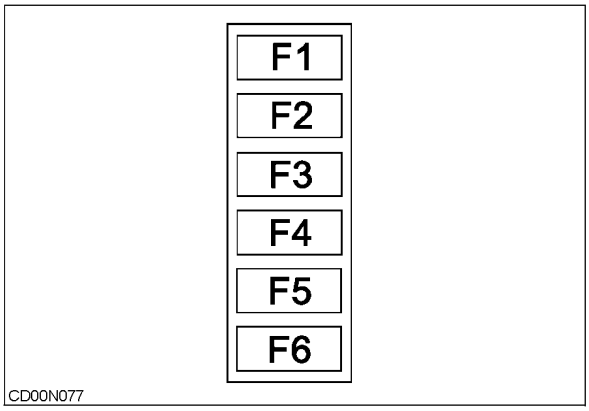
F2 Service power socket, cab illumination, warning horn, turn indicators and beacon, radio receiver ..... 10 A

F3 Brake, engine shut down, travel, vibration, brake lights, back up alarme, hydraulic oil level indicator, vibration switch indicator, brake indicator, travel lever neutral position indicator lamp ..... 7.5 A

F4 Engine coolant thermometer, hydraulic oil temperature gauge, fuel level, tachometer, hourmeter, warning lamps for engine oil pressure, air filter restriction, battery charge, hydraulic filter restriction and ASC differential lock (except **SV208**/**SV210**) ..... 10 A

F5 Ventilator and heater fan, front and rear wiper, front and rear windshield washer ..... 15 A

F6 Air conditioning (if equipped) ..... 20 A



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SV208 - SV210 SPECIFICATIONS (continued)

EQUIPMENT

Standard

Lockable vandal guard
Both drum and wheels are hydrostatically driven
Double mode vibration (**SV210**)
Interwheel differential lock
Articulated chassis
Halogen working lamps
(Smooth drum) Tires 14.9-24 tread R3 (T329 DIAMOND) (8 PR)
(Tamping drum) Tires 14.9-24 TT tread R1 (TD02) (8 PR)
Tire ballast liquid filling to -25°C (-13°F) (**SV210**)
Hand-pump hood and cabin tilting

Options

ROPS protection
Tamping foot kit (if not equipped)
Air-conditioning
Engine speed indicator
(Smooth drum) Tires 14.9-24 TT tread R1 (TD02) (8 PR) instead of standard ones
(Tamping drum) Tires 14.9-24 tread R3 (T329 DIAMOND) (8 PR) instead of standard ones
Tire ballast liquid filling to 0°C (32°F) (**SV208**)
Tire ballast liquid filling to -25°C (-13°F) (**SV208**)
Compaction indicator
Fan safety screen
Alternator safety screen
Turn indicators
Rotating beacon
Electrohydraulic cabin and hood tilting
Back up alarm
Differential lock interaxle ASC
Articulation joint lock oscillation

VIBRATION LEVELS

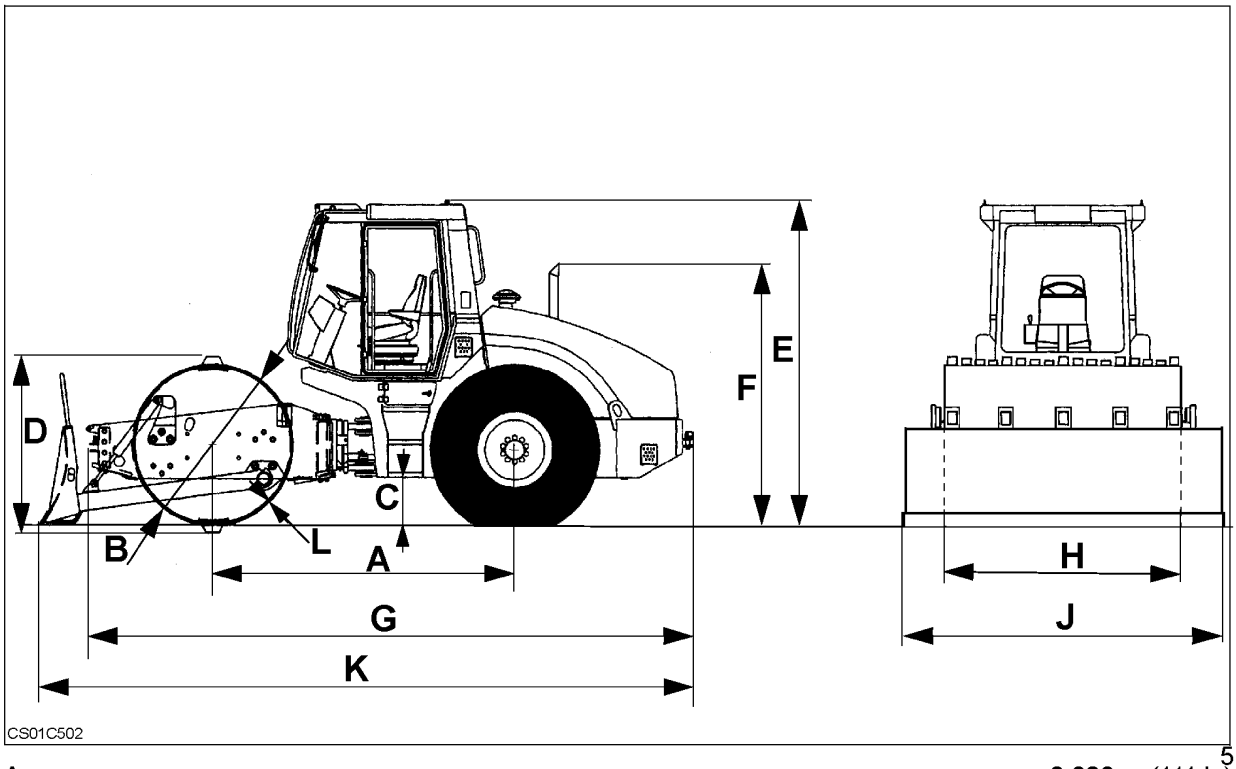
Vibration borne by the human body

The mean effective value of vibration acceleration:

- Transferred to the hands (measured according to ISO 5349 on sand, using vibration): aw < 2.5 m/s^2 (vectorial sum).

- Transferred to the body (measured according to EN 1032 on sand, using vibration): aw < 0.5 m/s^2 (vectorial sum).

SV212 - SV216 OVERALL MACHINE DIMENSIONS (with tamping drum and dozer blade)



5

A ..... 2.820 m (111 in)
B ..... 1.440 m (56.7 in)
C ..... 0.420 m (16.5 in)
D ..... 1.640 m (64.6 in)
E ..... 3.030 m (119.3 in)
F ..... 2.500 m (98.4 in)
G ..... 5.686 m (223.9 in)
H ..... 2.200 m (86.6 in)
J ..... 2.950 m (116.1 in)
K ..... 6.094 m (239.9 in)
L (**SV212**) ..... 0.020 m (0.8 in)
L (**SV216**) ..... 0.028 m (1.1 in)