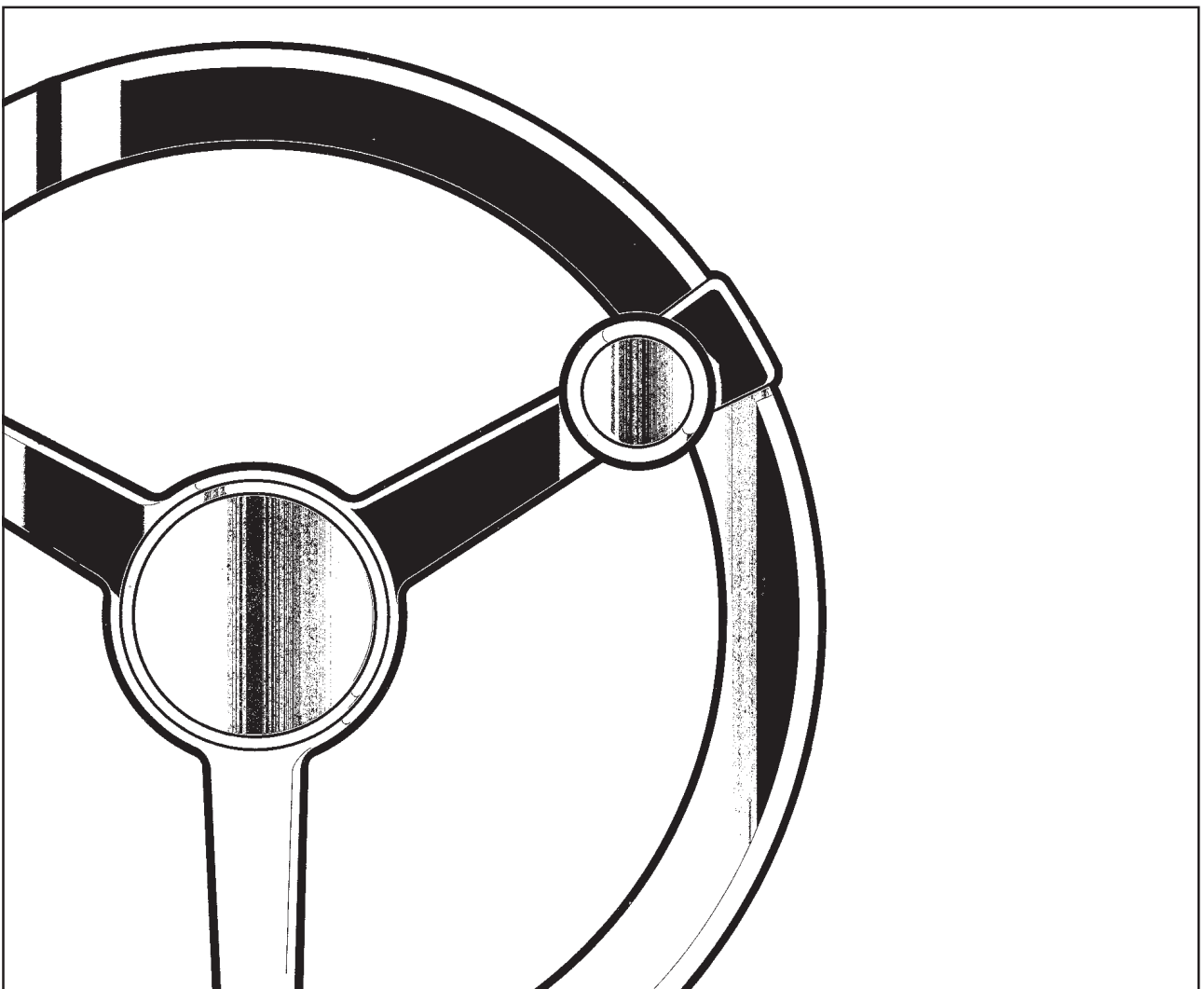


DYNAPAC CA121/141 OPERATION

O121EN4



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DYNAPAC

Vibratory roller CA121/141

Operation O121EN4, December 2003

Diesel engine:

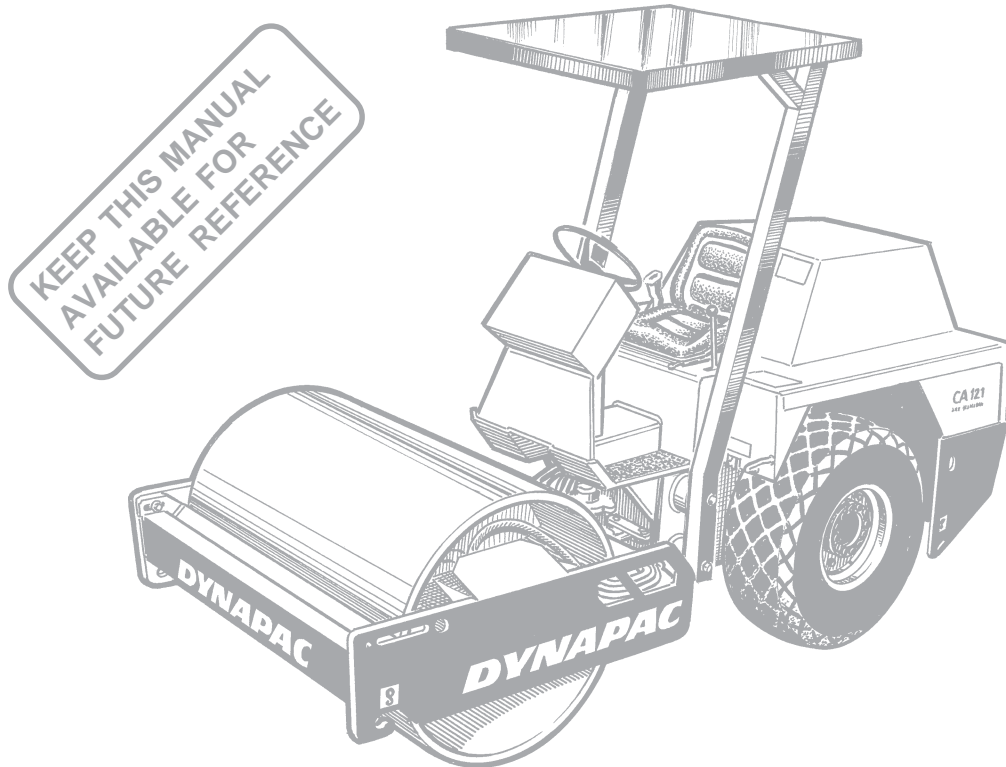
CA121: John Deere 3029TF270

CA141: John Deere 3029TF270

These instructions apply from:

CA121: PIN (S/N) *60311000*

CA141: PIN (S/N) *60410600*



The CA121 is a 4-ton and the CA141 is a 5-ton vibratory roller designed for compaction operations in pipe trenches, on road shoulders and in cramped spaces in connection with refilling work. The rollers are also suitable for repair work on dams, power stations, parking lots and airfields.

The CA121 and CA141 are each available in two versions, D and PD. The smooth drum version with drum drive (D) gives good maneuverability even on very steep slopes. The PD version, equipped with pads and drum drive, is especially suitable for the compaction of silt and clayey soils.

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WARNING SYMBOLS

WARNING



Safety instructions—Personal safety

CAUTION



Special caution—Machine or component damage

SAFETY MANUAL

WARNING



Each operator of the roller must study the safety manual, which accompanies each machine. Always follow the safety rules and do not remove the manual from the roller.

GENERAL

This manual contains instructions for the operation and use of the roller. For care and maintenance, see the "MAINTENANCE, CA121/141" manual.

WARNING



Remember that when you start and drive a cold machine, the hydraulic fluid is cold and the braking distance will be longer than normal until the machine reaches normal working temperature.

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.

SAFETY INSTRUCTIONS (Also read the safety manual)



1. The operator must be familiar with the contents of the **OPERATION MANUAL** before starting the roller.
2. Make sure that all instructions in the **MAINTENANCE MANUAL** are followed.
3. Only trained and/or experienced operators may drive the roller. No passengers are allowed on the roller. Remain seated during all operation.
4. Never use the roller if it is in need of adjustment or repairs.
5. Board and leave the roller only when it is stationary. Use the grips and railings. A "three-point grip" is always recommended when boarding or leaving the machine—either both feet and one hand, or one foot and both hands in contact with the machine.
6. Always use the Roll Over Protective Structure (ROPS) when the machine is used on risky ground.
7. Drive slowly in sharp bends.
8. Avoid driving at an angle on slopes; drive straight up or down.
9. When driving close to unsafe edges or holes, make sure that at least two thirds of the drum width is firmly on material that has already been compacted.
10. Make sure that there are no obstacles in the direction of travel, on the ground or overhead.
11. Drive extra carefully on uneven ground.
12. Use the safety equipment provided. The seat belt must be worn on machines with ROPS.
13. Keep the roller clean. Clean dirt and grease from the operator's platform without delay. Keep all signs and decals clean and clearly legible.
14. Safety measures before refueling:
 - Stop the engine.
 - Don't smoke.
 - No naked flame in the vicinity.
 - Ground the nozzle of the filling device against the tank to prevent sparks.
15. Before repairs or service:
 - Place chocks against the drum/wheels and against the strike-off blade.
 - Lock the articulation if necessary.
16. Hearing protectors are recommended if the noise level is higher than 85 db(A). The noise level will vary depending on the surface you are working on.
17. Do not make any changes or modifications on the roller that could affect safety. Changes may only be made with Dynapac's written consent.
18. Do not use the roller until the hydraulic fluid has reached its normal working temperature. Braking distance will be longer than usual when the fluid is cold. See the starting instructions in the **OPERATION MANUAL**.

SAFETY WHEN DRIVING

Driving near an edge

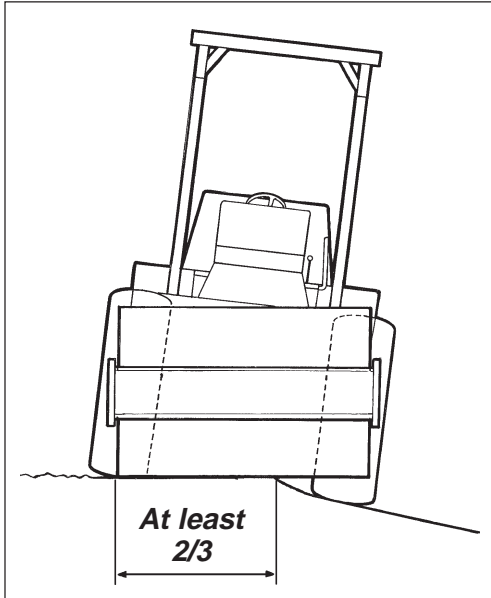


Fig. 1 Drum position when driving near an edge

When you drive near an edge, at least two thirds of the drum width must be on solid ground.



Remember that the machine's center of gravity is displaced outward when you steer to one side. For example, it moves to the right when you steer to the left.

Slopes

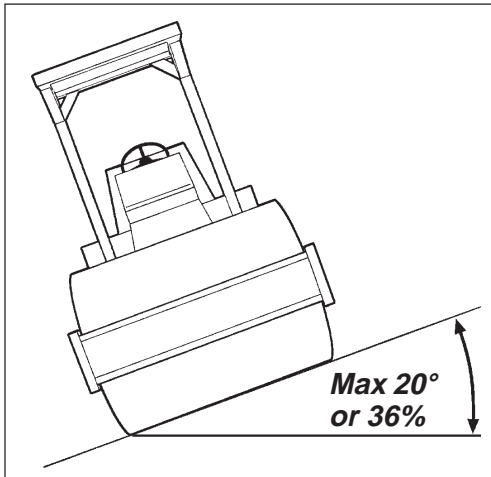


Fig. 2 Tipping angle on side slopes



ROPS is always recommended when driving on slopes or insecure ground.



Whenever possible, avoid driving across a slope. Instead, drive up and down on sloping ground.

The tipping angle is measured on level, hard ground and a stationary machine. Steering angle zero, vibration switched OFF and all tanks full. Remember that loose ground, steering of the machine, vibration switched ON, driving speed and raising the center of gravity (as with accessories) may cause the machine to topple even on a smaller slope than specified here.

SAFETY (OPTIONAL)

Strike-off blade

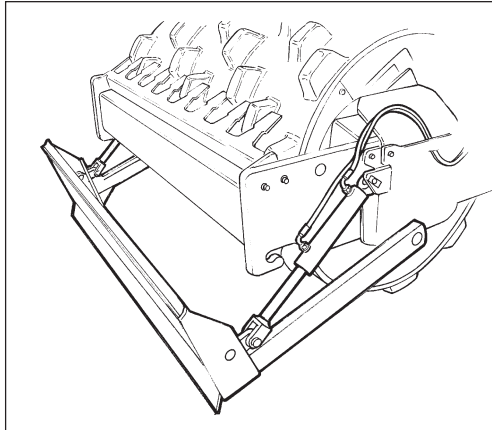


Fig.3 Strike-off blade

WARNING



The operator must make sure that nobody is in the working area during operation.

CAUTION



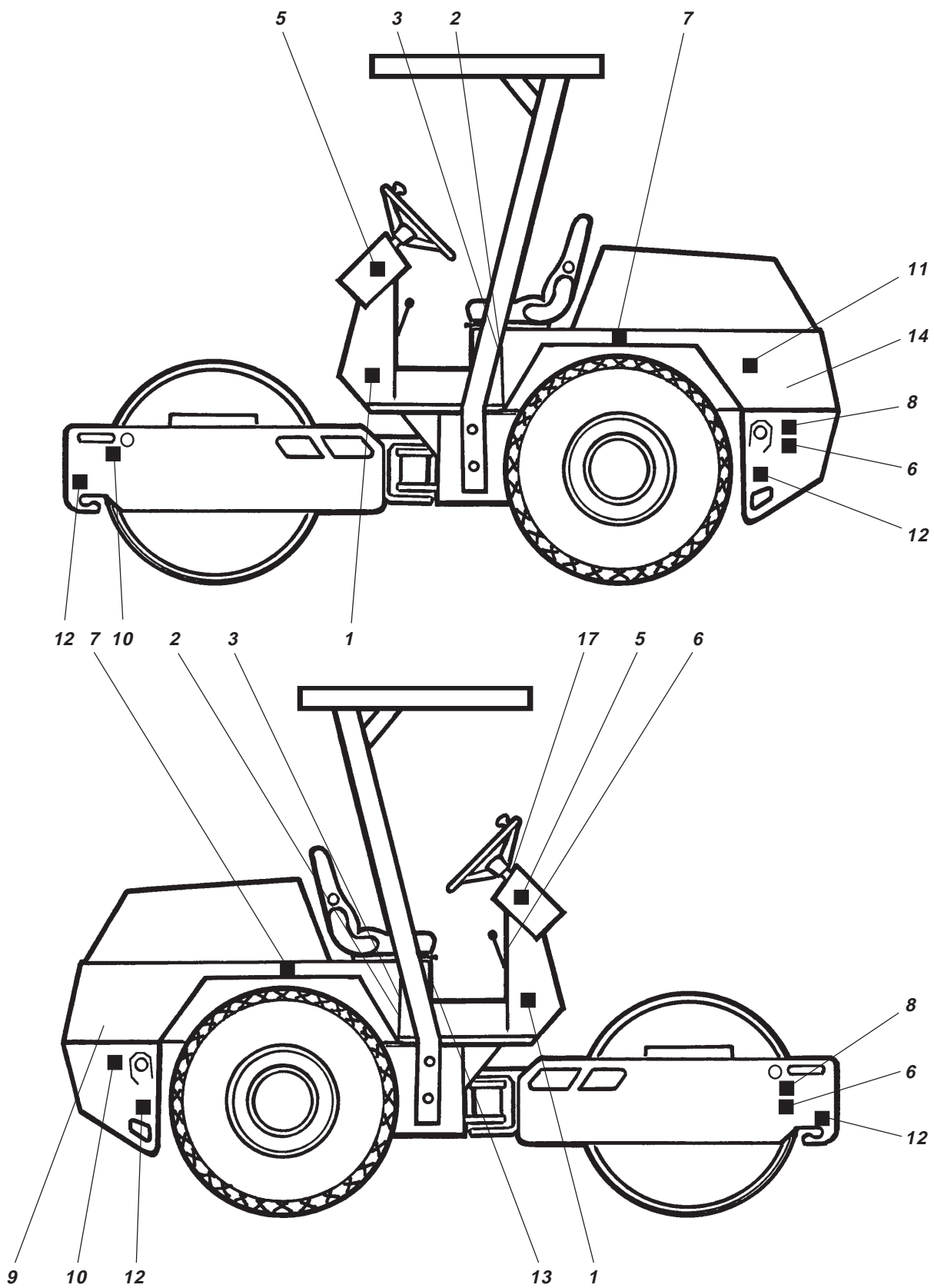
Retract the strike-off blade to transportation mode at the end of each working period.

WARNING



Always lower the blade to the ground before leaving/parking the roller.

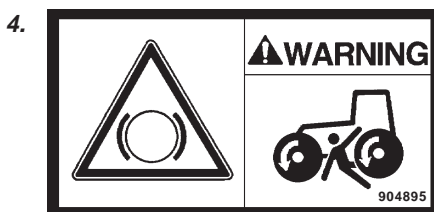
SAFETY DECALS, LOCATION AND DESCRIPTION



SAFETY DECALS, LOCATION AND DESCRIPTION



Crush zone, articulation/drum. Maintain a safe distance from the crush zone.



Study the chapter about towing before disengaging the brakes. Danger of being crushed.



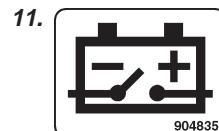
Lifting point



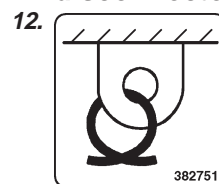
Warning - rotating engine components. Keep your hands a safe distance from the danger zone.



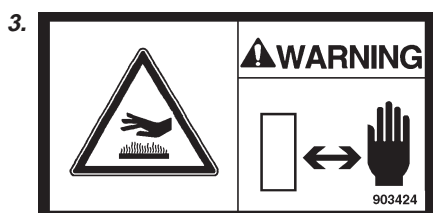
The operator is urgently requested to read the safety manual, and the operation and maintenance instructions before using the machine.



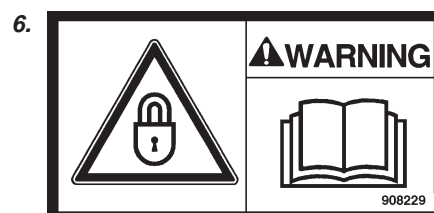
Battery disconnecter



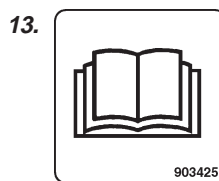
Securing point



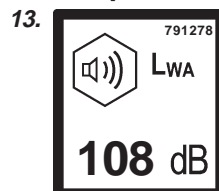
Warning - very hot surfaces in the engine compartment. Do not touch.



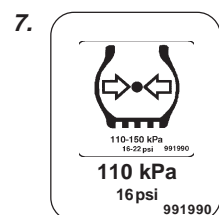
The articulation joint must be locked while lifting. Read the instruction manual.



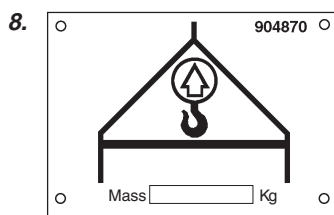
Handbook compartment



Sound Power level CA121



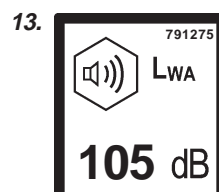
Tire pressure



Hoisting plate



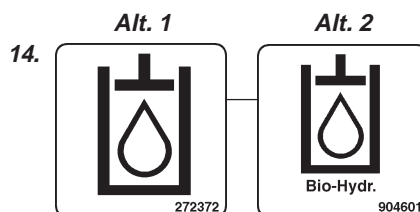
Diesel fuel



Sound Power level CA141



☐ = Optional



Hydraulic fluid

Biological hydraulic fluid

MACHINE AND ENGINE PLATES

Machine plate

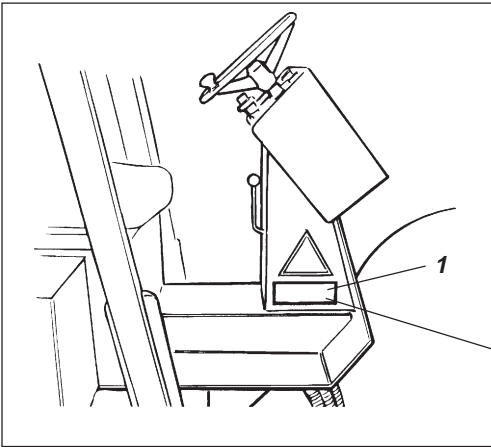


Fig. 4 Left step
1. Machine plate

The machine plate (1) is affixed to the right side of the steering column. The plate shows the manufacturer's name and address, type of machine, PIN (serial number), weight in working order, engine power and year of manufacture. Please specify the roller's PIN (serial number) when ordering spares.



Serial number on frame

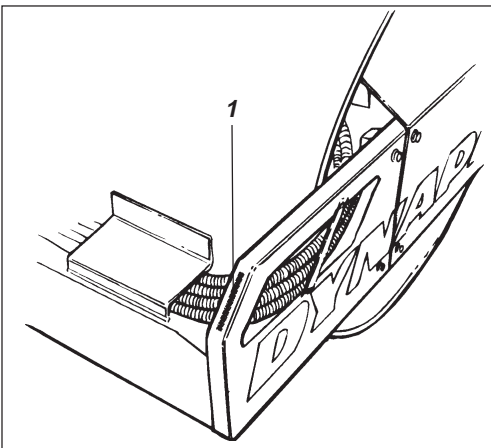


Fig. 5 Front frame
1. Serial number

The machine's serial number is punched on the right edge of the forward frame. This number is identical with the PIN (serial number) on the machine data plate.

Engine plate

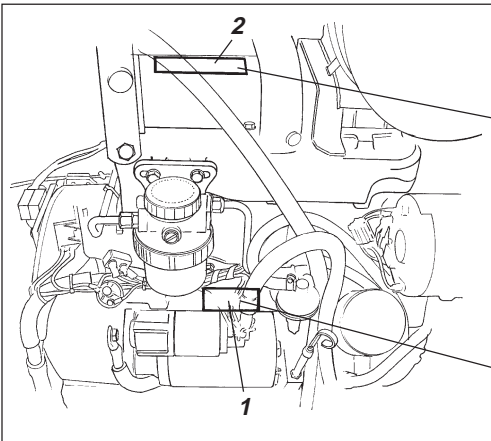
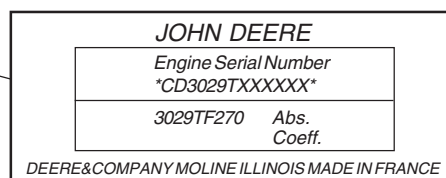
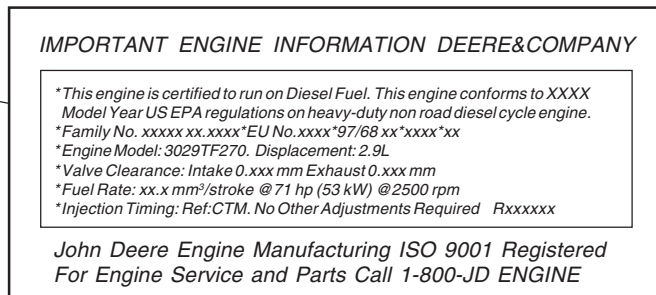


Fig. 6 Engine
1. Type plate
2. EPA sign (USA)

The engine data plate is on the right side of the engine, close to the oil filter. The plate indicates the type of engine, serial number and engine data. Please specify the engine serial number when ordering spares. See also the engine manual.



INSTRUMENTS AND CONTROLS

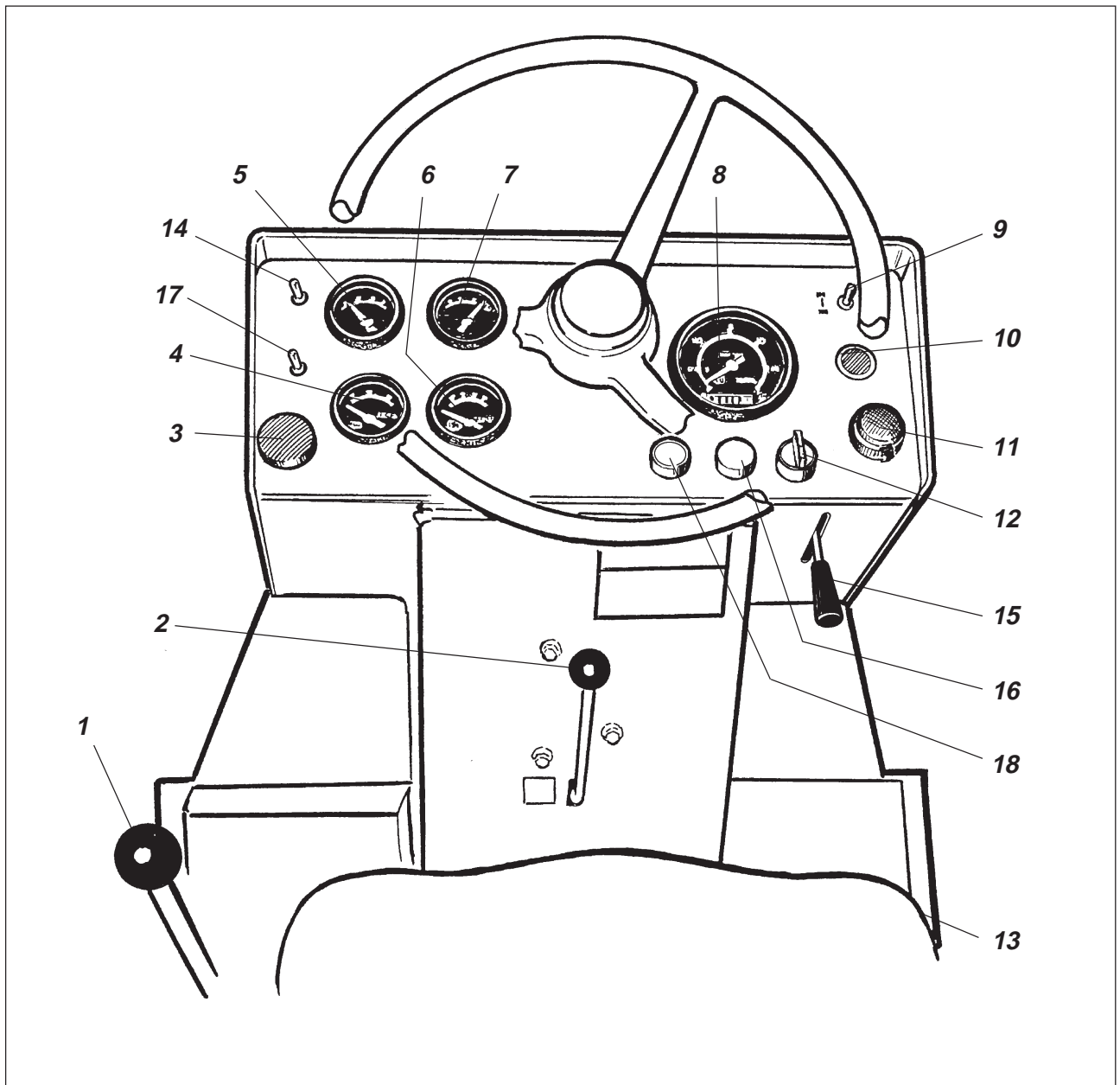










Fig. 7 Instruments and controls








- | | | | |
|----|-----------------------------|-----|---|
| 1. | Forward and reverse lever | 10. | Horn |
| 2. | Vibration ON/OFF | 11. | Rev control |
| 3. | Reserve brake | 12. | Starter switch |
| 4. | Temperature gauge - coolant | 13. | Pocket containing safety and instruction manuals |
| 5. | Oil pressure gauge | 14. | Working lights ON/OFF <input type="checkbox"/> |
| 6. | Voltmeter | 15. | Strike-off blade UP/DOWN <input type="checkbox"/> |
| 7. | Fuel gauge | 16. | Warning lamp, charging |
| 8. | Tachometer/Hourmeter | 17. | Hazard beacon ON/OFF <input type="checkbox"/> |
| 9. | Parking brake ON/OFF | 18. | Preheating ON/OFF <input type="checkbox"/> |

= Optional

INSTRUMENTS AND CONTROLS, FUNCTIONAL DESCRIPTION

Items in fig. 7	Designation	Symbol	Function
1	Forward and reverse lever	—	Move the lever to the desired direction of travel. Driving speed is proportional to movement of the lever. The roller brakes as the lever is moved toward neutral. The engine can only be started with the lever in neutral.
2	Vibration ON/OFF		Switches vibration ON and OFF.
3	Reserve brake knob (red knob)		OFF (pulled out) is normal during operation. ON (pushed in) applies the brakes and switches off the engine and electric power supply. The F&B control must be restored to neutral before restarting.
4	Temperature gauge, engine		Indicates engine coolant temperature. Normal gauge reading: 82–94°C. (180–201°F) Above 99°C (210°F): Stop the engine and determine the cause, see engine manual.
5	Oil pressure gauge		Indicates engine oil pressure. Normal indication: 140–415 kPa. Below 100 kPa: Stop the engine and determine the cause, see engine manual.
6	Voltmeter		Indicates electrical system voltage. Normal indication is 12–15 volts.
7	Fuel gauge		Indicates level in the fuel tank.
8	Tachometer/Hourmeter	—	Indicates current engine speed in RPM. Multiply the gauge reading by 100. The driving time is displayed digitally in hours.
9	Parking brake ON/OFF		ON: Activates the parking brake. OFF: Releases the parking brake. The engine must be running before the parking brake can be released.
10	Horn		Press to honk the horn.
11	Rev control	—	Released/engaged by the center button. Pull out to increase engine revs. Push in to reduce. Twist the handle for fine adjustment. Counter-clockwise = increase, clockwise = reduce. Minimum revs: 1000 r/min; Max: 2200 r/min.

INSTRUMENTS AND CONTROLS, FUNCTIONAL DESCRIPTION

Items in fig. 7	Designation	Symbol	Function
12	Starter switch		<p>In position ○ the electric circuit is broken.</p> <p>In position all instruments and electric controls are powered.</p> <p>In position ⊕ the start motor is activated.</p>
13	Pocket for instruction manuals		Manuals for safety, operating and maintenance, which must not be removed from the machine.
14	Working lights (Optional)		In ON mode, the four lamps in the ROPS arch will light.
15	Strike-off blade UP/DOWN/HOLD(Optional)		UP/DOWN/HOLD
16	Warning lamp, battery charging		If the lamp lights while the engine is running, the alternator is not charging. Stop the engine and locate the fault.
17	Hazard beacon (Optional)		The rotating hazard flasher is on in ON mode.
18	Preheating button		Press the preheating button for 30 seconds before attempting to start the engine.

BEFORE STARTING

Battery disconnecter – Switching on

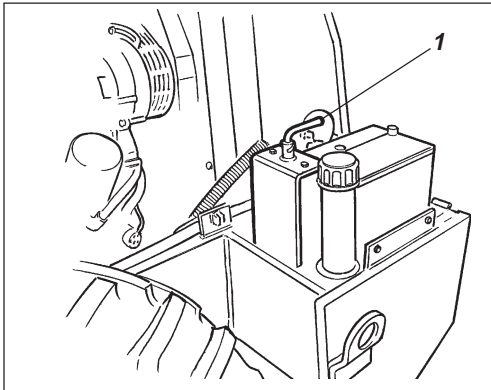


Fig. 8 Battery disconnecter
1. Handle

Remember to perform daily service. See the operation manual.

Make sure that the battery disconnecter (1) is switched ON.

WARNING



Lock the hood in the closed position with the lever under the operator's seat.

Operator's seat – Setting

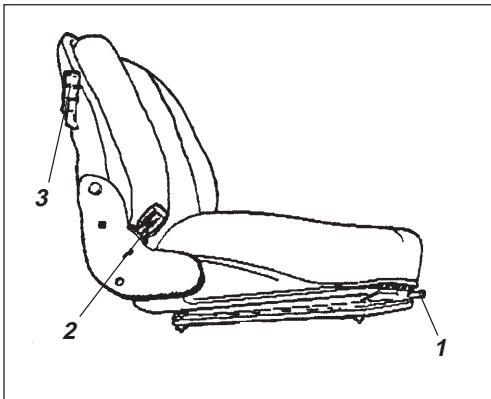


Fig. 9 Operator's seat
1. Length adjustment
2. Seat-back setting
3. Cushioning adjustment

Position the operator's seat so that the controls are easily accessible.

The seat can be adjusted as follows:

- Lengthwise (1).
- Seat-back slope (2).
- Cushioning in relation to the operator's weight (3).

WARNING



Always make sure that the seat is secure before beginning operation.

Instruments and controls – Control

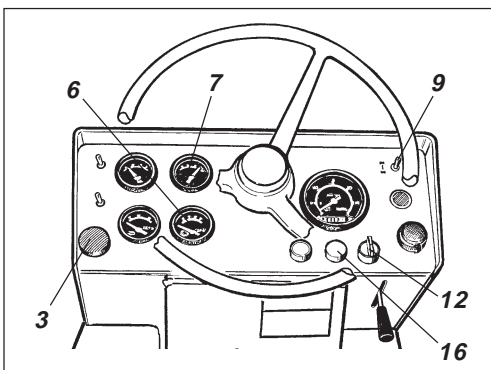


Fig. 10 Instrument panel
3. Reserve brake
6. Voltmeter
7. Fuel gauge
9. Parking brake knob
12. Starter switch
16. Warning lamp, charging

Make sure that the reserve brake knob (3) is pulled out.

Turn the starter switch (12) to I. This powers up all gauges and instruments.

The voltmeter (6) should indicate at least 12 volts.

The fuel gauge (7) should show a reading.

The warning lamp for charging (16) should light.

WARNING



Make sure that the parking brake knob (9) is in the applied mode.
If the parking brake is not applied, the roller may start to roll when you start the engine on sloping ground.

BEFORE STARTING

Seat belt

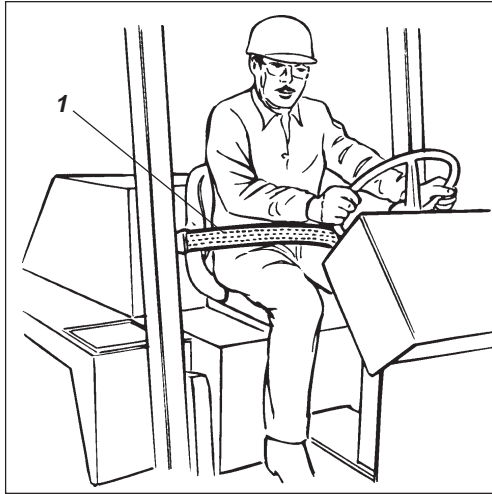


Fig. 11 Operator's station
1. Seat belt

Always fasten the seat belt (1) that is provided if ROPS is fitted on the roller, and wear a protective helmet.



Always replace the seat belt (1) with a new one if it is worn or has been subjected to a heavy load.

STARTING

Starting the engine

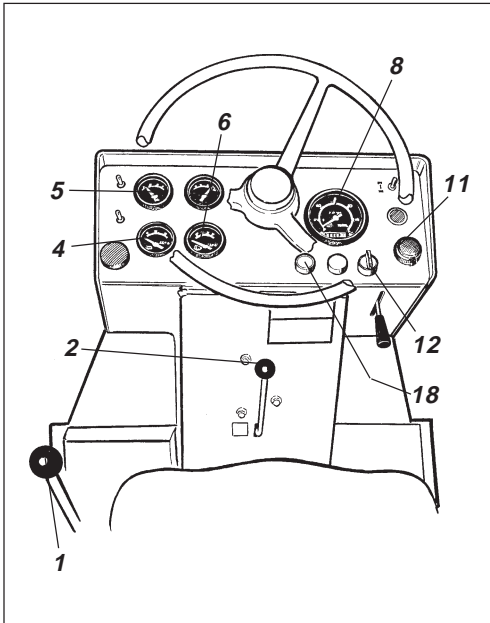


Fig. 12 Instrument panel and controls

1. Forward/Reverse lever
2. Vibration control
4. Temperature gauge - coolant
5. Oil pressure gauge
6. Voltmeter
8. Tachometer/hourmeter
11. Rev control
12. Starter switch
18. Preheating knob (Optional)

Set the forward and reverse lever (1) in neutral. The engine can only be started in this mode.

Set the vibration control (2) to the OFF mode.

Pull up the rev control (11) to about 1/3 full throttle.

Hold the preheating button (18) pressed in for about 30 seconds (optional).

Turn the starter switch (12) to the right to start mode, and release the knob as soon as the engine starts.



Do not run the starter motor too long. If the engine does not start immediately, wait a minute or so before making a new attempt.

Warm up the engine for a few minutes with the rev control in the idling mode, longer if ambient temperature is below +10°C (50°F).



Stop the engine immediately if the oil pressure gauge does not show a reading within 15 seconds after starting.

Check while warming up that the voltmeter (6) indicates 13–15 volts, and that the coolant temperature gauge (4) and the tachometer/hourmeter (8) give readings.



Remember that when you start and drive a cold machine, the hydraulic fluid is cold and the braking distance will be longer than normal until the machine reaches normal working temperature.



Make sure that ventilation (extraction) is adequate if the engine is run indoors (risk of carbon monoxide poisoning).

OPERATION

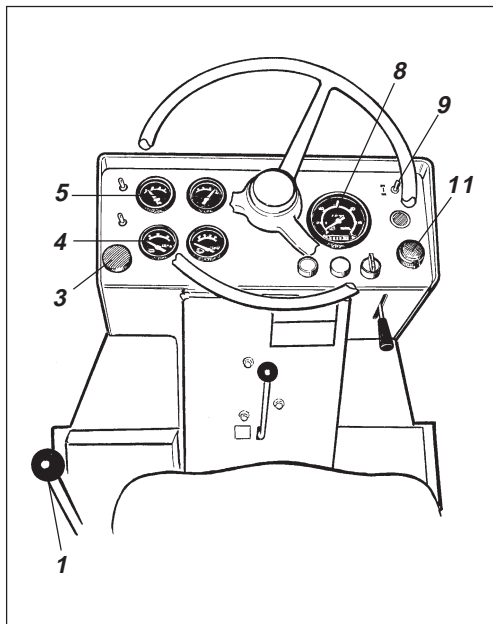


Fig. 13 Instrument panel and controls

1. Forward/Reverse lever
3. Reserve brake
4. Temperature gauge - coolant
5. Oil pressure gauge
8. Tachometer/hourmeter
9. Parking brake
11. Rev control

Reserve brake – Check

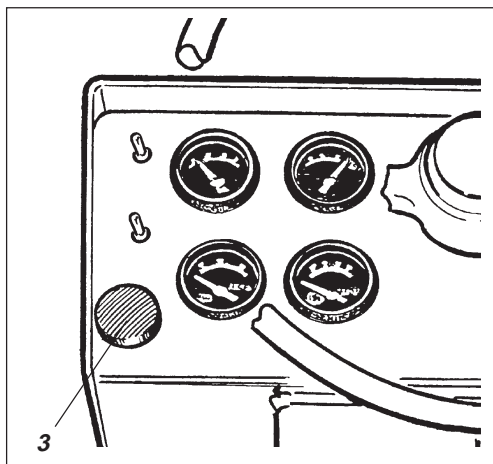


Fig. 14 Instrument panel, left side
3. Reserve brake



Under no circumstances may the machine be operated from the outside. The operator must remain seated inside the machine during all operation.

Open the throttle (11) until engine speed is 2200 rpm on the tachometer (8). Finely adjust by turning the control knob – clockwise to reduce revs and counter-clockwise to increase.

Check that the steering is working by turning the steering wheel once to the left and once to the right, while the roller is stationary.



Make sure that the area in front of and behind the roller is clear.



Move the toggle switch to the OFF position to release the parking brake (9). Be prepared because the roller may begin to roll.

The reserve brake knob (3) must be pulled out.

Carefully move the forward and reverse lever (1) in the desired direction of travel. The speed increases the further the lever is moved from the neutral position.



Always regulate the speed with the forward and reverse lever, not by changing the engine speed.

Check while driving that the gauges show normal values:

- Coolant temperature (4): 82–94°C (180–201°F) (Above 99°C (210°F)—Stop the engine and locate the fault.)
- Engine oil pressure (5): 140–415 kPa (Below 100 kPa—Stop the engine and locate the fault.)



Test the reserve brake by pressing the reserve brake knob (3) while the roller is running slowly forward. Stop the roller and identify the fault if the brake does not work.

The engine stops when the reserve brake knob is pressed. The control knob must be pulled out before the engine can be restarted. The Forward/Reverse control must be in neutral before the engine can be restarted.

OPERATION/VIBRATION

Engaging the vibration

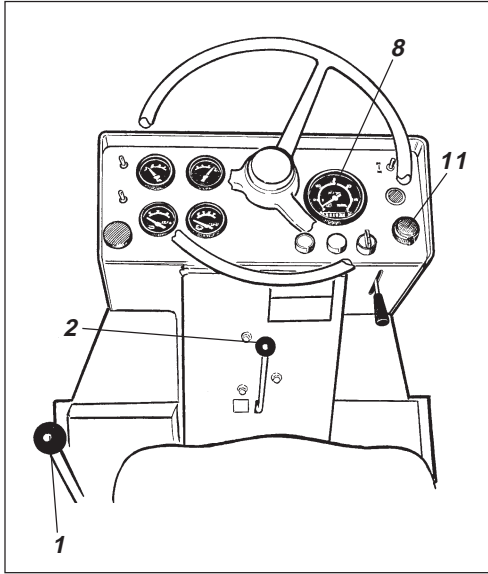


Fig. 15 Instrument panel and controls

1. Forward/Reverse lever
2. Vibration control
8. Tachometer/hourmeter
11. Rev control

Move the Forward/Reverse lever (1) forward or backward.

Move the lever (2) to the ON position to engage vibration.



Never leave vibration on when the roller is stationary. This may damage the surface and the machine.

Compacting is usually done at 4–5 km/hour (6 1/2–8 mph) (normal walking speed). It is not necessary to disengage vibration when changing the direction of travel.

Move the lever (2) to the OFF position to disengage vibration. Always switch off vibration before the roller comes to a complete standstill.

OPERATION (OPTIONAL)

Operating the strike-off blade

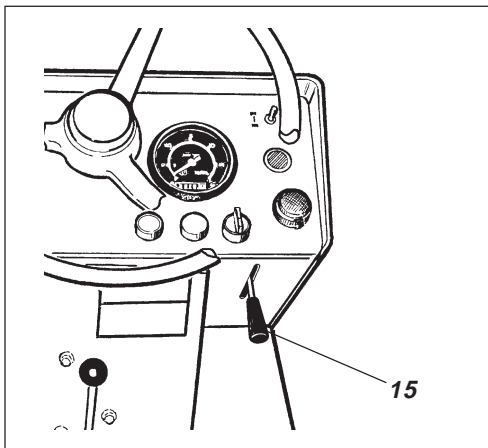


Fig. 16 Instrument panel and controls
15. Lever

Optional



Make sure that the blade is at its uppermost (raised) position before driving. Check the state of the ground before using the blade.

The lever (15) has two modes.
Upward – Raising the blade.
Downward – Lowering the blade.

Lower the blade before leaving/parking the machine.



Use the blade only when driving FORWARD.

BRAKING

Normal braking and reserve braking

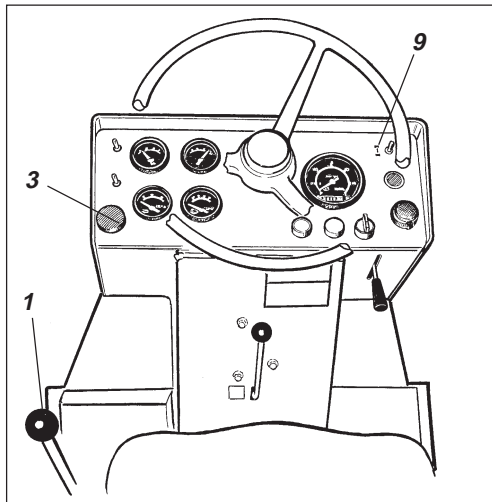


Fig. 17 Instrument panel and controls
1. Forward/Reverse lever
3. Reserve brake knob
9. Parking brake

Using the reserve brake

Normally you brake with the forward/reverse lever (1). The hydrostatic transmission brakes the roller when the lever is moved toward neutral. In addition there are multi-disc brakes in the wheel motors that act as a parking brake and are activated when the parking brake (9) is applied.

WARNING



To brake in an emergency, press the reserve brake knob (3), hold the steering wheel firmly and be prepared for a sudden stop.

After braking, restore the forward/reverse lever to neutral and pull up the reserve brake knob.

WARNING



Remember that when you start and drive a cold machine, the hydraulic fluid is cold and the braking distance will be longer than normal until the machine reaches normal working temperature.

Normal braking

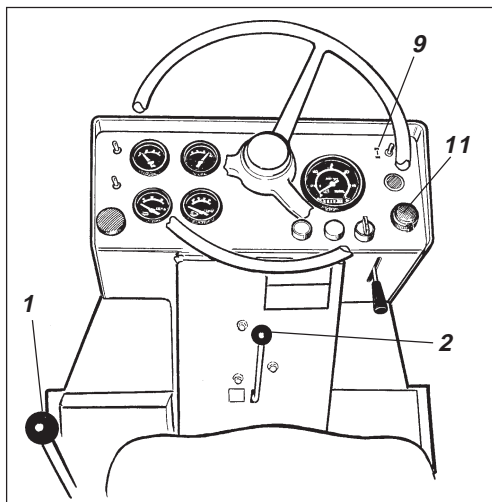


Fig. 18 Instrument panel and controls
1. Forward/Reverse lever
2. Vibration ON/OFF
9. Parking brake
11. Rev control

Move the lever (2) to the OFF position to disengage vibration.

Move the forward/reverse lever (19) to neutral to stop the roller.

WARNING



Always activate the parking brake knob (9) even for brief stops when on sloping ground.

Turn back the rev control to idling. Always let the engine idle for a few minutes to cool down.

WARNING



Remember that when you start and drive a cold machine, the hydraulic fluid is cold and the braking distance will be longer than normal until the machine reaches normal working temperature.

BRAKING

Switching off

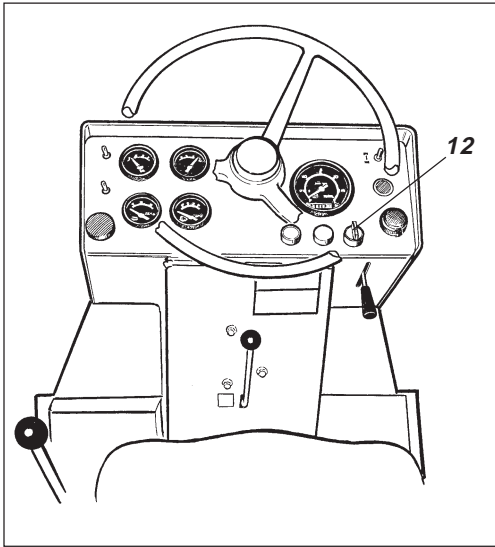


Fig. 19 Instrument panel and controls
12. Starter switch

Check the instruments to see if any faults are indicated, switch off all lights and other electrical functions.

Turn the starting knob (12) to position **O**. Lower the instrument cover and lock it.

PARKING

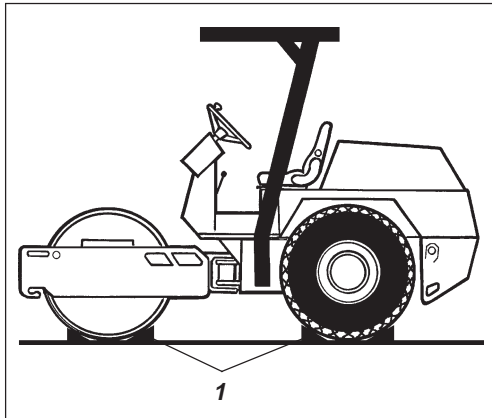


Fig. 20 Chocking the drum and wheels
1. Chock



WARNING Never leave the operator's station with the engine running unless the parking brake is applied.



WARNING Make sure that the roller is parked in a safe place for traffic. Chock the drum and wheels if the roller is parked on sloping ground.



CAUTION Remember the risk of freezing during the winter. Fill the engine's cooling system with antifreeze. See also maintenance instructions.

The parking brake must always be set if the operator has to leave his seat for any reason while the engine is running. Another alternative is to use the reserve brake, which also shuts down the engine.

Battery disconnecter

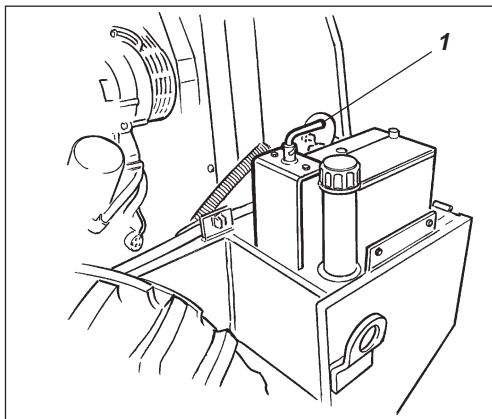


Fig. 21 Battery disconnecter
1. Handle

Turn off the battery disconnecter (1) and remove the handle before leaving the roller.

This will prevent the battery discharging and will also make it difficult for any unauthorized person to start and drive the machine. Lock the engine hood, too.

Strike-off blade (Optional)

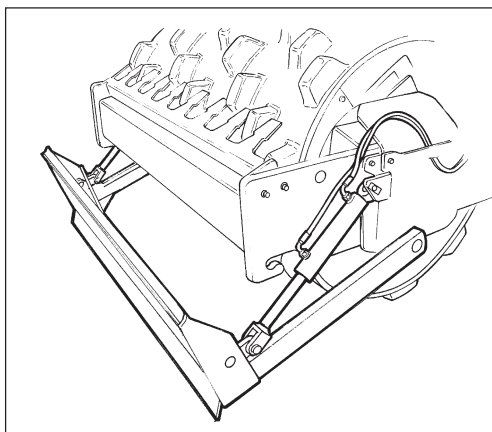


Fig. 22 Strike-off blade



WARNING Always lower the blade to the ground before leaving/parking the roller.

INSTRUCTIONS FOR LIFTING

Locking the articulation joint

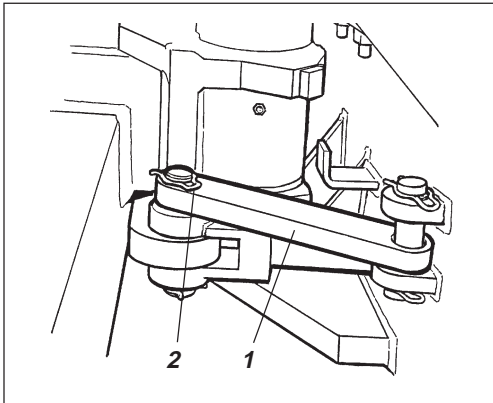


Fig. 23 Left side of articulation
1. Articulation in interlocked mode
2. Cotter

WARNING



The articulation must be locked to prevent inadvertent turning before lifting the roller.

Turn the steering wheel so that the machine is set to drive straight forward. Push the reserve brake knob.

Fold out the arm (1) and secure it to the rear machine frame with the cotter (2). Attach the lifting chains and ensure that no parts will be crushed when hoisting.

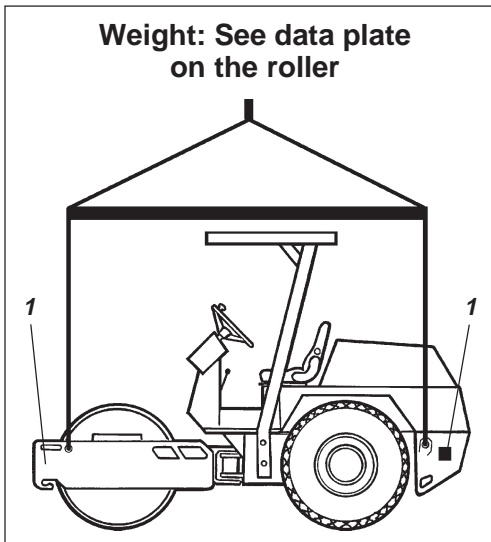


Fig. 24 Lifting the roller
1. Hoisting plate

WARNING



The maximum weight of the machine is noted on the hoisting plate (1). See also technical specifications in the maintenance instructions.

CAUTION



Lifting gear, such as chains, steel wires, straps, and lifting hooks, must be dimensioned according to current regulations.

WARNING



Keep well clear of the hoisted machine! Make sure that hoisting hooks are securely anchored.

Releasing the articulation joint

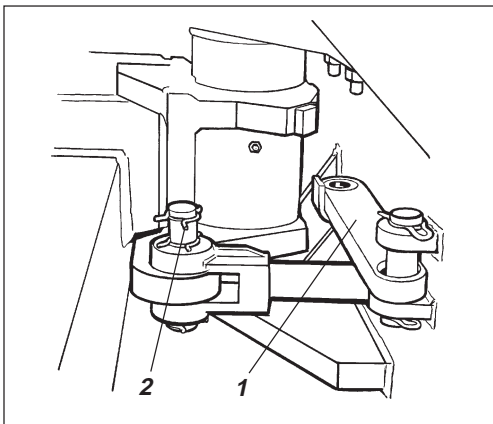


Fig. 25 Left side of articulation
1. Articulation lock in open mode
2. Cotter

CAUTION



Remember to restore the articulation interlock to open mode before driving again.

Release the cotter (2) and retract the locking arm (1). Refit the cotter (2).

INSTRUCTIONS FOR TOWING

Alternative 1 Towing short distance with engine working

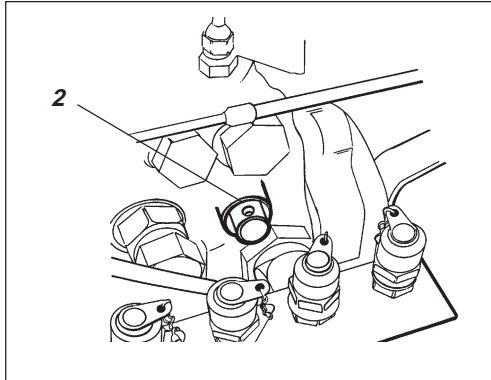


Fig. 26 Drive pump
2. Disengagement screw (red)

Open the bypass valve on the right-hand side of the drive pump by turning the red disengagement screw (2) two whole turns counter-clockwise.

Start the engine and allow it to idle.

The roller can now be towed and can also be steered if the steering system is in action.

Alternative 2 Towing short distance with engine not working

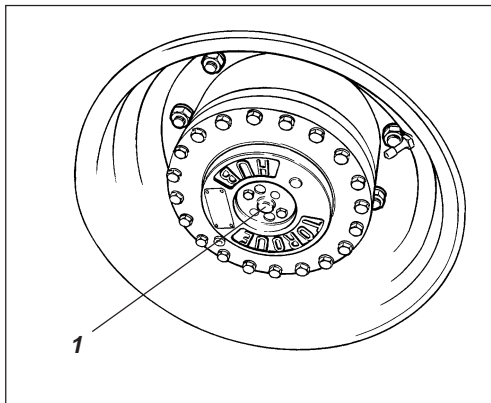


Fig. 27 Wheel hub
1. Disengagement disc

The roller can be moved up to 300 yards according to either of the options below.



Press the reserve brake knob to stop the engine. Chock the drums to prevent the machine from rolling.

Remove the disengagement discs (1) from both wheel hubs and from the drum gearing. Reverse the discs and screw them on with the raised part facing inward.

TOWING/RETRIEVAL

Towing a roller

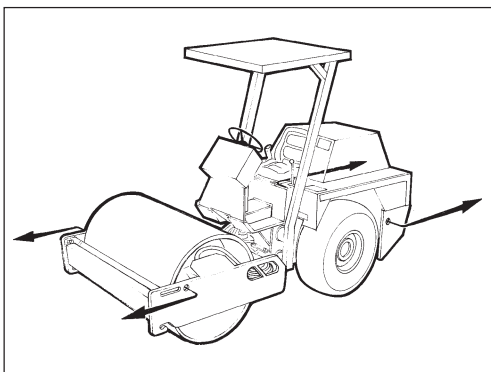


Fig. 28 Towing



The roller must be counter-braked when towing. Use a towbar, because the roller will have no ability to brake.



The roller must be towed slowly (max. 3 km/h (5 mph)) and only a short distance (max. 300 yds).



When towing/retrieval a machine, the towing device must be connected to both lifting holes. Pulling forces should act longitudinally on the machine as illustrated. Maximum gross pulling force 80 kN (18 lbf).



Restore all of the above towing items.

TRANSPORTATION

Roller prepared for transportation

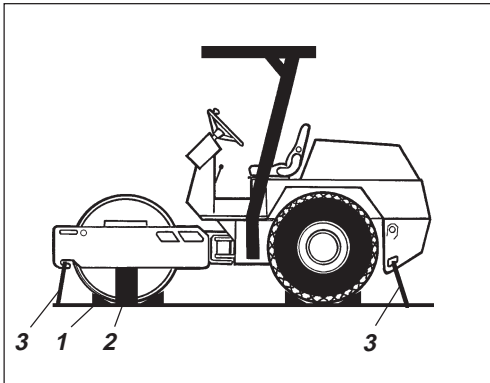


Fig. 29 Chocking the drum/frame

1. Chock
2. Block up
3. Lashing strap

WARNING



Interlock the articulation before hoisting and transportation; follow the instructions under the respective heading.

Secure the drum and wheels with chocks (1) and anchor them to the transport vehicle.

Block up (2) under the drum frame to avoid overload on the rubber suspension of the drum when lashing.

Clamp down the roller with lashing strap at all four corners; decals (3) indicate the fixing points.

CAUTION



Remember to restore the articulation interlock to open mode before starting the roller again.

OPERATING INSTRUCTIONS – SUMMARY



1. Follow the **SAFETY INSTRUCTIONS** in the **Safety Manual**.
2. Make sure that all instructions in the maintenance manual are followed.
3. Turn the battery disconnecter to ON.
4. Make sure that the reserve brake knob is in OFF mode (pulled out).
5. Set the vibration lever in OFF mode.
6. Put the forward/reverse lever in neutral.
7. Pull out the rev control to 1/3.
8. Start the engine and let it warm up.
9. Set the rev control to working mode.



10. Drive the roller. Operate the forward/reverse lever with care.



11. Test the brakes.
Remember that the braking distance will be longer if the roller is cold.

12. Use the vibration only when the roller is in motion.



13. **IN AN EMERGENCY:** – Press the reserve brake knob.
– Grip the steering wheel firmly.

14. Parking: Press the emergency stop knob to stop the engine, chock the drum and the wheels.
15. Lifting: See the operation manual.
16. Towing: See the operation manual.
17. Transport: See the operation manual.
18. Retrieval: See the operation manual.