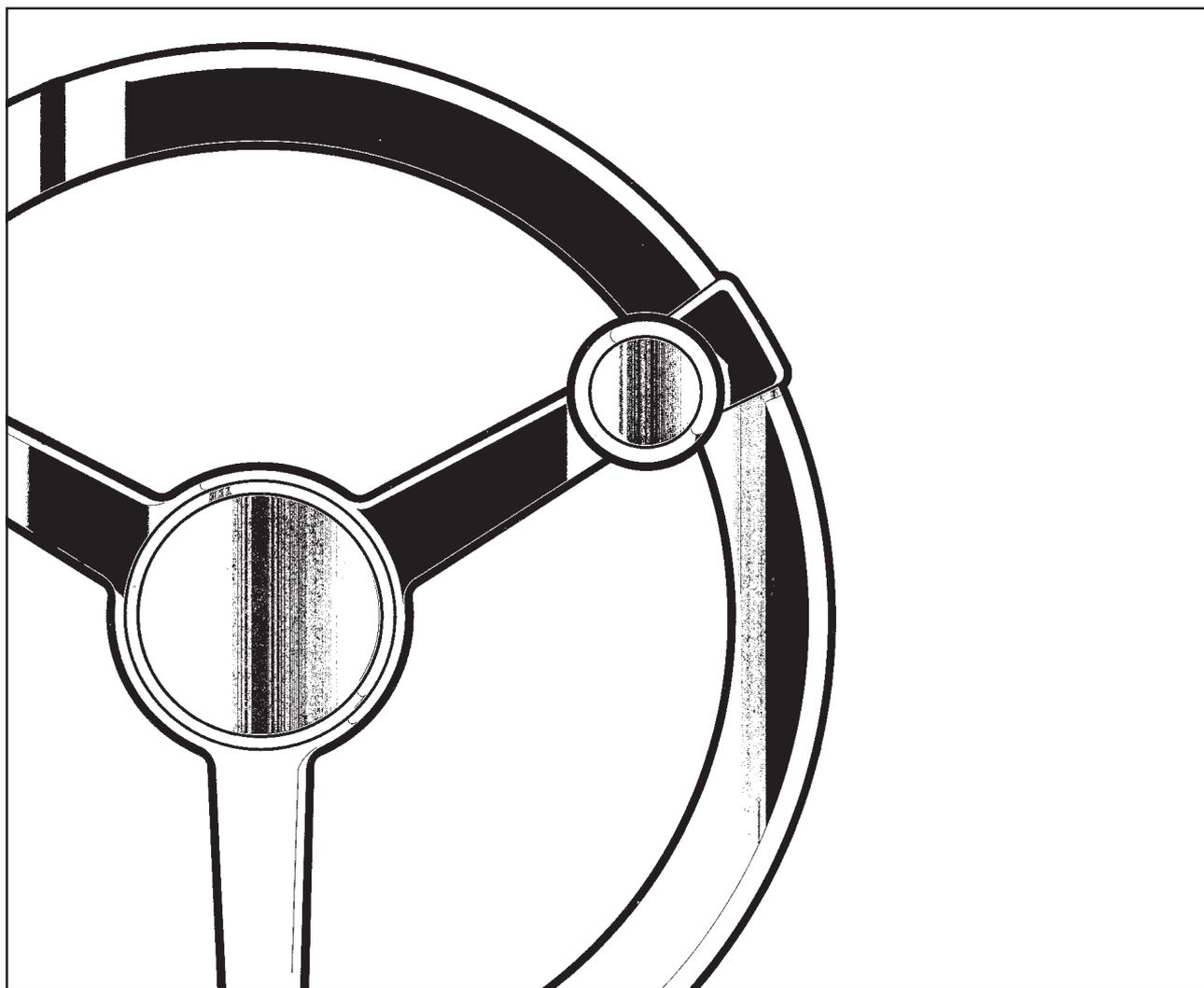


DYNAPAC CS 141 OPERATION

O141EN4



DYNAPAC
Metso Dynapac AB

Box 504, SE-371 23 Karlskrona, Sweden
Phone: +46 455 30 60 00, Fax: +46 455 30 60 30
www.dynapac.com

DYNAPAC

Static Three-drum Roller CS 141

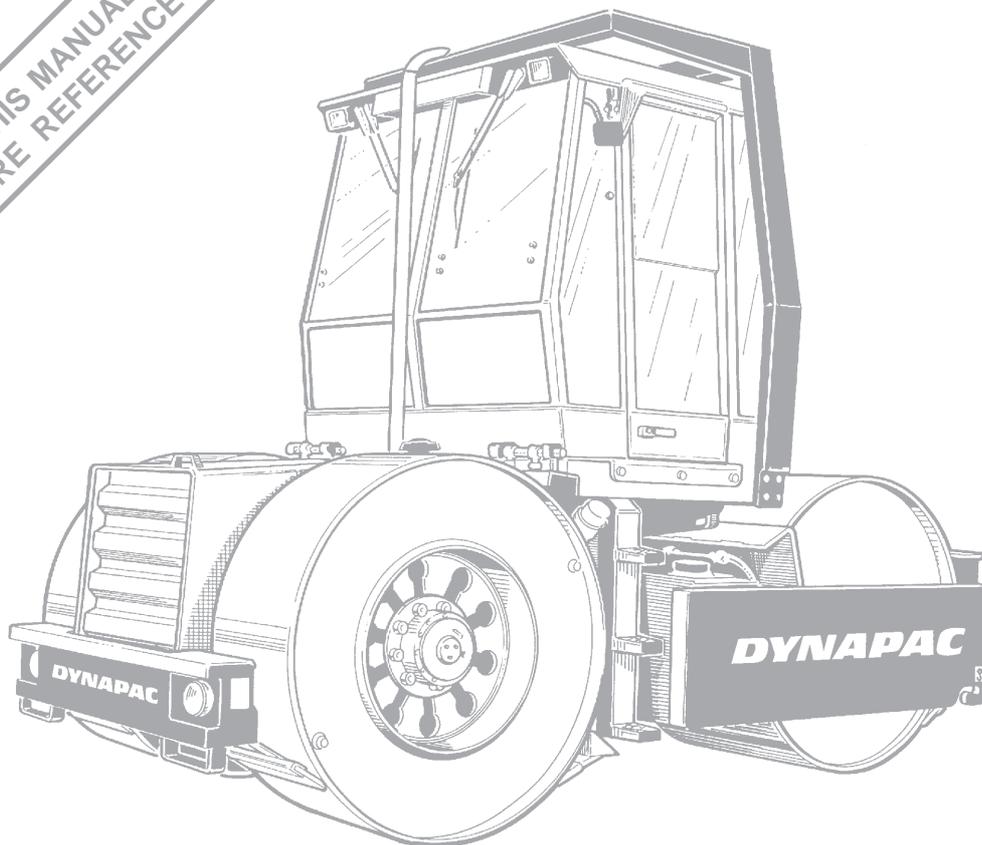
Operation O141EN4, April 2002

**Diesel engine:
Cummins 4BT-3.9**

These instructions apply from:

CS 141 PIN (S/N) *21720192*
CS 141 PIN (S/N) *21720211* (New instrument panel)

**KEEP THIS MANUAL FOR
FUTURE REFERENCE**



Dynapac CS 141 is a static 10–13 tonne articulated 3-drum roller. The drums have the same diameter and the line load is equal over the entire width. Propulsion and brakes on all three drums.

Good working environment for the operator. The ergonomically designed cab, with its amply sized windows facilitates a complete all-round view. The cab is an optional feature, but is described in this manual.

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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 that accompanies each machine. Always follow the safety rules and do not remove the manual from the roller.

GENERAL

This manual contains instructions for operation and use of the roller. For care and maintenance information, see the MAINTENANCE, CS 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)

WARNING



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 are allowed to drive the roller. Passengers are not 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 that are provided. A "three-point grip" is recommended whenever you board or leave the machine—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 fitted 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 drums/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 being worked on by the machine.
17. Make no changes or modifications on the roller that could affect safety. Changes may only be made following written consent by Dynapac.
18. Do not use the roller until the hydraulic fluid has reached its normal working temperature. Braking distance can be longer than usual if the fluid is cold. See starting instructions in the OPERATION MANUAL.

SAFETY WHEN DRIVING

Driving near an edge

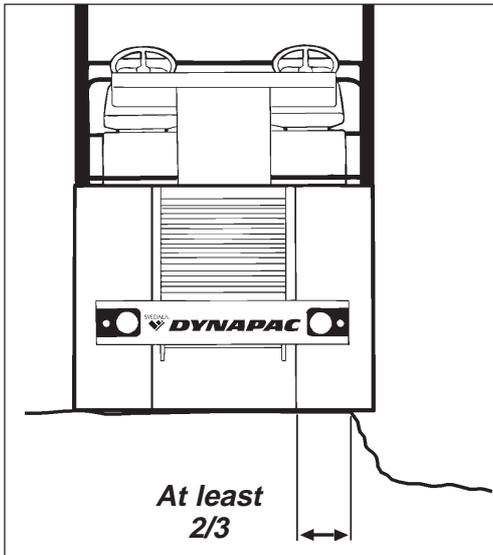


Fig. 1 Position of drum when driving near an edge

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

WARNING



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

SAFETY WHEN DRIVING

Slopes

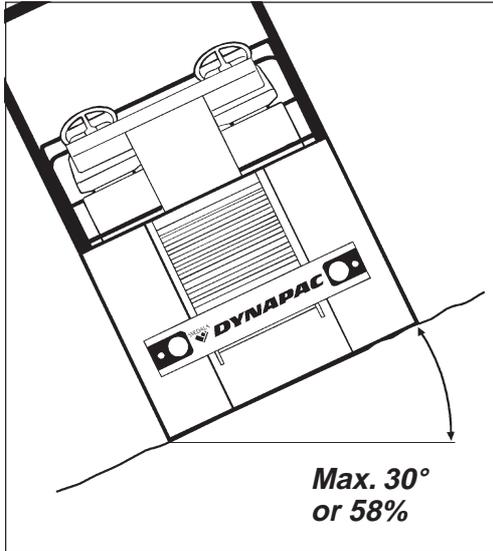


Fig. 2 Tipping angle on side slopes

WARNING



The ROPS (Roll Over Protective Structure) is always recommended when driving on slopes or insecure ground.

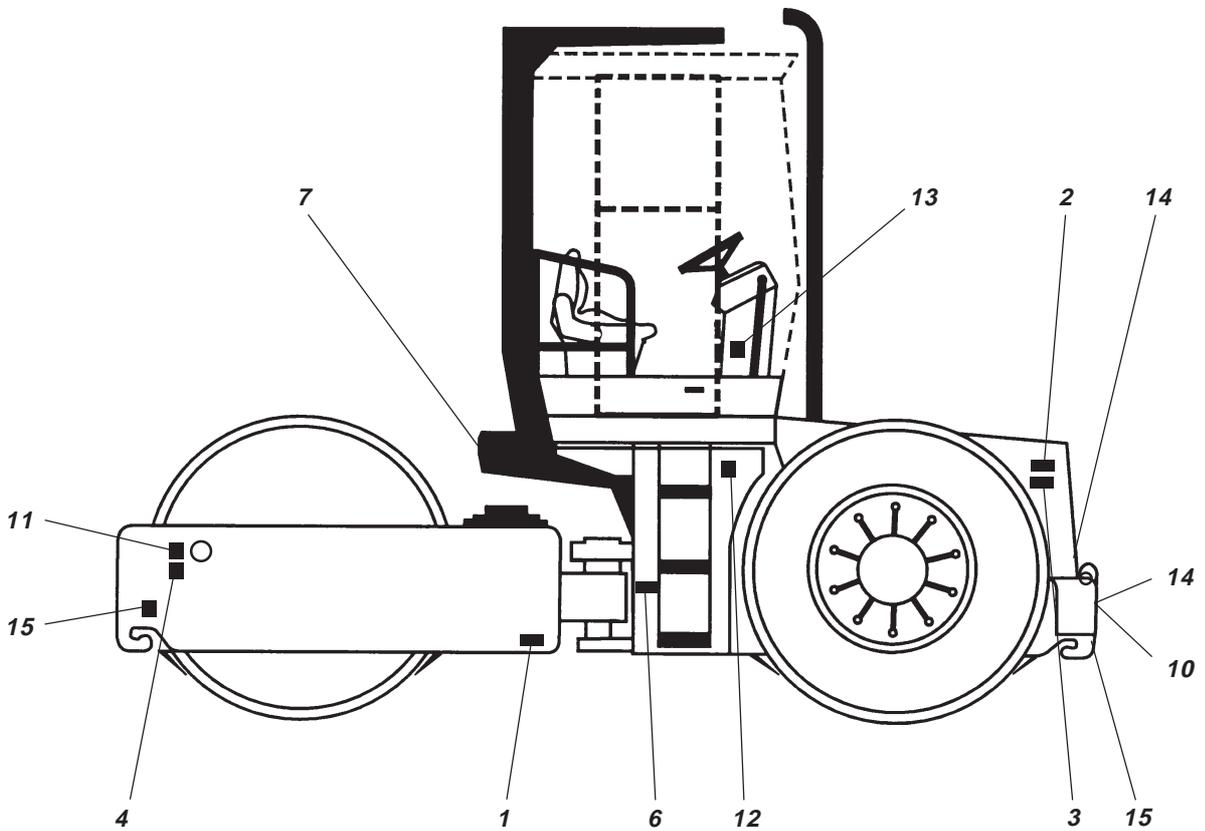
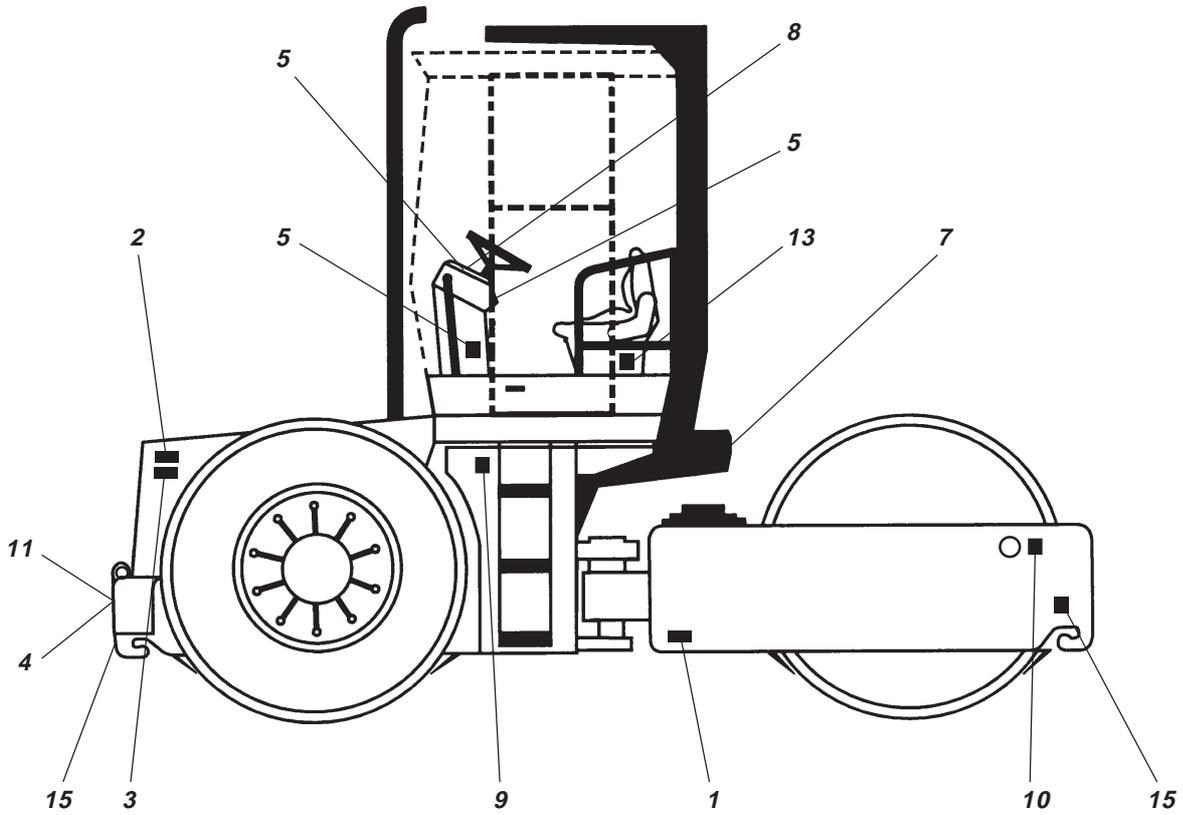
WARNING



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

The tilting angle is measured on a hard, level surface with the machine stationary, 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 (for example, with accessories) may cause the machine to topple even on a smaller slope than that stated here.

SAFETY DECALS, LOCATION AND DESCRIPTION



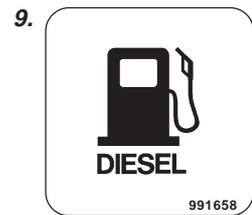
SAFETY DECALS, LOCATION AND DESCRIPTION



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



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



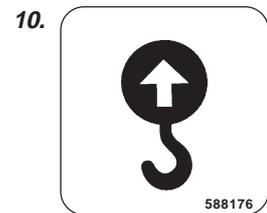
Diesel fuel



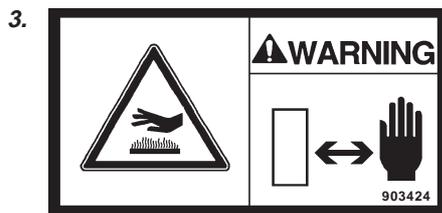
Warning rotating engine components. Keep your hands at a safe distance from the danger zone.



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



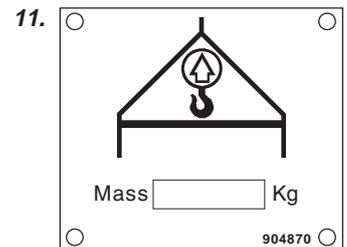
Lifting point



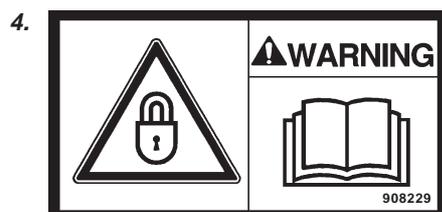
Warning very hot surfaces in the engine compartment. Do not touch.



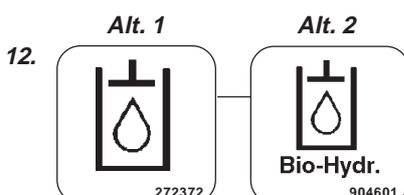
Warning danger of slipping or falling. Read the instruction manual.



Hoisting plate

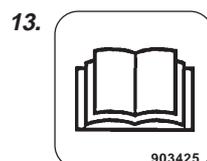


The articulation joint must be locked while lifting. Read the instruction manual.

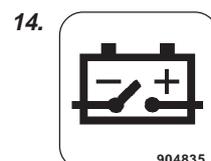


Hydraulic fluid

Biological hydraulic fluid



Handbook compartment



Battery disconnecter



Securing point

MACHINE AND ENGINE PLATES

Machine plate

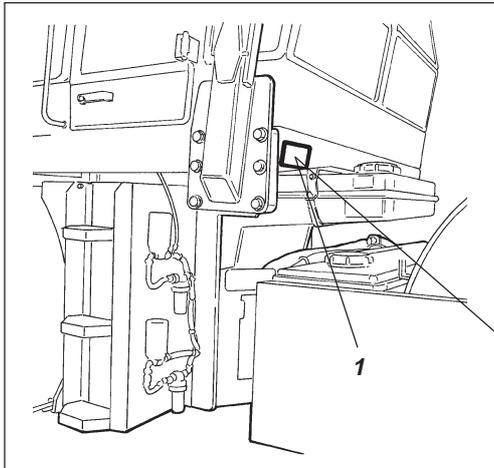


Fig. 3 Operator's platform
1. Machine plate

The machine type plate (1) is affixed on the rear left edge of the operator's platform. The plate shows the manufacturer's name and address, type of machine, PIN—"Product Identification Number" (serial number)—weight in working order, engine power and year of manufacture. (Only the manufacturer's name and address, PIN and type of machine will be noted if the machine is delivered outside the EU.) Please specify the PIN (serial number) of the roller when ordering spares.

DYNAPAC		CE
Metso Dynapac AB Karlskrona Sweden		
Type	<input type="text"/>	Operating mass <input type="text"/> kg
Product Ident.	<input type="text"/>	Rated power <input type="text"/> kW
Number	<input type="text"/>	Year of Mfg <input type="text"/>

Serial number on frame

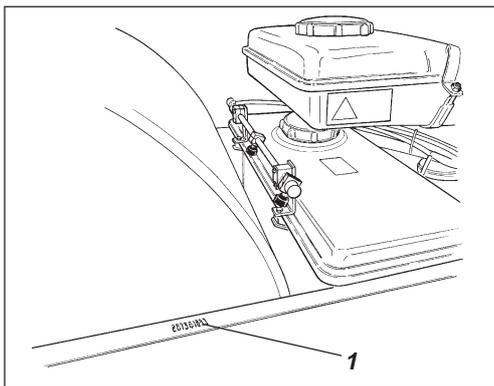


Fig. 4 Front frame
1. Serial number

The PIN (1) of the frame is punched on the right side of the front frame.

Engine plate

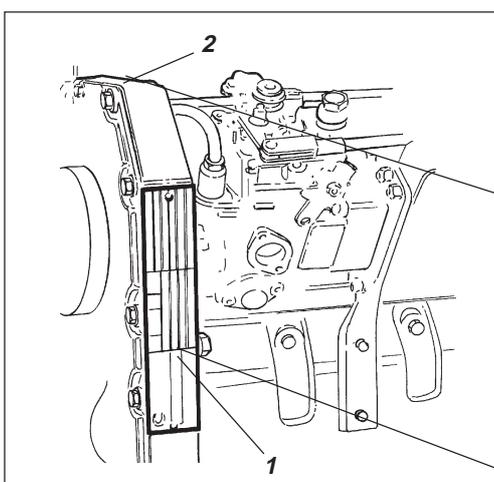


Fig. 5 Engine
1. Engine plate
2. EPA sign (USA)

The machine type plate (1) includes the serial number. Please specify the engine serial number and PIN when ordering spares. See also the engine manual. On Cummins' diesel engines, the engine type plate is fitted on the right edge of the toothed belt cover.

IMPORTANT ENGINE INFORMATION
This engine conforms to 1999 U.S. EPA and California regulations for heavy duty non-road compression ignition diesel cycle engines as applicable.
THIS ENGINE IS CERTIFIED TO OPERATE ON DIESEL FUEL
3935108

Cummins Engine Company, Inc. Columbus, Indiana 47202-3005	CIDL	CPL	Engine Serial No.
	Family		Cust. Spec.
<small>Warning: Injury may result and warranty is voided if fuel rate, rpm or altitude exceed published maximum values for this model and application.</small>	Valve lash	Inch	Int. Exh.
		MM	Int. Exh.
Date of MFG. Made in Great Britain.	Firing Order		FR
3284907	Rated HP/KW	at	RPM

INSTRUMENTS AND CONTROLS

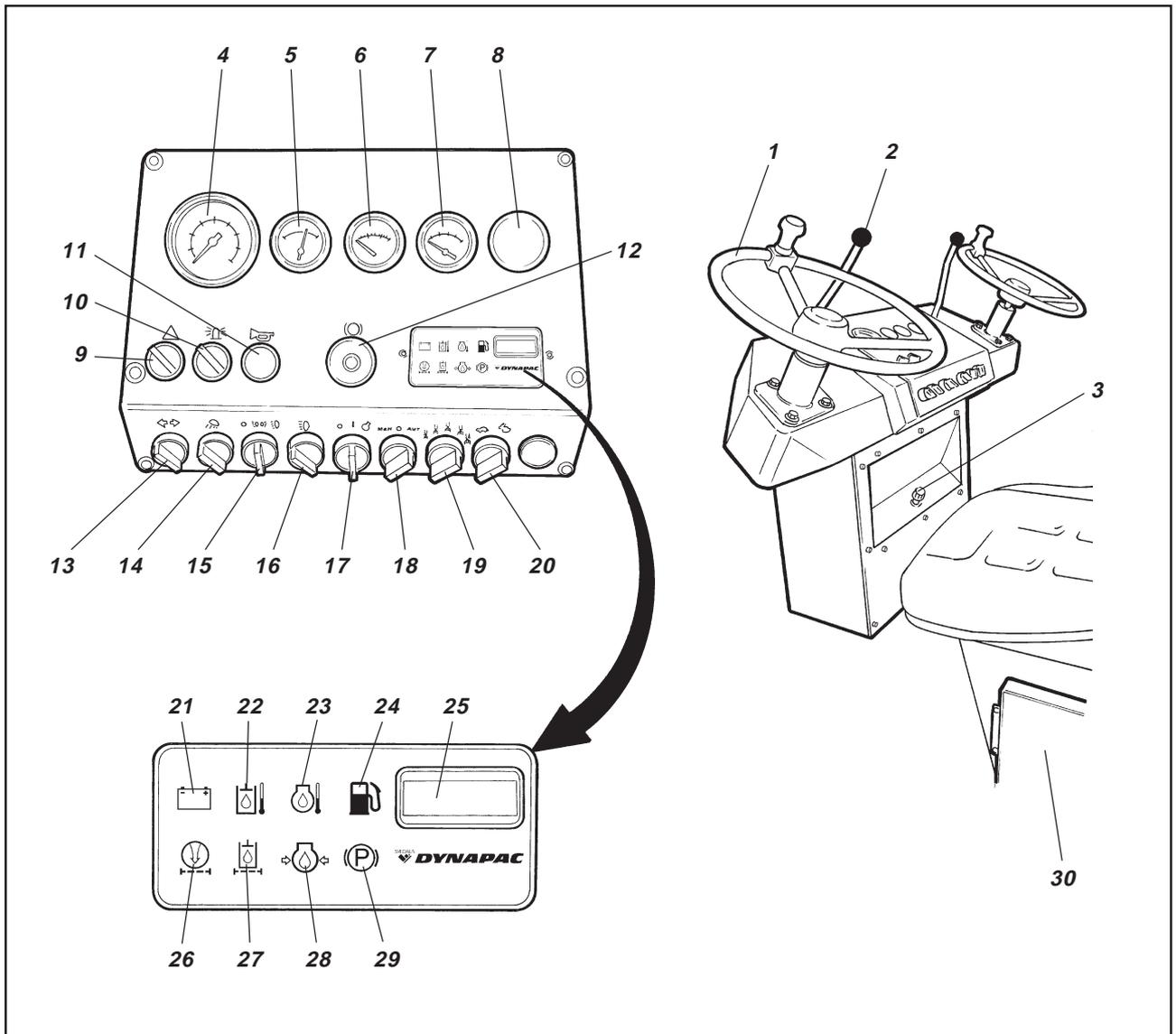


Fig. 6 Operator's station

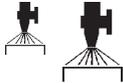
- | | |
|---|---|
| 1. Steering wheel | 16. Light switch for main beam <input type="checkbox"/> |
| 2. Forward/reverse lever | 17. Start/Stop knob |
| 3. Rev control | 18. Manual/Automatic sprinkler |
| 4. Tachometer <input type="checkbox"/> | 19. Sprinkler timer <input type="checkbox"/> |
| 5. Fuel gauge | 20. Gear selector low/high |
| 6. Instrument, coolant temperature <input type="checkbox"/> | 21. Warning lamp for charging |
| 7. Instrument, hydraulic temperature <input type="checkbox"/> | 22. Warning lamp for hydraulic temperature |
| 8. Instrument, voltmeter <input type="checkbox"/> | 23. Warning lamp for engine temperature |
| 9. Hazard flashers <input type="checkbox"/> | 24. Warning lamp for low fuel level |
| 10. Hazard beacon <input type="checkbox"/> | 25. Hourmeter |
| 11. Horn | 26. Warning lamp for air filter |
| 12. Reserve/parking brake knob | 27. Warning lamp for hydraulic filter |
| 13. Direction indicators <input type="checkbox"/> | 28. Warning lamp for oil pressure |
| 14. Light switch for working lights <input type="checkbox"/> | 29. Warning lamp for brake |
| 15. Light switch for parking/dipped lights <input type="checkbox"/> | 30. Handbook compartment |

= Optional equipment

INSTRUMENTS AND CONTROLS, FUNCTIONAL DESCRIPTION

Items in fig. 6	Designation	Symbol	Function
1	Steering wheel	—	There are two steering wheels, one on the left and one on the right side.
2	Forward/reverse lever	—	The lever must be in neutral to enable the engine to start; the engine will not start if the forward/reverse lever is in any other position. The forward/reverse lever controls the driving direction and speed of the roller. Move the lever forward to drive the roller forward, etc. The roller speed is proportional to the movement of the lever from the neutral position. The further from neutral, the higher the speed.
3	Rev control, diesel engine		Released/engaged by the center button. Pull out the control to increase engine revs, push it in to reduce revs. Turn/screw the handle for fine adjustment. Turn counter-clockwise to increase, clockwise to reduce.
4	Tachometer (Optional)		Indicates engine revs in revs per minute. Multiply the meter value by 100.
5	Fuel gauge		Indicates level in the fuel tank.
6	Temperature gauge, coolant (Optional)		Indicates engine coolant temperature. Normal gauge reading: 82–93°C. See engine manual.
7	Temperature gauge, hydraulic fluid (Optional)		Indicates the temperature of the hydraulic fluid. Normal value between 65 and 80°C (149–176°F). Stop the roller if the value exceeds 85°C (185°F) and rectify the fault.
8	Voltmeter (Optional)		Indicates voltage of the electrical system. Normal indication is 12–15 volts.
9	Hazard flasher switch (Optional)		Turn right to switch on the hazard flashers.
10	Hazard beacon switch (Optional)		Turn right to switch on the hazard beacon.
11	Horn switch		Press to sound the horn.
12	Reserve/parking brake knob		Press to activate the reserve brake. Press when the machine is stationary to activate the parking brake. Pull out to release both brakes.
13	Direction indicator switch (Optional)		Turn left to switch on the left direction indicator, etc. The flashing indicator is OFF in the middle position.
14	Light switch for working lights		Turn right to switch on the forward working lights.
15	Light switch for parking/dipped lights		Turn right to switch on the parking lights and further right to switch on the dipped headlights.

INSTRUMENTS AND CONTROLS, FUNCTIONAL DESCRIPTION

Items in fig. 6	Designation	Symbol	Function
16	Main beam/dipped lights switch (Optional)		The right position turns on the switch and the main beam light. The left position turns on the dipped beam lights.
17	Starter switch		In position  the electric circuit is broken. In position  all instruments and electric controls are powered. In position  the start motor is activated.
18	Sprinkler changeover switch	MAN O AUTO 	In left position, continual timer watering is applied to the drums. In middle position, watering is switched OFF. In right position, watering is switched on/off automatically via the forward/reverse lever when the direction of travel is changed.
19	Sprinkler time, switch (Optional)		The switch has six different timer modes to regulate the amount of water to the drums. The left mode gives least water. The right mode gives most water.
20	Gear selector, low/high		Tortoise = Working speed, low Hare = Transportation speed, high
21	Warning lamp for battery charging		If the lamp lights while the engine is running, the alternator is not charging. Stop the engine and locate the fault.
22	Warning lamp for hydraulic temperature		If the lamp lights, the hydraulic fluid is too hot. Do not drive the roller; cool the fluid by allowing the engine to idle and locate the fault.
23	Warning lamp for engine oil temperature		If the lamp lights, the engine is too hot. Stop the engine immediately and locate the fault. See also the engine manual.
24	Warning lamp for low fuel level		When the lamp lights, there is only enough fuel left for a short distance. Refuel as soon as possible.
25	Hourmeter	—	Engine running time is indicated in hours.
26	Warning lamp for air cleaner		The air cleaner must be cleaned or replaced if the lamp lights while the engine is running at full revs.
27	Warning lamp for hydraulic filter		If the lamp lights while the engine is running at full revs, the hydraulic filters must be changed.
28	Warning lamp for oil pressure		The lamp lights if engine oil pressure is too low. Stop the engine immediately and locate the fault.
29	Brake warning lamp		The lamp lights when the parking or reserve brake knob is pushed in and the brakes are applied.
30	Handbook compartment		Storage space for the roller's operator and safety manuals.

INSTRUMENTS AND CONTROLS, CAB (OPTIONAL)

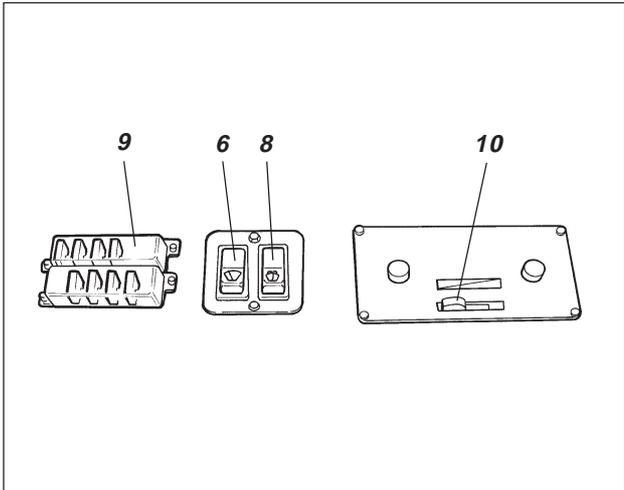


Fig. 7a Cab roof, left side

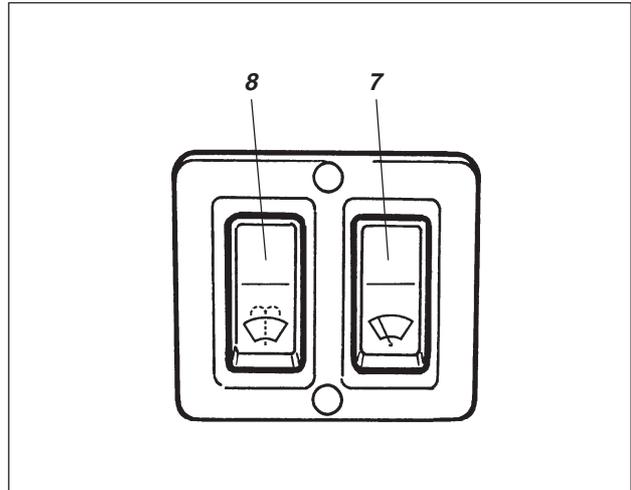


Fig. 7b Cab roof, right side

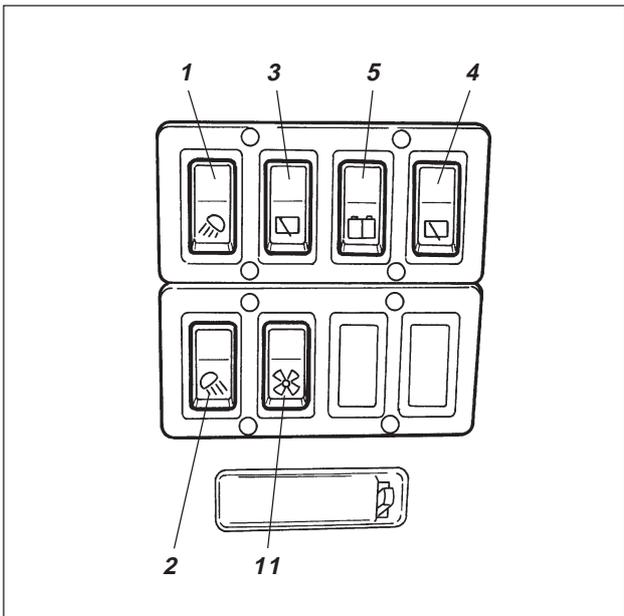


Fig. 7c Cab roof, back

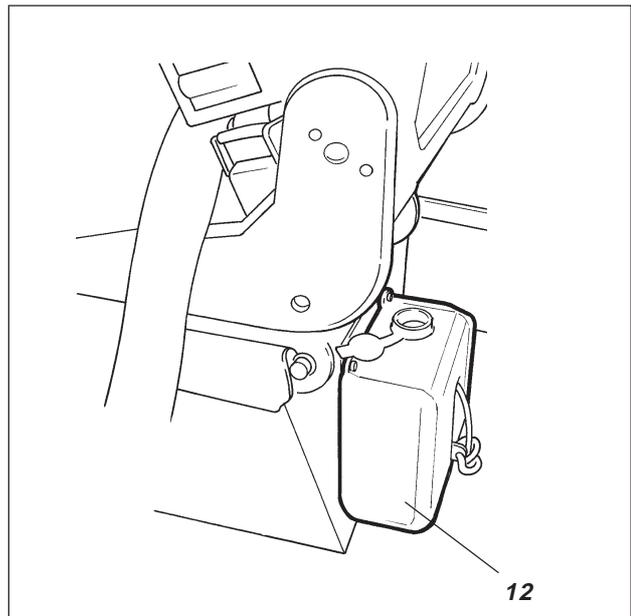


Fig. 7d Seat, left side

INSTRUMENTS AND CONTROLS IN CAB, FUNCTIONAL DESCRIPTION

Items in fig. 7	Designation	Symbol	Function
1	Front working light switch		Press to switch on the front working lights.
2	Rear working light switch		Press to switch on the rear working lights.
3	Left rear wiper		Press to operate the rear wiper.
4	Right rear wiper		Press to operate the rear wiper.
5	Rear windshield washer switch		Press to wash the rear window.
6	Left front wiper switch		Press to operate the front windshield wiper.
7	Right front wiper switch		Press to operate the front wiper.
8	SFront windshield washer switch		Press to wash the front window.
9	Fuse boxes (cab)		Contains fuses for the cab electrical system. See under the "Electrical system" heading in the Maintenance Manual for description of function for the different fuses.
10	Heating control		Left position = maximum heating. Right position = heating is OFF.
11	Air fan switch		Push to activate. Two positions for different amounts of air.
12	Washer fluid container	—	Fill with pure water and a small amount of environmentally safe washer fluid.

BEFORE STARTING

Battery disconnecter – Switching on

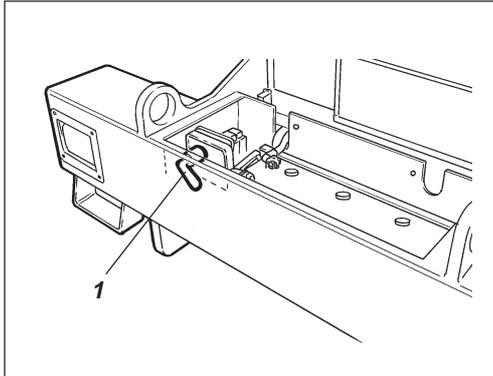


Fig. 8 Engine compartment
1. Battery disconnecter

Remember to perform daily service. See the operation manual.

The battery disconnecter is located in the engine compartment. Turn the key (1) to the ON position. The entire roller is now powered.

WARNING



The engine hood must be unlocked during operation, so that battery power can be disconnected quickly if necessary.

Reserve/parking brake – Check

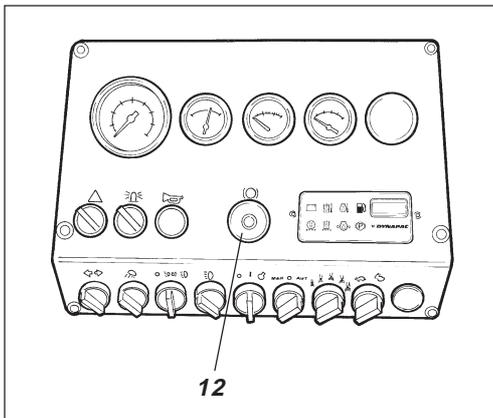


Fig. 9 Starting controls
12. Reserve/parking brake knob

WARNING



Make sure that the reserve/parking brake knob (12) is pushed in. If the parking brake is not applied, the roller may start to roll when starting the engine on sloping ground.

Instruments and lamps – Checking

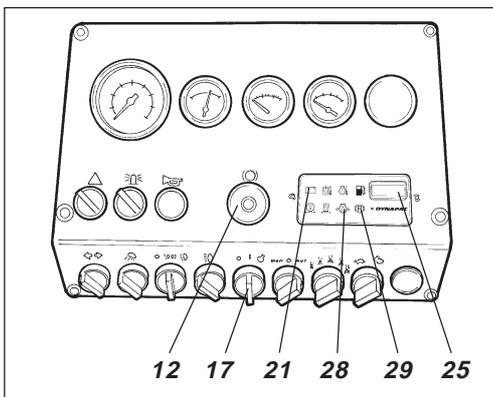


Fig. 10 Starting controls
12. Reserve/parking brake knob
17. Start/stop knob
21. Warning lamp for charging
25. Hourmeter
28. Warning lamp for oil pressure
29. Warning lamp for brake

Turn the starter switch (17) to position I. All warning lamps should light for about 5 seconds and the buzzer should sound. Make sure that the warning lamps light.

Check that the warning lamps for charging (21), oil pressure (28) and parking brake (29) light.

The hourmeter (25) records the number of hours so long as the engine is running.

BEFORE STARTING

Operator's seat – Setting

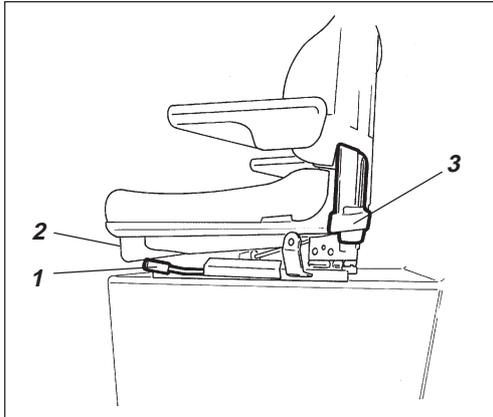


Fig. 11 Operator's seat

1. Lever - length adjustment
2. Lever - backrest slope
3. Lever - weight adjustment

Set the operator's seat in a comfortable position and so that the controls are easily accessible.

The seat has the following adjustment features:

- Length adjustment (1)
- Back slope adjustment (2)
- Weight adjustment (3)

Operator's station

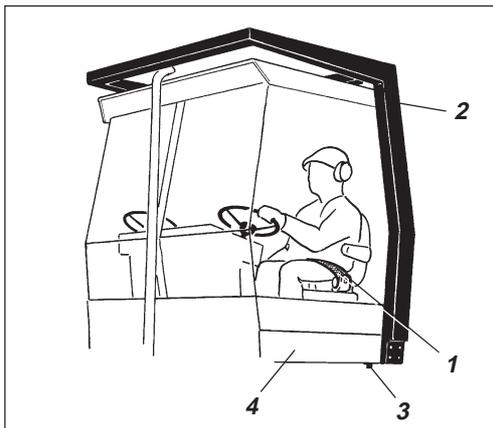


Fig. 12 Operator's station

1. Seat belt
2. ROPS
3. Rubber element
4. Anti-slip

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

WARNING



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

CAUTION



Check that rubber elements (3) on the platform are intact. Worn elements will impair comfort.

WARNING



Make sure that anti-slip (4) on the platform is in good condition; replace with new anti-slip if friction is poor.

WARNING



If the machine is fitted with a cab, make sure that the door is closed when in motion.

View

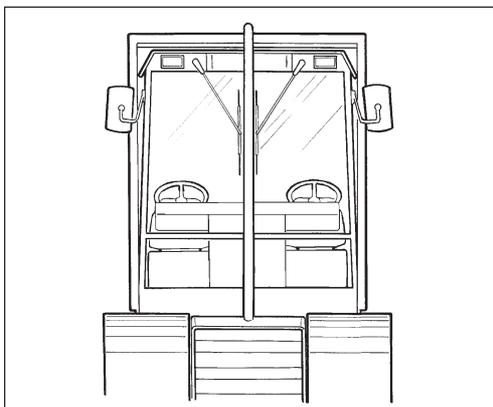


Fig. 13 View

Before starting, make sure that the field of view is unobstructed, both in front and behind. All cab windows must be clean and rear view mirrors properly adjusted.

STARTING

Starting the engine

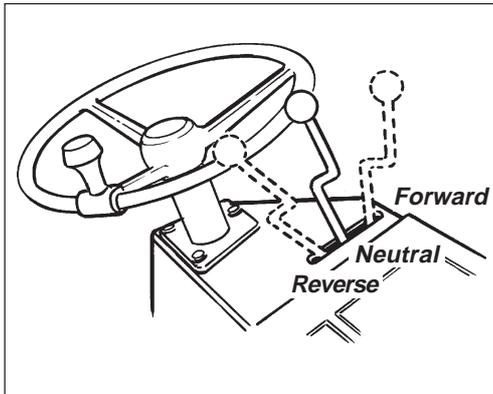


Fig. 14 Forward/reverse lever

Put the forward/reverse lever in neutral. The engine can only be started when the lever is in the neutral position.

Press the button on the end of the throttle control and pull out the throttle about $\frac{1}{4}$.

Instrument panel

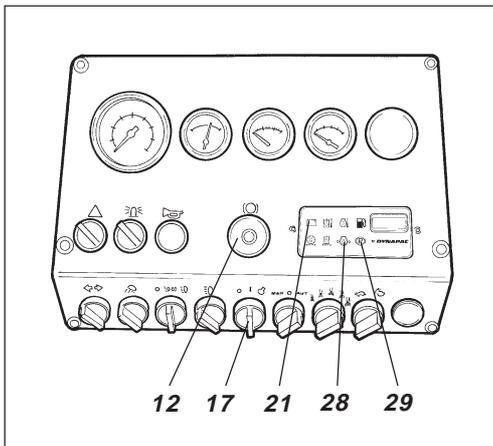


Fig. 15 Starting controls

- 12. Reserve/parking brake knob
- 17. Start/stop knob
- 21. Warning lamp for charging
- 28. Warning lamp for oil pressure
- 29. Warning lamp for brake

Turn the starter switch (17) to the right to the starting mode and release the knob immediately when the engine starts.

CAUTION



Do not run the starter motor too long; it is better to wait a minute or so if the engine does not start.

Warm up the engine at idling speed for a few minutes, longer if ambient temperature is below $+10^{\circ}\text{C}$ (50°F).

Check while warming up that the warning lamps for oil pressure (28) and charging (21) are out. The warning lamp (29) for the parking brake should still light.

WARNING



When you start up 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.

WARNING



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

OPERATION

Driving the roller

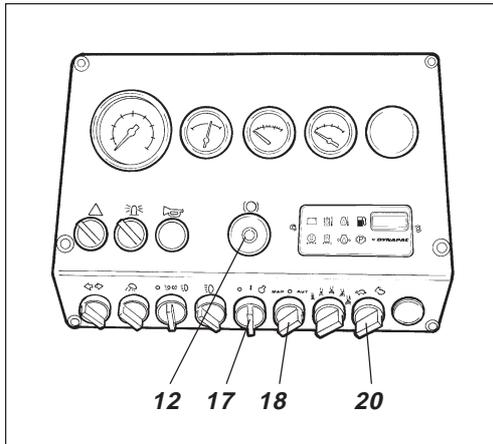


Fig. 16 Starting controls
12. Reserve/parking brake knob
17. Start/stop knob
18. Sprinkler switch
20. Gear selector

Instrument panel

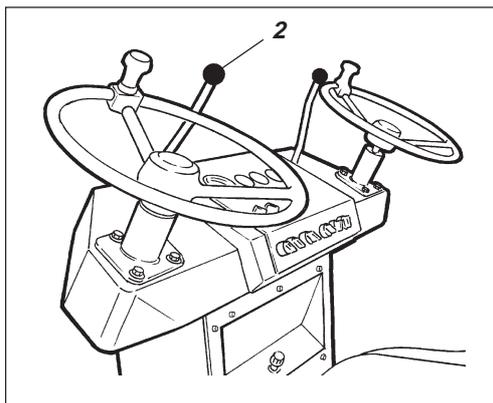


Fig. 17 Instrument panel
2. Forward/reverse lever

Sprinkler system/Water tanks

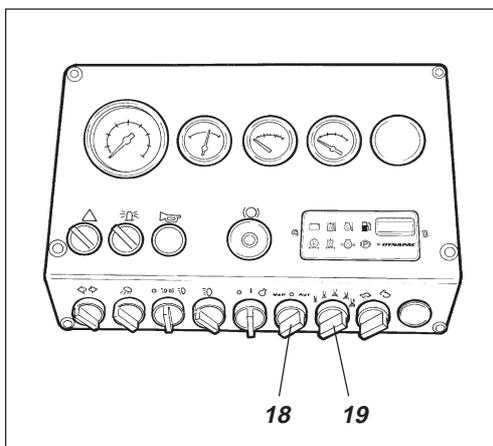


Fig. 18 Sprinkler control
18. Sprinkler switch
19. Sprinkler timer

WARNING



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

CAUTION



Always drive with engine revs higher than 1500 r/min.

Increase engine revs to 1800 r/min for maximum driving speed.

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

WARNING



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

WARNING



Pull up the reserve/parking brake knob (38) and check that the warning lamp for the parking brake is out. When starting the roller on a slope, be prepared that it may begin to roll.

Set the gear selector (20) at "Tortoise" and carefully move the forward/reverse lever (2) in the desired direction of travel. Speed increases as the lever is moved farther from the neutral position.

CAUTION



Speed must always be regulated with the forward/reverse lever and **never** by changing the engine speed.

WARNING



Test the reserve brake by pressing the reserve/parking brake knob (12) while the roller is running slowly forward.

Check now and then while driving that the gauges show normal readings. In the event of abnormal values or if the beeper sounds, immediately stop the roller and the engine. Check and remedy any fault; see also the maintenance manual and the engine manual. When changing direction of travel, always stop the roller fully before moving the forward/reverse lever to the opposite direction. Use the "Hare" mode for transport driving and "Tortoise" for compaction.

Turn on the sprinkler switch (18) and wet the drums thoroughly before driving/compacting on the course. Choose amount of water with the sprinkler timer (19). The roller are equipped with two water tanks, see "Specifications" in the Maintenance manual for water volume.

Also see Maintenance manual for filling/pumps/filter etc., and the following page regarding different settings for the sprinklerpumps.

Make sure the scrapers are correctly adjusted on the drums.

DRIVING

Basic setting

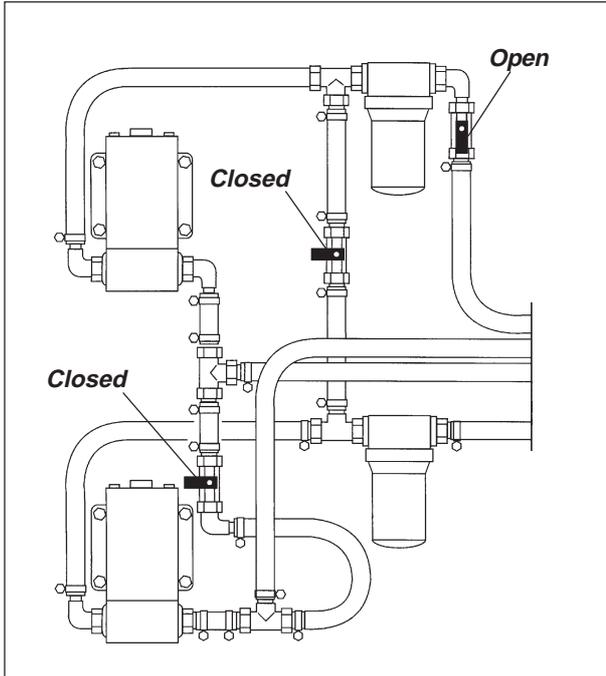


Fig. 19a Sprinkler system

Two tanks – one pump (the lower)

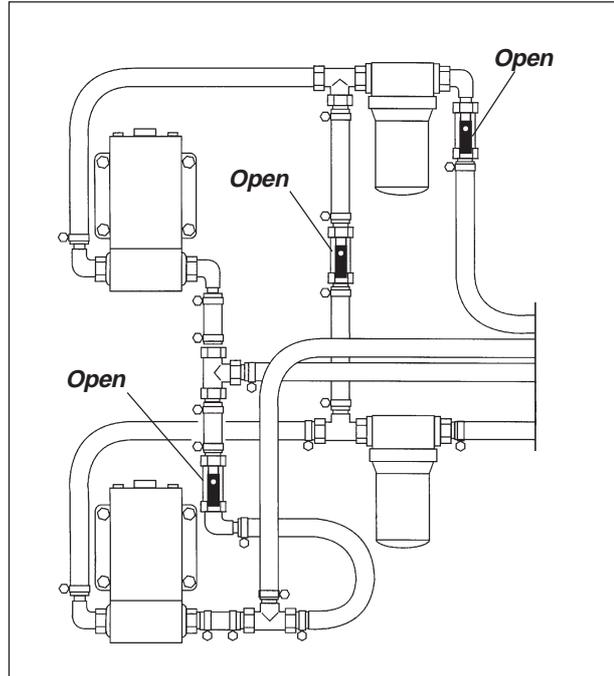


Fig. 19b Sprinkler system

One tank (the lower) – one pump (the upper)

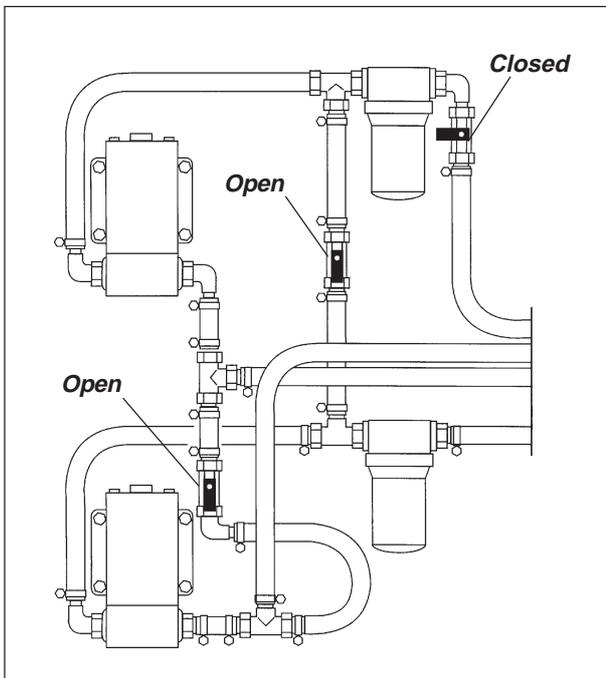


Fig. 19c Sprinkler system

One tank (the lower) – two pumps

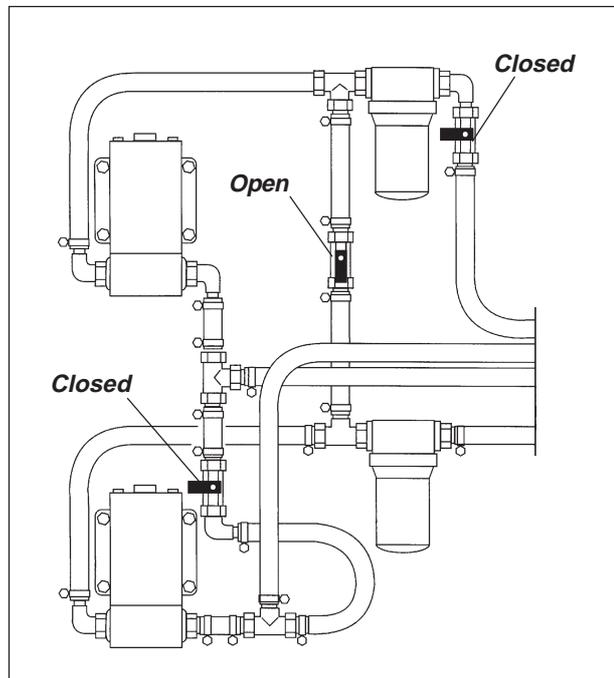


Fig. 19d Sprinkler system

Allow water from the upper tank to fill the lower one, then close the tap before the filter.

Allow water from the upper tank to fill the lower one, then close the tap before the filter.

BRAKING

Reserve brake

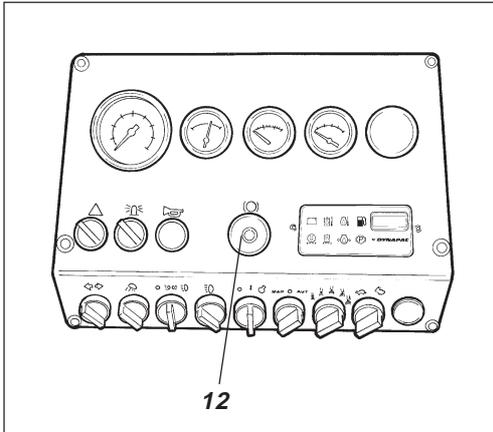


Fig. 20 Control panel
12. Reserve/parking brake knob

Braking is normally done with the forward/reverse lever. The hydrostatic transmission brakes the roller when the lever is moved towards neutral.

In addition, a disc brake in each drum motor acts as reserve brake when driving, and as a parking brake when stationary.

WARNING



To brake, press the reserve/parking brake knob (12), 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/parking brake knob.

Normal braking

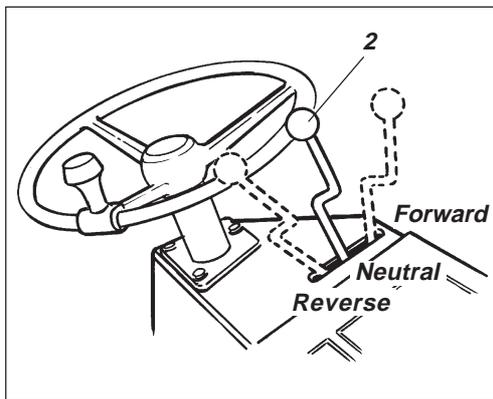


Fig. 21 Controls
2. Forward/reverse lever

Move the forward/reverse lever (2) to neutral to stop the roller.

WARNING



Always press the reserve/parking brake knob (12) even for brief stops when on sloping ground.

Turn the speed control back to idling, allow the engine to idle a 5 minutes to cool down.

WARNING



When you start up 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.

Switching off

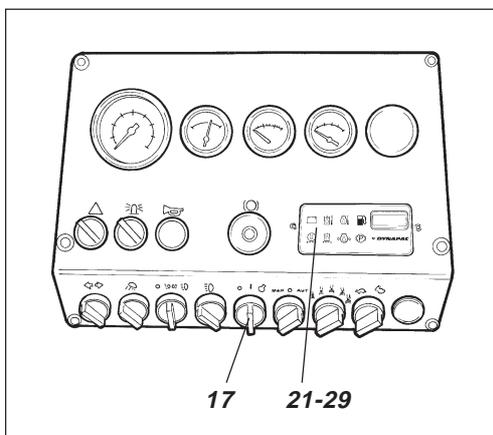


Fig. 22 Control panel
17. Starter switch
21-29. Panel for warning lamps

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

Turn the starter switch (17) to mode **O**. Lower the instrument cover (on rollers without cab) and lock it.

PARKING

Chocking the drum

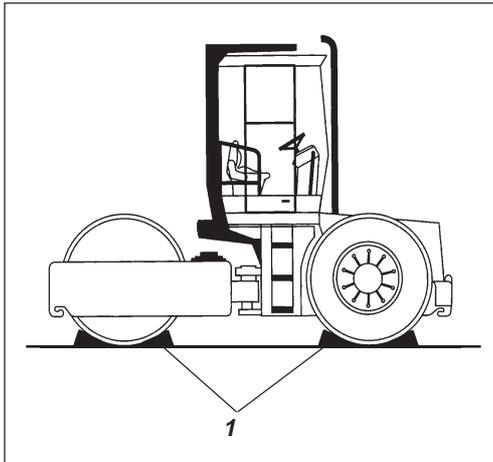


Fig. 23 Arrangement
1. Chock

WARNING



Never leave the roller with the engine running without pressing in the reserve/parking brake knob.

WARNING



Make sure that the roller is parked in a safe place for traffic. Chock the drums if the roller is parked on sloping ground.

CAUTION



Remember the risk of freezing during the winter. Use suitable antifreeze in the engine cooling system and in the washer fluid container in the cab. Empty the water tanks, pumps and leads.

Battery disconnecter

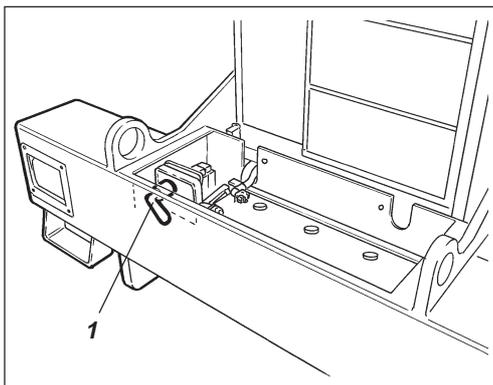


Fig. 24 Engine compartment
1. Battery disconnecter

Switch the battery disconnecter (1) into disconnected mode and remove the key before leaving the roller.

This will prevent battery discharge and will also make it difficult for any unauthorized person to start and drive the machine. Also lock the doors to the engine compartment.

LIFTING

Locking the articulated joint

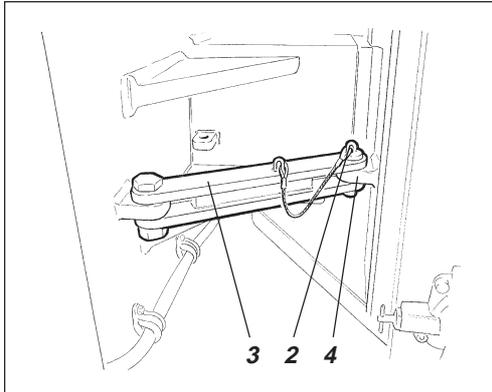


Fig. 25 Articulation in interlocked mode
2. Locking pin
3. Locking arm
4. Locking lug, front

WARNING



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

Turn the steering wheel so that the machine is set for driving straight forward. Push in the reserve/parking brake knob.

Pull up the locking pin (2), provided with wire.

Fold out the locking arm (3) and secure it to the upper locking lug (4) on the front of the machine frame.

Insert the locking pin through the holes in the locking arm and locking lug.

Lifting the roller

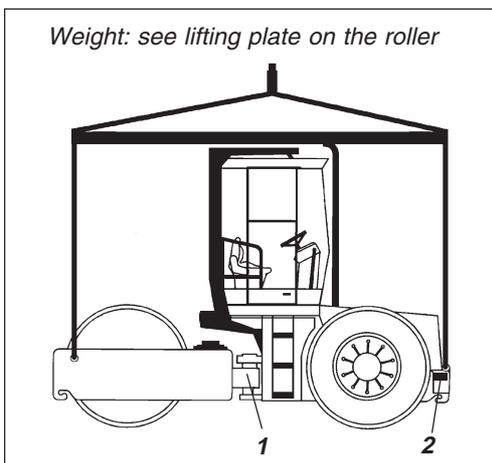


Fig. 26 Lifting the roller
1. Articulation lock
2. Lifting plate

WARNING



The gross weight of the machine is noted on the lifting plate (2). See also technical specifications in the maintenance instructions.

CAUTION



Lifting gear, such as chains, steel wires, straps, and lifting hooks must be dimensioned in conformance with current regulations.

WARNING



Keep well clear of the lifted machine! Make sure that lifting hooks are securely anchored.

Releasing the articulated joint

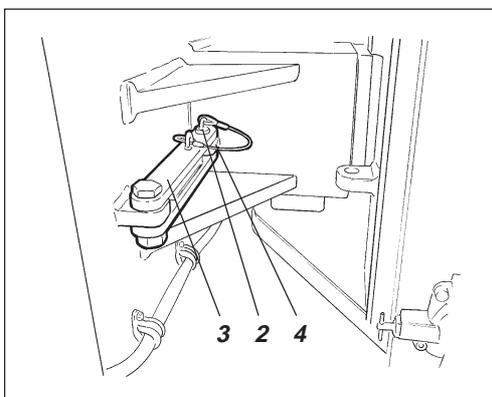


Fig. 27 Articulation in open mode
2. Locking pin
3. Locking arm
4. Locking lug, rear

CAUTION



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

Fold back the locking arm (3) and secure it in the locking lug (4) with the locking stud (2). The locking lug is located on the front frame of the machine.

TOWING

Towing

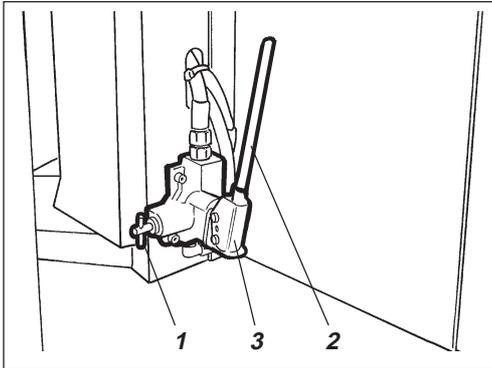


Fig. 28 Brake disengagement pump

1. Valve
2. Pump arm
3. Pump

WARNING



Chock the drums to prevent the roller from moving when the brakes are hydraulically disengaged.

First, open both of the towing valves according to alternative 1 above.

The disengagement pump for the brakes is located behind the right door to the engine compartment.

Make sure that the valve (1) is pushed in and pump with the pump arm (2) until the brakes are disengaged.

When restoring, hold the valve (1) in the extended position for a few seconds.

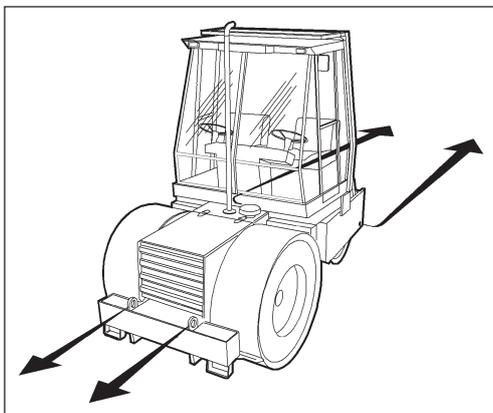


Fig. 29 Towing

WARNING



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

CAUTION



The roller must be towed slowly, max. 3 km/h (2 mph) and for a short distance only, max. 300 m (330 yards).

When a machine is towed/retrieved, the towing device must be connected to both lifting holes. Pulling forces shall act longitudinally on the machine as illustrated. Maximum gross pulling force 60 kN (13.5 lbf).

TRANSPORT

Roller prepared for transportation

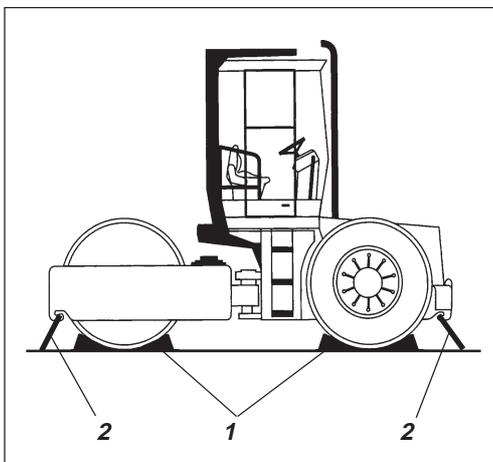


Fig. 30 Transportation

1. Chock
2. Lashing wire

WARNING



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

Chock the drums (1) and secure the chocks to the transport vehicle.

Clamp down the roller with lashing strap (2) at all four corners; decals indicate the fixing points.

CAUTION



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

WARNING



The roller must be unoccupied during transportation.

OPERATING INSTRUCTIONS - SUMMARY

WARNING



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. Put the forward/reverse lever in neutral.
5. Set the revs control to the idling mode.
6. Start the engine and allow it to warm up.
7. Set the revs control in the operating mode.

WARNING



8. **Drive the roller. Operate the forward/reverse lever with care.**

WARNING



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

10. Make sure that the drums are watered sufficiently when needed.

WARNING



11. **IN AN EMERGENCY:**
 - **Push in the reserve/parking brake knob.**
 - **Hold the steering wheel firmly.**
 - **Brace yourself for a sudden stop.**

12. Parking: Push in the reserve/parking brake knob.
Stop the engine and chock the drums.

13. Lifting: - See the operation manual.

14. Towing: - See the operation manual.

15. Transport: - See the operation manual.

16. Retrieval: - See the operation manual.