

DYNAPAC

Pneumatic rollers

CP221/271

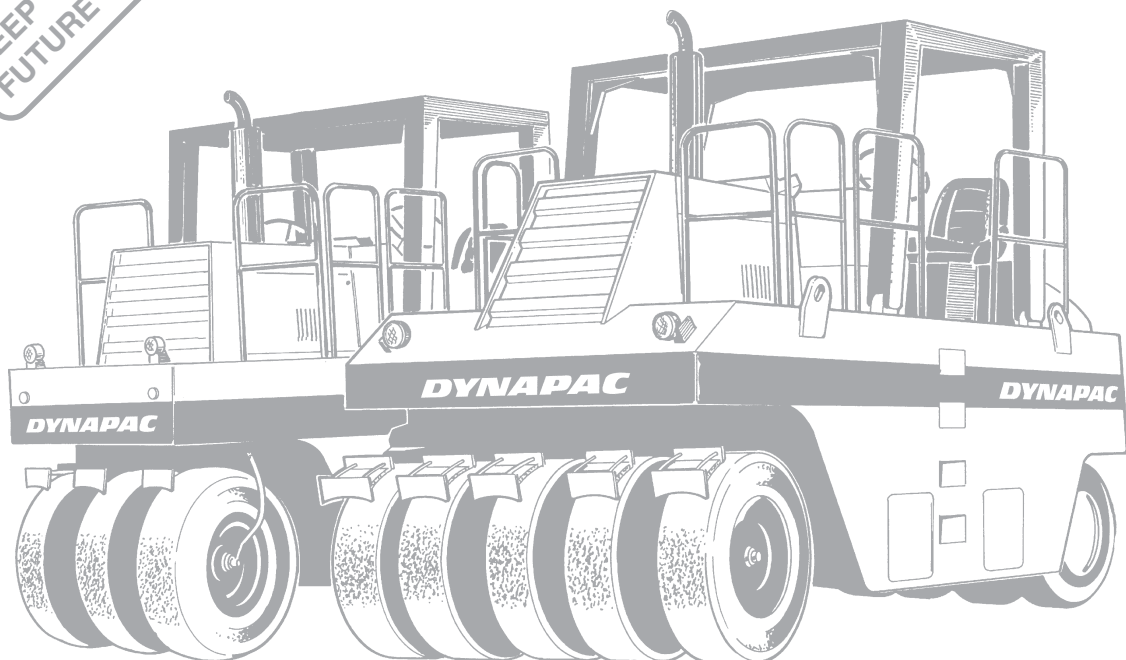
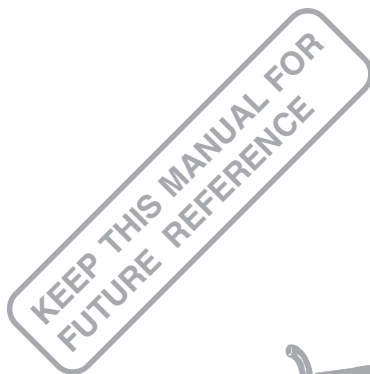
Operation

O221EN5, September 2004

**Diesel engine:
Cummins 4B4.5 - 99C**

These instructions apply from:

CP221	PIN (S/N) *2262(BR)0600*
CP271	PIN (S/N) *2362(BR)0700*



CP221 and 271 are heavy pneumatic rollers designed for the surface sealing and compacting of asphalt together with steel-drum rollers. Due to their very high weight these pneumatic rollers are also suitable for the compacting of subbases and base courses.

CP221 has three steered wheels at the front and four drive wheels at the rear, mounted on a rigid axle.

CP271 has five wheels at the front and four at the rear, mounted on a rigid axle.

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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, CP221/271 manual.

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 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 1/4 of the outer tire 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

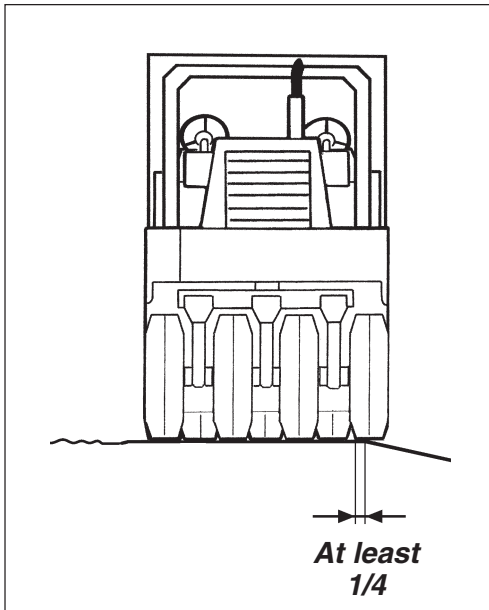


Fig. 1 Wheel position when driving close to edge

When driving close to unsafe edges or holes, make sure that at least 1/4 of the outer tire width is firmly on material that has already been compacted.

SAFETY WHEN DRIVING

Slopes

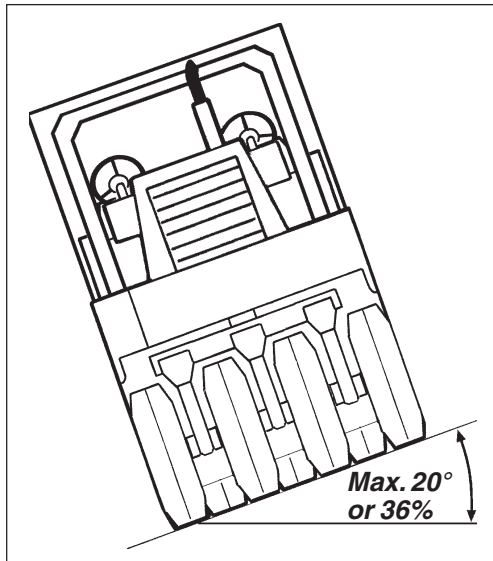


Fig. 2 Tipping angle on side slopes

WARNING



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.

WARNING



Always use 1st gear when driving on a slope.

The tipping angle is measured on level, hard ground and a stationary machine without ballast. The steering angle is zero (machine moving straight forward) and all tanks full. Remember that loose ground, steering of the machine, driving speed and increase in height of the center of gravity (for example, with accessories) may cause the machine to topple even on a smaller slope than that specified here.

Emergency braking

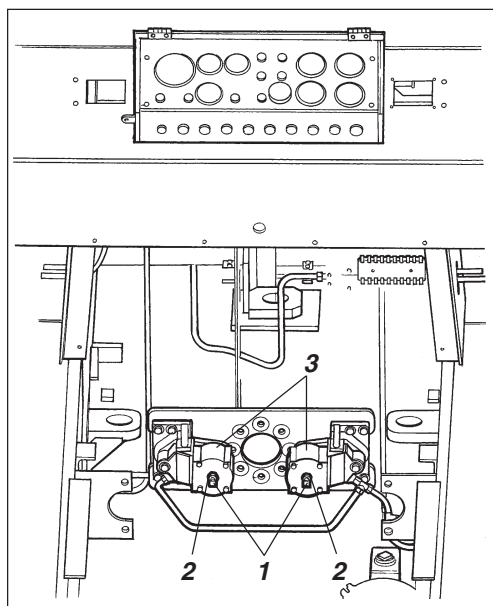


Fig. 3 Service cover, under operator's station

1. Adjusting screw (2x)
2. Lock nut (2x)
3. Brake yoke (2x)

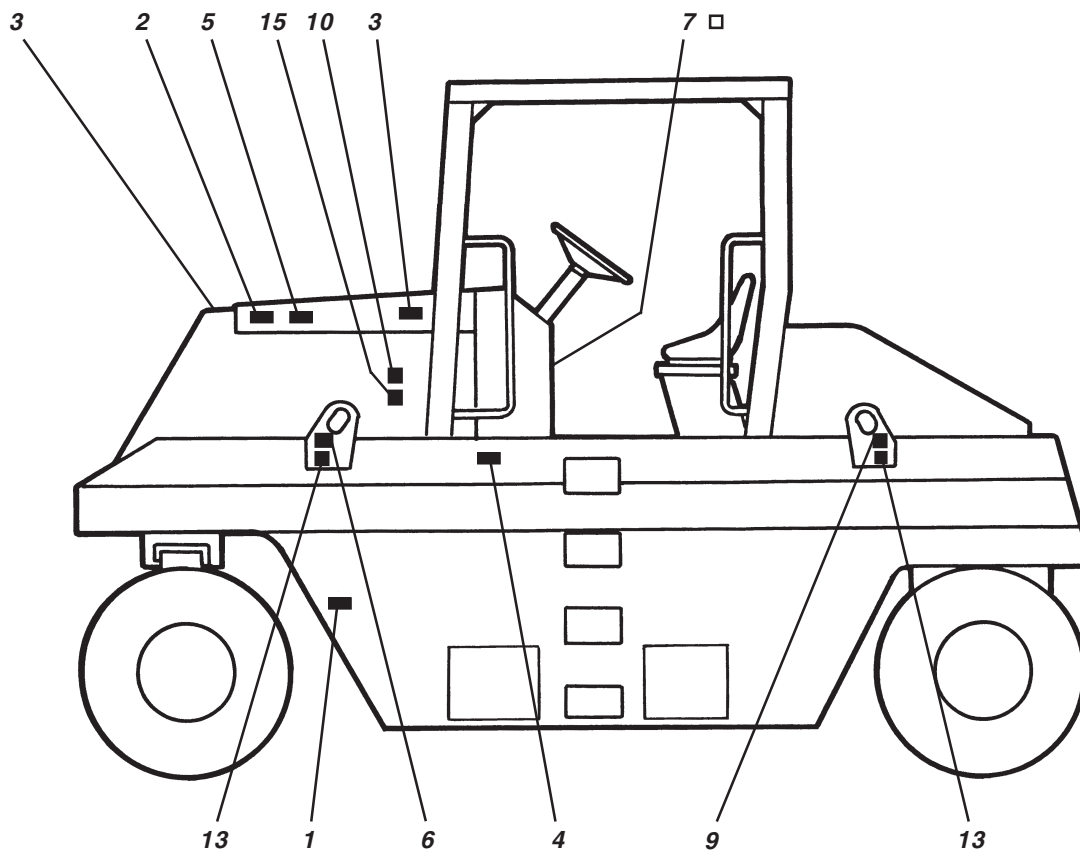
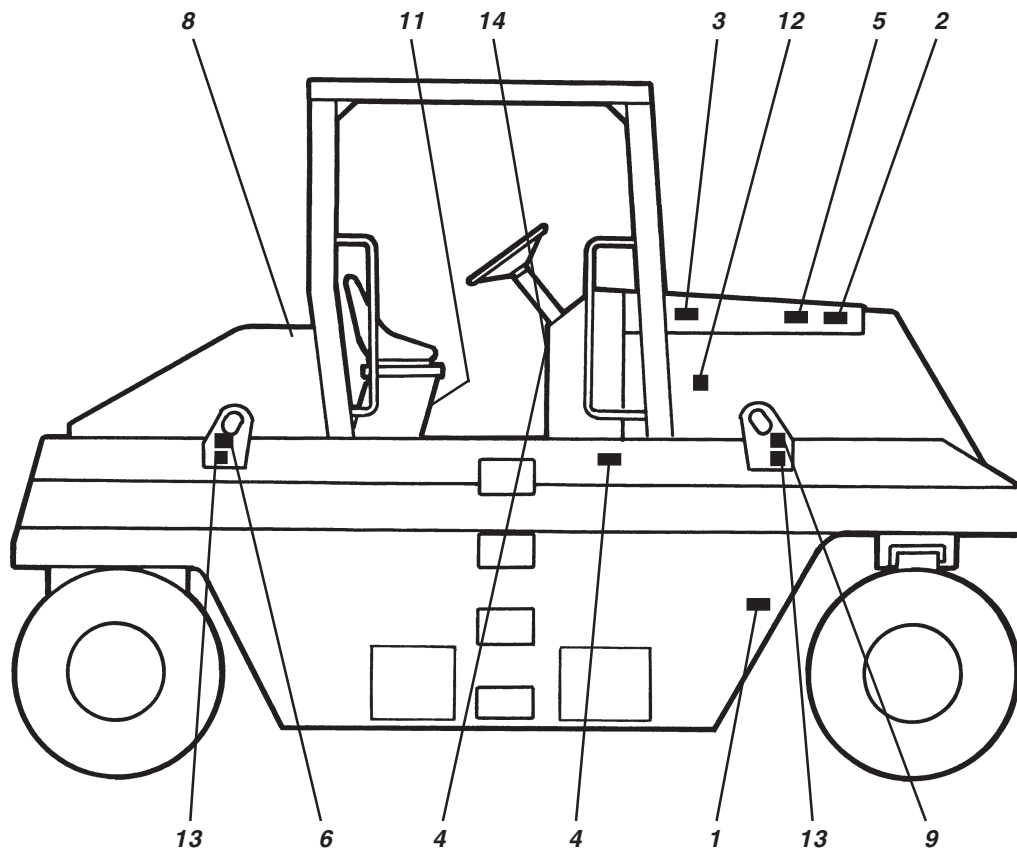
If emergency braking has occurred at transport speed, loosen the lock nut (2) and the adjusting screw (1) on both brake yokes (3).

Place a 0,3 mm (0.012 in) thick shim between the brake disc and one of the brake linings.

Tighten the adjusting screw (1) until it is just possible to remove the shim. Tighten the lock nut (2).

Repeat the procedure on the other brake yoke.

SAFETY DECALS, LOCATION AND DESCRIPTION



□ = Option

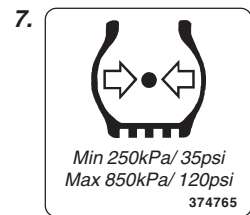
SAFETY DECALS, LOCATION AND DESCRIPTION



Crush zone, articulation.
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.



Tire pressure



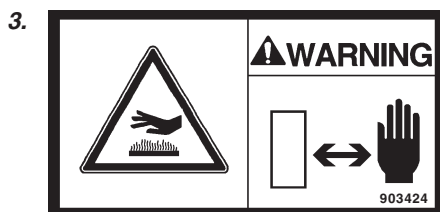
**Warning for rotating engine
components. Keep your
hands at a safe distance
from the danger zone.**



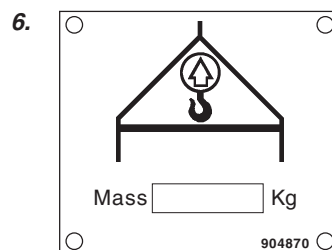
**Warning, hand and arm
entanglement. Never reach
into the hazardous area.**



Diesel fuel



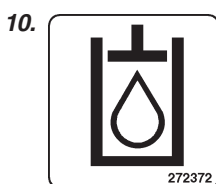
Warning for hot surface.
The surface must not be
touched.



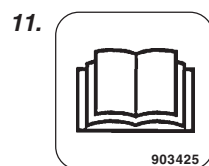
Hoisting plate



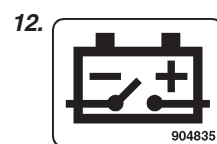
**Lifting
point**



**Hydraulic
fluid**



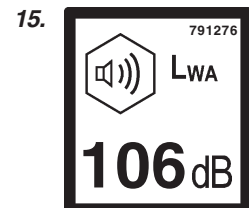
Handbooks



**Battery
disconnect**



**Securing
point**



**Sound Power
level**

MACHINE AND ENGINE PLATES

Machine plate

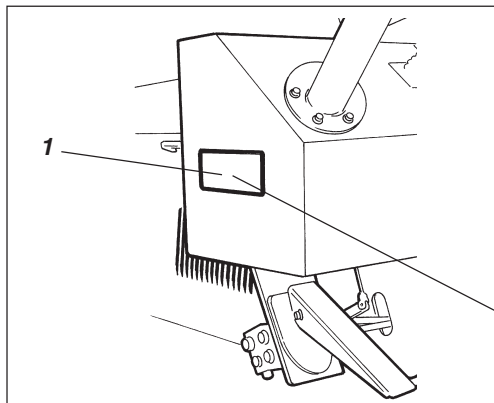


Fig. 4 Left hand side
1. Machine plate

The machine type plate (1) is located on the left side of the steering column. The plate shows the manufacturer's name and address, type of machine, PIN "Part Identification Number" (serial number), weight in working order, engine power and year of manufacture. CE markings and the year of manufacture may be omitted on machines supplied to markets outside the EU.

DYNAPAC			
Dynapac Compaction Equipment AB Box 504, SE-371 23 Karlskrona Sweden			
Type	Operating mass kg	Rated Power kW	Year of Mfg
Product Identification Number			
			358090SE

Please state the machine's PIN when ordering spares.

The PIN (1) of the machine is punched on the front right edge of the forward frame beam. This number is identical with the PIN (serial number) on the machine data plate.

Serial number on frame

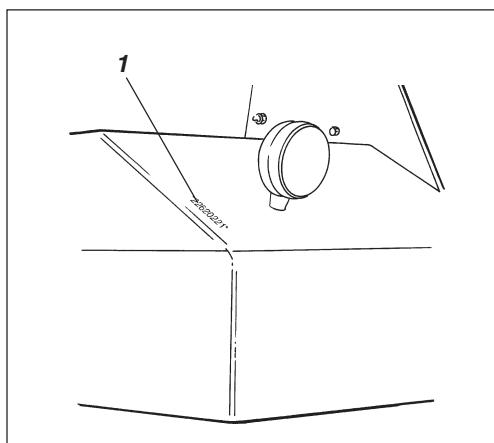


Fig. 5 Front frame
1. serial number

Engine plate

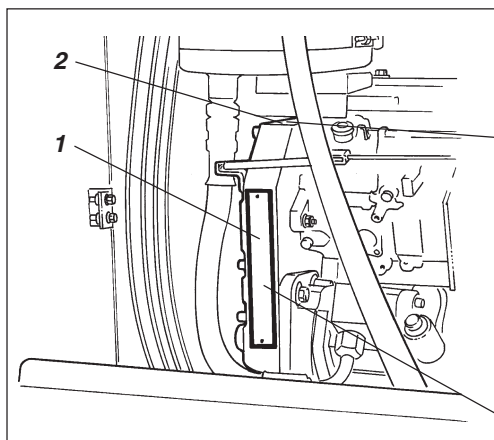


Fig. 6 Engine
1. Type plate
2. EPA sign (USA)

The engine type plate (1) on Cummins engines is located on the left side of the toothed-belt cover. The plate shows the type of engine, serial number and engine data. Please state the serial number of the engine when ordering spares. See also the engine manual.

IMPORTANT ENGINE INFORMATION			
This engine conforms to YYYY 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			
XXXXXXX			

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

INSTRUMENTS AND CONTROLS

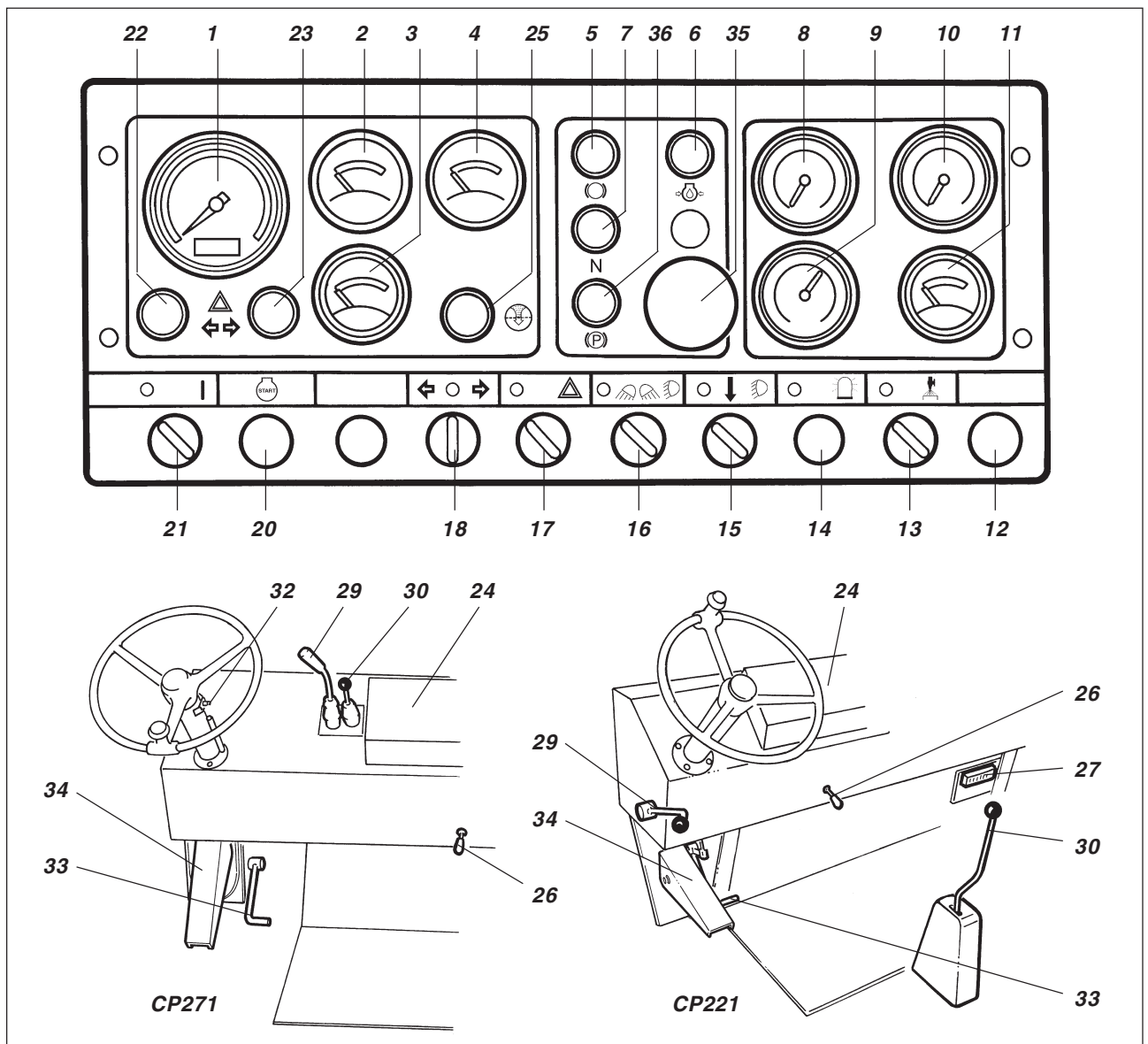













Fig. 7 Instruments and control panel














- | | |
|---|------------------------------------|
| 1. Tachometer/Hourmeter | 19. - |
| 2. Fuel gauge | 20. Starter button |
| 3. Coolant temperature gauge, engine | 21. Ignition changeover switch |
| 4. Voltmeter | 22. Direction indicator □ |
| 5. Warning lamp for low brake air pressure and low brake fluid level on machines with level sensor. | 23. Direction indicator □ |
| 6. Oil pressure lamp | 24. Panel cover |
| 7. Indicating lamp, neutral mode | 25. Warning lamp, air filter |
| 8. Tire pressure gauge □ | 26. Tire pressure control valve □ |
| 9. Brake air pressure gauge | 27. Fuse box |
| 10. Gearbox oil pressure | 28. - |
| 11. Gearbox oil temperature | 29. Forward/reverse lever |
| 12. Alarm, low air pressure, brakes | 30. Gear selector |
| 13. Sprinkler contact | 31. - |
| 14. Hazard beacon □ | 32. Horn |
| 15. Working lights, rear | 33. Accelerator |
| 16. Working lights/Driving lights □ | 34. Foot brake |
| 17. Hazard flashers changeover switch □ | 35. Parking brake knob |
| 18. Changeover switch, direction indicator □ | 36. Warning lamp for parking brake |

□ = Optional










INSTRUMENTS AND CONTROLS, FUNCTIONAL DESCRIPTION

Item in fig. 7	Designation	Symbol	Function
1	Tachometer/ Hourmeter		Indicates engine speed. Multiply meter reading by 100. Operating time is shown in hours.
2	Fuel gauge		Indicates level in the fuel tank.
3	Coolant temperature		Indicates engine operating temperature. Normal 82°C to 93°C. See engine manual.
4	Voltmeter		Indicates voltage of the system. Normal 12 to 15 V.
5	Warning lamp for low brake air pressure and low brake fluid level on machines with level sensor.		The lamp lights if pressure drops below 4 kg/cm ² (58 psi).
6	Warning lamp, low oil pressure		Stop the engine immediately if the warning lamp LIGHTS and locate and remedy the cause. See engine manual.
7	Neutral lamp	N	Lights when the forward/reverse lever is in neutral.
8	Gauge, tire pressure (Optional)		Indicates tire pressure.
9	Brake air pressure		Indicates operating pressure of the brakes. Normal reading 6,5 bar (94 psi).
10	Gauge, transmission oil pressure		Indicates operating pressure of the transmission. Normal reading 1270–1550 kPa (184–225 psi).
11	Gauge, transmission oil temperature		Indicates temperature of transmission oil. Normal working range 80 to 95°C.
12	Alarm, low brake pressure		Alarm signal sounds if pressure is below 4 kg/cm ² (58 psi).

INSTRUMENTS AND CONTROLS, FUNCTIONAL DESCRIPTION

Item in fig. 7	Designation	Symbol	Function
13	Sprinkler		Controls watering of the tires. O = No watering. I = Watering of the tires.
14	Hazard beacon, switch (Option)		Turn right to activate the hazard beacon.
15	Changeover switch, working lights, rear		Turn to the right to switch on the working lights.
16	Working lights, front, Driving lights (optional), switch		Turn right to switch on the working lights. Turn to switch on the parking lights and turn further to switch on the dipped headlights.
17	Hazard flashers (Optional)		Turn to the right to switch on the warning flashers.
18	Direction indicator, switch (Optional)		Turn left for the left direction indicator, etc. Flashing is switched off in the middle position.
20	Starter button		Press to energize the starter motor. Release immediately the engine fires.
21	Ignition switch		The electric circuit is broken in mode O . In mode I all instruments and electric controls are powered.
22	Direction indicator (Optional)		Flashes for left turn.
23	Direction indicator (Optional)		Flashes for right turn.
24	Panel cover		Lower over the panel as protection against the weather and sabotage.
25	Air filter service indicator		Clean the air filter if the red service indicator lights at full engine speed.
26	Tire pressure control valve (Optional)		Controls the tire pressure.

INSTRUMENTS AND CONTROLS, FUNCTIONAL DESCRIPTION

Item in fig. 7	Designation	Symbol	Function
27	Fuse box		Contains fuses for the electrical system. See under "Electrical system" for various functions of the fuses
29	Forward/reverse control		Move forward to drive forward, backward to reverse.
30	Gear selector		Move the lever forward for 1st gear, middle position 2nd gear and backward 3rd gear.
31	-		-
32	Horn		Press to sound the horn.
33	Accelerator		Press downward to increase engine revs and speed.
34	Brake pedal		Driving brake. Use for normal braking when driving. The brake system contains 2 circuits, where the second circuit is reserve brake.
35	Parking brake		Activates by the knob in depressed position. Normally used only for not moving machine and parking. Can be used in an emergency situation, but this requires readjustment.
36	Brake warning lamp		The lamp lights when the parking brake knob is pushed in and the brakes are applied.

BEFORE STARTING

Master switch – Switching on

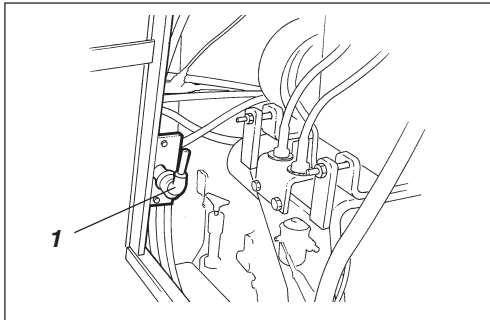


Fig. 8 Engine compartment
1. Master switch

Remember to carry out daily service. See maintenance manual.

The master switch is located on the right side in the engine compartment. Open the engine hood and turn the key (1) to the ON mode. This will power the entire roller.



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

Operator's seat – Setting

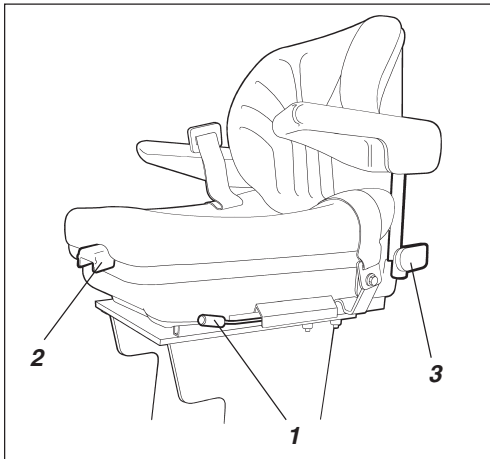


Fig. 9 Operator's seat
1. Length adjustment
2. Back slope adjustment
3. Weight adjustment

Adjust the operator's seat so that all controls can be easily reached.

The seat has the following adjustment features:

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



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

BEFORE STARTING

Instruments and lamps

– Checking

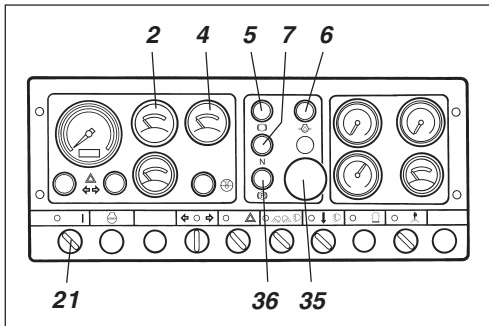


Fig. 10 Instrument panel

- 2. Fuel gauge
- 4. Voltmeter
- 5. Warning lamp for low brake air pressure and low brake fluid level on machines with level sensor.
- 6. Oil pressure lamp
- 7. Neutral lamp
- 21. Starter button
- 35. Parking brake knob
- 36. Warning lamp for parking brake

Turn the starter switch (21) to position **I** and all warning lamps should light for about five seconds.

Ensure that the voltmeter (4) indicates at least 12 volt. Ensure that the fuel gauge (2) shows a reading.

Check that the warning lamps for low brake pressure (5), oil pressure (6), neutral mode (7) and parking brake (36) light.

Parking brake – Check

WARNING



Make sure that the parking brake knob (35) is pushed in. If the parking brake is not applied, the roller may start to roll when starting the engine on sloping ground.

Seat belt

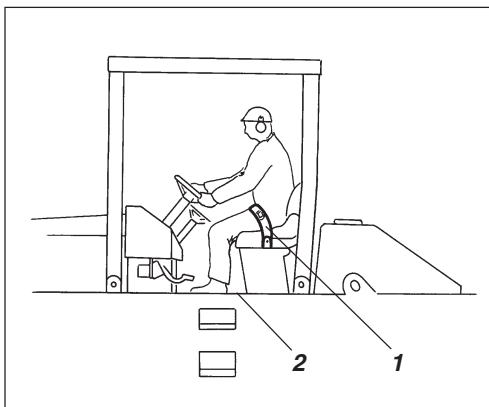


Fig. 11 Operator's station

- 1. Seat belt
- 2. 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



Replace the seat belt if it shows signs of wear or has been subjected to severe force.

WARNING



Make sure that anti-slip (2) on the platform is in good condition; replace with new anti-slip if friction is poor.

BEFORE STARTING

Check the forward/reverse control

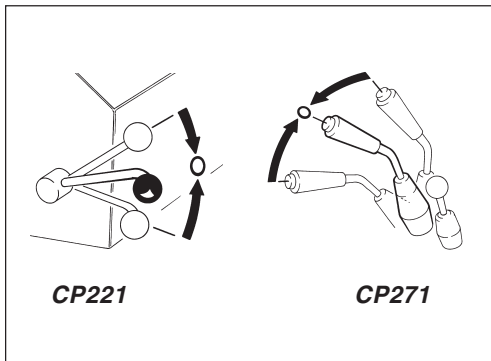


Fig. 12 Forward/reverse control

Ensure that the forward/reverse control is in neutral.

Accelerator and brake pedal

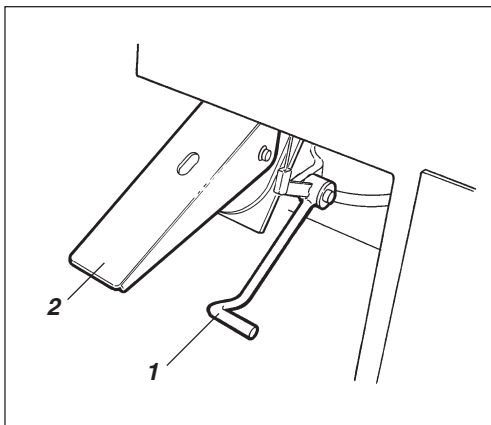


Fig. 13 Pedals
1. Accelerator
2. Foot brake

Position the seat to ensure that the accelerator (1) and the foot brake (2) are easily reached and the driving posture is comfortable.

As a general rule, 2nd gear is normally used for compaction operations. The final speed of the roller depends on the speed range selected with the gear lever. Use the accelerator pedal (1) to increase or reduce speed of the roller within the range.

STARTING

Starting the engine

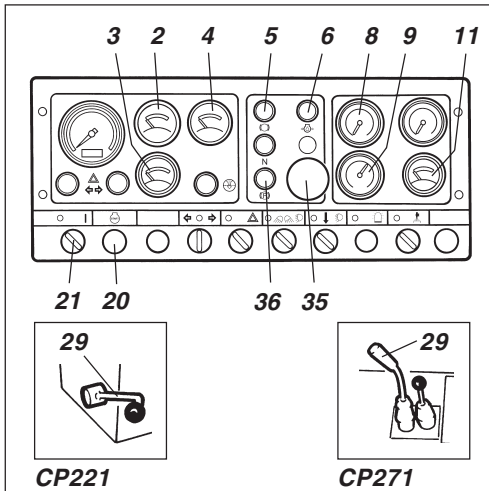


Fig. 14 Instrument panel

- 2. Fuel gauge
- 3. Coolant temperature gauge
- 4. Voltmeter
- 5. Warning lamp for low brake air pressure and low brake fluid level on machines with level sensor.
- 6. Oil pressure lamp
- 8. Tire pressure gauge
- 9. Brake pressure gauge
- 11. Transmission oil temperature gauge
- 20. Starter button
- 21. Ignition switch
- 29. Forward/reverse control
- 35. Parking brake knob
- 36. Warning lamp for parking brake

Brake test

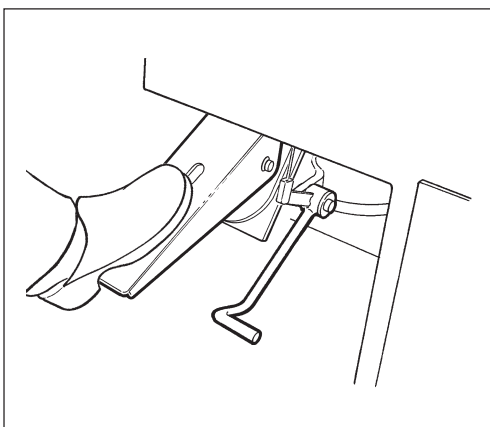


Fig. 15 Brake pedal

Set the forward/reverse lever (29) in neutral. The engine can only be started with the lever in neutral.



Make sure that the parking brake knob (35) is really pushed in. If the parking brake is not applied, the roller may start to roll when you start the engine on sloping ground.

Press the accelerator down about $\frac{1}{4}$. Turn the ignition switch (21) to position "I". The switch lights until the demanded pre-heater is ready. Ensure that the fuel gauge (2) and voltmeter (4) show readings and that the oil pressure warning lamp (6) is on.

Within 10 seconds after the pre-heater is ready: Briefly press the starter button (20). Release the button as soon as the engine fires.



Do not run the starter motor too long; preferably wait a minute or so if the engine does not start.

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

Check while warming up that the warning lamp for oil pressure (6) is out, and also that the voltmeter (4) indicates 13–14 volts. The warning lamp (36) for the parking brake should still light.

After warming up the engine, ensure that the temperature gauges for transmission oil (11) and coolant (3) show readings.



Ensure that ventilation (evacuation) is adequate if the engine is run indoors. i.e., danger of carbon monoxide poisoning.

Check all tires for correct pressure:
Minimum pressure 2.5 kg/cm^2 (35 psi)
Maximum pressure 8.5 kg/cm^2 (120 psi)

Tire pressure can be checked with the tire pressure gauge (8). Move the control valve lever (26, fig. 19) to its middle position. Up to increase and down to reduce (optional).



Test the driving brake. It is essential that the brakes are in working order.

Test by pressing the brake pedal. The brake pressure gauge (9) should then indicate 6,5 bar (94 psi). This is the maximum pressure.



Do not move the roller before pressure of the system has reached the specified operating level.



Test the brake by pressing the parking brake knob (37) while the roller is running slowly forward.

OPERATION

Driving the roller

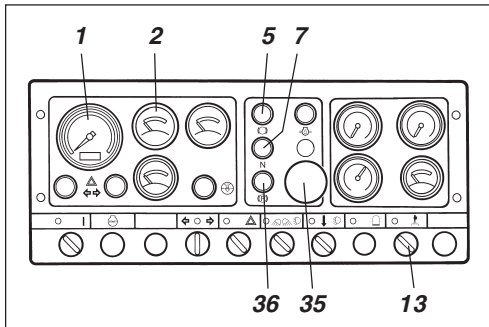


Fig 16 Instrument panel

- 1. Tachometer
- 2. Fuel gauge
- 5. Warning lamp for low brake air pressure and low brake fluid level on machines with level sensor.
- 7. Indicating lamp, neutral mode
- 13. Sprinkler contact
- 35. Parking brake knob
- 36. Warning lamp for parking brake

Selecting the speed range

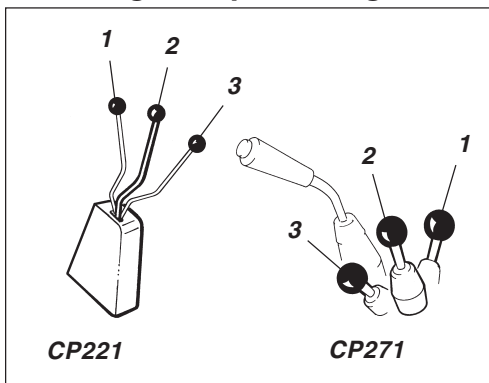


Fig 17 Gear selection lever

- 1. 1st
- 2. 2nd
- 3. 3rd

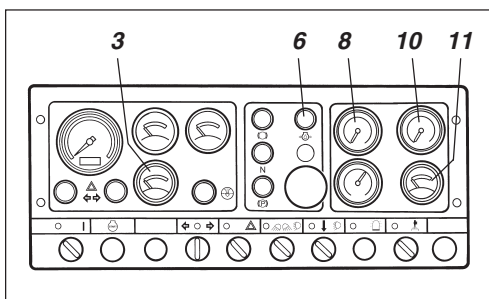


Fig 18 Instrument panel

- 3. Coolant temperature gauge, engine
- 6. Oil pressure lamp
- 8. Tire pressure gauge
- 10. Gearbox oil pressure
- 11. Gearbox oil temperature



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

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.

When compacting asphalt, remember to turn on the watering unit (13).



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



Pull up the parking brake knob (35) and check that the warning lamp (36) for the parking brake is out. When starting the roller on a slope, be prepared that it may begin to roll.

The following speeds are recommended:

1st

Steep slopes.
Driving in a cramped area with many obstacles.
With full ballast.
Driving on and off a transport vehicle.
In the event of strong resistance to rolling.
Maneuvering.

2nd

Rolling of compacted material. Eg, following a first run.

3rd

Used only for transport runs.



STOP the machine before changing the direction of travel or shifting gear.

Check now and then while driving that the gauges show normal readings. In the event of abnormal values or if the beeper sounds, stop the roller and the engine immediately. Check and remedy any fault, see also the maintenance manual and the engine manual.



Inspect the tire tread now and then to detect asphalt compound that has fastened—this is likely before the tires are sufficiently warm. Mixing 2-4% cutting fluid in the sprinkler water for the tires can prevent sticking.

OPERATION (Optional)

Adjusting tire pressure while driving (optional)

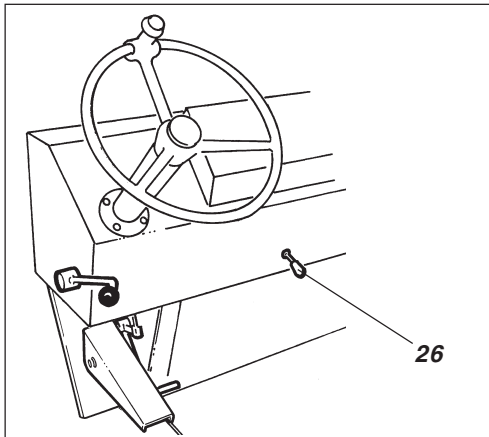


Fig. 19 Operator's station
26. Tire pressure control valve

Using the tire pressure control on the roller, the operator can vary the pressure while work is in progress. Using control valve (26) on the instrument panel, the pressure can be adjusted infinitely between 240 kPa and 830 kPa (35 to 120 psi).

Coconut mats (optional) – Applied

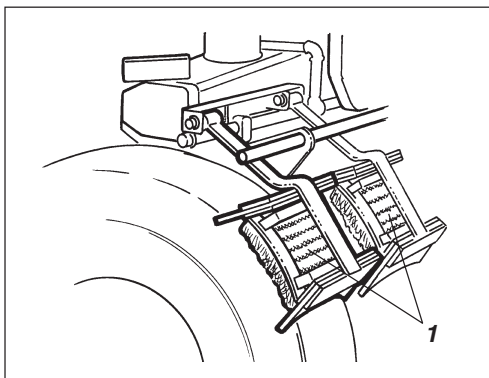


Fig. 20 In measure mode
1. Coconut mats

Remove the locking pin at each end of the rod.

Pull out the rod and allow the scrapers to rest in their working mode against the tires.

Insert the rod in the existing holes above the scraper. Fit the locking pins.

Disengaged

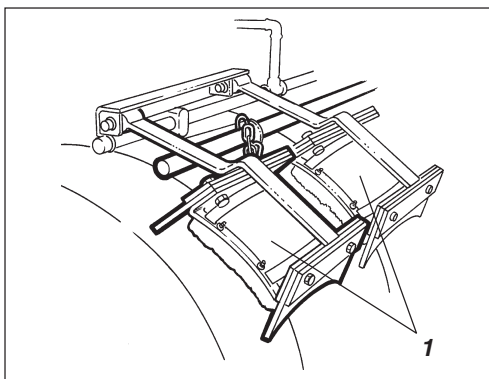


Fig. 21 Out of measure mode
1. Coconut mats

Remove the locking pins and pull out the rod.

Lift the scrapers and put the rod in the same place through existing holes under the scrapers.

Fit the locking pins.

OPERATION (Optional)

Ground pressure

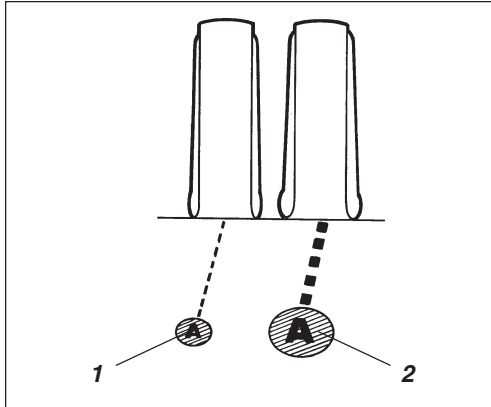


Fig. 22 Ground contact area

1. Contact area with high tire pressure
2. Contact area with low tire pressure

Contact area of the tires can be altered by altering the pressure.

High tire pressure gives smaller contact area (1).

Low tire pressure gives greater contact area (2).

The gross service weight divided by the number of tires gives the pressure per wheel. See table.

The ground contact area of the tires is relevant for compacting results.

CONTACT PRESSURE

Wheel pressure kg	Tire pressure, psi					
	240	350	480	620	720	830
	Ground pressure, psi					
1125	200	240	270	300	330	340
1375	220	260	300	330	350	380
1825	240	280	340	380	400	430
2250	250	310	360	410	440	480
2750	260	320	390	440	480	520
3000	270	330	410	460	490	540

Wheel pressure lbs	Tire pressure, psi					
	35	50	70	90	105	120
	Ground pressure, psi					
2500	29	35	39	44	47	49
3000	31	38	44	48	51	55
4000	35	41	49	55	58	62
5000	37	45	52	60	64	69
6000	38	47	57	64	70	75
6500	39	48	59	66	71	78

GROUND PRESSURE

Low tire pressure – 240 kPa (34.8 psi)

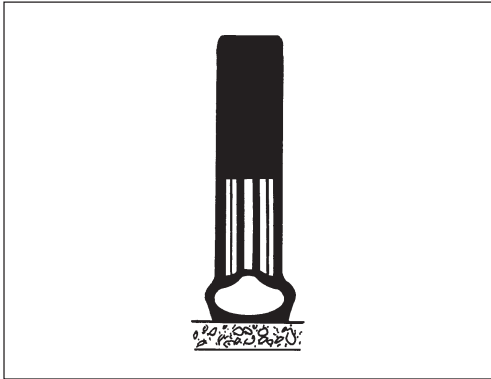


Fig. 23 Low pressure, larger area

The lower the tire pressure the lower the pressure on the contact surface, ie, due to the larger contact area.

Used on very loose material.

Normal tire pressure – 480 kPa (69.6 psi)

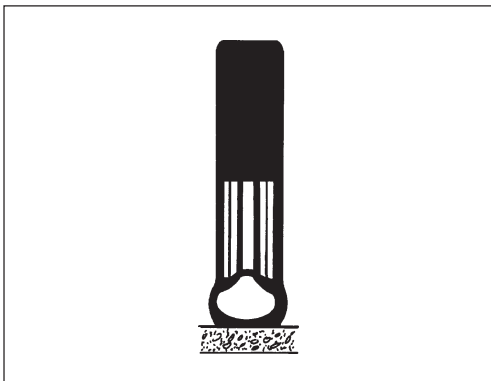


Fig. 24 Normal pressure

Used for degradation run.

High tire pressure – 830 kPa (120.4 psi)

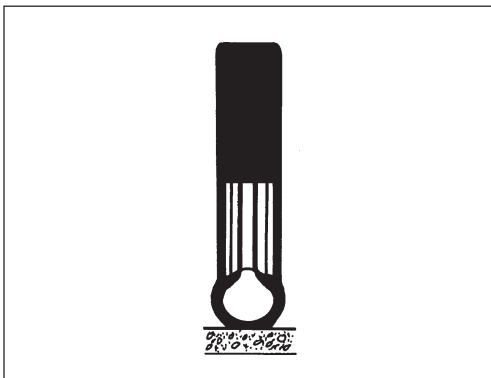


Fig. 25 High pressure, smaller area

The higher the tire pressure the higher the contact pressure.

Used on thicker courses and finishing run.

BALLAST

Ballast compartment, volume

CP221	CP271
5.4 m ³	8.0 m ³

Mixed ballast – max.

CP221	CP271
13.7 tonne	16 tonne

Use a suitable combination to achieve maximum ballast.

The service weight of the roller consists of the weight of the roller plus the weight of the ballast.

Thicker courses requires a heavier roller for efficient compacting, thinner course do not require such a heavy roller.

BALLAST COMPARTMENT

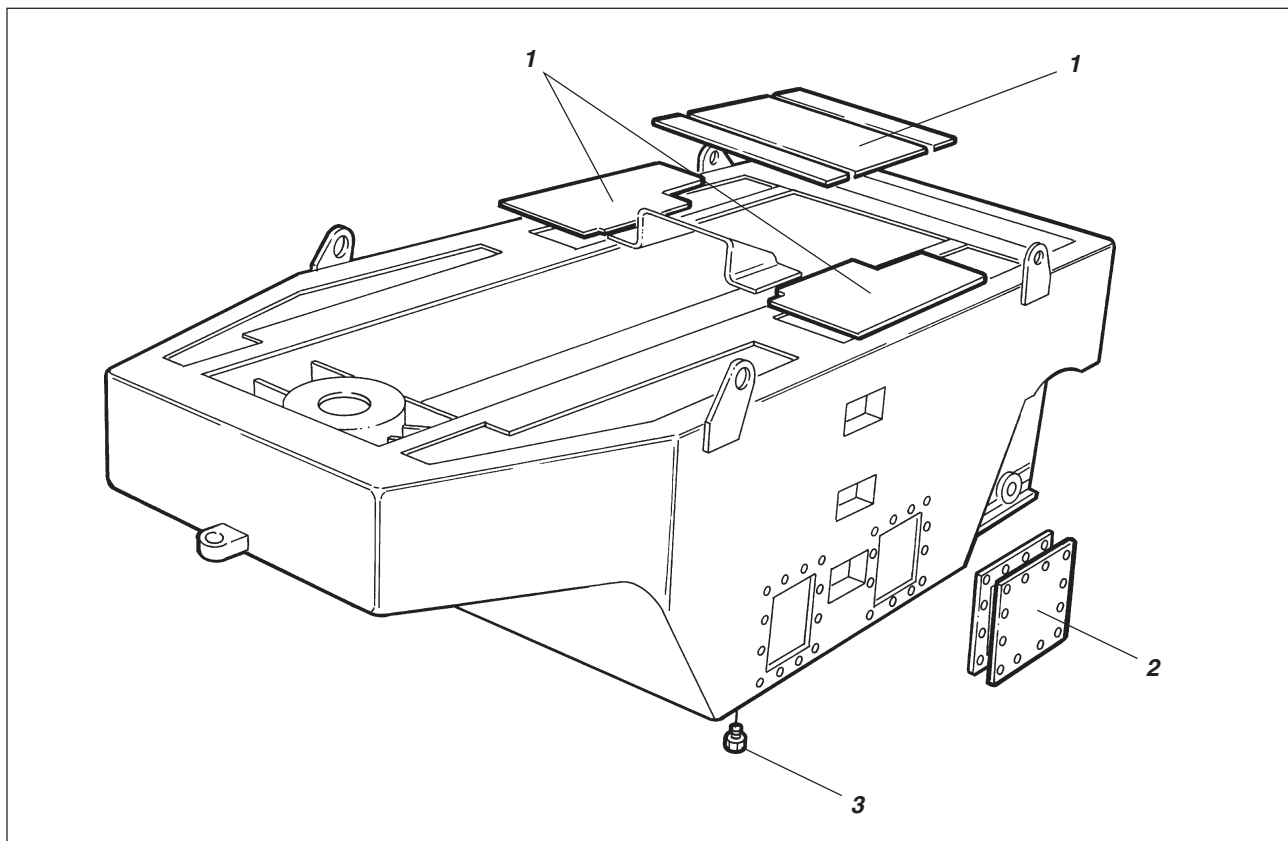


Fig. 26 Covers on the ballast compartment

- 1. Upper cover
- 2. Side cover
- 3. Plug

Fill the compartment from above.

Remove the upper cover (1).

Allow the side cover (2) to remain in place so that sand and water does not run out.

Remove the side cover when filling with pieces of steel.

Do not remove the plug (3), otherwise water will run out when the ballast is complemented with water.

Complement the ballast compartment as required with crushed rock, sand and steel.

Water can be added to the sand when being filled. This will even out the sand and fill spaces between the steel pieces.

CAUTION



When filling the roller with mixed ballast, begin with the available pieces of steel and then add the required amount of sand and water.

CAUTION



Distribute the ballast evenly.

Sand should be moistened with water when being filled. This will contribute to distributing the sand evenly.

BRAKING

Braking

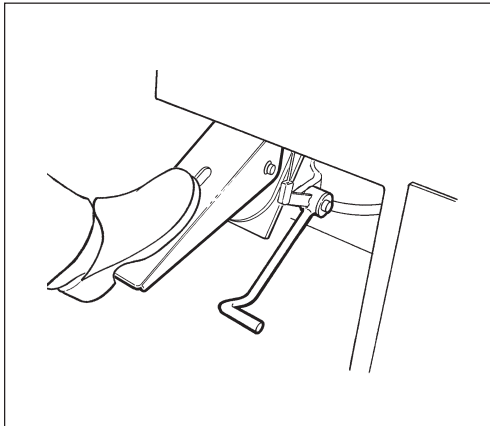


Fig. 27 Brake pedal

The driving brake is activated by the brake pedal, which is used to reduce speed and stop the machine during normal operation. Ensure that the brake pressure gauge indicates correct working pressure.

WARNING



Do not use the forward/reverse control for normal braking.

WARNING



Always apply the parking brake before leaving the machine.

Switching off

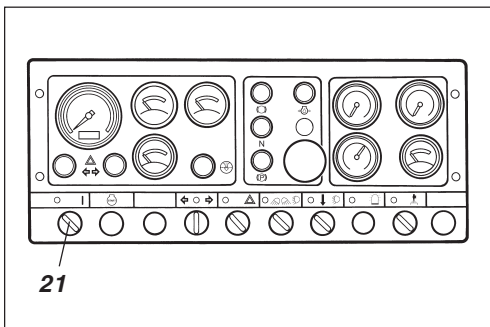


Fig. 28 Instrument panel
21. Ignition switch

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

Activate the parking brake!

Turn the ignition switch (2) to mode **O**. Lower the instrument cover and lock it.

PARKING

Chocking the wheels

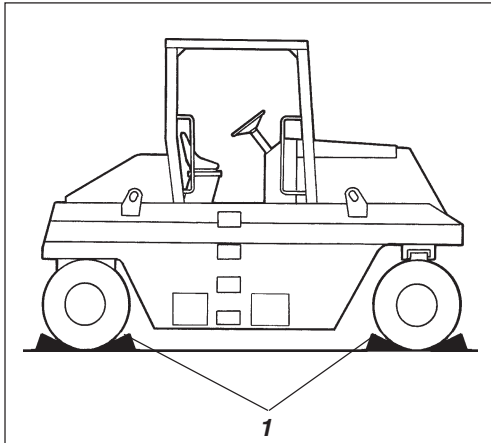


Fig. 29 Chocking the wheels
1. Chock



WARNING

Never leave the drivers platform without pressing in the parking brake knob.



WARNING

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

Turn the ignition to position **O** and lock the protective cover over the instrument panel with a padlock.



CAUTION

Remember the risk of freezing during the winter. Empty the water tanks, pumps and leads.

Master switch

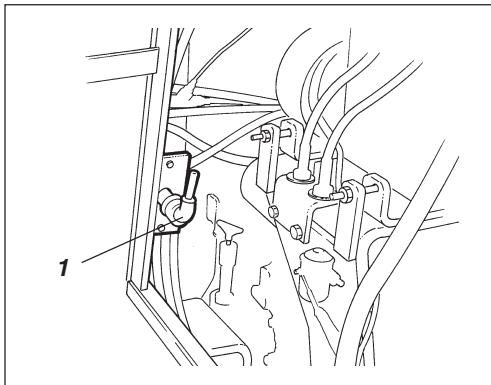


Fig. 30 Engine compartment, right side
1. Master switch

Turn off the master switch (1) and remove the handle 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.

HOISTING

Lifting the roller

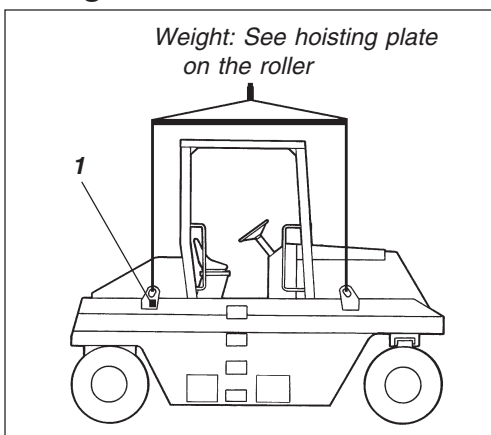


Fig. 31 Roller prepared for lifting
1. Hoisting plate

Ensure that the front wheels are in line with the frame before lifting the roller.

Place the lifting chains in the lifting lugs and make certain that no part of the machine is damaged by the chains when lifting.



WARNING

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



CAUTION

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



WARNING

Do not walk under a suspended load. Ensure that the hooks of the lifting chains are fitted securely in their positions.

TOWING

Towing

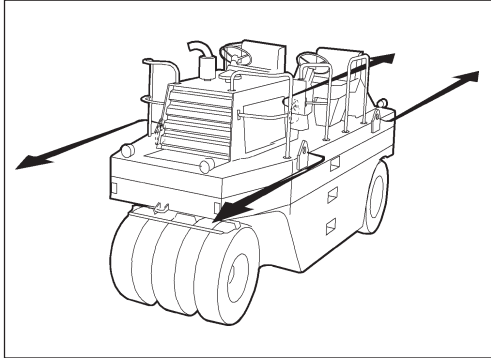


Fig. 32 Towing

The roller should normally not be towed because of the risk of damaging components in the transmission as a result of insufficient lubrication.

If towing cannot be avoided, put the forward/reverse control in neutral and use a tow bar dimensioned for the purpose, maximum pulling force 125 kN (62.5 kN each lifting hole) (28,100 lbs force—14,050 lbs force in each lifting hole).

The cardan shaft should be dismantled if the vehicle must be towed more than 100 m (90 yds).

Pulling eyelet

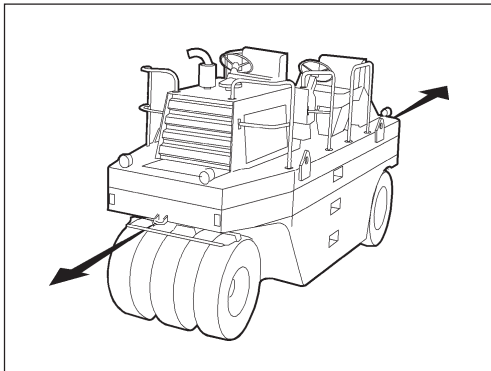


Fig. 33 Pulling eyelet



WARNING

If dismantling the cardan shaft, attention requires to that the parking brake is totally put out of operation.



WARNING

If the brake pressure as well is missing, towing in slopes can be highly dangerous. The traction vehicle's brakes must be dimensioned to manage the high unbraked machine weight.



WARNING

If not a safe towing can be accomplished, transportation must be done according to transportation instruction.



WARNING

Maximum towing speed may not exceed 3 km (1.9 miles) per hour.

The roller can be fitted with a pulling eyelet. The pulling eyelet is for pulling objects weighing no more than 2,400 kg (5.292 lbs). The pulling eyelet is not intended for towing/retrieval.

TRANSPORTATION

Roller prepared for transportation

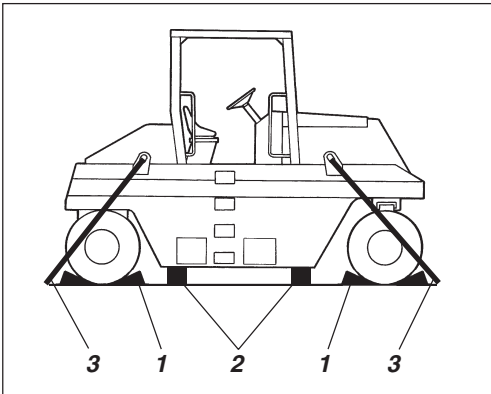


Fig. 34 Transporting a roller

1. Chock
2. Block up
3. Lashing wire

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

Block up under the frame (2) to avoid damage to the machine.

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

OPERATING INSTRUCTIONS – SUMMARY

WARNING



1. **Follow the SAFETY INSTRUCTIONS in the safety manual.**
2. Ensure that all instructions in the maintenance manual have been followed.
3. Turn the master switch to ON.
4. Move the forward/reverse lever to neutral.
5. Start the engine and allow it to warm up.
6. Select a suitable gear.
7. Release the parking brake.

WARNING



8. **Drive the roller. Accelerate with care.**

WARNING



9. **Test the brakes.**
Check to see that the correct brake pressure is achieved.

CAUTION



10. Stop the machine before changing direction of travel or shifting gear.
11. Parking:
 - Push in the parking brake knob.
 - Stop the engine and chock the wheels.
12. Hoisting:
 - See the the instruction.
13. Towing:
 - See the instruction.
14. Transport:
 - See the instruction.