

Instruction manual

ICC422C-2EN1.pdf
Operation & Maintenance

Vibratory roller, combi
CC422C

Engine
Cummins 4B TAA 3.9

Serial number
***42620800* -**




Dynapac CC422C is a vibratory roller in the 10 ton class (a so-called combi version of CC422) with articulated steering. It has a vibratory drum at the front and four smooth rubber tires at the rear, all with driving and braking functions.


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Introduction


Warning symbols


 **WARNING !** Marks a danger or a hazardous procedure that can result in life threatening or serious injury if the warning is ignored.

 **CAUTION !** Marks a danger or hazardous procedure that can result in damage to the machine or property if the warning is ignored.

Safety information

 **The safety manual supplied with the machine must be read by all roller operators. Always follow the safety instructions. Do not remove the manual from the machine.**

 **We recommend that the operator reads the safety instructions in this manual carefully. Always follow the safety instructions. Ensure that this manual is always easily accessible.**

 **Read the entire manual before starting the machine and before carrying out any maintenance.**

 **Ensure good ventilation (extraction of air by fan) where the engine is run indoors.**

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.

General

This manual contains instructions for machine operation and maintenance.

The machine must be correctly maintained for maximal performance.

The machine should be kept clean so that any leakages, loose bolts and loose connections are discovered at as early a point in time as possible.

Inspect the machine every day, before starting. Inspect the entire machine so that any leakages or other faults are detected.

Check the ground under the machine. Leakages are more easily detected on the ground than on the machine itself.



THINK ENVIRONMENT ! Do not release oil, fuel and other environmentally hazardous substances into the environment. Always send used filters, drain oil and fuel remnants to environmentally correct disposal.

This manual contains instructions for periodic maintenance normally carried out by the operator.



Additional instructions for the engine can be found in the manufacturer's engine manual.

Safety - General instructions

(Also read the safety manual)



1. **The operator must be familiar with the contents of the OPERATION section before starting the roller.**
2. **Ensure that all instructions in the MAINTENANCE section are followed.**
3. **Only trained and/or experienced operators are to operate the roller. Passengers are not permitted on the roller. Remain seated at all times when operating the roller.**
4. **Never use the roller if it is in need of adjustment or repair.**
5. **Board and leave the roller only when it is stationary. Use the grips and railings provided. Always use the three-point grip (both feet and one hand or one foot and both hands) when boarding or disembarking the machine.**
6. **The ROPS (Roll Over Protective Structure) should always be used when the machine is operated on unsafe ground.**
7. **Drive slowly in sharp bends.**
8. **Avoid driving across slopes. Drive straight up or straight down the slope.**
9. **When driving close to edges or holes, make sure that at least 2/3 of the drum width is on previously compacted materials.**
10. **Make sure that there are no obstacles in the direction of travel, on the ground, in front of or behind the roller, or overhead.**
11. **Drive particularly 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 any dirt or grease that accumulates on the operator platform immediately. Keep all signs and decals clean and legible.**
14. **Safety measures before refueling:**
 - **Shut off the engine**
 - **Do not smoke**
 - **No naked flame in the vicinity of the machine**
 - **Ground the filling device nozzle to the tank to avoid sparks**
15. **Before repairs or service:**
 - **Chock the drums/wheels and under the strike-off blade.**
 - **Lock the articulation if necessary**
16. **Hearing protection is recommended if the noise level exceeds 85 dB(A). The noise level can vary depending on what type of material the machine is being used on.**

- 17. Do not make any changes or modifications to the roller that could affect safety. Changes are only to be made after written approval has been given by Dynapac.**
- 18. Avoid using the roller before the hydraulic fluid has reached its normal working temperature. Braking distances can be longer than normal when the fluid is cold. Refer to the operating instruction in the STOP section.**

Safety - when operating

Driving near edges

When driving near an edge, minimum 2/3 of the drum width must be on solid ground.

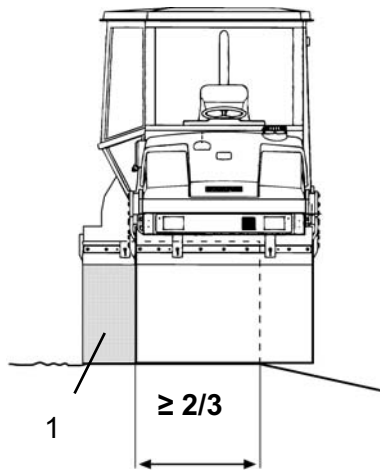


Fig. Position of drums when driving near an edge
1. Pivotal steering



When using pivotal steering, only one drum should be allowed to move into the position shown in the picture. The other drum must be in contact with the ground across its full width.



Keep in mind that the machine's center of gravity moves outwards when steering. For example, the center of gravity moves to the right when you steer to the left.

Slopes

This angle has been measured on a hard, flat surface with the machine stationary.

The steering angle was zero, the vibration was switched OFF and all tanks were full.

Always take into consideration that loose ground, steering the machine, vibration on, machine speed across the ground and raising the center of gravity can all cause the machine to topple at smaller slope angles than those specified here.

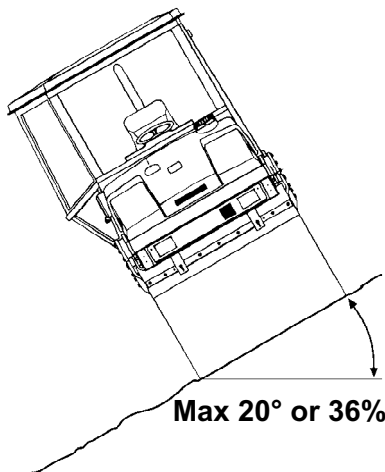


Fig. Operating on slopes



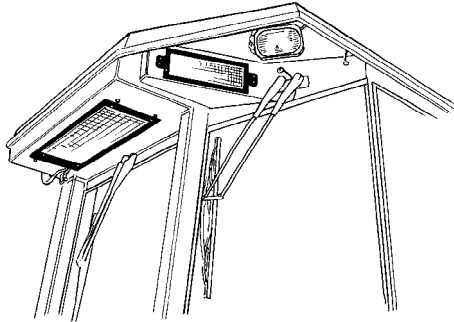
To exit the cab in an emergency, release the hammer on the rear right post and break the rear window.



It is recommended that ROPS (Roll Over Protective Structure) or a ROPS approved cab, is always used when driving on slopes or unsafe ground.



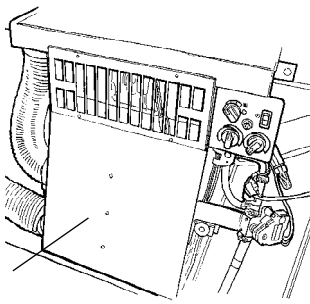
Where possible, avoid driving across slopes. Drive instead straight up and down sloping ground.

Safety (Optional)**Air conditioning (Optional)**

! *The system contains pressurized refrigerant. It is forbidden to release refrigerants into the atmosphere.*

! *Work on the refrigerant circuit is only to be carried out by authorized companies.*

! *The cooling system is pressurized. Incorrect handling can result in serious personal injury. Do not disconnect or undo the hose couplings.*



! The system must be refilled with an approved refrigerant by authorized personnel when necessary. Refer to the technical specifications.

Fig. Air conditioning
1. Cooling system in the cab

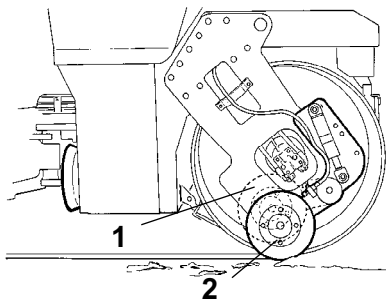


Fig. Edge cutter/edge roller
1. Transport position
2. Operation position

Edge cutter/edge roller (Optional)



The operator must make sure that nobody is in the area of operation while the machine is in use.



The edge cutter consists of rotating components and there is a risk of being crushed.



The tool is to be returned to the transport position (1) immediately after use.

Special instructions

Standard lubricants and other recommended oils and fluids

Before leaving the factory, the systems and components are filled with the oils and fluids specified in the lubricant specification. These are suitable for ambient temperatures in the range -15°C to +40°C (5°F - 104°F).



The maximum temperature for biological hydraulic fluid is +35°C (95°F).

Higher ambient temperatures, above +40°C (104°F)

For operation of the machine at higher ambient temperatures, however maximum +50°C (122°F), the following recommendations apply:

The diesel engine can be run at this temperature using normal oil. However, the following fluids must be used for other components:

Hydraulic system - mineral oil Shell Tellus T100 or similar.

Temperatures

The temperature limits apply to standard versions of rollers.

Rollers equipped with additional equipment, such as noise suppression, may need to be more carefully monitored in the higher temperature ranges.

High pressure cleaning

Do not spray directly onto electrical components.



High-pressure washing must not be used on the instrument panel.



Detergent that can destroy electrical parts, or which is conductive, must not be used.



In certain cases there is an electric operating lever and an attendant program box in the engine compartment, which must not be washed with high-pressure washing or otherwise washed with water. It is sufficient to wipe them clean.

Place a plastic bag over the fuel filler cap and secure with a rubber band. This is to avoid high pressure water entering the vent hole in the filler cap. This could cause malfunctions, such as the blocking of filters.



Never aim the water jet directly at the fuel tank cap. This is particularly important when using a high-pressure cleaner.

Fire fighting

If the machine catches fire, use an ABE-class powder fire extinguisher.

A BE-class carbon dioxide fire extinguisher can also be used.

Roll Over Protective Structure (ROPS), ROPS approved cab



If the machine is fitted with a Roll Over Protective Structure (ROPS, or ROPS approved cab) never carry out any welding or drilling in the structure or cab.



Never attempt to repair a damaged structure or cab. These must be replaced with new structures or cabs.

Battery handling



When removing the battery, always disconnect the negative cable first.



When fitting the battery, always connect the positive cable first.




Dispose of old batteries in an environmentally friendly way. Batteries contain toxic lead.



Do not use a quick-charger for charging the battery. This may shorten battery life.

Jump starting

 **Do not connect the negative cable to the negative terminal on the dead battery. A spark can ignite the oxy-hydrogen gas formed around the battery.**

 **Check that the battery used for jump starting has the same voltage as the dead battery.**

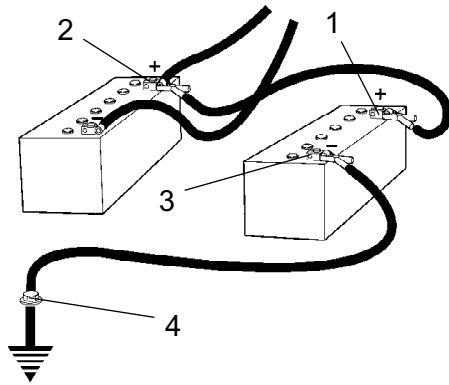


Fig. Jump starting

Turn the ignition and all power consuming equipment off. Switch off the engine on the machine which is providing jump start power.

First connect the jump start battery's positive terminal (1) to the flat battery's positive terminal (2). Then connect the jump start battery's negative terminal (3) to, for example, a bolt (4) or the lifting eye on the machine with the flat battery.

Start the engine on the power providing machine. Let it run for a while. Now try to start the other machine. Disconnect the cables in the reverse order.

**Technical specifications -
Noise/Vibrations/Electrical****Vibrations - Operator station
(ISO 2631)**

The vibration levels are measured in accordance with the operational cycle described in EU directive 2000/14/EC on machines equipped for the EU market, with vibration switched on, on soft polymer material and with the operator's seat in the transport position.

Measured whole-body vibrations are below the action value of 0.5 m/s² as specified in Directive 2002/44/EC. (Limit is 1.15 m/s²)

Measured hand/arm vibrations also were below the action level of 2.5 m/s² specified in the same directive. (Limit is 5 m/s²)

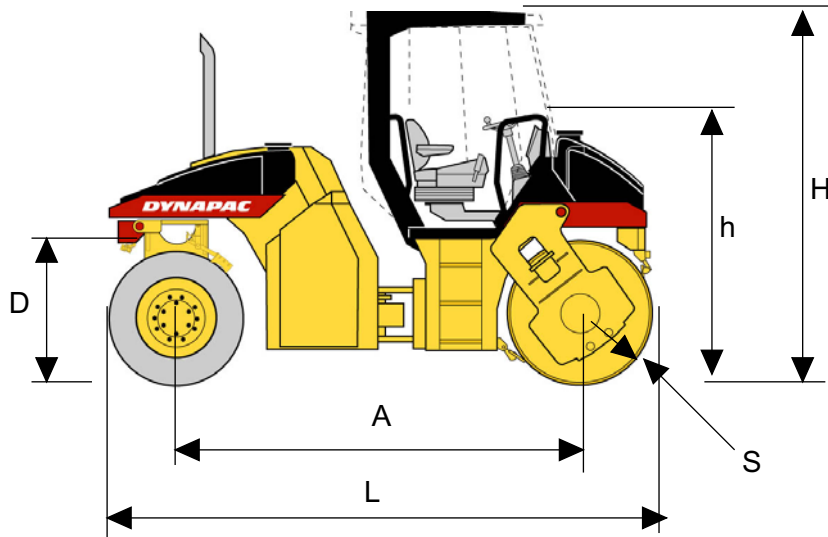
Noise level

The noise level is measured in accordance with the operational cycle described in EU directive 2000/14/EC on machines equipped for the EU market, on soft polymer material with vibration switched on and the operator's seat in the transport position.

Guaranteed sound power level, L_{wA}	108 dB (A)
Sound pressure level at the operator's ear (platform), L_{pA}	- dB (A)
Sound pressure level at the operator's ear (cab), L_{pA}	- dB (A)

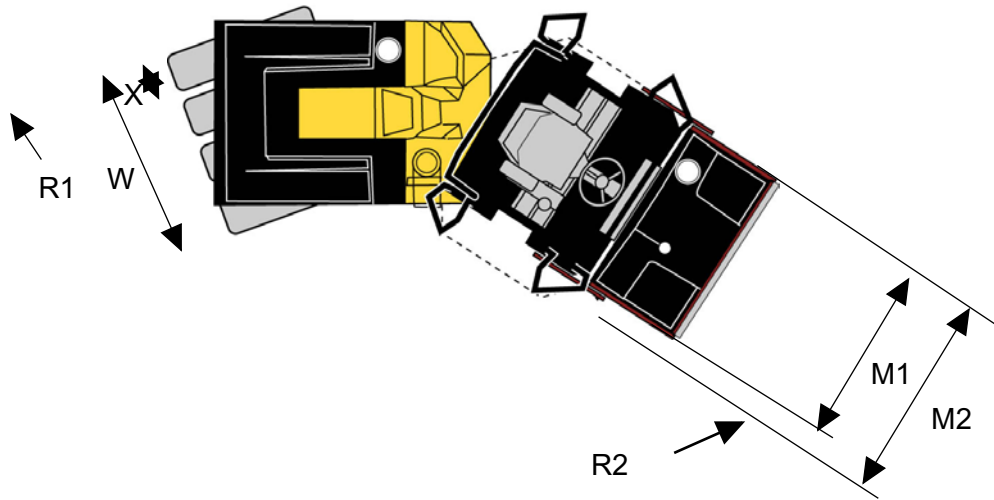
Electrical system

Machines are EMC tested in accordance with EN 13309:2000 'Construction machinery'

Technical specifications - Dimensions**Dimensions, side view**

Dimensions	mm	in
A	3650	144
D	1300	51
h	2170	85
H	2970	117
L	4950	195
S	18	0.71

Dimensions, top view



Dimensions	mm	in
M1	1810	71
M2	2025	80
R1: With offset drums	5350	211
R2: With offset drums	3170	125
R1: Without offset drums	7180	283
R2: Without offset drums	5530	218
W	1624	64
X	322	13

Technical specifications - Weights and volumes**Weights**

Service weight without ROPS	9.550 kg	21,060 lbs
Service weight with ROPS (EN500)	9.950 kg	21,940 lbs
Service weight with cab	9.950 kg	21,940 lbs

Fluid volumes

Drum	14 liters	14.8 qts
Hydraulic reservoir	40 liters	42.3 qts
Fuel tank	200 liters	52.8 gal
Emulsion tank	485 liters	128.1 gal
Water tank, front	485 liters	128.1 gal
Diesel engine, oil	11 liters	11.6 qts
Coolant	7,9 liters	8.4 qts
Pump gear	0,8 liters	1.1 qts

Technical specifications - Working capacity**Compaction data**

Static linear load, front	30,7 kg/cm	171.9 pli
Static linear load, rear	- kg/cm	- pli
Amplitude, high	0,9 mm	0.034 in
Amplitude, low	0,4 mm	0.017 in
Vibration frequency, high amplitude	51 Hz	3060 vpm
Vibration frequency, high amplitude (CE-2006)	50 Hz	3000 vpm
Vibration frequency, low amplitude	51 Hz	3060 vpm
Vibration frequency, low amplitude (CE-2006)	50 Hz	3000 vpm
Centrifugal force, high amplitude	145 kN	32,510 lb
Centrifugal force, low amplitude	72 kN	16,220 lb

Propulsion

Speed range	0-11	km/h	0-7	mph
Climbing capacity (theoretical)	42	%		

Technical specifications - General**Engine**

Manufacturer/Model	Cummins 4BTAA 3.9-C	
Power (SAE J1995)	93 kW	125 hp
Engine speed	2200 rpm	

Electrical system

Battery	12V 170Ah	
Alternator	12V 95A	
Fuses	See the Electrical system section - fuses	

Tires

Tire dimensions	E20 13/80 R20 Lisse	
Air pressure (kPa)	200	

Tightening torque

Tightening torque in Nm for oiled, bright galvanized bolts tightened using a torque wrench.

STRENGTH CLASS

M - thread	8.8	10.9	12.9
M6	8,4	12	14,6
M8	21	28	34
M10	40	56	68
M12	70	98	117
M16	169	240	290
M20	330	470	560
M24	570	800	960
M30	1130	1580	1900
M36	1960	2800	-

ROPS - bolts

Bolt dimensions :	M24 (PN 903792)
Strength class :	10.9
Tightening torque :	800 Nm (Dacromet treated)



ROPS-bolts which are to be torque tightened must be dry.

Hydraulic system

Opening pressure	MPa	Psi
Drive system	42.0	6,100
Supply system	2,4	350
Vibration system	35.0	5,100
Control systems	20.0	2,900
Brake release	1.5	220

Automatic Climate Control (ACC) (Optional)

The system described in this manual is type ACC (Automatic Climate Control), i.e. a system which maintains the set temperature in the cab provided the windows and doors are kept closed.

Coolant designation: HFC-R134:A

Coolant weight at first fill: 1600 gram

Machine plate - Identification

Product identification number on the frame

The machine PIN (Product Identification Number) (1) is punched on the right edge of the front frame.

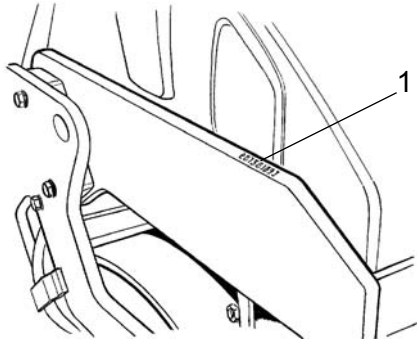
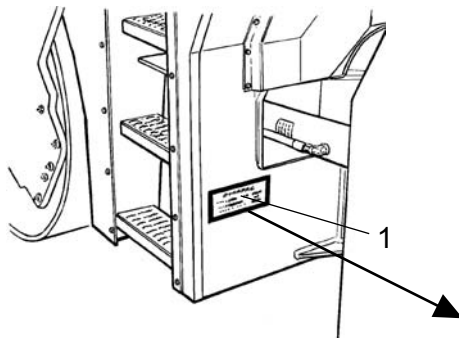


Fig. PIN Front frame

Machine plate

The machine type plate (1) is attached to the front left side of the frame, beside the steering joint.

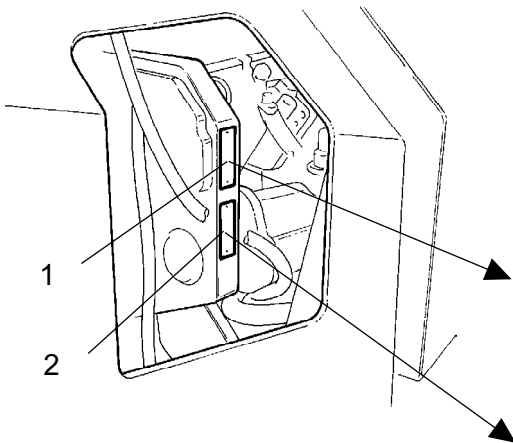
The plate specifies the manufacturers name and address, the type of machine, the PIN, Product Identification Number (serial number), operating weight, engine power and year of manufacture. (On machines supplied to outside the EU, there are no CE markings and in some cases no year of manufacture.)



**Fig. Operator platform
1. Machine plate**



Please state the machine's PIN when ordering spares.



Engine plates

The engine plate (1) is affixed to the left side of the engine under the injection pump. Remove the metal cover at the top on the left of the engine compartment to access the plate. The plate specifies the type of engine, its serial number and the engine specification. Please specify the engine serial number when ordering spares. Refer also to the engine manual.

Cummins Engine Company, Inc. Columbus, Indiana 47202-3005	C.I.D./L 275/4.5	CPL 8204	Engine Serial No. xxxxxxxx
	Family 4CEXL0275AAAC		Cust. Spec. SO 41506
Warning: Injury may result and warranty is voided if fuel rate, rpm or altitude exceed published maximum values for this model and application.	o 11*07/68gs*2002/68*0230*00		Engine Model B4.5-C
	Valve lash cold	Inch 010 Int. 020 MM .254 Int. .506	Exh. Timing-TDC B4.5-C Fuel rate at rated HP 83 mm ³ /st
Date of MFG. Made in Great Britain. XX-XX-XX	Firing Order 1-3-4-2	Rated HP/KW 99/74	FR 91170 Low idle RPM 900 ± 300
		at 2200 RPM	

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

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

3935108

Machine description- Decals

Location - decals

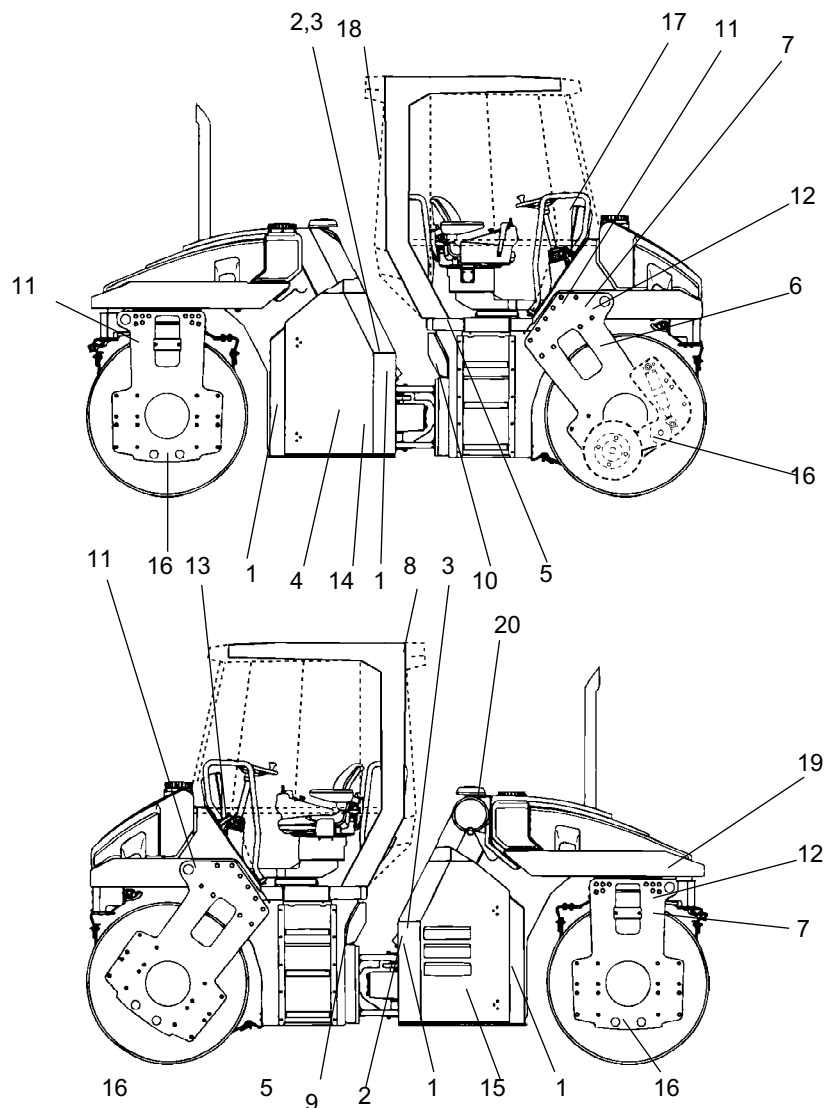


Fig. Location, decals and signs

- | | |
|--|---|
| 1. Warning, Crush zone | 11. Lifting point |
| 2. Warning, Rotating engine components | 12. Hoisting plate |
| 3. Warning, Hot surfaces | 13. Handbook compartment |
| 4. Warning, Brake release | 14. Hydraulic fluid |
| 5. Warning, Instruction manual | 15. Battery isolator switch |
| 6. Warning, Edge cutter | 16. Securing point |
| 7. Warning, Locking | 17. Warning sign |
| 8. Warning, Toxic gas | 18. Emergency exit |
| 9. Noise power level | 19. Tire pressure (Combi machines only) |
| 10. Diesel fuel | 20. Warning, Starting gas |



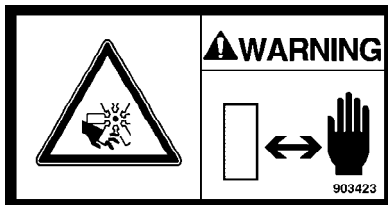
Safety decals

903422

- Crush zone, articulation/drum.

Maintain a safe distance from the crush zone.

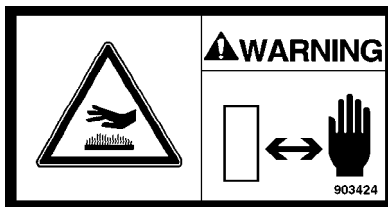
(Two crush zones on machines fitted with pivotal steering)



903423

- Warning of rotating engine components.

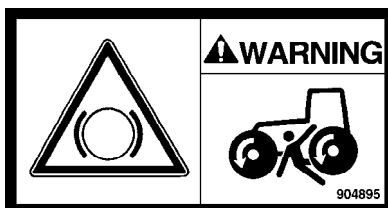
Keep your hands at a safe distance from the danger zone.



903424

- Warning of hot surfaces in the engine compartment.

Keep your hands at a safe distance from the danger zone.

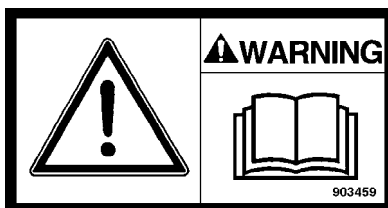


904895

- Brake disengagement

Study the towing chapter before disengaging the brakes.

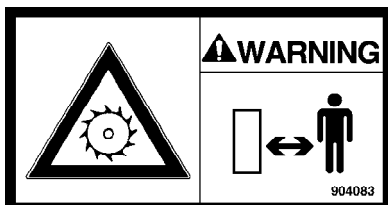
Danger of being crushed.



903459

- Instruction manual

The operator must read the safety, operation and maintenance instructions before operating the machine.

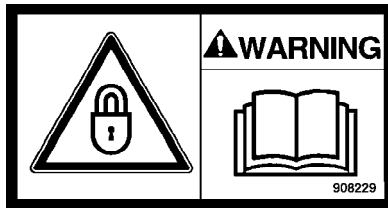


904083

- Edge cutter (option)

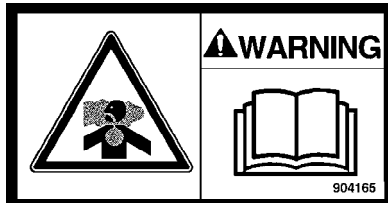
Warning of rotating parts.

Maintain a safe distance from the crush zone.



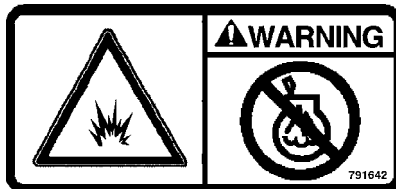
908229
- Locking

The articulation must be locked when lifting.
Read the instruction manual.



904165
- Toxic gas (accessory, ACC)

Read the instruction manual.

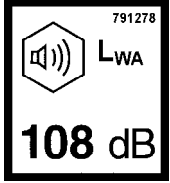


791642
- Starting gas

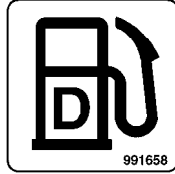
Starting gas is not to be used.

Info decals

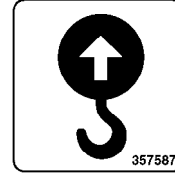
Noise power level



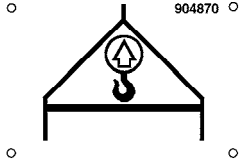
Diesel fuel



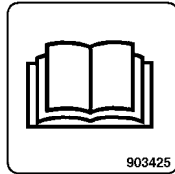
Lifting point



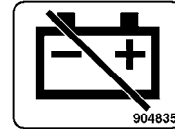
Hoisting plate



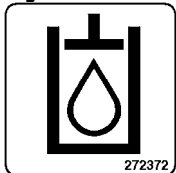
Handbook compartment



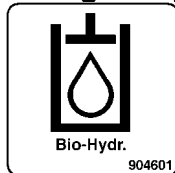
Master switch



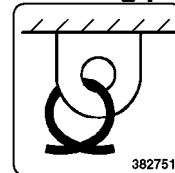
Hydraulic fluid



Biological hydraulic fluid



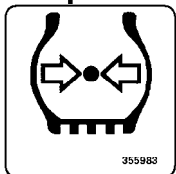
Securing point



Emergency exit



Tire pressure



**Machine description -
Instruments/Controls**

Locations - Instruments and controls

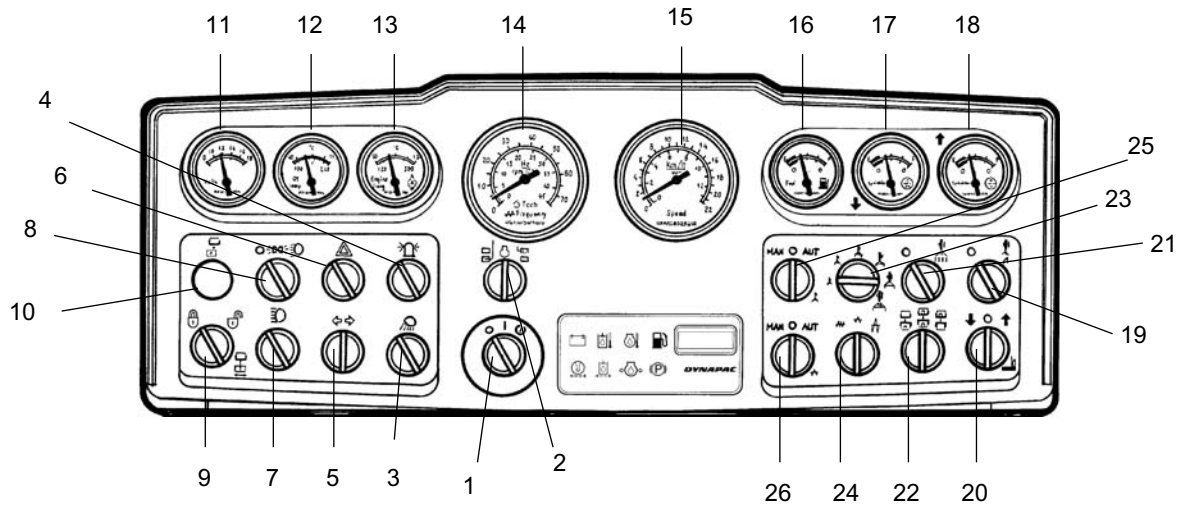


Fig. Instruments and control panel

- | | | | |
|-----|---|-----|---------------------------------|
| 1. | Starter switch | 15. | * Speedometer |
| 2. | * Rpm/Frequency selector | 16. | Fuel gauge |
| 3. | * Working lights | 17. | * Level gauge, rear water tank |
| 4. | * Hazard beacon | 18. | * Level gauge, front water tank |
| 5. | * Direction indicator switch | 19. | * Sprinkler, edge cutter |
| 6. | * Hazard warning lights | 20. | * Edge cutter, Up/Down |
| 7. | * Main beam switch | 21. | **Sprinkler, tires |
| 8. | * Parking/dipped beam switch | 22. | Vibration, front/rear drum |
| 9. | * Changeover switch, pivotal steering, On/Off | 23. | * Sprinkler timer |
| 10. | * Control lamp, drum position | 24. | Amplitude selector, High/Low |
| 11. | * Voltmeter | 25. | Manual/Automatic sprinkler |
| 12. | * Hydraulic fluid temperature | 26. | Manual/Automatic vibration |
| 13. | * Engine oil temperature | | |
| 14. | * Engine speed/Vibration frequency | | |

* = Optional

** = Standard on combi roller

Locations - Control panel and controls

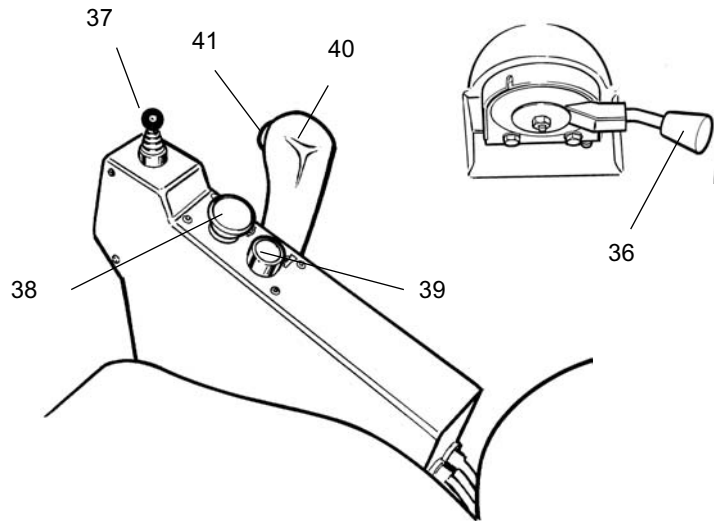
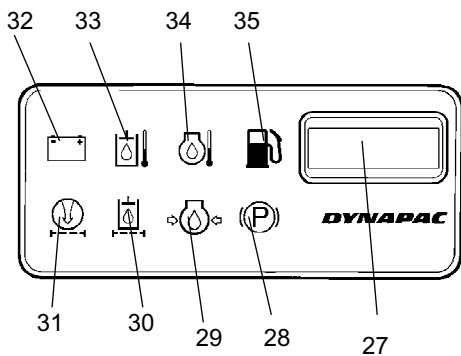




















Fig. Control panel



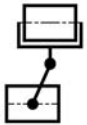



- | | | | |
|-----|-------------------------------------|-----|---------------------------------------|
| 27. | Hourmeter | 34. | Warning light, engine oil temperature |
| 28. | Brake warning lamp | 35. | Warning lamp, fuel level |
| 29. | Warning lamp, engine oil pressure | 36. | Engine speed control |
| 30. | Warning lamp, hydraulic filter | 37. | Joystick, pivotal steering |
| 31. | Warning lamp, air filter | 38. | Emergency/Parking brake knob |
| 32. | Warning lamp, charging | 39. | Horn |
| 33. | Warning lamp, hydraulic temperature | 40. | Forward/Reverse lever |
| | | 41. | Vibration On/Off |

Function descriptions

No	Designation	Symbol	Function
1	Starter switch	○ ○	The electric circuit is broken. All instruments and electric controls are supplied with power. Starter motor activation.
2	Engine speed	○	The current engine speed is shown in this position
	Vibration frequency measurement, switch	○	In the left position, frequency is measured on the rear rear drum. In the right position, frequency is measured on the front drum.
3	Rear working lights, switch	☛	Turn to the right to switch on the working lights.

No	Designation	Symbol	Function
4	Hazard beacon, switch		Turn to the right to switch on the hazard beacon.
5	Direction indicator, switch		Turn to the left to switch on the left direction indicators etc. The direction indicators are off in the middle position.
6	Hazard warning lights, switch		Turn the switch to the right to turn on the hazard warning lights.
7	Main/dipped beam switch with control lamp		In the right position, the switch lights and the main beam is on. In the left position, the dipped beam is on.
8	Forward working lights, switch		Lights off.
			Parking lights on
			Front working lights on
9	Pivotal steering, On/Off, switch		In the left position, the pivotal steering is switched off In the right position, the the pivotal steering is switched on
10	Control lamp, drum position		The lamp indicates that the sides of the drums are not aligned.
11	Voltmeter		Shows electrical system voltage. Normal range is 12-15 volts.
12	Temperature gauge, hydraulic fluid		Shows hydraulic fluid temperature. Normal temperature range is 65°-80°C (149°-176°F). Stop the engine if the gauge shows a temperature of more than 85°C (185°F). Locate the fault.
13	Temperature gauge, engine oil		Shows the engine oil temperature. Normal temperature is around 95°C (194°F). Stop the engine if the gauge shows a temperature of more than 120°C (248°F). Locate the fault.
14	Engine speed / Frequency meter		The inner scale shows current engine speed. The outer scale shows vibration frequency for the rear or front drum.
15	Speedometer		The outer scale shows speed in km/h. The inner scale shows speed in mph.
16	Fuel gauge		Shows level in the fuel tank.
17	Water gauge		Shows level in the rear water tank.
18	Water gauge		Shows level in the front water tank.
19	Sprinkler, edge cutter, switch		In the left position, watering is off.
			In the right position, the edge cutter disc is watered.

No	Designation	Symbol	Function
20	Edge cutter, Up/Down switch		In the left position, the edge cutter moves downwards. In the middle position, the edge cutter is stationary. In the right position, the edge cutter moves upwards.
21	Sprinkler, tire, switch (Combo versions only)		In the left position, the watering is off. In the right position, the tires are watered.
22	Vibration, front/rear drum, switch Do NOT turn this switch on when the switch (41) is on.		In the left position, vibration is activated for the rear drum. In the middle position, vibration is activated for both drums. In the right position, vibration is activated for the front drum.
23	Sprinkler timer, switch		The switch has six different timer positions which controls the amount of water supplied to the drums. The left mode supplies least water and the right mode most.
24	Amplitude / Frequency selector, switch		The left position gives low amplitude / high frequency. The right position gives high amplitude / low frequency.
25	Watering, switch	MAN O AUTO 	In the left position, the drums are continually watered. In the middle position, watering is off. In the right position, watering is automatically switched on/off via the forward/reverse lever when the direction of travel is changed.
26	Vibration setting, switch	MAN O AUTO 	In the left position, the vibration is switched on or off by the switch (41). In the middle position, the vibration system is off. In the right position, vibration is automatically switched on or off via the forward/reverse lever.
27	Hourmeter		Engine running time is shown in hours.
28	Brake warning lamp		The lamp come on when the parking or emergency brake knob is depressed and the brakes are applied.
29	Warning lamp, oil pressure		The lamp comes on if the engine oil pressure is too low. Stop the engine immediately and locate the fault.
30	Warning lamp, hydraulic filter		If the lamp comes on while the engine is running at full speed, the hydraulic filter must be changed.
31	Warning lamp, air filter		If the lamp comes on while the engine is running at full speed, the air filter must be cleaned or replaced.
32	Warning lamp, battery charging		If the lamp comes on while the engine is running, the alternator is not charging. Stop the engine and locate the fault.
33	Warning lamp, hydraulic fluid temperature		If the lamp comes on, the hydraulic fluid is too hot. Do not drive the roller. Cool the fluid by allowing the engine to idle and locate the fault.

No	Designation	Symbol	Function
34	Warning light, engine oil temperature		If the lamp comes on, the engine is too hot. Stop the engine immediately and locate the fault. Refer also to the engine manual.
35	Warning lamp, low fuel level		When the lamp comes on, there is only a small amount of fuel left. Refuel as soon as possible.
36	Engines speed control, engine		In the right position, the engine idles. In the left position, the engine runs at maximum speed.
37	Pivotal steering, joystick		In the left position, the front drum is positioned to the left of the rear drum. In the middle position, the drums are aligned. In the right position, the front drum is positioned to the right of the rear drum.
38	Emergency brake / Parking brake		Press to activate the emergency brakes. When the machine is stationary, the parking brake is activated. Both brakes are released when pulled out.
39	Horn, switch		Press to sound the horn.
40	Forward/Reverse lever		The lever must be in neutral to start the engine. The engine cannot be started if the forward/reverse lever is in any other position. The forward/reverse lever controls both the roller's driving direction and speed. When the lever is moved forward, the roller moves forward. The roller's speed is proportional to the distance the lever is from the neutral position. The further the lever is from the neutral position, the higher the speed.
41	Vibration On/Off, switch		Press once and release to switch the vibration on, press again to switch the vibration off. The above only applies when switch 26 is in the left position.

Locations - Instruments and controls, cab

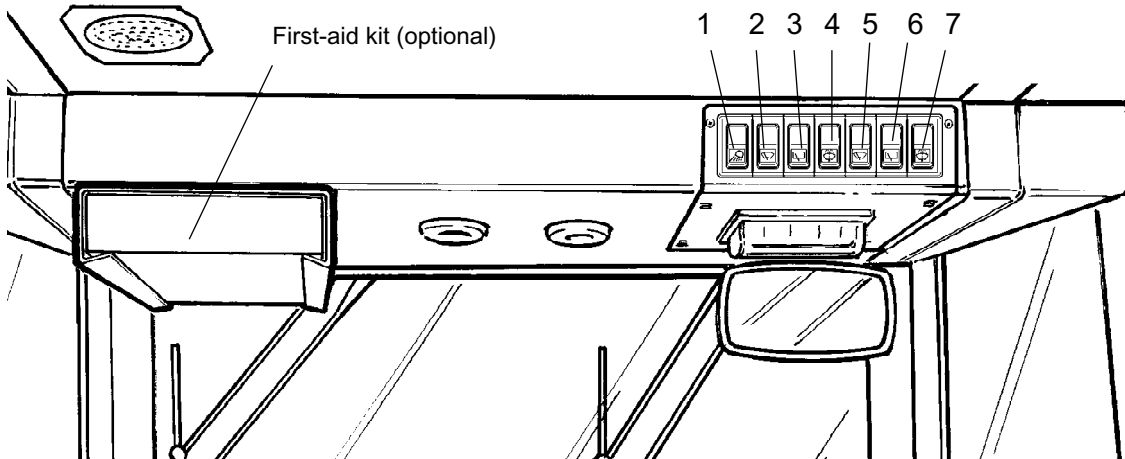


Fig. Cab roof, front

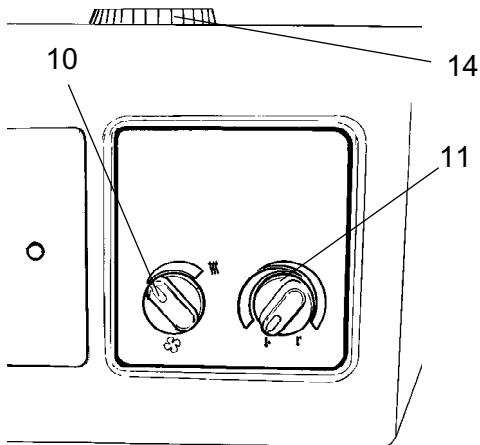


Fig. Cab rear, without ACC

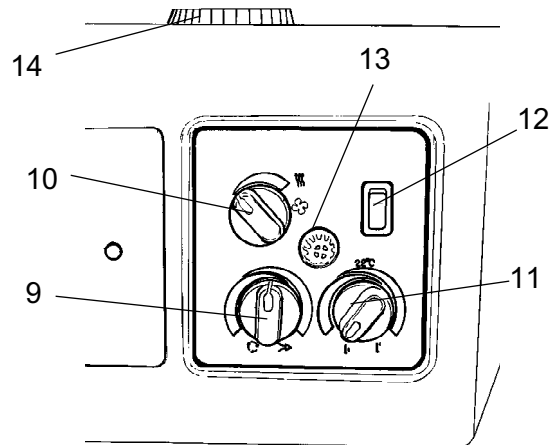


Fig. Cab rear, with ACC (optional)

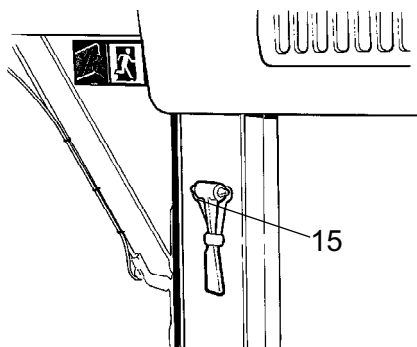















Fig. Rear right cab post

Function description of instruments and controls in the cab

No	Designation	Symbol	Function
1	Working lights, switch		Press to switch on the working lights.
2	Front wiper, switch		Press to operate the front screen wiper.
3	Rear wiper, switch		Press to operate the rear screen wiper.
4	Front and rear window screen washers, switch		Press the upper edge to activate the front screen washers. Press the lower edge to activate the rear screen washers.
5	Front side window wiper, switch		Press to operate the front side window wiper.
6	Rear side window wiper, switch		Press to operate the rear side window wiper.
7	Side window washers, switch		Press the upper edge to activate the front side window washers. Press the lower edge to activate the rear side screen washers.
8	Fuse box		Contains fuses for the electrical system in the cab.
9	Cab air recirculation, switch		In the left position, the maximum volume of air is recirculated. In the right position, the volume recirculated is minimal.
10	Ventilation fan, switch		In the left position, the fan is off. Turning the knob to the right increases the volume of air entering the cab.
11	Heater control		Turn to the right to increase heating. Turn to the left to reduce heating.
12	Air conditioning, switch		Starts and stops the air conditioning.
13	Temperature sensor		Registers the temperature in the cab. Do not cover.
14	Defroster nozzle		Turn the nozzle to direct the flow of air.
15	Hammer for emergency exit		To escape from the cab in an emergency, release the hammer and break the REAR window.

Machine description - Electrical system

Relays

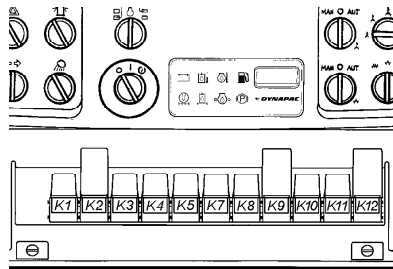


Fig. Instrument panel

- K1 *Lights relay*
- K2 *Direction indicators*
- K3 *Brake lights*
- K4 *Reverseing alarm*
- K7 *Horn*
- K8 *Sprinkler*
- K9 *Main relay*
- K10 *AVC*
- K11 *Neutral switch*
- K12 *VBS relay*

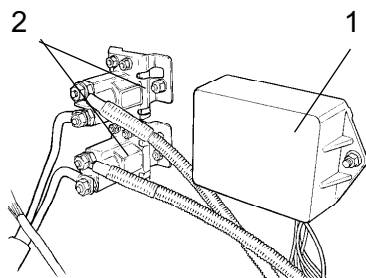


Fig. Engine compartment, left side
1. Control unit for preheating
2. Relay for heating

Behind the left engine compartment door, on the wall facing the rear drum, are the control unit and relays for preheating the engine.

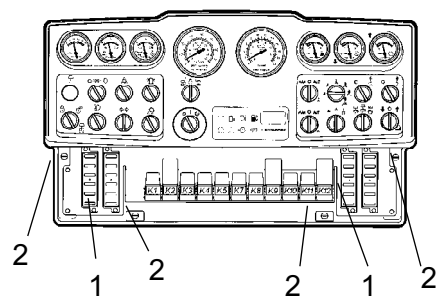


Fig. Instrument panel
1. Fuse box
2. Quick-fit screws

Fuses

The electrical regulation and control system is protected by 24 fuses, located under the instrument panel and in the engine compartment.

The four fuse boxes (1) are located behind the lower instrument plate, which is opened by turning the four quick-fit screws (2) a 1/4 turn counter-clockwise.

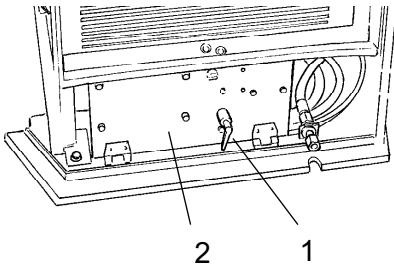


Fig. Battery bay
1. Battery isolation switch
2. Main fuse panel

The fuses in the engine compartment are located alongside the battery isolation switch.

The machine is equipped with a 12V electrical system and an AC alternator.



Connect the correct polarities (ground) to the battery. The cable between the battery and the alternator must not be disconnected when the engine is running.

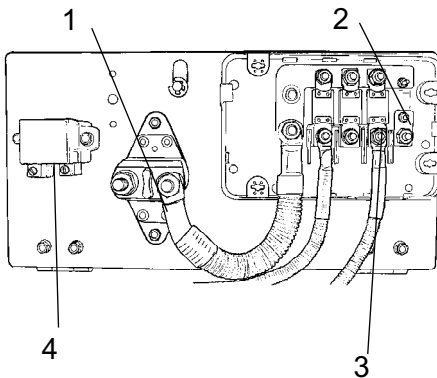


Fig. Main fuse panel
1. Battery isolation switch
2. Main fuse, Cab/standard electricity (100A)
3. Preheating, engine (125A)
4. Starter relay

The main fuse panel is located behind the left engine compartment door.

The main fuses and the starter relay are easily accessible when the door is folded forward.

Fuses

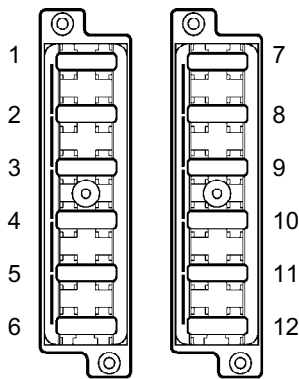


Fig. Fuse box, left and right side.

The figure shows the position of the fuses.

The table below gives fuse amperage and function. All fuses are flat pin fuses.

Fuse boxes, left side			Fuse boxes, right side		
1.	Vacant		1.	Brake valve, starter relay	7.5A
2.	Direction indicators, main fuse	10A	2.	Vibration relay, VBS	10A
3.	Left position lights, brake lights	7.5A	3.	Indicator panel	3A
4.	Right position lights	5A	4.	Horn	7.5A
5.	Left direction indicators, side repeaters	5A	5.	Vibration, AVC relay	7.5A
6.	Right direction indicators, side repeaters	5A	6.	Hazard beacon	10A
7.	Driving lights/Working lights right	10A/20A	7.	Sprinkler pump front	7.5A
8.	Driving lights/Working lights left	10A/20A	8.	Sprinkler pump rear	7.5A
9.	Left front headlight	7.5A	9.	Sprinkler system, main fuse	15A
10.	Right front headlight	7.5A	10.	Steering, offset up/down	15A
11.	Edge cutter, sprinkler, up/down	7.5A	11.	Reversing alarm	7.5A
12.	Vacant		12.	Instruments, voltmeter, temperature gauge, speedometer, rpm/frequency meter	7.5A

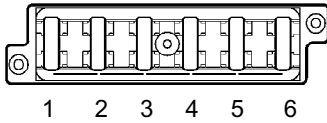


Fig. Cab roof fuse box

1.	AC condensor	20A
2.	Radio	10A
3.	Lighting	15A
4.	AC fan	25A
5.	Rear screen wiper/washers	15A
6.	Front screen wiper/washers	15A

Fuses in cab

The electrical system in the cab has a separate fuse box located on the front right side of the cab roof.

The figure shows fuse amperage and function.

All fuses are flat pin fuses.

Operation - Starting

Before starting

Master switch - Switching on

Remember to carry out daily maintenance. Refer to the maintenance instructions.

The master switch is located in the engine compartment. Turn the key (1) to the on position. The entire roller is now supplied with power.



The engine hood must be unlocked when operating, so that the battery can be quickly disconnected if necessary.

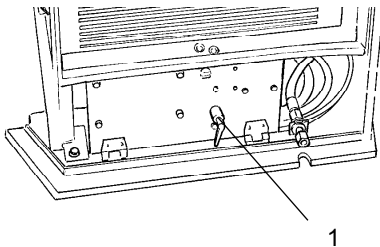


Fig. Engine compartment
1. Battery isolation switch

Control unit, operator's seat - Adjusting

The control unit has three adjustment options, transverse travel, rotation and steering column angle.

For transverse travel, raise the inner lever (1), which releases the catch.

For rotation, lift the outer lever (2). Ensure that the control unit locks in position before operating the machine.

Release locking lever (3) to adjust the steering column. Lock in the new position.

The seat can be adjusted as follows: - Length adjustment (4)
- Backrest inclination (5)
- Weight adjustment (6)



Adjust all settings when the machine is stationary.

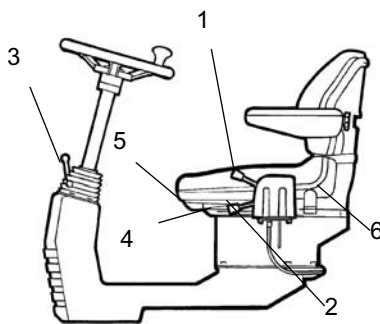


Fig. Operator position
1. Locking lever - transverse travel
2. Locking lever - rotation
3. Locking lever - steering column angle
4. Locking lever - length adjustment
5. Lever - backrest inclination
6. Lever - weight adjustment

Operator's seat in cab - Adjusting

The control unit has three adjustment options, transverse travel, rotation and steering column angle.

Adjust the operator's seat so that the position is comfortable and so that the controls are within easy reach.

The seat can be adjusted as follows:

- Length adjustment (1)
- Height adjustment (2)
- Seat-cushion inclination (3)
- Backrest inclination (4)
- Armrest inclination (5)
- Lumbar support adjustment (6)

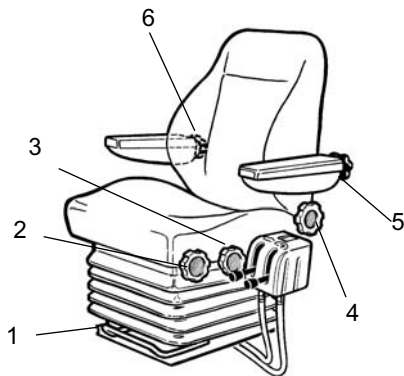


Fig. Operator's seat

1. Lever - length adjustment
2. Wheel - height adjustment
3. Wheel - seat cushion inclination
4. Wheel - backrest inclination
5. Wheel - armrest inclination
6. Wheel - lumbar support adjustment



Always ensure that the seat is locked in position before operating the roller.

Parking brake - Check

Make sure that the emergency/parking brake knob (1) really is in the depressed position. The roller can start to roll when the engine is started on sloping ground, if the parking brake is not applied.

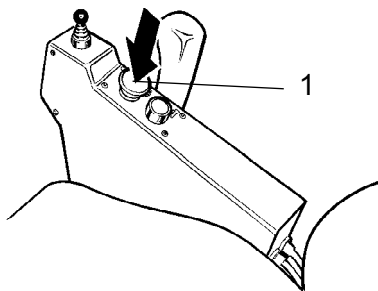


Fig. Control panel

1. Parking brake control

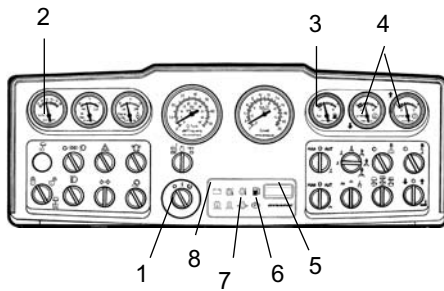


Fig. Instrument panel
1. Starter switch
2. Voltmeter
3. Fuel gauge
4. Water level gauge

Instruments and lamps - Checking

Turn the starter switch (1) to the middle position. All warning lamps should come on for about 5 seconds and the buzzer should sound. Make sure that the warning lamps remain on throughout this period.

Check that the voltmeter (2) reads at least 12 volts, and that the other gauges (3, 4) show readings.

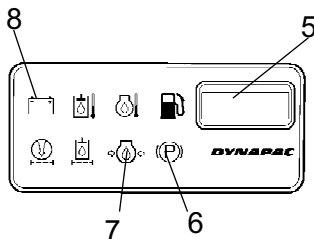


Fig. Control panel
5. Hourmeter
6. Brake lamp
7. Oil pressure lamp
8. Charging lamp

Check that the warning lamps for charging (8), oil pressure (7) and the parking brake (6) come on.

The hourmeter (5) registers and shows the total number of hours the engine has run.

Interlock (Optional)

The roller can be equipped with Interlock.

The engine switches off 7 seconds after the operator rises from the seat.

The engine stops whether the forward/reverse lever is in the neutral or the drive position.

The engine does not stop if the parking brake is activated.

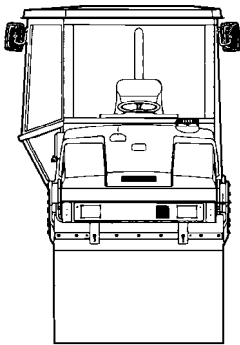


Fig. View

View

Before starting, make sure that the view forwards and backwards is unobstructed.

All cab windows should be clean and the rear view mirrors should be correctly adjusted.

Operator position

If a ROPS (Roll Over Protective Structure) or a cab is fitted to the roller, always wear the seat belt (1) provided and wear a protective helmet.

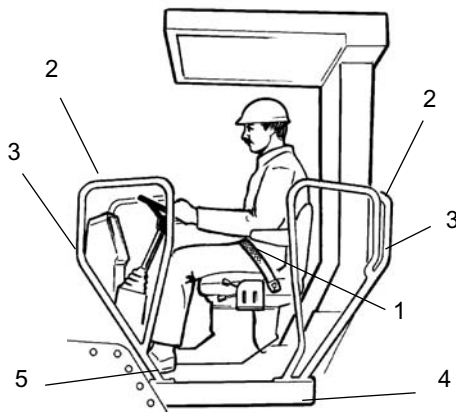


Fig. Operator position

- 1. Seat belt
- 2. Safety railing
- 3. Locking knob
- 4. Rubber element
- 5. Anti-slip



Replace the seat belt (1) if it shows signs of wear or has been subjected to high levels of force.



The safety railings (2) around the operator station are adjustable, and can be set in the inner and the outer positions. Retract the railings when driving close to walls or other obstacles.

Release the locking knob (3), set the the railings in the required position and relock in position.



Check that the rubber elements (4) on the platform are intact. Worn elements will reduce comfort.



Ensure that the anti-slip (5) on the platform is in good condition. Replace where anti-slip friction is poor.



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

Starting

Starting the engine

Set the forward/reverse lever (1) in neutral. The engine can only be started when the lever is in neutral.

Set the engine speed control (2) to idling.

Set the vibration switch (4) for manual/automatic vibration in the mid position (position 0).

Turn the starter switch (3) to the right to the first position. A lamp in the knob comes on. When the lamp goes out, turn the knob to the start position and release immediately the engine starts. This particularly important when starting the machine from cold.



Do not run the starter motor for too long. If the engine does not start immediately, wait a minute or so before trying again.

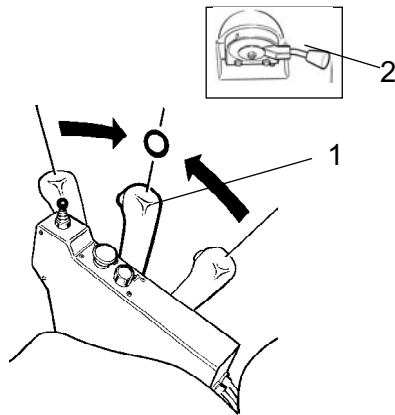


Fig. Control panel

1. Forward/Reverse lever
2. Engine speed control

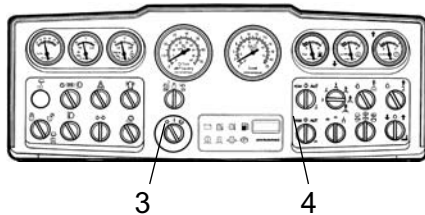


Fig. Instrument panel

3. Starter switch
4. Vibration switch

Let the engine idle for a few minutes to warm, longer if the ambient temperature is below +10°C (50°F).



Ensure that there is good ventilation (air extraction) if the engine is run indoors. Risk of carbon monoxide poisoning.

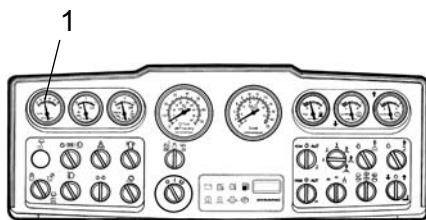


Fig. Instrument panel
1. Voltmeter

Whilst the engine is warming up, check that the warning lamps for oil pressure (3) and charging (2) are not on and that the voltmeter (1) shows 13-14 volts.

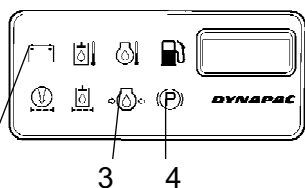


Fig. Instrument panel
2. Charging lamp
3. Oil pressure lamp
4. Brake lamp

The warning lamp (4) should remain on.



When starting and driving a machine that is cold, remember that the hydraulic fluid is also cold and that braking distances can be longer than normal until the machine reaches the working temperature.



During all transportat, make sure that side-displaced drums are in neutral.

Operation - Driving

Operating the roller



Under no circumstances is the machine to be operated from the ground. The operator must be seated inside the machine during all operation.

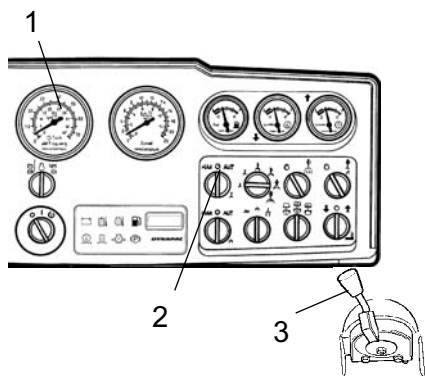


Fig. Instrument panel
 1. Tachometer
 2. Switch, sprinkler
 3. Engine speed control

Turn the engine speed control (3) and lock it in the working position.

Check that the steering is working correctly 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 sprinkler system (2).



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



Pull up the emergency/parking brake knob (1) and check that the parking brake warning lamp is off. Be prepared that the roller may begin to roll, if it is on a slope.

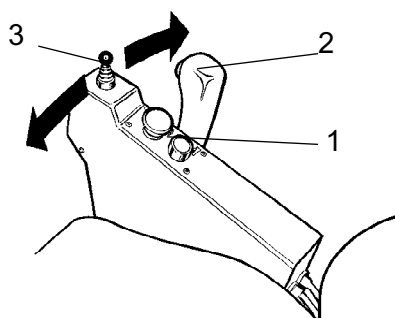


Fig. Control panel
 1. Parking brake control
 2. Forward/Reverse lever
 3. Pivotal steering, joystick (optional)

Carefully move the forward/reverse lever (2) forwards or backwards, depending on which direction of travel is required.

Speed increases as the lever is moved away from the neutral position.



The speed should always be controlled using the forward/reverse lever and never by changing the engine speed.



Test the emergency brake by depressing the emergency/parking brake knob (1) while the roller is moving forwards slowly.

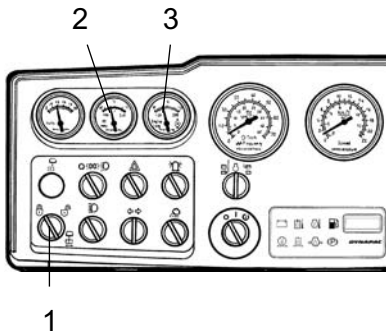


Fig. Instrument panel
 1. Pivotal steering, On/Off
 2. Hydraulic fluid temperature
 3. Engine oil temperature

Pivotal steering (Optional)

Turn the switch (1) to the unlocked position to activate the pivotal steering. Use the joystick on the control panel to operate the pivotal steering.

Check from time to time while driving that gauges (2) and (3) show normal readings.

Where abnormal values are shown or where the buzzer sounds, stop the roller immediately and switch off the engine. Check and remedy any faults. Refer also to the maintenance instructions and the engine manual.

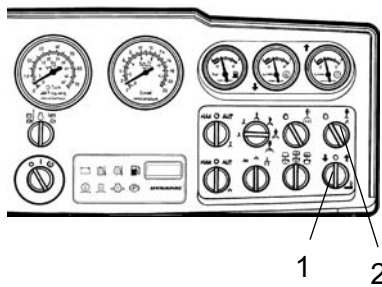


Fig. Changeover switch
 1. Edge cutter/roller, Up/Down
 2. Sprinkler, edge cutter/roller

Edge cutting (Optional)

If the engine is running and the changeover switch (1) is turned to the left, the edge cutter is lowered to the asphalt surface by a hydraulic cylinder. Turn the changeover switch to the right to lift the tool back into its original position.

A bypass valve prevents the hydraulic system being overloaded.

There is a separate sprinkler system which the operator should use to avoid asphalt sticking to the edge cutter/roller. The system is operated using a switch (2). The water is drawn from the front water tank, which is also used for the front drum sprinkler system.

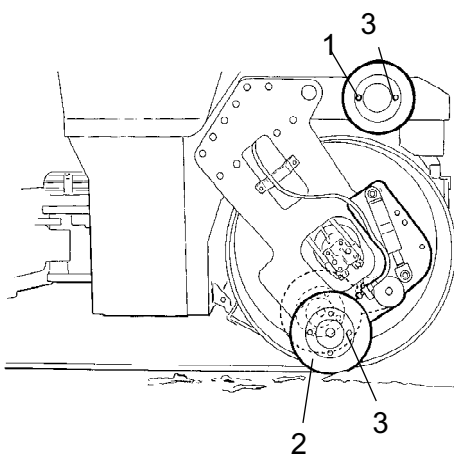


Fig. Changing the tool
 1. Edge roller
 2. Edge cutter
 3. Bolted joint

The operator can chose to use one of two tools, the edge cutter or the edge roller. The edge cutter (1) in the figure is shown in the transport position. It can easily be replaced with the edge roller (2) by undoing the bolted joint (3).

Operation - Vibration

Manual/Automatic vibration

Manual or automatic vibration activation/deactivation is selected using switch (1).

In the manual position, the operator activates vibration using the switch (41) on the forward/reverse lever.

In the automatic position, vibration is activated when the pre-set speed is reached. Vibration is automatically deactivated when the lowest pre-set speed is reached.

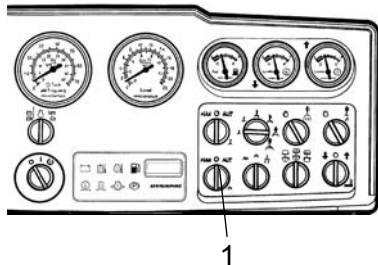


Fig. Instrument panel
1. Man/Auto switch

Manual vibration - Switching on



Never activate vibration when the roller is stationary. This can damage both the surface and the machine.

Engage and disengage vibration using the switch (1) on the front of the forward/reverse lever.

Always switch off vibration before the roller comes to a standstill.

When compacting thin layers of asphalt maximum 50 mm thick, the best result is achieved using a low amplitude and high frequency vibration.

The engine does not stop if the parking brake is activated.

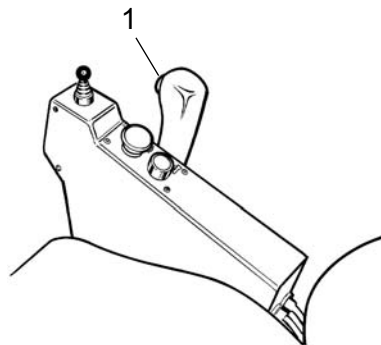


Fig. Control panel
1. Vibration On/Off switch

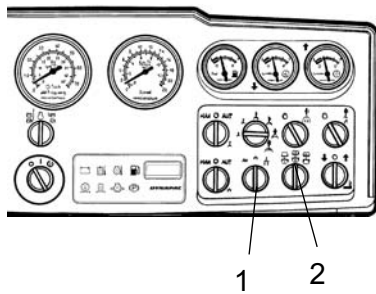


Fig. Instrument panel
1. High/Low switch
2. Drum switch

Amplitude/frequency - Changeover



The amplitude setting must not be change when vibration is in operation
Switch the vibration off and wait until vibration stops before changing amplitude.

There are three drum vibration three settings. Switch between the settings using switch (1).

Turn the knob to the left for low amplitude/high frequency and to the right for high amplitude/low frequency.

Switch (2) allows you to select vibration on both drums or on the front or rear drum only.

- The left position activates vibration on the rear drum.
- The middle position activates vibration on both drums.
- The right position activates vibration on the front drum.

Operating - Stopping

Braking

Emergency brake

Braking is normally activated using the forward/reverse lever. The hydrostatic transmission retards and slows the roller when the lever is moved towards the neutral position.

A disc brake in each drum motor acts as an emergency brake when in motion and as a parking brake when stationary.



To brake, press the emergency/parking brake knob (1), hold the steering wheel firmly and be prepared for a sudden stop.

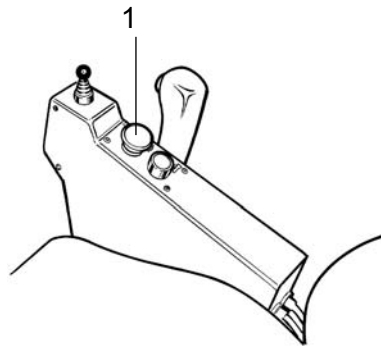


Fig. Control panel
1. Emergency brake/parking brake knob

After braking, return the forward/reverse lever to the neutral position and pull up the emergency/parking brake knob.

Normal braking

Press the switch (1) to switch off the vibration.

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

Even when stopping briefly, always depress the emergency/parking brake knob (3) when stopping on sloping ground.

Turn the engine speed control back to idling. Allow the engine to idle for a few minutes to cool down.



When starting and driving a machine that is cold, remember that the hydraulic fluid is also cold and that braking distances can be longer than normal until the machine reaches the working temperature.

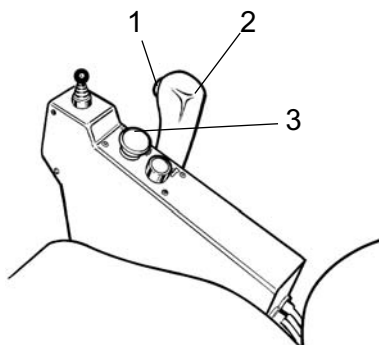


Fig. Control panel
1. Vibration On/Off switch
2. Forward/Reverse lever
3. Emergency/parking brake knob

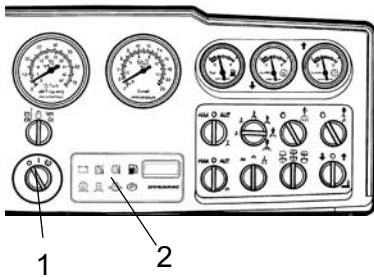


Fig. Instrument panel
 1. Starter switch
 2. Warning lamps panel

Switching off

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

Turn the starter switch (1) to the left to the shut off position. On rollers without a cab, lower and lock the instrument cover.

Parking

Chocking the drums



Never disembark from the machine when the is engine running, unless the emergency/parking brake knob is depressed.



Make sure that the roller is parked in a safe place with respect to other road users. Chock the drums if the roller is parked on sloping ground.



Remember that there is a risk of freezing during the winter. Drain the water tanks and water lines.

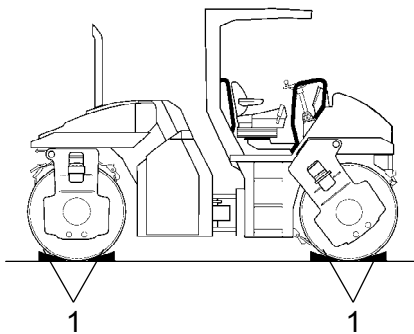


Fig. Positioning
 1. Chocks

Master switch

Before leaving the roller for the day, switch the master switch (1) to the disconnected position and remove the handle.

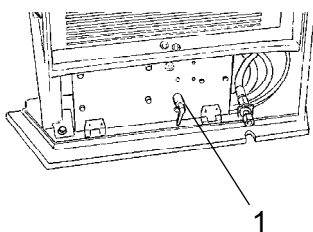


Fig. Engine compartment
 1. Battery isolation switch

This will prevent battery discharging and will also make it difficult for unauthorized persons to start and operate the machine. Lock the engine compartment doors.

Long-term parking

 The following instructions should be followed when long term parking (more than one month).

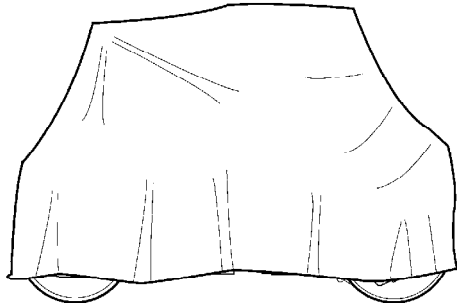


Fig. Roller weather protection

These measures apply when parking for a period of up to 6 months.

Before re-commissioning the roller, the points marked with an asterisk * must be returned to the pre-storage state.

Engine

* Refer to the manufacturer's instructions in the engine manual that is supplied with the roller.

Battery

* Remove the battery from the machine. Clean the battery, check that the electrolyte level is correct (see under the heading 'Every 50 hours of operation') and trickle-charge the battery once a month.

Air cleaner, exhaust pipe

* Cover the air cleaner (see under the heading 'Every 50 hours of operation' or 'Every 1000 hours of operation') or its opening with plastic or tape. Also cover the exhaust pipe opening. This is to avoid moisture entering the engine.

Sprinkler system

* Drain the water tank completely (see under the heading 'Every 2000 hours of operation'). Drain all hoses, filter housings and the water pump. Remove all sprinkler nozzles (see under the heading 'Every 10 hours of operation').

Fuel tank

Fill the fuel tank completely full to prevent condensation.

Hydraulic reservoir

Fill the hydraulic reservoir to the uppermost level mark (see under the heading 'Every 10 hours of operation.')

Steering cylinder, hinges, etc.

Lubricate the steering joint bearings and both bearings on the steering cylinder with grease (see under the heading 'Every 50 hours of operation').

Grease the steering cylinder piston with conservation grease.

Grease the hinges on the doors to the engine compartment and the cab. Grease both ends of the forward/reverse control (bright parts) (see under the heading 'Every 500 hours of operation').

Tires

Make sure that tire pressures are at least 200 kPa (2.0 kp/cm²).

Hoods, tarpaulin

* Lower the instrument cover over the instrument panel.

* Cover the entire roller with a tarpaulin. A gap must be left between the tarpaulin and the ground.

* If possible, store the roller indoors and ideally in a building where the temperature is constant.

Miscellaneous

Lifting

Locking the articulation



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

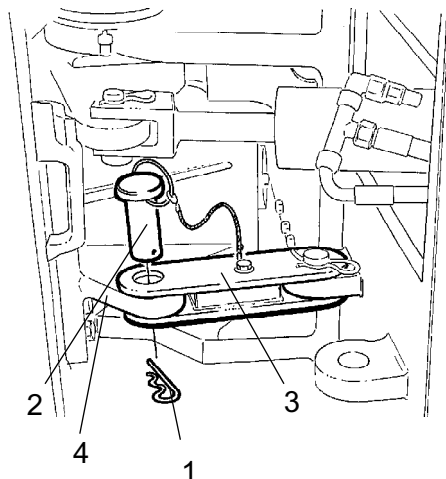


Fig. Articulation in the locked position

- 1. Locking pin
- 2. Locking dowel
- 3. Locking arm
- 4. Locking lug

Turn the steering wheel to the straight ahead position. Push in the emergency/parking brake knob.

Pull out the lowermost locking pin (1), which has a wire attached. Pull up the locking dowel (2) which also has a wire attached.

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

Fit the locking dowel into the holes through the locking arm and locking lug. Lock the dowel in position with the locking pin (1).

Lifting the roller



The machine's gross weight is specified on the hoisting plate (1). Refer also to the Technical specifications.



Lifting equipment such as chains, steel wires, straps and lifting hooks must be dimensioned in accordance with the relevant safety regulations for the lifting equipment.



Stand well clear of the hoisted machine! Make sure that the lifting hooks are properly secured.

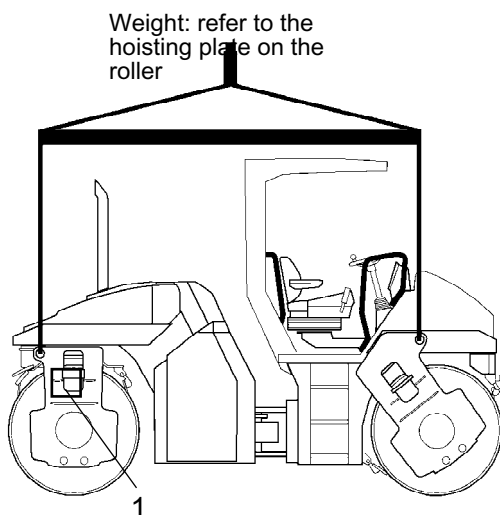


Fig. Roller prepared for lifting
1. Hoisting plate

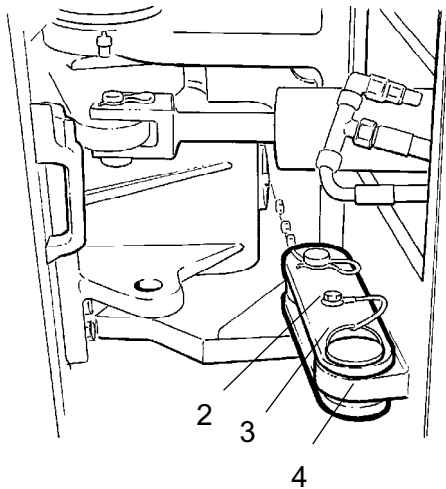


Fig. Articulation in the open position
2. Locking dowel
3. Locking arm
4. Locking lug

Unlocking the articulation



Remember to unlock the articulation before operating.

Fold the locking arm (3) back and secure it in the locking lug (4) with the locking dowel (2). The locking lug (4) is located on the tractor frame.

Towing

The roller can be moved up to 300 meters (1000 ft) using the instructions below.

Short distance towing with the engine running



Depress the emergency/parking brake knob and temporarily shut off the engine. Chock the drums to prevent the machine from rolling.

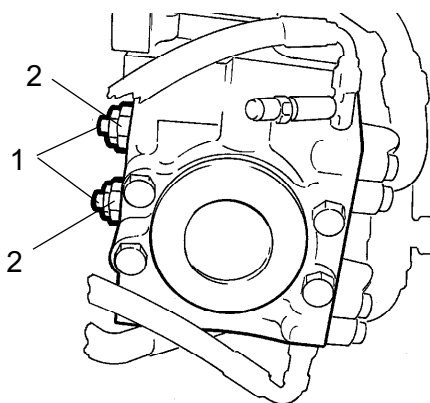


Fig. Propulsion pump
1. Towing valve
2. Multifunction valve

Open the right door to the engine compartment to access the propulsion pump.

Turn both towing valves (1) (middle hexagonal nuts) three turns counter clockwise, while holding the multifunction valve (2) (lowermost hexagonal nuts) in place. The valves are located on the left side of the propulsion pump.

Start the engine and allow it to idle.

The roller can now be towed and can also be steered if the steering system is otherwise functioning.

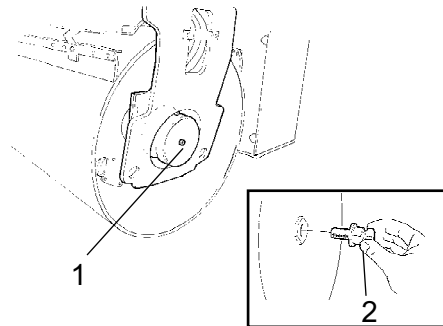


Fig. Drum propulsion motor
 1. Center plug
 2. M16x100 , washer and nut.

Towing short distances where the engine is inoperative

! *Chock the drums to prevent the roller moving when the brakes are mechanically disengaged.*

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

Access brake disengagement by removing the center plug (1).

The two brake disengagement screws (M16x100) are securely fastened to the hydraulic reservoir. (In the engine compartment on the right side of the machine.)

Screw in the M16 screw and tighten the nut while holding the screw in place.

Towing combi rollers

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

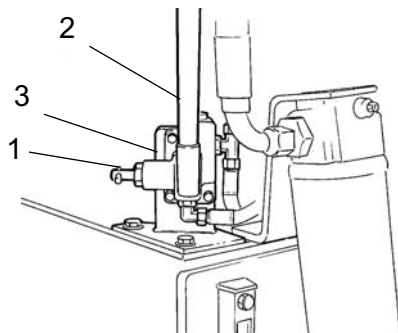


Fig. Brake disengagement pump
 1. Valve
 2. Pump arm
 3. Pump

Open both towing valves as described above.

The brake disengagement pump is located behind the right door of 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 pulled out position for a few seconds.

Towing the roller

When towing/recovering, the roller must be braked by the towing vehicle. A towing bar must be used as the roller has no brakes.



The roller must be towed slowly, max. 3 km/h (2 mph) and only towed short distances, max. 300 m (1000 ft).

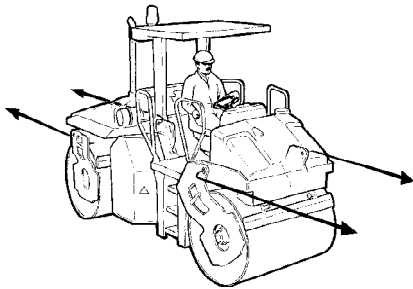


Fig. Towing

When towing/recovering a machine, the towing device must be connected to both lifting holes.

Pulling forces should act parallel to the machine's longitudinal axis, as illustrated. Maximum gross pulling force 190 kN (42.725 lbf).



Reverse the towing preparations made to the hydraulic pump and/or the motor.

Trailer eye

The roller can be fitted with a trailer eye.

The trailer eye is not designed to be used for towing/recovering. It is designed for trailers and other towed objects weighing no more than 4,000 kg (8,850 lbs).

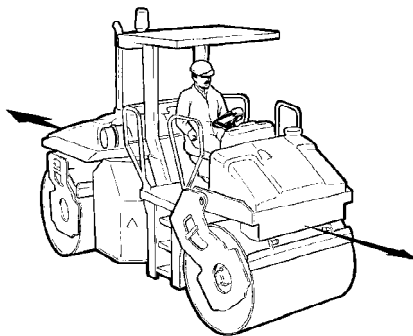


Fig. Trailer eye

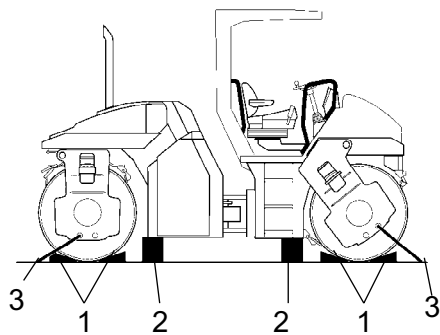


Fig. Positioning
1. Chocks
2. Blocks
3. Straps

Roller prepared for transport

! *Lock the articulation before lifting and transporting. Follow the instructions under the relevant heading.*

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

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

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

! Remember to return the articulation to its unlocked position before starting the roller.

Folding exhaust pipe (Optional)

The roller can be equipped with a foldable exhaust pipe.

! *Before starting to work on the foldable exhaust pipe, make sure that it is not hot. Take great care and use gloves.*

! *Risk of being crushed when raising or lowering the exhaust pipe.*

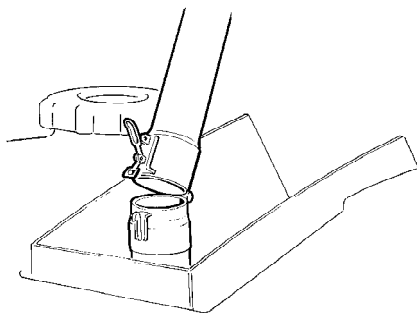


Fig. Folding exhaust pipe

Operating instructions - Summary

1. **Follow the SAFETY INSTRUCTIONS specified in the Safety Manual.**
2. Make sure that all instructions in the MAINTENANCE section are followed.
3. Turn the master switch to the ON position.
4. Move the forward/reverse lever to the NEUTRAL position.
5. Set the switch for Manual/Automatic vibration to the 0 position.
6. Set the engine speed control to idle.
7. Start the engine and allow it to warm up.
8. Set the engine speed control to the operating position.
9. Set the emergency/parking brake knob in the pulled-out position.



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 vibration only when the roller is in motion.
13. Check that the drums are thoroughly watered when watering is required.




14. **IN AN EMERGENCY:**
 - **Push in the EMERGENCY/PARKING BRAKE KNOB**
 - **Hold the steering wheel firmly.**
 - **Brace yourself for a sudden stop.**
15. When parking:
 - Push in the emergency/parking brake knob.
 - Stop the engine and chock the drums.
16. When lifting: - Refer to the relevant section in the Instruction Manual.
17. When towing: - Refer to the relevant section in the Instruction Manual.
18. When transporting: - Refer to the relevant section in the Instruction Manual.
19. When recovering - Refer to the relevant section in the Instruction Manual.






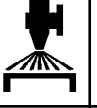





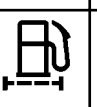




Maintenance - Lubricants and symbols

 Always use high-quality lubricants and the amounts recommended. Too much grease or oil can cause overheating, resulting in rapid wear.

	ENGINE OIL	Air temperature -15°C - +50°C (5°F-122°F) Shell Rimula Super 15W/40, API CH-4 or equivalent.
	HYDRAULIC FLUID	Air temperature -15°C - +40°C (5°F-104°F) Shell Tellus TX68 or equivalent. Air temperature above +40°C (104°F) Shell Tellus T100 or equivalent.
 Bio-Hydr.	BIOLOGICAL HYDRAULIC FLUID	BP BIOHYD SE-S 46 When it leaves the factory, the machine may be filled with biologically degradable fluid. The same type of fluid must be used when changing or topping up.
	DRUM OIL	Air temp. -15°C - +40°C (5°F-104°F) Mobil SHC 629 or equivalent.
	GREASE	SKF LGHB2 (NLGI-Klass 2) or equivalent for the articulated joint. Shell Retinax LX2 or equivalent for other grease points.
	FUEL	See engine manual.
	TRANSMISSION OIL	Air temperature -15°C - +40°C (5°F-104°F) Shell Spirax AX 80W/90, API GL-5 or equivalent. Air temperature 0°C (32°F) - above +40°C (104°F) Shell Spirax AX 85W/140, API GL-5 or equivalent.
	COOLANT	GlycoShell or equivalent, (mixed 50/50 with water). Anti-freeze protection down to about -37°C (-34.6°F).

 Other fuel and lubricants are required when operating in areas with extremely high or extremely low ambient temperatures. See the 'Special instructions' chapter, or consult Dynapac.

Maintenance symbols

	Engine, oil level		Air filter
	Engine, oil filter		Battery
	Hydraulic reservoir, level		Sprinkler
	Hydraulic fluid, filter		Sprinkler water
	Drum, oil level		Recycling
	Lubricating oil		Fuel filter
	Coolant level		Pump gear, oil level
	Air pressure		Sprinkler, tires

Maintenance - Maintenance schedule

Service and maintenance points

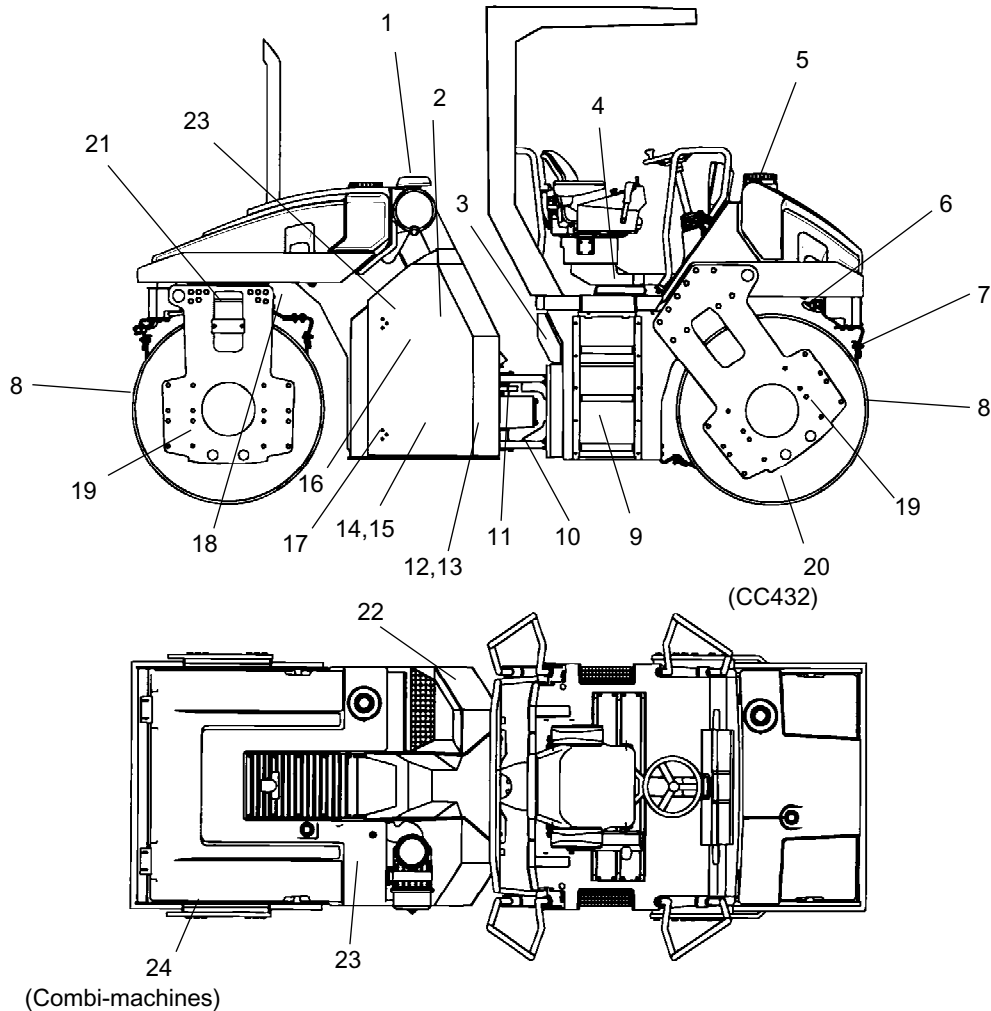




Fig. Service and maintenance points

- | | | |
|-------------------------|------------------------------|----------------------------|
| 1. Air cleaner | 9. Fuel tank | 17. Hinges |
| 2. Engine oil | 10. Steering joint | 18. Pivot cylinder |
| 3. Refueling point | 11. Steering cylinder | 19. Rubber element |
| 4. Seat bearing | 12. Hydraulic filter | 20. Pump gear |
| 5. Water tanks, filling | 13. Hydraulic fluid level | 21. Pivot bearing |
| 6. Watering system | 14. Hydraulic fluid, filling | 22. Battery |
| 7. Scrapers | 15. Hydraulic reservoir | 23. Hydraulic fluid cooler |
| 8. Drums | 16. Engine | 24. Tires (Combi) |

General

Periodic maintenance should be carried out after the number of hours specified. Use the daily, weekly etc. periods where number of hours cannot be used.

 Remove all dirt before filling, when checking oils and fuel and when lubricating using oil or grease.

 The manufacturer's instructions found in the engine manual also apply.

Every 10 hours of operation (Daily)

Refer to the contents to find the page number of the sections referred to !

Pos. in fig	Action	Comment
	Before starting up for the first time on that day	
2	Check the engine oil level	Refer to the engine manual
23	Check the engine coolant level	Refer to the engine manual
13	Check the hydraulic reservoir level	
9	Refuel	
5	Fill the water tanks	
6	Check the sprinkler system	
6	Emergency watering	
7	Check the scraper setting	
	Test the brakes	
24	Check the sprinkler system - tires	
24	Check the scraper setting - tires	

After the FIRST 50 hours of operation

Refer to the contents to find the page number of the sections referred to !

Pos. in fig	Action	Comment
2	Change the engine oil and oil filter	Refer to the engine manual
16	Change the fuel filter	Refer to the engine manual
12	Change the hydraulic fluid filter	

Every 50 hours of operation (Weekly)

Refer to the contents to find the page number of the sections referred to !

Pos. in fig	Action	Comment
10	Grease the steering joint	
11	Grease the steering cylinder brackets	
18	Grease the operating cylinder for pivotal steering	Optional
1	Inspect/clean the filter element in the air cleaner	Replace as required
24	Check the tire pressure (combi)	
20	Check the fluid level in the pump gear	
	Check the AC	Optional
	Inspect/lubricate the edge cutter	Optional

Every 250 hours of operation (Monthly)

Refer to the contents to find the page number of the sections referred to !

Pos. in fig	Action	Comment
22	Clean the hydraulic fluid cooler/water cooler	Or when required
21	Check the electrolyte level in the battery.	Refer to the engine manual
	Check the AC	Optional

Every 500 hours of operation (Every three months)

Refer to the contents to find the page number of the sections referred to !

Pos. in fig	Action	Comment
16	Change the engine fuel filter	Refer to the engine manual
2	Change the engine oil and oil filter	Refer to the engine manual
8	Check the oil level in the drums	
21	Lubricate the pivot bearings	Optional
19	Check rubber elements and bolted joints	
14	Check the hydraulic reservoir cover/breather	
17	Lubricate hinges and controls	
4	Grease the chair bearing	
	Grease the steering chain	
16	Change the engine pre-filter	

Every 1000 hours of operation (Every six months)

Refer to the contents to find the page number of the sections referred to !


Pos. in fig	Action	Comment
16	Check engine valve clearances	Refer to the engine manual
16	Check the engine belt drive system	Refer to the engine manual
12	Change the hydraulic fluid filter	
1	Replace the main filter in the air cleaner	
24	Change the pump gear fluid	
	Replace the air cleaner filter in the cab	
8	Change the oil in the drums (HF version)	

Every 2000 hours of operation (Yearly)


Refer to the contents to find the page number of the sections referred to !

Pos. in fig	Action	Comment
15	Change the hydraulic fluid	
8	Change the oil in the drums	
9	Drain and clean the fuel tank	
5	Drain and clean the water tanks	
	Lubricate the forward/reverse lever	
10	Check the condition of the articulation	
	Overhaul the air conditioning	Optional
	Check the compressor	Optional
	Check the drying filter	Optional

Maintenance - 10h


 **Park the roller on a level surface. When checking and making adjustments, the engine should be switched off and the emergency/parking brake should be applied, if not otherwise specified.**

Water tanks - Filling

 Unscrew the tank cap (1) and fill with clean water. Do not remove the strainer (2).

Fill both water tanks. They hold 485 liters (128.1 gal) each.

To make reaching the tank cap easier, there is a step above the battery behind the left door of the engine compartment and also a retractable step on the left front drum fork.

 **Only additive:** A small amount of environment-friendly antifreeze, and for combo models cutting fluid where appropriate.

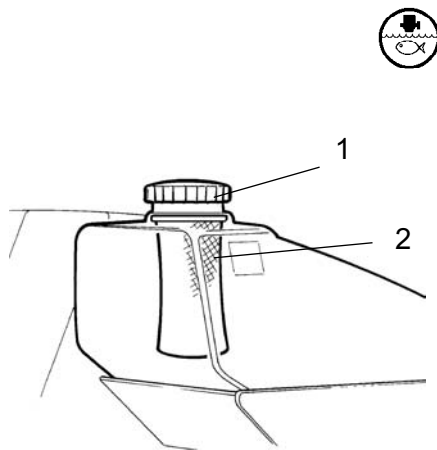


Fig. Rear water tank
1. Tank cap
2. Strainer



Diesel engine - Check oil level

The dipstick is accessed through the right door of the engine compartment.

 **Take care not to touch any hot parts of the engine or the radiator when removing the dipstick. Risk of burns.**

The dipstick is located on the engine's short side above the hydraulic pumps.

Pull up the dipstick (1) and check that the oil level is between the upper and lower marks.

For further details, refer to the engine's instruction manual.

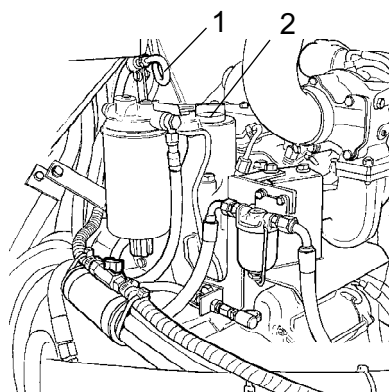


Fig. Engine compartment
1. Dipstick
2. Oil filler cap



Emergency watering

If one of the water pumps stops, the remaining pump can keep the sprinkler system operating - but at reduced capacity.

To operate with only one pump, open the stop cock (1) on the water hose by the articulation. Close the coarse filter stop cock (2) by the pump that has stopped, see the previous picture.

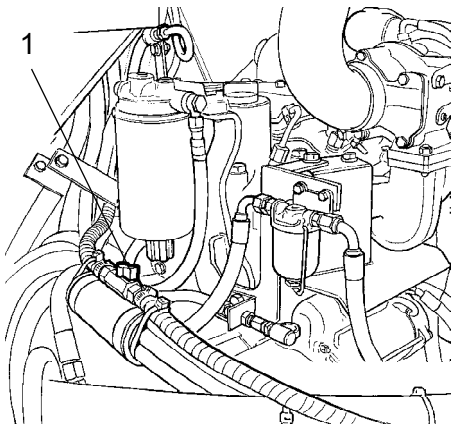


Fig. Engine compartment, right side
1. Stop cock



Fuel tank - Refueling



Never refuel while the engine is running. Do not smoke and avoid spilling fuel.

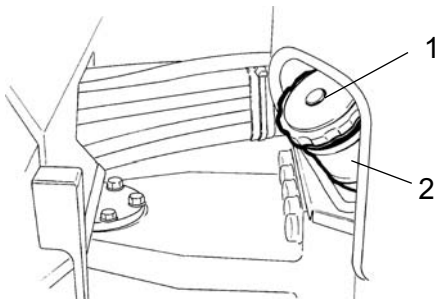


Fig. Fuel tank
1. Tank cap
2. Filler pipe

Refuel the tank every day before starting work, or fill the tank at end of work. Unscrew the lockable tank cap (1) and fill fuel up to the lower edge of the filler pipe.

The tank holds 200 liters (52.8 gal) of fuel. Refer to the engine manual for information on diesel grade.



**Sprinkler system/Drum
Check**

Start the sprinkler system and make sure that none of the nozzles (1) are blocked. If necessary, clean blocked nozzles and the coarse filter located near the water pump (2). See the illustrations.

There is a pump system, which is located underneath each water tank behind the cover (2), which is opened by turning the quick-fit screws (3) a 1/4 turn counter-clockwise. To close the cover, set the screws so that the screw slot is vertical and push in.

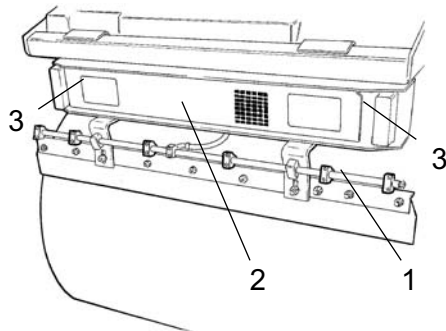


Fig. Rear drum
 1. Nozzle
 2. Pump system/cover
 3. Quick-fit screws

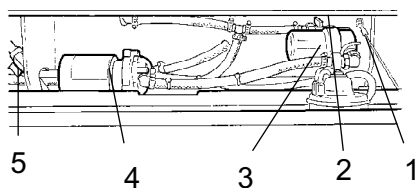


Fig. Pump system
 1. Coarse filter
 2. Stop cock
 3. Filter housing
 4. Water pump
 5. Drain cock

When cleaning the coarse filter (1), close the stop cock (2) and undo the filter housing (3).

Clean the filter and filter housing. Check that the rubber gasket in the filter housing is intact.

After inspecting and carrying out any necessary cleaning, start the system and check that it works.

A drain cock (5) is located on the left side of the pump system area. This can be used to drain the tank and the pump system.

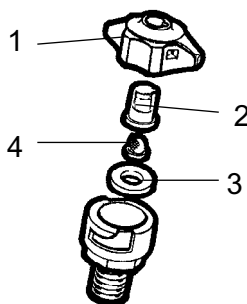


Fig. Nozzle
 1. Sleeve
 2. Nozzle
 3. Seal
 4. Fine filter

**Sprinkler system/Drum
Cleaning**

Dismantle the blocked nozzle by hand.

Blow the nozzle (2) and fine filter (4) clean using compressed air. Alternatively, fit replacement parts and clean the blocked parts at a later point in time.

After inspecting and carrying out any necessary cleaning, start the system and check that it works.



Wear protective goggles when working with compressed air.



Coolant level - Check

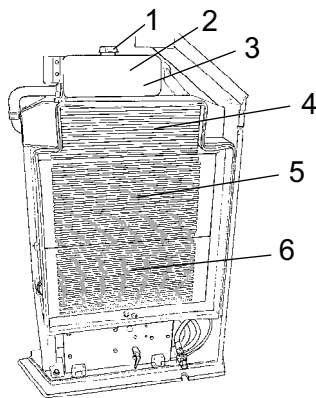


Fig. Radiator
 1. Filler cap
 2. Sight glass/max. level
 3. Sight glass/min. level
 4. Charge air cooler
 5. Water cooler
 6. Hydraulic fluid cooler

Check that level of the coolant is between the max. and min. marks.

! *Observe great caution if the radiator cap has to be opened while the engine is hot. Wear protective gloves and goggles.*

Fill with a mixture of 50% water and 50% anti freeze. See the lubrication specification in these instructions and the engine manual.

! Flush the system every other year and change the coolant. Also check that the air has unobstructed passage through the radiator.

**Scrapers, fixed
 Checking - Setting**

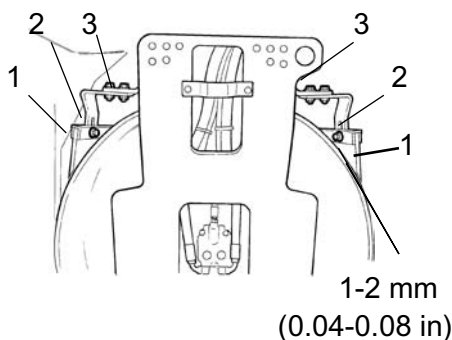


Fig. Rear drum scrapers
 1. Scraper blade
 2. Adjustment screws
 3. Adjustment screws

Make sure that the scrapers are undamaged. Adjust the scrapers so that they are 1-2 mm (0.04-0.08 in) from the drum. For special asphalt compounds, it may be better if the scraper blades (1) lie lightly against the drums.

Asphalt remnants can accumulate on the scraper and affect the contact force.

Loosen the screws (2) to adjust the scraper blade up or down. Loosen the screws (3) to adjust the contact pressure of the scraper blade against the drum.

Remember to tighten all the screws after any adjustment.

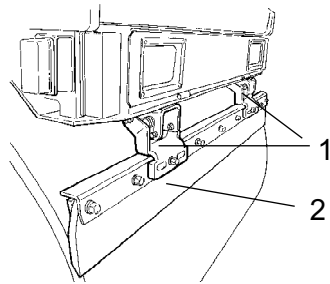


Fig. Spring-action scrapers
1. Spring mechanism
2. Scraper blade

**Scrapers, spring loaded (Optional)
 Checking**

Make sure that the scrapers are undamaged.

Spring-action scrapers need no adjustment as the spring force ensures the correct contact force.

Asphalt remnants can accumulate on the scraper and affect the contact force. Clean when necessary.



The scrapers must be retracted from the drum during transport driving.



Brakes - Check



Check the brakes by carrying out the following :

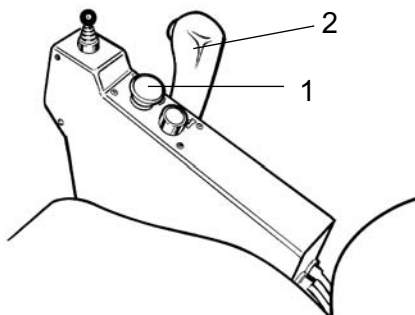


Fig. Control panel
1. Emergency/parking brake knob
2. Forward/reverse lever

Drive the roller **slowly** forwards.

Depress the emergency/parking brake knob (1). The warning lamp on the instrument panel should come on and the roller should stop.

After testing the brakes, set the forward/reverse lever (2) in neutral.

Pull up the emergency/parking brake knob.

The roller is now ready for operation.



Hydraulic reservoir - Check fluid level

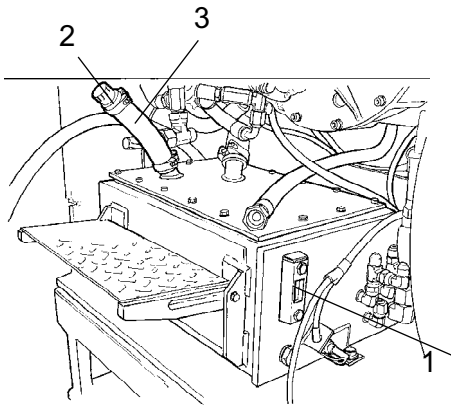


Fig. Hydraulic reservoir

- 1. Oil sight glass
- 2. Filler hose
- 3. Filler cap

Open the right engine compartment door.

Place the roller on a level surface and check that the oil level in the sight glass (1) is between the max and min markings. Top up with the type of hydraulic fluid specified in the lubricant specification, if the level is too low.

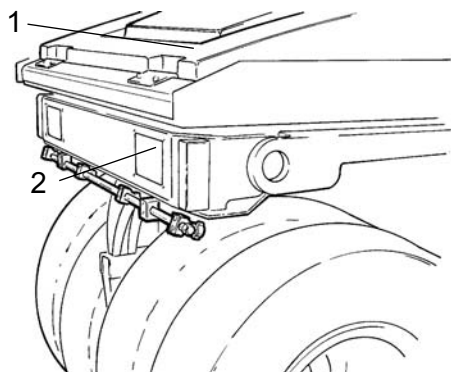


Fig. Wheel rack

- 1. Rear water tank
- 2. Sprinkler nozzle

Sprinkler system/Wheels - Check

Fill the rear tank with emulsion fluid; for example, water mixed with 2% cutting oil. Make sure that the sprinkler nozzles (2) are not clogged. Clean them and the filter if necessary. See under Sprinkler system/Drum; Check - Cleaning, for detailed instructions.



Check the tire treads now and then to see if any asphalt compound has stuck. This can occur before the tires are sufficiently warm.



Fluids that are flammable or detrimental to the environment must not be used in the emulsion tank.

Scrapers Check - Adjustment

Make sure that the scrapers are undamaged. Adjust the scrapers so that they are 1-2 mm from the tires. For special asphalt compounds it can be better if the scraper blades (1) are only in light contact with the tires. The contact is adjusted with the screw on the back of the scraper bracket.

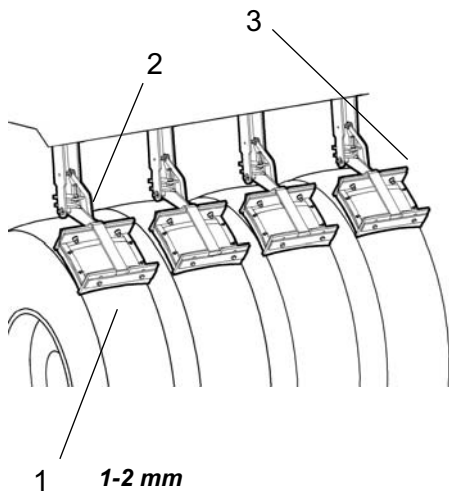


Fig. Tire scrapers
1. Scraper blades
2. Lock shackle
3. Adjusting screw

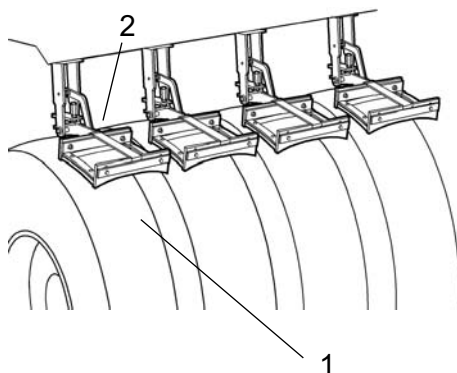


Fig. Tire scrapers
1. Scraper blades
2. Lock shackle

The scrapers must hang clear of the tires during transport. Lift up the scraper blades (1) and lock them in the raised position with the lock shackle (2).

Maintenance - 50h

! *Park the roller on a level surface. When checking and making adjustments, the engine should be switched off and the emergency/parking brake should be applied, if not otherwise specified.*

Steering joint - Lubrication

! *Do not allow anyone to remain in the vicinity of the steering joint when the engine is running. Risk of being crushed when the steering is operated. Press the emergency/parking brake knob before lubricating.*

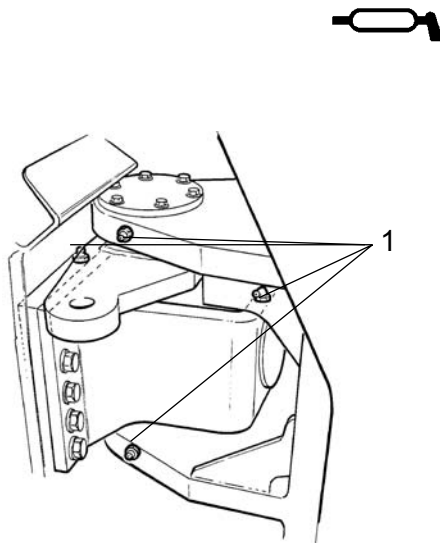


Fig. Right side of articulation
1. Grease nipples

Turn the steering wheel fully to the left. All four grease nipples (1) can now be accessed from the right side of the machine.

Wipe the grease nipples (1) clean. Grease each nipple with five strokes of the hand-operated grease gun. Make sure that grease penetrates into the bearing. If grease does not penetrate the bearings, it may be necessary to relieve the pressure on the articulation joint with a jack and then repeat the greasing process.

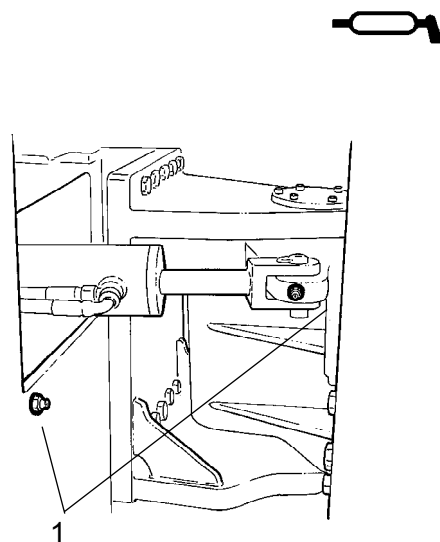
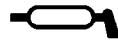


Fig. Left side of articulation
1. Grease nipples

Steering cylinder - Lubrication

Turn the steering wheel back to the straight ahead position. The two grease nipples (1) on the steering cylinder can now be accessed from the left side of the machine.

Wipe the nipples (1) clean and grease each each nipple (1) with three strokes of the hand-operated grease gun.



Pivot cylinder (Optional) - Lubrication

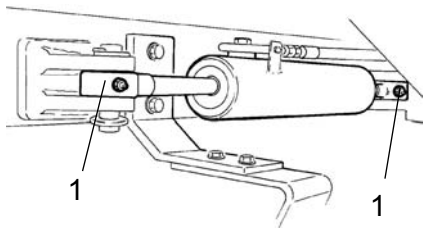


Fig. Pivot cylinder
1. Grease nipples



Do not allow anyone to remain behind the drum while the engine is running. Danger of being crushed when the drum is moved.

Turn the rear drum so that it is in the left turn position. The two grease nipples (1) on the cylinder can now be accessed from the right side of the machine.

Wipe the nipples clean and grease each nipple (1) with three strokes of the hand-operated grease gun.



Air cleaner
Checking - Cleaning



Replace or clean the air cleaner main filter if the warning lamp on the control panel comes on when the engine is running at maximum speed.

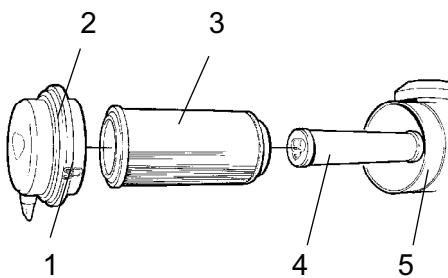


Fig. Air cleaner
1. Locking flaps
2. Cover
3. Main filter
4. Backup filter
5. Filter housing

Release the three locking catches (1), pull off the cover (2), and pull out the main filter (3).

Do not remove the backup filter (4).

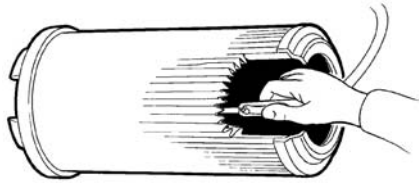


Fig. Main filter

**Main filter
- Cleaning with compressed air**

When cleaning the air filter, use compressed air with a maximum pressure of 5 bars. Blow air up and down along the paper pleats on the inside of the filter.

Hold the nozzle at least 2-3 cm (0.8-1.2 in) away from the paper pleats so that the paper is not torn by the air pressure.



Wear protective goggles when working with compressed air.

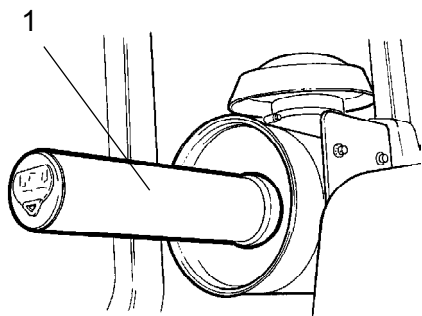
Wipe the inside of the cover (2) and the filter housing (5) clean. See the previous illustration.



Check that the hose clamps between the filter housing and the suction hose are tight and that the hoses are intact. Inspect the entire hose system, all the way to the engine.



Change the main filter after 5 cleanings or more frequently.



**Fig. Air filter
1. Backup filter**

Backup filter - Change

Change the backup filter with a new filter after every fifth replacement or cleaning of the main filter.

The back-up filter cannot be cleaned.

To change the backup filter (1), pull the old filter out of its holder, insert a new filter and reassemble the air cleaner in the reverse order.



Pump drive - Oil level, Check - Filling

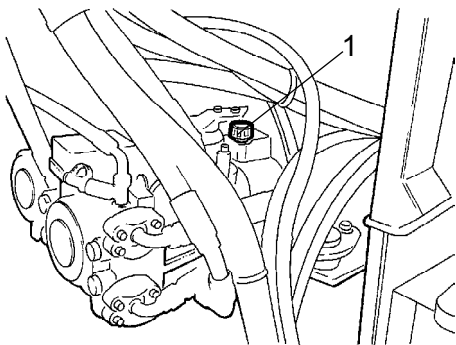


Fig. Pump gear
1. Dipstick

Position the roller on a level surface.



When checking the oil level, switch the engine off and ensure that the parking brake is applied.

Open the right door of the engine compartment and unscrew the dipstick (1).

The oil level should be between the two marks on the lower edge of the dipstick.

Fill with transmission oil if required, see Lubricant Specification.

Ensure that the rubber gasket between the dipstick and the gear housing is in place, and screw in the dipstick.



Air conditioning (Optional)

- Inspection



Never work under the roller when the engine is running. Park the roller on a level surface, chock the wheels and depress the parking brake control.

With the unit in operation, check using the sight glass (1) that bubbles are not visible on the drying filter.

Turn the roller steering to full right lock to give better access to the drying filter.



Always depress the parking brake knob.

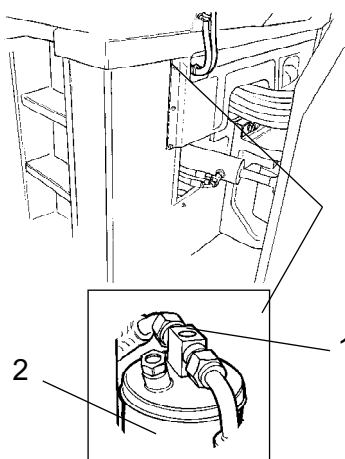


Fig. Drying filter
1. Sight glass
2. Filter holder

The filter is located on the left side under the cab and is visible where the hoses pass in under the cab floor, see the illustration.

If bubbles are visible through the sight glass, this indicates that the refrigerant level is too low. Shut off the unit, as it can be damaged if it is run with insufficient refrigerant. Fill with refrigerant.



**Air conditioning (Optional)
- Cleaning**

Where cooling capacity is markedly reduced, clean the condensor element (1) located on the rear edge of the cab. Also clean the cooling unit in the cab.

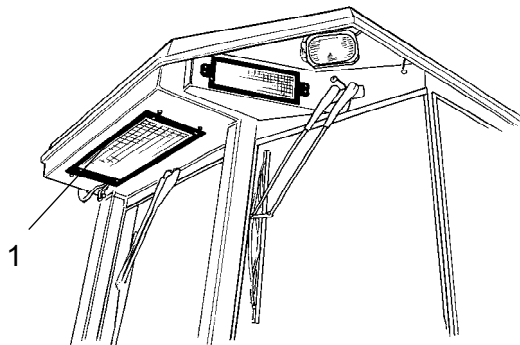
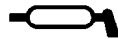


Fig. Cab
1. Condensor element



**Edge cutter (Optional)
- Lubrication**



Refer to the operation section for information on how to operate the edge cutter.

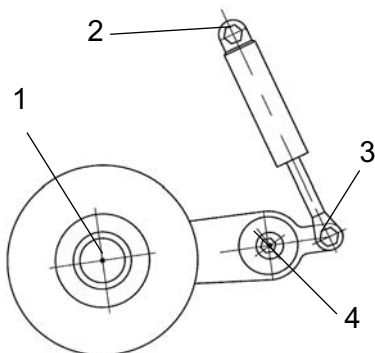


Fig. Four grease points for lubricating edge cutters

Grease the four points indicated in the figure.

Grease should always be used for lubrication, see the lubricant specifications.

Grease all bearing points with five strokes of a hand-operated grease gun.



Tires - Tire pressure

Check the tire pressure with a pressure gauge.

Make sure that the tires have the same pressure.

Recommended pressure: See Technical Specifications.

The figure shows the position of the air valve on the outer tires.

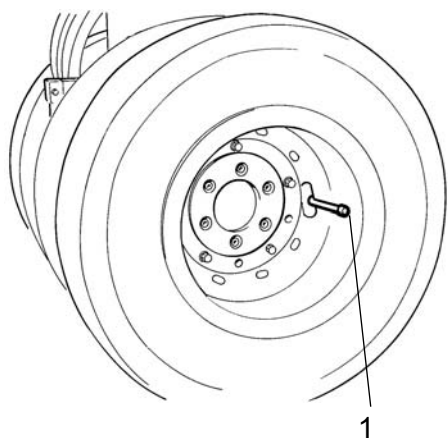


Fig. Outer wheels
1. Air valve

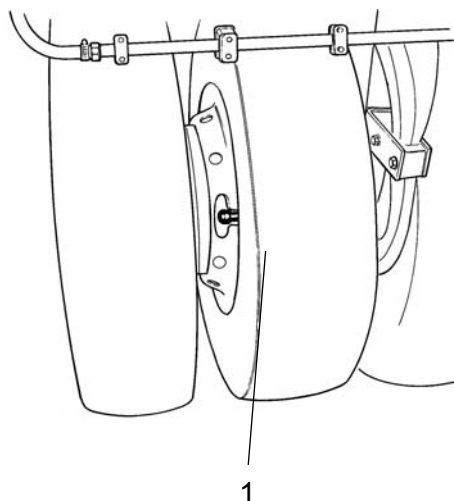



Fig. Inner wheels
1. Air valve

The figure shows the position of the air valve on the inner tires.



Check the Safety Manual that accompanies the roller before filling the tires with air.

Maintenance - 250h


 **Park the roller on a level surface. When checking and making adjustments, the engine should be switched off and the emergency/parking brake should be applied, if not otherwise specified.**



**Hydraulic fluid cooler
Checking - Cleaning**

The water and hydraulic fluid coolers can be accessed when the left engine compartment door is opened.

Make sure that the air flow through the cooler is unobstructed. Dirty coolers are blown clean with compressed air or washed clean using a high-pressure water cleaner.

 **Take care when using a high-pressure water jet. Do not hold the nozzle too near the cooler.**

 **Wear protective goggles when working with compressed air or high-pressure water jets.**

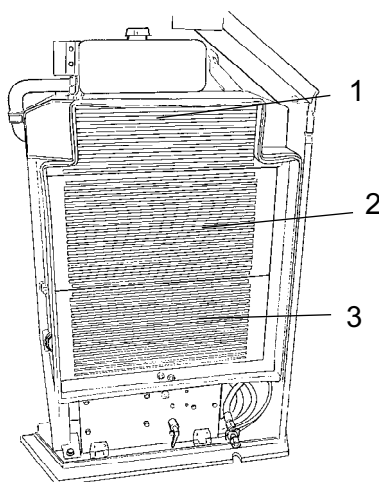


Fig. Coolers
1. Charge air cooler
2. Water cooler
3. Hydraulic fluid cooler

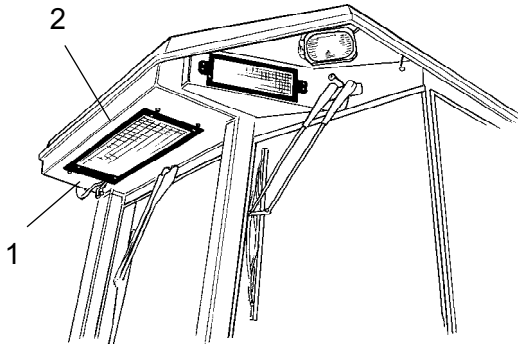


Fig. Air conditioning
 1. Refrigerant hoses
 2. Condenser element

**Air conditioning (Optional)
 - Inspection**

Inspect refrigerant hoses and connections and make sure that there are no signs of an oil film that can indicate a refrigerant leakage.



Battery - Check electrolyte level

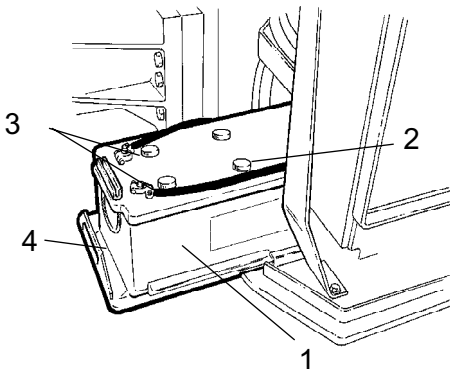


Fig. Battery bay
 1. Battery
 2. Cell cap
 3. Cable shoes
 4. Handle

Open the left door of the engine compartment.

Pull out the battery, which is located on the floor behind the radiator.



Wear safety goggles. The battery contains corrosive acid. In the event of contact with the acid, rinse with water.



Make sure there are no naked flames in the vicinity when checking the electrolyte level. Explosive gas is formed when the alternator is charged.



When disconnecting the battery, always disconnect the negative cable first. When connecting the battery, always connect the positive cable first.

The cable shoes should be clean and well tightened. Corroded cable shoes should be cleaned and greased with acid-free Vaseline.

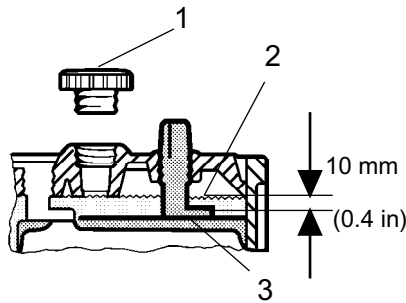


Fig. Electrolyte level in battery

1. Cell cap
2. Electrolyte level
3. Plate

Battery cell Electrolyte level

Remove the cell caps and check that the electrolyte is about 10 mm (0.4 in) above the plates. Check the level of all cells. If the level is below this, top off to the correct level with distilled water.

If the ambient temperature is below freezing, the engine should be run for a while before topping the battery off with distilled water. The electrolyte can otherwise freeze.

Check that the ventilation holes in the cell covers are not blocked and refit the covers.



Discard used batteries properly. Batteries contain lead, which is harmful to the environment.



Before carrying out any electric welding on the machine, disconnect the battery ground cable and then all electrical connections to the alternator.

Maintenance - 500h

! *Park the roller on a level surface. When checking and making adjustments, the engine should be switched off and the emergency/parking brake should be applied, if not otherwise specified.*

! *Ensure that there is good ventilation (air extraction) if the engine is run indoors. Risk of carbon monoxide poisoning.*

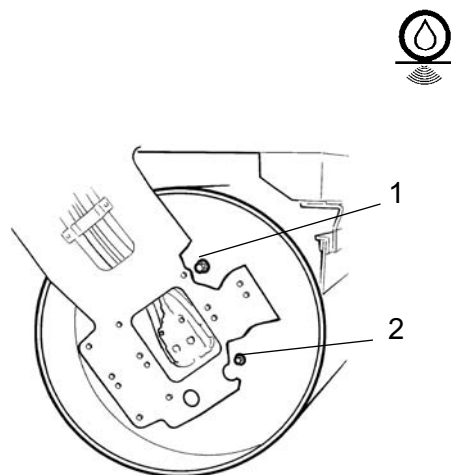


Fig. Drum, vibration side
1. Filler plug
2. Level plug

**Drum - oil level
 Inspection - filling**

Position the roller with the filler plug (1), the large plug, at the highest point in its rotation.

Wipe clean around the level plug (2), the small plug, and remove the plug.

Make sure that the oil level is up to the lower edge of the hole. Top off with fresh oil if the level is low. Use oil as specified in the lubricants specification.

When removing the filler plug, wipe any metal accumulated on the plug magnet off. Make sure that plug seals are intact and replace with new seals if not.

Refit the plugs and check that they are tight by driving the roller and then rechecking.

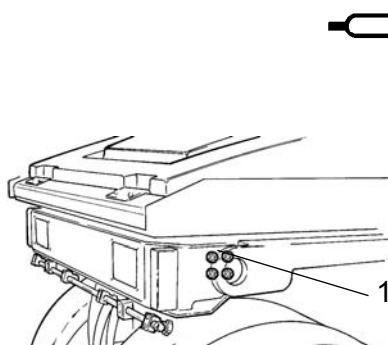


Fig. Rear drum
1. Grease nipples x 4

Pivot bearing (Optional) - Lubrication

Grease each nipple (1) with five strokes of a hand-operated grease gun.

Use grease as specified in the lubricant specification.

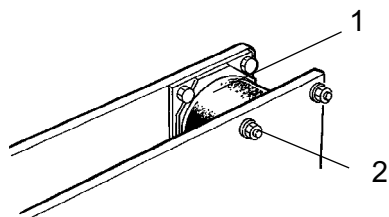


Fig. Drum, vibration side
1. Rubber element
2. Attachment screws

Rubber elements and attachment screws
Check

Check all rubber elements (1). Replace all elements where more than 25% of the elements on one side of the drum have cracks deeper than 10-15 mm (0.39-0.59 in).

Check using a knife blade or pointed object.

Check also that the attachment screws (2) are tightened.



Hydraulic reservoir cap - Check

Open the right engine compartment door.

Unscrew and make sure that the reservoir cap is not clogged. Air must have unobstructed passage through the cap in both directions.

If passage in either direction is blocked, clean the filter with a little diesel oil and blow through with compressed air until the block is removed, or replace the cap with a new one.



Wear protective goggles when working with compressed air.

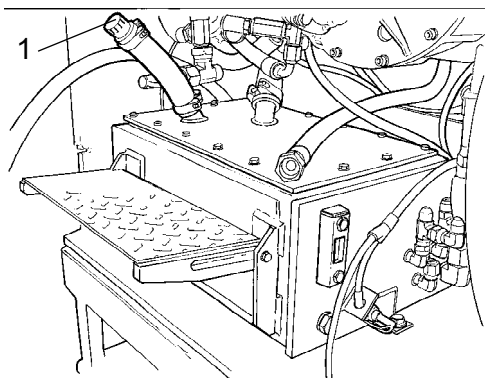


Fig. Engine compartment, right side
1. Reservoir cap

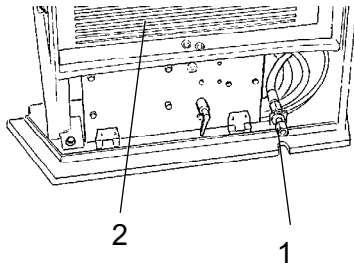


Fig. Engine compartment, left side
 1. Oil drain
 2. Radiator

**Engine
 Oil change**

The engine oil drain plug is located alongside the battery behind the left engine compartment door.

Run the engine warm before draining the oil.

Place a receptacle that holds at least 15 liters (4 gal) under the drain plug.

! Take great care when draining engine oil. Wear protective gloves and goggles.

Unscrew the oil drain plug (1). Allow all the oil to drain out and refit the plug.

Fill with fresh engine oil. Refer to the lubricants specification or the engine manual for information on the correct oil grade.

Check the dipstick to ensure that the engine oil level is correct. Refer to the engine manual for details.

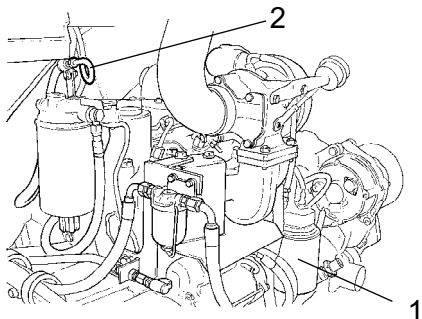


Fig. Engine compartment, right side
 1. Oil filter
 2. Dipstick

**Engine
 Replacing oil filter**

Check the dipstick (2) to ensure that the engine oil level is correct. Refer to the engine manual for details.

The oil filter (1) can be accessed most easily via the right engine compartment door.

See the engine manual for information about replacing the filter.

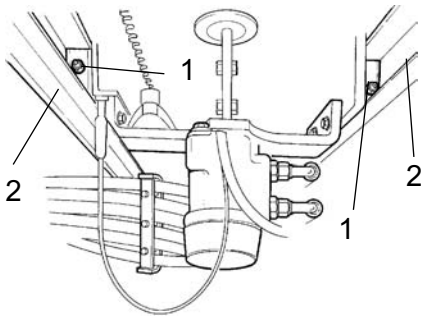


Fig. Seat bearing, underside
 1. Grease nipples
 2. Slide rails

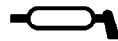
Seat bearing - Lubrication

Remove both steps under the operator platform. For machines fitted with a cab, remove a step on one side and a cover plate on the other side.

Lubricate the seat slide rails (2) for transverse travel. There are four lubrication nipples (1), two accessible from each side. All are to receive five strokes from a hand-operated grease gun.

Also lubricate the seat locking mechanism, both for transverse travel and rotation. Use engine oil or drum oil.

! If the seat starts to be stiff when adjusting, it should be lubricated more often.



Seat bearing - Lubrication

! Keep in mind that the chain is a vital part of the steering mechanism.

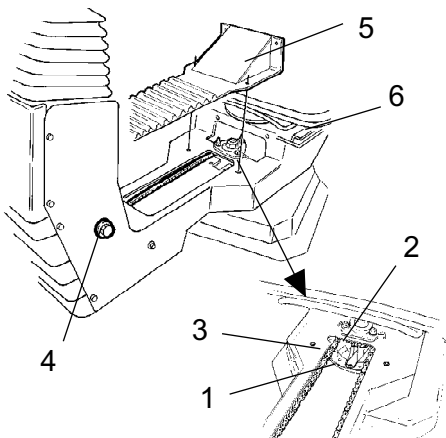


Fig. Seat bearing
 1. Lubrication nipple
 2. Sprocket
 3. Steering chain
 4. Adjustment screw
 5. Cover
 6. Slide rails

Remove the cover (5) to access the lubrication nipple (1). Lubricate the operator seat slew bearing with three strokes of a hand-operated grease gun.

Also grease the seat slide rails (6).

Clean and grease the chain (3) between the seat and the steering column.

If the chain is slack on the sprocket (2), loosen the screws (4) and move the steering column forward. Tighten the screws and check chain tension.

! If the seat starts to be stiff when adjusting, it should be lubricated more often than specified here.

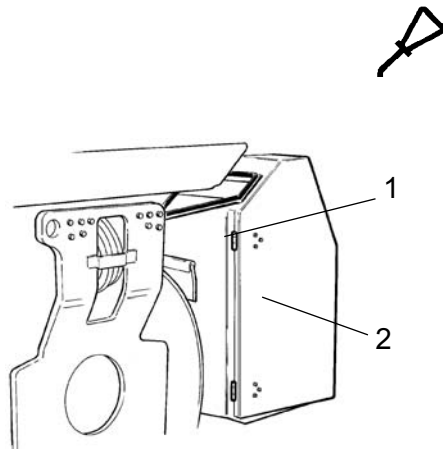


Fig. Engine compartment
1. Hinges
2. Control cables

**Hinges, controls
 - Lubrication**

Lubricate both hinges (1) on the engine compartment doors until the grease penetrates into the hinge.

If the machine has a cab, lubricate the cab door hinges in the same way.

Also lubricate the hinges on the front and rear lamp covers with a few drops of oil.

Lubricate the forward/reverse control cables alongside the hydraulic pump control arm. Apply a few drops of oil to the control sleeve opening.



The engine fuel filter - replacement/cleaning

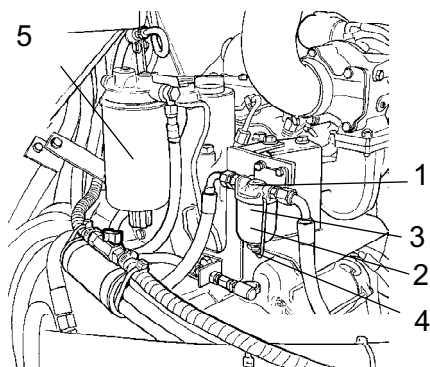


Fig. Engine
1. Pre-filter
2. Glass container
3. Strainer
4. Nut
5. Fuel filter


Pre-filter, undo the screw (1) and remove the glass container (2).


Remove and clean the strainer (3) using a non-flammable agent. Install the strainer and the container.

Replace the fuel filter. See engine manual.

Start the engine and check that the pre-filter does not leak.


Maintenance - 1000h

 **Park the roller on a level surface. When checking and making adjustments, the engine should be switched off and the emergency/parking brake should be applied, if not otherwise specified.**

 **Ensure that there is good ventilation (air extraction) if the engine is run indoors. Risk of carbon monoxide poisoning.**



Hydraulic filter Change

 Remove the filter (1) and deliver to special waste handling. This is a single-use filter and cannot be cleaned.

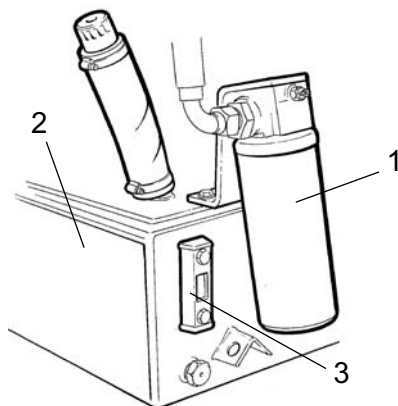


Fig. Hydraulic reservoir
1. Hydraulic filter
2. Reservoir
3. Sight glass

Thoroughly clean the filter holder sealing surface.

Apply a thin coat of fresh hydraulic fluid to the rubber gasket on the new filter.

Screw the filter on by hand, firstly until the filter gasket makes contact with the filter base. Then rotate a further ½ turn.

Check the hydraulic fluid level in the sight glass (3) and top off as required. See under the heading 'Every 10 hours of operation' for more information.

Start the engine and check that the filter does not leak.



Air filter - Changing

Replace the air cleaner main filter (1) even if it has not been cleaned five times. See under the heading 'Every 50 hours of operation' for information on changing the filter.



If a blocked filter is not replaced, the exhaust fumes will be black and the engine will lose power. There is also a risk of severe damage to the engine.

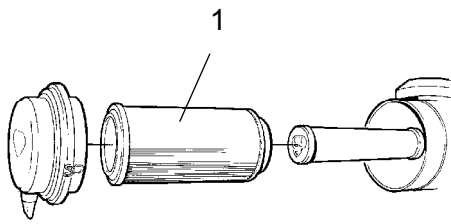


Fig. Air cleaner
1. Main filter



Pump drive - Oil change



Take great care when draining warm fluids and oils. Wear protective gloves and goggles.

Obtain a container for collecting the used fluid. The container should hold at least 1.5 liters.

Unscrew the drain plug (1) and the dipstick (see under the heading "Every 50 hours of operation") so that the fluid runs out more easily.

Wipe away any metal residue from the magnetic drain plug, reinstall the plug with a seal.

The gearbox holds 0.8 liters. See under the heading "Every 50 hours of operation" when filling.

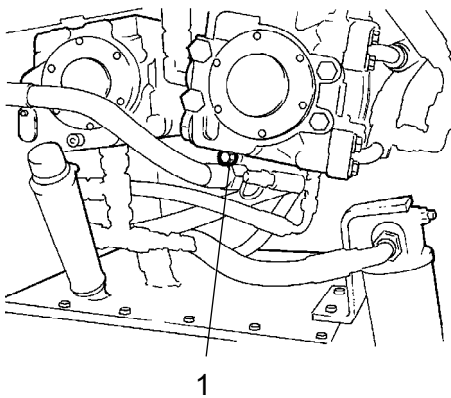


Fig. Pump gear
1. Drain plug

**Air conditioning (Optional)
Fresh air filter- Change**

Use a step ladder to reach the filter (1).

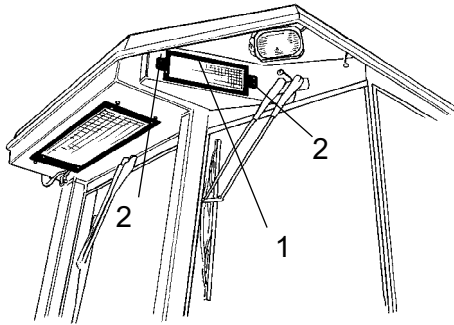



Fig. Cab
1. Fresh air filter (x2)
2. Screws (x2)


There are two fresh air filters (1), one on each side of the cab.

Undo the screws (2) and remove the complete holder. Remove the filter insert and replace with a new filter.

The filter may need to be changed more often if the machine is operated in a dusty environment.

Maintenance - 2000h

 **Park the roller on a level surface. When checking and making adjustments, the engine should be switched off and the emergency/parking brake should be applied, if not otherwise specified.**

 **Ensure that there is good ventilation (air extraction) if the engine is run indoors. Risk of carbon monoxide poisoning.**



**Hydraulic reservoir
Fluid change**

 **Take great care when draining fluids and oils. Wear protective gloves and goggles.**

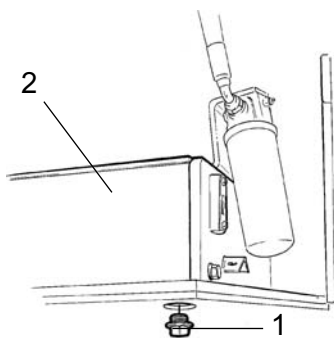



Fig. Engine compartment, right side
1. Drain plug
2. Hydraulic reservoir

Place a receptacle that holds at least 50 liters (13.2 gal) under the drain plug.

Unscrew the drain plug (1). Allow all the fluid to drain out and refit the plug.

 **Deliver the drained fluid to environmentally correct handling.**

Fill with fresh hydraulic fluid. Refer to the lubricants specification for grade information.

Change the hydraulic fluid filter as described under the heading 'Every 1000 hours of operation'.

Start the engine and operate the hydraulic functions. Check the level in the reservoir and top off as required.



Drum - Oil change



Take great care when draining the fluid. Wear protective gloves and goggles.

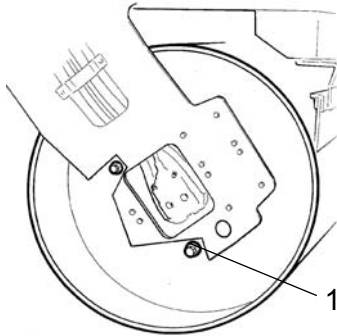


Fig. Drum, vibration side
1. Drain plug

Set the roller so that the drain plug (1), the large plug, is at the lowest position in its rotation.

Place a receptacle that holds at least 20 liters (5.3 gal) under the drain plug.

Remove the drain plug (1). Allow all the oil to drain out and refill the plug.



Deliver the drain oil to environmentally correct handling.

See under the heading 'Every 500 hours of operation' for filling oil.



Fuel tank - Cleaning

It is easiest to clean the tank when it is almost empty.

Pump out any bottom sediment using a suitable pump, such as an oil drain pump.



Collect the fuel and sediment in a container and deliver to environmentally correct handling.



Keep in mind fire risk when handling fuel.



The fuel tank is made of plastic (polyethylene) and is recyclable.

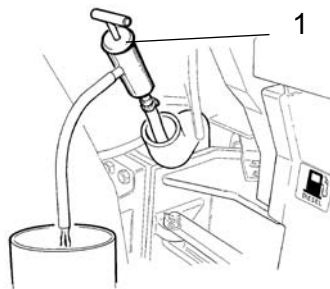


Fig. Fuel tank
1. Oil drain pump



Watering system

- Draining



Keep in mind that there is a risk of freezing during the winter. Drain the tank, pump and lines or add antifreeze to the water.

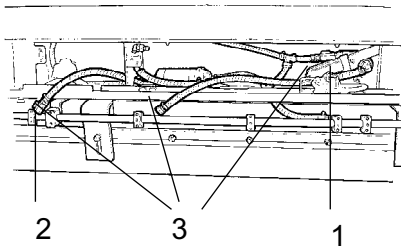


Fig. Pump system
 1. Filter housing
 2. Drain cock
 3. Quick connectors

The easiest way to drain the tanks is to unscrew and remove the filter housing (1) and disconnect the hoses by releasing the quick connectors (3).

There is also a drain cock (red square) under each water tank.

Open the drain cock (2) to drain the water pump.



Water tank - Cleaning

Clean the tanks with water and a suitable detergent for plastic surfaces.

Refit the filter housing (1) or the drain plug (2). Fill with water and check for leaks.

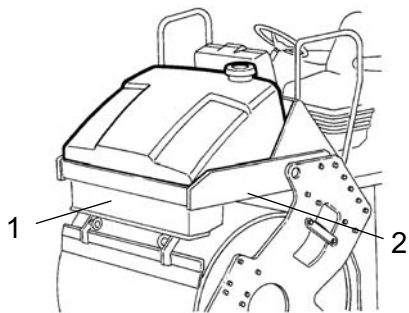


Fig. Water tank
 1. Pump system
 2. Drain plug



The water tanks are made of plastic (polyethylene) and are recyclable.

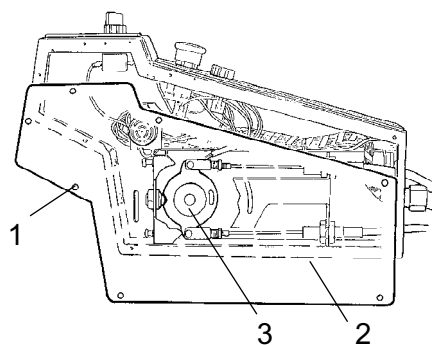
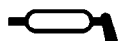


Fig. Forward/Reverse lever

- 1. Screw
- 2. Plate
- 3. Cam disc

Forward/Reverse lever - Lubrication

Remove the screws (1) and take off the plate (2).

Grease the contact surface on the cam disc (3).

Refit the plate (2) with the screws (1).

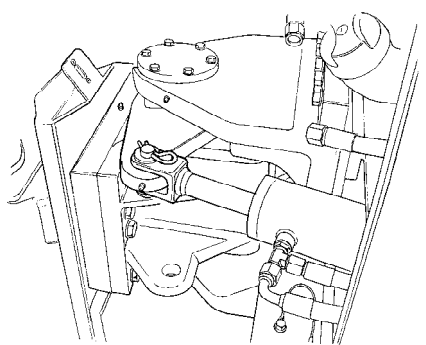


Fig. Steering joint

Steering joint - Check

Inspect the steering joint to detect any damage or cracks.

Check and tighten any loose bolts.

Check also for any stiffness or play in the steering joint.



**Air conditioning (Optional)
- Overhaul**

Regular inspection and maintenance is necessary to ensure satisfactory long-term operation.

Clean all dust from the condenser element (1) using compressed air. Blow from above downwards.

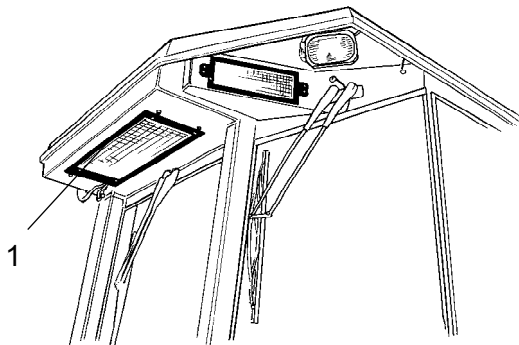


Fig. Cab
1. Condenser element



The air jet can damage the element flanges if it is too powerful.



Wear protective goggles when working with compressed air.

Inspect the condenser element attachment.

Clean all dust from the cooling unit and the cooling element (1) using compressed air.

Check the system hoses for chafing. Make sure that drainage from the cooling unit is unobstructed so that condensation does not accumulate inside the unit.

Check the drainage by pinching the valves (2) located under the operator cab.

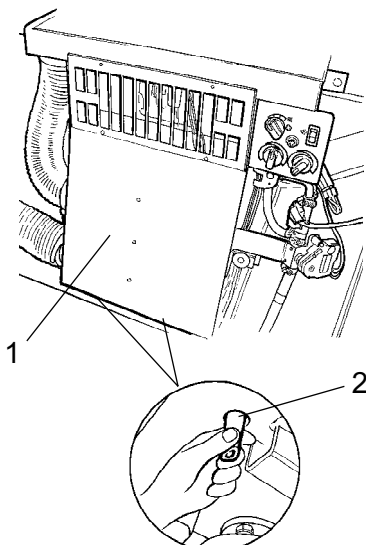


Fig. Air conditioning
1. Cooling element
2. Drain valve (x2)

**Air conditioning (Optional)
Drying filter - Inspection**

With the unit in operation, check using the sight glass (1) that bubbles are not visible on the drying filter.

Turn the roller steering to full right lock to give better access to the drying filter.



Never work under the roller when the engine is running. Park the roller on a level surface, chock the wheels and depress the parking brake control.

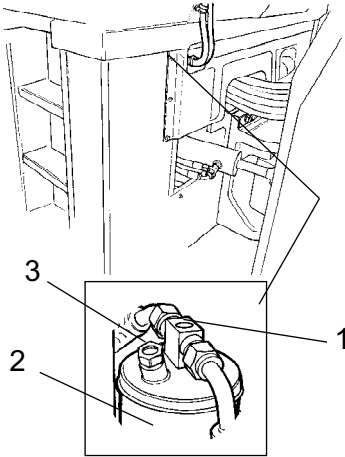


Fig. Drying filter
1. Sight glass
2. Filter holder

The filter is located on the left side under the cab and is visible at the point where the hoses enter under the cab floor, see fig.

If bubbles are visible in the sight glass, this indicates that the refrigerant level is too low. Shut off the unit, as it can be damaged if it is run with insufficient refrigerant. Fill with refrigerant.

Check the moisture indicator (3). It should be blue. If it is beige, the dryer cartridge should be changed by an authorized service company.



The refrigerant circuit is only to be worked on by authorized companies.

**Air conditioning (Optional)
Compressor - Inspection**

Inspect compressor attachment. Dismantle the ladder to the cab in order to access these components, which are located under the platform.

The unit should, if possible, be run at least five minutes every week, to ensure lubrication of the rubber gaskets in the system.

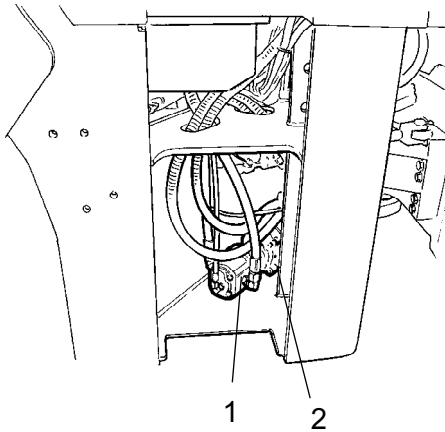


Fig. Compressor
1. Hydraulic motor
2. Compressor

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