

Instruction manual

ICG233HF-1EN1.pdf
Operation & Maintenance

Vibratory roller
CG233HF

Engine
Deutz BF4M 2011

Serial number
***86110232* -**



Dynapac CG233HF is an 8-ton class vibratory roller, featuring vibration, drive and brakes on both drums.

The machine's drums are split and steering takes place on both drums or only the front drum.

The comfort cab can be flush, i.e. the same width as the machine, or built out on the right side for optimum view of both drums.

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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.

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.

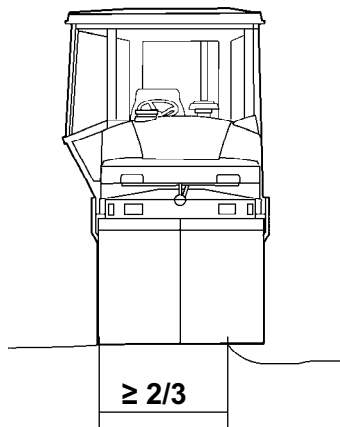


Fig. Position of drum when driving near an edge



When using off-set drums, only one drum may 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.



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

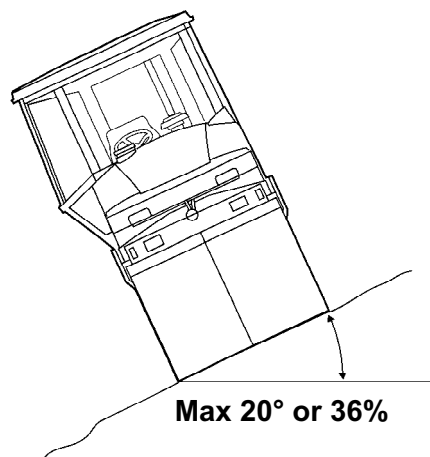


Fig. Operating on slopes

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.

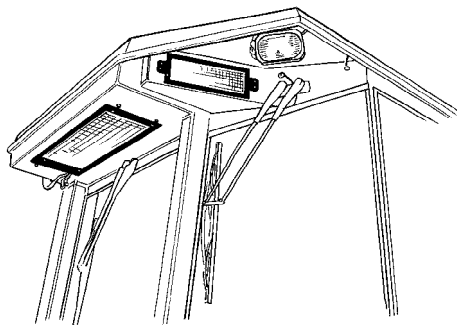
Always take into consideration that loose ground, steering the drums, vibration on, machine speed across the ground and raising the center of gravity can all cause the machine to topple at smaller slope angles than those specified here.



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. Always wear the seat belt.

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.



Recharge the system with approved refrigerant as required. Refer to the technical specifications.

1

Fig. Air conditioning
1. Cooling system in the cab

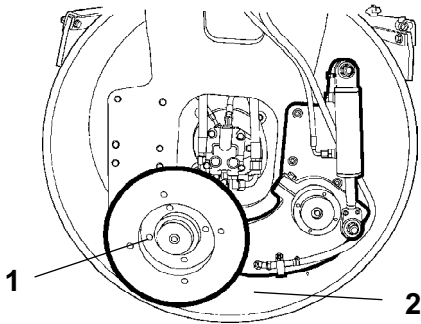


Fig. Edge cutter/edge roller
1. Transport position
2. Operation position

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.

Chip spreader (Optional)



The machine must not be transported with chip in the chip spreader.

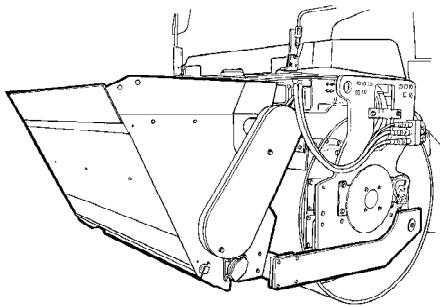


Fig. Chip spreader



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



Risk of personal injury or being crushed. The chip spreader contains rotating components.



The chip spreader must be reset in transport mode after it has been used.

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 -10°C to +40°C (14°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 TX100 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.

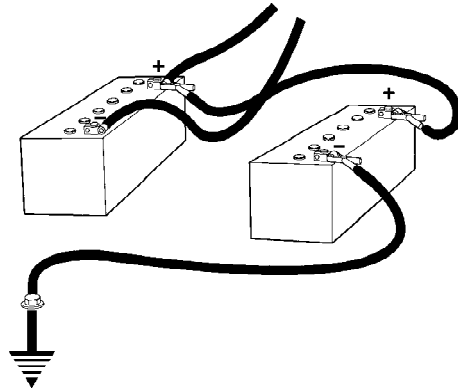


Fig. Jump starting

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 to the dead battery's positive terminal. Then connect the jump start battery's negative terminal to, for example, a bolt or engine hoisting hook on the machine with the dead 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/s^2 as specified in Directive 2002/44/EC. (Limit is 1.15 m/s^2)

Measured hand/arm vibrations also were below the action level of 2.5 m/s^2 specified in the same directive. (Limit is 5 m/s^2)

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.

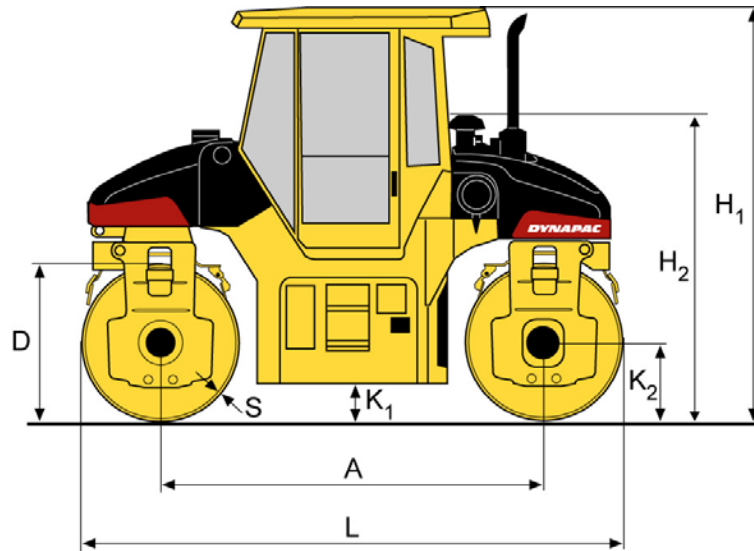
Guaranteed sound power level, L_{WA} 109 dB (A)

Sound pressure level at the operator's ear (cab), L_{pA} 79 dB (A)

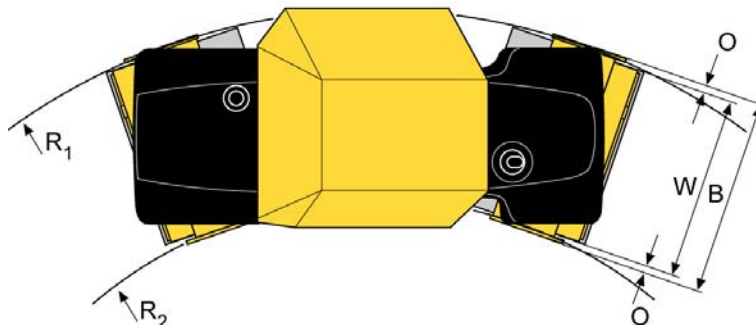
During operation the above values may differ because of the actual operational conditions.

Electrical system

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

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

Dimensions	mm	in
A	2775	109
D	1120	44
H 1	2950	116
H 2	2120	83
K 1	270	10.6
K 2	675	26.6
L	3900	153.5
S	17	0.7

Dimensions, top view

Dimensions	mm	in
B	1588	62.5
O	65	2.6
R1: Without displacement	4988	196.4
R2: Without displacement	3540	139.4
W	1450	57
Off-set distance	900	35.4

Technical specifications - Weights and volumes**Fluid volumes**

Drum	13 liters	13.7 qts
Hydraulic reservoir	38 liters	40.2 qts
Fuel tank	100 liters	26.4 gal
Water tank, front	350 liters/tank	92.5 gal
Water tank, rear	397 liters	104.9 gal
Diesel engine	18 liters	19 qts

Weights

Service weight (EN500)	8200 kg	18.080 lbs
Service weight with cab	8200 kg	18.080 lbs

Technical specifications - Working capacity**Compaction data**

Static linear load, front	28,3 kg/cm	158.5 pli
Static linear load, rear	28,3 kg/cm	158.5 pli
Amplitude, high	0.5 mm	0.020 in
Amplitude, low	0,2 mm	0.008 in
Vibration frequency, high amplitude	54 Hz	3240 vpm
Vibration frequency, low amplitude	71 Hz	4260 vpm
Centrifugal force, high amplitude	89 kN	20.025 lb
Centrifugal force, low amplitude	68 kN	15.300 lb

Propulsion

Speed range	0-12	km/h	0-7.5	mph
Climbing capacity (theoretical)	42	%		

Technical specifications - General**Engine**

Manufacturer/Model	Deutz BF4M 2011	
Power (SAE J1995)	62 kW	84 hp
Engine speed	2700 rpm	

Electrical system

Battery	12V 170Ah	
Alternator	12V 80A	
Fuses	See the Electrical system section - fuses	

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	-

Hydraulic system

Opening pressure	MPa
Drive system	42.0
Supply system	2.0
Vibration system	35.0
Control systems	20.0
Brake release	1.5

Machine plate - Identification

Machine plate

The machine type plate (1) is affixed on the rear left side of the frame.

The plate specifies the manufacturer's name and address, the type of machine, the PIN product identification number (serial number), service 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.)

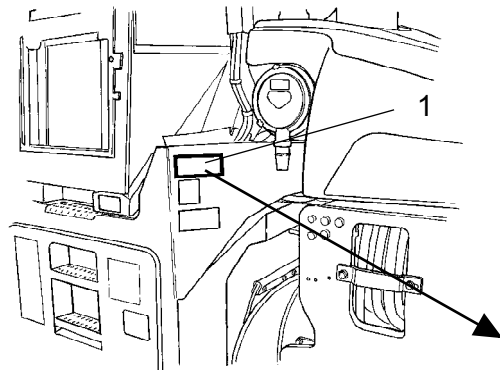


Fig. Operator platform
1. Machine plate



Please state the machine's PIN when ordering spares.

Product identification number on the frame

The machine PIN (product identification number) (1) is punched on the front right side of the frame.

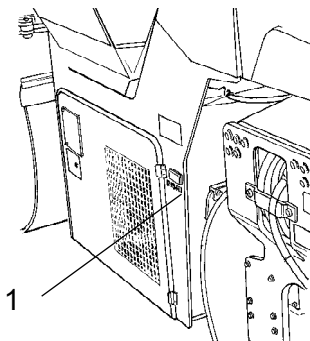


Fig. 1. PIN Frame right side

Engine plates

The engine type plate (1) is attached to the top of the engine.

The plate specifies the type of engine, its serial number and the engine specification.

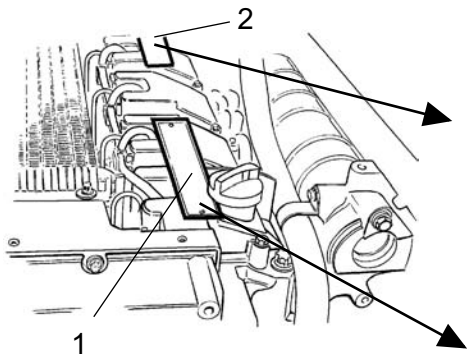


Fig. Engine
1. Type plate
2. EPA plate (USA)

IMPORTANT ENGINE INFORMATION			
ENGINE FAMILY	POWER	VALVELASH	INJ. TIMING
MODEL	RPM	ENGINE DISPLACEMENT	INJ. RATE
THIS ENGINE IS CERTIFIED TO OPERATE ON DIESEL FUEL			
SERIAL NO		REM	
THIS ENGINE CONFORMS TO MODEL YEAR US EPA /			
REGULATIONS FOR LARGE NONROAD COMPRESSION IGNITION ENGINES			

Please specify the engine serial number when ordering spares. Refer also to the engine manual.

Mot.-Typ	Code	Mot.-Nr.	kW	IP	K
kW (G)		kW (S)	kW (S)	kW	
kW (W)				°C	
DEUTZ AG		MADE IN GERMANY			

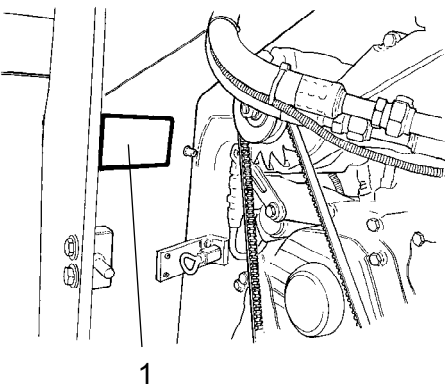


Fig. Right engine compartment
1. Engine plate

A engine plate is also mounted on the frame inside the right engine cover. Placed nearby the alternator.

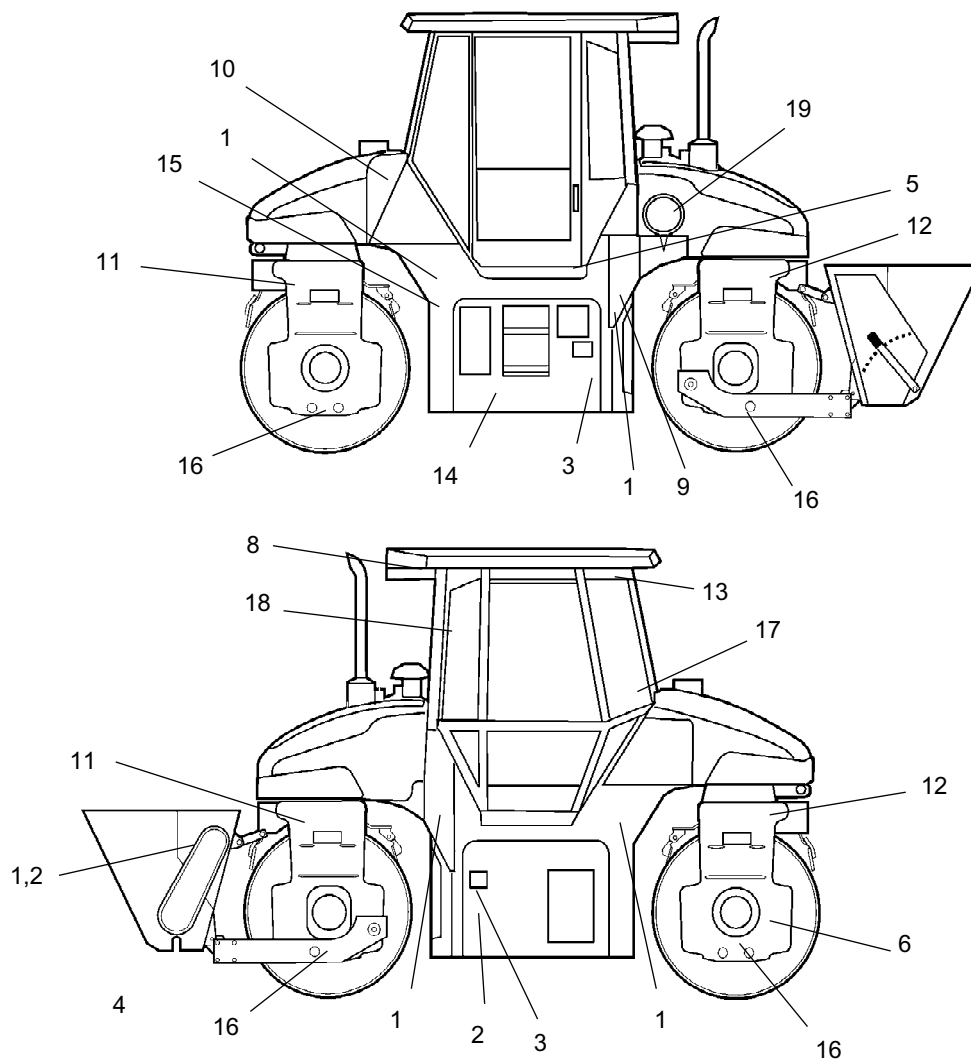
Machine description- Decals
Location - decals


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. - | 17. Warning sign |
| 8. Warning, Toxic gas | 18. Emergency exit |
| 9. Noise power level | 19. Warning, Starting gas) |
| 10. Diesel fuel | |

Safety decals

Always make sure that all safety decals are completely legible, and remove dirt or order new decals if they have become illegible. Use the part number specified on each decal.

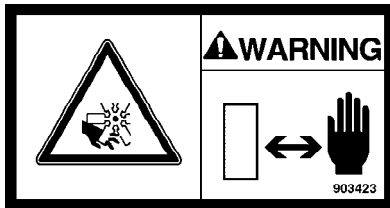
791642
- Starting gas

Starting gas is not to be used.



903423
- Warning of rotating engine components.

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



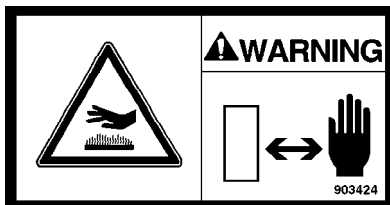
903422
- Crush zone, drum.

Maintain a safe distance from the crush zone.



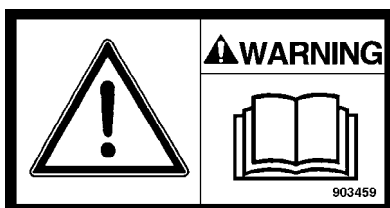
903424
- Warning of hot surfaces in the engine compartment.

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



903459
- Instruction manual

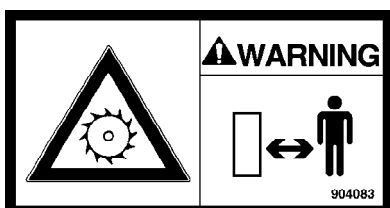
The operator must read the safety, operation and maintenance instructions before operating the machine.

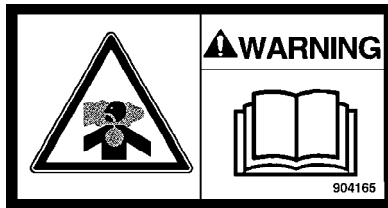


904083
- Edge cutter (option)

Warning of rotating parts.

Maintain a safe distance from the crush zone.





904165

- Toxic gas (accessory, ACC)

Read the instruction manual.

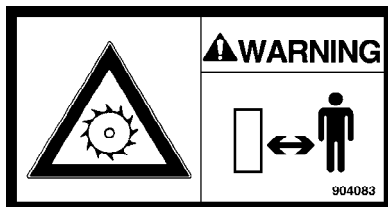


903422

- Crush zone, chip spreader (optional)

Risk of personal injury or being crushed.

Keep well clear of the spreader's working area



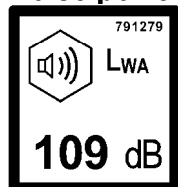
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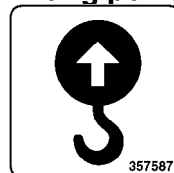
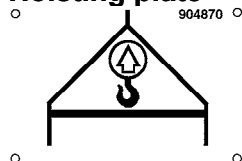
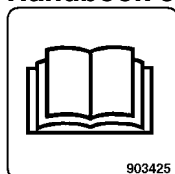
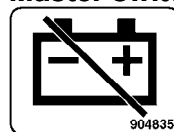
- Chip spreader (optional)

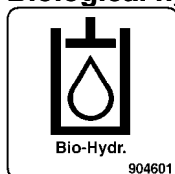
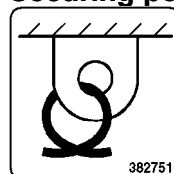
The spreader contains rotating components.

Never insert your hands or any objects when the spreader is in operation.

Always stop the roller motor before carrying out adjustments or maintenance on the spreader.

Info decals
Noise power level

Diesel fuel

Lifting point

Hoisting plate

Handbook compartment

Master switch

Hydraulic fluid

Biological hydraulic fluid

Securing point

Emergency exit


Machine description - Instruments/Controls

Locations - Instruments and controls

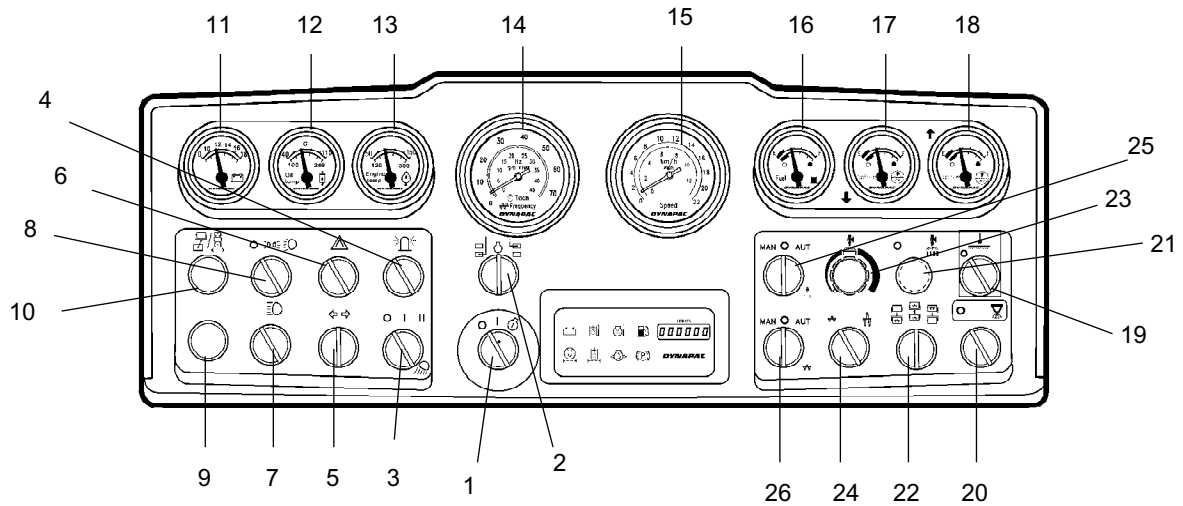


Fig. Instruments and control panel

- | | |
|--|--------------------------------------|
| 1. Starter switch | 15. Speedometer |
| 2. Rpm/Frequency selector | 16. Fuel gauge |
| 3. Working lights, cab/under the machine | 17. Level gauge, rear water tank |
| 4. * Hazard beacon | 18. Level gauge, front water tank |
| 5. * Direction indicator switch | 19. * Asphalt temp. meter, On/Off |
| 6. * Hazard warning lights | 20. * Chip spreader |
| 7. * Main beam switch | 21. - |
| 8. * Parking/dipped beam switch | 22. Vibration, front/rear drum |
| 9. Central warning lamp (error codes) | 23. Sprinkler timer |
| 10. Control lamp, off-set position, steering limit | 24. Amplitude selector, High/Low |
| 11. Voltmeter | 25. Manual/Automatic sprinkler (AWC) |
| 12. Hydraulic fluid temperature | 26. Manual/Automatic vibration (AVC) |
| 13. Engine oil temperature | |
| 14. Engine speed/Vibration frequency | |

* = optional equipment

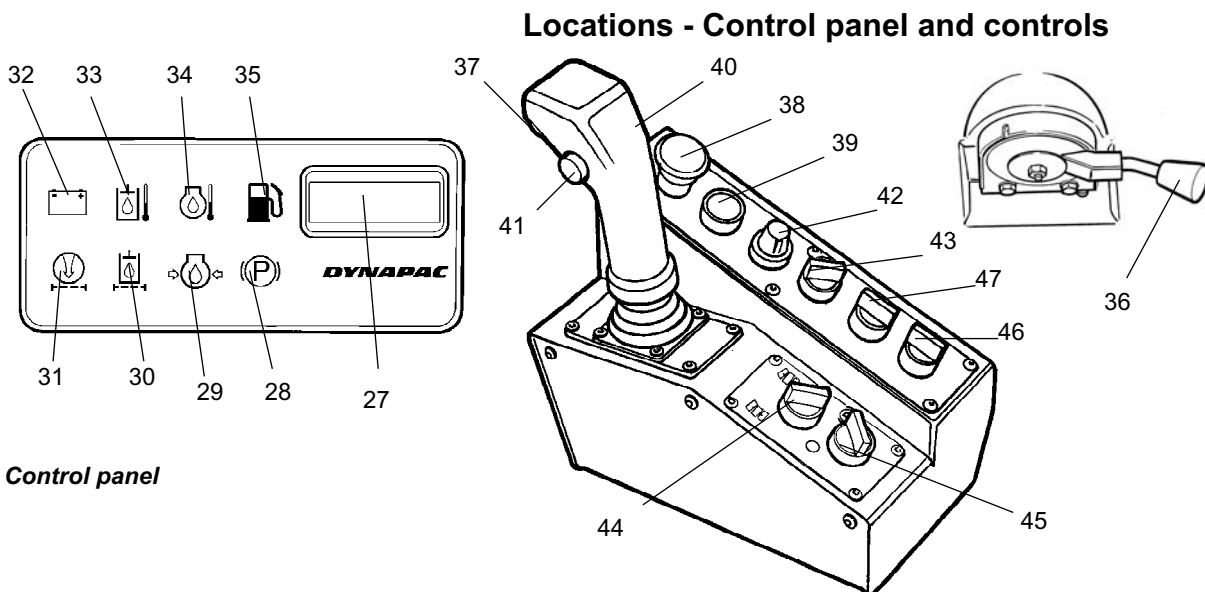
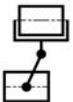


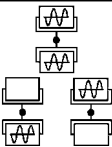
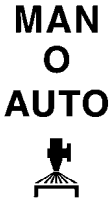
Fig. Control panel

- | | | | |
|-----|--------------------------------------|-----|--|
| 27. | Hourmeter | 36. | Engine speed control |
| 28. | Parking brake | 37. | Alignment (off-set), buttons |
| 29. | Warning lamp, engine oil pressure | 38. | Emergency stop |
| 30. | Warning lamp, hydraulic filter | 39. | Horn |
| 31. | Warning lamp, air filter | 40. | Forward/Reverse lever |
| 32. | Warning lamp, battery charging | 41. | Vibration On/Off |
| 33. | Warning lamp, hydraulic temperature | 42. | Speed limiter |
| 34. | Warning lamp, engine oil temperature | 43. | Transport/Work mode |
| 35. | Warning lamp, fuel level | 44. | Steering both drums (synchro)/front drum |
| | | 45. | Parking brake On/Off |
| | | 46. | * Sprinkler, edge cutter |
| | | 47. | * Edge cutter, Up/Down |

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	Working lights, switch		When turning to the right to position I, the working lights in the cab are lit.

No	Designation	Symbol	Function
			Turning to position II lights the frame and cab working lights.
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, to the right to switch on the right direction indicators. 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	Driving lights, switch	  	Lights off. Parking lights on Front dipped lights on
9	Central warning lamp		Indicates error codes. Explanation of error codes according to error code list.
10	Control lamp, drum position		The lamp indicates that the sides of the drums are not aligned (off-set). The lamp flashes when the drums are close to their outer positions.
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	Asphalt temperature gauge, off/on		
20	Chip spreader		
21	-		-

No	Designation	Symbol	Function
22	Vibration, front/rear drum, switch		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. May only be regulated when the vibrations are switched off.
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		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		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, controlled via speed.
27	Hourmeter		Diesel engine operating time is shown in hours.
28	Parking warning lamp		The lamp lights when the parking brake knob is activated 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.
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.

No	Designation	Symbol	Function
36	Engins speed control, engine		In the right position, the engine idles. In the left position, the engine runs at maximum speed.
37	Off-set, buttons		By pressing the left button, the front drum is positioned to the left. By pressing both buttons at the same time, the drums are reset to the neutral position. By pressing the right button, the front drum is positioned to the right.
38	Emergency stop		When pressed, the diesel engine is stopped and the ECU reset.
39	Horn, switch		Press to sound the horn.
40	Forward/Reverse lever		The lever must be in neutral to start the diesel 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 etc. 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. If you are using working mode and quickly (panic) move the F/R lever toward neutral, the machine switches to transport mode for rapid braking. Automatic application of brakes, 2 sec. delay, when the control is in neutral.
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.
42.	Speed limiter	 	The speed (0-12 km/h) is adjusted infinitely variably by turning the potentiometer. Left position gives the lowest speed. Right position gives the highest speed.
43.	Transport / Working mode		In left position (transport mode), it is not possible to switch on vibration or off-set driving. The speed ramps allow rapid starting and short braking distances. In the right position (working mode), the vibrations and off-set can be engaged. The machine works with gentle speed ramps in order not to leave marks on the ground.
44.	Steering, both drums/front drum		In left position, steering on both front and rear drums is obtained (simulated articulated joint). In right position, steering on front drum only is obtained.
45.	Parking brake, On/Off		In left position, the parking brake is switched off and in right position it is switched on. Always use the Parking brake when stationary on sloping surfaces.
46	Sprinkler, edge cutter, switch	 	In the left position, watering is off. In the right position, the edge cutter disc is watered.
47	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.

Locations - Instruments and controls, cab

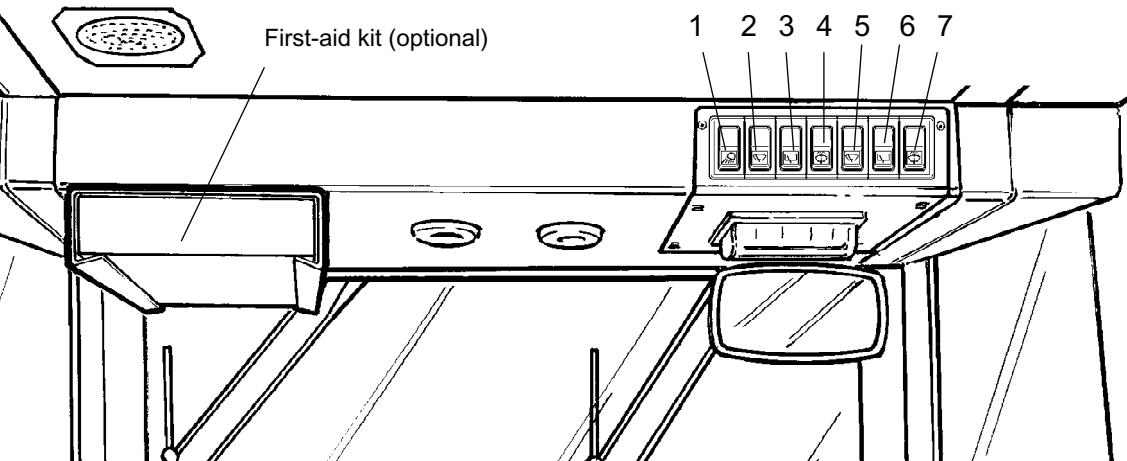


Fig. Cab roof, front

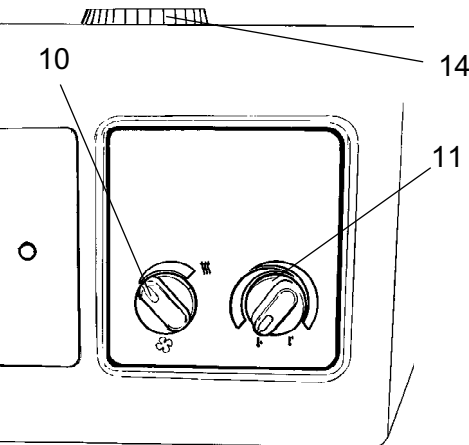


Fig. Cab rear, without ACC

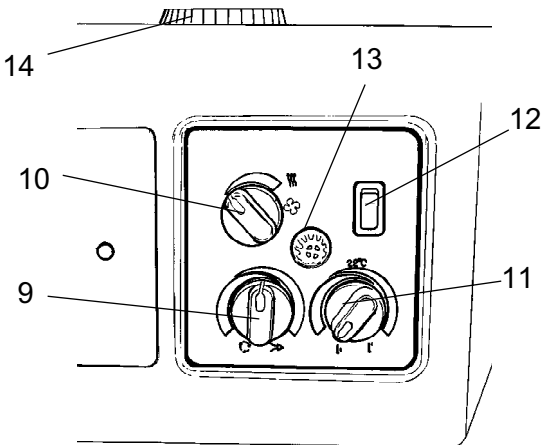


Fig. Cab rear, with ACC (optional)

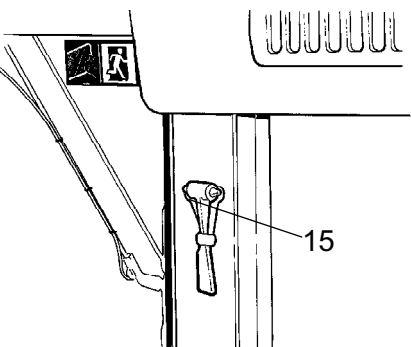


Fig. Rear right cab post

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

The fuses in the engine compartment are located inside 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.

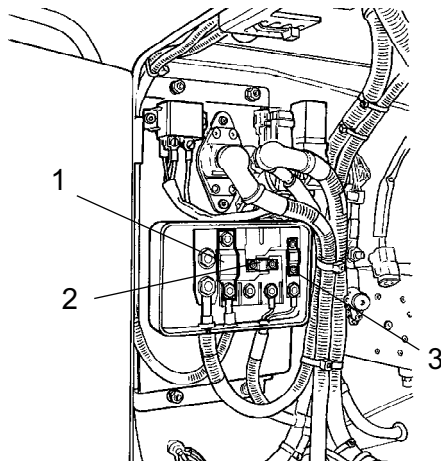


Fig. Fuses, left engine compartment

1. Main fuse, cab (100A)
2. Main fuse, lights (50A)
3. Main fuse, standard (30A)

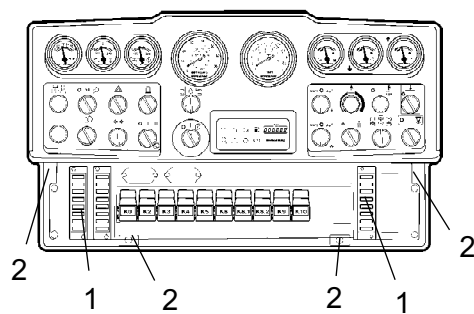


Fig. Instrument panel

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.

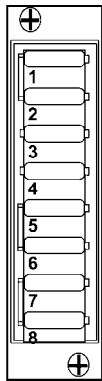


Fig. Fuse box

Fuses

The figure shows the position of the fuses.

There are two fuse boxes on the left side of the panel's lower edge (F1 & F2) and one on the right side (F3).

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

Fuse box, left (F1)

1.	Control unit (ECU) (F1.1)	10A	5.	Vibration (F1.5)	5A
2.	Start, Fuel solenoid (F1.2)	5A	6.	Signal horn (F1.6)	5A
3.	Indicator panel (F1.3)	3A	7.	Reversing alarm (F1.7)	3A
4.	Forward/Reverse lever box (F1.4)	5A	8.	12V outlet, relay cab fan+ACC (F1.8)	10 A

Fuse box, left (F2)

1	Sprinkler pump, front	7.5A	5	Edge cutter / Gravel spreader	7.5A
2	Sprinkler pump, rear	7.5A	6	Working lights, cab	20A
3	Main fuse, sprinkler	15A	7	Working lights, frame	20A
4	Instrument	5A	8	Hazard beacon	7.5A

Fuse box, right (F3)

1	Dipped/Main beam, left front	7.5A	5	Direction indicators, main fuse	10A
2	Dipped/Main beam, right front	7.5A	6	Direction indicators, left front & left rear	20A
3	Position lights, left front & left rear / Brake lights	7.5A	7	Direction indicators, right front & right rear	20A
4	Position lights, right front & right rear	5A	8	Reserve	

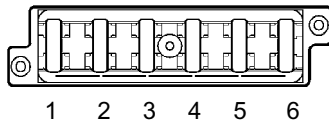


Fig. Cab roof fuse box

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.

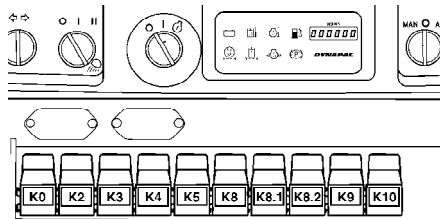


Fig. Instrument panel

Relays in panel

K0	Frequency converter (tachograph)
K2	Main relay
K3	Fuel cut off valve
K4	Horn
K5	Sprinkler
K8	Main relay, lights
K8.1	Working lights, cab
K8.2	Working lights, frame
K9	Direction indicators
K10	Brake lights

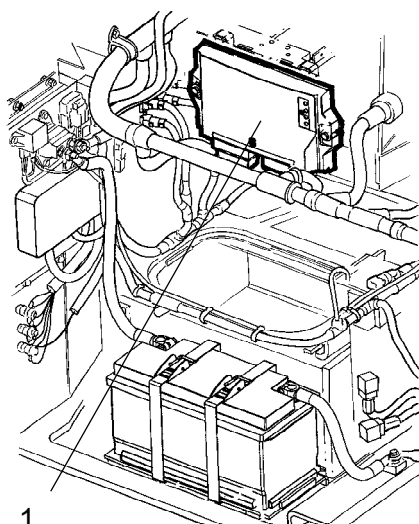


Fig. Control unit, left engine compartment
1. Control unit (ECU)

The control unit (the ECU) in the engine compartment is located under the platform inside the left engine compartment door.

This control unit looks after the electrical drive control, including vibration, steering, start-stop.

Signals any faults in the system with error codes, see error code list for troubleshooting.

Fault indicating on the control unit (ECU)

	Example of sequence							
	On	Off	On	Off	On	Off	On	Off
Time in seconds	1.2 s	0.7 s	0.2 s	0.7 s	0.2 s	0.7 s	0.2 s	0.7 s
Signal	-		•		•		•	
	Long		Short		Short		Short	
	2 seconds between each sequence							

Error code list

*Error code	Type of fault	System reaction	Comments
— • • •	Fault on Joystick, F/R lever	The speed reduces and the machine stops. Limp home device	Cable break/no contact, recalibration, outside limiting values. Check cables 401-1, 722, 909-1 and potentiometer.
• • — —	Fault on potentiometer for speed	The speed is reduced: 33% of max speed	Cable break, recalibration, outside limiting values. Check cables 401-2, 721, 909-2 and potentiometer.

*Error code	Type of fault	System reaction	Comments
● — ● —	The machine can be moved even though the parking brake is on.	The speed is reduced: 33% of max speed	Cable break, recalibration, outside limiting values. Check cables 401-2, 721, 909-2 and potentiometer.
— — ● ●	Fault on neutral position switch in F/R lever		Cable break/no contact, switch has moved. Check cables 205-6, 312.
— — — —	Angle sensor, rear syncro mode	Only front drum steering is possible	Cable break/no contact at sensor, recalibration. Switch to front mode.
— — — ●	Front angle sensor in syncro mode	Only front drum steering is possible	Cable break/no contact, recalibration. Switch to front mode.
● ● ● —	No revs on diesel engine		Cable break/no contact. Check cable 802.
— ● — ●	Fault on EDC valve		Cable break/no contact
— ● ● —	Not possible to steer offset (rear drum)		Cable break/no contact
● ● ● ●	Incorrect value from motor temperature sensor	The cooling fan is running at full speed	Outside a limiting value (lower), cable break.
● — — —	Fault on sprinkler potentiometer	The sprinkler pump is running all the time	Cable break/no contact, or outside limiting values. Check cables 402-3, 735.
● — — ●	Diesel engine revs too low for vibration	Vibration switches off.	Not possible to vibrate between 1,100 - 2,000 rpm
● — ● ●	Signal lost from temperature sensor		Cable break/no contact on cable 806-2
	Diesel engine revs too high	Brake is activated	Overspeed protection at 3,400 rpm releases at 3,200 rpm
	Interlock not working	Alarm goes on, and the diesel engine stops.	Self-indicating, machine stops
	Offset does not return to neutral/blocked	0-position indicating lamp on instrument panel	Self-indicating

Operation - Starting

Before starting

Master switch - Switching on

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

The battery isolation switch is located on the step side's front engine compartment wall. Turn the key (1) clockwise to the on position. The entire roller is now supplied with power.

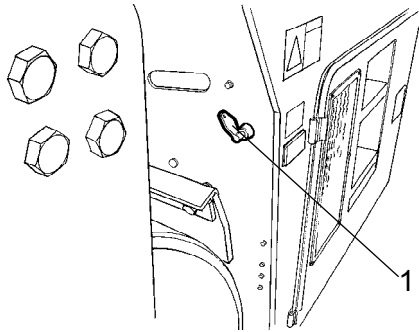


Fig. Step side (left engine door)
1. Battery isolation switch

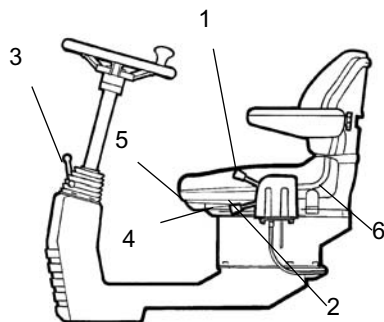


Fig. Operator position
1. Locking lever - transverse travel
2. Locking lever - rotation
3. Locking lever - steering column angle
4. Locking lever - length adjustment
5. Lever - backrest inclination
6. Lever - weight adjustment

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.

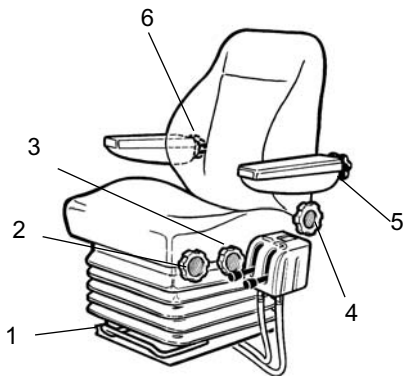


Fig. Operator's seat

- 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

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
- Lumbar support adjustment (6)



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

Interlock

The roller is 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.



Sit down for all operations!

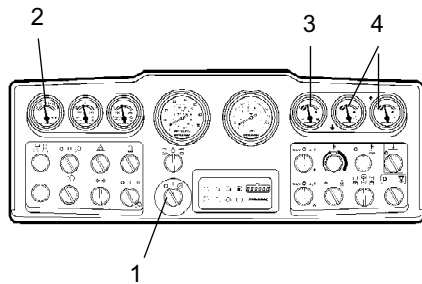


Fig. Instrument panel

- 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.

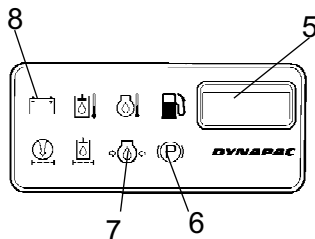


Fig. Control panel

- 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.

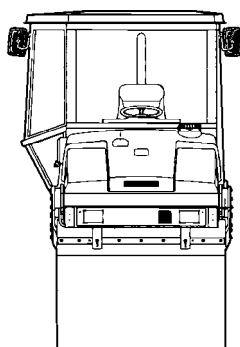


Fig. View

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.

The machine can be equipped with working mirrors (accessory). These must be folded in during transport.

Operator position

Always wear the seat belt (1) provided and wear a protective helmet.



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



Check that rubber elements (4) on the cab are intact. Worn elements will impair comfort.



Make sure that the cab 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 (6) for manual/automatic vibration in the mid position (position 0).

Make sure that the emergency stop (3) is disengaged, otherwise the engine will not start.

Turn the starter switch (5) 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.

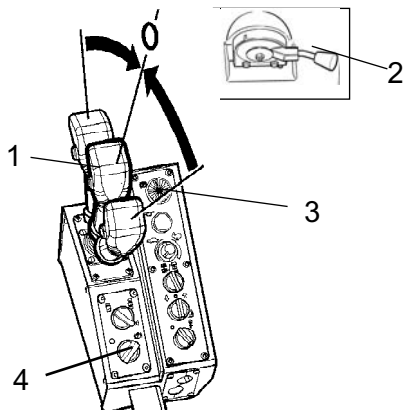


Fig. Control panel
1. Forward/Reverse lever
2. Engine speed control
3. Emergency stop
4. Parking brake

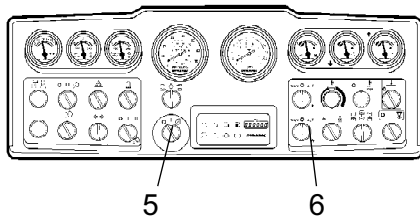


Fig. Instrument panel
5. Starter switch
6. Vibration switch

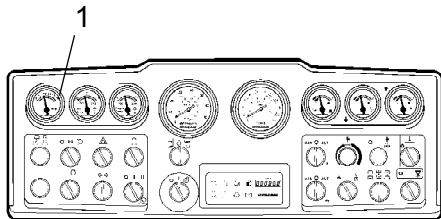


Fig. Instrument panel
1. Voltmeter

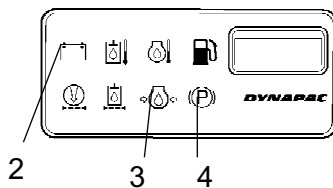


Fig. Kontrollpanel
2. Charging lamp
3. Oil pressure lamp
4. Brake lamp



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

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

Release the parking brake (4) before driving.

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.

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 transport, make sure that side-displaced drums are in neutral. Drive in transport mode.

Operation - Driving

Operating the roller, Transport mode



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

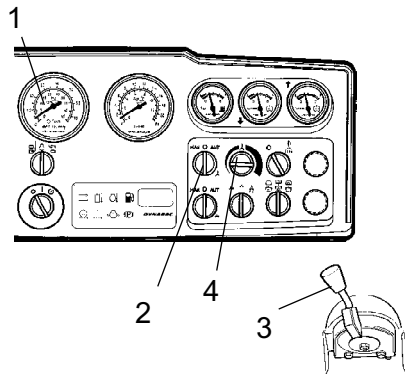


Fig. Instrument panel

1. Tachometer
2. Switch, sprinkler
3. Engine speed control
4. Sprinkler timer

In transport mode, it is not possible to vibrate or to drive with off-set drums.

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). Use the sprinkler timer (4) to obtain the correct amount of water.



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

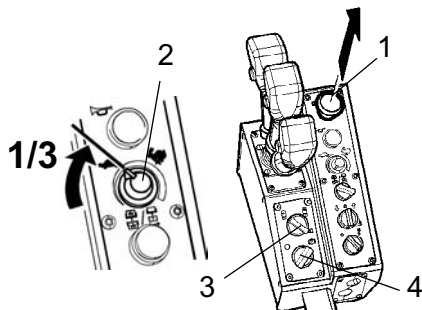


Fig. Control panel

1. Emergency stop
2. Speed limiter
3. Steering both drums/front drum

Set the speed limiter (2) to 1/3 speed.

Select steering method (3). Steering with both drums, left position, or only with front drum, right position.



Turn the parking brake knob (4) to position O and check that the parking brake warning lamp is now off.

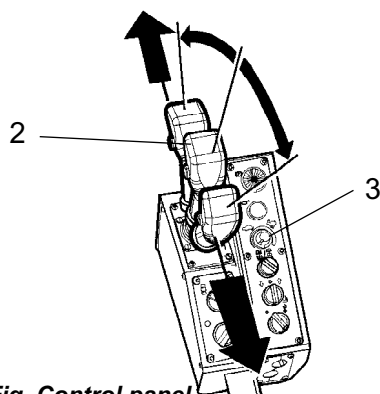


Fig. Control panel
2. Forward/Reverse lever
3. Speed limiter

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.

Increasing or decreasing maximum speed is achieved by turning the speed limiter (3) to the left or right.



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

Drum position

The drum position lamp (1) lights when the rear drum is not in the straight ahead position (neutral).

The lamp flashes when the drums are approaching their outer positions.

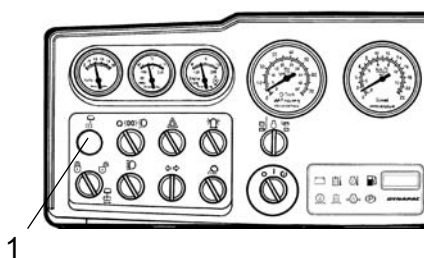


Fig. Instrument panel
1. Drum position lamp

Switching to work mode.

Working mode is activated with the switch (1) in the right position on the control box

It is now possible to activate the vibrations and off-set.



We recommend that inexperienced operators@@test run the machine on an open area before@@attempting precision operation.

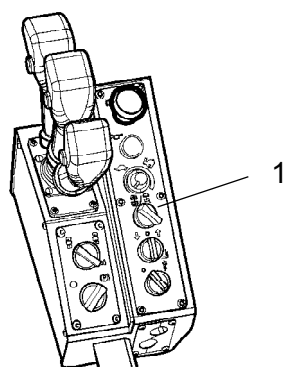


Fig. Control panel
1. Switch, transport/work mode

To reset to transport mode, turn the switch to the left position.

Operating the roller, Working mode


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

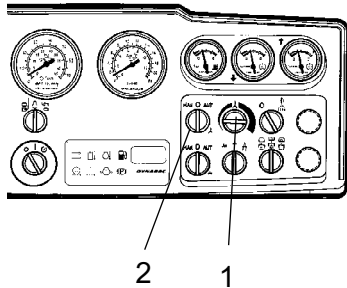


Fig. Instrument panel
1. Potentiometer/Sprinkler timer
2. Switch, sprinkler

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).

When setting automatic sprinkler (sprinkler timer), infinitely variable setting of the water flow is obtained with the potentiometer (1) on a scale of 0-100%.

Automatic switching off of the water flow at 0.5 km/h, reactivated at increased speeds (for example when changing direction).



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

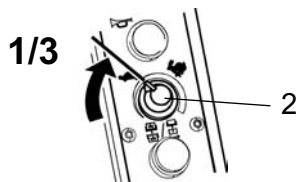


Fig. Control panel
2. Speed limiter

Set the speed limiter (2) to 1/3 speed.

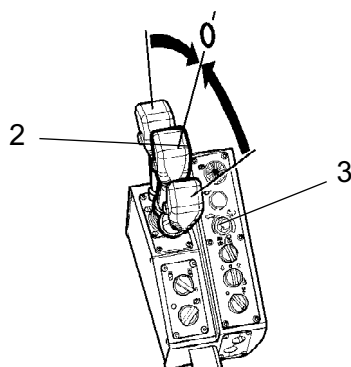


Fig. Control panel
2. Forward/Reverse lever
3. Speed limiter

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.

Increasing or decreasing maximum speed is achieved by turning the speed limiter (3) to the left or right.

In working mode, gentle acceleration or retardation can be obtained. There are 3 different acceleration/retardation ramps depending on the speed at which the machine is being driven.

If the control lever is moved quickly (forwards/backwards) toward/past neutral, the system switches to emergency ramp, for example in the event of panic, in order to shorten the braking distance. The emergency ramp is much acute than the ramp in transport mode.

Activate work mode again by moving the control lever to neutral and turn the transport/work mode switch to left position.

Edge cutting (Optional)



Ensure that nobody remains within the edge cutter's working range.

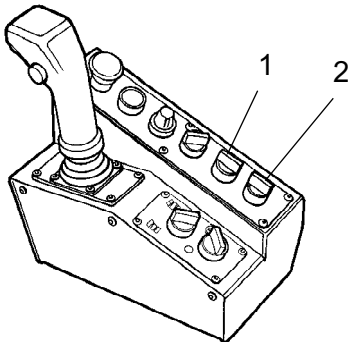


Fig. Changeover switch
1. Edge cutter/roller, Up/Down
2. Sprinkler, edge cutter/roller

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.



Always ensure that the edge cutter is folded up during transport or when the tool is not going to be used.

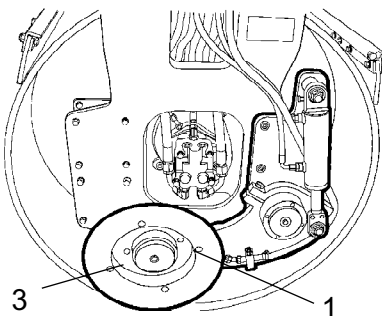
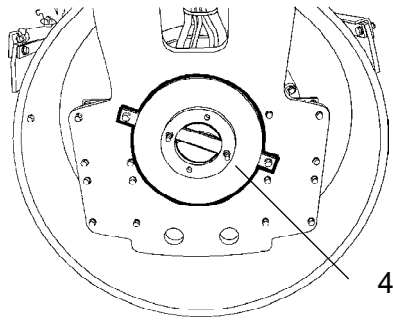


Fig. Changing tools
1. Edge cutter
3. Bolted joint

The operator can choose 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.



The edge cutter can easily be replaced with the edge roller (4) by undoing the bolted joint (3).

Fig. Tool location
4. Edge roller

Operation - Vibration

Manual/Automatic vibration

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

In manual mode, the operator must activate vibration via the switch (2) on the forward/reverse lever.

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

Activation of vibration for the first time, as well as disconnection of automatic vibration, are performed with the switch (2) on the forward/reverse lever.

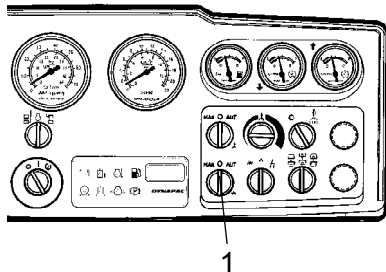


Fig. Instrument panel
1. Man/Auto switch

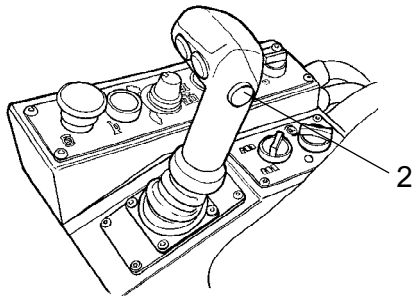


Fig. Control panel
2. Switch, vibration On/Off

Manual vibration - Switching on



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

With the machine set in working mode, the vibrations can be activated on the control lever.

Engage and disengage vibration using the switch (2) on the side of the control 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.

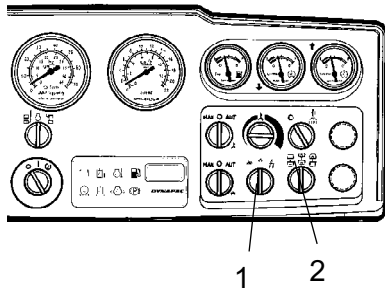


Fig. Instrument panel
1. High/Low switch
2. Drum switch

Amplitude/frequency - Changeover



Resetting the amplitude may not be performed when vibration is in operation. Switch the vibration first off and wait until vibration stops before resetting amplitude.

There are two drum vibration 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. In the center position, the vibration is switched off.

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 braking

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 a brake when parking. Activated with the parking brake control (4), in right position.



For emergency braking, press the emergency stop (3), hold the steering wheel firmly and be prepared for a sudden stop. The engine stops.

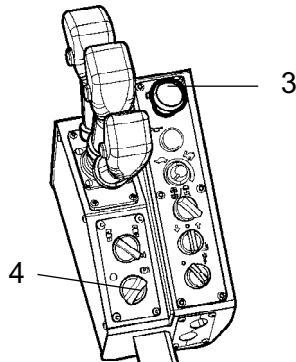


Fig. Control panel
3. Emergency stop
4. Parking brake

Normal braking

Press the switch (4) to switch off the vibration.

Move the forward/reverse lever (6) to the neutral position to stop the roller.

Always turn the parking brake (3) to right position, even for brief stops when on sloping ground.

Turn the engine speed control (2) 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.

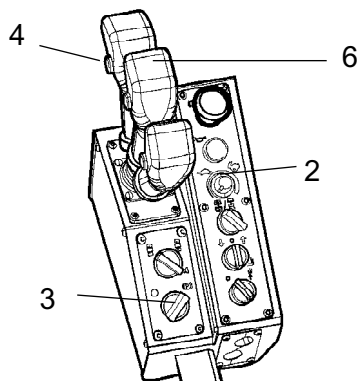


Fig. Control panel
2. Engine speed control
3. Parking brake
4. Vibration button
6. Forward/reverse lever

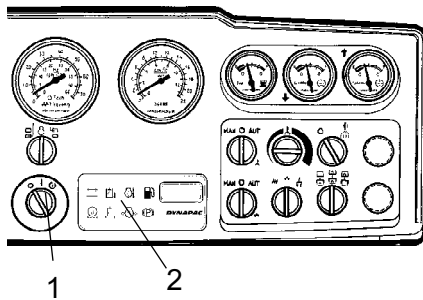


Fig. Instrument panel
1. Starter switch
2. Warning lamps panel

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.

Parking

Chocking the drums



Never disembark from the machine when the diesel engine is running, unless the parking brake is activated.



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.



Keep in mind that there is a risk of freezing during the winter. Drain the water tanks, pumps and water lines.

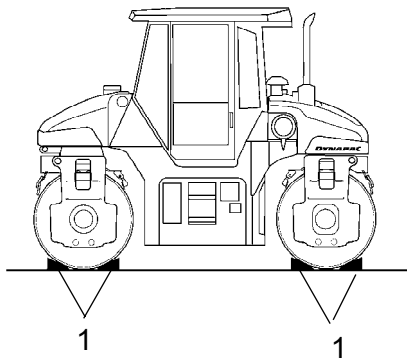


Fig. Positioning
1. Chocks

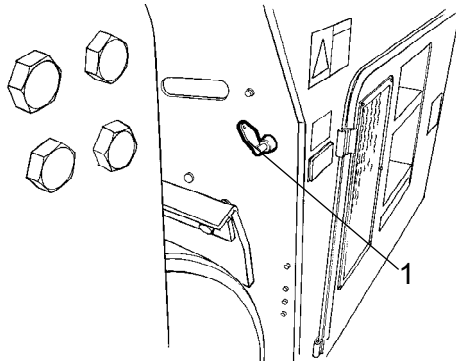


Fig. Step side (left engine door)
1. Master switch

Master switch

Before leaving the roller for the day, turn the master switch (1) counter-clockwise to the disconnected position and remove the key.

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

Long-term parking



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

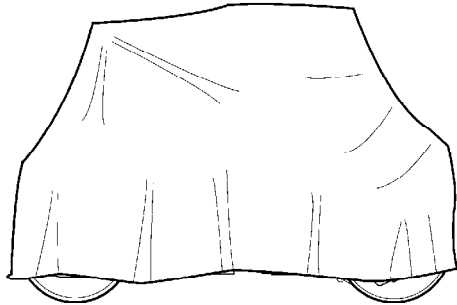


Fig. Roller weather protection

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 both bearings of 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').

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

Lifting the roller



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



Lifting gear such as chains, steel wires, straps, and lifting hooks must conform with current regulations.



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

Weight: refer to the hoisting plate on the roller

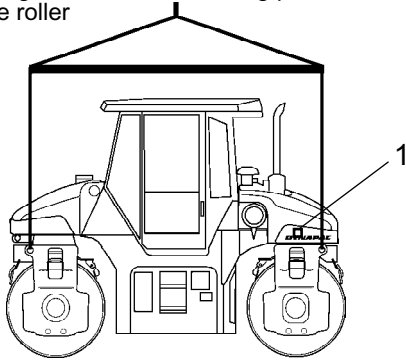


Fig. Roller prepared for lifting
1. Hoisting plate

Towing/Recovering

Towing

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

Short distance towing with the engine running



Activate the parking brake knob, and temporarily stop the diesel engine. Chock the drums to prevent the roller from moving

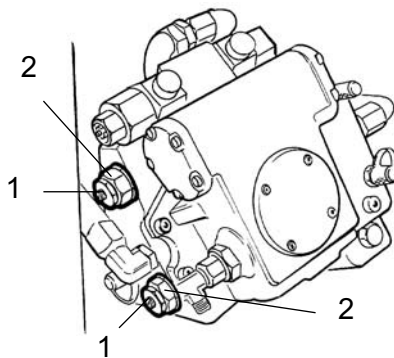


Fig. Propulsion pump
1. Towing valve
2. Multifunction valve

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.

Deactivate the parking brake knob and place the forward/reverse lever in the forward or reverse position. If the lever is in neutral, the brakes in the hydraulic motors are activated.

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

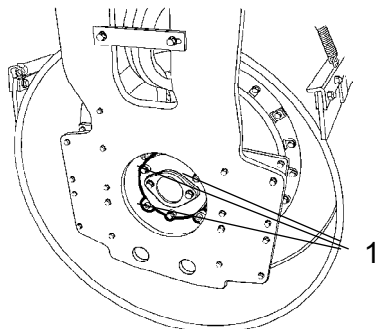


Fig. Drum propulsion motor
1. Plugs (x 3) for brake
disengagement

Towing short distances where the engine is inoperative



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

Open both towing valves as described above.

Remove the three plugs.

Screw each hexagonal socket screw in 1/2 turn. Ensure that each screw is screwed in an equal amount. This is necessary to prevent the brake piston jamming. Continue to screw in each screw about 1/2 turn until they bottom.

The above steps must be carried out on all of the drum halves.

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).

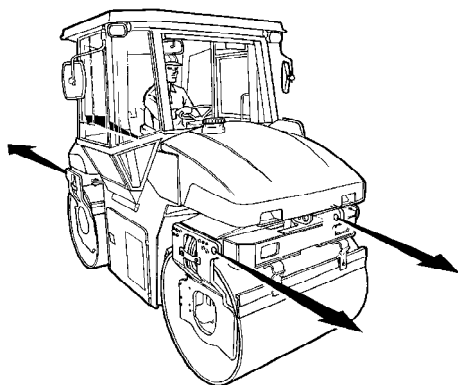


Fig. Towing

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 130 kN (29.225 lbf).



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

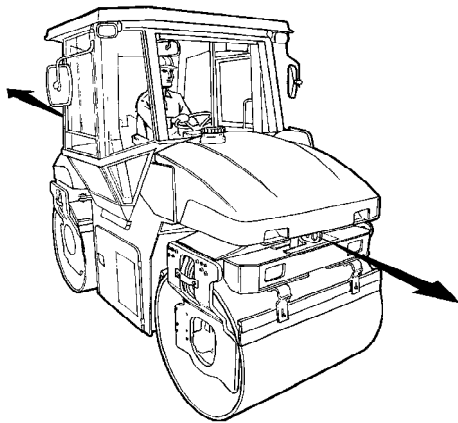


Fig. Trailer eye

Trailer eye

The roller is fitted with trailer eyes front and rear.

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).

Transport

Roller prepared for transport



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



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

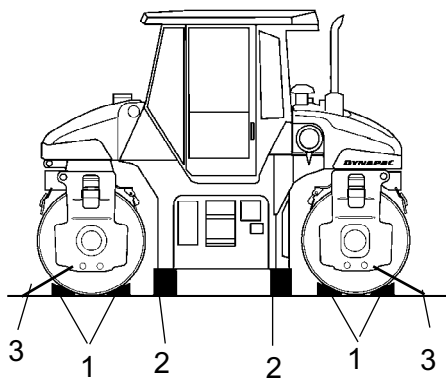


Fig. Positioning

- 1. Chocks**
- 2. Blocks**
- 3. Straps**

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. Set the emergency stop in the pulled-out position.
8. Start the engine and allow it to warm up.
9. Set the engine speed control to the operating position.
10. Disengage the parking brake.



11. **Drive the roller. Operate the forward/reverse controls with care.**



12. **Test the brakes. Remember that the braking distance will be longer if the hydraulic fluid is cold.**

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



15. **IN AN EMERGENCY:**
 - **Press the EMERGENCY STOP**
 - **Hold the steering wheel firmly.**
 - **Brace yourself for a sudden stop.**
16. When parking:
 - Set the parking brake knob in the parking position.
 - Stop the engine and chock the drums.
17. When lifting: - Refer to the relevant section in the Instruction Manual.
18. When towing: - Refer to the relevant section in the Instruction Manual.
19. 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 -10°C-+40°C (14°F-104°F) Shell Rimula TX SAE 15W/40 or equivalent API CF-4/SG (CD/CE)
	HYDRAULIC FLUID	Air temp. -10°C-+40°C (14°F-104°F) Shell Tellus TX68 or equivalent. Air temp. above +40°C (104°F) Shell Tellus TX100 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.
	COOLANT	Glycoshell or equivalent. (mixed 50/50 with water) Prevents freezing to approx. -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		

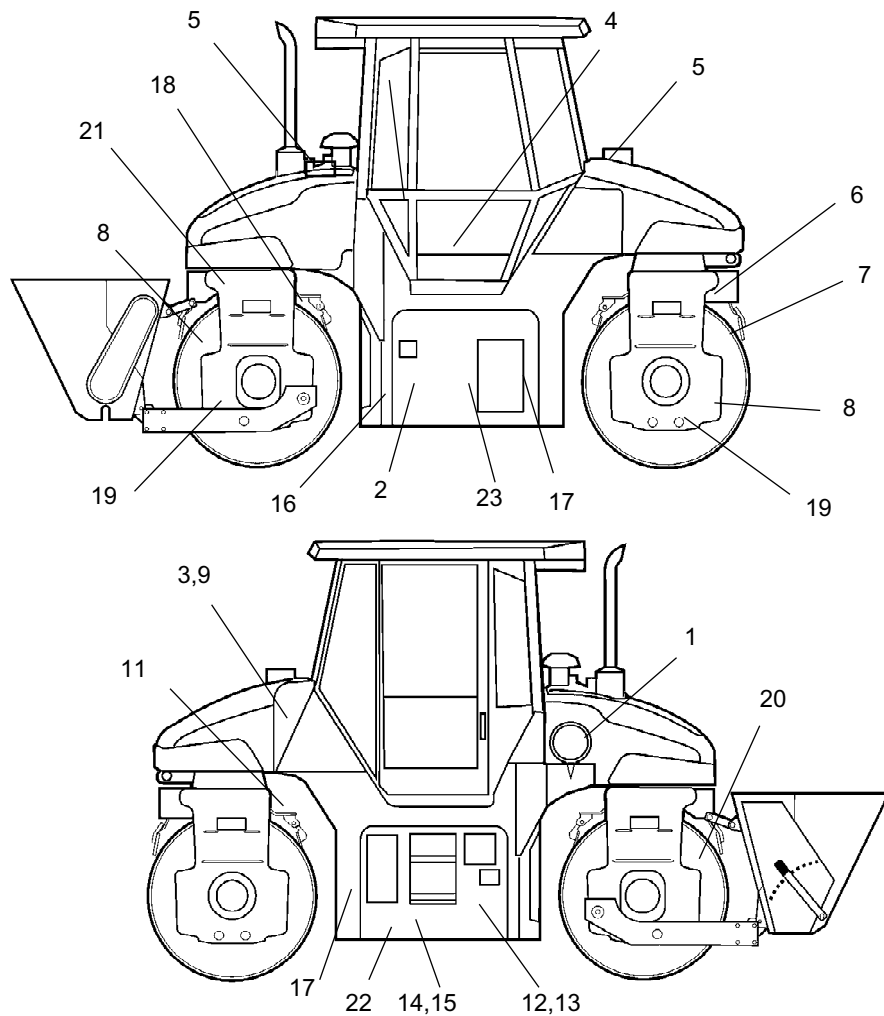
Maintenance - Maintenance schedule
Service and maintenance points


Fig. Service and maintenance points

- | | | |
|-------------------------|------------------------------|------------------------|
| 1. Air cleaner | 9. Fuel tank | 17. Hinges |
| 2. Engine oil | 10. - | 18. Pivot cylinder |
| 3. Refueling point | 11. Steering cylinder | 19. Rubber element |
| 4. Seat bearing | 12. Hydraulic filter | 20. Drums, lubrication |
| 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. Cooler |
| 8. Drums | 16. Engine | |

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
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	

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
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
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
22	Check the electrolyte level in the battery	
	Inspect the air conditioning	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
	Inspect the air conditioning	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
8	Check the oil level in the drums	
20	Grease the drum bearing	Split drum
21	Lubricate the pivot bearings	Optional
19	Check rubber elements and bolted joints	
14	Check the hydraulic reservoir cover/breather	
4	Grease the chair bearing	
	Grease the steering chain	
17	Lubricate hinges and controls	
2	Change the engine oil and oil filter	Refer to the engine manual
16	Check the engine V belt tension	Refer to the engine manual
16	Change the engine pre-filter	
16	Clean the engine cooling flanges	Or as necessary. Refer to the engine manual.
23	Clean the hydraulic fluid cooler	Or as necessary.
22	Check battery and battery connections	

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/Adjust the diesel engine's valve clearances	Refer to the engine manual
16	Check/Adjust the diesel engine's toothed belt/V-belt	Refer to the engine manual
16	Replace the fuel filter and clean the fuel pump	Refer to the engine manual
12	Change the hydraulic fluid filter	
1	Replace the main filter in the air cleaner	
	Replace the air cleaner filter in the cab	Optional

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	
10	Check the condition of the articulation	
	Overhaul the air conditioning	Optional

Every 3000/5000/6000/12000 hours of operation

See the specific service plan for the diesel engine!

The positive drive belt is replaced every 3000 hours of operation or max 5 years.

Maintenance - 10h

***Park the roller on a level surface.
When checking and making adjustments to the roller, switch the engine off and ensure the parking brake knob is switched on, unless otherwise specified.***

**Hydraulic reservoir, Level check - Filling**

Open the left door of the engine compartment.

Make sure that the oil level is between the max/min marks.

Top off with the type of hydraulic fluid specified in the lubricants specification, if the level is too low.

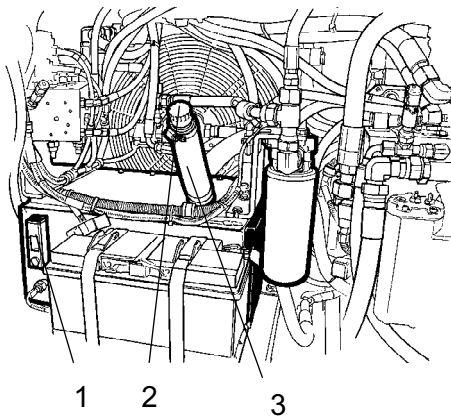


Fig. Hydraulic reservoir

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



Fuel tank - Refueling



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

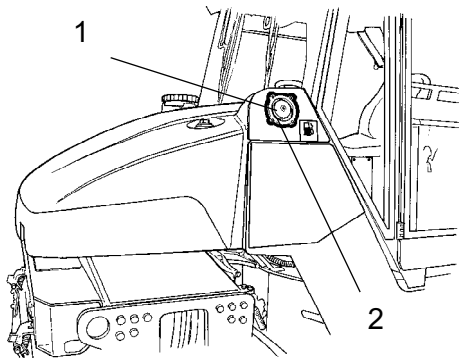


Fig. Fuel tank
1. Tank cap
2. Filler pipe

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 100 liters (26.4 gal) of fuel. Refer to the engine manual for information on diesel grade.



Water tanks - Filling



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

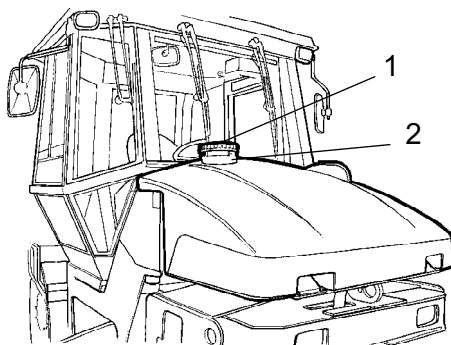


Fig. Front water tank
1. Tank cap
2. Strainer

Fill both water tanks. The front tank holds 350 liters (92.6 gal) and the rear tank holds 397 liters (104.9 gal).

To make reaching the tank cap easier, fold out the step on the front right and rear right drum fork.



Only additive: A small amount of environmentally friendly antifreeze.



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.

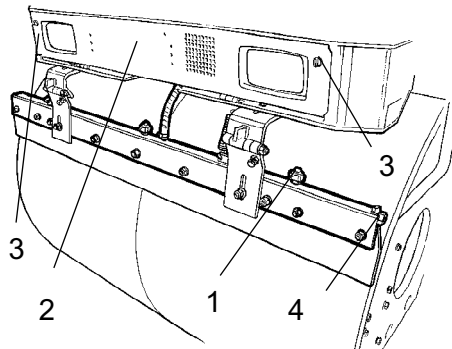


Fig. Front drum

1. Nozzle
2. Pump system/cover
3. Quick-fit screws
4. Drain plug

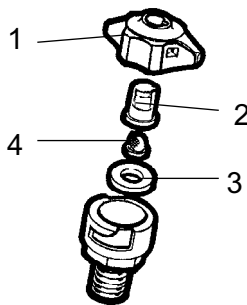


Fig. Nozzle

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.

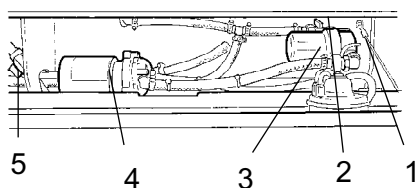


Fig. Pump system

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.

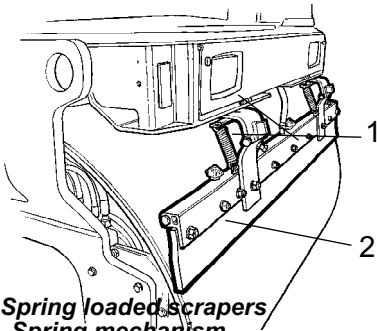


Fig. Spring loaded scrapers
1. Spring mechanism
2. Scraper blade

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.

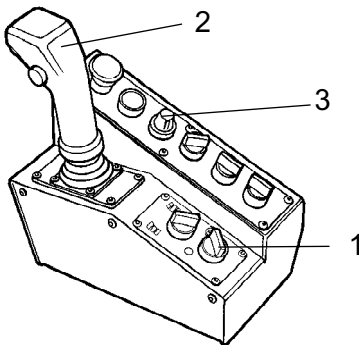


Fig. Control panel
1. Parking brake knob
2. Forward/Reverse lever
3. Speed limiter

Brakes - Check



Check the brakes by carrying out the following :

Set the speed limiter (3) to 1/3 and activate the parking brake knob (1).

Move the forward/reverse lever (2) forwards or backwards.

The brake warning lamp on the instrument should now be lit and the roller should be stationary.

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

Deactivate the parking brake knob (1).

Maintenance - 50h

***Park the roller on a level surface.
When checking and making adjustments to the roller, switch the engine off and ensure the parking brake knob is switched on, unless otherwise specified.***

**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.

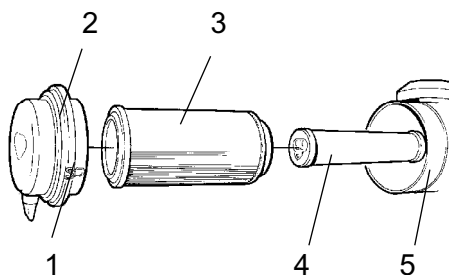


Fig. Air cleaner
1. Locking flaps
2. Cover
3. Main filter
4. Backup filter
5. Filter housing

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).



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.

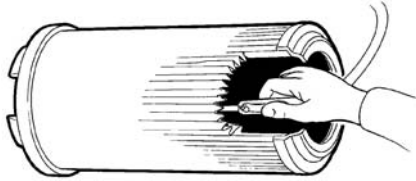


Fig. Main filter

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.



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.

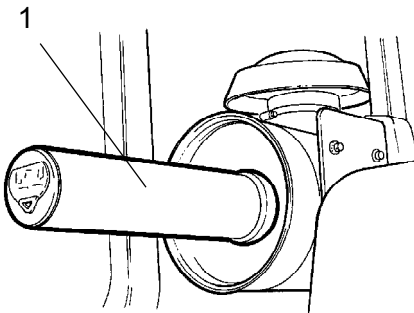
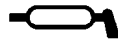


Fig. Air filter
1. Backup filter



Pivot cylinder - Lubrication

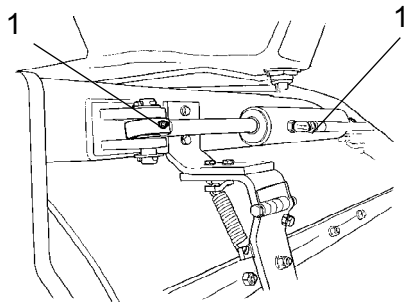


Fig. Pivot cylinder
1. Grease nipples



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.



Battery

Checking the electrolyte level



Make sure there is no open flame in the vicinity when checking the electrolyte level. Explosive gas is formed when the alternator charges the battery.

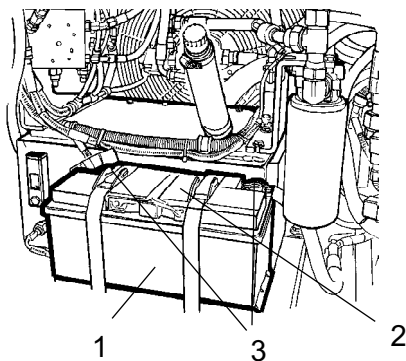


Fig. Battery bay
1. Battery
2. Cell cap
3. Cable shoes

Open the left door of the engine compartment.



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



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 tightened. Corroded cable shoes should be cleaned and greased with acid-proof Vaseline.



Battery cell Electrolyte level

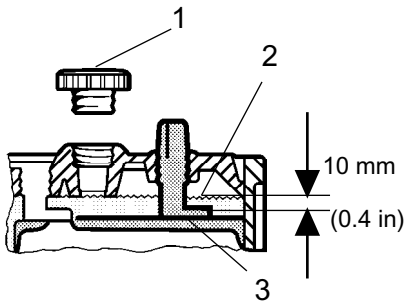


Fig. Electrolyte level in battery
1. Cell cap
2. Electrolyte level
3. Plate

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.



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.

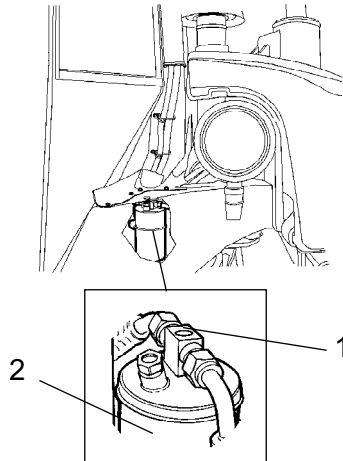


Fig. Drying filter
1. Sight glass
2. Filter holder

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



Always depress the parking brake knob.

The filter is located in the left rear part of the frame under the cab. The sight glass can be seen through a hole in the frame. The drying filter can be reached through the left engine compartment. If bubbles are visible in the sight glass this is a sign 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

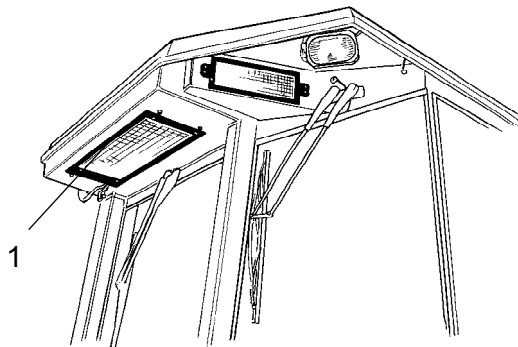
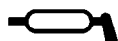


Fig. Cab
1. Condensor element

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.



Edge cutter (Optional) - Lubrication



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

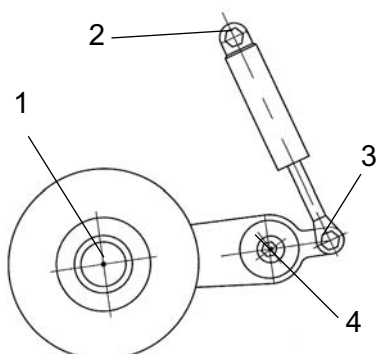


Fig. Four grease points for lubricating edge cutters

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.

Maintenance - 250h



***Park the roller on a level surface.
When checking and making adjustments to the roller, switch the engine off and ensure the parking brake knob is switched on, unless otherwise specified.***

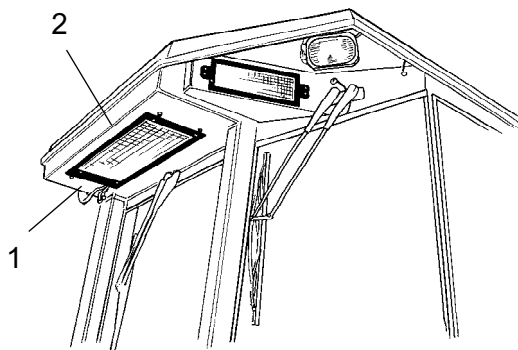


Fig. Air conditioning
1. Refrigerant hoses
2. Condensor element

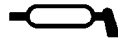
Air conditioning (Optional) - Inspection

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

Maintenance - 500h



Park the roller on a level surface.
When checking and making adjustments to the roller, switch the engine off and ensure the parking brake knob is switched on, unless otherwise specified.



Split drum - Lubrication

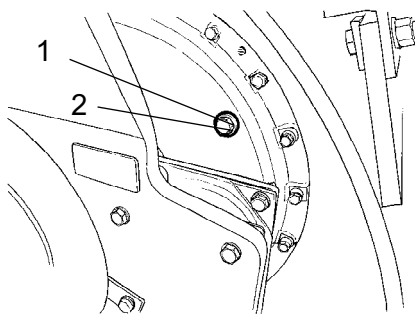


Fig. Drum, drive side
1. Protective plugs
2. Grease nipples

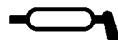
Position the drum so that two protective plugs (1) are accessible near the top of the drum.

Unscrew the protective plugs and grease each nipple (2) with five strokes of a hand-operated grease gun.

Use grease as specified in the lubricant specification.

Refit the protective plugs and then reposition the drum to grease the remaining nipples.

Lubricate both drums.



Pivot bearing - Lubrication

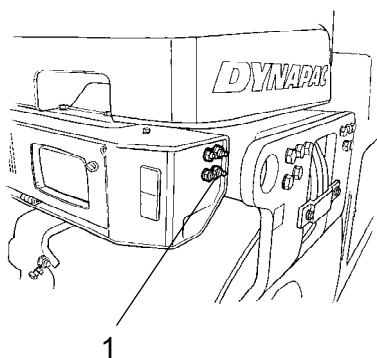


Fig. Rear drum
1. Grease nipples x 4

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

Use grease as specified in the lubricant specification.

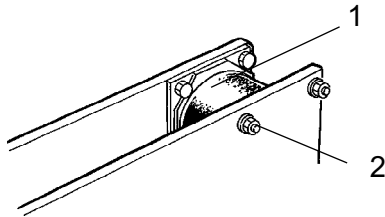


Fig. Drum, vibration side
1. Rubber element
2. Attachment screws

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.

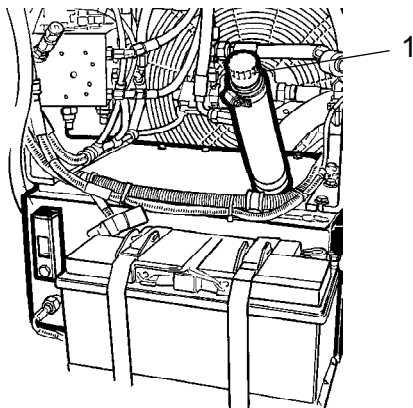


Fig. Engine compartment, left side
1. Reservoir cap



Engine pre-filter Change

Loosen the hose clamps (2) using a screwdriver.



Remove the filter (1) and deliver to special waste handling. These are single-use filters and cannot be cleaned.

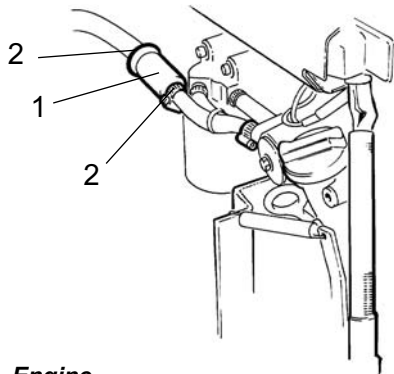


Fig. Engine
1. Pre-filter
2. Hose clamps

Fit a new pre-filter and tighten the hose clamps.

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

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.

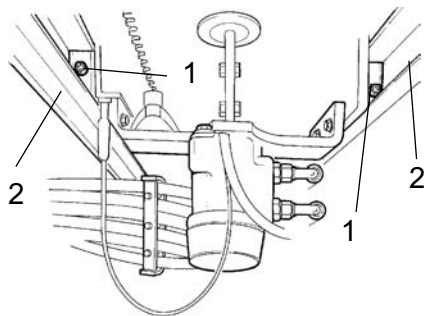
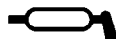


Fig. Seat bearing, underside
1. Grease nipples
2. Slide rails



Seat bearing - Lubrication



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

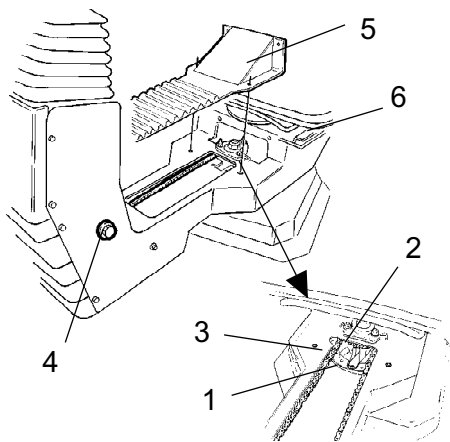


Fig. Seat bearing
 1. Lubrication nipple
 2. Sprocket
 3. Steering chain
 4. Adjustment screw
 5. Cover
 6. Slide rails

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.



Radiator Check - Clean

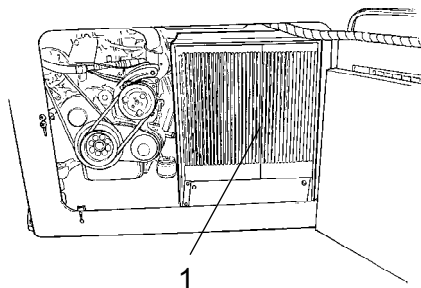


Fig. Engine compartment, right side
 1. Radiator

Open the right door of the engine compartment to access the radiator.

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.

Blow air or direct water through the cooler in the opposite direction to that of the cooling air.



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



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



Diesel engine/Radiator Oil change

The engine's and the radiator's oil drain plugs are located under the machine on the left-hand side, behind a service panel.

Drain the oil when the engine is warm. Place a receptacle that holds at least 18 liters (19 qts) under the drain plugs.



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

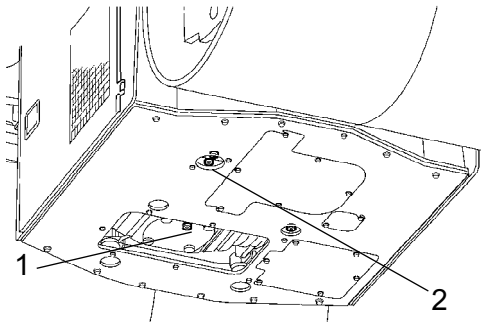


Fig. Machine underside
1. Oil drain, diesel engine
2. Oil drain, radiator

Remove the oil drain plugs (1) and (2). Allow all the oil to drain out and refit the plugs.



Deliver the drain oil for environmentally correct handling.

Fill with fresh engine oil, see Lubricant specification or the engine manual for the correct grade of oil.

Fill with 15 liters (16 qts) of engine oil before starting the machine. Run the engine until it is warm and then switch off.

Check the dipstick to ensure that the engine oil level is correct. Refer to the engine manual for details. Top up with oil if necessary to the max mark on the dipstick.

Maintenance - 1000h

Park the roller on a level surface. When checking and making adjustments to the roller, switch the engine off and ensure the parking brake knob is switched on, unless otherwise specified.

**Hydraulic filter
Change**

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

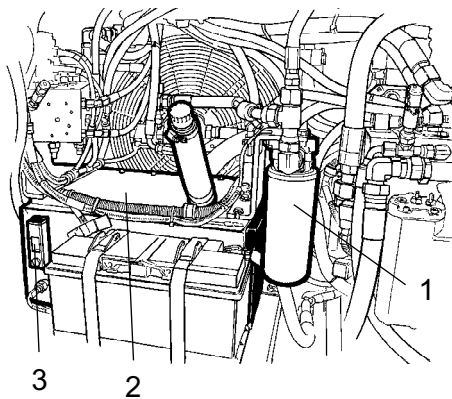


Fig. Hydraulic reservoir

- 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 $\frac{1}{2}$ 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.



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



Air filter Change

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.

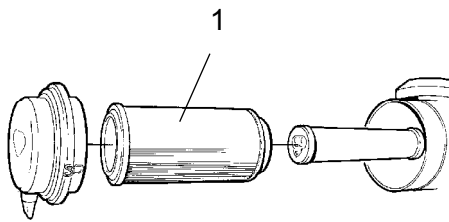


Fig. Air cleaner
1. Main filter



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.



Air conditioning (Optional) Fresh air filter- Change



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

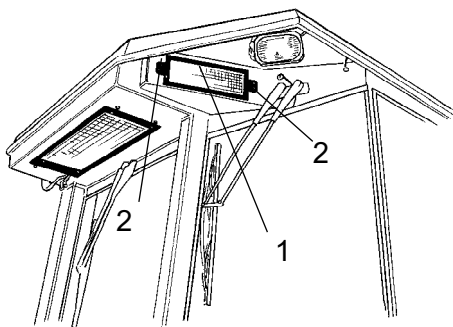


Fig. Cab
1. Fresh air filter (x2)
2. Screws (x2)

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 to the roller, switch the engine off and ensure the parking brake knob is switched on, unless otherwise specified.



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

**Hydraulic reservoir/Radiator
Oil change**

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

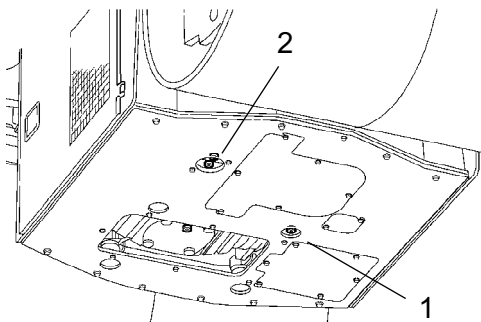


Fig. Machine underside
1. Oil drain, hydraulic reservoir
2. Oil drain, radiator

Place a receptacle that holds at least 38 liters (40.2 qts) under the drain plugs.

Remove the oil drain plugs (1) and (2). Allow all the oil to drain out and refit the plugs.



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.



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.

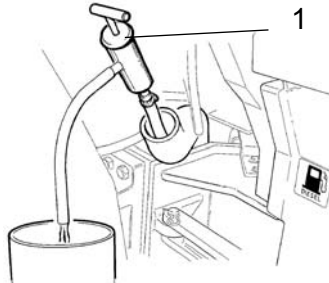


Fig. Fuel tank
1. Oil drain pump



Drum - Oil change



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

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 refit the plug.



Deliver the drain oil to environmentally correct handling.

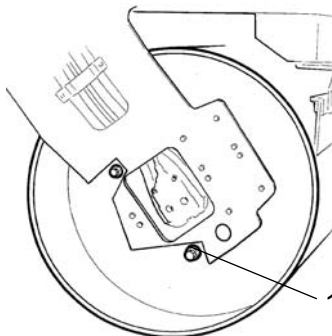


Fig. Drum, vibration side
1. Drain plug

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



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.

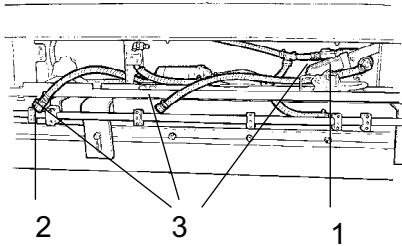


Fig. Pump system

- 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.

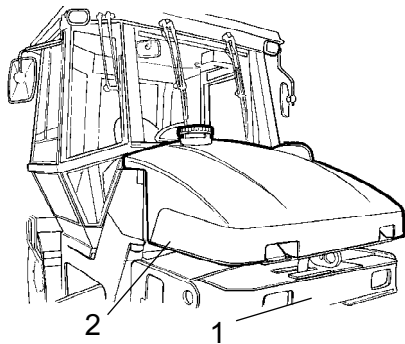


Fig. Water tank

- 1. Pump system
- 2. Drain plug



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



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.



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



Wear protective goggles when working with compressed air.

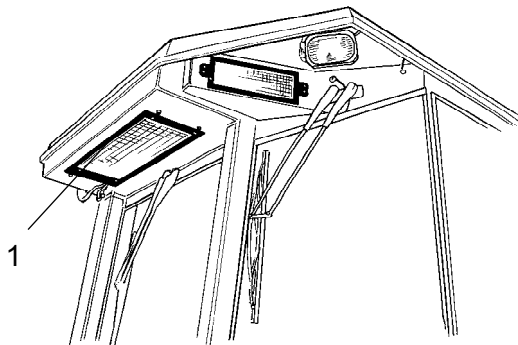


Fig. Cab
1. Condensor element

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.

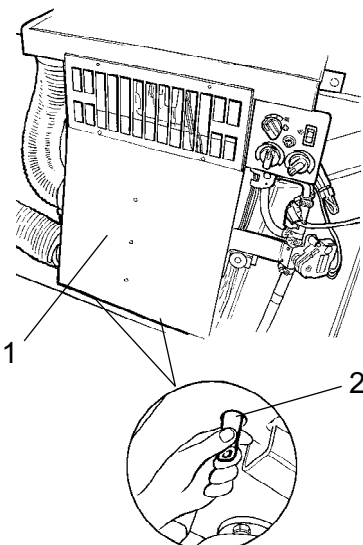


Fig. Air conditioning
1. Cooling element
2. Drain valve (x2)

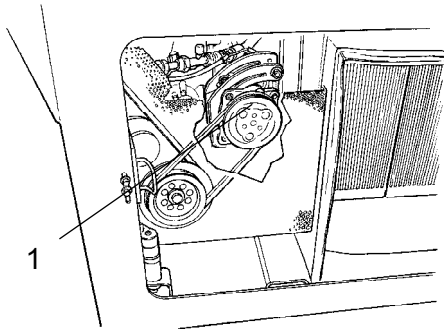


Fig. Right side of the engine compartment
1. Compressor

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

Inspect compressor attachment. It is fitted to the engine inside the right engine compartment door.

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

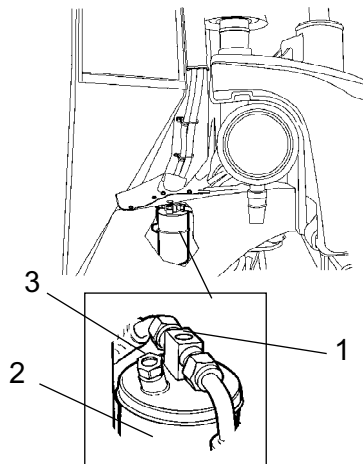


Fig. Drying filter
1. Sight glass
2. Filter holder
3. Moisture indicator

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.



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.

The filter is located in the left rear part of the frame under the cab. The sight glass can be seen through a hole in the frame. The drying filter can be reached through the left engine compartment.

If bubbles are visible through the sight glass this is a sign 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.

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