Instruction Manual

4812316026EN
Operation and Maintenance

Single Drum Vibratory Roller
CA150

Engine
Cummins QSB 3.3

Serial Number
10000104x0B003790

Printed in Brazil

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Introduction

The machine

The Atlas Copco CA150 is a 7 ton single drum vibratory roller with 1676 mm of useful width. Exceptional maneuverability and short turning radius ensure great performance in urban paving services.

Purpose

The CA150 is largely used in the compaction area, such as in construction works of soil and asphalt mixtures in construction works of roads and industrial areas, among others. It is also available in the following versions: plain drum, pad foot drum, with or without vibration in the drum, and in the special version for asphalt.

Warning symbols

WARNING! Identifies a dangerous or risky procedure that can represent a threat to life or lead to serious injuries or damages if ignored.

CAUTION! Identifies a risky procedure that can result in damages to machine or property if ignored.

Safety information

The Safety Manual delivered with the machine should be read by operator. Always follow the safety instructions and always keep the manual with the machine.

It is recommended for the operator to read the safety instructions contained in this manual carefully and follow such instructions. Make sure the manual can be easily accessed at all times.

Read the manual before starting the machine and/or perform any maintenance.

Make sure the area is well ventilated whenever you start the motor in enclosed places.

General

This Manual contains instructions about the operation and maintenance of the machine.

The maintenance of the machine should be carried out accordingly so as to obtain the best performance.

The machine should be kept clean, in order to identify any leakage and loose bolts and connections as soon as possible.

Inspect the machine every day before the start, so as to detect any leakage or other possible failures.

Check the floor on the machine. The leakage is easily detected on the floor of the machine.

THINK GREEN: Do not dispose lubricant or fuel oil in areas that may contaminate the soil or the environment. Always dispose filters used, drainage and fuel oils accordingly.

This manual contains instructions for periodic maintenance, which is usually performed by the operator.

Other engine information can be found in the manufacturer's manual.

Safety - General instructions

(please also read the safety manual)

1. **Please read and understand this manual before starting and operating the machine. The operator should be fully familiarized with the equipment before the use.**

2. **Observe and follow all the lubrication and maintenance instructions contained in the Maintenance Section.**

3. **Only trained and qualified personal are allowed to operate the machine. Passengers are NOT allowed. Only operate the machine sitting on the seat.**

4. **Do not operate the machine if repair or adjustments are needed.**

5. **Always use the stairs and handrails to enter and leave the machine. NEVER enter or leave the cab when the machine is moving.**

6. **In case the land stability conditions are irregular or dangerous, use the Roll Over Protective Structure (ROPS). Always with the seat belt when using ROPS.**

7. **Move the machine in low speed.**

8. **Avoid maneuvers near cliffs or steep side slopes. Run the machine in first gear and always inspect if the brakes are functioning correctly.**

9. **When driving the machine next to slopes or holes, make sure that at least 2/3 of the machine width is over the material to be compacted.**

10. **Make sure there is no obstacles in the displacement direction, either ahead, behind or above the machine.**

11. **Drive more carefully when operating in rough areas.**

12. **Use the safety equipment available. In machines equipped with ROPS the use of the safety belt is mandatory.**

13. **Keep the machine clean. Remove immediately any dirt or grease on the operator's platform, safety signs and plates.**

14. **Safety measures before adding fuel:**
    - **Turn off the engine;**
    - **Do not smoke;**
    - **Neither allow sparks nor open flame close to the machine;**
    - **Make sure the fuel filler and the fuel nozzle are grounded.**

15. **Before performing any maintenance operation:**
    - **Block the wheels and the leveling blade with wedges;**
    - **Also lock the articulation, if needed.**
    -

16. **Please use hearing protecting ear plugs in case the machine noise level exceeds to 85 dB (A). The noise level may vary according to the type of work the machine is going through.**

17. **Do not make any modifications to the machine under any circumstances since it may cause personal injuries and damages to the machine. Any modification to the machine requires prior approval in writing by *ATLAS COPCO*.**

18. **Avoid using the machine before the hydraulic oil reaches the normal operating temperature. The braking distance may be longer than normal if the oil is cold. Please refer to the operation instructions in the section START.**

19. **For safety purposes, the operator must wear:**
    - **Safety cap;**
    - **Steel-toe boot;**
    - **Hearing protection ear plugs;**
    - **Reflective clothing / Reflective vest;**
    - **Safety gloves.**

Safety - During the operation

Operation near edges

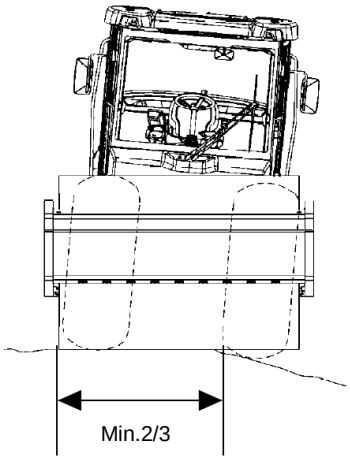


Fig. Arrangement of the drums when driving near edges.

When driving near edges, at least 2/3 of the machine should be on solid ground with full load capacity.

Remember the center of gravity of the machine moves towards outside when the steering wheel is activated. Example: it moves to the right when the steering wheel is steered to the left.

Slopes

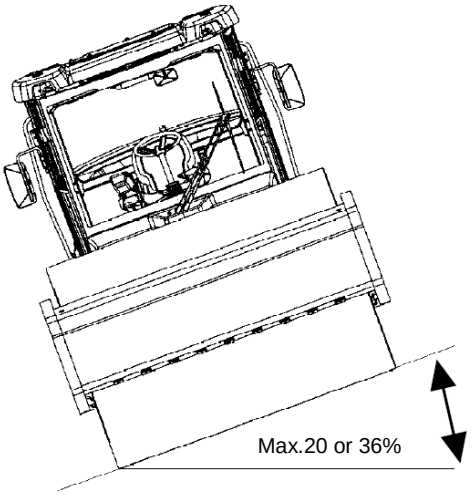


Fig. Operation in slopes

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

The steering angle is 0 (zero) with vibration turned OFF and all the tanks full.

Always take into consideration that operations such as steering the machine in loose ground, turning on the vibration, as well as the machine ground speed and raising of 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.

When driving on slopes or unsafe ground it is recommended that ROPS (Roll Over Protective Structure) or a ROPS-approved cab is always used. Always wear a safety belt.

Avoid driving across slopes.

On slopes drive straight up and down.

Special instructions

Standard lubricants and other recommended oils and fluids

Before leaving the factory, the systems andcomponents are filled with the oils and fluids specifiedin the lubricant specification. These are suitable forroom temperatures in the range 5°F to 104°F (-15°C to 40°C).

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

When operating the machine at higher roomtemperatures, but not higher than 122°F (50°C), the following recommendations should be applied:

The diesel engine runs at this temperature usingstandard oil. However, the following fluids must be used for other components:

Hydraulic system – mineral oil Shell Spirax HD 85W/140 or similar

Lower room temperatures – Risk of freezing

Make sure the coolant system is empty/drained (pulverizer, hoses, tanks) and that antifreeze fluid is added in order to avoid the freezing of the system.

Temperatures

The limit temperatures are applied to the machines of this series.

Rollers equipped with additional equipment, such as noise suppression, may need to be more carefully monitored when used in higher temperatures.

High pressure cleaning

Do not spray water directly onto electrical components or the instrument panels.

Place a plastic bag over the fuel filler cap and secure with a rubber band. This is to avoid high pressure water to enter into the vent hole of the filler cap. Otherwise that may 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 ahigh-pressure cleaner.

Fire extinguisher

In case of fire in the machine use an BCD-class powder fire extinguisher. A BC-class CO2 fire extinguisher can also be used.

Roll Over Protective Structure (ROPS), ROPS approved cab.

If the machine is fitted with a Roll OverProtective Structure (ROPS, or ROPS-approvedcab) never carry out any welding or drilling services inthe structure or cab.

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

Welding

Whenever you need to perform welding services on the machine, the battery must be removed and the electronic equipment disconnected from the electrical system.

If possible, remove the parts to be welded from the machine.

Battery handling

When removing batteries, always disconnect the negative cable first.

When fitting batteries, always connect the positive cable first.

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

Never use a quick-charger to charge the battery. This may shorten the battery life.

Jump starting

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

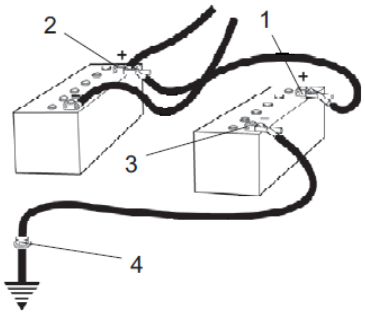


Fig. Jump starting

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

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

First connect the jump starting battery's positive terminal (1) to the dead battery's positive terminal (2). Then connect the jump starting battery's negative terminal (3) to a bolt (4) or the lifting eye 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 - Operation station

(ISO 2631)

The vibration levels are measured in accordance with the operational cycle described inEU 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 Directive2002/44/EC. (Limit is 1.15 m/s^2)
Measured hand/arm vibrations also were below the action value of 2.5 m/s^2 specified in the same directive. (Limit is 5 m/s^2)

Electrical system

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

Noise level

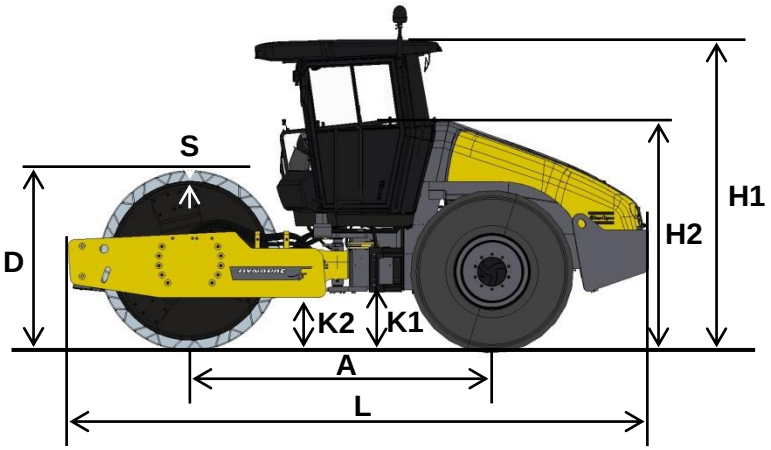
The noise level is measured in accordance with the operational cycle described in EU directive 2000/14/EC on machines equipped for the EU market, on soft polymer material with the vibration on and with the operator's seat in the transport position.

Guaranteed sound power level, L_{wA}	107 dB (A)
Sound pressure level at the operator's ear (platform), L_{pA}	89 dB (A)
Sound pressure level at the operator's ear (cab), L_{pA}	90 dB (A)

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

Technical specifications - Dimensions

Dimensions – Side view



	Dimensions	mm	in.
A	Wheelbase, drum and wheel	2,597	102
L	Length, standard roller	4,830	190
L	Length, scraper-equipped roller	4,910	193
H1	Height, with cab	2,780	109
H2	Height, without ROPS / Cab	2,025	79
D	Diameter, drum	1,219	48
S	Thickness, drum sweep, nominal	22	0.9
P	Height, pads	76	3
K1	Clearance, machine frame	328	13
K2	Clearance, drum frame	366	14

Dimensions – Top view

	Dimensions	mm	in.
B	Width, standard equipped roller	1,852	73
O1	Overhang, left frame side	88	3.5
O2	Overhang, right frame side	88	3.5
R1	Turn radius, external	4,996	197
R2	Turn radius, internal	2,836	112
W1	Width, tractor section	1,822	72
W2	Width, drum	1,676	66

Technical specifications – Weights and volumes

Weight	kg	lbs
Operating weight, without ROPS (STD)	6,600	14,600
Operating weight, without ROPS (D)	6,800	15,000
Operating weight, without ROPS (PD)	7,100	15,700
Operating weight, without ROPS (P)	6,900	15,200
Operating weight, without ROPS (A)	7,100	15,700
Operating weight, with ROPS (STD), EN500	7,000	15,400
Operating weight, with ROPS (D), EN500	7,200	15,900
Operating weight, with ROPS (PD), EN500	7,500	16,500
Operating weight, with ROPS (P), EN500	7,400	16,300
Operating weight, with ROPS (A), EN500	7,500	16,500
Operating weight, with cab (STD)	7,150	15,800
Operating weight, with the cab (D)	7,350	16,200
Operating weight, with cab (PD)	7,450	16,400
Operating weight, with cab (P)	7,450	16,400
Operating weight, with cab (A)	7,450	16,400

Technical specifications – Working capacities

Compaction data		
Static linear load (STD)	20.9	kg/cm
Static linear load (D)	22.1	kg/cm
Static linear load (P, PD)	-	kg/cm
Static linear load (A)	22.7	kg/cm
Amplitude, high (STD)	1.7	mm
Amplitude, high (D)	1.7	mm
Amplitude, high (P, PD)	1.7	mm
Amplitude, high (A)	0.8	mm
Amplitude, low (STD)	0.8	mm
Amplitude, low (D)	0.8	mm
Amplitude, low (P, PD)	0.9	mm
Amplitude, low (A)	0.4	mm
Vibration frequency, high amplitude (STD)	31	Hz
Vibration frequency, high amplitude (D)	31	Hz
Vibration frequency, high amplitude (P, PD)	31	Hz
Vibration frequency, high amplitude (A)	45	Hz
Vibration frequency, low amplitude (STD)	43	Hz
Vibration frequency, low amplitude (D)	43	Hz
Vibration frequency, low amplitude (P, PD)	43	Hz
Vibration frequency, low amplitude (A)	45	Hz
Centrifugal force, high amplitude (STD)	114	kN
Centrifugal force, high amplitude (D)	114	kN
Centrifugal force, high amplitude (P, PD)	143	kN
Centrifugal force, high amplitude (A)	115	kN
Centrifugal force, low amplitude (STD)	109	kN
Centrifugal force, low amplitude (D)	109	kN
Centrifugal force, low amplitude (P, PD)	136	kN
Centrifugal force, low amplitude (A)	58	kN

Technical specifications – General

Engine

Manufacturer/Model	Cummins QSB 3.3 T3		Water cooled turbo diesel with after cooler
Power (SAE J1995)	60	kW	80 hp
Engine speed, idling	900	rpm	
Engine speed, loading/unloading	1,500	rpm	
Engine speed, working/transport	2,200	rpm	

Electrical system

Battery	12V	170Ah
Alternator	12V	60A
Fuses	See the "Electrical system" section - fuses	

Tire	Tire dimensions	Tire pressure
Standard-type	14.9 x 24	200 kPa (29 psi)
Plain-type	13.0 x 24	150-170 kPa (21-24 psi)

The tires can be optionally filled with fluid (up to 350 kg/tire). When servicing, bear in mind this extra weight in tires and their condition.

Hydraulic system

Opening pressure	**MPa**
Drive system	38.0
Supply system	2.0
Vibration system	33.0
Control systems	18.0
Brake release	1.4

ROPS bolts

Bolt dimensions:	M20 (PN 500226)
Strength class:	8.8
Tightening torque:	300 Nm (Dacromet treated)

ROPS bolts that are torque tightened must be dry.

Torque

Tightening torque in Nm (lbf.ft) to oiled or dry bolts tightened with a torque wrench.

Metric coarse screw thread, bright galvanized (fzb):

STRENGTH CLASS:

M - thread	8.8 - Oiled	8.8 - Dry	10.9 - Oiled	10.9 - Dry	12.9 - Oiled	12.9 - Dry
M6	8.4	9.4	12	13.4	14.6	16.3
M8	21	23	28	32	34	38
M10	40	45	56	62	68	76
M12	70	78	98	110	117	131
M14	110	123	156	174	187	208
M16	169	190	240	270	290	320
M20	330	370	470	520	560	620
M22	446	497	626	699	752	839
M24	570	640	800	900	960	1,080
M30	1,130	1,260	1,580	1,770	1,900	2,100

Metric coarse thread, zinc-treated (Dacromet/GEOMET):

STRENGTH CLASS:

M - thread	10.9 - Oiled	10.9 - Dry	12.9 - Oiled	12.9 - Dry
M6	12	15	14.6	18.3
M8	28	36	34	43
M10	56	70	68	86
M12	98	124	117	147
M14	156	196	187	234
M16	240	304	290	360
M20	470	585	560	698
M22	626	786	752	944
M24	800	1,010	960	1,215
M30	1,580	1,990	1,900	2,360

Machine description

Diesel engine

The machine is equipped with Water cooled turbo, 4-stroke, 4-cylinder, straight line Diesel engine with direct injection and admission after cooler.

Electrical system

The machine is equipped with the following controlling units (ECU - Electronic Control Unit) and electronic modules.

- ECU (for the machine)
- Engine Control Module (ECM)

Transmission/propelling system

The propelling system is a hydrostatic system with one hydraulic supplying two motors connected in parallel, on for the rear axle and the other for the drum.

The machine speed is proportional to the angle of the control lever (forward/reverse lever deflection) that controls the speed). A nonslip and speed selector system are available as optional equipment.

Brake system

The brake system comprises a service brake, a secondary brake and a parking brake. The service brake system delays the propelling system, also known as hydrostatic brake.

Secondary brake and parking brake

The secondary brake and the parking brake system is comprised by disc brakes in the rear axle and drum transmission that are disengaged by hydraulic pressure.

Steering system

The steering system is a hydrostatic pressure sensor system. The control valve in the steering column delivers the flow to the steering cylinder in the swivel joint. The steering angle is proportional to the value of the steering wheel steered.

Vibration system

The vibration system is a hydrostatic system in which the hydraulic motor activates the eccentric shaft, which causes the drum to vibrate.

High or low amplitudes are determined by the rotation direction of the hydraulic motor. Optional systems for variation in the amplitude are also available.

Cab

The cab is equipped with a ventilation and heating system, with defrosters in all windows. The air conditioning is available as an optional equipment.

Emergency exit

The cab is equipped with two emergency exits: the door and the cab rear window, which can be broken with the emergency hammer located in the cab.

FOPS and ROPS

FOPS is the acronym for “Falling Object Protective Structure" and ROPS is the acronym for "Roll Over Protective Structure".

The cab is ROPS-approved in accordance with the FOPS and ROPS standards.

In case any part of the cab or FOPS/ROPS structure shows plastic deformation or cracks, the FOPS/ROPS cab must be replaced immediately.

Never carry out unauthorized modifications in the cab or FOPS/ROPS structure without prior discussing the modification with the Atlas Copco production unit. Atlas Copco will determine whether the modification can be approved in accordance with the FOPS/ROPS standards.

Water Aspersion System:

The A and AD (Asphalt) versions of CA150 machines are equipped with anticorrosive water aspersion system with control button on the operator's side, and a 500 liter polyethylene tank. Plain tires and scrapers are also standard equipment.

Machine plate – Identification

Product identification number on the frame

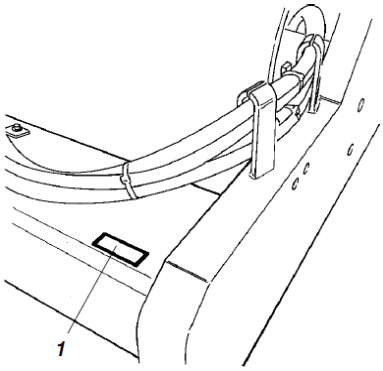


Fig. Front frame
1. PIN

The PIN number (1) of the machine is attached on the right edge of the front frame.

Machine plate

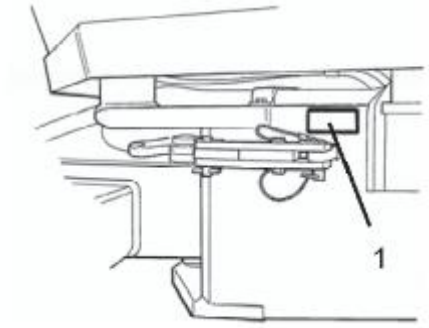


Fig. Rear frame
1. Machine plate

The machine plate (1) is attached on the left side of the rear frame, beside the articulation.

The plate specifies the manufacturer's name andaddress, the type of machine, the PIN productidentification number (serial number), service weight, engine power and year of manufacturing

Atlas Copco Construction Technique Brasil Ltda.
Rua Georg Schaeffler , 430 – Iporanga
Sorocaba SP - Brasil

Product Identification Number

Designation	Type	Rated Power	Max axle load front / rear
		kW	kg

Gross machinery mass	Operating mass	Max ballast	Year of Mfg
kg	kg	kg	

4811 0001 36

Please state the machine's PIN when ordering parts.

Explanation of 17PIN serial number

100	00123	V	E	B	123456
A	**B**	**C**	**D**	**E**	**F**

A = Manufacturer
B = Family/Model
C = Check letter
D = Year of manufacturing
E = Production unit
F = Serial number

Engine nameplate

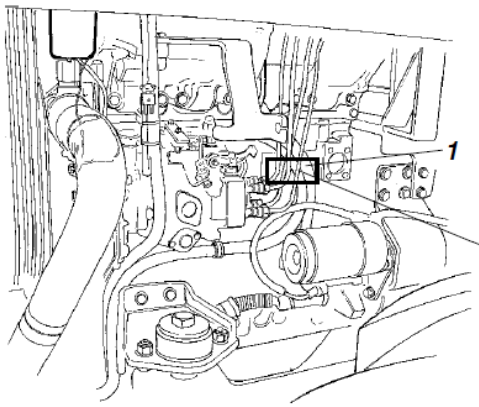


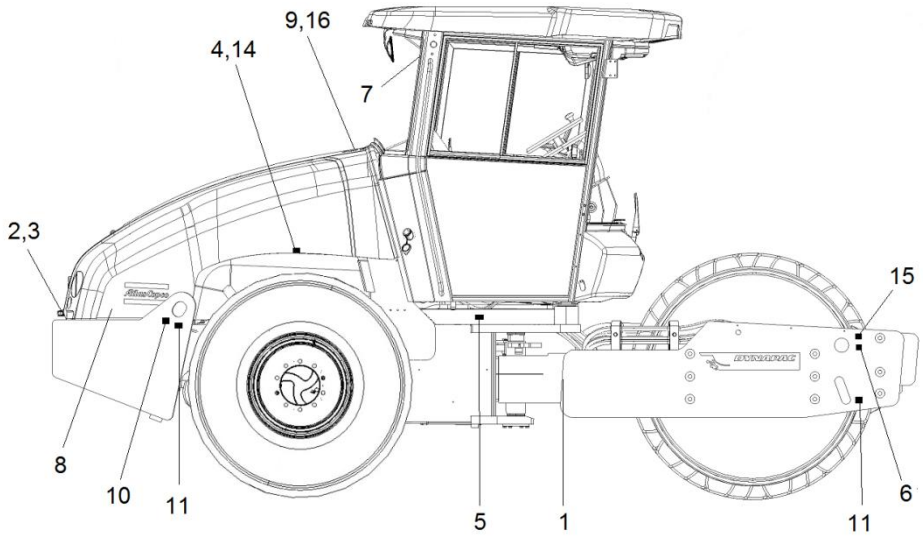
Fig. Engine
1. Engine nameplate

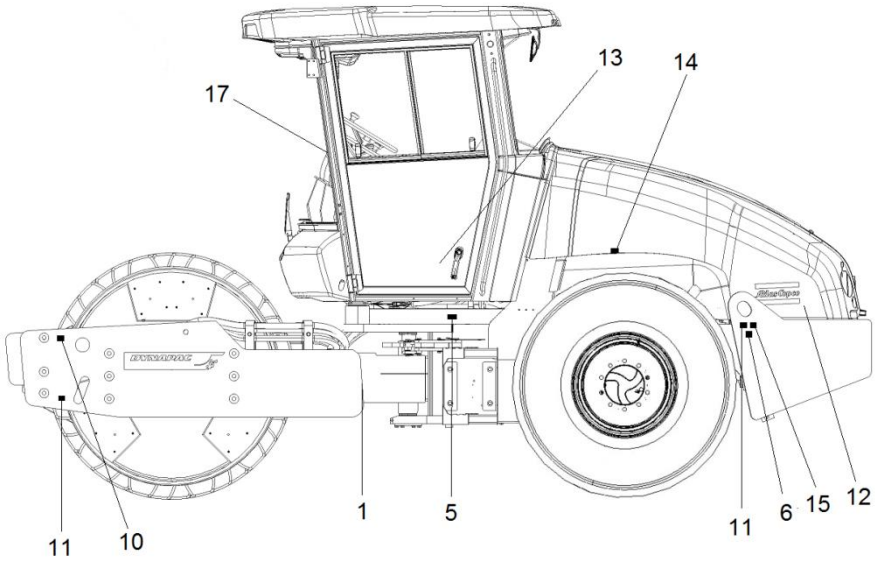
The engine nameplate (1) is attached on the right side of the engine, below the injection pump. The plate specifies the type, serial number and data of the engine. Please specify the engine serial number when ordering spare parts. Refer also to the engine manual.

Cummins Engine Company, Inc Columbus, Indiana USA 47202-3005 www.Cummins.com	**Important Engine Information**
	Model B3.3 ESN68006012
	Gross rated HP/kW 80 /60 at 2200 rpm
	Low Idle RPM 800 RPM
	Fuel Rating FR30004
	CPL 2674
	Displacement: 3.261 L/199 in3
WARNING: Injury may result and warranty is voided if fuel rate, rpm or altitude exceed published maximum values for this model and application.	
This engine conforms to YYYY U.S. EPA and California regulations for large non-road compression ignition engines as applicable. This engine is certified to operate on diesel fuel.	
Timing-BTDC 8 degrees	
Valve Lash Intake 0.014in/0.35mm (cold engine) Exhaust 0.020in/0.50mm	EPA Cert. Family: ICEXL03.3AAB
Fuel rate at rated HP/kW 61mm3/st	European Approval Number: e11*97/68CA*00/000*0069*00
S.O. SO94678 Made in Japan 6204-81-2411	Date of Manufacture yyyy-mm-dd

Machine description - Decals

Location - Decals

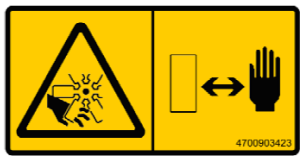




1. Warning, crush zone
2. Warning, rotating engine components
3. Warning, hot surfaces
4. Warning, ballasted tire
5. Warning, read instruction manual
6. Warning, risk of crushing, please lock the articulation.
7. Emergency exit - cab
8. Diesel fuel
9. Hydraulic oil
10. Lifting point
11. Fixing point
12. Master switch
13. Handbook compartment
14. Tire pressure
15. Hoisting plate
16. Coolant
17. Warning sign

Safety decals

4700903422
Warning – Crush zone, articulation/drum.
Maintain a safe distance from the crush zone.



4700903423
Warning – Rotating engine components.
Keep your hands at a safe distance from the danger zone.

4700903424
Warning – Hot surfaces in the engine housing.
Keep your hands at a safe distance from the danger zone.

4700903985
Warning, ballasted tire.
Read the instruction manual

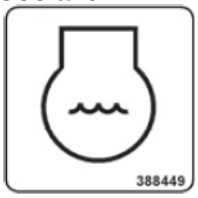
4700903459
Warning – Instruction manual
The operator must read the safety, operation and maintenance instructions before operating the machine.

4700908229
Warning – Lock the articulation.
The articulation must be locked when lifting. Read the instruction manual

4700903590
Emergency exit (Cab).

Information decals

Coolant



Diesel fuel

Lifting point

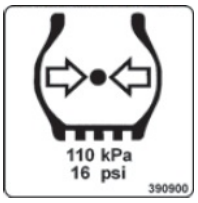
Hoisting plate

Handbook compartment

Master switch

Hydraulic oil

Tire pressure

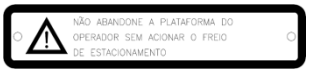


Fixing point

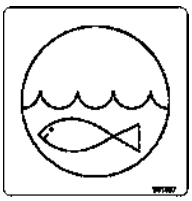
Hydraulic oil level

Fire extinguisher

Warning sign



Water tank



Machine description – Instruments/Controls

Locations – Instruments and controls

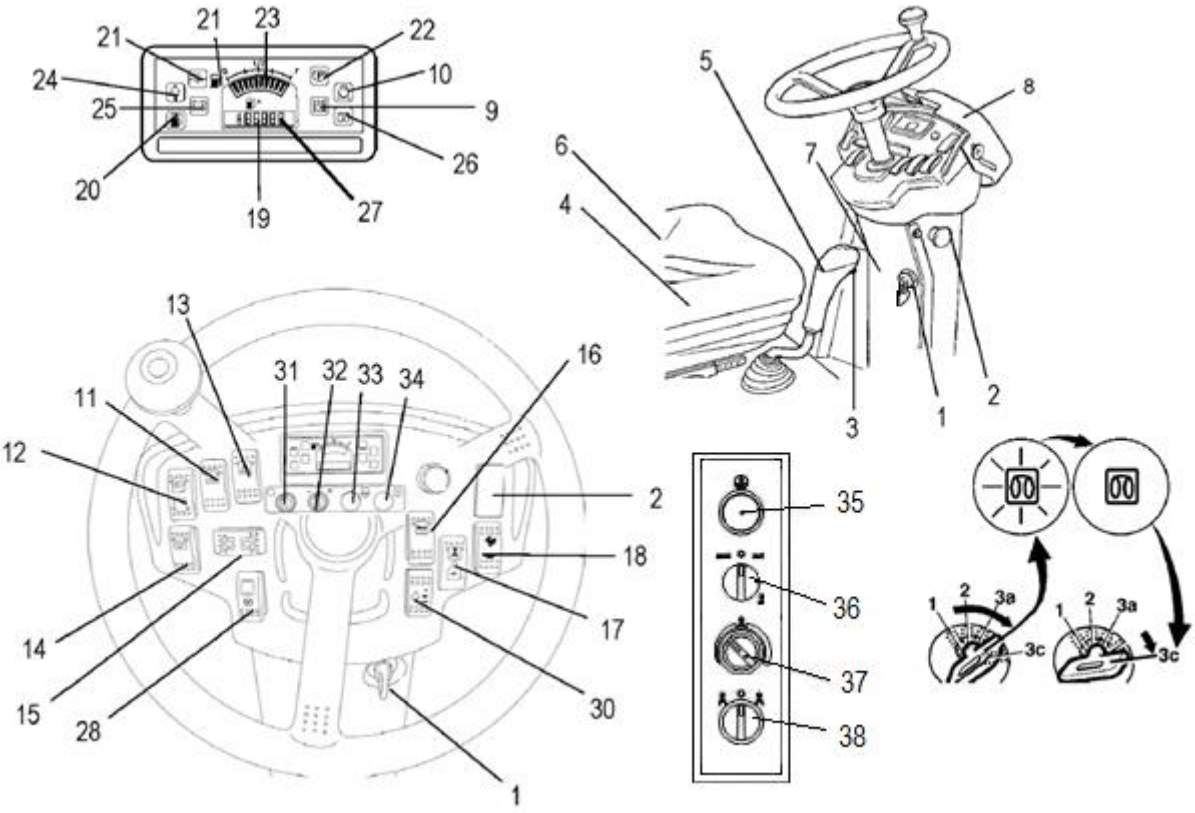


Fig. Instruments and control panel

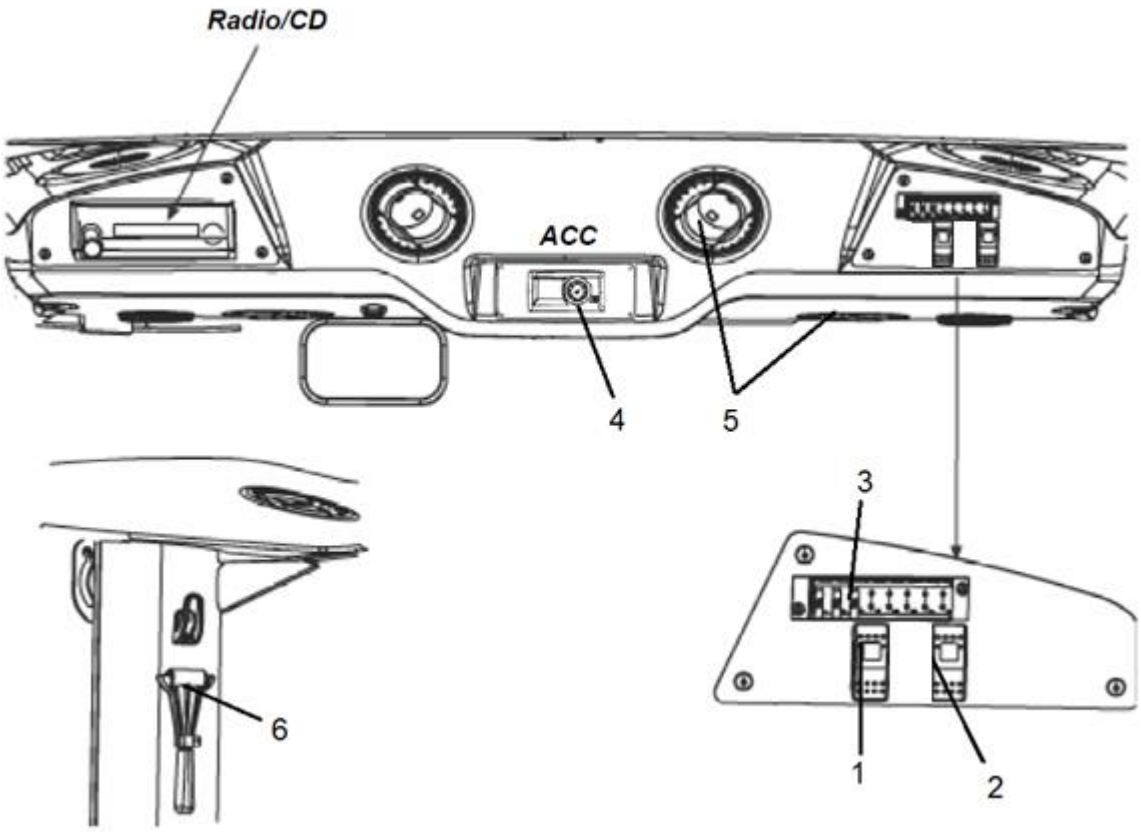
1. Ignition key
2. Emergency stop
3. Vibration ON/OFF
4. Handbook compartment
5. Forward/back lever
6. Seat switch
7. Fuse box
8. Instrument guard
9. Hydraulic oil temperature
10. Air filter
11. Road lights
12. Working lights
13. Hazard warning lights
14. Beacon lights
15. Turning lights
16. Horn
17. Vibration switch
18. Anti slip, forward/reverse
19. Control panel
20. Low fuel level
21. Oil pressure, Diesel engine
22. Parking brake
23. Fuel level
24. Water temperature, Diesel engine
25. Battery
26. Engine pre-heating lamp
27. Hourmeter
28. Parking brake switch
29. Transport position/Traction control (optional)
30. Electronic speed control regulator
31. Engine diagnostics selector
32. Engine diagnostics
33. Engine diagnostics indicator (serious failure)
34. Engine diagnostics (non-serious failure)
35. Water tank low level indicator (optional)
36. Vibration and water aspersion switch (optional)
37. Water aspersion regulator (optional)
38. Tire emulsion switch (optional).

No.	Designation	Symbol	Function
1.	Ignition key		Positions 1-2: OFF position, it is possible to remove the key. Position 3a: All instruments and electric controls are powered. The machine is equipped with automatic heating, which runs in this position. Position 3c: Starter engine ON.
2.	Emergency stop		The emergency stop is activated when this button is pressed. The brake is applied and the engine stops. The machine stops abruptly.
3.	Vibration ON/OFF .		To turn ON the vibration press and pull the button. Press again to turn OFF the vibration. You need first to define between high and low amplitude in the control panel.
4.	Handbook compartment		Pull and open the upper side of the compartment to access the manuals.
5.	Forward/reverse lever		Leave it in the neutral position to turn ON the diesel engine. If you leave the lever in any other position the diesel engine will not be turned ON. The gear direction and the drum speed are regulated with the forward/reverse lever. If you move it to the forward position the drum will move forward. The drum speed is proportional to the distance between the lever and the neutral position. The further the lever is from the neutral position, the higher the speed.
6.	Seat switch		Keep seated at all times when operating the roller. If the operator stands up during the operation the buzzer is activated. After 3 seconds the brakes are activated and the engine stops.
7.	Fuse box (on the control column)		Contains fuses for the electrical system. Refer to section "Electrical System" for a description of the fuse functions.
8.	Instrument guard		Located below the instrument plate in order to protect the instruments from the weather and sabotage. It is lockable.
9.	Temperature indicator, hydraulic oil		Show the hydraulic oil temperature. The normal temperature range is from 149° to 176°F (from 65° to 80ºC). Stop the engine if the indicator shows a temperature higher than 185°F (85°C). Locate the fault.
10.	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.
11.	Road lights, switch (optional)		When is pressed in the upper position, the roads lights are on. When is pressed in the lower position, the parking lights are off.

No.	Designation	Symbol	Function
12.	Working lights, switch (optional)		When pressed, the working lights comes on.
13.	Hazard warning lights, switch (optional)		When pressed, the hazard warning lights comes on.
14.	Beacon lights, switch (optional)		When pressed, the beacon lights comes on.
15.	Turning lights, switch (optional)		When pressed to one side, the lights of the respective side will be turned on. In the neutral position the function is turned off.
16.	Horn, switch		Press the button to sound the horn.
17.	Amplitude high/low, vibration ON		In low amplitude the vibration is activated with the button in the forward/reverse lever. Vibration OFF. In high amplitude the vibration is activated with the button in the forward/reverse lever.
18.	Anti slip, forward/reverse (optional)		Roller slipping symbol = less distribution of power to the roller. Neutral position = even distribution of forward/reverse power. Tire slipping symbol = less distribution of power to the roller.
19.	Control panel		
20.	Warning light, low fuel level		When the fuel level is low, the lamp lights up.
21.	Warning lamp, oil pressure		When the engine lubricating oil pressure is low, the lamp lights up. The engine must be turned off immediately. Then check the failure.
22.	Warning lamp, parking brake		When the parking brake is applied, the lamp lights up.
23.	Fuel level		Show the fuel level in the diesel fuel tank.
24.	Warning lamp, water temperature		When the water temperature is high, the lamp lights up.

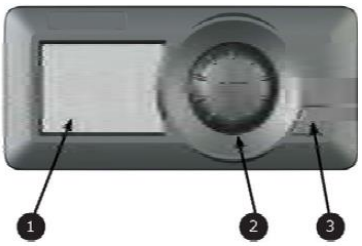
No.	Designation	Symbol	Function
25.	Warning lamp, battery charge		If the lamp lights up with the engine on, the alternator will not be charged. The engine must be turned off immediately. Then check the failure.
26.	Warning lamp, engine pre-heating lamp		The lamp must go out before changing the switch to the 3c position and turn on the engine.
27.	Hourmeter		Shows the number of hours the engine has run.
28.	Parking brake switch		Press the button then apply the parking brake; the machine stops with the motor running. Always use the parking brake when the machine is stationary on a sloping surface.
29.	Transport mode/Traction control (optional)	 	Transport mode. Traction control mode. Active this function along with the power distribution selector switch.
30.	Electronic speed control regulator		Regulate the number of revolutions of the diesel engine. Low (900 rpm), medium (1500 rpm) and high (2200 rpm).
31.	Engine diagnostics		Switch.
32.	Engine diagnostics		Selector +/-.
33.	Engine diagnostics		Red pilot lamp indicates serious failure. Turn off the engine immediately. Check the problem before turning it on again.
34.	Engine diagnostics		Yellow pilot lamp indicates non-serious failure. Check the failure(s) as soon as possible.
35.	Warning lamp, low water level		When the water level of the aspersion tank is low, the lamp lights up.
36.	Vibration and water aspersion control		To activate the water aspersion and control the vibration simultaneously.
37.	Aspersion potentiometer		Controls the amount of water to be sprayed in the drum.
38.	Tire emulsion control		Activate the emulsion of tires in continuous and intermittent modes.

Locations – Control panel/controls/cab



No.	Designation	Symbol	Function
1.	Front windshield wiper switch		Press the switch and the front windshield wiper is activated.
2.	Front windshield washer switch		Press the switch in the upper side to activate the front windshield washer.
3.	Fuse box		Contains fuses for the electrical system in the cab.
4.	Automatic Climate Control (ACC)		Air conditioning automatic control
5.	Air outlets		Direct the air outlets to obtain better ventilation.
6.	Emergency exit hammer		In case of emergency exit from the cab, release the hammer and break the REAR window.

ACC – Control panel



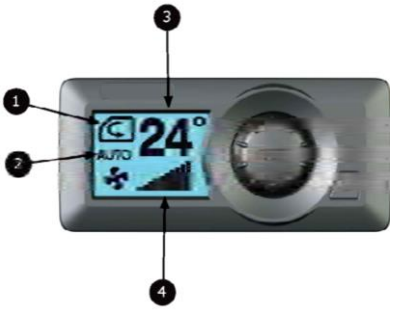
1. LCD Display
During normal operation, the adjustment temperature, the fan speed and selection/recirculating operating modes are shown.

2. SET/SELECT Button
During the normal operation the button is used to choose between the modes.
(It is also used in testing / diagnosis mode for different choices).

3. ON/OFF Switch
Turn on and off the device.

Main display

Air source control
The air source control can be adjusted to external air or recirculated air.



Modes
Shows the mode selected, “Automatic”,”Heat”,”Cool” and “Defrost”.

Temperature selection
Shows the current temperature selection.

Ventilation speed
Shows the current fan speed.

ACC – Operation menu

Main screen
When the unit is turned on, the information will be shown. The adjustment temperature, the fan speed and selection/recirculating operating modes are shown.
A small warning icon will be shown in case of any failure in the system.

Ventilation speed control
Press the SET/SELECT button until the fan icon is shown, then turn the button to select the speed.

The fan speed cannot be controlled in the “Defrost” mode.

Climate mode control:
Press the SET/SELECT button until the climate control icon is shown, then turn the button to select the climate mode.

AUTO

The system regulates the temperature automatically depending on the temperature selected.

Cool

The air conditioning compressor is turned on to cool the cab and the heating valve is turned off.

Heat

The inner temperature gets warmer via the heating valve electronic control. The compressor is turned off.

Defrost

When the defrost is turned on, the compressor also is turned on and the fan is adjusted in the maximum speed, then the heating valve is fully opened.

Air circulation control:
Press the SET button until the air circulation control icon is shown, then turn the button to select the type.

Turn the button clockwise for recirculated air.

Turn it counterclockwise for external air.

Display configuration:
To set the display and the temperature range, press the SET button until the configuration is shown, then turn the button to adjust the settings.

Turning OFF the ACC
In the main screen, press the power button to turn off the ACC. When the system is turned off the light goes off and the inner temperature is shown on the display.

Control Unit

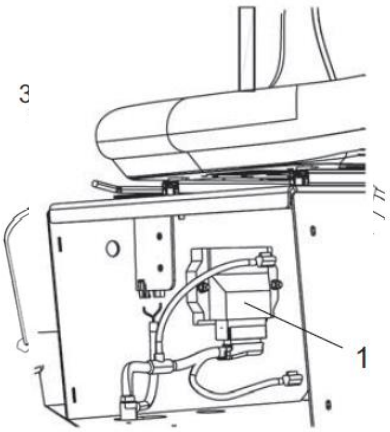


Fig. Steering box
1. ECU

The ECU (1) is located behind the front cover below the operator's seat.
This unit is responsible for the functioning of the electrical system for steering, vibration, start / stop, etc.

Relays

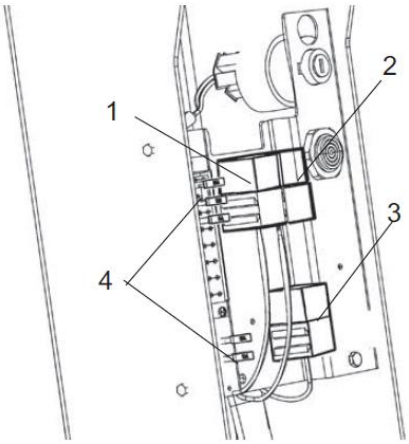


Fig. Relays and fuses
1. Turning light relay
2. Brake light relay
3. Working light relay
4. Fuse box

1.	K7	Turning lights
2.	K6	Brake lights
3.		Working lights

Main fuses

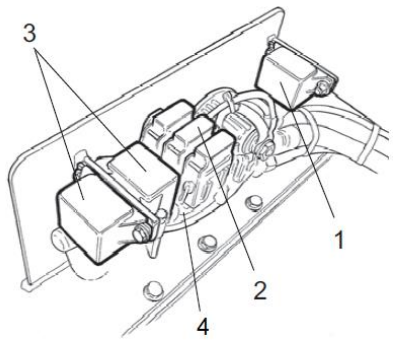


Fig. Engine compartment
1. Start relay
2. Main fuse
3. Pre-heating relay
4. Pre-heating relay fuse

There are two main fuses (2). These are placed behind the battery switch. Loose the two bolts in order to disassemble the metal cover.
The fuse is a flat-pin type.
The start relay (1), the pre-heating relay (3) and the fuses (4) of this relay are also installed in this place.

Standard power supply	40A(Orange, High)
Lighting power supply*	20A(Yellow)
Cab power supply*	50A(Red)
Power supply, Pre-heating	125A(Orange, SF30)

*Optional equipment

Water aspersion system

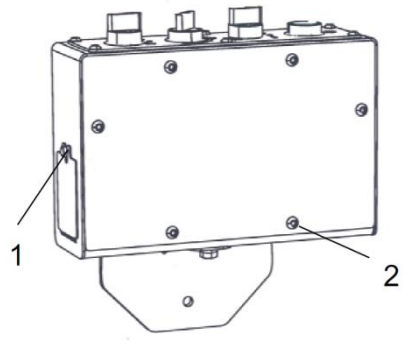


Fig. Control box, water aspersion
1. Fuse cover bolts.
2. Relay cover bolts.

The control box contains the fuses and relays for the water aspersion system. To access the fuses, loose the bolt (1) and open the cover. To access the relays open the cover loosening the bolts (2).

Arrangement of fuses and relays

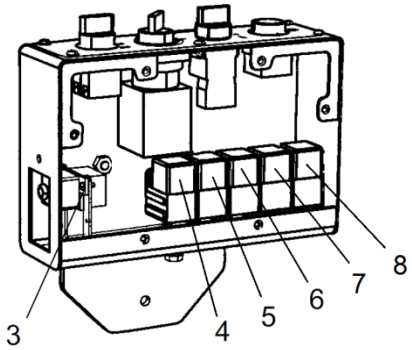


Fig. Control box, with relays and fuses.

The figure shows the arrangement of the fuses and relays in the control box of the water aspersion system.

3. Fuse box
4. K11 Water aspersion, automatic
5.* K12 Water aspersion, timer, implement
6.* K13 Level, water tank, optional
7. K14 Vibration, automatic
8. K15 Vibration, automatic

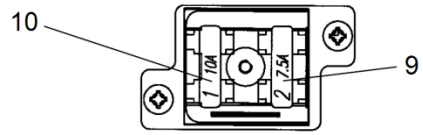


Fig. Fuse box.

9. Fuse 7.5A Neutral start relay
10. Fuse 10A Water aspersion system

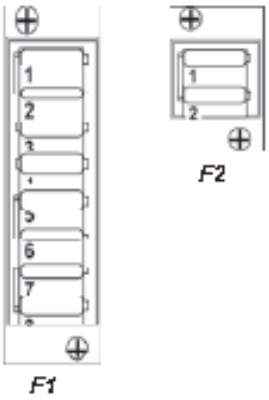


Fig. Fuse box

Fuses

The figure shows the arrangement of fuses.

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

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

Fuses in boxes F1

1.	Emergency stop, ECU, reverse alarm, neutral position, operator's seat switch and vibration	15A	5.	High/low speed	10A
2.	Horn and control panel	10A	6.	Cab windshield wiper	10A
3.	Diesel engine diagnostics ECU	5A	7.	Compaction indicator	10A
4.	Beacon lights	10A	8.	Warning indicators, cab interior lighting	10A

Fuses in boxes F2

1.	Working lights	20A
2.	Traffic lights, headlight, navigation light, brake lights, number plate lights	20A

Operation - Starting the machine

Before starting

Master switch - Switching on

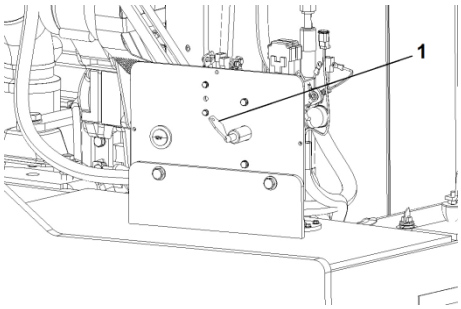


Fig. Engine compartment
1. Battery switch

Remember to perform the daily maintenance. Refer to the maintenance instructions

The battery master switch is located in the engine housing. Open the engine cover and set the key (1) to the ON position. The entire roller is now supplied with power.

The engine hood must be unlocked whenoperating, so that the battery can be quicklydisconnected if necessary.

Operator's seat (standard) - Adjustment

Fig. Operator's seat
1. Longitudinal adjustment

Adjust the operator's seat so that the position is comfortable and the controls are easily accessed.

The operator's seat can be adjusted longitudinally (1).

Operator's seat (optional) – Adjustment

Fig. Operator's seat:
1. Lock lever – longitudinal adjustment;
2. Weight adjustment;
3. Back rest angle;
4. Seat belt.

Adjust the operator's seat so that the position is comfortable and the controls are easily accessed.

The operator's seat can be adjusted as below:

- Longitudinal adjustment (1);
- Weight adjustment (2);
- Back rest angle (3).

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

Do not forget to use the seat belt (4).

Before starting

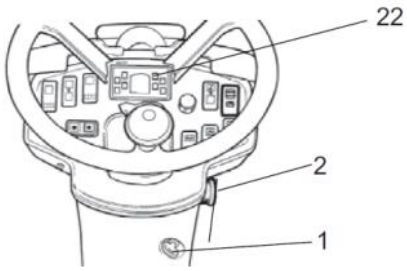


Fig. Instrument panel:
1. Starter switch:
2. Emergency stop;
22. Warning panel;

Make sure the emergency stop button (2) is pulled out. When the roller is in neutral or there is no load on the operator's seat, the automatic brake function is engaged.

Pull out the emergency stop button (2).

Turn the switch (1) to the position 3ª.

Check if the panel warning lamps (3) are on.

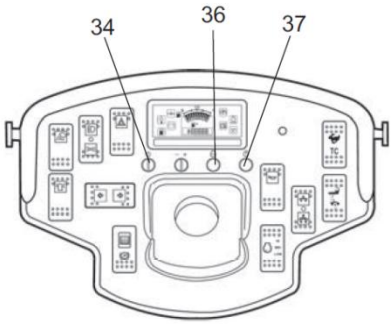


Fig. Control panel:
34. Engine diagnostics button;
36. Control lamp, serious failure;
37. Control lamp, non-serious failure.
Instruments and lamps - checking

Check the diagnostics lamps

Turn the switch to the position 3ª, as above.

Then turn the engine diagnostics button (34) to the right position.

Check if the control lamps (36 (37) are on.

Operator position

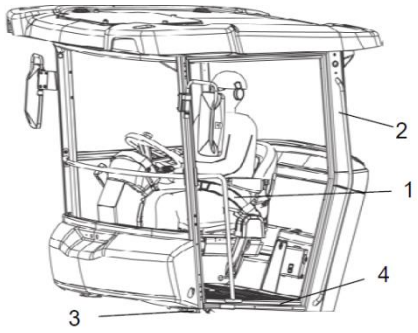


Fig. Operator position:
1. *Seat belt;*
2. *ROPS;*
3. *Rubber element*
4. *Anti-slip protection.*

If a ROPS (2) (Roll Over Protective Structure) or a cab is fitted to the roller, 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 tension.

Check if the rubber elements (3) on the platform are in good conditions. Worn elements will impair the comfort.

Make sure that anti-slip protections (4) on the platform are in good conditions. Replace where anti-slip friction is poor.

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

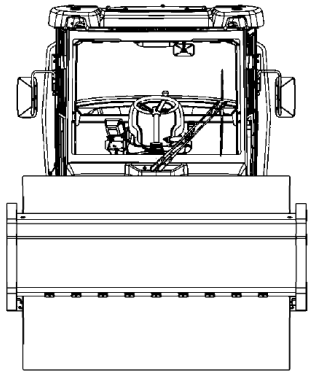


Fig. View

View

Before starting the machine, 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.

Interlock

The roller is equipped with an interlocking system.

The engine switches off from 4 to 7 seconds after the operator rises from the seat with the forward/reserve lever still engaged (not in the neutral position).

The engine does not switch off when the parking brake is engaged.

Always keep seated for all operations!

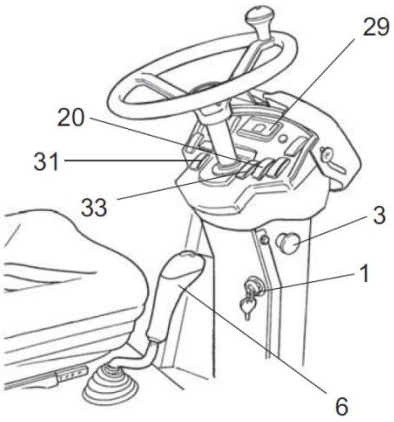
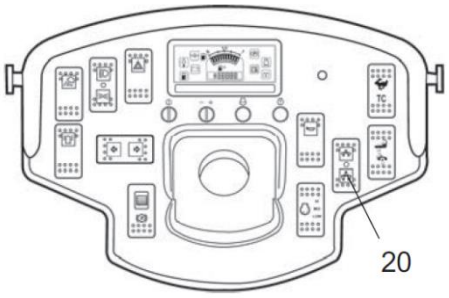


Fig. Control panel:
1. Ignition key;
3. Emergency stop;
6. Forward/reverse lever;
20. Vibration switch;
29. Lamp;
31. Parking brake switch;
33. Variable revolution speed range.



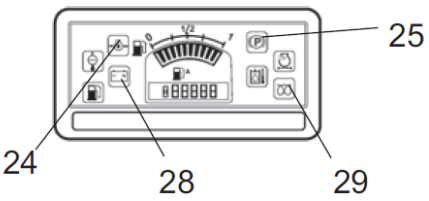


Fig. Control panel:
24. Oil pressure lamp;
25. Brake lamp;
28. Charging lamp;
29. Glow plug lamp.

Operation - Starting the machine

Starting the Diesel engine

Make sure the emergency stop button (3) is pulled out.

Make sure the parking brake switch (31) is activated.

Move the forward/reverse lever (6) to the neutral position. The engine can only be started when the lever is in the neutral position.

Turn the vibration switch (20) to the OFF position (O position).

Set the revolution regulator (33) in the position for idling running, low.

Pre-heating: turn the key to the position II. When the lamp (29) lights off, set the direct start switch (1) to the position 3c. As soon as the engine starts, release the start switch.

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

Idle the engine for a few minutes until it is warm, or longer if the room temperature is below 50ºF (10°C).

With temperature below 32°F (0°C), the Diesel engine and the hydraulic system must be warmed at least for 15 minutes.

Check during the heating of the engine if the oil pressure (24) and battery charging (28) warning lights are switched off.

The warning lamp (25) should remain ON.

When starting and driving the machine that is cold, remember that the hydraulic oil is also cold and that braking distances can be longer than normaluntil the machine reaches the working temperature.

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

Operation – Driving the machine

Operating the roller

Under no circumstances the machine should be operated from the ground. The operator must be seated inside the machine during the entire operation.

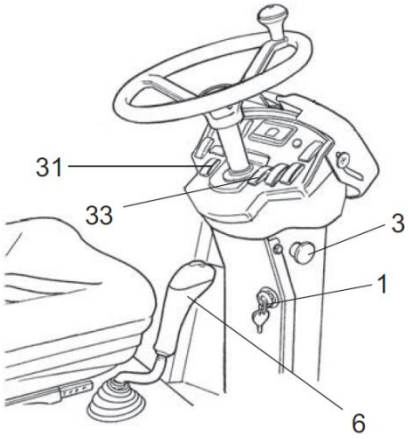


Fig. Control panel:
1. Ignition key;
3. Emergency stop;
6. Forward/reverse lever;
31. Parking brake switch;
33. Rotation starter switch.

Se the rotation starter switch (3) in the position HIGH.

Release the parking brake (3).

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.

Check if the working areas ahead and behind the roller are clear.
.

Carefully move the forward/reverse lever (6) forwards or backwards, depending on which direction of travel is required.

The speed increases as the lever is moved away from the neutral position.

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

Test the emergency stop be pressing the emergency stop button (3) while the roller is moving slowly forward. Be prepared for a sudden stop. The engine will be switched off and the brakes activated.

During the operation, check if the warning lamps light on.

Operation – Vibration

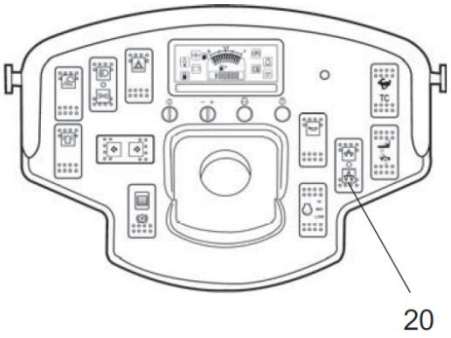


Fig. Control panel:
20. Vibration switch.

Vibration switch

Use the switch (20) to activate/deactivate the vibration.

The operator must activate the vibration via switch (4), below the forward/reverse/lever. See illustration on the left.

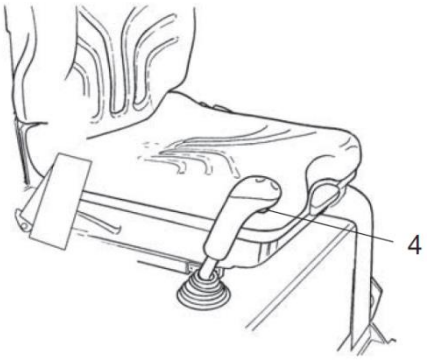


Fig. Forward/reverse lever:
4. Vibration switch.

Vibration – Activation

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

Use the switch (4) to activate or deactivate the vibration, which is located below the forward/reverse lever.

The vibration must the activated only at low and high speed.

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

Type(s) of soil	High Amplitude	Low Amplitude
Clay and Mud	24-26 Hz	28-30 Hz
Muddy	24-26 Hz	29-31 Hz
Sand and Gravel	26-28 Hz	31-33 Hz
Crushed Rock and Riprap	24-26 Hz	31-33 Hz

Water Aspersion System – Optional

Aspersion in the drum

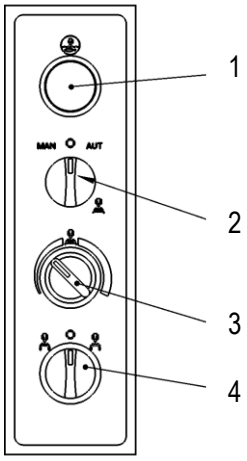


Fig. Control box, water aspersion:
1. *Warning lamp.*
2. *Water aspersion switch.*
3. *Aspersion potentiometer.*
4. *Emulsion switch.*

Use the switch (2) located in the control box beside the operator's seat to activate or deactivate the aspersion in the drum.
In the mode "manual" the aspersion system will the turned on regardless whether the roller is moving or not. When activating the mode "automatic" the aspersion system will be turned on only with the roller moving.
When fitted, it is possible to control the amount of water via switch (3), and receive warnings from the indicator (1) when the water level is low.

When activating the aspersion along with the vibration, both will run depending on the mode selected (Manual or Automatic).

Use the switch (4) located in the control box beside the operator's seat to activate or deactivate the emulsion on tires.
When turned to left the aspersion of the emulsion is continuous, while turned to right the aspersion is intermittent.

Tire scrapers

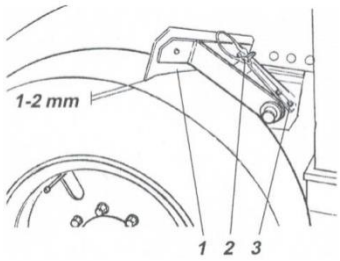
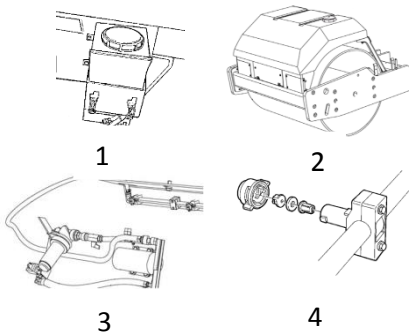


Fig. Tire scrapers:
1. *Scraper blade.*
2. *Safety pin.*
3. *Thrust stop.*

Adjust them in order the leave a 1-2 mm clearance from the tire.
In certain special types of asphalt, is recommended a smooth contact of the blades (1) with the tires.

Before using the system



Fill up the emulsion tank (water with 2% of cutting fluid) (1).

Fill up the tank with limpid water without removing the filter (2).

Check if the pump is running accordingly and if the filter (3) is cleaned.

Check if the aspersion system nozzles are not clogged (4).

For more detailed instructions refer to the section "Maintenance".

Operation – Stopping

Braking

Emergency braking

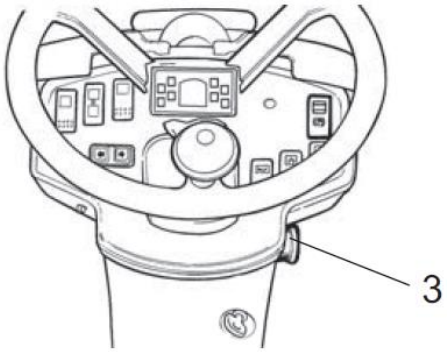


Fig. Control panel:
3. Emergency stop.

The braking is normally activated using the forward/reverse lever. The hydrostatic transmission stops the roller when the lever is moved towards the neutral position.

There is also a brake in the drum motor and the rear axle of the roller, which works as an emergency brake during the operation.

For emergency brake, press the emergency stop button (3), hold the steering wheel firmly and be prepared for a sudden stop. The brakes are applied and the engine stops.

After the emergency braking, return the forward/reverse lever to the neutral position and pull out the emergency stop (2). When the roller is fitted with an interlock it is necessary to sit down in the operator's seat to restart the engine.

Normal braking

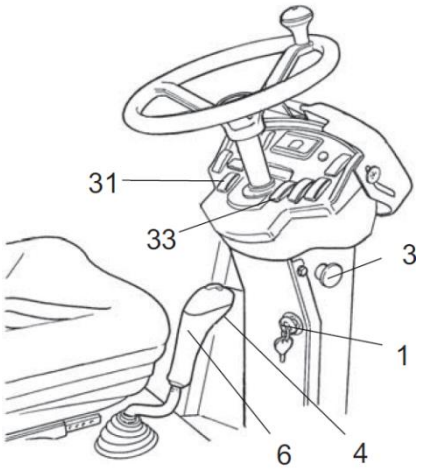


Fig. Control panel:
1. Switch;
3. Emergency stop;
4. Vibration switch;
6. Forward/reverse lever;
31. Parking brake switch;
33. Speed control regulator.

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

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

Set the speed control regulator (33) in the position for idling running, low.

Set the parking brake switch (31) to the ON position.

Always use the parking brake (31) when the machine is stationary on a sloping surface.

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

Switching off the engine

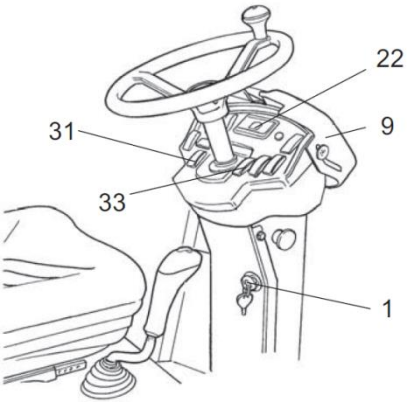


Fig. Control panel:
1. Ignition key;
9. Instrument guard;
22. Warning lamp panel;
31. Parking brake switch;
33. Speed control regulator.

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

Set the speed control regulator (33) in position Low and let the engine run for about 1 minute.

Activate the parking brake (31).

Turn the ignition key (1) to the left up to the OFF position 1. At the end of the shift, lower the control panel cover (22) and lock it.

Parking

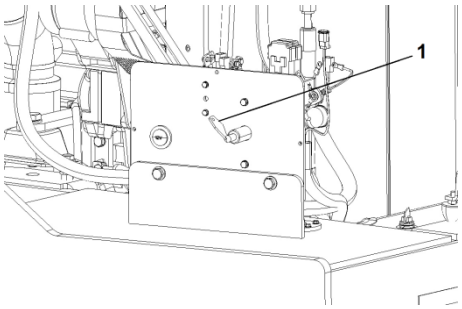


Fig. Engine compartment:
1. Master switch.

Master switch

At the end of the shift, turn off the battery master switch (1) and remove the key. This will prevent the battery from discharging and will also make it difficult for unauthorized persons to start and operate the machine. Also lock the engine hood with the key.

Chocking the drums

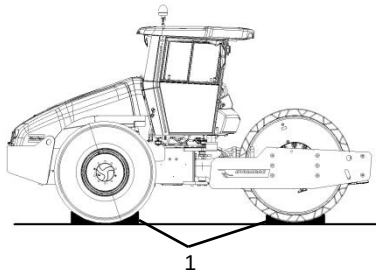


Fig. Engine compartment:
1. Chock.

Never leave the machine when the engine is running, unless the emergency/parkingbrake button is pressed.

Make sure that the roller is parked in a safe place for both the machine and people passing by. Chock the drumsif the roller is parked on a sloping ground.

Remember the risk of freezing during the winter. Fill the engine cooling system and the windshield washer tanks in the cab with suitable anti-freezing mixtures. Refer also to the maintenance instructions.

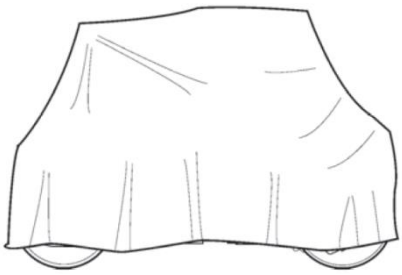


Fig. Roller weather protection.

Long-term parking

The following instructions should be followed for long-term parking (more than 1 month).

These instructions are valid for a period of up to 6 months.

Before putting the roller again into operation, the points marked with an asterisk (*) must be returned to the pre-storage state.

Wash the machine and touch up the paint finish in order to avoid oxidation.

Protect the exposed parts with anti-rust agent, lubricate the machine thoroughly and apply consistent grease to the unpainted surfaces.

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 (refer to "Every 50 hours of operation") and trickle-charge the battery once a month.

Air filter, exhaust pipe

* Cover the air filter (refer to “Every 50 hours of operation” and “Every 1000 hours of operation”) or its opening with plastic or adhesive tape. Also cover the exhaust pipe port. This must be done to prevent moisture from entering in the engine.

Water aspersion system

Drain all the water from the tank and all hoses. Drain the filter box and the water pump. Remove all nozzles from the aspersion system.
To obtain more information about draining refer to the section "Maintenance".

Fuel tank

Fill the fuel tank completely to prevent condensation.

Hydraulic oil tank

Fill the hydraulic oil tank to the uppermost level mark (refer to "Every 10 hours of operation").

Steering cylinder, hinges, etc.

Lubricate the articulation bearing with grease (refer to section "Every 50 hours of operation").

Lubricate the steering cylinder piston with conservation grease.

Also lubricate the door hinges of engine housing and cab. Lubricate both ends of the forward/reverse lever (chromed parts) (refer to section "Every 500 hours of operation").

Cover, tarpaulin

*Lower the cover on the controls of the control 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, preferably, in an area where the temperature is constant.

Tires

Make sure that the air pressure in the tires is according to the type of tire (see "Technical Specifications" section).

Miscellaneous

Lifting

Locking the articulation

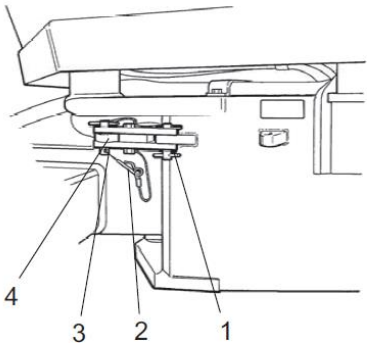


Fig. Steering articulation in the locked position
1. *Locking arm*
2. *Safety pin*
3. *Locking stud*
4. *Articulation locking lug*

Before lifting the roller, the articulation must be locked to prevent inadvertent turning.

Turn the steering wheel to the straight ahead position. Press the emergency/parking brake switch.

Remove the lowermost safety pin (2). Pull up the locking stud (3) which also has a wire attached.

Release the locking arm (1) and place it over the locking lug (4) in the steering articulation.

Fit the locking stud (3) in the holes through the locking arm (1) and locking lug (4) and secure the stud in position with the locking pin (2).

Lifting the roller

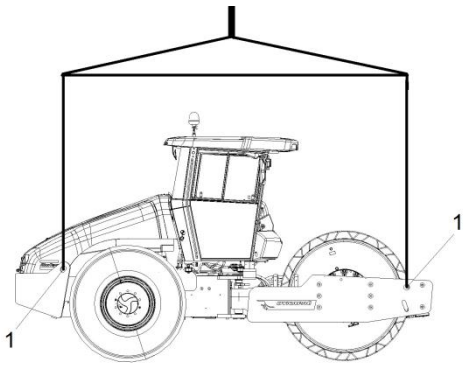


Fig. Roller prepared for lifting
1. *Hoisting plate*

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

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

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

Unlocking the articulation

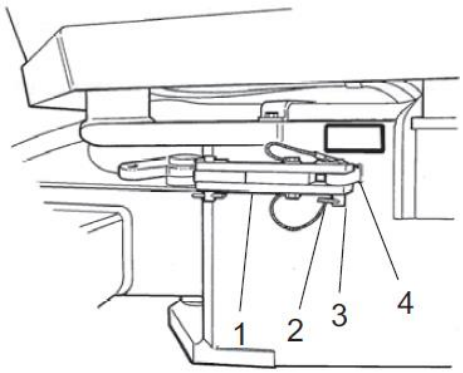


Fig. Steering articulation in the open position
1. ***Locking arm***
2. ***Locking pin***
3. ***Locking stud***
4. ***Articulation locking lug***

Remember to unlock the steering articulation before operating.

Move the locking arm (1) back to its starting position and secure it in the locking stud (3) in the articulation locking lug (4). Install the safety pin with wire (2) to secure the locking stud (3). The articulation locking lug (4) is located on the machine frame.

Towing

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

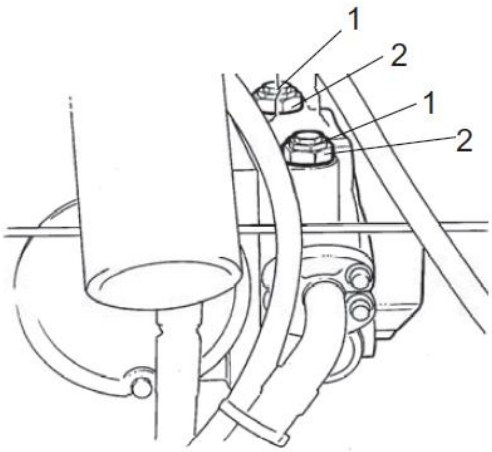


Fig. Propulsion pump
1. ***Towing valve***
2. ***Locknut***

Alternative 1

Towing in short distances with the engine running.

Press the emergency/parking brake switch and shut off the engine temporarily. As a safety measure chock the drums to prevent the roller from moving.

Turn both towing valves (1) (middle hexagonal nut)three turns counter clockwise, while holding the multifunction valve (2) (lowermost hexagonal nut) in place. The valves are placed on the forward drive pump.

Start the engine and allow it to idle.

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

Alternative 2

Towing in short distances where the engine is inoperative.

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

First release both towing valves as per alternative 1.

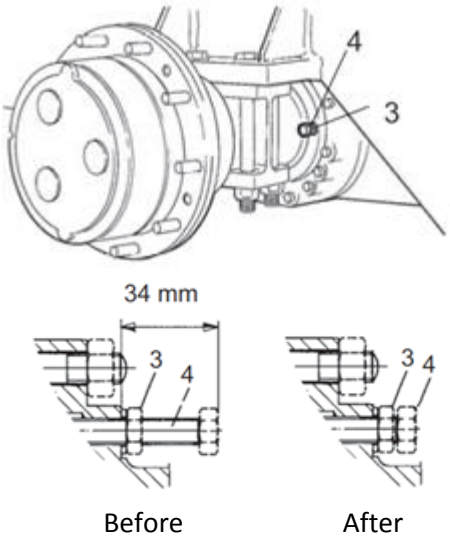


Fig. Rear axle
3 Locknut
4 Adjusting bolt

Rear axle brake

Undo the locknut (3) and screw the adjustment bolts (4) until the resistance increases, and then give it one additional turn. The adjustment bolts are located on the rear axle, two bolts on each side of the differential case.

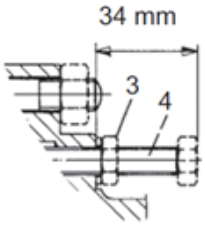


Fig. Rear axle
3 Locknut
4 Adjusting bolt

After towing , remember to turn the screw to the working position

Towing the machine

When towing/retrieving the roller, 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. 2 mph (3 km/h), and only towed in short distances, max. 330 yards (300 m).

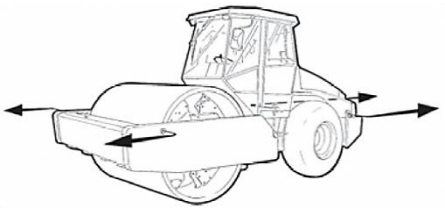


Fig. Towing

When towing/retrieving a machine, the towing device must be connected to both lifting holes. The pulling force must act longitudinally on the machine as shown in the figure. Maximum gross pulling force 26977 lbf (120 kN).

Restore the items for towing according to alternative 1 or 2 on the preceding pages.

Preparation of the machine for transport

Lock the steering articulation before lifting and transporting. Follow the instructions in the preceding sections.

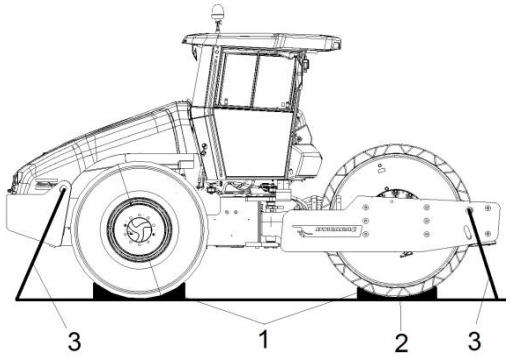


Fig. Transport
1. Chocks
2. Blocks
3. Lashing strap

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

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

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

Remember to unlock the steering articulation before starting the roller.

Operation 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/static vibration to the 0 position;
6. Set the rotation starter switch in the position for idle running (900 rpm);
7. Start the engine and allow it to warm up;
8. Set the rotation starter switch in the working position (2200 rpm);
9. Set the speed control lever to the START position;

10. **Drive the roller operating the forward/reverse lever carefully;**

11. **Test the brakes. Remember that the braking distance will be longer if the roller is cold;**
12. Use vibration only when the roller is in motion;

13. **In an emergency:**
    - **Press the emergency/parking brake switch;**
    - **Hold the steering wheel firmly;**
    - **Be prepared for a sudden stop**.
14. When parking
    - Press the emergency/parking brake switch;
    - Stop the engine and chock the drum and wheels.
15. When lifting:
    - Refer to the relevant section in the Instruction Manual.
16. When towing:
    - Refer to the relevant section in the Instruction Manual.
17. When transporting:
    - Refer to the relevant section in the Instruction Manual.
18. When recovering:
    - Refer to the relevant section in the Instruction Manual.

Preventive maintenance

Complete maintenance is necessary so the machine can operate satisfactorily and at the lowest possible cost.

The Maintenance section includes the periodic maintenance that must be carried out on the machine.

The recommended maintenance intervals assume that the machine is used in a normal environment and working conditions.

Approval and delivery inspection

The machine is tested and adjusted before it leaves the factory.

On arrival, before delivering the machine to the customer, the delivery inspection must be conducted as per the check list in the warranty document.

Any transport damage must be immediately reported to the transport company.

Warranty

The warranty is only valid if the stipulated delivery inspections and the separate service inspections have been completed as per the warranty document, and when the machine has been registered for starting under the warranty.

The warranty is not valid if damage has been caused by inadequate service, incorrect use of the machine, the use of lubricants and hydraulic oils other than those specified in the manual, or if any other adjustments have been made without the authorization required.

Maintenance – Lubricants and symbols

Fluid volumes	Liters	Gallons
Rear axle		
Differential	7	1.59
Planetary gear (side)	0.8	0.21
Drum	10.5	2.77
Hydraulic oil tank	52	13.7
Hydraulic system oil	18	4.76
Lubricating oil, Diesel engine	12	3.17
Coolant, Diesel engine	17.5	4.5
Fuel tank	225	59.4
Water tank CA150A	500	132
Tire sprinkler tank	10	2.64

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

	**ENGINE OIL**	Room temperature from 5°F to 122°F (-15°C +50°C) Shell Rimula Super 15W40, API CH4 or equivalent.
	**HYDRAULIC OIL**	Room temperature from 5°F to 104°F (-15°C +40°C) Shell Tellus S2 V68 or equivalent. Room temperature above 104°F (+40°C) Shell Tellus T100 or equivalent.
	**DIFFERENTIAL OIL**	Room temperature from 5°F to 122°F (-15°C +40°C) Shell Spirax AX 80W90, API GL-5 or equivalent. Room temperature 32°F to higher than 122°F (-0°C to above 40°C)Spirax AX 85W140, API GL-5 or equivalent.
	**DRUM OIL**	Shell Spirax S2 A 90.
	**GREASE**	SKF LGHB2 (NLGI TIPO 2) or equivalent for the central articulation. Shell Retinax LX2 or equivalent for other lubricating points.
	**FUEL**	Refer to the engine's instruction manual.
	**COOLANT**	Glyco Shell or equivalent, (mixed 50/50 with water).Anti-freezing protection up to about -34.6°F (-37°C).

Other fuel and lubricants are required when operating in areas with extremely high or extremely low room temperatures. Refer to the section "Special instructions", or contact Atlas Copco for more detailed information.

Maintenance symbols

	Engine, oil level		Tire pressure
	Engine, oil filter		Air filter
	Hydraulic oil tank		Battery
	Hydraulic oil, filter		Recycling
	Differential, oil level		Fuel filter
	Drum, oil level		Coolant
	Lubricant oil		

Maintenance – Scheduled maintenance

Service and inspection points

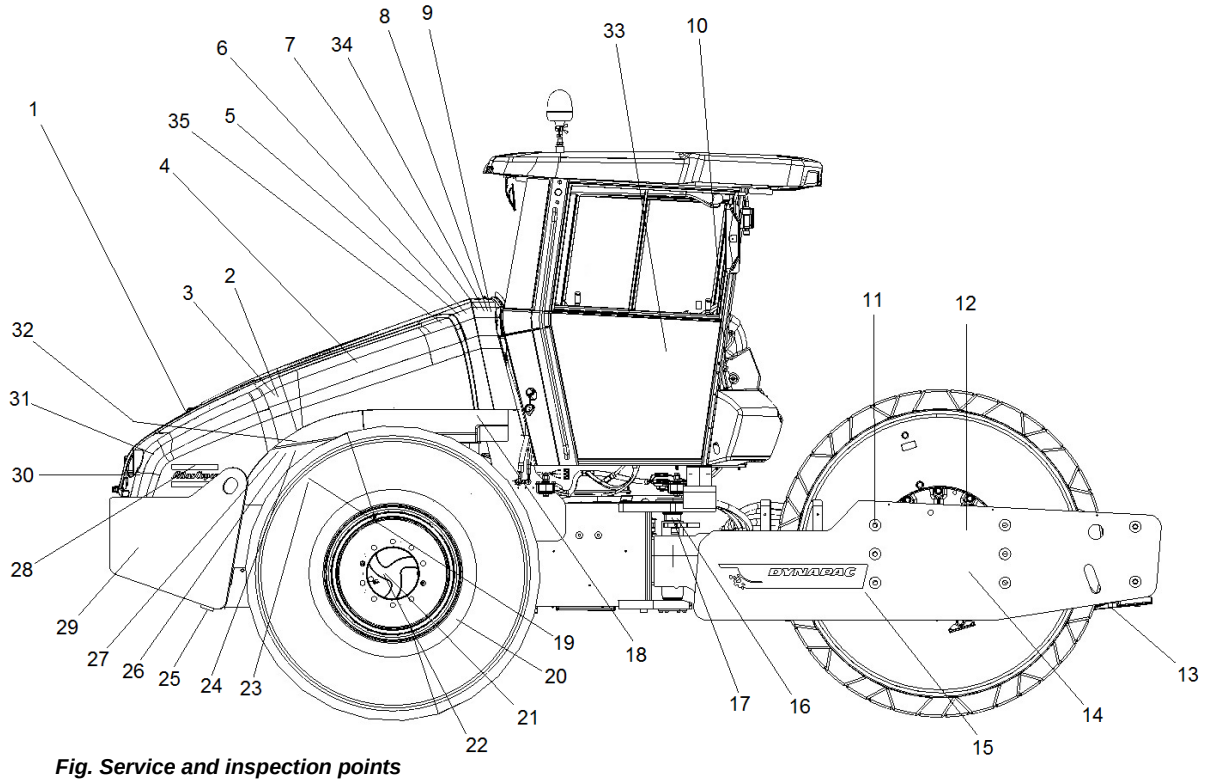


Fig. Service and inspection points

1. Coolant grill
2. Fuel filter, fuel prefilter
3. Oil level, Diesel engine
4. Air filter
5. Hydraulic oil tank, sight glass
6. Breather filter
7. Hydraulic oil filter
8. Draining, hydraulic oil tank
9. Hydraulic oil, filling
10. Fuse box
11. Drum oil, filling
12. Drum gearbox
13. Scrapers
14. Drum oil, level plug
15. Shock absorbers and fastening screws
16. Steering articulation
17. Steering drums (2x)
18. Flywheel casing, hydraulic pumps
19. Wheel nuts
20. Tires, air pressure
21. Rear axle, differential
22. Rear axle, planetary gear (2x)
23. Rear axle suspension, 2 sides
24. Oil filter, Diesel engine
25. Draining, fuel tank
26. Diesel engine suspension (4x)
27. Filling pump, fuel
28. Diesel engine, filling
29. Battery
30. Cooler
31. Hydraulic oil cooler
32. Drive belts, cooling, alternator
33. Forward/reverse lever
34. Engine hood, hinge
35. Diesel engine coolant level

General

The periodic maintenance measures shall be carried out first after the number of hours specified. Use the interval indicated, that is, daily, weekly, and so on, when the number of hours cannot be used.

Always remove all the external dirty before filling or when controlling the oil and fuel level and, also, when lubricating with grease or oil.

The engine manufacturer's instructions in the corresponding manual shall also be followed.

Every 10 hours of operation (Daily)

The periodic maintenance measures shall be carried out first after the number of hours specified. Use the period indicated, that is, daily, weekly, and so on, when the number of hours cannot be used.

Pos. in the figure	Action	Note
	Before starting the machine for the first time on the day	
13	Check the scrapers adjustment.	
1	Check the air flow of the coolant.	
31	Check the coolant level.	Refer to the engine's instruction manual.
4	Check the engine oil level.	Refer to the engine's instruction manual.
28	Refill the fuel tank.	
5	Check the hydraulic oil tank level.	
	Check the brakes.	

After the first 50 hours of operation

Refer to the content to locate the page number of the referred sections.

Pos. in the figure	Action	Note
24	Change the engine oil and filter.	Refer to the engine's instruction manual.
2	Change the fuel filter and prefilter.	Refer to the engine's instruction manual.
7	Replace the hydraulic oil filter.	

Every 50 hours of operation (Weekly)

Refer to the content to locate the page number of the referred sections.

Pos. in the figure	Action	Note
33	Check the adjustment of the forward/reverse lever.	
	Check the condition of the hoses and connections.	
4	Check/clean the air filter element.	Replace, if necessary.
16	Locking the steering articulation	
17	Check if the steering drums are tightened.	
19	Check the tightening of the wheel nuts.	
20	Check the air pressure of the tires	
	Check the air conditioning.	Optional

Every 250 hours of operation (Monthly)

Refer to the content to locate the page number of the referred sections.

Pos. in the figure	Action	Note
22	Check the oil level in the planetary gears/rear axle.	
14	Check the roller's gearbox oil level.	Implements D/PD
30,31	Clean the coolers.	
19,23	Check the bolted joints.	The information above is valid for new or repaired components only.
15	Check rubber elements and bolted joints.	
29	Check the battery.	
	Check the air conditioning.	Optional
24	Change the engine oil and filter.	

Every 500 hours of operation (Every three months)

Refer to the content to locate the page number of the referred sections.

Pos. in the figure	Action	Note
24	Change the fuel filter.	Refer to the engine's instruction manual.
2	Clean the fuel prefilter.	
7	Check the hydraulic oil tank filter and breather.	

Every 1000 hours of operation (Every six months)

Refer to the content to locate the page number of the referred sections.

Pos. in the figure	Action	Note
7	Replace the hydraulic oil filter.	
8	Drain the condensate from the hydraulic oil tank.	
25	Drain the condensate from the fuel tank.	
21	Change the rear axle differential oil.	
22	Change the rear axle planetary gear oil.	
	Check the engine valves clearances.	Refer to the engine's instruction manual.
32	Check the engine's belt tension.	Refer to the engine's instruction manual.
24	Check the oil level in the planetary gears/rear axle.	
11	Change the drum oil.	

Every 2000 hours of operation (Annually)

Refer to the content to locate the page number of the referred sections.

Pos. in the figure	Action	Note
8,9	Change the hydraulic tank oil.	
33	Lubricate the forward/reverse lever.	

Maintenance – Every 10 hours of operation

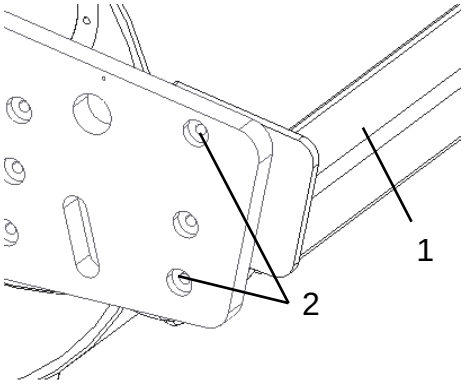


Fig. Scrapers:
1. Scraper blades;
2. Bolts.

Checking - Adjustment

Never perform the checking with engine running. Chock the wheels and drums.

Keep in mind that the drums turn if the machine moves. The adjustment of scrapers must be carried out considering the values specified, otherwise the drums can be damaged and the wear increased.

If necessary, adjust the distance to the roller as follows: Unscrew the 4 bolts (2) from the frame and adjust the distance between the blades (1) and the drum to 20 mm.

Tighten the bolts.

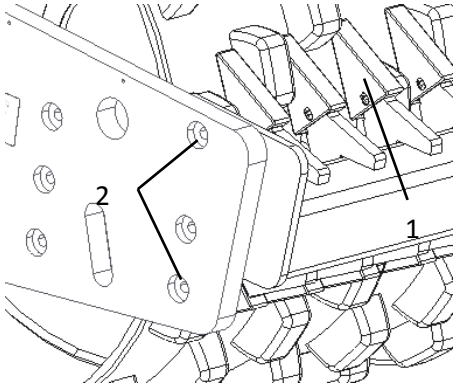


Fig. Scrapers:
1. Scraper;
2. Bolts.

CA150P/PD

Unscrew the bolts (2) from the frame and adjust the distance between the blades and the drum to 25mm.

Tighten the bolts.

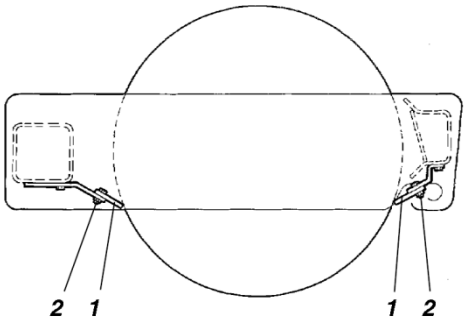


Fig. Drum scrapers:
1. Scraper;
2. Bolts

Smooth scrapers (implements)

Unscrew the bolts (2) and adjust it to have a smooth contact with the drum.

Tighten the bolts.

Air circulation – Check

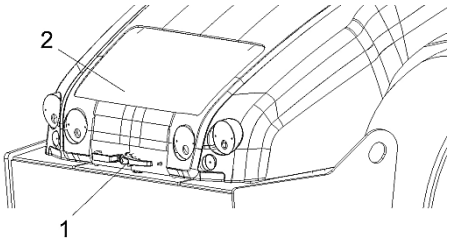


Fig. Engine cover
1. *Cover latch*
2. *Protective grill*

Check if the air circulates freely through the grill up to the engine.

To open the hood, turn the locking arm upwards (1). Raise the hood to its fully open position and check if the red safety catch of the gas spring on the left side is closed.

If the gas springs of the engine are out of action and the hood is raised to its upper position, lock it so that it cannot fall.

Coolant Level – Check

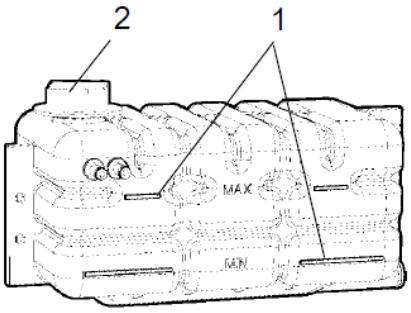


Fig. Coolant tank
1. *Coolant tank level between the marks min. and max.*
2. *Filler cap*

Check if the coolant level is between the max. and min. marks.

Be extremely careful when opening the cooler cover when the engine is at high temperature. Use protective gloves and goggles.

Fill with a coolant mixture of 50% water and 50% antifreeze. Refer to the lubricant specifications in this manual and in the engine manual.

Replace the coolant and wash the system every two years. Also check if the air flows freely through the cooler.

Diesel engine oil level – Check

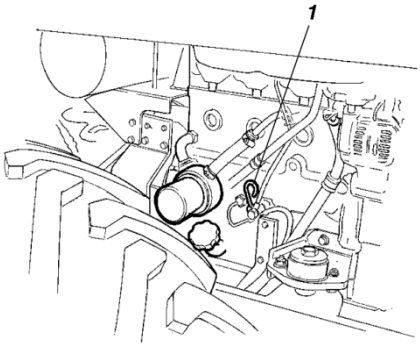


Fig. Engine compartment:
1. *Oil dipstick.*

Park the roller in a plan surface. Switch off the engine and activate the parking brake when carrying out inspections in the machine.

Be careful with the high temperature cooler and engine parts when removing the oil dipstick. Risk of burning.

The dipstick is at the left side of the engine.

Pull the dipstick out (1) and check if the oil level is between the max. and min. marks. For further information, refer to the engine's instruction manual.

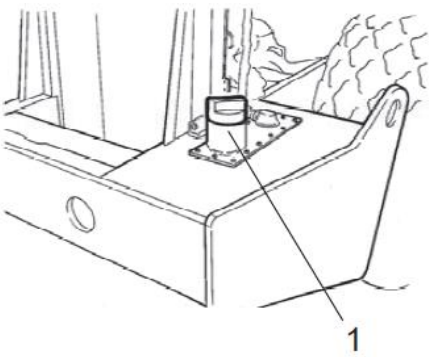


Fig. Fuel tank:
1. Filler pipe.

Fuel tank – Filling

Refill daily the fuel tank up to the inner edge of the pipe (1). Follow the engine manufacturer specifications about the fuel's quality.

Switch off the engine. Short-circuit (press) the filler gun against a non-insulated part of the roller before refueling, and then against the filler pipe (1) while refueling.

Never fill the tank with the engine running. Do not smoke and avoid spilling fuel.

The tank has a 66.04 gal. (225 liter) capacity.

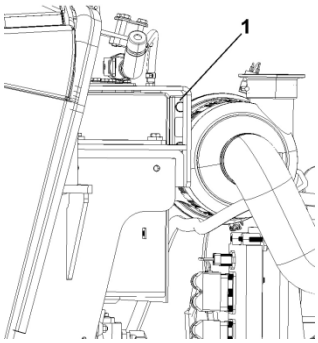


Fig. Hydraulic tank:
1. Sight glass.

Hydraulic oil tank oil level – Check

Park the machine on a plane surface and check the oil level through the sight glass (1). If the level is too low, add hydraulic oil according to the lubricant specifications.

Operation of the brakes – Check

Check if the brakes are working correctly as follows:

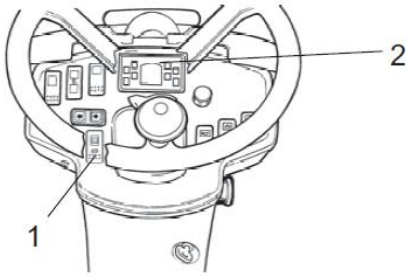


Fig. Control panel:
1. Emergency stop;
2. Parking brake lamp.

Drive the machine slowly forwards. Hold the steering wheel and be ready for a sudden stop.

Press the emergency brake knob (1). The machine shall stop suddenly and the engine will be switched off.

After checking the brakes, put the forward/reverse lever in the neutral position.

Pull out the emergency stop button (1).
Turn off the engine.

The machine is ready for operation.

Maintenance – Every 50 hours of operation

Park the machine on a plane surface. When checking and making adjustments, the engine shall be switched off and the emergency/parking brake shall be applied, if not otherwise specified.

Ensure that there is a good ventilation when the engine is running indoors. There are risks of carbon monoxide poisoning.

Forward/reverse lever adjusting

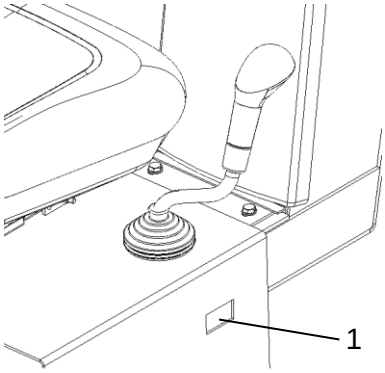


Fig. Forward/reverse lever
1. Access for adjustment

Check if the forward/reverse lever is steady.

If you want to adjust the lever's steadiness, adjust the pressure (19 mm or ¾") via the screw located at the right side of the lever (1).

Air filter – Inspection / Cleaning

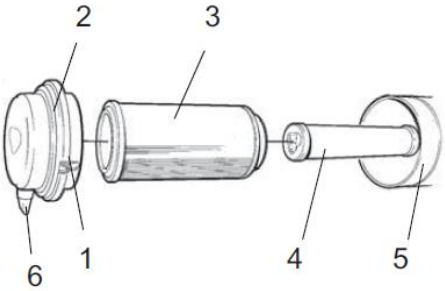


Fig. Air filter:
1. Clamps
2. Cover
3. Main filter
4. Backup filter
5. Filter box
6. Powder valve

Replace the main air filter element when the warning lamp on the control panel turns on and the engine is at the maximum rpm.

Loose the clamps (1), pull off the cover (2) and remove the main filter (3).

Do not remove the backup filter (4).

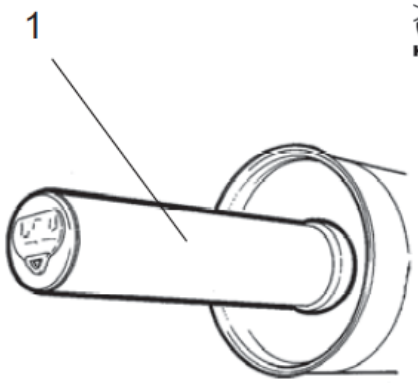


Fig. Air filter
1. Backup filter

Backup filter – Replace

Replace the backup filter with a new one after the third replacement of the main filter.

Never clean the backup filter.

To replace the backup filter (1), pull the old one out of its holder, insert and reassemble the new filter in the reverse order.

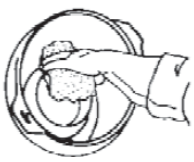
Clean the air filter, if necessary. Read the section "Air Filter - Cleaning".

Air filter – Cleaning

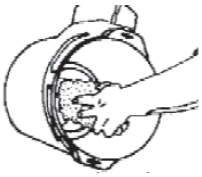
Clean inside the cover (2) and the filter housing (5). Refer to the previous figure.

Also clean both faces of the outlet pipe. Refer to the corresponding figure.

Clean both sides of the outlet pipe.



Inner edge of the outlet pipe



Outer edge of the outlet pipe

Check if the hose clamps between the filter housing and the inlet house are tightened and if the hoses are intact. Check the entire hose system throughout the engine.

Articulation and steering cylinder – Lubrication

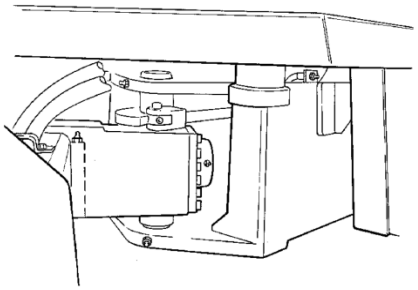


Fig. Steering articulation left side.

Do not allow anyone to remain in the vicinity of the steering articulations when the engine is running. Risk of being crushed when the steering is operated. Apply the emergency/parking brake before lubricating.

Turn the steering wheel totally to the left, in order to access all the lubrication points (4) of the steering system by the right side of the machine.

Use grease according to the lubricant specifications.

Steering articulation – Lubrication

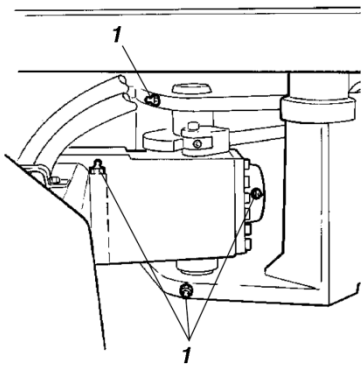


Fig. Steering articulation left side:
1. Lubrication points, articulation (4 points).

Clean the dirty and grease from the lubrication points.

Apply grease in all lubrication points (1). Check if the grease is getting in the bearings correctly.

If the grease is not getting in the bearings, it may be necessary to relieve the central articulation with a hydraulic jack and repeat the operation at the same time.

Tires – Air pressure – Wheel nuts – Tightening

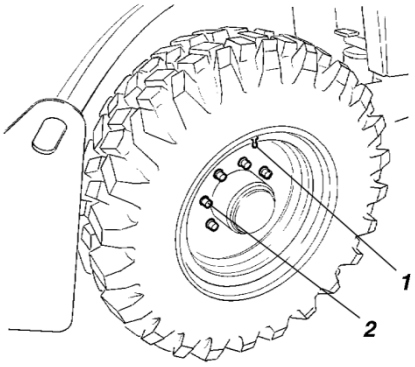


Fig. Wheels
1. Air valve
2. Wheel nut

Check the air pressure with a pressure gauge.
When the tire is filled with liquid/fluid, the valve (1) shall be at the "12 o'clock" position when pumping with the specified pressure.

Recommended pressure values: Refer to Technical Specifications.

Check the air pressure of the tires.

When replacing the tires, it is important that both of them have the same tread radius. This is necessary to ensure that the rear axle anti-slip protection is working correctly.

Check if the wheel nuts (2) are tightened with a torque of 464.66 lbf.ft (630 Nm).

Check both wheels and all the nuts (this information is only valid for new machines or the ones with newly fitted wheels).

To fill the tires with air, refer to the Safety Manual that accompanies the machine.

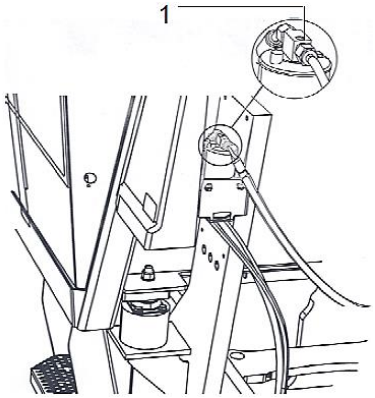


Fig. Drying filter:
1. Sight glass

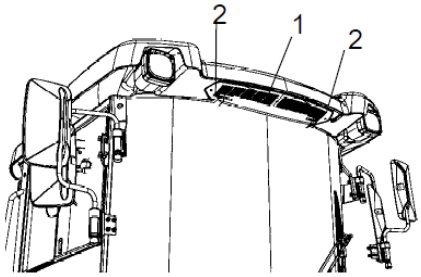


Fig. Cab
1. Filters (x2)
2. Bolts (x3)

Air conditioning (Optional) – Inspection

The system described in this manual is type ACC(Automatic Climate Control – Air Conditioning).

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

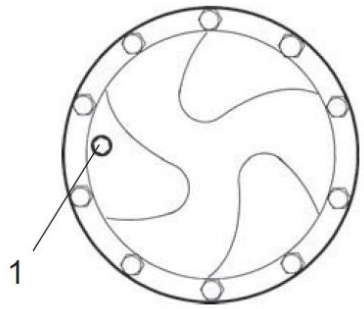
The filter is located on the left side of the engine housing's front edge.

When the engine is running, open the engine hood and check if there are visible bubbles in the drying filter through the sight glass (1).

The filter is located on the left side of the engine housing's front edge. If the bubbles are visible, it means that the coolant level is too low. In this case, stop the machine. There are risks of damage if you work with an insufficient amount of coolant.

In case there is a severe reduction of cooling capacity, clean the condenser element (1) located on the rear edge of the cab. Also clean the cooling unit in the cab. Refer to the section “2000 Hours of Operation, Air-conditioning – Inspection”.

Maintenance – Every 250 hours of operation



Park the machine on a plane surface. When checking and making adjustments, the engine shall be switched off and the emergency/parking brake shall be applied, if not otherwise specified.

Ensure that there is a good ventilation when the engine is running indoors. There are risks of carbon monoxide poisoning.

Rear axle differential oil level – Check

Never work under the roller when the engine is running. Park the machine on a plane surface.

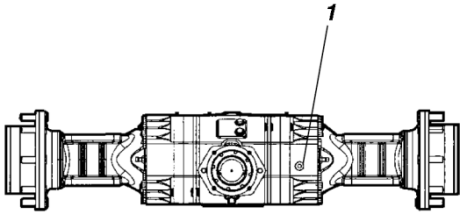


Fig. Oil level checking – differential case
1. Filling plug

Clean and remove the level plug (1) and check if the oil reaches the hole's lower edge. If the level is low, fill it up to the correct level. Use a proper gearbox oil (see lubricant specifications).

Clean and refit the plug.

Rear axle planetary gear oil level – Check

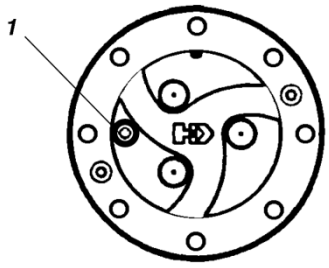


Fig. Oil level checking – planetary gear
1. Level/filling plug.

Park the machine so that the plug is at the "9 o' clock" position.

Clean and remove the level plug (1) and check if the oil reaches the plug hole level. If the level is low, fill with oil up to the correct level. Use a proper gearbox oil. Refer to the lubricant specifications.

Clean and refit the plug.

Check the oil level as in the same way as the remaining rear axle planetary gears.

Drum oil level – Check

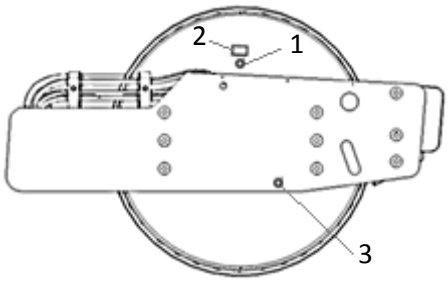


Fig. Roller, right side
1. *Filling plug*
2. *Number plate*
3. *Sight glass*

Park the roller on a plane surface so that the plug (1) and the drum number plate (2) are visible on the right side.

Now the oil level shall reach the sight glass (3).

Remove the plug (1), if necessary, and fill it up to the middle of the sight glass.

Clean any metallic particle on the magnetic plug (1) before refitting it.

Refer to the correct oil grade in the lubricant specifications.

Do not overfill with oil - there are overheating risks.

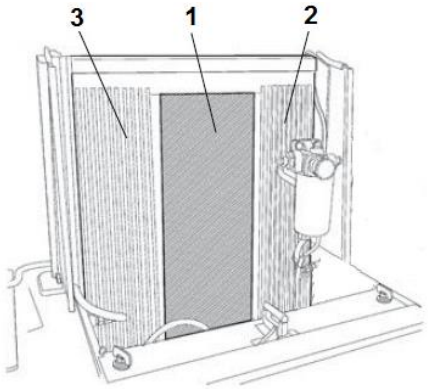


Fig. Engine compartment
1. *Water cooler*
2. *Air cooler*
3. *Hydraulic oil cooler*

Cooler – Check/Clean

Check if the air flows freely throughout the coolers (1), (2) and (3).

A dirty cooler can be cleaned with compressed air or washed with high pressure water.

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

Be careful when washing with high pressure water and do not point the nozzle near to the radiator.

Use protective goggles when working with compressed air or high pressure water.

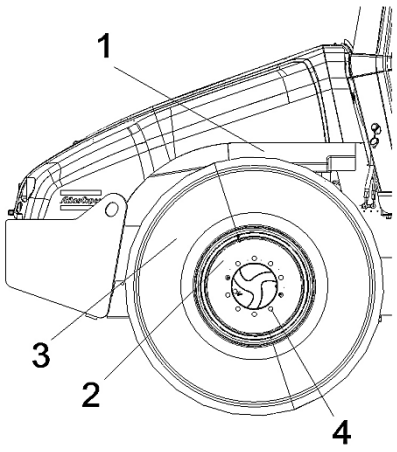


Fig. Machine right side
1. *Steering pump*
2. *Rear axle*
3. *Engine suspension*
4. *Wheel nuts*

Bolted joints tightening torque – Check

Steering pump to Diesel engine (1), 40.56 lbf.ft (55 Nm), slightly oiled.

Rear axle suspension (2), 243 lbf/ft (330 Nm), oiled.

Engine suspension (3). Check if all the M12 bolts (x20) are tightened with 51.62 lbf.ft (70 Nm) and slightly oiled.

Wheel nuts (4). Check if all the nuts are tightened with 464.66 lbf.ft (630 Nm) and oiled.

(The information above is valid for new or replaced components only).

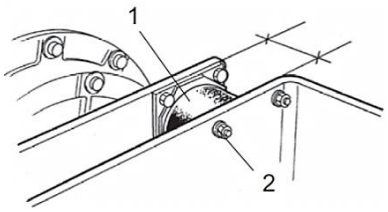


Fig. Drum, vibration side
1. *Rubber element*
2. *Fastening screws*

Rubber elements and fastening screws – Check

Check all the rubber elements (1) and replace them if more than 25% of one of the sides of the roller presents a play deeper than 10 or 15 mm.

Use the knife or other sharp object to help you during the checking.

Also check if the fastening screws (2) are tightened.

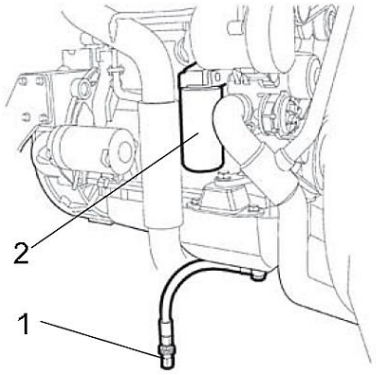


Fig. Engine left side:
1. *Drain plug;*
2. *Oil filter.*

Diesel engine oil and filter – Change

Be extremely careful when draining high temperature fluid or oil. Use gloves and protective goggles.

It is easier handling the oil drain plug (1) under the engine; it is located next to a hose on the rear axle. Drain the oil with the engine still hot. Place a 2.7 gal (10 liter) capacity container under the drain plug.

Replace the oil filter (2). Read the engine's instruction manual.

The drained oil and the filter shall be delivered to an environmental-friendly waste disposal station.

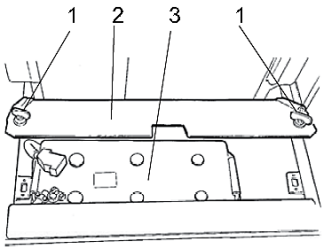


Fig. Battery box
1. *Bolts;*
2. *Battery cover;*
3. *Battery*

Battery – Check

Check if there are no sparks near when checking the electrolyte level. An explosive gas is formed when the alternator is charging the battery.

Open the engine cover and unscrew the bolts (1).

Open the battery cover (2).

Clean the top of the battery.

Always wear safety goggles. The battery contains corrosive acid. Wash with water in case of contact with the skin.

Battery cell

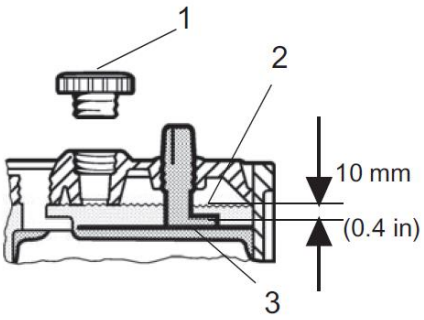


Fig. Battery electrolyte level:
1. Cover;
2. Electrolyte level;
3. Plate.

Remove the cover (1) and check if the electrolyte level (2) is around 0.39 in (10 mm) above the plates. If the level is low, fill with distilled water up to the correct level.

If the room temperature is under the freezing point, run the engine for a while after the distilled water is added, otherwise the electrolyte may freeze.

Check if the ventilation holes of the element covers are clogged and refit the cover.

The cable terminals shall be well tightened and clean. Corroded cable connections shall be cleaned and lubricated with alkaline vaseline.

Be careful when washing with high pressure water and do not point the nozzle near to the radiator.

When removing the battery, always disconnect the negative cable first. When fitting the battery, always connect the positive cable first.

Dispose the batteries in an environmentally friendly way. The battery contains lead, which is hazardous to the environment.

When welding the machine, disconnect the battery's cable and all the other cables connected to the alternator.

Air conditioning (optional) - Check

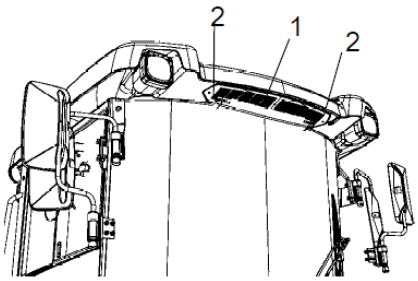


Fig. Cab
3. Filters (x2)
4. Bolts (x3)

Check the hoses and connections and make sure there is no sign of oil, which can indicate a coolant leakage.

Maintenance - Every 500 hours of operation

Park the machine on a plane surface. When checking and making adjustments, the engine shall be switched off and the emergency/parking brake shall be applied, if not otherwise specified.

Ensure that there is a good ventilation when the engine is running indoors. There are risks of carbon monoxide poisoning.

Air filter – Inspection / Cleaning

If the air filter is clogged in one of the directions, wash it with Diesel oil and use compressed air until the air flows freely again or replace the plug for a new one.

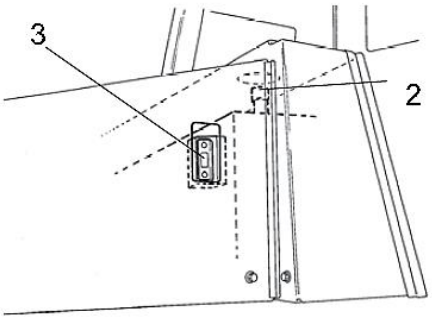


Fig. Hydraulic tank:
2. Filling plug / Air filter;
3. Sight glass.

Always use protective goggles when working with compressed air.

Check if the air filter (2) is clogged. The air must flow freely through the plug in both directions.

Start the engine and check if there is oil leakage via sight glass (3) and if necessary, test it again.

Fuel prefilter – Cleaning

Make sure that there is a good ventilation (air extraction) if the engine is running indoors.There are risks of carbon monoxide poisoning.

When cleaning the filter, refer to the section concerning the fuel system, in the engine instructions manual.

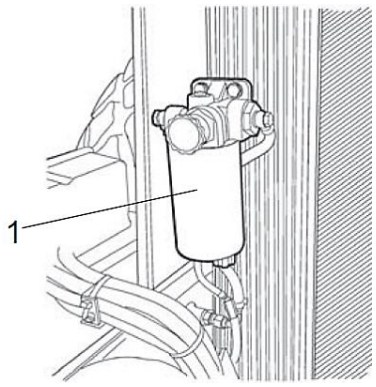


Fig. Engine compartment:
1. Fuel prefilter.

Forward/reverse lever - Lubricate

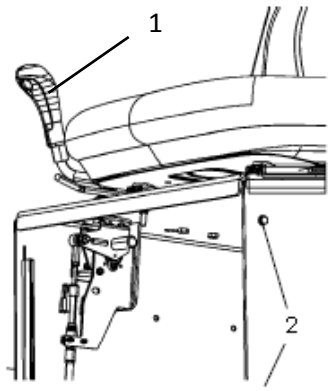


Fig. Forward/reverse lever:
1. Cover;
2. Bolts.

Lubricate the forward/reverse lever mechanism. Remove the cover (1) unscrewing the bolts (2). Lubricate the mechanism with oil.

Reassemble the cover.

Maintenance - Every 1000 hours of operation

Park the machine on a plane surface. When checking and making adjustments, the engine shall be switched off and the emergency/parking brake shall be applied, if not otherwise specified.

Ensure that there is a good ventilation when the engine is running indoors. There are risks of carbon monoxide poisoning.

Hydraulic oil tank – Change

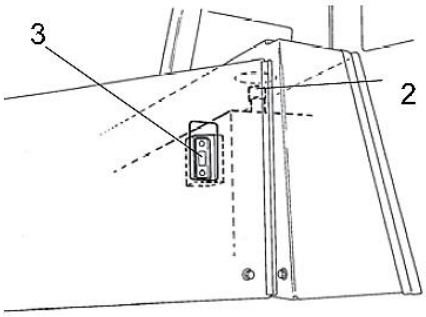


Fig. Hydraulic tank:
2. Filler plug;
3. Sight glass.

Loose the cover/air filter (2) at the upper part of the tank to release the pressure within it.

Check if the air filter (2) is clogged. The air must flow freely through the plug in both directions.

If it is clogged in one of the directions, wash the filter with Diesel oil and use compressed air until the air flows freely again or replace the plug for a new one.

Always use protective goggles when working with compressed air.

Carry out a careful cleaning around the hydraulic oil filter.

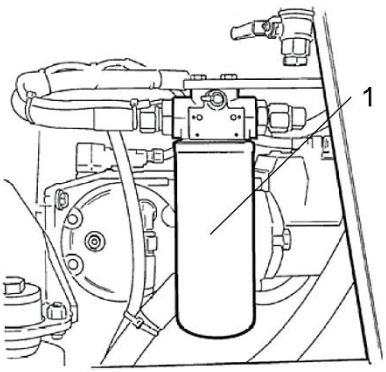


Fig. Engine compartment:
1. Hydraulic oil filter.

Remove the filter (1) and deliver the residues to an environmental-friendly waste disposal station. This is a disposable filter and it cannot be cleaned.

Check if the old seal ring is not on the filter's holder, otherwise leakage will occur between the new and old seal.

Carry out a careful cleaning on the filter's holder sealing surface.

Apply a thin layer of hydraulic oil on the new filter's sealing surface.

Tighten until the gasket touches the filter's holder. Then turn an additional half revolution. Do not tighten the filter too hard as this can damage the gasket.

Start the engine and check if the hydraulic oil is leaking off the filter. Control the oil level via sight glass (3) and if necessary, test it again.

Hydraulic oil tank – Draining

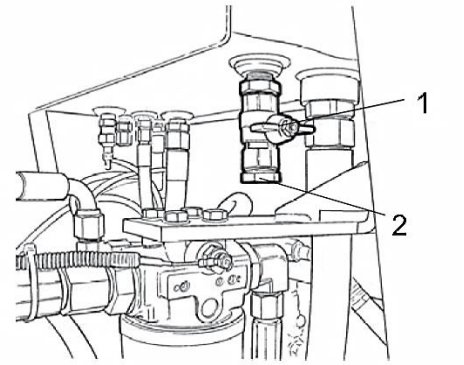


Fig. Hydraulic oil tank, bottom:
1. Cock;
2. Plug.

The condensate in the hydraulic oil tank is drained through the plug (2).

The draining shall be carried out when the machine has been stationary for a long period, e.g., after an overnight.

Carry out the draining as follows:

- Remove the plug (2);
- Position a container under the cock;
- Open the cock (1);
- Drain the condensate;
- Close the drain cock and refit the plug.

Save the hydraulic oil and condensate and deliver it to an environmental-friendly waste disposal station.

Fuel tank – Draining

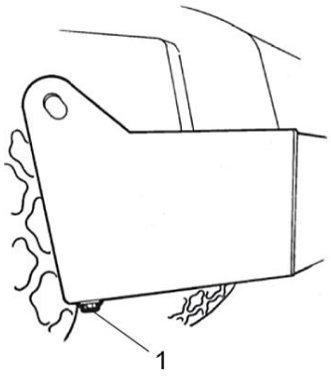


Fig. Fuel tank :
1. Drainage plug.

Drain the water and sediment from the fuel tank via drain plug (1), which is located at the bottom of the tank.

Be very careful during the draining. Do not drop the plug or else all the fuel will flow out.

The draining shall be carried out when the machine has been stationary for a long period, e.g. after an overnight. The fuel level shall be as low as possible.

The machine shall preferably been standing with this side slightly lower, so that water and sediment can be gathered near the drain plug.

Save the residues and oil and deliver it to an environmental-friendly waste disposal station.

Carry out the draining as follows:

- Position a container under the cock;
- Remove the plug (1);
- Drain the condensate and sediment until there is only pure fuel emerging out of the plug.
- Refit the plug.

Air conditioning (Implement) Air filter – Replacement

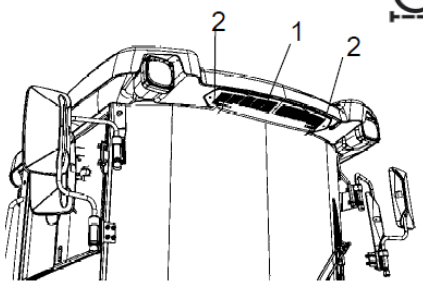


Fig. Cab
1. Filters (x2)
2. Bolts (x3)

Use stairs to get access to the filter (1), which can be removed from the window on the right side of the cab.

The filter is located at the front of the cab.
Remove three bolts and the protective plastic.
Remove the filters and replace them with new ones.
It may be necessary to replace them more frequently if the machine is working in a dusty environment.

Rear axle differential oil – Change

Never work under the machine when the engine is running. Park the roller in a plane surface. Block the wheels.

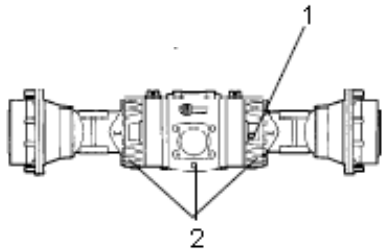


Fig. Rear axle:
1. Level/filling plug;
2. Drain plug;.

Clean and remove the level/filling plug (1) and the three drain plugs (2). Next, drain the oil into a proper container. The recommended container's volume is 1.84 gal (7 liters).

Save the oil and dispose of it correctly.

Fit the drain plugs and fill the oil up to the correct level. Fit the level/filling plug. Use a proper gearbox oil. Refer to the lubricant instructions.

Rear axle planetary gear oil – Draining

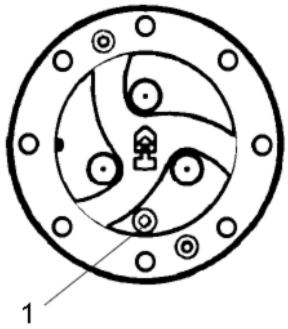


Fig. Oil draining – planetary gear:
1. Level/filling plug.

Park the machine so that the plug (1) is at its lowest position.

Clean and remove the plug (1) and drain the oil into a container. The recommended container's volume is 0.52 gal (2 liters).

Deliver the drained oil to an environmental-friendly waste disposal station.

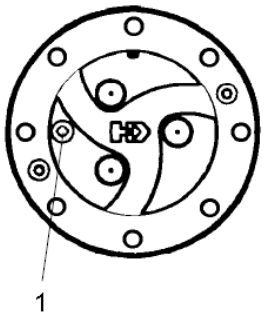


Fig. Oil filling – planetary gear:
1. Level/filling plug.

Rear axle planetary gears oil – Change / Filling

Park the machine so that the planetary gear plug (1) is at the "9 o' clock" position.

Fill with oil up to the bottom of the level opening. Use a proper gearbox oil. Refer to the lubricant instructions.

Clean and refit the plug (1).

Fill with oil as specified for the rear axle secondary planetary gear.

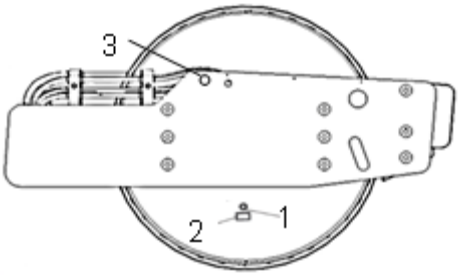


Fig. Drum, right side
1. Draining/filling plug
2. Number plate
3. Sight glass

Drum oil – Change

Park the machine on a plane surface so that the drain plug (1) is straight down. Position a 3.96 gal (15 liter) capacity container under the drain plug.

Save the oil and deliver to an environmental-friendly disposal station.

Clean and remove the drain plug (1).
Refill as specified in "Drum - Check the oil level".

Be extremely careful when draining high temperature fluid or oil. Use protective gloves and goggles.

Maintenance – Every 2000 hours of operation

Park the machine on a plane surface. When checking and making adjustments, the engine shall be switched off and the emergency/parking brake shall be applied, if not otherwise specified.

Ensure that there is a good ventilation when the engine is running indoors. There are risks of carbon monoxide poisoning.

Hydraulic tank fluid – Change

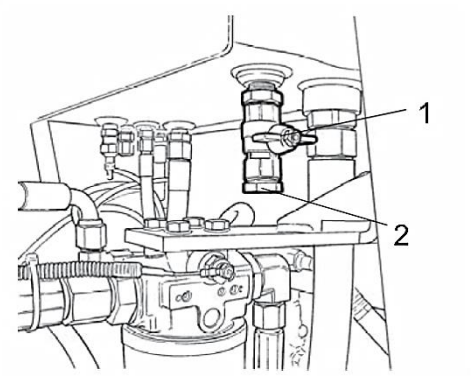


Fig. Hydraulic oil tank, bottom:
1. Cock;
2. Plug.

Be extremely careful when draining the oil or fluid. Use gloves and protective goggles.

Position a 15.85 gal (60 liter) capacity container under the machine.

Remove the drain plug (2).

Open the cock and let the oil/fluid drain throughout the tube to the container.

Refit the plug.

Deliver the drained fluid to an environmental-friendly disposal station.

Fill with new hydraulic oil/fluid. To obtain more information about oil/fluid quality/grade, refer to the lubricant specifications.

Replace the hydraulic oil filter according to the section "Every 1,000 hours of operation".

Start the Diesel engine and test all the hydraulic functions. Check the tank oil level and fill it, if necessary.

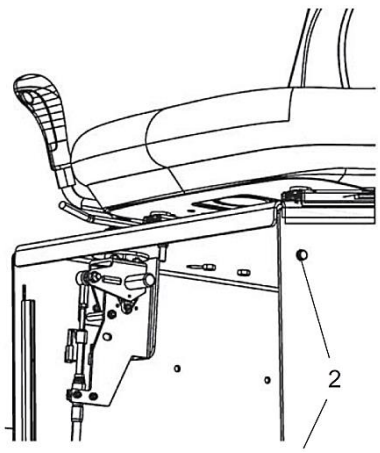


Fig. Forward/reverse lever
2. Bolts

Forward/reverse lever - Lubrication

Lubricate the forward/reverse mechanical system.
Take off the outer cover down below the seat, loosening the bolts (2). Lubricate the driving elements.

Reposition the cover back in its place.

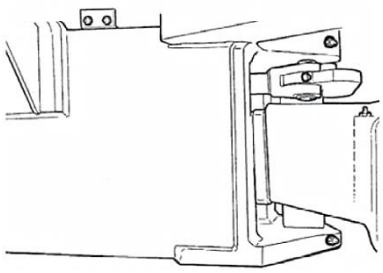


Fig. Steering hitch.

Steering hitch - Check

Check if there are damages or cracks in the steering hitch.

Check and tighten loosen bolts.

Also check possible stiffness and plays

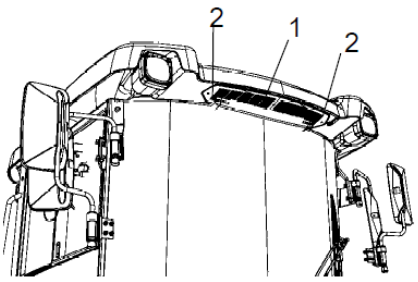


Fig. Cab
1. *Filters (x2)*
2. *Bolts (x3)*

Air conditioning (Optional) - Check

It is necessary to carry out inspections and maintenance regularly in order to ensure the proper working of the machine in a long-term basis.

Clean the dust in the condenser element (1) using compressed air. Direct the air downwards.

If the air flow is too strong, there are risks of damage in the element fins.

Use protective goggles when working with compressed air.

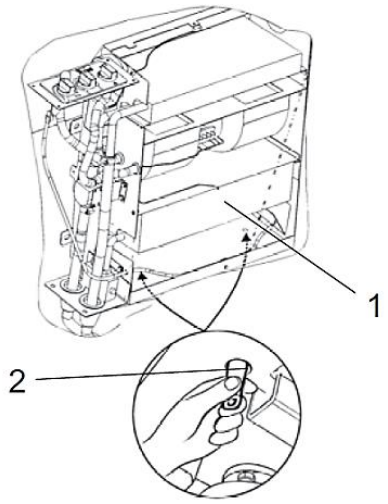


Fig. Cab
1. *Cooling element*
2. *Drain valve (x2)*

Check the attachment of the compressor element.

Clean the dust in the coolant unit and element (1) using compressed air.

Check if the system hoses are not touching any other component. Check if the coolant unit drain is not obstructed, which can prevent the condensation water accumulation inside the unit.

Tighten the valves (2) to complete the draining process.

Drying filter – Check

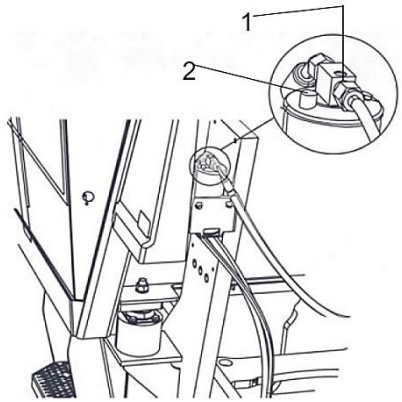


Fig. Engine compartment drying filter
1. *Sight glass*
2. *Moisture indicator*

The filter is located on the left side of the engine housing's front edge.

When the engine is running, open the engine hood and check if there are visible bubbles in the drying filter through the sight glass (1). If the bubbles are visible, it means that the coolant level is too low. In this case, stop the machine. There are risks of damage if you work with an insufficient amount of coolant.

Check the moisture indicator (2). It shall be blue. If it is beige, it means that the drying cartridge shall be replaced by an authorized service company.

The compressor will be damaged if it works with an insufficient amount of coolant.

Do not loose or pull off the hose couplings.

The coolant system is pressurized. The incorrect handling can result in severe accidents.

The system contains pressurized coolant. It is forbidden to release coolant agents to the atmosphere. Works on the coolant circuit can only be made by authorized companies.

Drying filter – Check

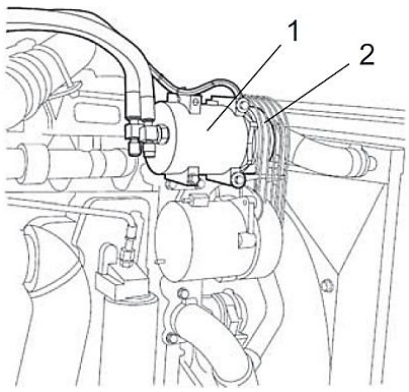


Fig. Engine compartment
1. *Compressor*
2. *Transmission belt*

Check the attachment of the compressor (1).

The compressor is located above the alternator, at the engine housing.

If it is possible, turn on the unit and let it run for 5 minutes per week, in order to ensure the lubrication of the gaskets and the system's compressor.

Check if the drive belt (2) is damaged or cracked.

The air conditioning unit shall not be switched on when the external temperature is under 32°F (0ºC).

Maintenance – Specific for CA150A and AD

Service and inspection points

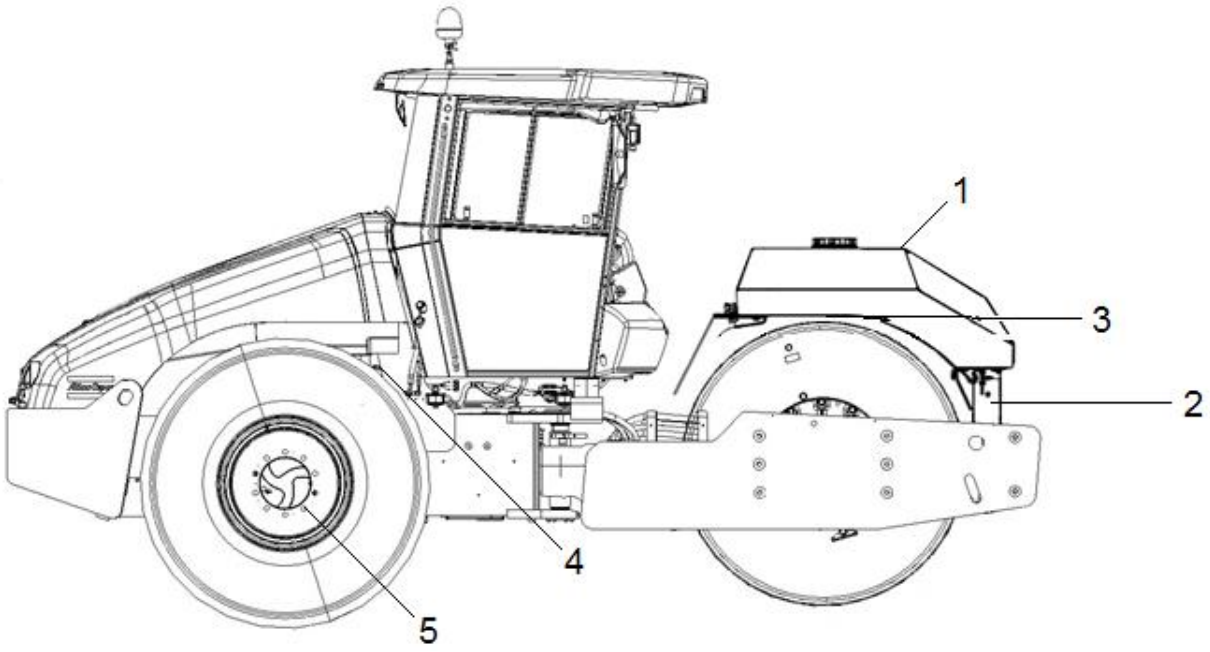


Fig. Service and inspection points

1. Hydraulic Tank
2. Water Aspersion System:
3. Aspersion Nozzles
4. Scrapers
5. Wheel Nuts

Every 10 hours of operation (Daily)

The periodic maintenance measures shall be carried out first after the number of hours specified. Use the interval indicated, that is, daily, weekly, and so on, when the number of hours cannot be used.

Pos. in the figure	Action	Note
1	Water tank - Filling	
2	Water aspersion system – Check / Clean filter and prefilter	
4	Water aspersion system - Tires	
4	Scrapers – Check / Adjust	

Every 50 hours of operation (Weekly)

Refer to the content to locate the page number of the referred sections.

Pos. in the figure	Action	Note
5	Tires – Air pressure and tightening of wheel nuts	**Every 50 hours**

Every 2000 hours of operation (Annually)

Refer to the content to locate the page number of the referred sections.

Pos. in the figure	Action	Note
1	Water tank - Cleaning	**Every 2000 hours**

Every 10 hours of operation (Daily)

Water tank - Filling

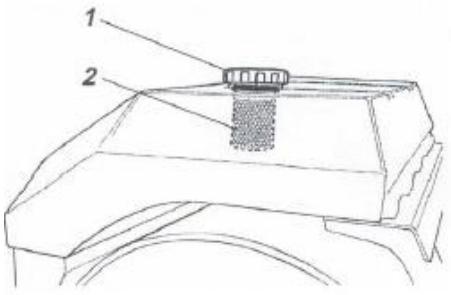


Fig. Water tank
1. Tank cover
2. Filter

Unscrew and remove the tank cover (1) and fill it with limpid water, without removing the filter (2).

Fill up the 500 liter water tank.

Additive: Anti-freezing liquid.

Water aspersion system filter and prefilter – Check

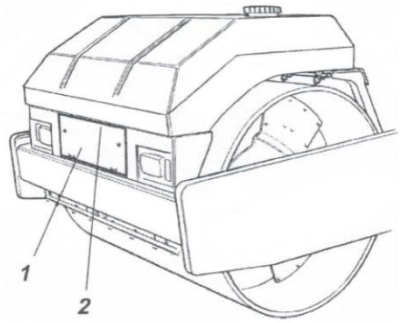


Fig. Drum
1. Nozzle
2. Pumping system / cover
3. Fastening screws

Turn on the water aspersion system and check any clogged nozzle (1). In case of clogged nozzle clean them, as well as the prefilter located next to the water pump.

The pumping system is located on the water tank, behind the cover (2).

Water aspersion system nozzles – Check / Clean

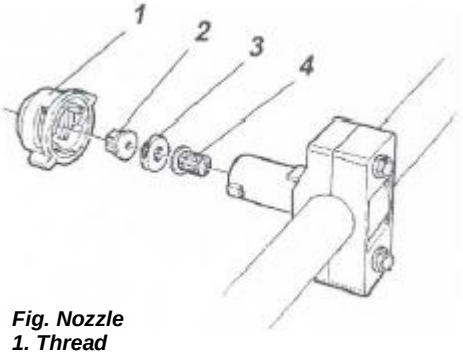


Fig. Nozzle
1. Thread
2. Nozzle
3. Seal
4. Thin filter

Disassemble manually the nozzle clogged. Blow the nozzle (2) and the thin filter (4) with pressure air or, optionally, replace the parts and clean the clogged parts later.

Use protective goggles when working with compressed air.

Water aspersion system filter and prefilter – Clean

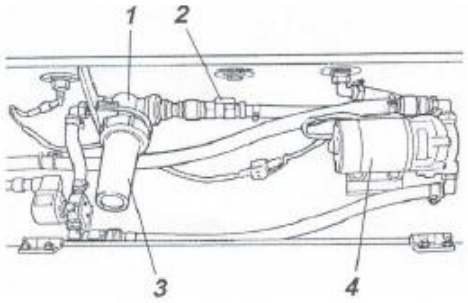


Fig. Pumping system:
1. Prefilter
2. Cock
3. Filter shell
4. Water pump

To clean the prefilter (1), close the cock (2) and loosen the filter shell (3).

Clean the filter and the shell, check if the sealing is intact.

After checking and cleaning, if needed, turn on the system and observe if the operation is normal.

Tire aspersion system –Check

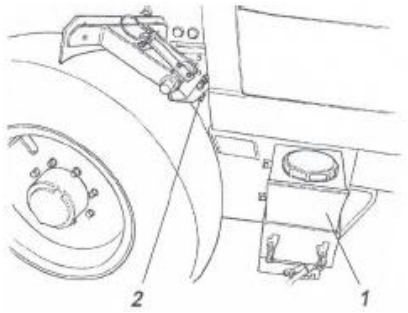


Fig. Wheel Support
1. Rear water tank
2. Water Aspersion Nozzle

Fill up the tank with emulsion liquid, e.g. water mixed with 2% of cutting liquid and check if the nozzles (2) are not clogged (clean the nozzles and the filter, if needed).

Do not add flammable or non-environmentally friendlyliquids in the emulsion tank
.

Always check the tires tread to check the asphaltadherence, which should be carried out before the tiresare too hot.

Scrapers – Check / Adjust

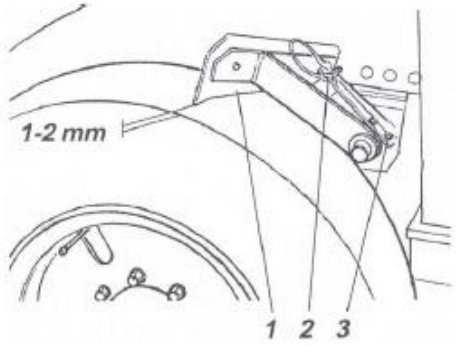


Fig. Tire scrapers
1. Scraper blade
2. Safety pin
3. Thrust stop

Check if the scrapers are intact. Adjust them in order the leave a 1-2 mm clearance from the tire.
In certain special types of asphalt, is recommended a smooth contact of the blades (1) with the tires.

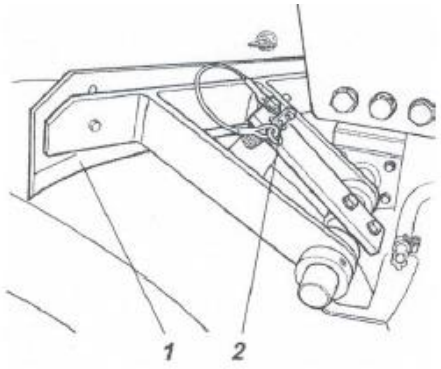


Fig. Tire Scrapers
1. Scraper blade
2. Safety pin

Scrapers – Transport

When transporting the roller, the scrapers must keep a distance from the tires. Raise the scraper blade (1) and lock it in this position with the safety pin (2).

Every 50 hours of operation (Weekly)

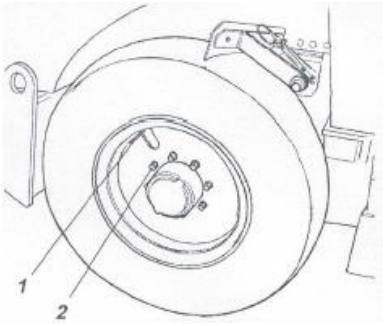


Fig. Wheel
1. Air valve
2. Wheel nut

Tires – Pressure and torque on nuts

Check the air pressure of the tires with a manometer.
The air pressure is specified in the section "Specifications".
Check both tires.

When replacing tires it is important that both have the same tread radius, so as to the automatic traction controls works properly.

Check the tightening of the wheel nuts (2) with com 346 lbf.ft (470 Nm).
Check the tires and all the nuts. (Only valid for new machines or newly-assembled machines).

When calibrating the tires, please refer to the safety manual of the machine.

Every 2000 hours of operation (Annually)

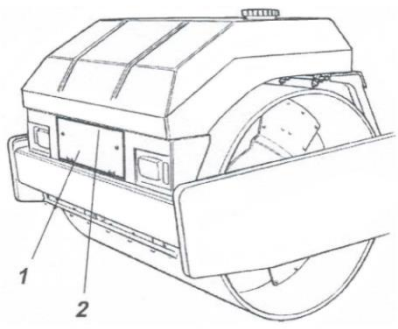


Fig. Water tank
1. Pumping system:
2. Drain plug

Water tank – Clean

Remove the drain plug (2) and wash the water tank, slightly adding detergent special for plastic surfaces.

Reassemble the drain plug (2), fill the tank with water and check for any leaks.

The water tank is made of plastic and it is recyclable.

Atlas Copco Construction Technique Brasil Ltda.
CNPJ: 06.314.429/0001-30
Rua Georg Schaeffler, 430, Sorocaba/SP, Brazil
Phone: +55 (15) 3412-7500 Fax.: +55 (15) 3412-7522
www.atlascopco.com