

Instruction manual

Operating & Maintenance

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**Vibratory roller
CC1300C**

**Engine
Kubota D1803-CR-TE4B (T4f)
Kubota D1803-CR-TE5B (Stage V)**

**Serial number
10000375xxA016845 - A024390
10000451xxA026087 - A030795**



Translation of original instruction

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Introduction

The machine

Dynapac CC1300C is a self-propelled vibratory combi roller in 4 metric tonnes class featuring a 1300 mm (51 in) wide drum and 1280 mm (50 in.) wide wheels. The machine is equipped with drive and brakes both front and rear and vibrations on front drum.

Intended use

The CC1300C is a small combi roller as are used for compacting of thin layers and soft asphalt compounds. The roller is mainly intended for smaller construction works, such as compacting asphalt on minor roads, sidewalks, cycle ways and garage driveways. The four rubber wheels on the CC1300C gives the asphalt a different surface structure, as sometimes aim at in comparison with a vibrating tandem roller.

Signal symbols and meaning



WARNING ! Indicates potential hazardous situation/procedure which, if not avoided, could result in death or serious injury.



CAUTION ! Indicates potential hazardous situation/procedure which, if not avoided, could result in minor or moderate injury, damage to the machine or property.

Safety information



It is recommended to at least train operators in handling and daily maintenance of the machine in accordance with the instruction manual. Passengers are not allowed on the machine, and you must sit in the seat when operating the machine.



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



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



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



Replace immediately the instruction manuals if lost, damaged or unreadable.




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

CALIFORNIA

Proposition 65

Decal and location of decal shown in section Machine description.

 **WARNING:** Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

For more information go to www.P65warnings.ca.gov/diesel.

General

This manual contains instructions for machine operation and maintenance.

The machine must be correctly maintained for maximal performance.

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

Do not spray with high-pressure cleaner directly onto gaskets and bearing spacings in steering hitch and drum, and electronics.

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

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



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

This manual contains instructions for periodic maintenance, where maintenance after every 10 and 50 hours of operation can be performed by the machine operator. Other maintenance intervals must be carried out by accredited (Dynapac) service personnel.



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

Specific maintenance and checks on diesel engines must be performed by engine supplier authorized personnel.

CE marking and Declaration of conformity

(Applies to machines marketed in EU/EEC)

This machine is CE marked. This shows that on delivery it complies with the basic health and safety directives applicable for the machine in accordance with machinery directive 2006/42/EC and that it also complies with other regulations and directives applicable for this machine.

A "Declaration of conformity" is supplied with this machine, which specifies the applicable regulations and directives with supplements, as well as the harmonized standards and other regulations that are applied and according to the regulations must be declared in writing.

Safety - General instructions

(Also read the safety manual)



- The operator must be familiar with the contents of the OPERATION section before starting the roller.
- Ensure that all instructions in the MAINTENANCE section are followed.
- Only the operator is allowed to be on the roller. Remain seated at all times when operating the roller.
- Never use the roller if it is in need of adjustment or repair.
- Only ascend and descend the roller when it is stationary. Use the intended footsteps, grips and rails. Always use the three-point grip (both feet and one hand, or one foot and both hands) when ascending or descending the machine. Never jump down from the machine.
- Dynapac always recommends mounted ROPS (Roll Over Protective Structure), or a ROPS-approved cab and seat belt usage.
- Drive slowly in sharp bends.
- Avoid driving across slopes. Drive straight up or straight down the slope.
- Never operate with the drum outside the edge, the substrate might not have full bearing strength or the edge is close to a slope. Avoid operating close to edges and ditches and the like as well as on poor ground conditions that jeopardizes the bearing strength and capacity to support the roller.
- Make sure that there are no obstacles in the direction of travel, on the ground, in front of or behind the roller, or overhead.
- Drive particularly carefully on uneven ground.
- Keep the roller clean. Clean any dirt or grease that accumulates on the footsteps or operator platform to avoid slipping risk. Keep all signs and decals clean and legible.
- Safety measures before refueling:
 - Stop the engine
 - Do not smoke.
 - No naked flames in the vicinity of the roller.
 - Earth the filling equipment nozzle by keeping it in contact to the tank opening to avoid sparks.
- Before repairs or service:
 - Chock the drums/wheels.
 - Lock the articulation if necessary.
 - Place blocks under overhanging equipment, such as strike-off blade, edge cutter/compactor and chip spreader.

- **Hearing protection is recommended if the noise level exceeds 80 dB(A). The noise level can vary depending on the equipment on the machine and the surface the machine is being used on.**
- **Modifications to the roller, including the use of any attachment/equipment, not approved by Dynapac that might compromise safety (including visibility) are not allowed. Any modifications are only to be made after written approval has been given by Dynapac.**
- **Avoid using the roller before the hydraulic fluid has reached its normal working temperature. Braking distances can be longer than normal when the fluid is cold.**
- **For your own protection always wear:**
 - working boots with steel toecaps
 - ear protectors
 - reflecting clothing/high visibility jacket**Also wear:**
 - helmet if no cab or FOPS, or if required by worksite management
 - working gloves if no cab and for work outside operator's platform.
- **If the machine seems to be responding abnormally during travel, stop and check it.**

Safety - when operating



Prevent persons from entering or remaining in the risk zone, i.e. a distance of at least 7 m (23 ft) in all directions from operating machines. The operator may allow a person to remain in the risk zone, however he/she must be attentive and operate the machine only when the person is fully visible or has given a clear indication of where he or she is.



Avoid driving across a slope. Drive straight up and down sloping ground.

Work driving



Dynapac always recommends mounted ROPS (Roll Over Protective Structure) and seat belt usage.

On machines with foldable ROPS, make sure that the ROPS is correctly mounted in the upright position during all operation.

Avoid operating close to edges and ditches and the like as well as on poor ground conditions that jeopardizes the bearing strength and capacity to support the roller. Pay attention to potential obstacles above the machine, such as overhead cables and the branches of trees etc.

Pay particular attention to the stability of the substrate when compacting close to edges and holes. Do not compact with a large overlap from the previous track in order to maintain roller stability. Consider other compaction methods such as remote-control or a walk-behind roller close to steep slopes or where the bearing strength of the substrate is unknown.

Driving near edges



Never operate with the drum outside the edge, the substrate might not have full bearing strength or the edge is close to a slope.



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

Special instructions

Standard lubricants and other recommended oils and fluids

Before leaving the factory, the systems and components are filled with the oils and fluids specified in the lubricant specification. These are suitable for ambient temperatures in the range -15°C to +40°C (5°F - 105°F).



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

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

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

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

Hydraulic system - mineral oil Shell Tellus S2V100 or similar.

Lower ambient temperature - Freeze risk

Make sure that the watering system is empty/drained of water (sprinkler, hoses, tank/s) or that anti-freeze has been added, to prevent the system freezing.

Temperatures

The temperature limits apply to standard versions of rollers.

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

high pressure cleaning

Do not spray 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 entering the vent hole in the filler cap. This could cause malfunctions, such as the blocking of filters.

Do not spray with high-pressure cleaner directly onto gaskets and bearing spacings in steering hitch and drum, and electronics.



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

Fire fighting

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

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

Roll Over Protective Structure (ROPS)



Never carry out any welding or drilling in the Roll Over Protective Structure (ROPS).



Never repair a damaged ROPS structure, it must be replaced with a new one.

Battery handling



When removing batteries, always disconnect the negative cable first.



When fitting batteries, always connect the positive cable first.



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



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

Jump starting

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



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

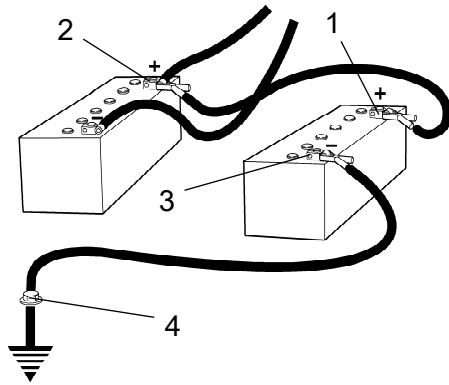


Fig. Jump starting

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

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

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

Technical specifications

Vibrations - Operator station (ISO 2631)

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

Measured whole-body vibrations are below the action value of 0.5 m/s^2 as specified in Directive 2002/44/EC. (Limit is 1.15 m/s^2)

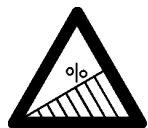
Measured hand/arm vibrations also were below the action level of 2.5 m/s^2 specified in the same directive. (Limit is 5 m/s^2)

Noise level

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

Guaranteed sound power level, L_{WA}	103	dB (A)
Sound pressure level at the operator's ear (platform), L_{pA}	80 ± 3	dB (A)

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



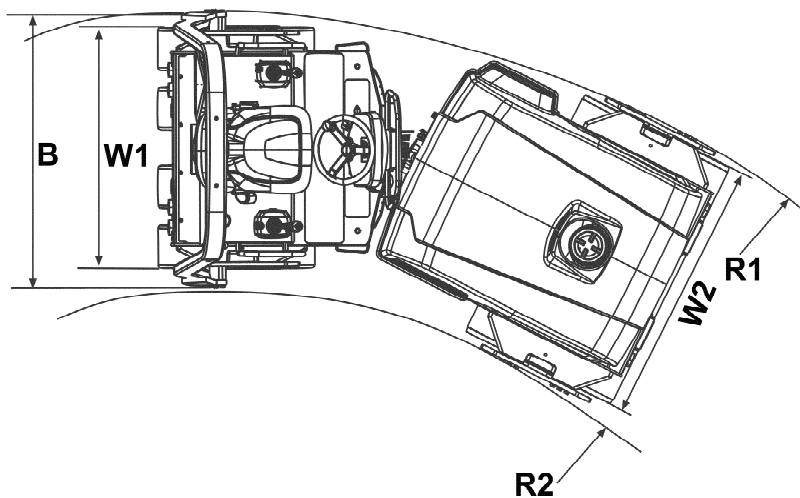
Max 20° or 36%

Slopes

The recommended max slope angle is for a machine that runs straight on hard, flat surface.

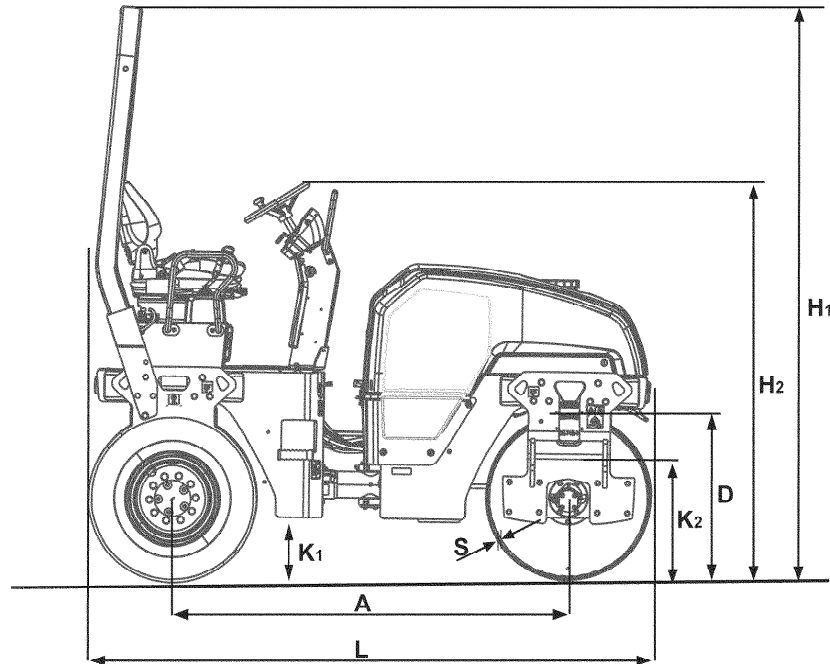
Unstable ground, vibration on, speed and steering the machine can all cause the machine to topple at smaller angles than specified here.

Dimensions, top view



	Dimensions	mm	in
B	Machine width	1450	57
B (Without ROPS)	Machine width	1400	55
R ₁	Turning radius, outer	4240	167
R ₂	Turning radius, inner	2940	116
W ₁	Wheel width	1280	50
W ₂	Drum width	1300	51

Dimensions, side view



	Dimensions	mm	in
A	Wheel base	1925	76
D	Diameter, drum	802	32
H ₁	Height, with ROPS	2750	108
H ₂	Height, without ROPS	1910	75
K ₁		260	10
K ₂		600	24
L	Length	2725	107
S	Thickness, drum shell	16	0.6

Weights and volumes

Weights

Weight CECE, Standard equipped roller	3750 kg	8,270 lbs
---------------------------------------	---------	-----------

Fluid volumes

Fuel tank	50 liter	52.9 qts
Emulsions tank	40 liter	42.2 qts
Water tank	200 liter	211.4 qts

Working capacity

Compaction data

Static linear load	14,8 kg/cm	82.9 psi
Amplitude	0,5 mm	0.019 in
Vibration frequency	52 Hz	3,120 vpm
Centrifugal force	33 kN	7,425 lb

Note: The frequency is measured at high revs. The amplitude is measured as the real value and not the nominal.

Propulsion

Speed range	0-10	km/h	0-6.2	mph
Climbing capacity (theoretical)	37	%		

General

Engine

Manufacturer/Model	Kubota D1803-CR-TE4B Kubota D1803-CR-TE5B (Stage V)		
Power (SAE J1995)	37.0 kW		49,6 hp
Engine speed	2700 rpm		

CO₂-emission

CO₂-emissions measured according to applicable test cycle in Regulation (EU) 2016/1628.

Manufacturer/Model		Test-cycle	CO ₂ -emission (g/kWh)
Kubota D1803-CR-T	Stage V	NRTC	798.1
Kubota D1803-CR-T	Stage V	NRSC	776.7

NRTC: Non-road transient test cycles.

NRSC: Non-road steady-state test cycles

Electrical system

Battery	12V 74Ah
Alternator	12V 60A
Fuses	See the Electrical system section - fuses

Tires

Tire dimensions	7.50-16	
Air pressure (kPa)	240 - 300	34.8 - 43.5 psi

Tightening torque

Tightening torque in Nm for 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	1080
M30	1130	1260	1580	1770	1900	2100

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

STRENGTH CLASS:

M - thread	10.9, Oiled	10.9, Dry	12.9, Oiled	12.9, Dry
M6	12,0	15,0	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	1010	960	1215
M30	1580	1990	1900	2360



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

ROPS - bolts

Bolt dimensions :	M16 (PN 4700902889)
Strength class :	10.9
Tightening torque :	192 Nm, torque class 2 (Dacromet treated)

Hydraulic system

Opening pressure (Absolute pressure)	MPa
Drive system	35,0
Supply system	2,2
Vibration system	20,0
Control systems	20,0
Brake release	2,0

Machine description

Diesel engine

The machine is equipped with a water-cooled, straight three cylinder, four-stroke, turbocharged diesel engine.

Electrical system

The machine has the following control units (ECU, Electronic Control Unit) and electronic units.

- Main ECU (for the machine)

Propulsion system/Transmission

The propulsion system is a hydrostatic system with a hydraulic pump supplying three motors connected in parallel.

The motors drive the drum and wheels.

The speed of the machine is proportional to the deflection/angle of the control lever from neutral.

Brake system

The brake system consists of a service brake, secondary brake and parking brake.

The service brake is hydrostatic and is activated by moving the control lever to neutral.

Secondary/Parking brake

The secondary and parking brake system consists of sprung multiple disc brakes in the motors. The brakes are released with hydraulic pressure and are operated with a switch on the instrument panel.

Steering system

The steering system is a hydrostatic system.

The control valve on the steering column distributes the flow to the control cylinder, which actuates the articulation.

The steering angle is proportional to the deflection of the steering wheel.

ROPS

ROPS is the abbreviation for "Roll Over Protective Structure".

If any part of the ROPS structure's protective construction displays plastic deformation or cracks, the ROPS structure must be replaced immediately.

Never perform unauthorized modifications on the ROPS structure without first having discussed the modification with Dynapac's production unit. Dynapac

determines whether the modification could result in the approval according to the ROPS standards becoming invalid.

Identification

Product identification number on the frame

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

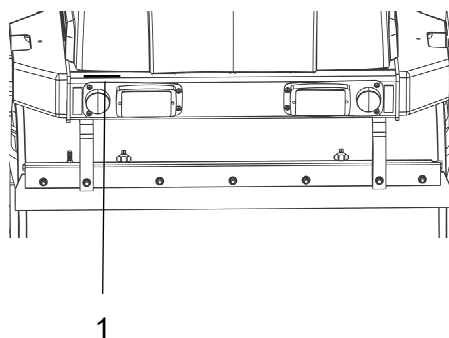


Fig. PIN Front frame
1. Serial number

100	00123	V	x	A	123456
A	B	C	F		

Explanation of 17PIN serial number

A= Manufacturer

B= Family/Model

C= Check letter

F= Serial number

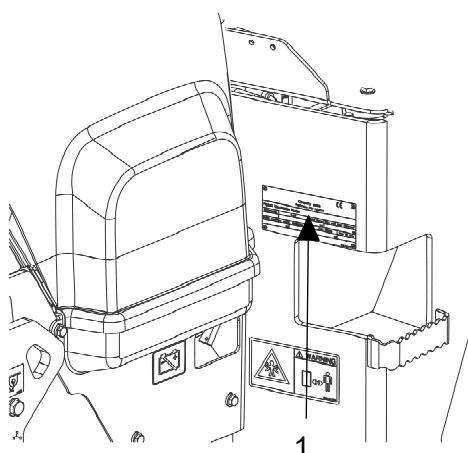





Fig. Operator platform
1. Machine plate

Machine plate

The machine type plate (1) is affixed on the left front edge of the operator's platform.

The plate specifies the manufacturer's name and address, the type of machine, the PIN number (serial number), service weight, engine power and year of manufacture. If the machine is delivered outside of the EU, the plate may not have a CE marking and the year of manufacture.

		 Dynapac Compaction Equipment AB Box 504, SE-371 23 Karlskrona Sweden		
Product Identification Number			XXXXXXXXXXXXXXXXXX	
Designation	Type	Rated Power	Max axle load front / rear	
XXXXXXX	XXXXXXX	XXX kW	XXXX/XXXX	
Gross machinery mass		Operating mass	Max ballast	[Date of Mfg]
XXXXX kg		XXXXX kg	XXXXX kg	XXXX
Made in Sweden				

Please state the machine's PIN (serial number) when ordering parts.

Engine plates

The engine's type plate (1) is located on top of the cylinder head cover.

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

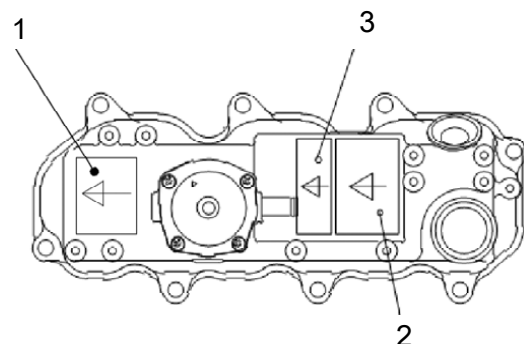
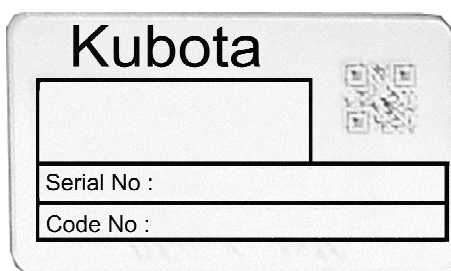



Fig. Engine
1. Type plate

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



TYPE	:	
FAMILY	:	
APPROVAL NUMBER:		
Kubota	KUBOTA Corporation	
1H327-1		

EMISSION CONTROL INFORMATION 	
THIS ENGINE MEETS 2008 Int. Tier4 EMISSION REGULATIONS FOR U. S. EPA AND CALIFORNIA NONROAD CI ENGINES.	
Kubota KUBOTA Corporation	
MODEL :	ENGINE DISP. :
FAMILY :	ECS :
POWER :	CATEGORY :
VALVE CLEARANCE (COLD) :	
INJ. TIMING :	
LOW SULFUR DIESEL OR ULTRA LOW SULFUR DIESEL FUEL ONLY	
CONTACT KUBOTA FOR FUEL SETTING.	1H247-2

Location - decals

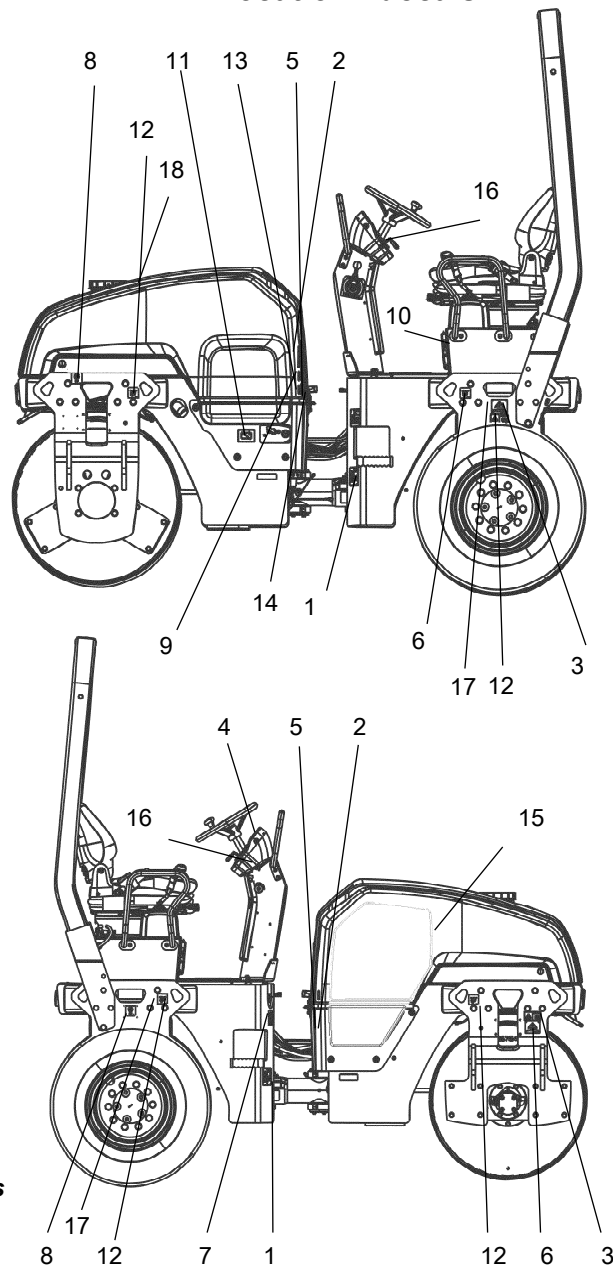


Fig. Location, decals and signs

1.	Warning, Crush zone	4700903422	8.	Lifting point	4700357587
2.	Warning, Rotating engine components	4700903423	9.	Hydraulic fluid Bio-Hydraulic oil PANOLIN	4700272372 4700792772
3.	Warning, Locking	4700908229	10.	Manual compartment	4700903425
4.	Warning, Instruction manual	4700903459	11.	Battery disconnecter	4700904835
5.	Warning, Hot surfaces	4700903424	12.	Fixing point	4700382751
6.	Lifting plate	4700904870	13.	Sound power level	4700791273
7.	Diesel fuel Fuel with low sulfur content	4811000345 4811000344	14.	Hydraulic fluid level	4700272373
			15.	Warning, Starting gas	4700791642
			16.	Starting instructions	4812124830
			17.	Tire pressure	4812116992
			18.	Water	4700991657

Location - decals, CALIFORNIA

Proposition 65

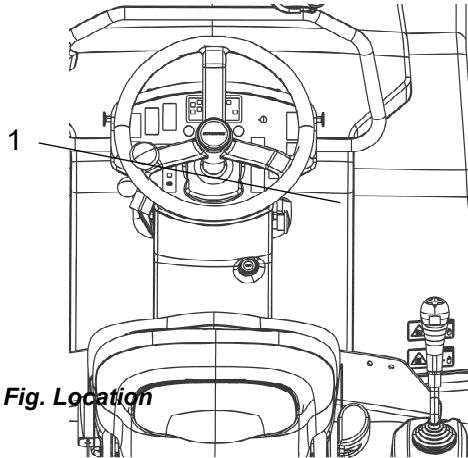


Fig. Location

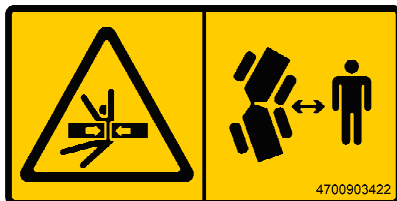
1. Warning, CALIFORNIA Proposition 65

4812129673

Safety decals

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

If a part is replaced and this part have a decal, make sure to also order the decal.



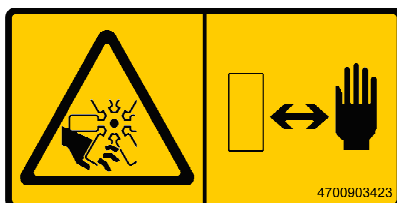
4700903422

4700903422

Warning - Crush zone, articulation/drum.

Maintain a safe distance from the crush zone.

(Two crush zones on machines fitted with pivotal steering)

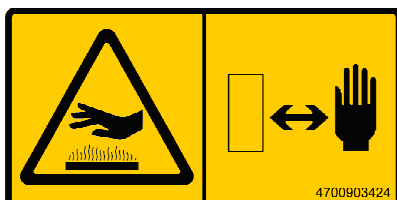


4700903423

4700903423

Warning - Rotating engine components.

Keep your hands at a safe distance.

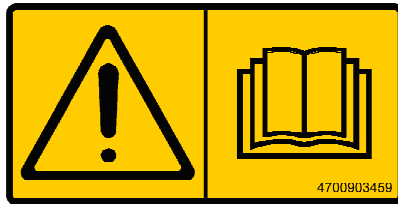


4700903424

4700903424

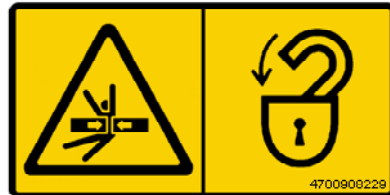
Warning - Hot surfaces in the engine compartment.

Keep your hands at a safe distance.



4700903459
Warning - Instruction manual

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



4700908229
Warning - Risk of crushing

The articulation must be locked when lifting.

Read the instruction manual.



4700791642
Warning - Starting gas

Starting gas is not to be used.

4812129673

Warning

CALIFORNIA - Proposition 65



WARNING

Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

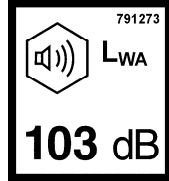
- Always start and operate the engine in a well-ventilated area.
- If in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

For more information go to
www.P65warnings.ca.gov/diesel

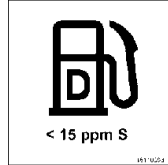
4812129673

Info decals

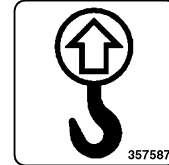
Noise power level



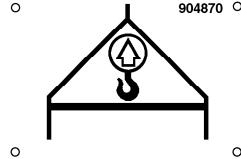
Diesel fuel



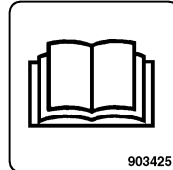
Lifting point



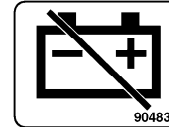
Hoisting plate



Handbook compartment



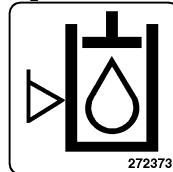
Master switch



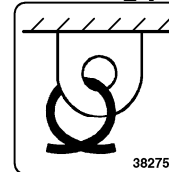
Hydraulic fluid



Hydraulic fluid level



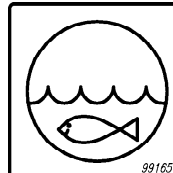
Securing point



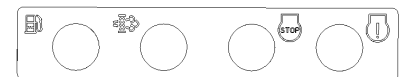
Biological hydraulic fluid,
PANOLIN



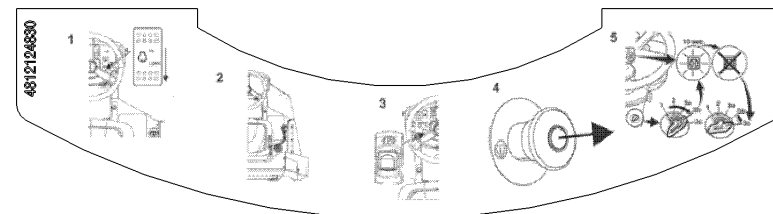
Water



Warning lamps



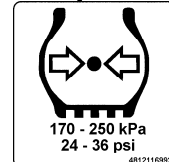
Starting instructions



Fuel with low sulfur content



Tire pressure



Instruments/Controls

Locations - Instruments and controls

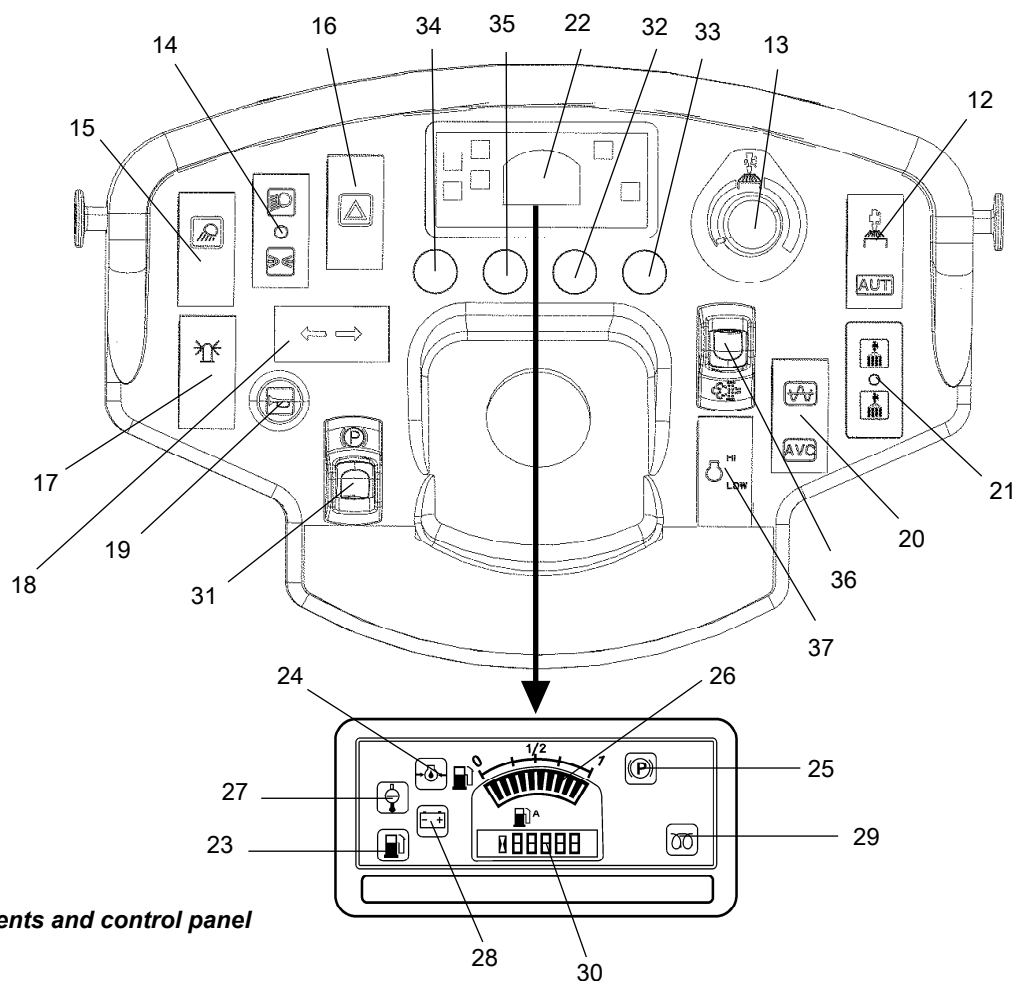


Fig. Instruments and control panel

- | | | | |
|-------|----------------------------------|-----|--|
| 12. | Manual/automatic sprinkler, drum | 23. | Low fuel level |
| 13. * | Sprinkler timer | 24. | Oil pressure, engine |
| 14. * | Driving lights | 25. | Parking brake lamp |
| 15. | Working lights | 26. | Fuel level |
| 16. * | Hazard warning lights | 27. | Water temperature, engine |
| 17. * | Hazard beacon | 28. | Battery/charging |
| 18. * | Direction indicators | 29. | Glow plug |
| 19. | Horn | 30. | Hourmeter |
| 20. | Vibration manual/automatic | 31. | Parking brake On/Off |
| 21. | Sprinkler system, wheels | 32. | Motor diagnostics control light serious fault |
| 22. | Control panel | 33. | Motor diagnostics control light less serious fault |
| | | 34. | Control lamp, water separator |
| | | 35. | Control lamp, parked regeneration |
| | | 36. | Switch, parked regeneration |
| | | 37. | Speed selector, LO/HI |
- * = Option

Locations - Control panel and controls

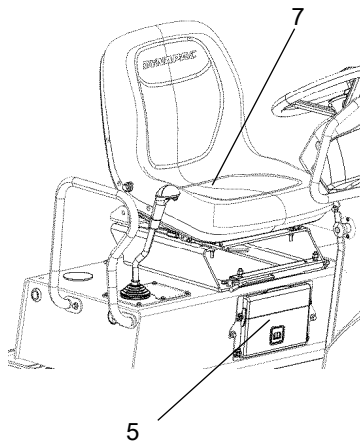


Fig. Operator position

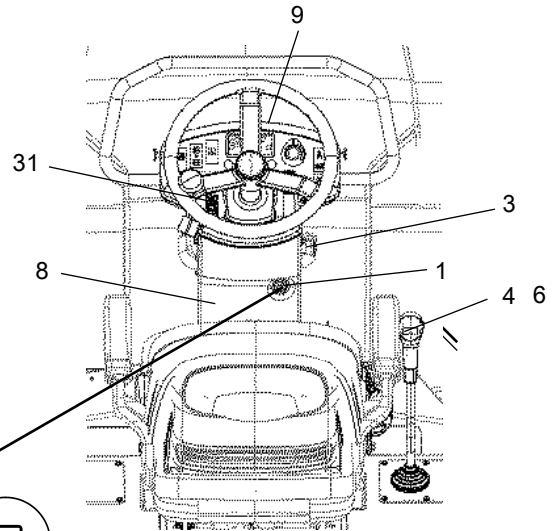
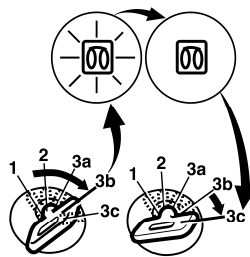




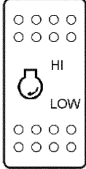






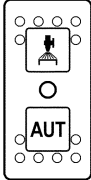


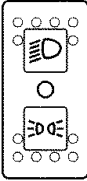


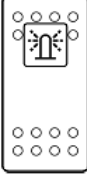
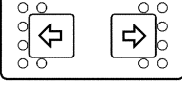

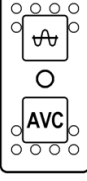
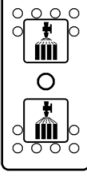



Fig. Operator's station






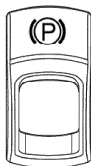




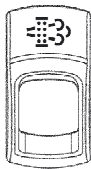


- 1 Starter switch
- 3 Emergency stop
- 4 Vibration On/Off
- 5 Handbook compartment
- 6 Forward/reverse lever
- 7 Seat switch
- 8 Fuse box
- 9 Instrument cover

Function description

No	Designation	Symbol	Function
1.	Starter switch	   	<p>Positions 1-2: Shut off position, key can be removed.</p> <p>Position 3a: All instruments and electric controls are supplied with power.</p> <p>Position 3b: Glowing. Hold the starter switch in this position until the lamp goes out. The starter motor is activated in the next position.</p> <p>Position 3c: Starter motor activation.</p>
2.	Throttle control		<p>In forward position, the engine idles.</p> <p>In backward position, the engine runs at full speed.</p>
3.	Emergency stop		<p>When pressed, the emergency stop is activated. The engine switches off and the brakes are activated. Brace yourself for a sudden stop.</p>
4.	Vibration On/Off. Switch		<p>Press once and release to switch vibration on. Press again to switch the vibration off.</p>
5.	Handbook compartment		<p>Pull up and open the top of the compartment for access to handbooks.</p>
6.	Forward/Reverse lever		<p>The lever must be in neutral to start the diesel engine. The engine cannot be started if the forward/reverse lever is in any other position.</p> <p>The forward/reverse lever controls both the roller's driving direction and speed. The roller moves forward when the lever is moved forward, etc.</p> <p>The speed of the roller is regulated in proportion to how far the lever is moved from neutral. The further the lever is from neutral, the higher the speed.</p>
7.	Seat switch		<p>Remain seated at all times when operating the roller. If the operator stands up during operation, a buzzer sounds. After 4 seconds the brakes are activated and the engine stops.</p>
8.	Fuse box (on control column)		<p>Contains fuses for the electrical system. See under the header "Electrical system" for functional descriptions of the fuses.</p>
9.	Instrument cover		<p>Lowered over the instrument plate to protect the instruments from the weather and sabotage. Lockable</p>
12.	Sprinkler, switch		<p>Upper position = switching on of flow of water to drum.</p> <p>Intermediate position = Sprinkling switched off</p> <p>Lower position = switching on of water to drum via forward/reverse lever. The flow of water can be controlled by means of the sprinkler timer (13).</p>
13.	Sprinkler timer		<p>Variable adjustment of water flow from 0-100%. Only works when AUTO (12) is pressed in.</p>

No	Designation	Symbol	Function
14.	Driving lights, switch (Optional)		Upper position = Traffic lighting goes on Intermediate position = Lighting switched off Lower position = Parking light goes on
15.	Working lights, switch		When depressed, the working lights are on
16.	Hazard warning lights, switch (Optional)		When depressed, the hazard warning lights are on
17.	Hazard beacon, switch		When depressed, the hazard beacon is on
18.	Direction indicators, switch (Optional)		When depressed to the left, the left direction indicators are on etc. In the middle position the function is shut off.
19.	Horn, switch		Press to sound the horn.
20.	Vibration MAN/AUTO, switch		In the upper position, the vibration is switched on/off with the switch on the forward/reverse lever. The function is activated with the switch. In the intermediate position the vibration system is completely switched off. In the lower position the vibration is switched on or off automatically via the forward/reverse lever.
21.	Sprinkler system tires, switch		Regulates water flow to the tires. Upper position = Intermittent operation Lower position = Continuous operation
22.	Control panel		
23.	Warning lamp, low fuel level		The lamp goes on if the fuel level in the diesel tank is low.
24.	Warning lamp, oil pressure		This lamp goes on if the lubricating pressure in the engine is too low. Stop the engine immediately and locate the fault.

No	Designation	Symbol	Function
25.	Warning lamp, parking brake		The lamp lights when the parking brake is activated.
26.	Fuel level		Shows the fuel level in the diesel tank.
27.	Warning lamp, water temperature		The light comes on if the water temperature is too high.
28.	Warning lamp, battery charging		If the lamp lights while the engine is running the alternator is not charging. Stop the engine and locate the fault.
29.	Warning lamp, glow plug		The lamp must go out before the starter switch is moved to position 3c for activation of the starter motor.
30.	Hourmeter		Shows the number of hours the engine has run.
31.	Parking brake On/Off, switch		To activate the brakes, press the top of the switch to change the position of the lever. To disengage the brakes, press down the red part at the same time as the switch, and change the position of the lever. NOTE: When starting the machine, the parking brake must be activated. Always use the parking brake when the machine is stationary on a sloping surface.
32.	Motor diagnostics		Control lamp red. Serious fault: Turn the motor off at once! Attend to before restarting.
33.	Motor diagnostics		Control lamp yellow. Less serious fault: Attend to as soon as possible.
34.	Water separator		Yellow control lamp. If the lamp is lit, this indicates that there is water in the tank. Stop the roller and drain the fuel filter. (see chapter "Maintenance procedures 50h")
35.	Regeneration parked		Yellow control lamp. If the lamp flashes, start a parked regeneration.
36.	Regeneration parked, Switch		Parked regeneration is activated in pressed mode. If the indicator in the switch flashes, start a parked regeneration.

Electrical system

Fuses on machine equipped with Sauer-Danfoss ECU

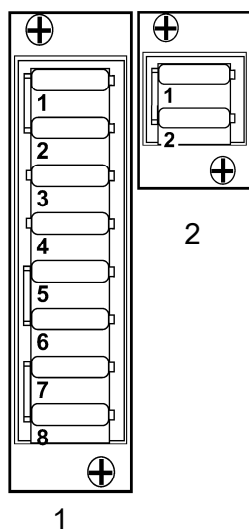


Fig. Fuse boxes
1. Upper
2. Lower

The figure shows the position of the fuses.

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

Fuse box, Upper		Fuse box, Lower	
F1.1	ECU, interlock, vibration, instrument, buzzer, sprinkler, regeneration control	20A	F2.1 Spare
F1.2	Rotating beacons, horn	10A	F2.2 Flow divider, Sprinkler combi wheel
F1.3	Start	5A	10A
F1.4	Alternator, pre-heater relay	5A	
F1.5	EGR valve	10A	
F1.6	Direction indicators, Power socket 12V	10A	
F1.7	Traffic lights, Working lights	15A	
F1.8	Brake lights, Traffic lights, Working lights	15A	

Fuses on machine equipped with HY-TTC 71 ECU

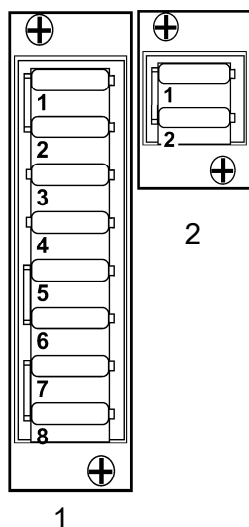


Fig. Fuse boxes
 1. Upper
 2. Lower

The figure shows the position of the fuses.

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

Fuse box, Upper

F1.1 ECU, Interlock, Vibration, Instrument, Sprinkler, Regeneration control	20A
F1.2 ECU, Alternator, Horn	10A
F1.3 EGR valve	5A
F1.4 Rotating beacon, Sprinkler	5A
F1.5 ECU memory	5A
F1.6 Direction indicators, 12V outlet	10A
F1.7 Traffic light, Working lights	15A
8. Brake light, Traffic light, Working lights	15A

Fuse box, Lower

F2.1 Spare	
F2.2 Flow divider, Sprinkler combi wheel	10A

Fuses at battery master disconnect switch

The figure shows the position of the fuses.

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

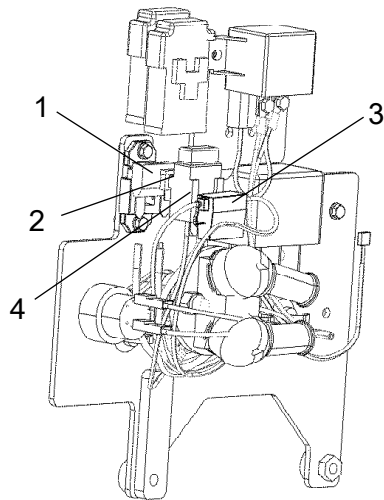


Fig. Battery disconnect

1.	F3	Ignition key	30A
2.	F4	Starter relay	50A
3.	F8	Fuel pump, engine ECM	20A
4.	F20	Preheating	80A

Relays

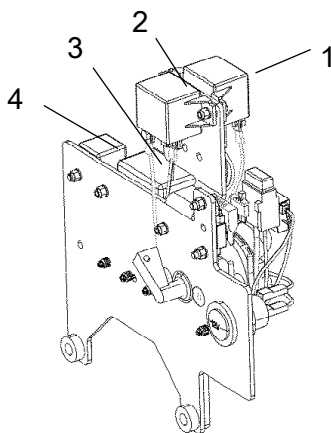


Fig. Relays

1.	K1	Starter relay
3.	K2	Main relay, engine ECM
2.	K5	Relay, Glow plug
4.	Kx	Relay, Glow plug lamp

Operation

Before starting

Master switch - Switching on

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

The battery disconnecter is on the left side in the engine compartment.
Turn the key (1) to switched on position. The roller is now supplied with power.

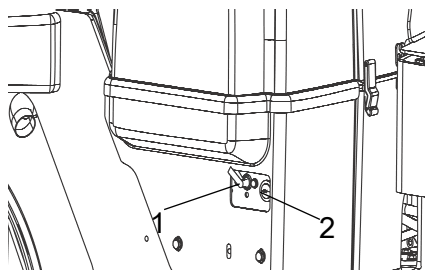


Fig. Engine compartment
1. Battery disconnecter
2. Power socket, 12 V



The engine hood must be unlocked during operation, unless the battery disconnecter is freely accessible from the outside, so that the battery voltage can be quickly disconnected if necessary.

Driver seat (Std) - Adjustment

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

The seat can be adjusted as follows.

- Length adjustment (1)

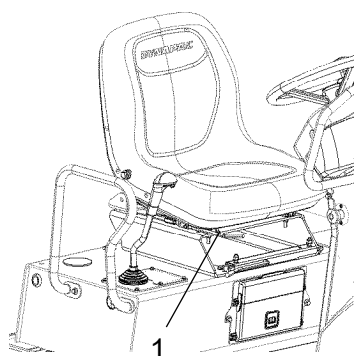


Fig. Driver seat
1. Handle - Length adjustment



Always check that the seat is in locked position before starting.

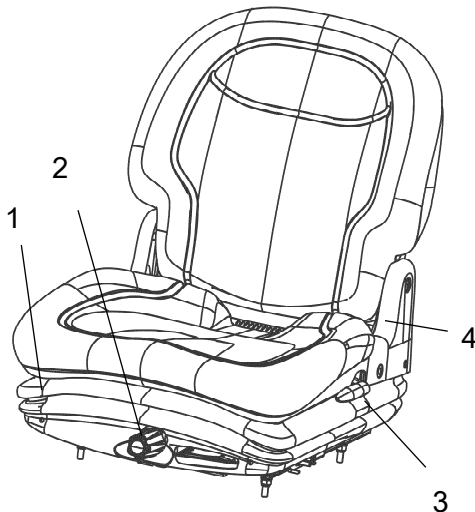


Fig. Driver seat
 1. Lock lever - Length adjustment
 2. Weight adjustment
 3. Back support angle
 4. Seat belt

Driver seat (Option) - Adjustment

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

The seat can be adjusted as follows.

- Length adjustment (1)
- Weight adjustment (2)
- Back support angle (3)



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



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

Instruments and lamps - Checking



Make sure that the emergency stop is pulled out and the parking brake is activated. When the forward/reverse lever is in neutral, the automatic brake function is engaged.

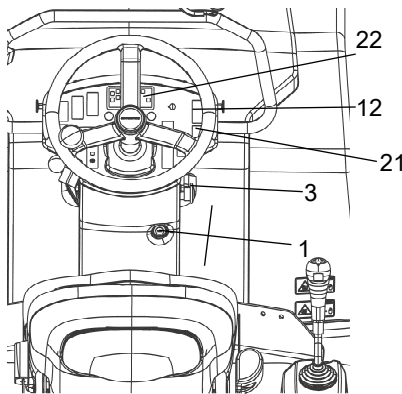


Figure. Instrument panel
 1. Starter switch
 3. Emergency stop
 12. Switch, watering
 21. Switch, watering wheels
 22. Warning panel

Turn the switch (1) to position 3a.

Check that the warning lamps in the warning panel (22) come on.

Set the sprinkler switches (12) and (21) to the operating position and check that the system is functioning.

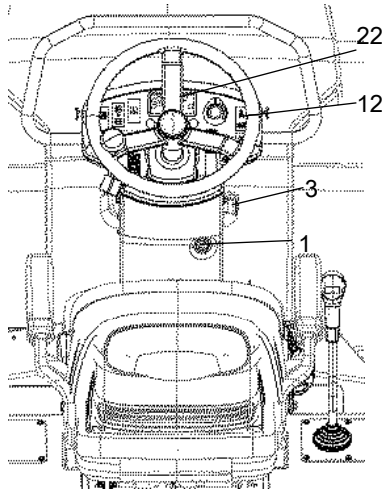
Instruments and lamps - Checking

Figure. Instrument panel
1. Starter switch
3. Emergency stop
12. Switch, watering
22. Warning panel



Make sure that the emergency stop is pulled out and the parking brake is activated. When the forward/reverse lever is in neutral, the automatic brake function is engaged.

Turn the switch (1) to position 3a.

Check that the warning lamps in the warning panel (22) come on.

Set the sprinkler switch (12) to the operating position and check that the system is functioning.

Interlock

The roller is equipped with Interlock.

Roller equipped with **Sauer-Danfoss** ECU:

The diesel engine will switch off after 4 seconds if the operator gets off the seat when going forwards/backwards.

If the lever is in neutral when the operator gets off the seat a buzzer will go on until the parking brake button is activated.

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

The diesel engine will switch off immediately if for any reason the forward/reverse lever is moved out of neutral when the operator is not sitting down and the parking brake button has not been activated.

Roller equipped with **HY-TTC 71** ECU:

If the operator is leaving the seat with the diesel engine running, travel lever in neutral position and parking brake disengaged, the buzzer will set and the diesel engine will shut down after four seconds.

During these four seconds the diesel engine shut down can be rescinded either by engaging the parking brake or to be seated.

If the operator is not seated and move the travel lever out of neutral position, the buzzer will set and the diesel engine will shut down instantly.



Sit down for all operations!

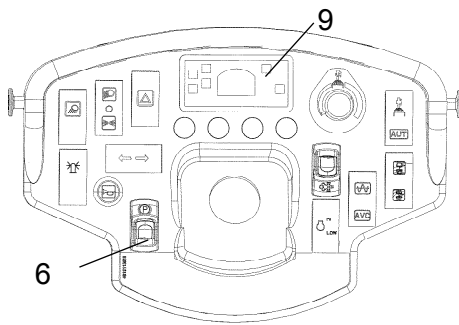


Fig. Instrument panel
6. Parking brake
9. Brake warning lamp

Parking brake - Check



Make sure that the parking brake (6) is activated. The roller can start to roll when the engine is started on sloping ground, if the parking brake is not applied.

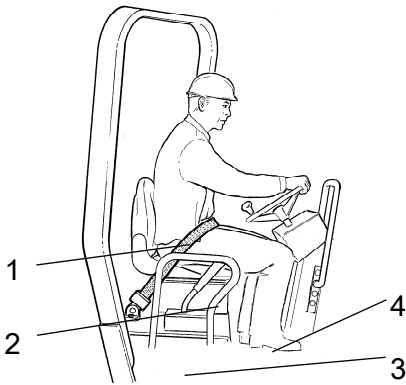


Fig. Driver seat
1. Seat belt
2. Safety rails
3. Rubber element
4. Anti-slip

Operator position

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



Always replace the seat belt (1) if it shows signs of wear or has been subjected to excessive strain.



Check that the platform's rubber elements (3) are in good condition. If the elements are worn this will have a negative effect on comfort.



Ensure that the anti-slip (4) on the platform is in good condition. Replace where anti-slip friction is poor.

Starting

Starting the engine

Make sure that the emergency stop (3) is pulled out and the parking brake (31) is activated.

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

Set the vibration switch (20) for manual/automatic vibration in (position O).

With high outer temperature, set the speed selector (37) to idling: Low.

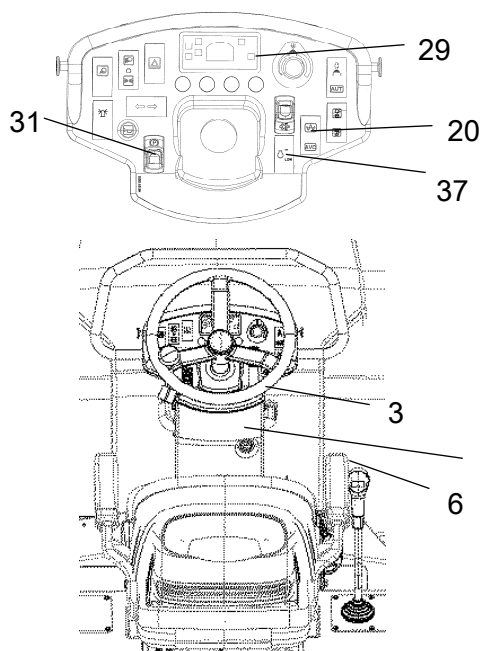
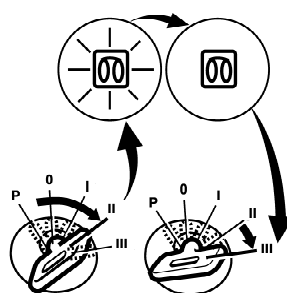


Fig. Control panel
 1. Starter switch
 3. Emergency stop
 6. Forward/reverse lever
 20. Vibration switch man/auto
 29. Glow lamp
 31. Parking brake
 37. Speed selector



Preheating: Turn the ignition key to position II.

When the glow lamp (29) goes out: Turn the ignition key to the right to position III.

As soon as the engine has started, release the ignition key.



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

Warm up the engine at idling speed for a few minutes, although longer if ambient temperature is below +10°C (50°F).

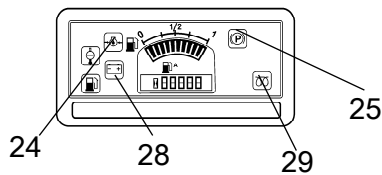


Fig. Control panel
 24. Oil pressure lamp
 25. Brake lamp
 28. Charging lamp
 29. Glow lamp

Check while warming the engine that the warning lamps for the oil pressure (24) and charging (28) go out.

The parking brake lamp (25) will remain on for as long as the parking brake switch is activated.



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



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

Driving

Operating the roller



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



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

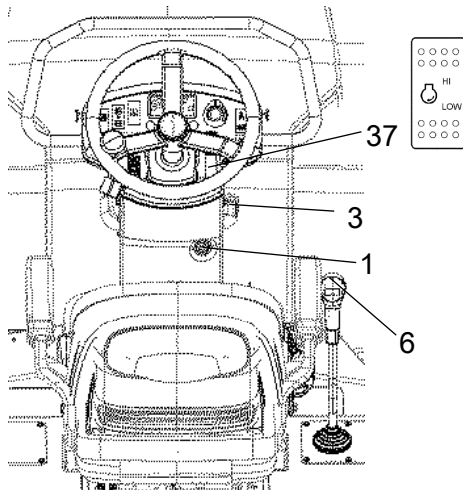


Fig. Instrument panel
 1. Starter switch
 3. Emergency stop
 6. Forward/reverse lever
 37. Speed selector

Release the parking brake and check that the parking brake lamp goes off.

Set the speed selector (37) to High.

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

When compacting asphalt, remember to turn on the sprinkler system (12).

Interlock/Emergency stop/Parking brake - Check



The interlock, emergency stop and parking brake must be checked daily before operating. A function check of the interlock and emergency stop requires a restart.



The interlock function is checked by the operator standing up from the seat when the roller is moving very slowly forwards/backwards. (Check in both directions). Hold the steering wheel firmly and brace yourself for a sudden stop. A buzzer goes on and after 4 seconds the engine switches off and the brakes are activated.



Check the function of the emergency stop by pressing the emergency stop when the roller is moving slowly forwards/backwards. (Check in both directions). Hold the steering wheel firmly and brace yourself for a sudden stop. The engine switches off and the brakes are activated.



Check the function of the parking brake by activating the parking brake when the roller is moving very slowly forwards/backwards. (Check in both directions). Hold the steering wheel and brace yourself for a sudden stop when the brakes are activated. The engine does not switch off.

Regeneration of DPF filter

The machine is equipped with a diesel particle filter (DPF filter).

The diesel engine does an automatic burnout of carbon when necessary and no indication is shown during normal operation.

If the machine is run frequently with partial load, starting and stopping, and at low temperatures etc., a **parked** regeneration may need to be done.

This is indicated when the lamp for **Parked Regen (regeneration) requires (Parked Regen Requested)**(35) starts to flash parallel with the switch (36).

The operator should park the machine at a suitable place and allow the engine to run.

The parking brake should be activated, the machine should be stationary, and the control lever should be in neutral.

The engine should be warm.

To start the parked regen, press the switch for **Parked**

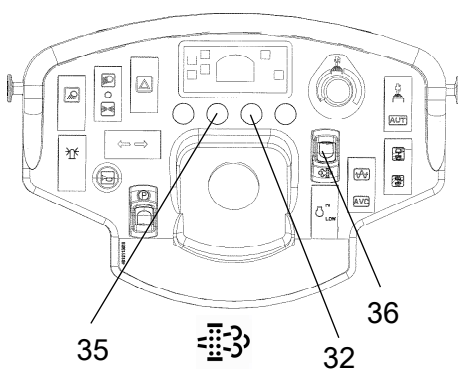


Fig. Control panel
 32. Control lamp, fatal error
 35. Control lamp, parked regen (regeneration)
 36. Switch for parked regen (regeneration) of the DPF filter

Regen (regeneration) requires (Parked Regen Requested) (36).

This is done by moving up the yellow lock and pressing the switch. The switch will spring back afterwards.

The speed of the engine increases and the lamp stops flashing but remains on **Parked regen (regeneration) in progress (Parked Regen Requested) 35**.

The regen (regeneration) of the DPF filter takes about 20 minutes, after which the engine returns to low speed and the lamp goes out.

When the regeneration is finished and if the machine is going to be used again, disable the parking brake.

The machine can now be used.

If it is not possible to do a parked regeneration, because the place is not suitable or because the working conditions will not permit this, do as follows:

- Drive the roller as soon as possible to a suitable place.
- Park the roller, enable the parking brake and carry out a parked regeneration.



If the yellow flashing indicators on parked regeneration (35, 36) are ignored, error codes will be displayed and the engine power will be reduced. If the indicators continue to be ignored the red control lamp (32) will go on. Switch off the engine immediately, enable the parking brake and contact a service technician at once.



***Ensure there is space for good ventilation around the machine.
Temperatures in the region of 350°C (662°F) can be generated at the exhaust pipe when performing regen (regeneration) of the DPF filter.***



The engine hood should be kept closed while the regen (regeneration) is in progress.

Vibration

Manual/Automatic vibration

Manual or automatic vibration activation/deactivation is selected using switch (20).

In the manual position, the operator must activate the vibration using the switch on underside of the forward/reverse lever grip.

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

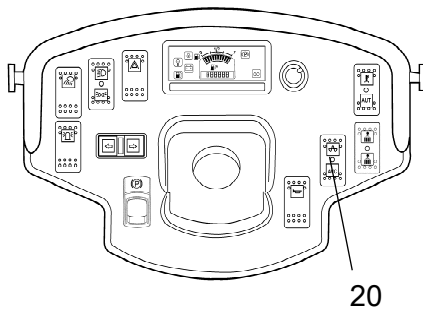


Fig. Instrument panel
20. Man/Auto switch

Braking

Normal braking

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

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



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



Never leave the operator platform without activating the parking brake (31).

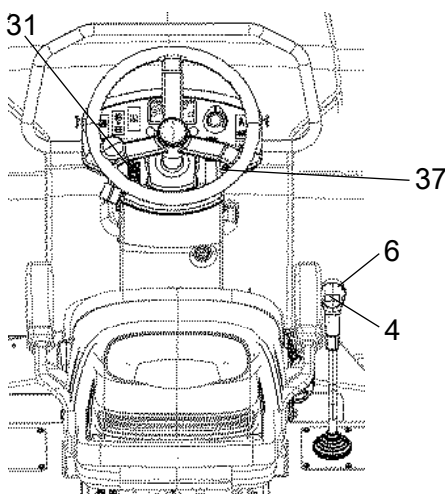


Fig. Control panel
4. Vibration On/Off
6. Forward/reverse lever
31. Parking brake
37. Speed selector

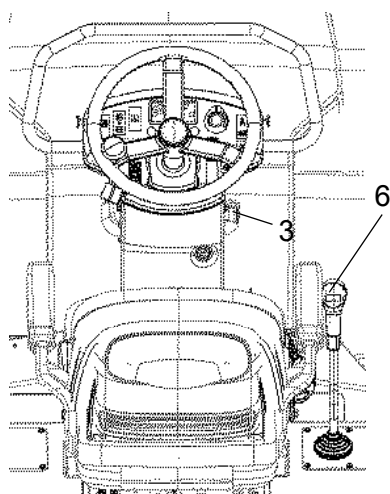


Fig. Control panel
3. Emergency stop
6. Forward/Reverse lever

Emergency braking

Braking is normally activated using the forward/reverse lever (6). The hydrostatic transmission brakes the roller when the lever is moved to the neutral position.

There is a brake in each drive motor that acts as an emergency brake during operation.



To brake in an emergency situation, push in the emergency stop (3), hold the steering wheel firmly and be prepared for a sudden stop. The diesel engine stops.

After emergency braking, reset the forward/reverse lever (6) to neutral position, pull out the emergency stop and activate the parking brake. Restart the engine.

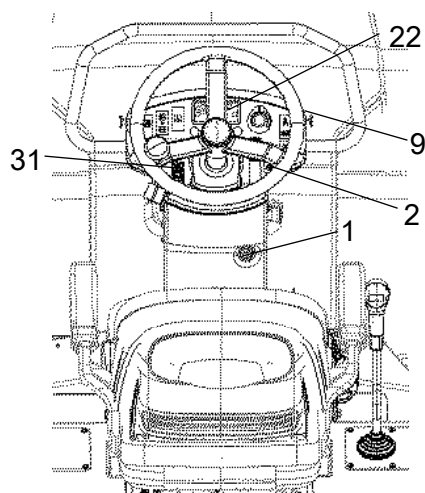


Figure. Instrument panel
1. Starter switch
2. Throttle control
9. Instrument cover
22. Panel for warning lamps
31. Parking brake

Switching off

Set the speed selector (37) to Low, and allow the engine to idle for a few minutes to cool down.

Activate the parking brake (31).

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

Turn the starter switch (1) to the left to the switched off position. At the end of the shift, fold over the instrument cover (9) and lock.

Parking

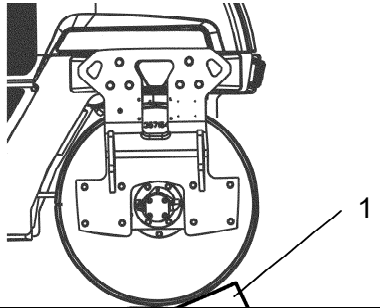


Fig. Drum part
1. Chocks

Chocking the wheels/drum



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



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



Remember that there is a risk of freezing during the winter. Empty the water tank. Fill antifreeze in the engine's cooling system. See also maintenance instructions.

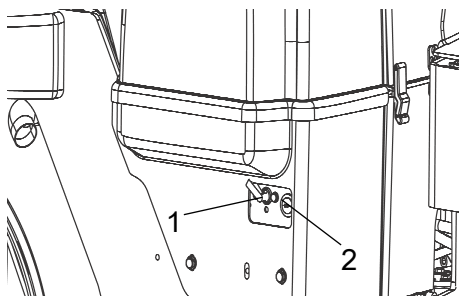


Fig. Battery bay
1. Battery disconnect
2. Power socket, 12 V

Battery disconnect

Before leaving the roller at the end of the shift, switch off the battery disconnect (1) and remove the key.

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

Long-term parking



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

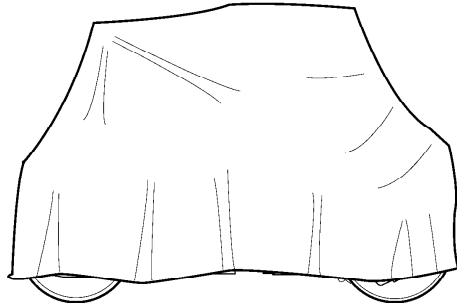


Fig. Roller weather protection

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

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

Wash the machine and touch up the paint finish to avoid rusting.

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

Engine

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

Battery

* Dismantle the battery/batteries from the machine, clean the outside and maintenance charge.

Air cleaner, exhaust pipe

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

Fuel tank

Fill the fuel tank completely full to prevent condensation.

Hydraulic reservoir

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

Water tank

Empty the water tank completely to avoid fouling.

Steering cylinder, hinges, etc.

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

Grease the steering cylinder piston with conservation grease.

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

Hoods, tarpaulin

* Lower the instrument cover over the instrument panel.

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

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

Miscellaneous

Lifting

Locking the articulation

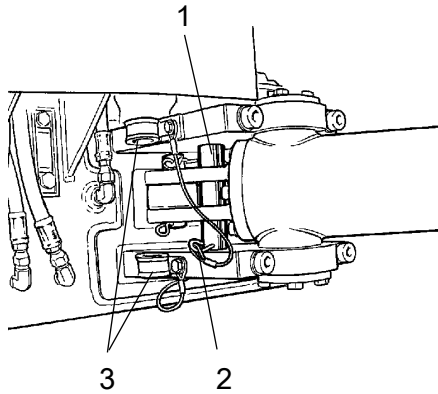


Fig. Left side of steering joint

- 1. Lock bar**
- 2. Lock pin**
- 3. Holder**



Before lifting the roller the steering joint must be locked to prevent it turning.

Turn the steering wheel to the straight ahead position.

Switch off the machine and activate the parking brake.

Pull down the galvanized lock bar (1) from its holder (3), and place it from underneath in the hole on the lower steering joint bracket. Press the bar through until the upper end is visible in the hole on the upper steering joint bracket.

Secure the bar with the lock pin (2).

Weight: refer to the hoisting plate on the roller

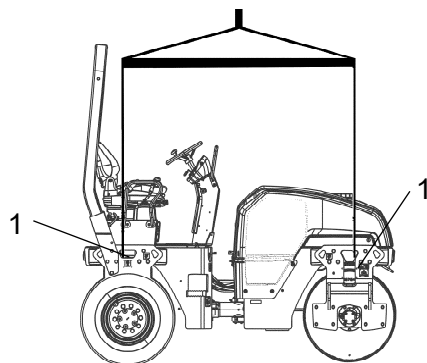


Fig. Lifting the roller

- 1. Lifting plate**



The weight of the machine is shown on the lifting plate (1). See also 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.

Unlocking the articulation



Remember to refit the lock bar (1) in its holder after operation.

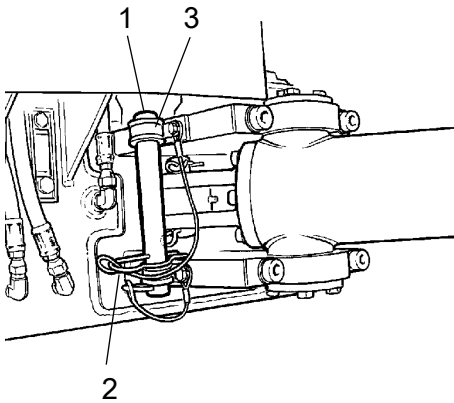


Fig. Left side of steering joint

- 1. Lock bar
- 2. Lock pin
- 3. Holder

Towing

The roller can be moved up to 300 meters (1,000 ft) using the instructions below.

Short distance towing with switched off engine



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

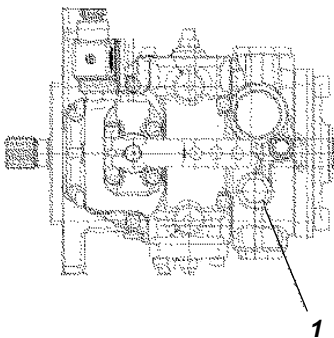


Fig. Propulsion pump

- 1. By-pass screw

Open the hood and make sure that the propulsion pump is accessible.

On the pump there is a by-pass screw (1), which should be unscrewed counterclockwise (maximum two turns) to set the system (ports A and B) in by-pass mode.

This function enables a machine to be moved without the drive shaft on the propulsion pump rotating.

When resetting the by-pass screw (1) tightened clockwise (maximum two turns).

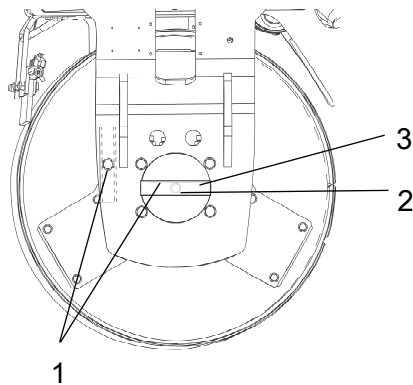


Fig. Left side of drum
1. Brake tool
2. Fastening screw
3. Disengagement nut

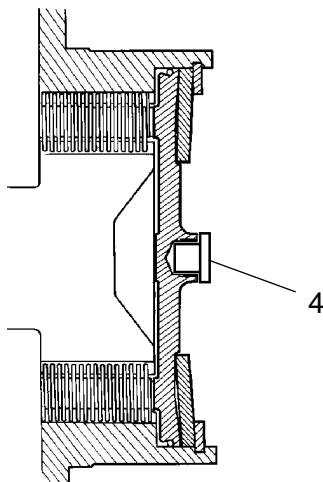


Fig. Brake housing
4. Center plug

Release the brakes



Activate the parking brake, and stop the engine. Block the drum with a chock to prevent movement; the roller can start rolling when the brakes are released.



The disc brake in each drive motor must be disengaged mechanically, according to below following instructions, before the roller can be towed.

Remove the center plug (4) using a screwdriver.

Screw off the brake tool (1) from its threaded fixing hole. Then fix the brake tool (1) in the center hole by tightening the screw (2) until it bottoms in the hole. Tighten the nut (3) against the brake tool until it stops, indicating that the brakes is now disengaged.

Disengaging the brakes

Screw out the nut again after towing. This returns the brakes to their normal mode. Screw off the brake tool and fit it back into its fixing holes. Refit the center plug (4) to counteract the information of rust inside the threaded hole.

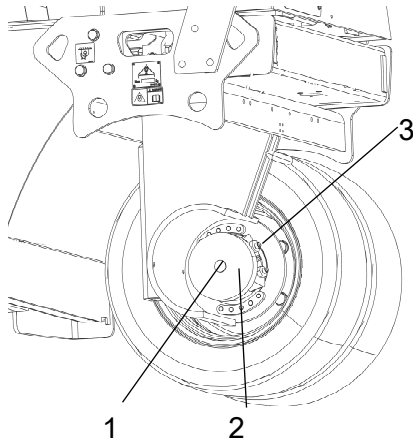


Fig. Left wheel side
 1. Release screw
 2. Brake housing
 3. Drive motor

Releasing the brake, wheel motors (Optional)



Activate the parking brake, and stop the engine. Block the drum with a chock to prevent movement; the roller can start rolling when the brakes are released.



The disc brakes in each drive motor must be released mechanically as shown below before the towing the roller.

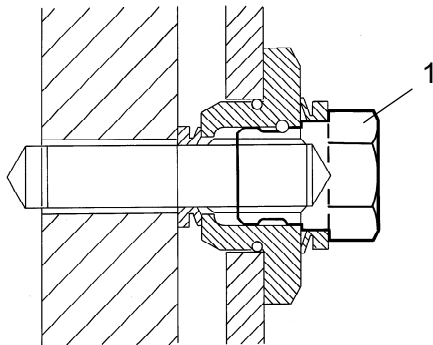


Fig. Brake housing
 1. Release screw

Use a key with an 18 mm socket.

Turn the release screw (1) a 1 1/2 turn clockwise to release the brake.

Release the brakes on both drums.

Turn the same screws a 1 1/2 turn anticlockwise to activate the brakes again after towing.

Towing the roller

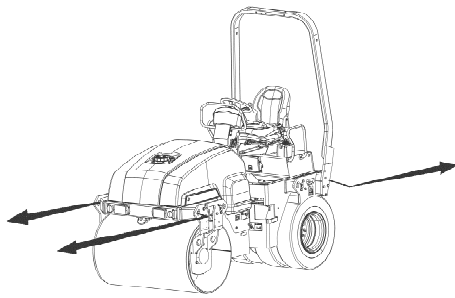


Fig. Towing



The roller must be counter-braked during towing/recovery. Always use a towbar. There is no braking capacity on the roller now.



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

When towing/retrieving a machine, the towing device must be connected to both lifting holes. The pulling force shall act longitudinally on the machine as shown in the figure. Maximum total pulling force 130 kN (29225 lbf).



Reverse the towing preparations.

Transport

Tie-down and secure the machine according to the Cargo Securing Certificate for the specific machine if this is available and applicable.

If not, tie down and secure the machine according to the cargo securing rules that are valid for the country where the transport takes place.



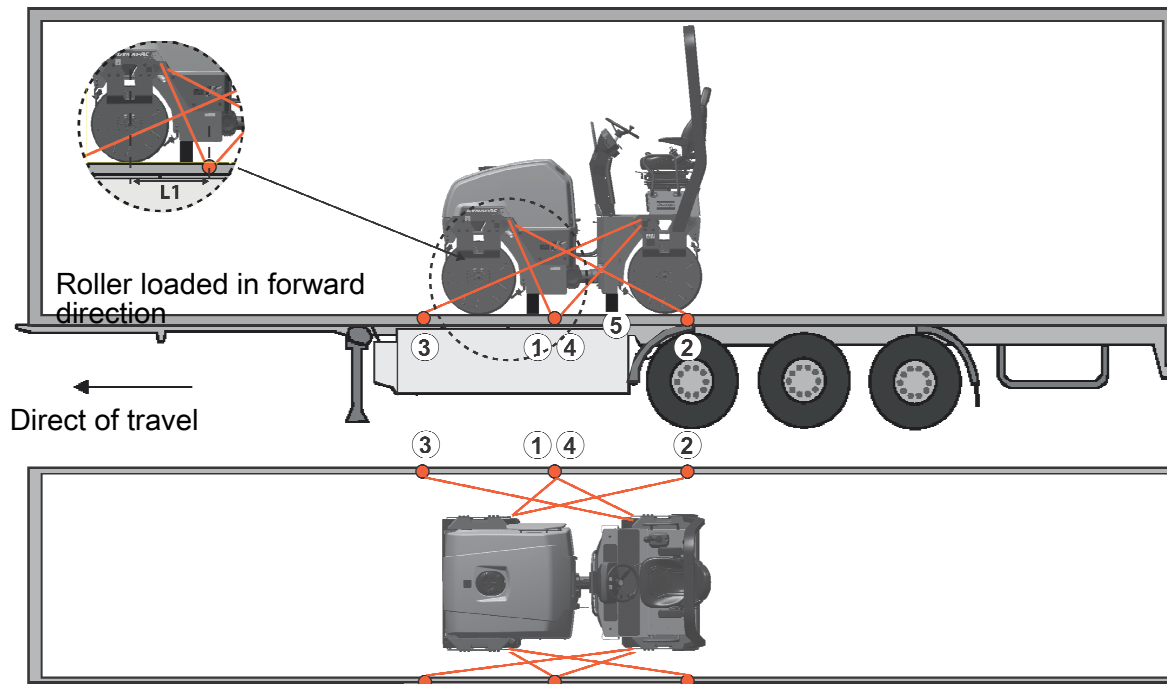
Never lash over the machine's articulated joint, nor over the machine's operator platform.

Before securing the machine ensure that :

- the parking brake is applied and in good working condition
- the articulated joint is in closed position
- the machine is centered laterally on the platform
- the lashings are in good condition and fulfills the corresponding rules for transport securing.

Securing CC1300C for loading

Securing the CC1300C vibratory roller from Dynapac for transport.



- 1 - 2 = double lashings, i.e. one lashing with two parts secured to two different lashing mounts,
- 3 - 4 symmetrically located on the right and left sides.
- 5 = rubber

The lashings' permitted distance interval in meters		
(1 - 4: Double lashings, LC at least 1.7 tonnes (1700 daN), S _{TF} 300 kg (300daN))		
Double L ₁ - L ₂	Double L ₃ - L ₄	
0,6 - 3,0	0,1 - 3,0	

The distance L_1 above is between points **D** and **E**. **D** is the projected point directly at right angles laterally in relation to the edge of the platform from the lashing mount **C** on the roller. **E** is the lashing mount at the edge of the platform. $L_2 - L_3$ have a corresponding relationship.

Load carrier

- When loaded, the vibratory roller is centered laterally on the platform (± 5 cm).
- The parking brake is applied and in good working condition, and the articulated joint lock is closed.
- The drum is placed on a rubber liner, so that the static friction between the surfaces is at least 0.6.
- The contact surfaces must be clean, wet or dry, and free from frost, ice and snow.
- The lashing mounts on the load carrier have LC/MSL at least 2 tonnes.

Lashings

- The lashings comprise a lashing strap or chain with a permitted load (LC/MSL) of at least 1.7 tonnes (1,700 daN) and a pre-tension S_{TF} of at least 300 kg (300 daN). The lashings are re-tightened as required.
- Each of lashings 1-3 is either a double or two single lashings. A double lashing runs in a sling through a lashing point or around a machine part and down into two different mounts on the platform.
- Lashings in the same direction are placed in different lashing mounts on the trailer. Lashings that are pulled in opposite directions may be placed in the same lashing mount, however.
- The lashings are as short as possible.
- The lashing hooks must not lose grip if the lashings become slack.
- The lashings are protected against sharp edges and corners.
- The lashings are located symmetrically in pairs on the right and left sides.

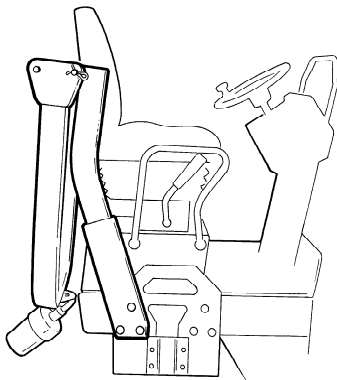


Fig. Retractable ROPS

Retractable ROPS (Optional)

The machine can be equipped with retractable ROPS.



Risk of crush injury when raising and lowering ROPS.



If the roller is equipped with a retractable ROPS, the machine must only be operated when it is lifted up and locked.

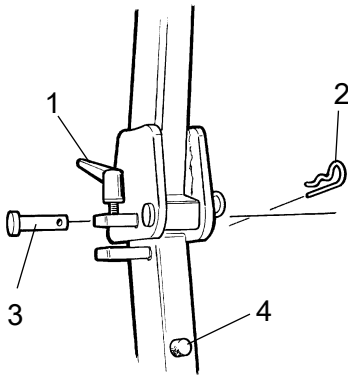


Fig. ROPS locking device
1. Tensioning screw
2. Pin
3. Stud
4. Rubber buffer

To retract the ROPS, release the tensioning screw (1), and pull out the pin (2) and stud (3). Do the same on both sides. Lower the ROPS backwards if there is space.



Remember to dismantle the rotating warning light before lowering the ROPS.



After lowering the ROPS, replace the pin and stud.

To lift the ROPS proceed in the reserve order.



Always make sure the ROPS is locked in raised position before operation.

Grease the tensioning screw (1) and stud (3) periodically.

Operating instructions - Summary

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



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



11. **Check the brakes, drive slowly. Remember that the braking distance will be longer if the roller is cold.**
12. Use vibration only when the roller is in motion.
13. Check that the drum and wheels are thoroughly watered when watering is required.



14. **IN AN EMERGENCY:**
 - **Press the EMERGENCY STOP BUTTON**
 - **Hold the steering wheel firmly.**
 - **Brace yourself for a sudden stop. The engine stops.**
15. Parking: - Stop the engine, chock the drum and wheels.
16. When lifting: - Refer to the relevant section in the Instruction Manual.
17. When towing: - Refer to the relevant section in the Instruction Manual.
18. When transporting: - Refer to the relevant section in the Instruction Manual.
19. When recovering: - Refer to the relevant section in the Instruction Manual.

Preventive maintenance

Complete maintenance is necessary for the machine to function 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.

Acceptance and delivery inspection

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

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

Any transport damage must be reported immediately to the transport company, as this is not covered by the product warranty.


Warranty

The warranty is only valid if the stipulated delivery inspection and the separate service inspection 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 fluids other than those specified in the manual, or if any other adjustments have been made without the requisite authorization.

CALIFORNIA**Proposition 65**

Decal and location of decal shown in section
Machine description.

 **WARNING:** Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

For more information go to www.P65warnings.ca.gov/diesel.








Maintenance - Lubricants and symbols



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

Fluid volumes













Drum, oil	6 liters	6.3 qts
Hydraulic tank	29 liters	30.7 qts
Fluid in the hydraulic system	11 liters	11.6 qts
Diesel engine		
- lubricating oil (incl. change of filters)	7.25 liters	7 qts
Coolant	8 liters	8.5 qts

 ENGINE OIL	Air temperature -15°C - +50°C (5°F-122°F)	Dynapac Engine Oil 200	P/N 4812161855 (5 liter) P/N 4812161856 (20 liter) P/N 4812161857 (209 liter)
 HYDRAULIC FLUID	Air temperature -15°C - +50°C (5°F-104°F)	Dynapac Hydraulic 300	P/N 4812161868 (20 liter) P/N 4812161869 (209 liter)
 BIOLOGICAL HYDRAULIC FLUID, Bio-Hydr. PANOLIN	Air temperature over +50°C (104°F) When it leaves the factory, the machine may be filled with biologically degradable fluid. The same type of fluid must be used when changing or topping up.	Shell Tellus S2 V100 PANOLIN HLP Synth 46 (www.panolin.com)	
 DRUM OIL	Air temp. -15°C - +40°C (5°F-104°F)	Dynapac Gear Oil 300	P/N 4812161887 (5 liter) P/N 4812161888 (20 liter) P/N 4812161889 (209 liter)
	Air temperature 0°C - over +40°C (32°F- over 104°F)	Shell Spirax AX 85W/140, API GL-5	
 GREASE			Dynapac Roller Grease P/N 4812030096 (0.4 kg)
 FUEL	See engine manual.	-	-
 COOLANT	Anti-freeze protection down to about -37°C (-34.6°F)	Dynapac Coolant 100 (mixed 50/50 with water)	P/N 4812161854 (20 liter)



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

Maintenance symbols

	Engine, oil level		Air filter
	Engine, oil filter		Battery
	Hydraulic reservoir, level		Sprinkler
	Hydraulic fluid, filter		Sprinkler water
	Drum, oil level		Recycling
	Lubricating oil		Fuel filter

Maintenance - Maintenance schedule

Service and maintenance points

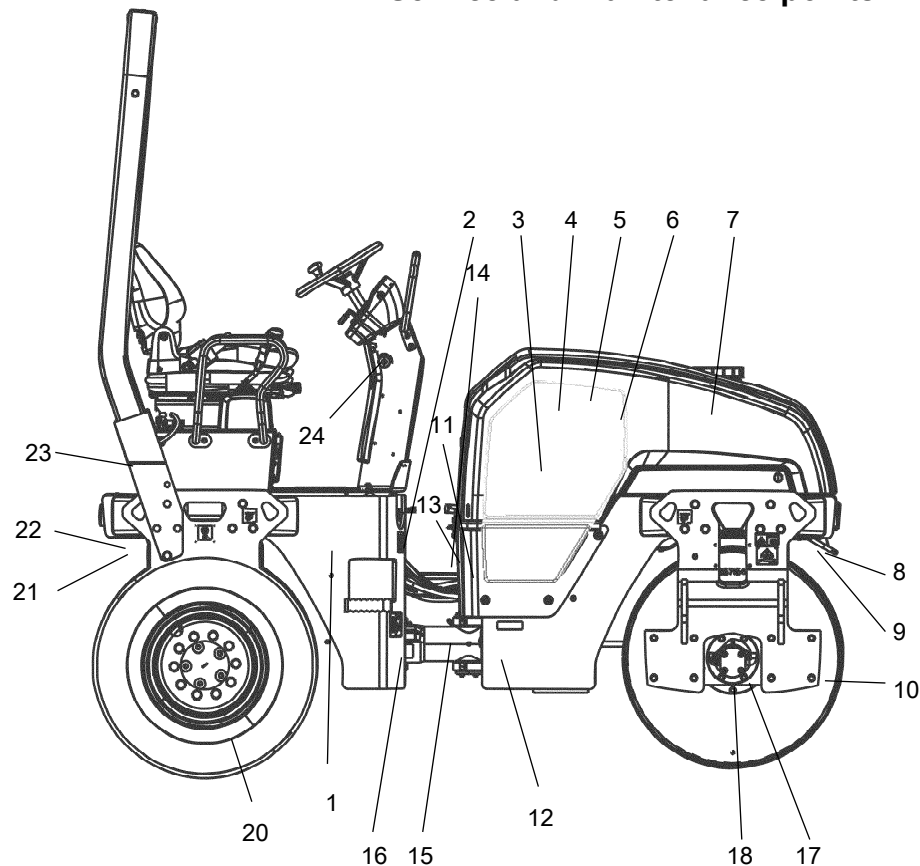


Fig. Service and maintenance points

- | | | |
|--------------------------|---|-----------------------------|
| 1. Fuel tank | 9. Scrapers | 17. Filler plugs/Drum |
| 2. Refueling | 10. Shock absorbers and attachment screws | 18. Oil level in drum |
| 3. Cooler | 11. Hydraulic fluid refilling | |
| 4. Air cleaner | 12. Hydraulic fluid tank | 20. Tires/air pressure |
| 5. Battery | 13. Hydraulic fluid filter | 21. Sprinkler system/Wheels |
| 6. Diesel engine | 14. Hydraulic fluid level glass | 22. Scrapers/Wheels |
| 7. Water tank | 15. Steering joint | 23. Emulsion tank |
| 8. Sprinkler system/Drum | 16. Steering cylinder bracket | 24. Emergency stop |

General

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

Maintenance - Maintenance schedule



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



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

Specific maintenance and checks on diesel engines must be carried out by the engine supplier's certified personnel.

Every 10 hours of operation (Daily)

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

Pos. in fig	Action	Comment
	Before starting up for the first time on that day	
3	Check for free circulation of cooling air	
4	Check coolant level	
6	Check the engine oil level	Refer to the engine manual
14	Check the hydraulic reservoir level	
1	Fill the fuel tank	
7	Fill the water tank	
8	Check the sprinkler system/Drum	
9	Check the scraper setting/Drum	
22	Check the spring loaded scrapers	Optional
21	Check the sprinkler system - tires	
22	Check the scraper setting - tires	
19	Test the brakes	
6	Check the fan belt	
6	Check air cleaner indicator@@	

After the FIRST 50 hours of operation

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

Pos. in fig	Action	Comment
6	Change the fuel filter	Refer to the engine manual
13	Change the hydraulic fluid filter	

Every 50 hours of operation (Weekly)

See Contents to find the page number of the sections referred to!

Pos. in fig	Action	Comment
4	Check the air cleaner. Check that hoses and connections are tight	Replace when necessary
15	Grease the steering joint	
16	Grease the steering cylinder brackets	
20	Check the tire pressure	
6	Draining the fuel prefilter	Performed if the control lamp for the water separator lights on the instrument panel.

Every 250 / 750 / 1250 / 1750 hours of operation

See Contents to find the page number of the sections referred to!

Pos. in fig	Action	Comment
5	Check the battery	
6	Change the engine oil and oil filter	Refer also to the Instruction Manual for the engine.
3	Clean the outside of the radiator core	In dusty environments, as necessary
	Adjust the engine drive belt	Refer to the Instruction manual for the engine
	Check the air intake hoses	

Maintenance - Maintenance schedule

Every 500 / 1500 hours of operation

See Contents to find the page numbers of the sections referred to!

Pos. in fig	Action	Comment
5	Check the battery	
6	Change engine oil and oil filter	Refer also to the Instruction Manual for the engine.
18	Check the oil level in the drum	
10	Check rubber elements and bolted joints	
11	Check the hydraulic reservoir cover/breather	
6	Lubricate hinges and controls	
6	Replace the V-belt on the engine	Refer to the engine manual
3	Check coolant freezing point	Change the coolant every other year
4	Change air filter elements	
6	Change the engine's fuel filter	Refer also to the Instruction Manual for the engine.
6	Change the fuel pre-filter	Refer also to the Instruction Manual for the engine.
6	Clean the fuel filter's water separator	*) applies to 1500h
33	Replace the filter in the oil separator	*) applies to 1500h

Every 1000 hours of operation

See Contents to find the page number of the sections referred to!

Pos. in fig	Action	Comment
5	Check the battery	
6	Change engine oil and oil filter	Refer also to the Instruction Manual for the engine.
18	Check the oil level in the drum	
10	Check the rubber elements and bolted joints	
11	Check the hydraulic reservoir cover/breather	
6	Lubricate hinges and controls	
6	Replace the V-belt on the engine	Refer to the engine manual
3	Check coolant freezing point	Change the coolant every other year
4	Change air filter elements	
6	Change the engine's fuel filter	Refer also to the Instruction Manual for the engine.
6	Change the engine's pre-filter	Refer also to the Instruction Manual for the engine.
12	Drain condensate from hydraulic tank	
13	Change the hydraulic fluid filter	

Every 2000 hours of operation

See Contents to find the page numbers of the sections referred to!

Pos. in fig	Action	Comment
5	Check the battery condition	
6	Change the engine oil and oil filter	Refer to the engine manual
18	Check the oil level in the drum	
10	Check rubber elements and bolted joints	
11	Check the hydraulic reservoir cover/breather	
6	Lubricate hinges and controls	
6	Check engine's V-belt	
3	Check coolant freezing point	Change the coolant every other year
4	Change air filter elements	
13	Change the hydraulic fluid filter	
12	Drain condensate from hydraulic tank	
6	Change the engine's fuel filter	Refer to the engine manual
6	Change the engine's pre-filter	Refer to the engine manual
12	Change the hydraulic fluid	
18	Change the oil in the drum	
7	Drain and clean the water tank	
23	Drain and clean the emulsions tank	
1	Drain and clean the fuel tank	
	Check the condition of the articulation	

Service - Checklist

Pos	Action	After the first 50 hours of operation (Daily)	Every 50 hours of operation (Weekly)	Every 250 hours of operation	Every 500 hours of operation	Every 750 hours of operation	Every 1000 hours of operation	Every 1250 hours of operation	Every 1500 hours of operation	Every 1750 hours of operation	Every 2000 hours of operation	Every 24th month	NOTE
4	Check coolant level	○	○										Refer to the engine manual
6	Check engine's V-belt												Refer to the engine manual
6	Check the engine oil level	○	○										
14	Check fluid level in hydraulic reservoir	○	○										
1	Fill the fuel tank	○	○										
7	Fill the water tank	○	○										
3	Check for free circulation of cooling air	○	○										
8	Check the sprinkler system	○	○										
9	Check the scraper setting	○	○										
22	Check spring loader scrapers	○	○										
21	Check the sprinkler system - tires	○	○										
22	Check the scraper setting - tires	○	○										
19	Test the brakes	○	○										
6	Check air cleaner indicator	○	○										
6	Replace the engine's fuel filter	●	●										
6	Change the engine's pre-filter	●	●										Also refer to the engine manual
13	Change the hydraulic fluid filter	●	●										Also refer to the engine manual
4	Clean/Change the air cleaner filter element	○	○	○	○	○	○	○	○	○	○	○	
4	Check that hoses and couplings are not leaking	○	○										
15	Grease the steering joint	○	○										
16	Grease the steering cylinder brackets	○	○										
20	Check the tire pressure	○	○										
6	Draining the fuel prefilter	●	●										Perform at the control lamp for the water separator lights on the instrument panel.
3	Clean the outside of the radiator core	○	○										*) In dusty environments, as necessary
	Adjust the engine drive belt	○	○										Refer to the engine manual
	Check the air intake hoses	○	○										
6	Change the engine oil	●	●	●	●	●	●	●	●	●	●	●	Also refer to the engine manual
6	Change the engine oil filter	●	●	●	●	●	●	●	●	●	●	●	
33	Replace the filter in the oil separator	○	○	○	○	○	○	○	○	○	○	○	
18	Check the oil level / Change oil in the drums	○	○	○	○	○	○	○	○	○	○	○	
10	Check rubber elements and bolted joints	○	○	○	○	○	○	○	○	○	○	○	
11	Check the hydraulic reservoir cover/breather	○	○	○	○	○	○	○	○	○	○	○	
6	Lubricate controls and joints	○	○	○	○	○	○	○	○	○	○	○	
6	Replace engine's V-belt	○	○	○	○	○	○	○	○	○	○	○	Refer to the engine manual
3	Check coolant freezing point/Change coolant	○	○										
6	Clean the pre fuel filter/water separator	○	○										
12	Drain the condensate from hydraulic reservoir	○	○										
6	Check engine's valve clearance												Refer to the engine manual
6	Change engine's oil separator element												Also refer to the engine manual (D1303 only)
13	Change the hydraulic fluid												
7	Drain and clean the water tank												
1	Drain and clean the fuel tank												
15	Check the condition of the articulation												

Maintenance, 10h

Every 10 hours of operation (Daily)



***Park the roller on a level surface.
The engine must be switched off and the
parking brake activated when checking or
adjusting the roller, unless otherwise specified.***



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



Check - Coolant system

Check that all hoses/hose connectors are intact and tight. Fill with coolant as specified in the lubricants specification.



***Take great care when opening the radiator cap
while the engine is hot. Wear protective gloves and
goggles.***



Also check the freezing point. Change the coolant every other year.

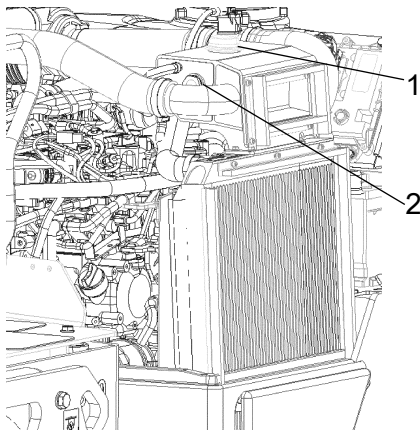


Figure. Cooling water container
1. Filler cap
2. Level marking



Coolers

Checking - Cleaning

Make sure that the air flow through the coolers (1) and (2) is unobstructed. Dirty coolers are blown clean with compressed air or washed clean using a high-pressure water cleaner.

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



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

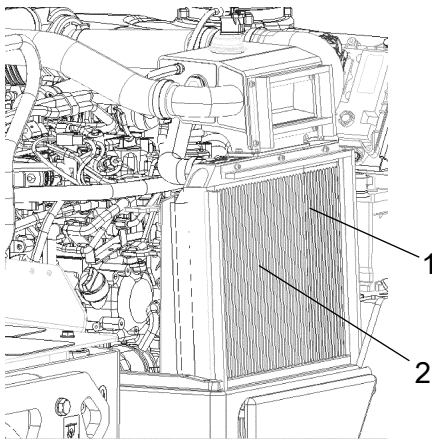


Fig. Engine compartment
1. Water cooler
2. Hydraulic fluid cooler



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

**Hydraulic reservoir, Level check - Filling**

Check that the level is between the min and max markings. Top up with hydraulic fluid as per lubricant specifications if level is too low.

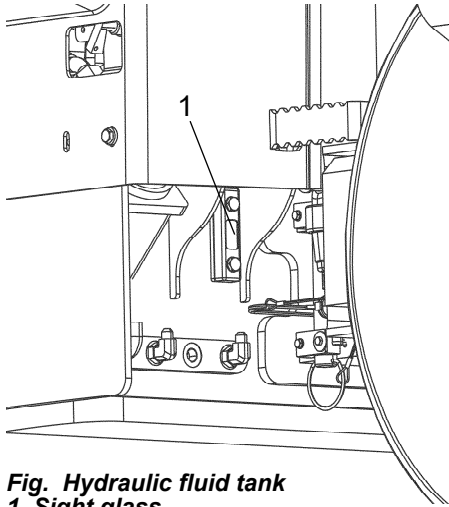


Fig. Hydraulic fluid tank
1. Sight glass

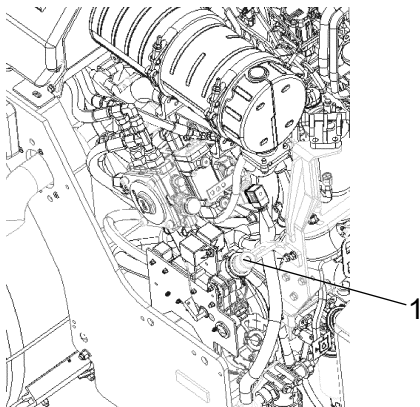
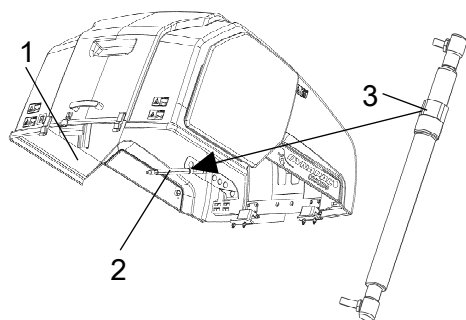


Fig. Engine compartment
1. Hydraulic fluid refilling

Open the engine hood and unscrew the filler cap, top up with hydraulic fluid (as per lubricant specification) if the level is too low.



Lowering of engine hood

Stand on the **left** side of the engine hood. Press in the red button (3) and carefully lower the engine hood until the gas spring (2) goes into the slot. Release the red button (3) and then lower down the engine hood completely.

Fig. Engine compartment

- 1. Engine hood
- 2. Gas spring
- 3. Button

Air circulation - Check

Check that the engine has free circulation of cooling air through the grille (1) in the engine compartment.

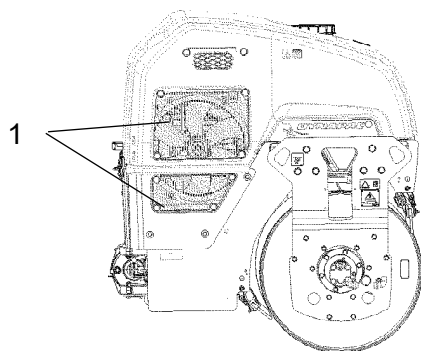


Fig. Right drum side
 1. Cooling air grille



Fuel tank - Filling

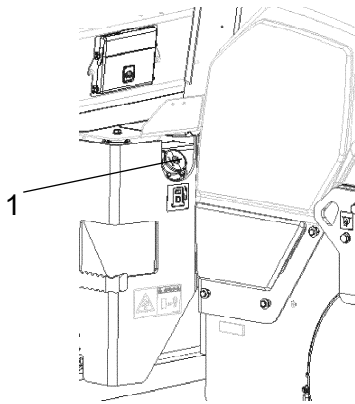


Fig. Fuel tank
1. Filler cap

Refuel every day before starting to work. Screw off the lockable tank cap (1) and fill diesel fuel to the lower edge of the filler pipe.



Stop the diesel engine. Short-circuit (press) the filler gun against a non-insulated part of the roller before refuelling, and against the filler pipe while refuelling.



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

The fuel tank holds 50 liters.



Water tank - Filling

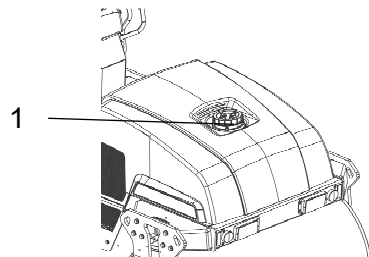


Fig. Water tank
1. Tank cap



Unscrew the tank cap (1) and fill with clean water. Do not remove the strainer. See technical specifications for the tank volume.



Only additive: A small amount of environment-friendly antifreeze.



Sprinkler system/Drum Checking - Cleaning

Start the sprinkler system and make sure that no nozzles (1) are clogged. If necessary, clean clogged nozzles and the coarse filter located by the water pump; see figures below.



The sprinkler system should be drained if there is a risk of freezing.

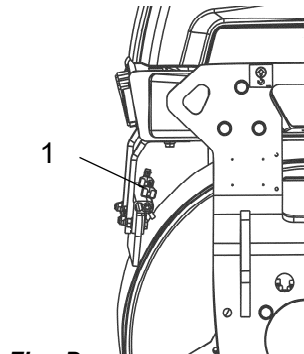


Fig. Drum
1. Nozzle



Sprinkler system / Wheels Check - Cleaning

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



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

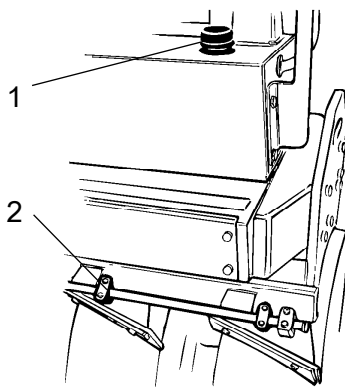


Fig. Wheel rack
1. Filler cap
2. Nozzle (one for each tire)



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

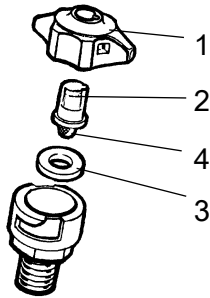


Fig. Nozzle
 1. Sleeve
 2. Nozzle
 3. Gasket
 4. Strainer

Dismantle the blocked nozzle by hand. Blow the nozzle (2) and fine filter (4) clean with compressed air, or install replacement parts and clean the clogged parts later.



Wear protective goggles when working with compressed air.

Scrapers, fixed Checking - Setting

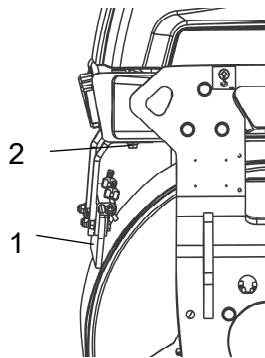


Fig. Drum
 1. Scraper blade
 2. Adjusting screws

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

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

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

Remember to tighten all the screws after any adjustment.

Scrapers, spring-action (Optional) Checking - Adjustment



The scrapers must be lifted from the drum during transport.

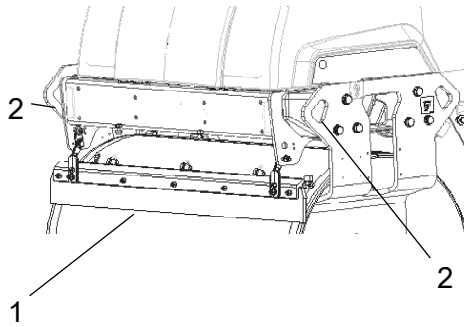


Fig. Spring-action scrapers
 1. Scraper blade
 2. Adjusting screws

Scrapers Check - Adjustment

Make sure that the scraper (1) is flush with the tire when compacting asphalt.

The scrapers must hang clear of the tires during transport. Lift up the scraper beam (2) by moving up the cotter (3) to the uppermost hole.

The angle of the scraper to the tire can be adjusted by releasing the screws (4) to adjust the scraper, and then tightening the screws.

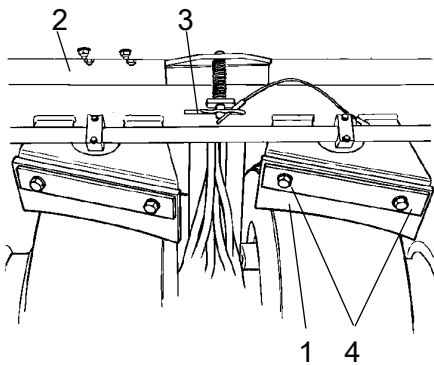


Fig. Wheel scrapers
 1. Scraper
 2. Scraper blade
 3. Lock pin
 4. Adjusting screw

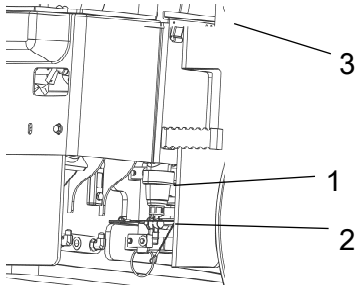


Fig. Pump system
1. Water filter
2. Stop cock
3. Water pump

When cleaning the coarse filter (1), open the cock (2) and loosen the filter housing.

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

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

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



Pump system / Tire Check - Cleaning

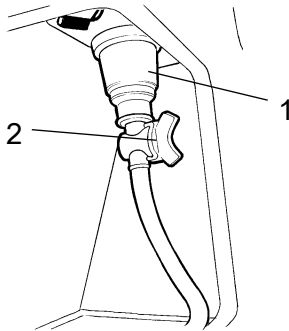


Fig. Left footstep
1. Filter housing
2. Cock

When cleaning, close the stop cock (2) and undo the filter house (1). Clean the filter and filter housing. Listen to or put your hand on the water pump to check that it is working.

**Brakes - Check**

Check operation of the brakes as follows:

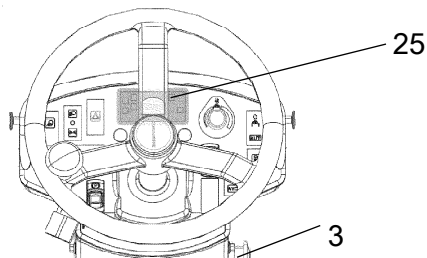


Figure. Instrument panel
3. Emergency stop
25. Parking brake lamp

Run the roller very slowly forward. Hold the steering wheel firmly and brace yourself for a sudden stop.

Press in the emergency stop (3). The roller will stop abruptly and the engine will switch off.

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

Pull out the emergency stop (3). Start the engine.

The roller is now ready for operation.

Refer also to the section in the manual on operation.

Maintenance - 50h

Every 50 hours of operation (Weekly)



***Park the roller on a level surface.
The engine must be switched off and the
parking brake activated when checking or
adjusting the roller, unless otherwise specified.***



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



Air cleaner indicator

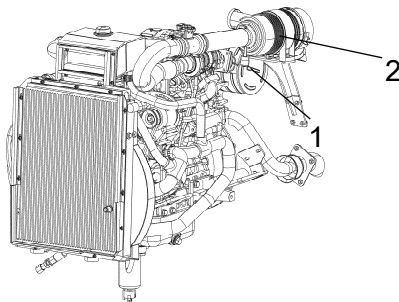


Fig. Air cleaner
1. Indicator
2. Main filter

If the indicator (1) on the air cleaner turns red, replace the main filter (2) on the air cleaner. The dust pouch is emptied by pressing the rubber bellows with your fingers. Check also that the air hoses are in good condition.

Clean the air cleaner when operated in extremely dusty environments.



Air cleaner

Check - Replacement of main filter



Replace the air cleaner's main filter when the indicator shows red. The indicator is mounted on the air cleaner's connecting pipe.

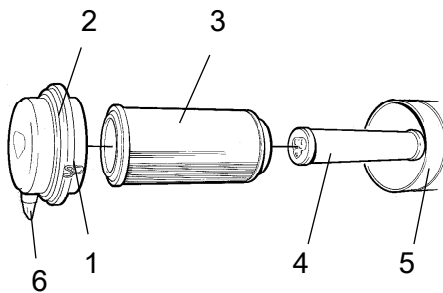


Fig. Air cleaner
 1. Clips
 2. Cover
 3. Main filter
 4. Backup filter
 5. Filter housing
 6. Dust valve

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

Do not remove the backup filter (4).

Clean the air cleaner if necessary, see section Air cleaner - Cleaning.

When replacing the main filter (3), insert a new filter and refit the air cleaner in the reverse order.

Check the condition of the dust valve (6); replace if necessary.

When refitting the cover, make sure that the dust valve is positioned downwards.

Air filter indicator - Resetting

The air filter indicator is located on the filter, or in its immediate vicinity.

The air filter indicator must be reset after replacing the air filter.

Press the "button" (1) on the top of the indicator to reset.

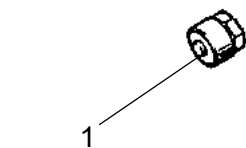


Fig. Indicator
 1. Button



Backup filter - Change

Change the backup filter with a new filter after every third replacement of the main filter.

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

Clean the air cleaner if necessary, see section Air cleaner - Cleaning.

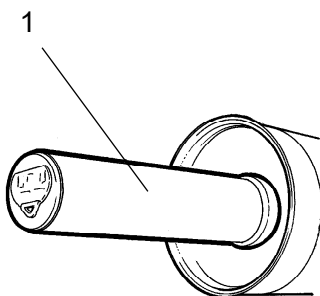


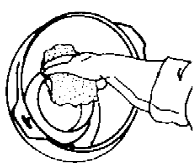
Fig. Air filter
 1. Backup filter



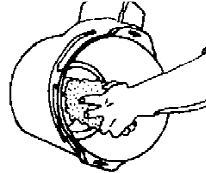
Air cleaner - Cleaning

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

Wipe clean on both sides of the outlet pipe.



Inner edge of outlet pipe.



Outer edge of outlet pipe.

Wipe also both surfaces for the outlet pipe; see adjacent figure.



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



Steering cylinder and steering joint - Lubrication



Do not allow anyone to remain in the vicinity of the steering joint when the engine is running. Danger of crush injury when the steering is operated. Activate the parking brake before lubricating.

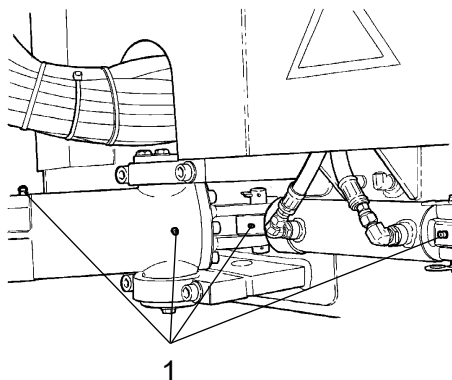


Fig. Main filter
1. Grease nipples

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

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



Tires - Tire pressure

Check the air pressure with a pressure gauge.
Make sure that the tires have the same pressure.
Recommended pressure: See Technical Specifications.

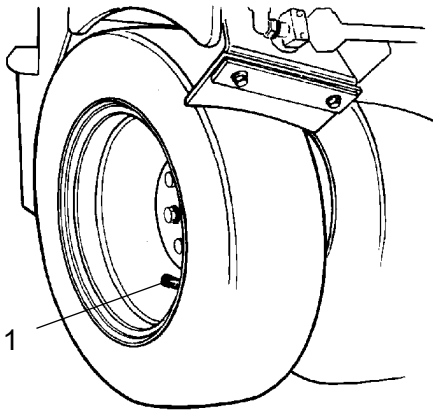


Fig. Tire
1. Air valve



Pre-fuel filter - Draining

Unscrew the drain plug (1) at the bottom of the fuel filter.

Ensure that all deposits are removed with the aid of the secondary hand-operated pump (2).

As soon as only pure fuel emerges, close the drain plug (1) again.

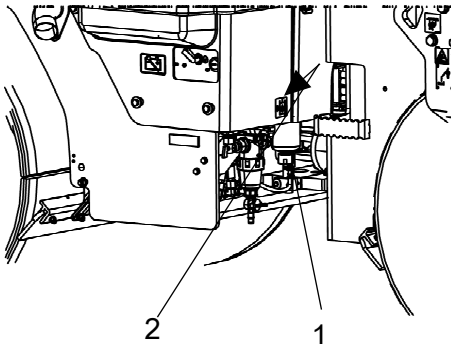


Figure. Pre-fuel filter
1. Drain plug
2. Hand pump

Maintenance measures - 250 h

Every 250/750/1250/1750..... hours of operation (every 3 months)



***Park the roller on a level surface.
The engine must be switched off and the parking brake activated when checking or adjusting the roller, unless otherwise specified.***



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

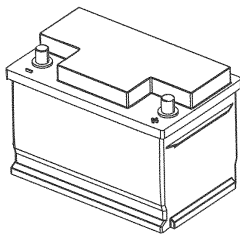


Fig. Battery

**Battery
- Check condition**

The battery is sealed and maintenance-free.



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



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

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

Wipe the top of the battery.



Engine oil and oil filter - Change

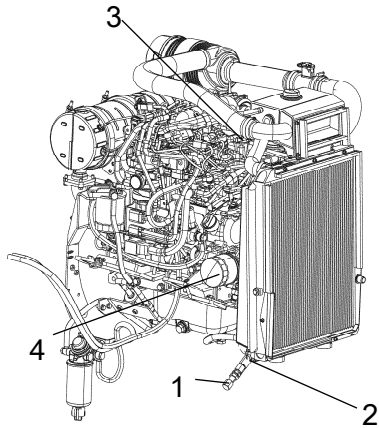


Fig. Engine compartment right side

- 1. Drain hose
- 2. Drain plug
- 3. Filler cap
- 4. Oil filter

Run the engine until it is warm before draining the oil .



Switch off the engine and push in the emergency stop.



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

Set a container which can hold at least 8 liters (2 gal) under the drain plug (2).

Undo the oil filler cap (3), and undo the drain plug (2) in the end of the drain hose (1). Let all the engine oil flow out.



Deliver the drained oil to special waste handling.



Refer to the engine manual for detailed instructions when changing oil and filters.

Remove the oil filter (4) and fit a new filter.

Collect any spillage.

Fit the drain plug (2) to the end of the hose.

Fill with fresh engine oil. See under the heading lubricants, for the correct oil grade. Fit the filler cap (3) and check that the oil level is correct using the dipstick.

Start the engine and allow it to idle for a few minutes. During this time, check around the oil filter and drain plug for leaks.

Switch off the engine, wait for a minute or so and then check the oil level. Top up with more oil if necessary.



Coolers

Checking - Cleaning

Make sure that the air flow through the coolers (1) and (2) is unobstructed. Dirty coolers are blown clean with compressed air or washed clean using a high-pressure water cleaner.

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

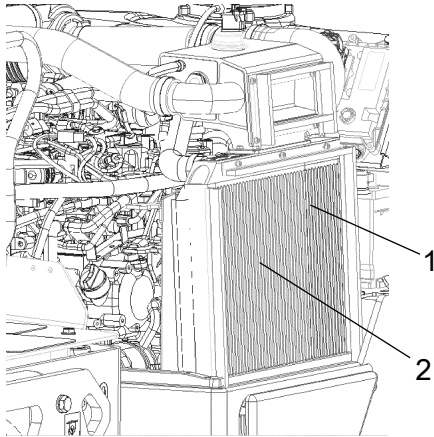


Fig. Engine compartment
1. Water cooler
2. Hydraulic fluid cooler



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



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

Maintenance measures - 500 h

Every 500/1500..... hours of operation (every six months)



***Park the roller on a level surface.
The engine must be switched off and the parking brake activated when checking or adjusting the roller, unless otherwise specified.***



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

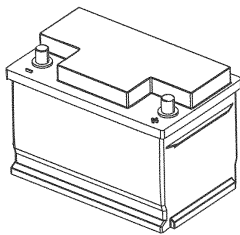


Fig. Battery

**Battery
- Check condition**

The battery is sealed and maintenance-free.



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



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

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

Wipe the top of the battery.



Engine oil and oil filter - Change

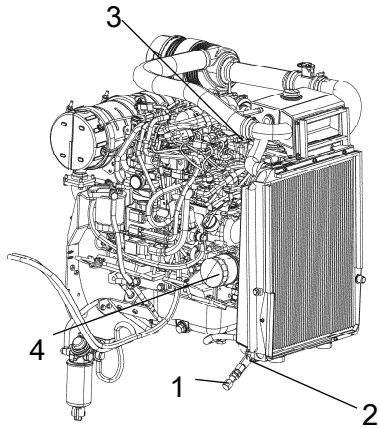


Fig. Engine compartment right side

- 1. Drain hose**
- 2. Drain plug**
- 3. Filler cap**
- 4. Oil filter**

Run the engine until it is warm before draining the oil .



Switch off the engine and push in the emergency stop.



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

Set a container which can hold at least 8 liters (2 gal) under the drain plug (2).

Undo the oil filler cap (3), and undo the drain plug (2) in the end of the drain hose (1). Let all the engine oil flow out.



Deliver the drained oil to special waste handling.



Refer to the engine manual for detailed instructions when changing oil and filters.

Remove the oil filter (4) and fit a new filter.

Collect any spillage.

Fit the drain plug (2) to the end of the hose.

Fill with fresh engine oil. See under the heading lubricants, for the correct oil grade. Fit the filler cap (3) and check that the oil level is correct using the dipstick.

Start the engine and allow it to idle for a few minutes. During this time, check around the oil filter and drain plug for leaks.

Switch off the engine, wait for a minute or so and then check the oil level. Top up with more oil if necessary.

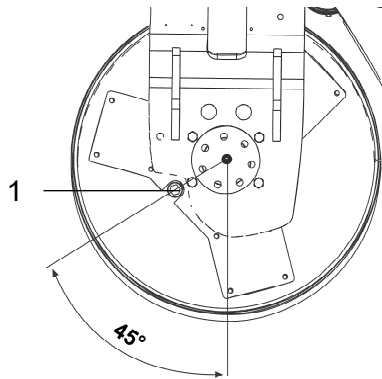


Fig. Drum, drive side
1. Oil plug

Drum - oil level Inspection - filling

Run the roller slowly until the oil plug (1) is aligned with the semicircular recess in the drum suspension.

Unscrew the plug and check that the oil level reaches up to the bottom of the hole. Top up with new oil if necessary. Use oil as specified in the lubricants specification.

Clean the magnetic oil plug (1) from any metallic residue, and refit the plug.

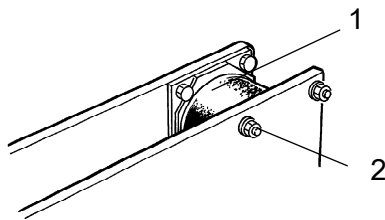


Fig. Drum, vibration side
1. Rubber element
2. Attachment screws

Rubber elements and attachment screws Check

Check all rubber elements (1). Replace all elements where more than 25% of the elements on one side of the drum have cracks deeper than 10-15 mm (0.4-0.6 in).

Check using a knife blade or pointed object.

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

**Controls - Lubrication**

Lubricate the forward/reverse lever in the engine compartment with a few drops of oil.

If the lever gets stiff after a prolonged period of use, remove the cover and lever and lubricate.



Fig. Engine compartment
1. Forward/Reverse lever
2. Hydraulic reservoir cap

**Hydraulic reservoir cap - Check**

Screw off the tank cap and check that it is not clogged. Air must have unobstructed passage through the cap in both directions.

If clogged in either direction, clean with a little diesel oil and blow with compressed air until free passage is assured or replace the cap with a new one.



Wear protective goggles when working with compressed air.



Controls - Lubrication

Lubricate the forward/reverse lever mechanism.

Remove the cover/plate (1) by loosening the screws (2) on the top, and lubricate the mechanism under the cover/plate with oil.

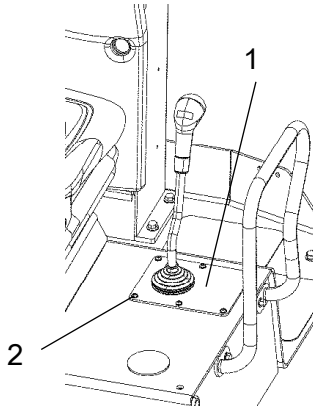


Fig. Forward/Reverse lever
1. Plate
2. Attachment screws



Check - Coolant system

Check that all hoses/hose connectors are intact and tight. Fill with coolant as specified in the lubricants specification.



Take great care when opening the radiator cap while the engine is hot. Wear protective gloves and goggles.



Also check the freezing point. Change the coolant every other year.

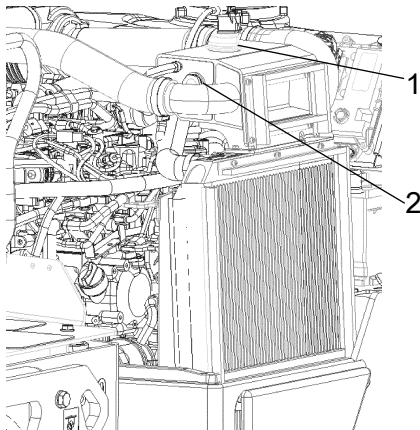


Figure. Cooling water container
1. Filler cap
2. Level marking



Replacing the fuel filter



Place a container underneath to collect fuel that runs out when the filter is released.

Screw off the fuel filter (1). The filter is of the disposable type and cannot be cleaned. Hand in to a waste disposal station.



Refer to the engine manual for detailed instructions when replacing the fuel filter.

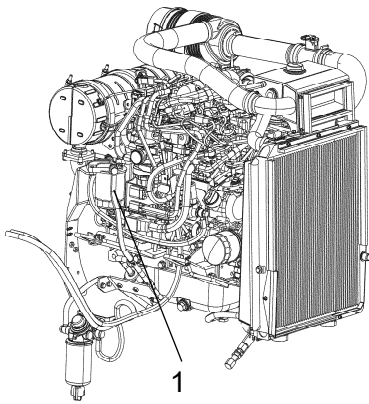


Fig. Engine compartment
1. Fuel filter

Start the engine and check that the fuel filter is tight.

N.B. Under no circumstances may new fuel filters be pre-filled with fuel before assembly due to the demands on the cleanliness of the fuel system. Use the hand pump on the fuel prefilter to fill from the machine's fuel system.



Replacing the pre-filter

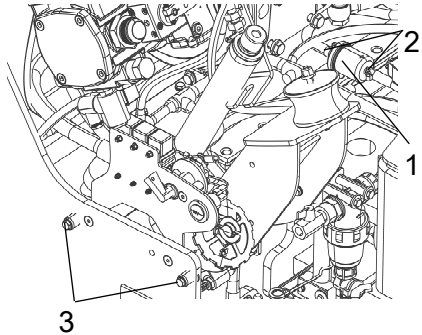


Fig. Engine compartment

- 1. Pre-filter**
- 2. Hose clamps**
- 3. Bolts**

Activate the parking brake.
Switch off the engine and remove the plate on the left side of the frame (at battery disconnecter) by releasing the three bolts (3).
Release the hose clamps (2) with a screwdriver.



Place a container underneath to collect fuel that runs out when the filter is released.

Remove the pre-filter (1) and hand in to a waste disposal station. This is a disposable filter and cannot be cleaned.

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

Start the engine and check that the pre-filter is tight.



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



Replacing the diesel engine's oil separator filter

(applies to 1500h)

N.B. The engine must be switched off when changing the filter.

Loosen the filter's bottom cover (2) and remove the filter insert and O-ring (3).

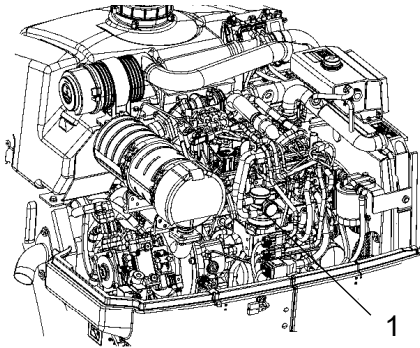


Fig. Engine compartment
1. Oil separator filter

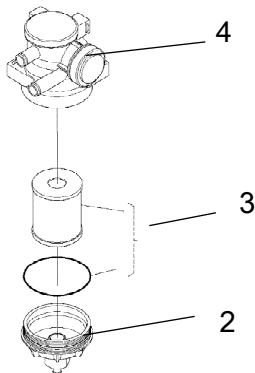


Fig. Oil separator filter
2. Cover
3. Filter insert and O-ring
4. Filter housing



Remove the filter insert (3) and hand in to a waste disposal station. This is a disposable filter and cannot be cleaned.

Wipe out any deposits in the bottom cover (2) and filter housing (4).

Fit the new filter insert with O-ring (3) and refit the bottom cover (2).

Start the diesel engine and allow it to run at full revs for 30 seconds. Check that the filter cap (2) is tight.

Maintenance - 1000h

Performed after 1000 operating hours (each year)



***Park the roller on a level surface.
The engine must be switched off and the
parking brake activated when checking or
adjusting the roller, unless otherwise specified.***



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

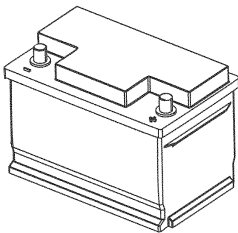


Fig. Battery

Battery**- Check condition**

The battery is sealed and maintenance-free.



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



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

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

Wipe the top of the battery.



Engine oil and oil filter - Change

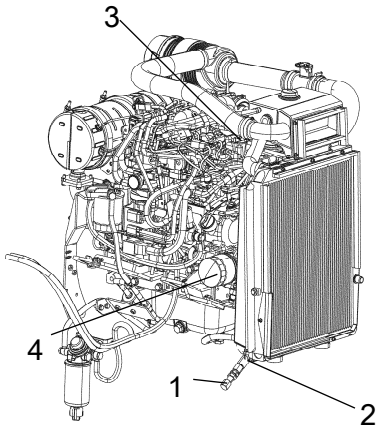


Fig. Engine compartment right side

- 1. Drain hose
- 2. Drain plug
- 3. Filler cap
- 4. Oil filter

Run the engine until it is warm before draining the oil .



Switch off the engine and push in the emergency stop.



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

Set a container which can hold at least 8 liters (2 gal) under the drain plug (2).

Undo the oil filler cap (3), and undo the drain plug (2) in the end of the drain hose (1). Let all the engine oil flow out.



Deliver the drained oil to special waste handling.



Refer to the engine manual for detailed instructions when changing oil and filters.

Remove the oil filter (4) and fit a new filter.

Collect any spillage.

Fit the drain plug (2) to the end of the hose.

Fill with fresh engine oil. See under the heading lubricants, for the correct oil grade. Fit the filler cap (3) and check that the oil level is correct using the dipstick.

Start the engine and allow it to idle for a few minutes. During this time, check around the oil filter and drain plug for leaks.

Switch off the engine, wait for a minute or so and then check the oil level. Top up with more oil if necessary.

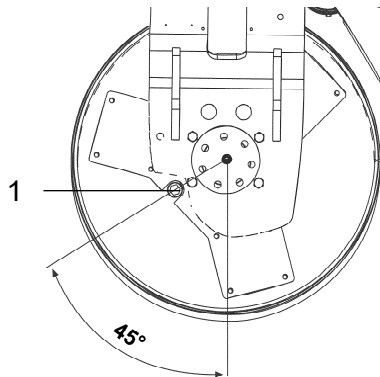


Fig. Drum, drive side
1. Oil plug

Drum - oil level Inspection - filling

Run the roller slowly until the oil plug (1) is aligned with the semicircular recess in the drum suspension.

Unscrew the plug and check that the oil level reaches up to the bottom of the hole. Top up with new oil if necessary. Use oil as specified in the lubricants specification.

Clean the magnetic oil plug (1) from any metallic residue, and refit the plug.

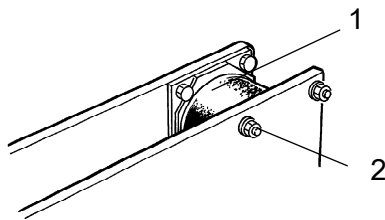


Fig. Drum, vibration side
1. Rubber element
2. Attachment screws

Rubber elements and attachment screws Check

Check all rubber elements (1). Replace all elements where more than 25% of the elements on one side of the drum have cracks deeper than 10-15 mm (0.4-0.6 in).

Check using a knife blade or pointed object.

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



Controls - Lubrication

Lubricate the forward/reverse lever in the engine compartment with a few drops of oil.

If the lever gets stiff after a prolonged period of use, remove the cover and lever and lubricate.



Fig. Engine compartment
1. Forward/Reverse lever
2. Hydraulic reservoir cap



Hydraulic reservoir cap - Check

Screw off the tank cap and check that it is not clogged. Air must have unobstructed passage through the cap in both directions.

If clogged in either direction, clean with a little diesel oil and blow with compressed air until free passage is assured or replace the cap with a new one.



Wear protective goggles when working with compressed air.



Controls - Lubrication

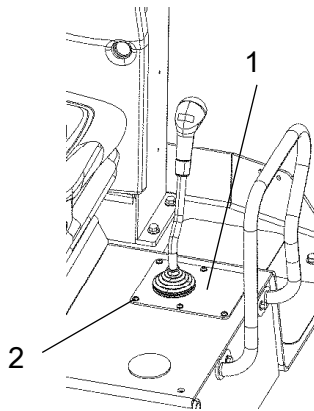


Fig. Forward/Reverse lever
1. Plate
2. Attachment screws

Lubricate the forward/reverse lever mechanism.

Remove the cover/plate (1) by loosening the screws (2) on the top, and lubricate the mechanism under the cover/plate with oil.



Check - Coolant system

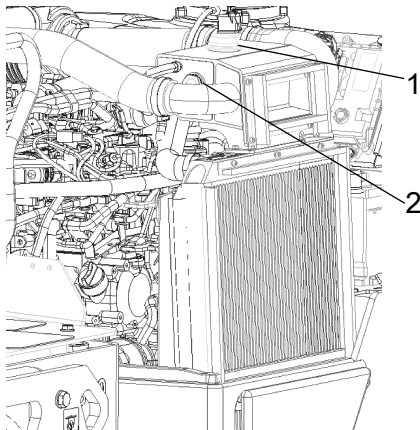


Figure. Cooling water container
1. Filler cap
2. Level marking

Check that all hoses/hose connectors are intact and tight. Fill with coolant as specified in the lubricants specification.



Take great care when opening the radiator cap while the engine is hot. Wear protective gloves and goggles.



Also check the freezing point. Change the coolant every other year.



Replacing the fuel filter



Place a container underneath to collect fuel that runs out when the filter is released.

Screw off the fuel filter (1). The filter is of the disposable type and cannot be cleaned. Hand in to a waste disposal station.



Refer to the engine manual for detailed instructions when replacing the fuel filter.

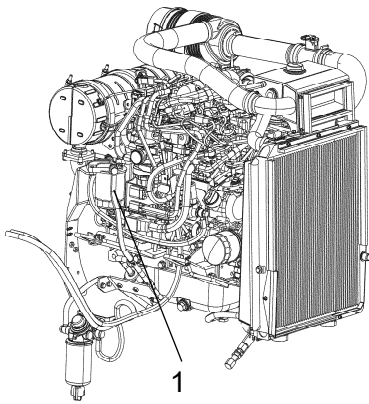


Fig. Engine compartment
1. Fuel filter

Start the engine and check that the fuel filter is tight.

N.B. Under no circumstances may new fuel filters be pre-filled with fuel before assembly due to the demands on the cleanliness of the fuel system. Use the hand pump on the fuel prefilter to fill from the machine's fuel system.



Replacing the pre-filter

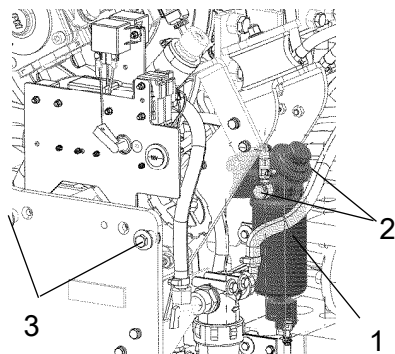


Fig. Engine compartment

- 1. Pre-filter
- 2. Hose clamps
- 3. Bolts

Activate the parking brake.
 Switch off the engine and remove the plate on the left side of the frame (at battery disconnecter) by releasing the three bolts (3).
 Release the hose clamps (2) with a screwdriver.



Place a container underneath to collect fuel that runs out when the filter is released.

Remove the pre-filter (1) and hand in to a waste disposal station. This is a disposable filter and cannot be cleaned.

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

Start the engine and check that the pre-filter is tight.



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



Hydraulic fluid reservoir - Draining

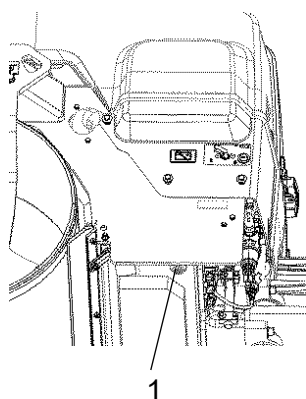


Fig. Left frame side
 1. Drain plug

Condensate in the hydraulic tank is drained via the plug (1). This should be done when the roller has stood still for some time, e.g. during the night.



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

Drain as follows:

Place a container under the plug (1). Loosen and allow any condensate to run out. Tighten the plug.



Replacing the hydraulic oil filter

Unscrew the retaining screws (1) on each side of the roller.

Remove the protective cover (2).

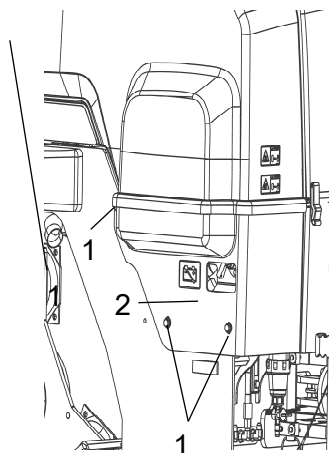


Fig. Engine compartment
1. Retaining screws
2. Protective cover

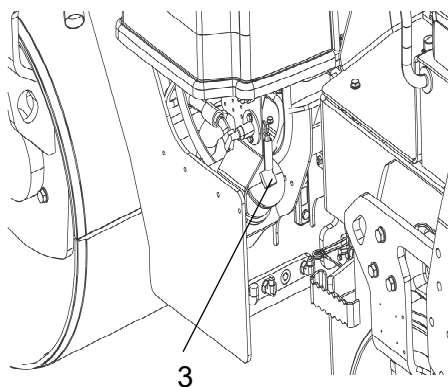


Fig. Hydraulic oil filter
3. Cap

Loosen the red cap (3) and pull up the filter insert (4).

Refit the red cap temporarily to prevent dust and dirt getting into the tank.

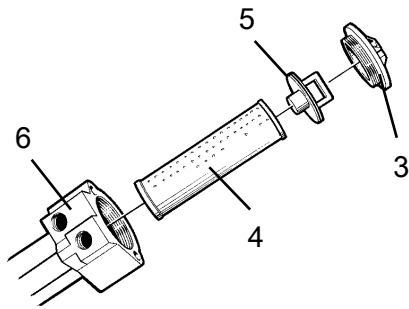


Fig. Hydraulic oil filter

3. Cap

4. Filter insert

5. Handle

6. Filter holder

Release the filter insert (4) from the handle (5).



Remove the filter (4) and hand in to an environment-friendly waste disposal station. This is a disposable filter and cannot be cleaned.

Mount the new insert on the handle, refit the unit into the filter holder (6), and refit the red cover.

Start the engine and allow it to run at full revs for 30 seconds. Check that the filter cap (3) is tight.

Maintenance - 2000h

Performed after 2000 operating hours (every two years)



***Park the roller on a level surface.
The engine must be switched off and the parking brake activated when checking or adjusting the roller, unless otherwise specified.***



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

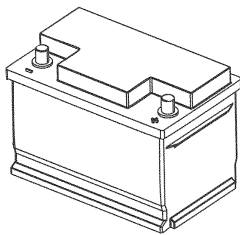


Fig. Battery

**Battery
- Check condition**

The battery is sealed and maintenance-free.



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



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

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

Wipe the top of the battery.



Engine oil and oil filter - Change

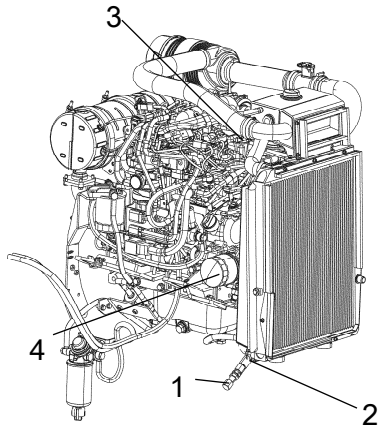


Fig. Engine compartment right side

- 1. Drain hose**
- 2. Drain plug**
- 3. Filler cap**
- 4. Oil filter**

Run the engine until it is warm before draining the oil .



Switch off the engine and push in the emergency stop.



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

Set a container which can hold at least 8 liters (2 gal) under the drain plug (2).

Undo the oil filler cap (3), and undo the drain plug (2) in the end of the drain hose (1). Let all the engine oil flow out.



Deliver the drained oil to special waste handling.



Refer to the engine manual for detailed instructions when changing oil and filters.

Remove the oil filter (4) and fit a new filter.

Collect any spillage.

Fit the drain plug (2) to the end of the hose.

Fill with fresh engine oil. See under the heading lubricants, for the correct oil grade. Fit the filler cap (3) and check that the oil level is correct using the dipstick.

Start the engine and allow it to idle for a few minutes. During this time, check around the oil filter and drain plug for leaks.

Switch off the engine, wait for a minute or so and then check the oil level. Top up with more oil if necessary.

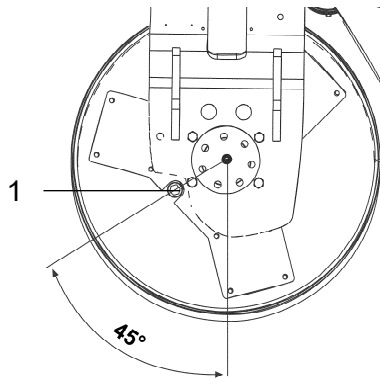


Fig. Drum, drive side
1. Oil plug

Drum - oil level Inspection - filling

Run the roller slowly until the oil plug (1) is aligned with the semicircular recess in the drum suspension.

Unscrew the plug and check that the oil level reaches up to the bottom of the hole. Top up with new oil if necessary. Use oil as specified in the lubricants specification.

Clean the magnetic oil plug (1) from any metallic residue, and refit the plug.

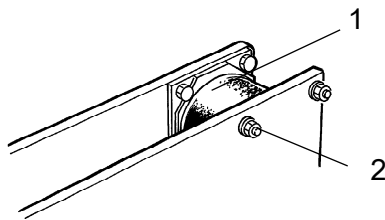


Fig. Drum, vibration side
1. Rubber element
2. Attachment screws

Rubber elements and attachment screws Check

Check all rubber elements (1). Replace all elements where more than 25% of the elements on one side of the drum have cracks deeper than 10-15 mm (0.4-0.6 in).

Check using a knife blade or pointed object.

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



Controls - Lubrication

Lubricate the forward/reverse lever in the engine compartment with a few drops of oil.

If the lever gets stiff after a prolonged period of use, remove the cover and lever and lubricate.



Fig. Engine compartment
1. Forward/Reverse lever
2. Hydraulic reservoir cap



Hydraulic reservoir cap - Check

Screw off the tank cap and check that it is not clogged. Air must have unobstructed passage through the cap in both directions.

If clogged in either direction, clean with a little diesel oil and blow with compressed air until free passage is assured or replace the cap with a new one.



Wear protective goggles when working with compressed air.



Controls - Lubrication

Lubricate the forward/reverse lever mechanism.

Remove the cover/plate (1) by loosening the screws (2) on the top, and lubricate the mechanism under the cover/plate with oil.

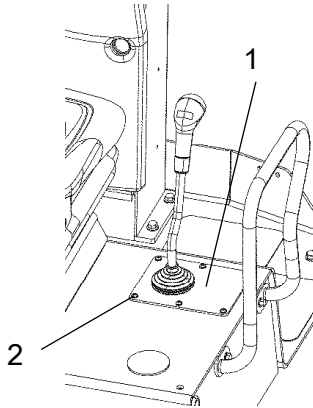


Fig. Forward/Reverse lever
1. Plate
2. Attachment screws



Check - Coolant system

Check that all hoses/hose connectors are intact and tight. Fill with coolant as specified in the lubricants specification.



Take great care when opening the radiator cap while the engine is hot. Wear protective gloves and goggles.



Also check the freezing point. Change the coolant every other year.

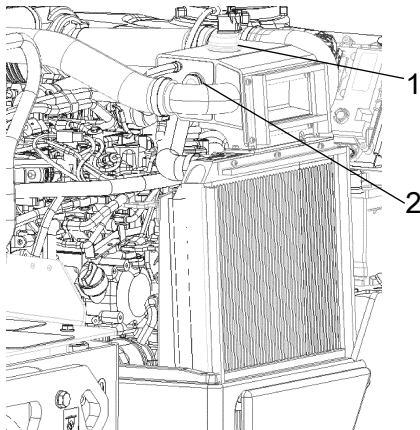


Figure. Cooling water container
1. Filler cap
2. Level marking



Replacing the hydraulic oil filter

Unscrew the retaining screws (1) on each side of the roller.

Remove the protective cover (2).

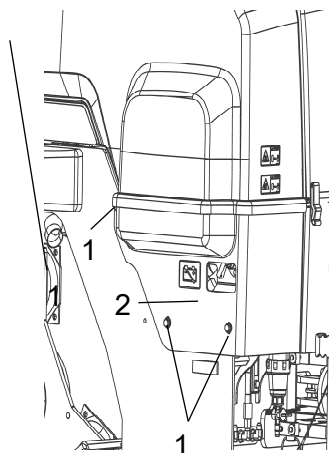


Fig. Engine compartment

- 1. Retaining screws**
- 2. Protective cover**

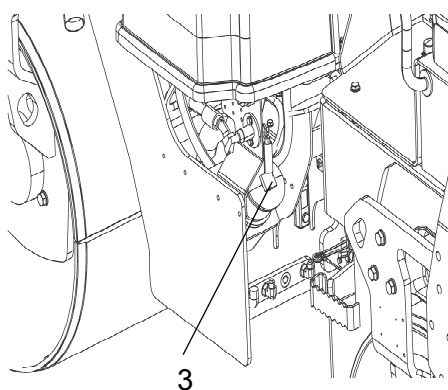


Fig. Hydraulic oil filter
3. Cap

Loosen the red cap (3) and pull up the filter insert (4).

Refit the red cap temporarily to prevent dust and dirt getting into the tank.

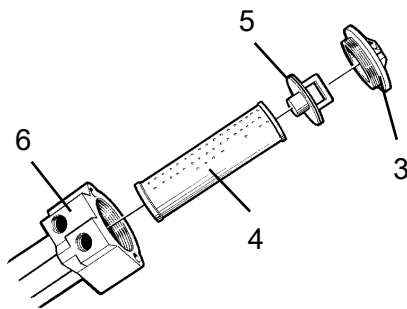


Fig. Hydraulic oil filter

- 3. Cap
- 4. Filter insert
- 5. Handle
- 6. Filter holder

Release the filter insert (4) from the handle (5).



Remove the filter (4) and hand in to an environment-friendly waste disposal station. This is a disposable filter and cannot be cleaned.

Mount the new insert on the handle, refit the unit into the filter holder (6), and refit the red cover.

Start the engine and allow it to run at full revs for 30 seconds. Check that the filter cap (3) is tight.



Hydraulic fluid reservoir - Draining

Condensate in the hydraulic tank is drained via the plug (1). This should be done when the roller has stood still for some time, e.g. during the night.



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

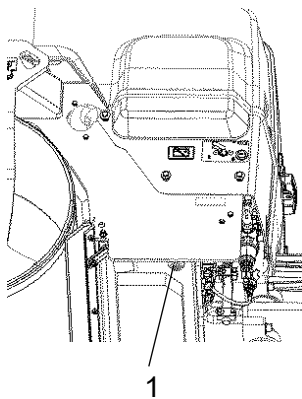


Fig. Left frame side
1. Drain plug

Drain as follows:

Place a container under the plug (1). Loosen and allow any condensate to run out. Tighten the plug.



Hydraulic tank - Changing the fluid

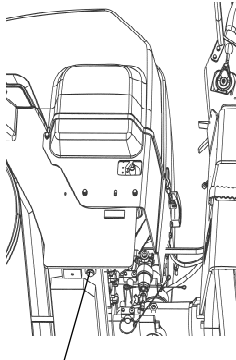


Fig. Left frame side
1. Drain plug



Risk of burn injuries when draining hot oil. Protect your hands.



Place a container under the plug. It should hold at least 40 liters. Save the oil and dispose of it in an approved manner.

Unscrew the drain plug (1) and allow all the oil to run out. Wipe and replace the drain plug.



Fill with fresh hydraulic fluid of the grade indicated in the Lubricant specification.

Replace the hydraulic fluid filter. See under the heading 'Every 1000 hours of operation'.

Start the diesel engine and run the various hydraulic functions. Check the fluid level in the tank, and top up if necessary.



Replacing the pre-filter

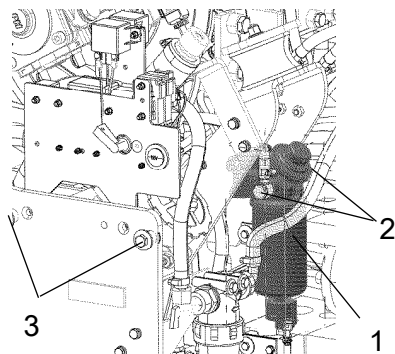


Fig. Engine compartment

- 1. Pre-filter**
- 2. Hose clamps**
- 3. Bolts**

Activate the parking brake.
Switch off the engine and remove the plate on the left side of the frame (at battery disconnecter) by releasing the three bolts (3).
Release the hose clamps (2) with a screwdriver.



Place a container underneath to collect fuel that runs out when the filter is released.

Remove the pre-filter (1) and hand in to a waste disposal station. This is a disposable filter and cannot be cleaned.

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

Start the engine and check that the pre-filter is tight.



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



Replacing the fuel filter



Place a container underneath to collect fuel that runs out when the filter is released.

Screw off the fuel filter (1). The filter is of the disposable type and cannot be cleaned. Hand in to a waste disposal station.



Refer to the engine manual for detailed instructions when replacing the fuel filter.

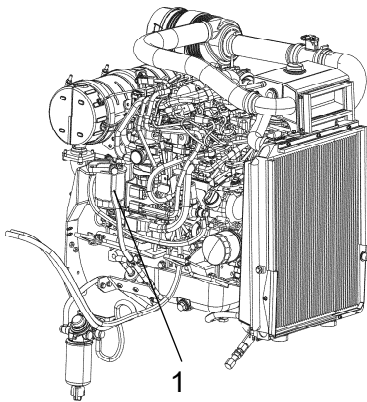


Fig. Engine compartment
1. Fuel filter

Start the engine and check that the fuel filter is tight.

N.B. Under no circumstances may new fuel filters be pre-filled with fuel before assembly due to the demands on the cleanliness of the fuel system. Use the hand pump on the fuel prefilter to fill from the machine's fuel system.



Drum - Oil change



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

Place the roller on a level surface and drive it slowly until the drain plug (1) is straight down.



Switch off the engine and activate the parking brake.

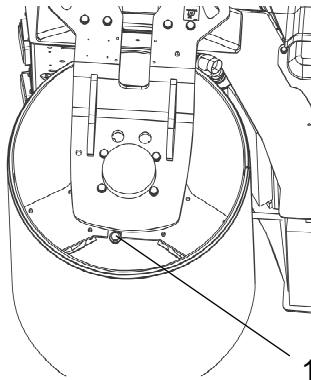


Fig. Drum, vibration side
1. Drain plug



Place a receptacle that will hold at least 7 liters (7.4 quarts) under the plug. Collect the oil and dispose of it properly.

Remove the plug and allow all the oil to run out. See under the heading 'Every 500 hours of operation' for filling oil.



Water tank - Draining



Remember that there is a risk of freezing during the winter. Empty the tank, pump and lines.

The easiest way to empty the water tank is to open the drain cock on the water filter (1). (There is also a drain plug under the water tank).

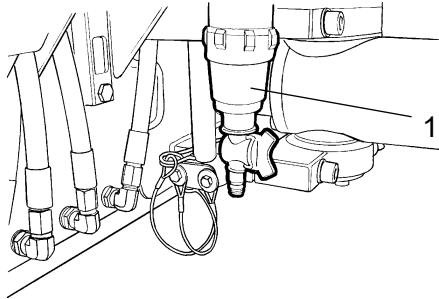


Fig. Pump system
1. Water filter



Water pump - Draining

The water pump (1) is emptied by opening the drain cock (2).

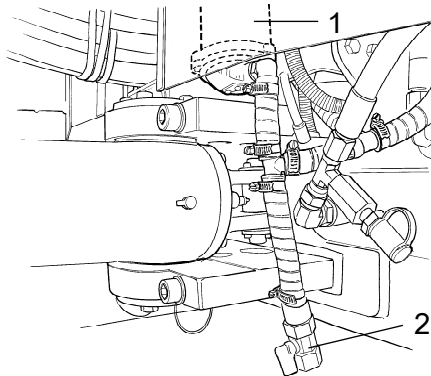


Fig. Pump system
1. Water pump
2. Drain cock



Water tank - Cleaning

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

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

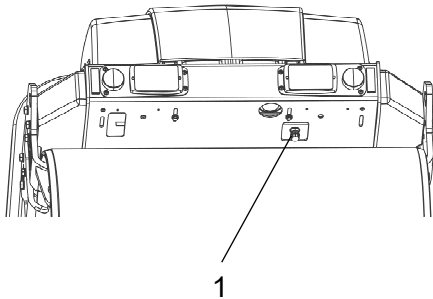


Fig. Water tank
1. Drain plug



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



Emulsion tank - Draining

Open the cock (1) and the drain cock (2), which is located in the left step. The hose (3) facilitates draining the emulsion fluid into a suitable receptacle.

When cleaning the tank, see Water tank - Cleaning.

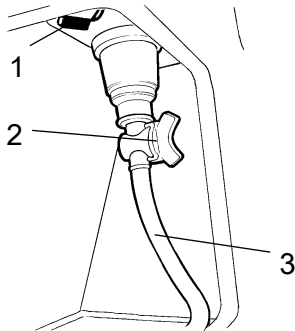


Fig. Pump system
1. Stop cock
2. Drain cock
3. Drain hose



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



Fuel tank - Cleaning

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



Pump out any bottom sediment using a suitable pump, such as an oil drain pump. Save the oil in a container and dispose of it in an approved manner.

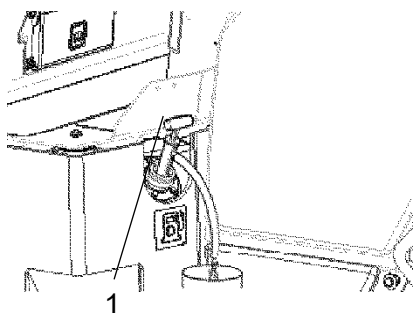


Fig. Fuel tank
1. Fuel tank



Keep in mind fire risk when handling fuel.



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

Steering joint - Check

Check the steering joint for any damage or cracks.

Check and tighten any loose bolts.

Check also for any stiffness and play.

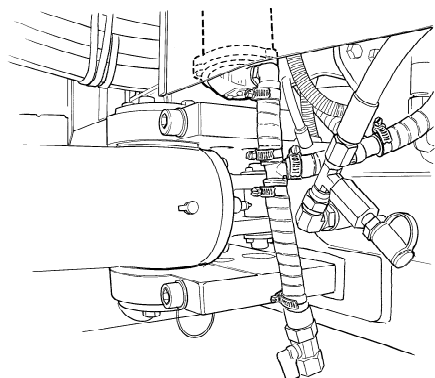


Fig. Steering joint

