PARTS CATALOGUE

DRS120DS
Soil Roller

SERIAL NUMBER:
10300200LLE011595

ENGINE:
Dynapac- 4R1040T

Manual Revisions

Table 1: Revision History

Sr No	*Date*	*Revision*
1	*Jan 2022*	*New Released*
2	*Feb 2023*	*Brake Release Procedure Added for New Axle*

Table of Contents

Introduction

Warning symbols

The machine

DRS120DS is one of Dynapac's medium-heavy soil compaction rollers. It is available in D versions.

Intended use

All types of base courses and subbase courses can be compacted deeper and used as drum drive machine.

The safety-related accessories are described in this manual. Other accessories, such as compaction meter, tachograph and field computer, are described in separate instructions.

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

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

Safety information

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.

General

This manual contains instructions for machine operation and maintenance.

The machine must be correctly maintained for maximal performance.

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

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

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

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

This manual contains instructions for periodic maintenance, where the machine operator can perform maintenance after every 10 and 50 hours of operation. Accredited (Dynapac) service personnel must carry out other maintenance intervals.

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

The engine supplier's certified personnel must carry out specific maintenance and checks on diesel engines.

Safety - General instructions

(Also read the safety manual)

1. **The operator must be familiar with the contents of the OPERATION section before starting the roller.**
2. **Ensure that all instructions in the MAINTENANCE section are followed.**
3. **Only trained and/or experienced operators are to operate the roller. Passengers are not permitted on the roller. Remain seated at all times when operating the roller.**
4. **Never use the roller if it is in need of adjustment or repair.**
5. **Only mount and dismount 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 mounting or dismounting the machine. Never jump down from the machine.**
6. **The ROPS (Roll Over Protective Structure) should always be used when the machine is operated on unsafe ground.**
7. **Drive slowly in sharp bends.**
8. **Avoid driving across slopes. Drive straight up or straight down the slope.**
9. **Never operate with roller outside the edge, if the substrate does not have full bearing strength or is close to a slope. Avoid operating close to edges and ditches and the like as well as on poor ground conditions that influence the bearing strength and capacity to support the roller.**
10. **Make sure that there are no obstacles in the direction of travel, on the ground, in front of or behind the roller, or overhead.**
11. **Drive particularly carefully on uneven ground.**
12. **Use the safety equipment provided. The seat belt must be worn on machines fitted with ROPS/ROPS-cab.**
13. **Keep the roller clean. Clean any dirt or grease that accumulates on the operator platform immediately. Keep all signs and decals clean and legible.**
14. **Safety measures before refueling:**
    - Stop the engine
    - Do not smoke.
    - No naked flames in the vicinity of the roller.
    - Earth the filling equipment nozzle to the tank opening to avoid sparks.
15. **Before repairs or service:**
    - Chock the drums/wheels.
    - Lock the articulation if necessary.
    - Place blocks under overhanging equipment, such as strike-off blade and chip spreader.

16. **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.**

17. **Do not make any changes or modifications to the roller that could affect safety. Changes are only to be made after written approval has been given by Dynapac.**

18. **Avoid using the roller before the hydraulic fluid has reached its normal working temperature. Braking distances can be longer than normal when the fluid is cold. See instructions in the STOP section.**

19. **For your own protection always wear:**
    - helmet
    - working boots with steel toecaps
    - ear protectors
    - reflecting clothing/high visibility jacket
    - working gloves

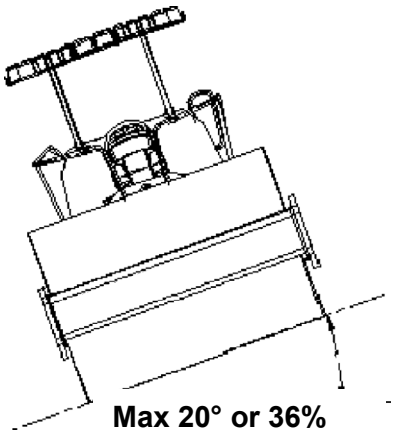


Fig. Operating on slopes

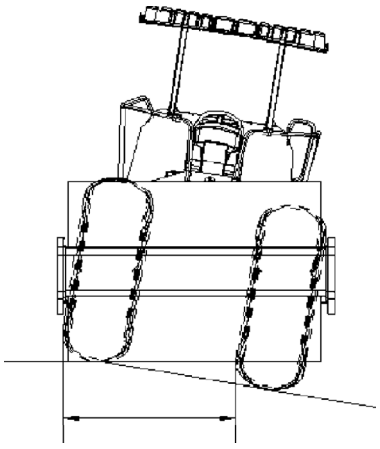


Fig.Position of Drum When driving near an edge

Safety - when operating

Prevent persons from entering or remaining in the danger area, 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.

Slopes

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

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

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

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

Driving near edges

Never operate with roller outside the edge, if the substrate does not have full bearing strength or 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.

Work driving

Avoid operating close to edges and ditches and the like as well as on poor ground conditions that influence 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.

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

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

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).

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.

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.

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), ROPS approved cab

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

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

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.

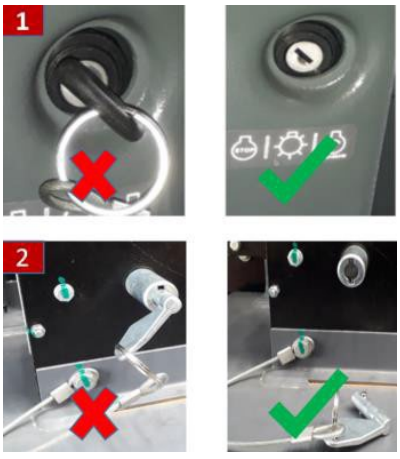


Fig. Ignition key & Battery dis-connector
1. ***Ignition key***
2. ***Battery Dis-connector***

Ignition key & Battery Dis-connector key removal In transit

While transporting the machine on the trailer or container or in long-term parking always ensure that

1. **Ignition key should be removed from the Ignition switch**
2. **Battery dis-connector key should be removed**.

This will avoid static parasitic current consumption & saves the battery life & potential battery drain issue

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.

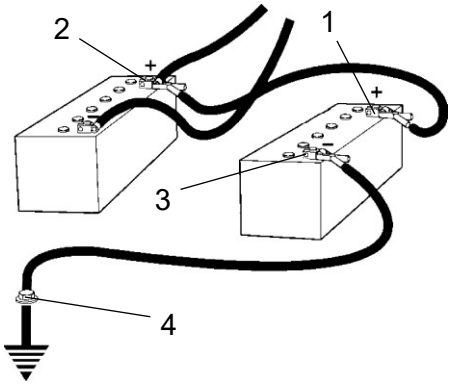


Fig. Jump starting

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.

Orientation of Rotating Beacon on the Machine

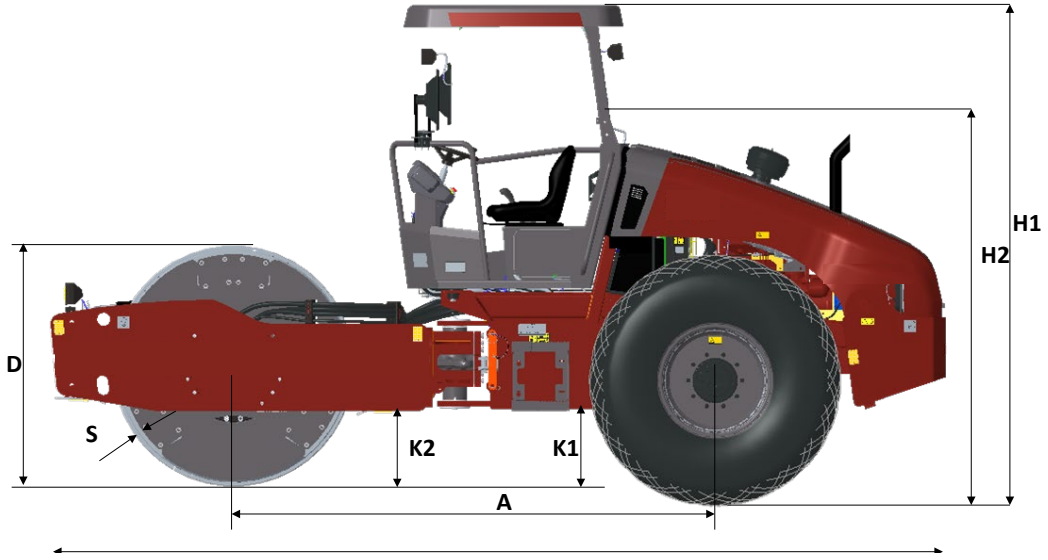
Fig. Orientation of Rotating Beacon

The beacon should be fitted with the lens (Amber coloured) mounted at uppermost (sky direction) i.e. Never bend the beacon towards down.

This will avoid rainwater entry & its accumulation through its drain holes if beacon bended at bottom.

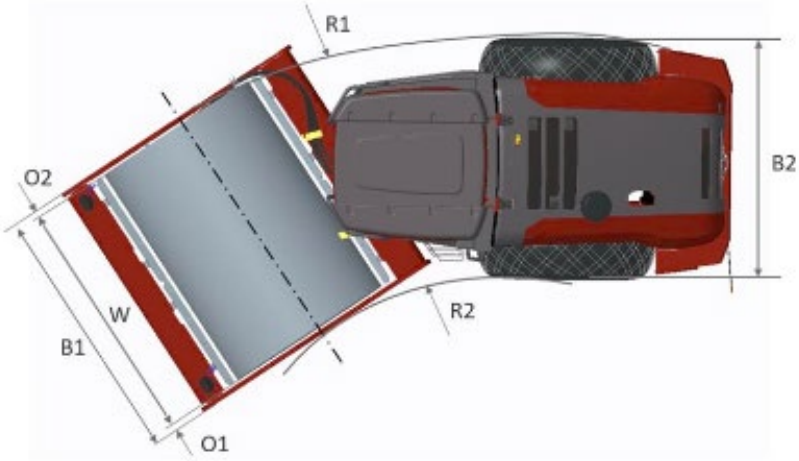
However, wherever height constraint observed (like machine in container)- the same beacon light to be removed, packed safely & send along with machine.

Dimensions, side view



	Dimensions	mm	in
A	Wheelbase, drum and wheel	2990	117.7
L	Length, standard equipped roller	5600	220.5
H1	Height, with ROPS (STD, D)	2977	117.2
H3	Height, without ROPS/cab (STD, D)	2400	94.5
D	Diameter, drum	1500	59.1
S	Thickness, drum sweep, nominal	25	1.0
K1	Clearance, tractor frame	520	20.5
K2	Clearance, drum frame (STD, D)	460	18.1

Dimensions, top view



	Dimensions	mm	in
B	Width, standard equipped roller	2260	89.0
O1	Overhang, left frame side	65	2.6
O2	Overhang, right frame side	65	2.6
R1	Turn radius, external	5515	217.1
R2	Turn radius, internal	3385	133.3
W1	Width, tractor section	2130	83.9
W2	Width, drum	2130	83.9

Weights and volumes

Service weight		Front Module	Rear Module	Operating Mass
DRS120DS	Kg	6800	4600	11400
	lb	14991	10141	25133

Fluid volumes

Fuel tank	280 liters	74 gal

Working capacity

Compaction data

Static linear load (D)	32.8	kg/cm	183.6	p/i
Amplitude, high D	1.8	mm	0.07	in
Amplitude, low D	0.9	mm	0.03	in
Vibration frequency, high amplitude D	33	Hz	1980	vpm
Vibration frequency, low amplitude D	33	Hz	1980	vpm
Centrifugal force, high amplitude D	250	kN	56200	lb
Centrifugal force, low amplitude D	130	kN	29224	lb

General

Engine

Manufacturer/Model	Dynapac 4R1040T	Water cooled turbo diesel
Power (SAE J1995)	78 kW	105
Engine speed	2200	

Electrical system

Battery	12V 150Ah
Alternator	12V 65A
Fuses	See the Electrical system section - fuses

Tire	Tire dimensions	Tire pressure
Std-type	23.1 x 26.0 8 ply	110 kPa (1.1 kp/cm) (16 psi)

The tires filled with fluid (up to 495 kg/tire). When doing tire maintenance, pay attention to their condition.

Tire Water Blasting procedure

Jack the Roller and turn the tire to bring the valve to the top position.

Remove the valve core housing and make connection with tire blasting pump and fill the water with 495 lit's per tire.

Set the final working press (110kpa-16psi) after un-jack the roller in valve position in bottom side.

Tyre blasting must in bead seating with control pressure & valve position in up position.

Hydraulic system

Opening pressure	MPa	Bar	Psi
Drive system	35.0	350	5076
Supply system	2.2	22	319
Vibration system	30.0	300	4351
Steering systems	15.0	150	2175
Brake release	2.5	25	362

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

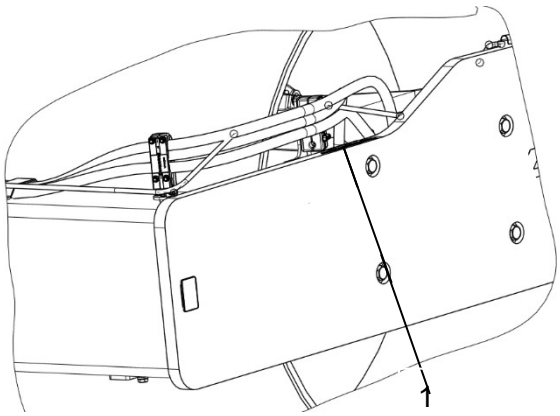


Fig. Front frame
1. PIN

Machine description

Identification

Product identification number on the frame

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

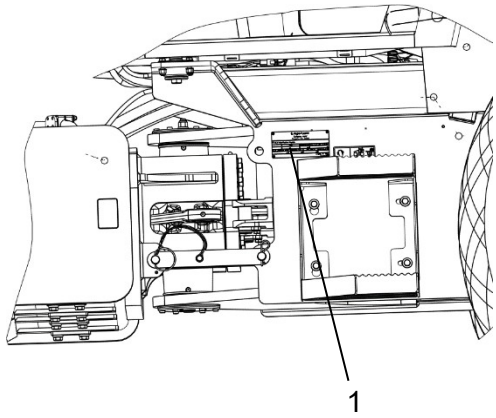


Fig. Operator platform
1. Machine plate

Machine plate

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

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

optional QR code

DYNAPAC
FAYAT GROUP

Dynapac Road Construction Equipment India Pvt Ltd
Plot no.1, Gat no.163-168, Alandi Markal road, Village-Fulgaon,
Taluka-Haveli, Dist Pune-412216, Maharashtra, India

Product Identification Number	>XXXXXXXXXXXXXXXXX<		
Designation	Type	Rated Power	Max axle load front / rear
XXXXXX	XXXXXX	XXX kW	XXXX/XXXX kg
Gross machinery mass	Operating mass	Max ballast	Month/Year of Mfg
XXXX kg	XXXX kg	XXXX kg	XX / XXXX

Made in India
4812109715

Fig. Machine plate

Please state the machine's PIN when ordering spares.

103	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. Engine
1. Type plate

Engine plates

The engine plate (1) is affixed to the right side of the engine.

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

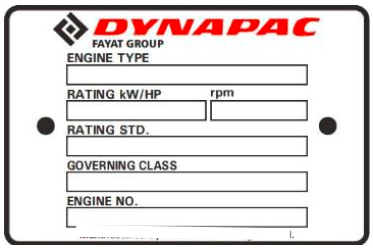
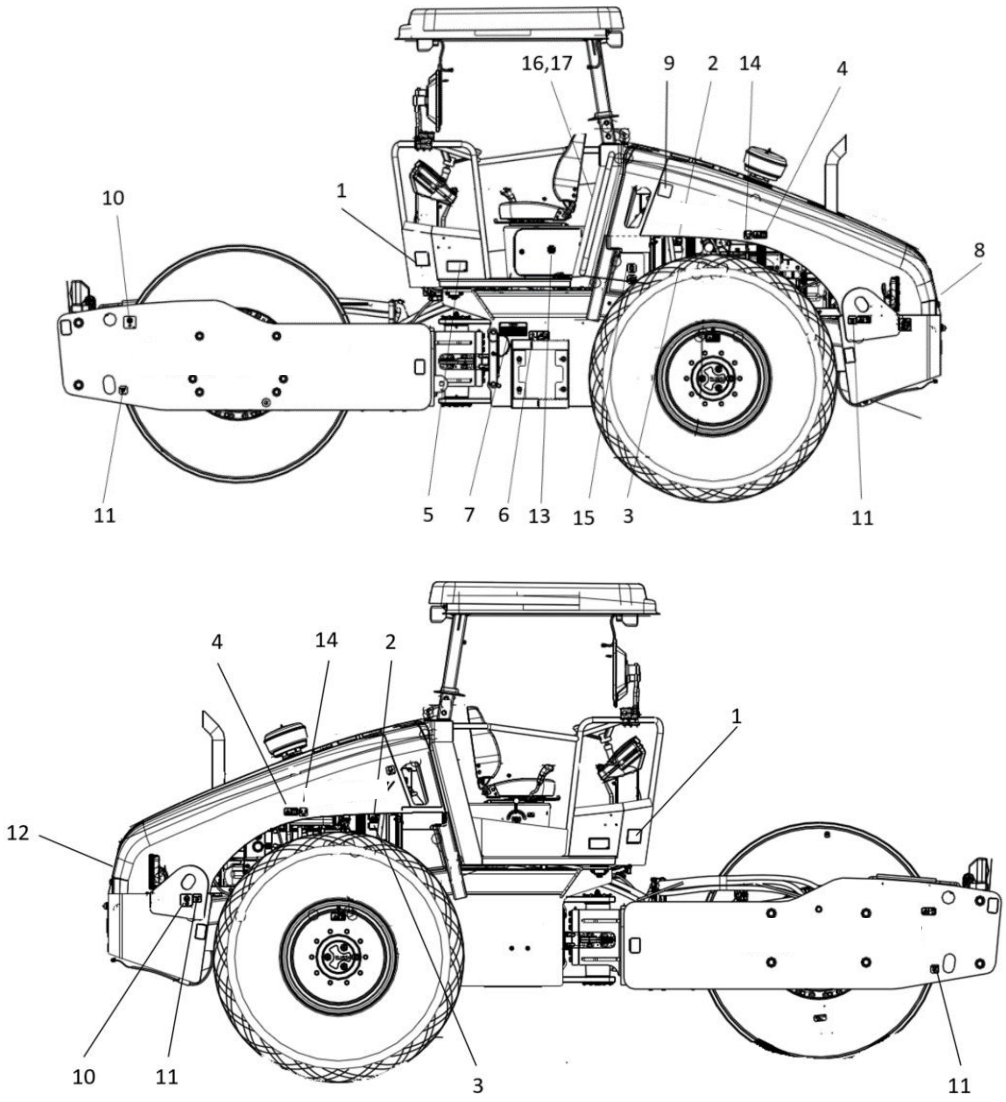


Fig. Type plate

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

Decals

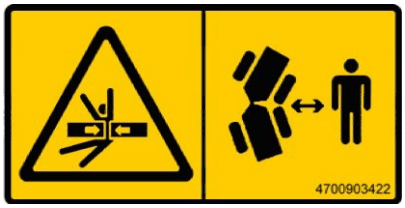
Location – decals



1. Warning, crush zone
2. Warning, rotating engine components
3. Warning, Hot surfaces
4. Warning, Ballasted tire.
5. Warning, Read instructions manual
6. Warning, risk of crushing
7. Product sign
8. Diesel fuel
9. Hydraulic fluid/Bio hydraulic fluid
10. Lifting point
11. Fixing point
12. Master switch
13. Handbook compartment
14. Tire pressure
15. Hydraulic fluid/Biohydraulic
16. BS-3 decal
17. Maintenance decal

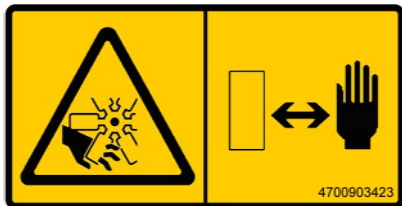
Safety decals

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.



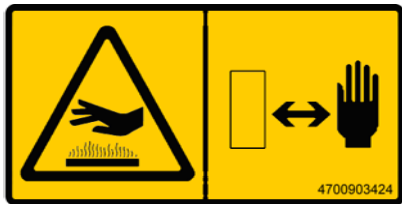
4700903422
Warning - Crush zone, articulation/drum.

Maintain a safe distance from the crush zone.
(Two crush zones on machines fitted with pivotal steering)



4700903423
Warning - Rotating engine components.

Keep your hands at a safe distance.



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.

4700904165
Warning - Toxic gas (option, ACC)

Read the instruction manual.

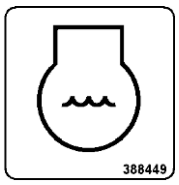
4700903985
Warning - Ballasted tire.

Read the instruction manual.

More information in section in Technical specifications.

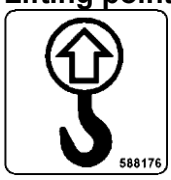
Info decals

Coolant



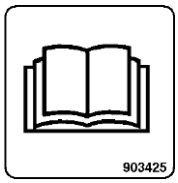
Diesel fuel

Lifting point

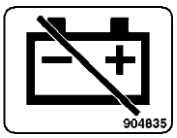


Grease

Handbook compartment

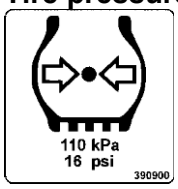


Master switch

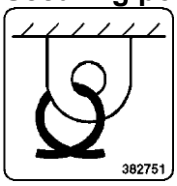


Hydraulic fluid

Tire pressure



Securing point



Hydraulic fluid level

Instruments/controls

Locations - Instruments and controls

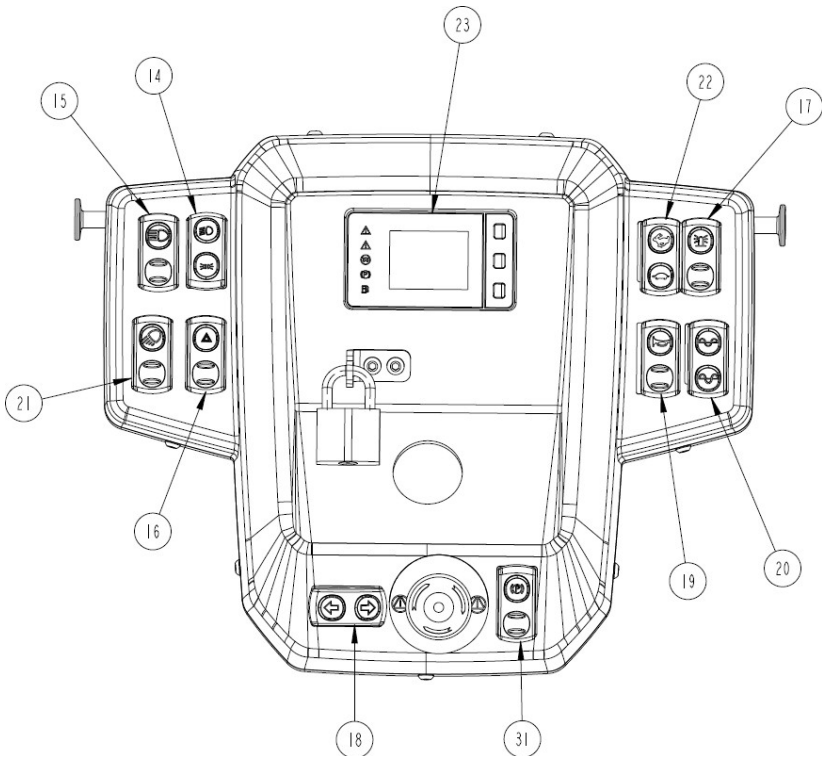
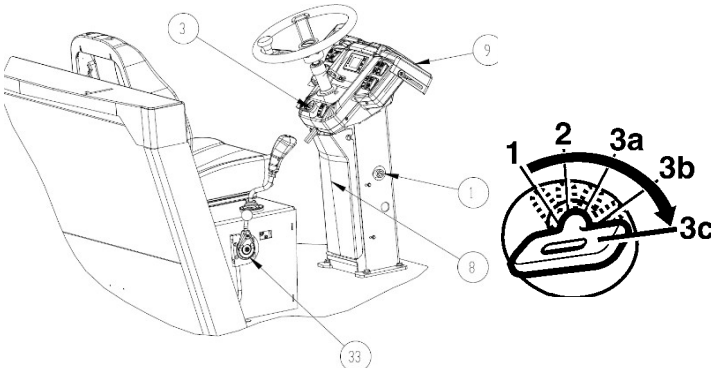


Fig. Instruments and control panel

14.	Driving lights, Low beam
15.	Driving lights, High beam
16.	Hazard flashers
17.	Hazard beacon
18.	Direction indicators
19.	Horn
20.	Vibration On/Off, Amplitude High/Low
21.	Anti-spin forward/equal share/back
22.	Speed selection (Working/Transport)
23.	Control panel
31.	Parking brake On/Off

Locations - Control panel and controls

Fig. Control panel



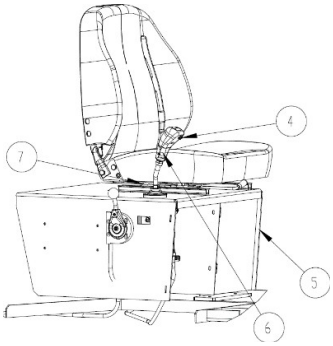


Fig. Operator position

1	Starter switch	23	Low fuel level
3	Emergency stop	24	Oil pressure, diesel engine
4	Vibration ON/OFF	25	Parking brake
5	Handbook compartment	26	Fuel level
6	Forward/Back control	27	Water temperature, diesel engine
7	Seat switch	28	Battery/charging
8	Fuse box	30	Hour meter
9	Instrument guard	33	Engine speed control
11	Hydraulic temperature		
12	Air filter		

Function description

No	Designation	Symbol	Function
1.	**Starterswitch**		**Positions 1-2: Shut off position, key can be** removed. **Position 3a: All instruments and electric controls** are supplied with power. Position 3c: Starter motor activation.
3.	Emergency stop		When pressed, the emergency stop is activated. The brake is applied and the engine stops. Brace yourself for a sudden stop.
4.	Vibration On/Off. Switch		When the circuit breaker is pressed in and released the vibrations are connected up. Press again and the vibrations are disconnected. Highor low amplitude must first be chosen on the instrument panel.
5.	Handbook compartment		Pull up and open the top of the compartment for access to handbooks.
6.	Forward/Reverse lever		The lever must be in neutral to start the diesel engine. The engine cannot be started if the lever is in any other position. The forward/reverse lever controls both the roller's driving direction and speed. When the lever is moved forward, the roller moves forward etc. The roller's speed is proportional to the distance the lever is from the neutral position. The further the lever is from the neutral position, the higher the speed.
7.	Seat switch		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.
8.	Fuse box (on control column)		Contains fuses for the electrical system. Seeunder the heading ‘Electrical system’ for a description of fuse functions.
9.	Instrument cover		Lowered over the instrument plate to protectthe instruments from the weather and sabotage. Lockable
11.	Temperature gauge, hydraulic fluid.		Shows hydraulic fluid temperature. Normal temperature range is 65°-80°C (149°-176°F). Stop the engine if the gauge shows a temperature of more than 85°C (185°F). Locate the fault.
12.	Warning lamp, air filter		If the lamp comes on while the engine is running at full speed, the air filter must be cleaned or replaced.
14.	Driving lights, low beam, switch (Optional)		When depressed, the driving lights low beam are on.
15.	Driving lights, high beam, switch (Optional)		When depressed, the driving lights high beam are on.
16.	Hazard warning lights, switch (Optional)		Where depressed, the hazard warning lights are on

No	Designation	Symbol	Function
17.	**Hazard beacon, switch** (Optional)		Where 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.	Amplitude High/Low, Vibration On		Low Amplitude Activate the vibration together with the circuit breaker on forward/back control.
			Vibration switched off.
			Amplitude, high Activate the vibration together with the circuit breaker on forward/back control.
21.	Anti spin Forward/Equal share/Back (Optional)		Roller spinning symbol = less distribution of power to the roller.
			Mid position = Equal distribution of power forward/back.
			Wheel spinning symbol =Less distribution of power to the roller.
22.	Control panel		
23.	Warning lamp, low fuel level		This lamp lights when the fuel level in the diesel tank is too low.
24.	Warning lamp, oil pressure		This lamp lights if the lubricating pressure in the engine is too low. Stop the engine immediately and locate the fault.
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.
30.	Hour meter		Shows the number of hours the engine has run.
31.	Parking brake On/Off, switch		Push in to activate the parking brake, the machine stops with the engine running. **Always use the parking brake when the machine is stationary on a sloping surface.**
32.	Transport mode		Transport mode.
		TC	Traction control mode (TC): Activate this function together with the power distribution selector switch.
33.	Engine speed control		Turn the lever backwards and release it into the groove to set engine speed to operating speed. To select idling speed, move the lever to forward end position.

Electrical control system

Functional Description – Display

Fig. Start screen

When the ignition key is activated to position 1, the start screen appears on the display (Fig. 1). This is shown for a two seconds and then switches over to the status screen.

Transport mode

The transport mode menu is shown when one of the three function keys to the right on the display is activated.

The status screening provides information about travel direction (2), Hour meter (3) and fuel level (4).

Direction of work

The icon has three options (F, N, R) and is located in the top left corner of the Display (2).

➔ **N** (Neutral) – Indicates that the lever is in Neutral position.

➔ **F** (Forwards) – A left arrow is shown in front of "F" on the display.

➔ **R** (Reverse) – A right arrow is shown after "R" on the display.

Hour meter

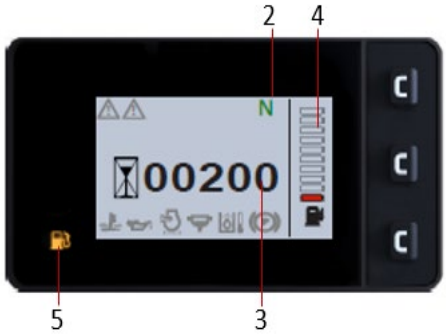


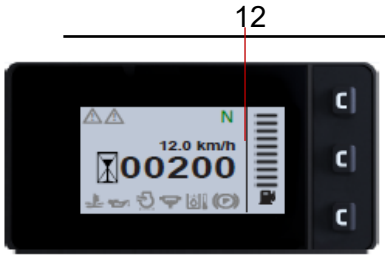
Fig. Transport mode

An icon (hour-glass) is shown on the left-hand side of the display for machine hours. The number of hours is shown to the right of the icon (3).

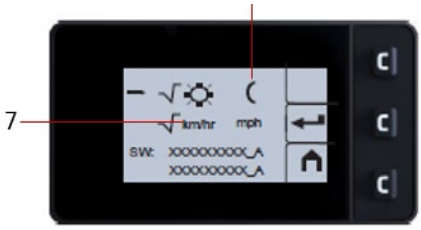
Fuel level

The fuel level is indicated as a no of lines of on the bar to the right of the display.

Once the first fuel bar is reached (bottom to top), it means the system has 10% of its total capacity, and the warning LED lights glow, indicating that you should refuel (5).



Transport page with speed



Transport with machine speed (Applicable to DCM)

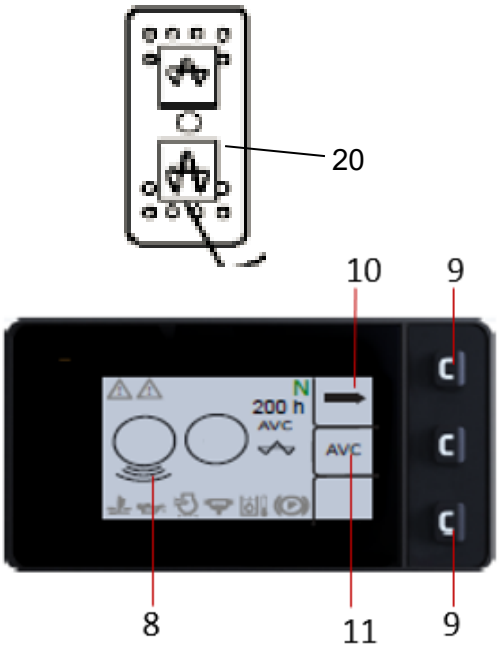
User can see the machine speed (12) in travel and working mode. It's applicable in DCM machine.

User settings

Users can change the lighting configurations (6), Brightness & contrast. Machine speed (7) Applicable in Compaction meter.

SW: - 4812332072_A– Display
4812330987_A – ECU software

Fig. User settings



Working mode – Vibration

Different Vibration modes are chosen by pressing the corresponding button (20) on the Control panel.

Vibration status

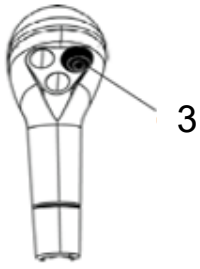
Vibration status activated on the drum (8).

Automatic Vibration Control – AVC

Press bottom buttons (9) on the far edge of the Display. An arrow will appear on the right (10).

Press the bottom button (9) and the submenu is displayed.

Press the bottom button (9) to activate AVC (11), and after it is activated, the icon will appear on the bottom right of the display. To activate the vibration, click on the button (3).



Machine with standard equipment
Fig. Vibritaion switch

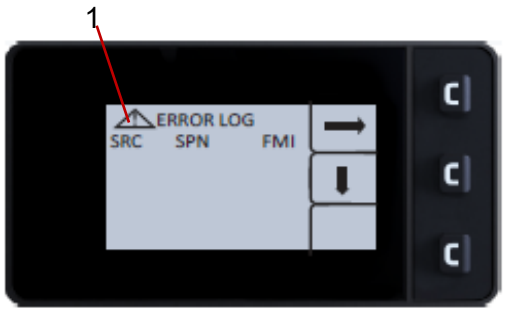


Fig. Submenu – Error codes

Fig. List of error codes

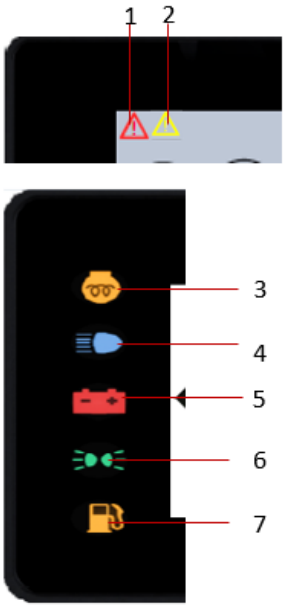
Sub menu – Error codes

1. The alarm symbols are shown on the left hand side of the display. At the top is the red warning symbol and at the bottom the yellow (1).
2. The side menu is displayed, when the sub-menu is selected.
3. Now go to the submenu of user configurations.
4. The middle button (4) on the side menu shows a downward arrow. When this is selected, an error code list appears. When the last error code is shown, scroll the list up to the first error code again.
5. The active Home mode is shown when the travel direction is changed.
6. If the sub-menu is inactive for more than 20 seconds, the menu will switch back to the active home menu.
7. When "OK" is shown in the box to the bottom right, the screen should be cleared

.

8. When "OK" is selected, the active Home mode is shown.
9. A Red or Yellow control lamp gives a reminder until the error is rectified.

Function description



		Designation and function
1		Warning lamp (Red) Serious failure: STOP the engine immediately Lights ON a long with the message on the screen
2		Warning lamp (Yellow) Less Serious failure: correct as soon as possible Lights On along with message on the screen.
3		Heating (Yellow) Not Applicable for T1 The symbol must go out before switching the ignition key to position II & activate the starter.
4		Upper light (Blue) Not applicable to T1 & T3. This symbol light glow when upper light ON
5		Battery indicator (Red) The symbol light glow when the battery voltage below 13.5V
6		Parking Lamp (Green) The Symbol lights glow when parking light ON.
7		Fuel level (Yellow) The Symbol lights glows only 10% of fuel is left in the tank.

No Charging

Functional Description – Tell- Tales & Alarms

Battery Charging

When battery voltage is low i.e. <13.5V, the charging symbol Appears with orange triangle alert as per beside snap.

High Engine Temperature

Engine Coolant Temp. High

When the Engine Temp high: immediately symbol will come with red colour alert as per beside slide

High Hydralic Oil Temperature

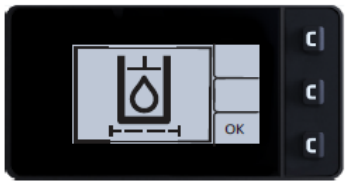
Hydraulic Oil Temp high

When Hydraulic oil temp high; immediately symbol will come with RED colour alert.

Low Oil Pressure

Low Engine Oil Pressure level

When engine oil press. Level is low; immediately symbol will come with RED colour alert.



Hydralic Oil Filter

Hydraulic Oil Filter
When Hydraulic Oil filter clogged; immediately symbol will come with RED colour alert.

Air Filter

Air Filter
When Air filter clogged; immediately symbol will come with RED
colour alert.

Fuel level low

Low Fuel
When fuel is low-symbol should come with Orange tell-tale

Parking Break

Parking Brake
When the parking brake applied symbol should come red tell-

Parking Light

Parking light
When the parking light applied symbol should come in green

Pbrake for cranking

Parking Brake
When the parking brake released and try to start the machine, symbol should appear to indicate the Parking switch need to applied in machine starting.

FNR neutral for cranking

FNR in neutral
When the FNR lever away from neutral and try to start the machine, Machine, Symbol will appear to indicate the FNR need to
In neutral switch when machine starting.

Work mode needed

Work Mode
In working condition work mode need to select before vibration mode activation, Symbol will appear when work mode switch not activated.

Driver away from seat

Driver seat
When the driver away from seat in machine starting and also in running condition symbol will appear o indicate operator need to seat.

Gear Position 1

Symbolic representation of working mode
Switched ‘ON’ Low speed button and check symbol as per beside with tortoise curve inside the drum (this will appear when low speed activated)

Gear Position 2

Symbolic representation of Travel mode
Switched ‘ON’ High speed button and check symbol as per beside with rabbit curve inside the drum (this will appear when high speed activated)

Low Amplitude
Vibration

Symbolic representation of Vibration 'ON' in low amplitude
Switched 'ON' vibration in low amplitude & check symbol as per beside snap with single curve below drum (this will appear whenever machine running in Vibration low mode only)

High Amplitude
Vibration

Symbolic representation of Vibration 'ON' in high amplitude
Switched 'ON' vibration in high amplitude & check symbol as per beside snap with dual curves below drum (this will appear whenever machine running in Vibration high mode only)

Electrical system

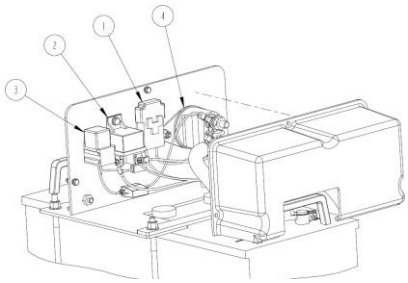
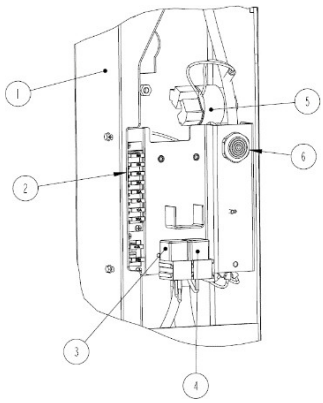


Fig. Engine house
1. Main fuse
2. Fuel solenoid relay
3. Starter relay
4. Master switch

Main fuses

The main fuse (1) is placed by the battery disconnector (4). The fuse is of the flat pin type. The fuel solenoid relay (2) and the starter relay (3) are also fitted here.

Main fuse 40A (Orange)



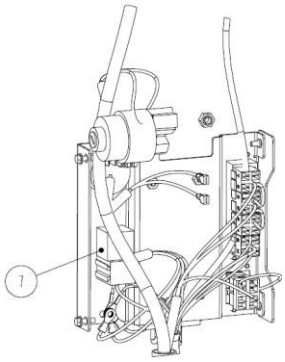


Fig. Control column
1. Console
2. Fuse Boxes
3. Light relay
4. Break Light relay
5. Ignition Switch
6. Buzzer
7. Flasher Relay

Relays

1. K7 Direction Indicators
2. K6 Stop Lights

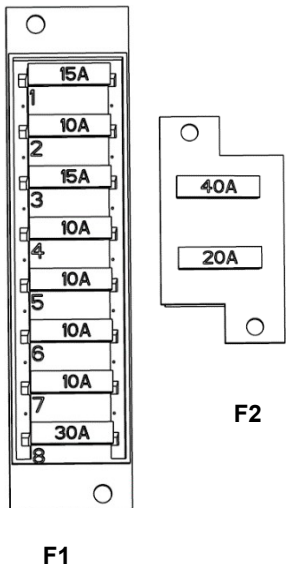


Fig. Fuses boxes.

Fuses

The figure shows the position of the fuses. The table below gives fuse amperage and function. All fuses are flat pin fuses.

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

Fuses in boxes F1

1.	Ignition, Emergency, NSS, ECU, Vibration seat Switch	15A	5.	Reverse Alarm, vibration activation input	10A
2.	Horn, Display	10A	6.	Future Provision	10A
3.	Future Provision	15A	7.	Future Provision	10A
4.	Rotating hazard beacon	10A	8.	Hazard, Side Indicator	30A

Fuses in boxes F2

1.	Working lights	20A
2.	Head Lights, Hi-Beam, Rear lights. Reg plate Lamp	20A

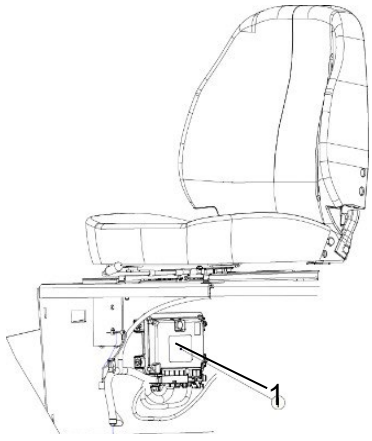


Fig. Driving compartment
1 Control unit (ECU)

Control unit (ECU) 1 is places behind the front hatch under the driver seat.

This control unit runs the electrical driving system, vibration, start-stop, among other things.

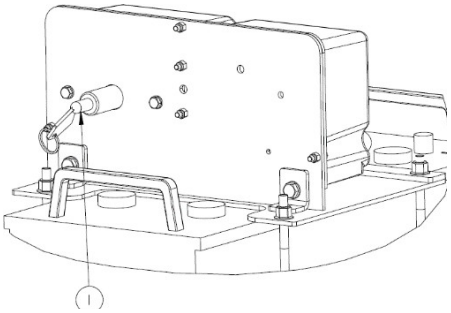


Fig. Engine house
1. Battery Master switch

Operation

Before starting

Master switch - Switching on

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

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

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

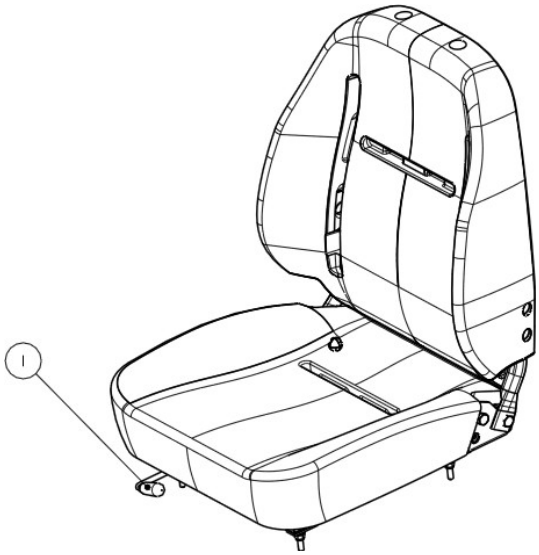


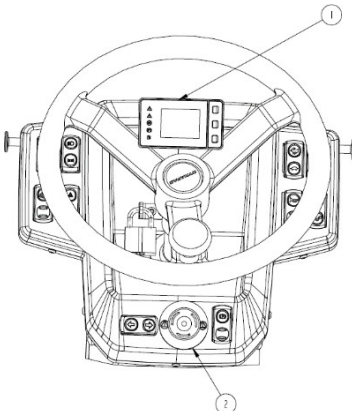
Fig. Operator's seat
1. Length adjustment

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 lengthways (1) .

Instruments and lamps - Checking



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

Pull out the emergency stop (2).

Turn the switch (1) to position 3a.

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

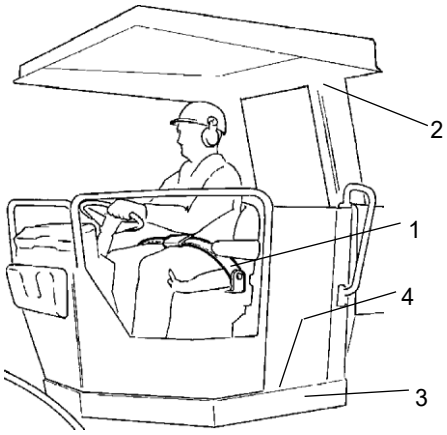


Fig. Operator's station
1. Seat belt
2. ROPS
3. Rubber element
4. Anti-slip

Operator position

If a ROPS (2) (Roll Over Protective Structure) or a cab is fitted to the roller, always wear the seat belt (1) provided and wear a protective helmet.

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

Check that rubber elements (3) on the platform are intact. Worn elements will impair comfort.

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

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

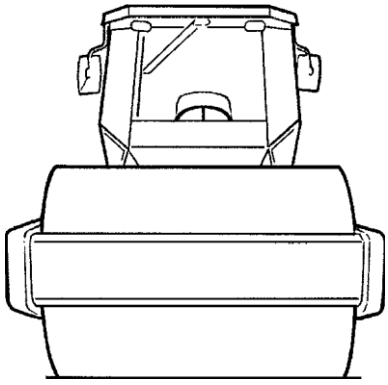


Fig. view

View

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

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

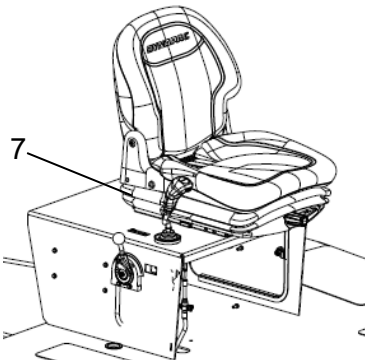


Fig. Inter locking
7- Seat switch

Interlock

The roller is equipped with Interlock.

The engine switches off 4 seconds after the operator rises from the seat.

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

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

Sit down for all operations!

Starting

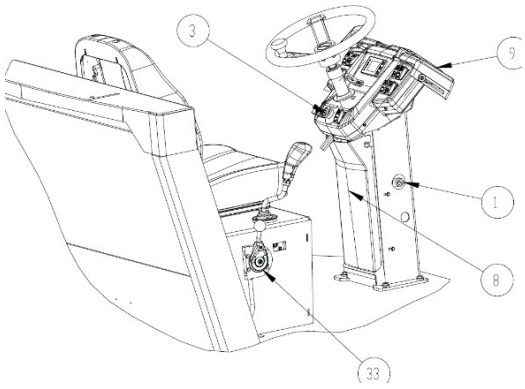


Fig. Control panel
1. Ignition starter switch
3. Emergency shut down
6. Forward/Back regulator
33. Engine speed control

Start of diesel motor

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

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

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

Turn the vibration switch to the Off position (position O).

At normal/high environmental temperature, set engine speed control (33) at the position for idle running (forward end position).

Turn switching starter(1) to position 3c. As soon as the motor has started, let the starting switch go.

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

Idle the engine for a few minutes until it is warm, longer if the ambient temperature is below +10 °C (50 °F)

At temperatures below 0°C (32°F) the diesel engine and hydraulic system should be warmed up for at least 15 minutes.

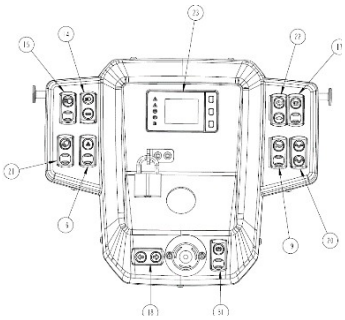


Fig. Instrument panel
20. Vibration switch

Fig. Control panel
28. Brake lamp

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

The warning lamp (25) should remain on.

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

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

Operating

Operating the roller

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

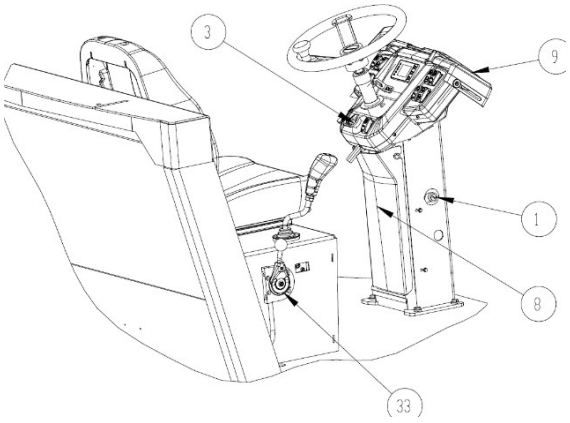


Fig. Control panel
1. Ignition starter switch
3. Emergency shut down
6. Forward/Back regulator
33. Engine speed control

Pull back the engine speed control (33) until it locks in the operational position.

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

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

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

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

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

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

Check while driving that the warning lamps have not gone on.

If the engine is overheated or if the oil pressure is to low then the buzzer sounds for 10 seconds and the engine shuts off. Brace your self for a sudden stop.

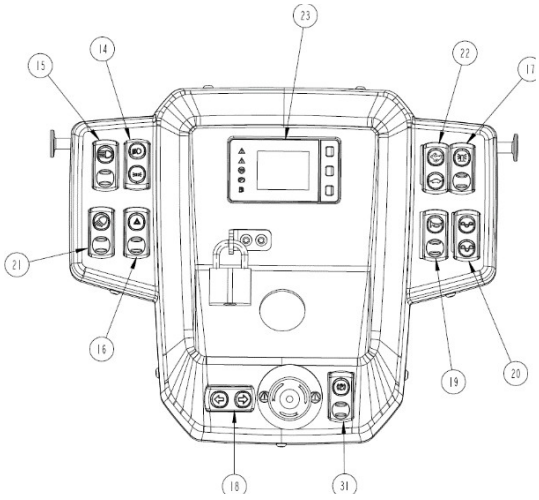


Fig. Instrument panel
20. Vibration switch.

Vibration

Vibration On/Off

Activation/deactivation of the vibration is selected with the switch (20).

The operator must activate the vibration via the switch (4) on the underside of the forward/reverse handle. See illustration below.

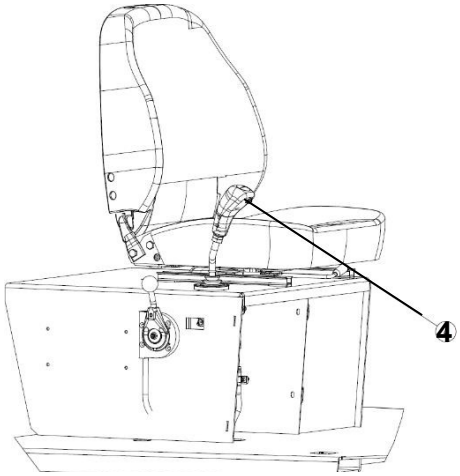


Fig. Forward/Reverse lever
4. Switch, vibration On/Off

Vibration - Activation

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

Engage and disengage vibration using the switch (4) on the underside of the forward/reverse lever.

Vibration can only be engaged at low and high speed.

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

Dynapac Compaction Meter (DCM) including Active Bouncing Control (ABC) - Optional

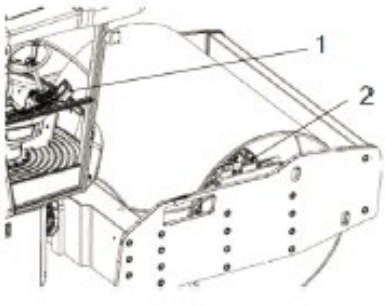


Fig. Main components:
1. Display of CMV
2. Sensor and process unit.

The Compaction Meter is an accessory used to ensure the compaction result and enables optimal material processing. Your system allows you to choose different types of materials as a parameter, adapting the system to the material being compacted.
If the Compaction Meter is mounted on the machine, a separate view in the machine display indicates the stiffness of the surface as a compaction meter value (CMV).

The Active Bouncing Control is always integrated in the Compaction Meter and after a certain warning time shuts off vibration if the machine is run in double-jump (bouncing). This is to save both machine and material as well as the operator from damages when the machine starts to double-jump.

The Compaction Meter is available for both D and PD machines but as the ground contact area varies a lot on PD the readings may not give any sure conclusions. However, ABC is still active. The ABC is only possible to disable via the service tool.

Setting CMV limit

The compaction meter value view in display will give the operator all information needed during compaction; engine rpm, gear position, speed, frequency and inclinations are in display together with actual CMV and the limit set in brackets. Use the buttons underneath the display to set the limit. The scale will automatically vary between 0-75 and 0-250 depending on the current readings.

If double-jump occurs the operator will first get a warning (!).

The sensor is fitted on the mounting plate of the main bearing and it senses the vibrating motion of the drum. The information is transmitted to the processor unit where it is analyzed.

The analyzed information is presented in the display as a digital value expressed as CMV (Compaction Value). High or low measuring range is automatically selected and viewed in the display. The resulting numerical value is a relative measure of the ground stiffness achieved.

Operation CMV

The Compaction Meter measures the dynamic stiffness of the ground and presents a value based on this. The CMV is influenced by the rolling speed, rolling direction (forward or reverse), amplitude setting and vibration frequency. The Dynapac Compaction Meter (DCM) is less sensitive to small variation in vibration frequency.

Some CMV references for compacted materials:

Material	**CMV**
Rocking	40 - 200
Gravel	25 - 100
Sand	20 - 60
Silte	5 -30
Clay	0 - 80

The water content in the compacted soil (not relevant for rock fill) has a large influence on stiffness, wet soil will result in low values and dry soil will result in higher values.
When double-jump occurs, the value CMV will be reduced, these lower values should not be used to determine if compaction is ready or not.

NOTE: The operator shall always keep an eye on where they are driving and not focus too much on the CMV display, due to safety.

Braking

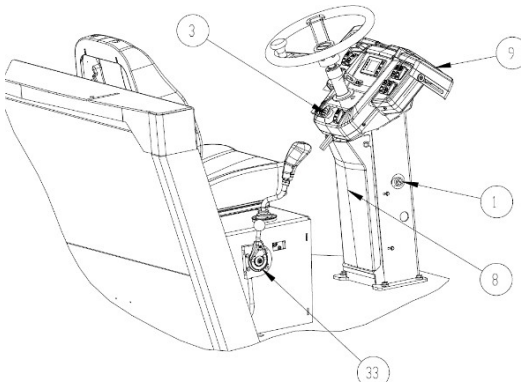


Fig. Control panel
1. Key
3. Emergency shut down
4. Vibration On/Off.
6. Forward/Back regulator
31. Parking brake starting switch
33. Engine speed control

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.

Turn the engine speed control (33) forward to idling position.

Set the parking brake switch (31) in the On position.

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

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

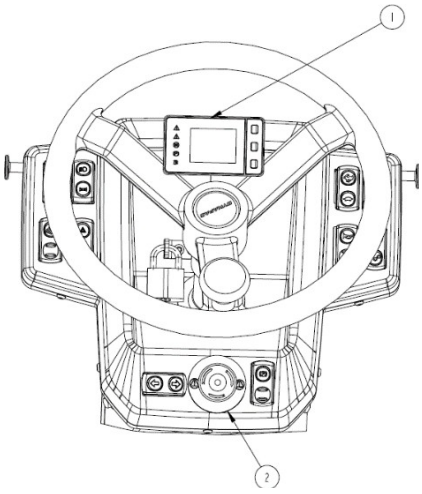


Fig. Instrument panel

1 Display
2 Emergency stop

Emergency braking

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

There is also a brake in the drum motor and rear axle that acts as an emergency brake during operation.

For emergency braking, press the emergency stop (2), hold the steering wheel firmly and be prepared for a sudden stop. The brakes are applied and the engine stops.

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

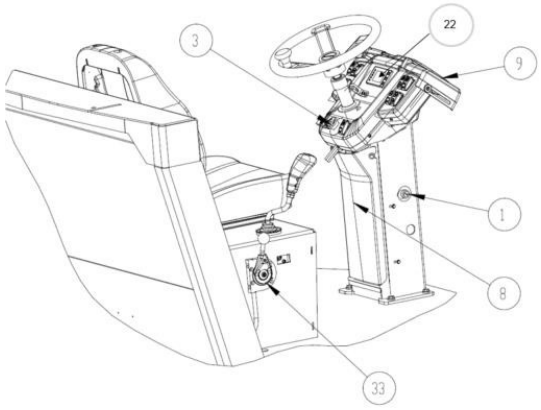


Fig. Instrument panel
1. Starter switch
9. Instrument guard
22. Panel for warning lamps

Switching off

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

Turn the starter switch (1) to the left to switched off position 1. At the end of the shift, lower the instrument cover (22) and lock it.

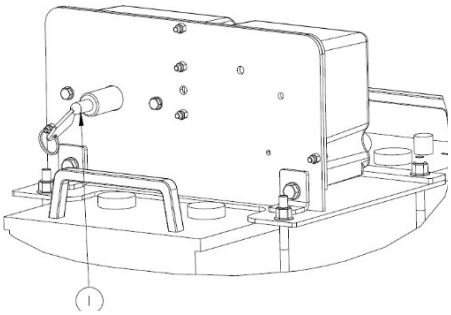


Fig. Engine compartment
1. Master switch

Parking

Master switch

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

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

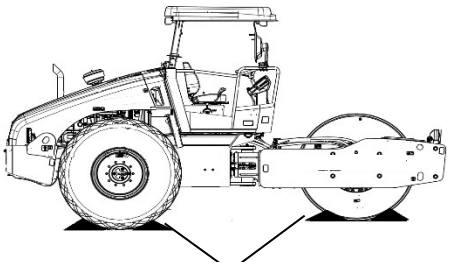


Fig. Arrangement
1. Chock

Chocking the drums

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

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

Keep in mind that there is a risk of freezing during the winter. Fill the engine cooling system and the screen wash bottle in the cab with suitable anti-freeze mixtures. See also the maintenance instructions.

Long-term parking

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

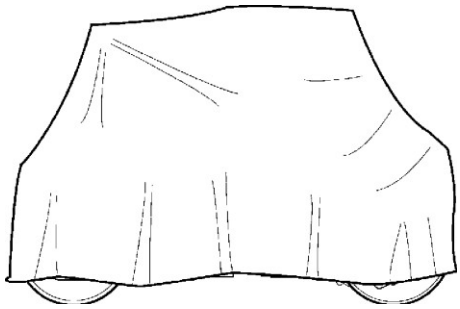


Fig. Roller weather protection

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

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

Air cleaner, exhaust pipe

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

Fuel tank

Fill the fuel tank completely full to prevent condensation.

Hydraulic reservoir

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

Steering cylinder, hinges, etc.

Lubricate the articulation bearing 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.

Tires (All-weather)

Check that tire pressure is 110 kPa (1.1 kp/cm 2), (16 psi).

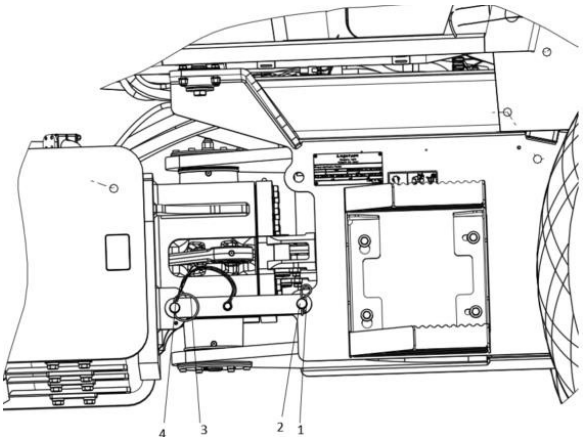


Fig. Articulation in the locked position
1. Locking arm
2. Locking pin
3. Locking stud
4. Locking lug

Weight: refer to the Pin plate on the roller

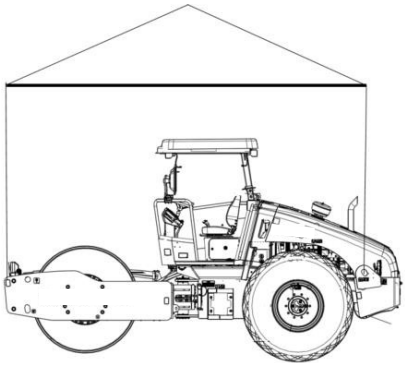


Fig. Roller prepared for lifting
1. PIN plate

Miscellaneous

Lifting

Locking the articulation

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

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

Pull out the lowermost locking pin (2), which has a wire attached. Pull up the locking dowel (3) which also has a wire attached.

Fold out the locking arm (1) and secure it to the upper locking lug (4) on steering joint.

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

Lifting the roller

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

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

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

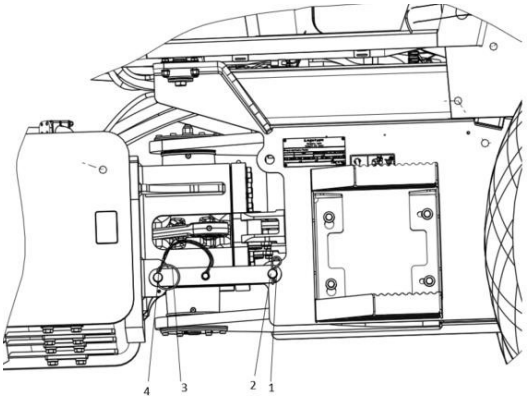


Fig. Articulation in the open position
1. Locking arm
2. Locking pin
3. Locking stud
4. Locking lug

Unlocking the articulation

Remember to unlock the articulation before operating.

Fold the locking arm (1) back and secure it in the locking lug (4) with the locking stud (3). Insert the lowermost locking pin (2) fitted with a wire, tosecure the locking stud (3). The locking lug (4) is located on the tractor frame.

Towing/Recovering

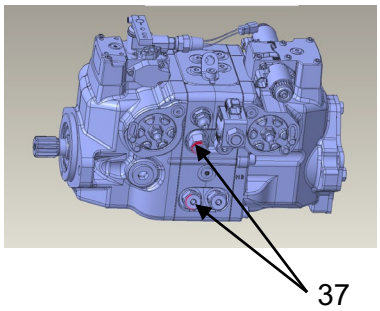


Fig. Propulsion pump
37. Setting screw

The roller can be moved up to 300 meters (330 yards) using the instructions below.

Alternative 1

Short distance towing with the engine running

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

Remove the grub from setting screw (1) and tighten the Allen bolt inside the setting screw clockwise approx. 3 to 4 turns.

Start the engine in low idle. The machine can now tow and can also be steered if the steering system is working.

Alternative 2-

Towing short distances where the engine is inoperative

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

First release both towing valves as per alternative 1.

Applicable for Carraro Axle

Rear axle brake (Up to Machine Sr no - E012246)

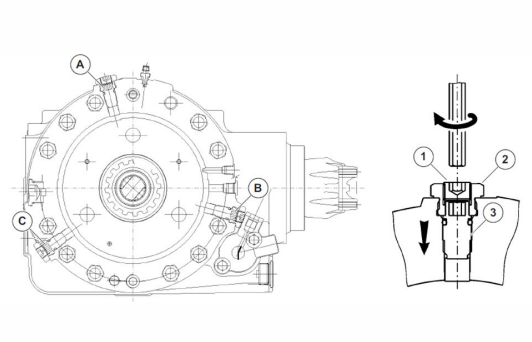


Fig. Rear Axle
1. *Lock Screw*
2. *Lock nut*
3. *Brake release screw*

On the both sides remove the lock screws(1).

Screw in the brake release bolts (3), ½ turns at a time, in sequence (A,B,C) until the torque drops off sharply (4-5 turns)

Clear the area of any personnel before removing the stop blocks on the drum and two wheels, and then tow the machine to a safe location.

In addition, release the drum brake - Follow procedure

Applicable for Dana Axle

Rear axle brake (From Machine Sr no - E012247)

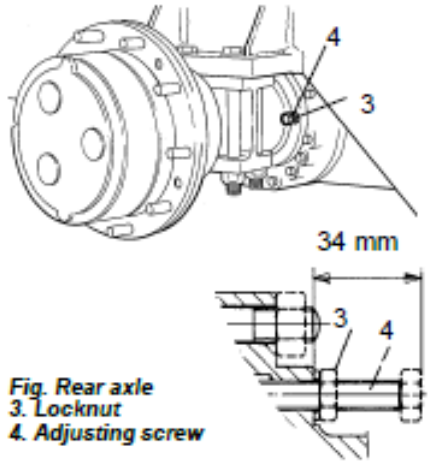


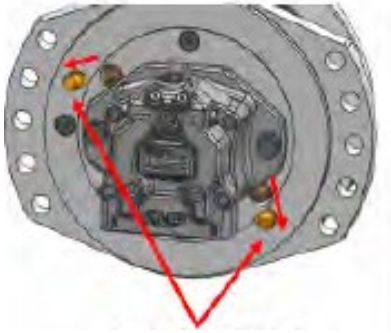
Fig. Rear axle
3. Locknut
4. Adjusting screw

Undo the lock nut (3) and screw the adjustment screws (4) by hand until resistance increases, and then one additional turn. The adjustment screws are located on the rear axle, two screws on each side of the differential housing.

In addition, release the drum brake - Follow procedure

Releasing the parking brake in the Drum

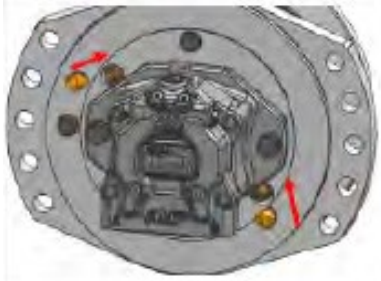
Disengage procedure

1	 Protective plug	Removing the plug protection
2	 	Using the appropriate 10 wrench rotate in clockwise direction the nuts until full disengagement

The brake is now disengaged, and the machine can be towed.

Reset the drum motor brake after towing.

Engage procedure

1	 	Using the appropriate 10 wrench rotate in counter clockwise direction until fill engagement.
2		Insert the plug protection

Towing the roller

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

The roller must be towed slowly, max. 3 km/h (2 mph) and only towed short distances, max. 300 m (330 yards).

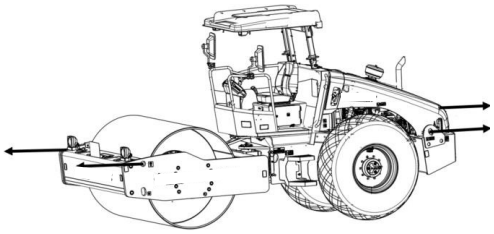


Fig.Towing

When towing/retrieving a machine, the towing device must be connected to both lifting holes. The pulling force must act longitudinally on the machine as shown in the figure. Maximum gross pulling force 185 kN (41590 lbf).

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

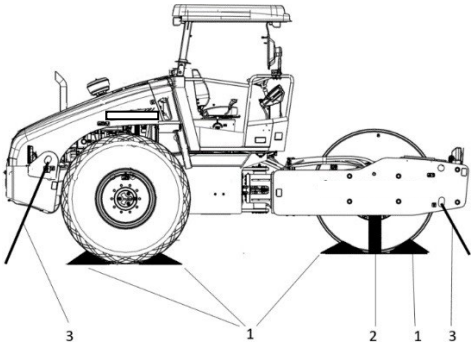


Fig. Transport
1. Chock
2. Block up
3. Lashing wire

Roller prepared for transport

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

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

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

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

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

Operating instructions - Summary

1. **Follow the SAFETY INSTRUCTIONS specified in the Safety Manual.**

2. Make sure that all instructions in the MAINTENANCE section are followed.

3. Turn the master switch to the ON position.

4. Move the forward/reverse lever to the NEUTRAL position.

5. Set the switch for Manual/Automatic vibration to the 0 position.

6. Set the engine speed control to idle.

7. Start the engine and allow it to warm up.

8. Set the engine speed control to the operating position.

9. Set the emergency/parking brake knob in the pulled-out position.

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

11. **Test the brakes. Remember that the braking distance will be longer if the roller is cold.**

12. Use vibration only when the roller is in motion.

13. **IN AN EMERGENCY:**
    - Push in the EMERGENCY/PARKING BRAKE KNOB
    - Hold the steering wheel firmly.
    - Brace yourself for a sudden stop.

14. When parking:
    - Push in the reserve/parking brake knob.
    - Stop the engine and chock the drum and wheels.

15. When lifting: - Refer to the relevant section in the Instruction Manual.

16. When towing: - Refer to the relevant section in the Instruction Manual.

17. When transporting: - Refer to the relevant section in the Instruction Manual.

18. When recovering - Refer to the relevant section in the Instruction Manual.

Preventive maintenance

Complete maintenance is necessary 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.

Maintenance - Lubricants and symbols

Fluid volumes

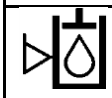
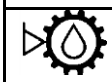
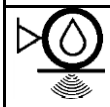
Rear axle		
-	1	liter
- Planet	2.2	liters/sid
Drum		
Cartridge	2.2	liters/side
Hydraulic reservoir	5	liter
Oil in hydraulic system	2	liter
Lubrication oil, diesel engine	1	liter
Coolant, diesel	2	liter

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

ENGINE OIL	**Air temperature -15°C - +50°C (5°F-122°F)**	**Dynapac Engine Oil 50**	**P/N 4812161855 (5 liters)**
HYDRAULIC FLUID	**Air temperature -15°C - +50°C (5°F-122°F)**	**Dynapac Hydraulic 300**	P/N 4812161868 (20 litres) P/N 4812161869 (209 litres)
	Air temperature over +40°C (104°F)		
DRUM OIL	**Air temperature -15°C - +40°C (5°F-104°F)**	**Dynapac Drum Oil 1000**	**P/N 4812161887 (5 liters)**
GREASE			**Dynapac Grease (0.4kg), P/N 4812030095**
GREASE		**For the steering hitch.**	**Dynapac Grease (0.4kg), P/N 4812030096**
FUEL	**See engine manual.**	**-**	**-**
GEAR OIL		**Dynapac Gear Oil 300**	**P/N** 4812161883 **(5 liters)**
COOLANT	**Anti-freeze protection down to about -37°C (-34.6°F)**	**GlycoShell/Carcoolant 774C (mixed 50/50 with water)**	
TRANSMISSION OIL		**Dynapac Gear Oil 400**	**P/N** 4812161858 **(5 liters)**

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		Tyre pressure
	Engine, oil filter		Air filter
	Hydraulic reservoir, level		Battery
	Hydraulic fluid, filter		Recycling
	Transmission, oil level		Fuel filter
	Drum, oil level		Coolant, level
	Oil for lubrication		

Maintenance - Maintenance schedule

Service and maintenance points

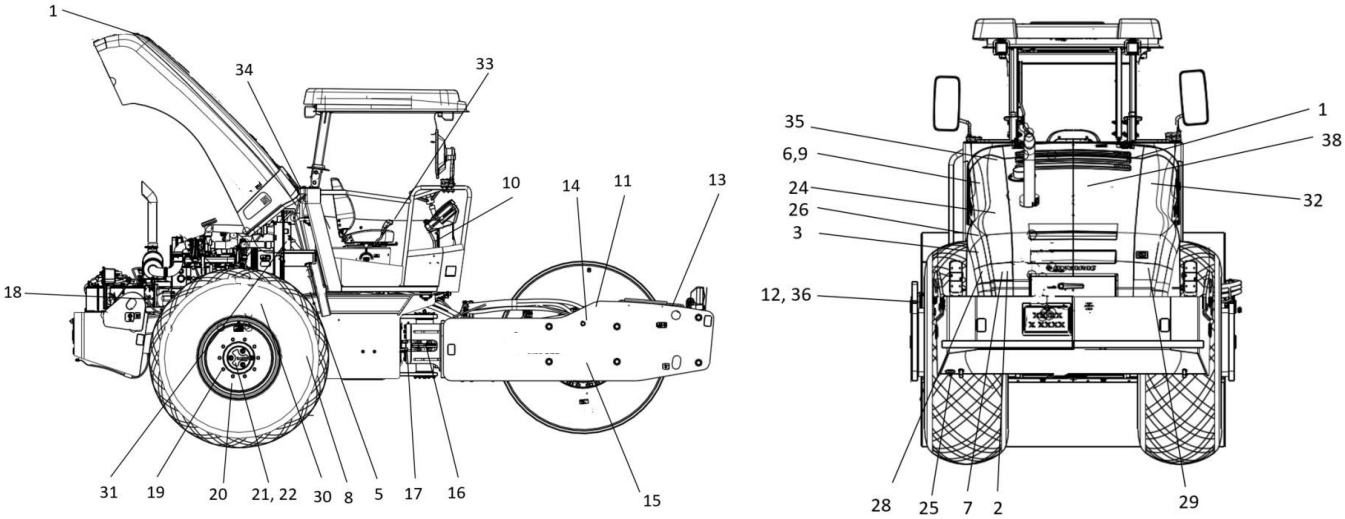


Fig. Service and maintenance points

1. Cooler grill	10. Fuse box	19. Wheel nuts	29. Battery
2. Fuel filter	11. Drum oil	20. Tire pressure	30. Hydraulic oil cooler
3. Engine oil.	12. Drum gearbox.	21. Oil in rear axle differential	31. Radiator
4. Air filter.	13. Scrapper setting	22. Oil in axle planetary	32.Drive belts, alternator and cooling
5. Hydraulic oil.	14. Drum oil level	24. Engine oil filter.	33. Forward reverse lever
6. Bleeder filter on hydraulic tank.	15. Rubber mount & Drum bolted joint	25.Draining/ condensate in fuel tank	34. Grease for hinges
7. Hydraulic filter	16. Articulation	26. Fuel feed pump	35. Coolant level
8. Draining/condensate in hydraulic tank.	17. Hydraulic cylinders		36. Drum gear oil
9. Hydraulic fluid filling, hydraulic oil tank.	18. Flywheel casing, Hydraulic pumps	28. Diesel filling	38.Exhaust Muffler

General

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

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

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

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	
13	Check the scraper setting	IM
1	Check for free circulation of cooling air	IM
35	Check coolant level	Up to markings on Tank
3	Check the engine oil level	Up to marking on engine dipstick
28	Refuel	
5	Check the hydraulic reservoir level	
	Test the brakes	
16	Grease the steering cylinder bearings	

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
3,24	Change the engine oil and oil filter	Refer to the engine manual
2	Change the fuel filter, mud filter	Refer to the engine manual
7	Change the hydraulic fluid filter	
21	Change oil in rear axle differential	
22	Change oil in the rear axle planetary gearing	
36	Change oil in Drum gear box	

Every 50 hours of operation

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

Pos. in fig	Action	Comment
	Check that hoses and couplings are not leaking	
4	Inspect/clean the filter element in the air cleaner	Replace as required
16	Lubricate the articulation	
16	Steering hitch tightening	
17	Check that the guiding cylinders are tight	
19	Check the wheel-nuts are tightened	
20	Check the tire pressure	

Every 250 hours of operation

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

Pos. in fig	Action	Comment
22	Check oil level in rear axle/planetary gearing	
14	Check oil level in the drum cartridge	Both side
14	Cleaning the ventilation screws in the drum cartridges	
34	Grease for hinges	
32	Drive belts, alternator &Cooling	The above applies to new or reconditioned components only
15	Check rubber elements and bolted joints	
29	Check battery	

Every 500 hours of operation

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

Pos. in fig	Action	Comment
2	Replace the fuel filter & water separator.	Refer to the engine manual
6	Check bleeder filter on hydraulic reservoir	
3,24	Change the engine oil and oil filter	Refer to the engine
4	Change in Air cleaner Primary element	
14	Cleaning the ventilation screws in the drum cartridges	

Every 1000 hours of operation

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

Pos. in fig	Action	Comment
7	Change the hydraulic fluid filter	
2	Replace the fuel filter & water separator.	Refer to the engine manual
8	Drain the condensate from hydraulic reservoir	
25	Drain condensate from fuel tank	
21	Change oil in rear axle differential	
22	Change oil in the rear axle planetary gearing	
	Check engine valve clearances	Refer to the engine manual
31	Check belt tension for drive system	Refer to the engine manual
3,24	Change the engine oil and oil filter	Refer to the engine
4	Change in Air cleaner Primary & secondary element	
16	Steering hitch - tightening	
14	Cleaning the ventilation screws in the drum cartridges	
36	Change oil in the drum gear box	

Every 2000 hours of operation

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

Pos. in fig	Action	Comment
5, 9	Change the hydraulic fluid & filter	
11	Change the oil in the drum cartridge	For both sides
2	Replace the fuel filter & water separator.	Refer to the engine manual
33	Lubricate the Forward/Reverse lever	
	Steering hitch check	
2	Replace the fuel filter, mud filter & water separator.	Refer to the engine manual
3,24	Change the engine oil and oil filter	Refer to the engine
16	Steering hitch - tightening	
14	Cleaning the ventilation screws in the drum cartridges	
36	Change oil in the drum gear box	

Maintenance, 10h

Every 10 hours of operation (Daily)

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

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

Scrapers - Check, adjustment

It is important to consider movement of the drum when the machine turns, i.e., the scrapers can be damaged or wear of the drum may increase if adjustment is made closer than the values stated.

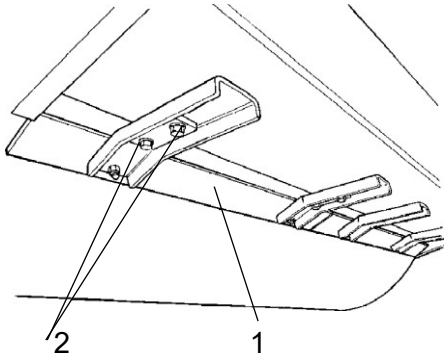


Fig. Scrapers
1. Scraper blades (x4)
2. Screws

Steel scrapers

If necessary, adjust distance to the drum as follows:

Undo the screws (2) on the scraper attachment.

Then adjust the scraper blade (1) to 20 mm from the drum.

Tighten the screws (2).

Repeat the procedure for the other scraper blades (x4).

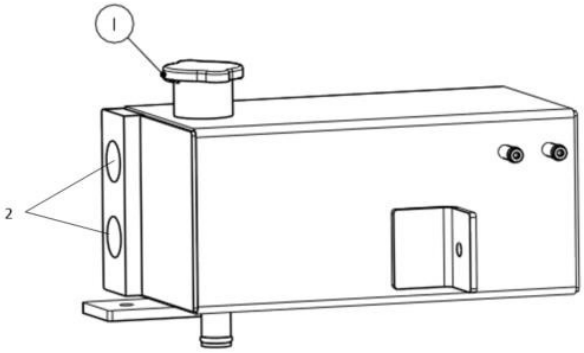


Fig. Coolant container
1. Filler cap
2. Level mark in coolant container (min/max markings

Coolant level - Check

Cooling liquid holder is placed up right near engine and is seen easiest from the right side of the roller.

The filler cap (2) is accessible from the top of the engine hood.

Check the coolant level with the engine stopped and cold.

Check that the coolant level is between the max/min markings (1).

Make sure that cooling air flows freely through the protective grille to the engine.

The coolant is hot and under pressure at working temperature and the escaping steam can cause serious scalding. Open the filler cap carefully to release the pressure. Wear protective goggles and protective gloves.

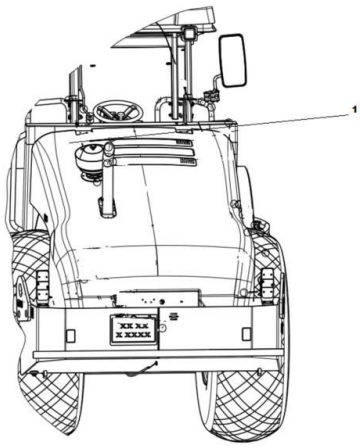


Fig. Cooler grille
1. Filler cap, coolant

Air circulation - Check

Ensure that the diesel engine has free circulation of cooling air through the vents in the hood.

Observe extreme caution if the filler cap must be opened when the engine is hot. NOTE, the engine must be switched off. Wear protective gloves and goggles.

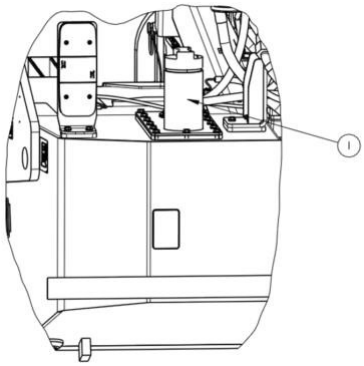


Fig. Filling with fuel
1. Filler pipe

Fuel tank - Filling

Refuel daily with diesel fuel up to the lower edge of the filler pipe (1). Follow the engine manufacturer's specification with regard to the quality of diesel fuel.

Stop the diesel engine. Short-circuit (press) the filler gun against a non-insulated part of the roller before filling, and against the filler pipe (1) while filling.

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

The tank holds 280 liters of fuel.

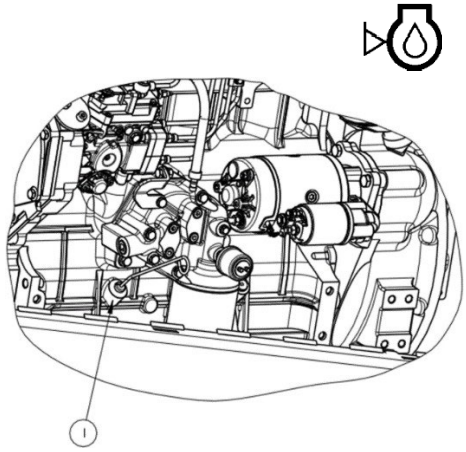


Fig. Engine compartment
1. Dipstick

Diesel engine Check oil level

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

The dipstick is located on the engine's left side.

Pull up the dipstick (1) and check that the oil level is between the upper and lower marks. For further details, refer to the engine's instruction manual.

Brakes - Check

Check operation of the brakes as follows:

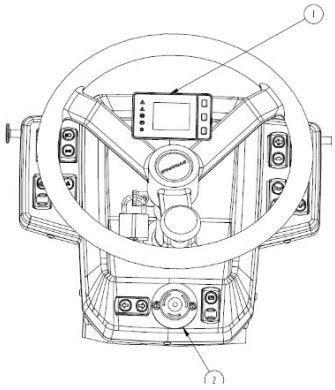


Fig. Instrument panel
2. Emergency stop

Checking the emergency stop

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

Press the emergency stop (2). The roller will stop abruptly and the engine will be switched off.

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

Pull out the emergency stop (2). Start the engine.

The roller is now ready for operation.

Refer also to the section in the manual on operation.

Brakes - Check

Check operation of the brakes as follows:

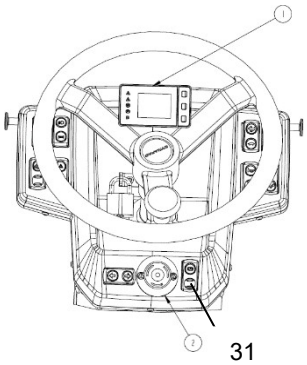


Fig. Instrument panel
31. Parking brake switch

Checking the parking brake

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

Push in the parking brake switch (31). The roller should stop immediately with the engine running.

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

Reset the parking brake switch

(31) . The roller is now ready for

operation.

Refer also to the section in the manual on operation.

Hydraulic reservoir - Check fluid level

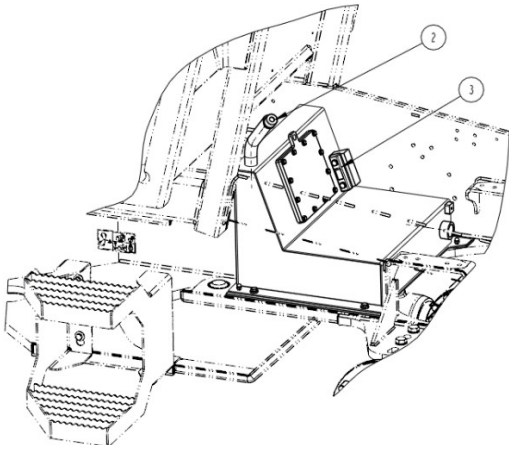


Fig. Sight glass hydraulic reservoir
3- Sight glass

The sight glass is located on the tank and tank is located under the driver's platform.

Place the roller on a flat surface and check the fluid level in the sight glass (3). If the level is too low, top up with the type of hydraulic fluid specified in the lubricant specification.

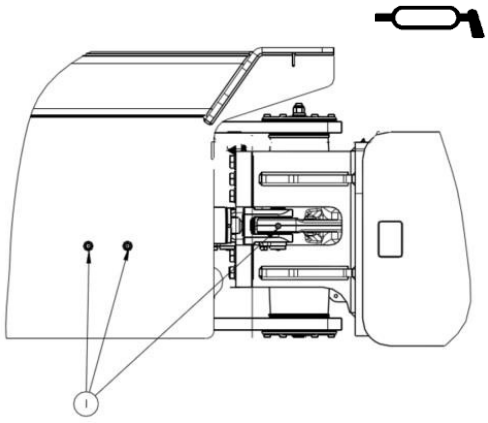


Fig. Tractor frame/Steering hitch
1. Grease nipples

Steering cylinder - Lubrication

Wipe off any dirt and grease from the nipples.

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

Leave a small amount of grease on the nipples following lubrication to prevent dirt from penetrating in.

Use grease as per the lubricant specification.

Maintenance - 50h

First 50 hours of operation

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

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

Diesel engine-Oil and Filter change

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

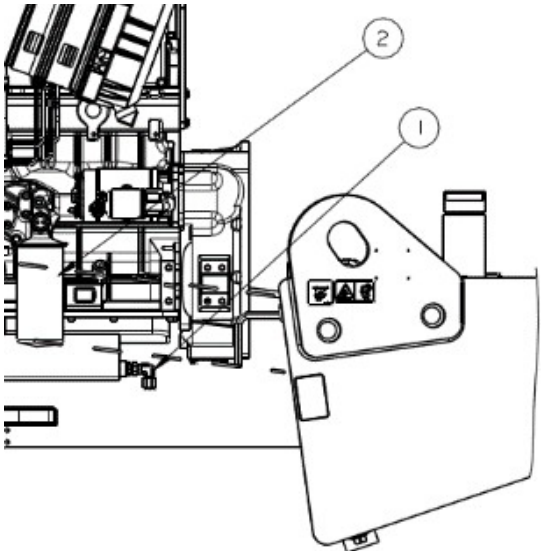


Fig. Left side of engine
1. Drain plug
2. Oil filter

The oil drain plug (1) is most easily accessible from the bottom of the engine and is located attached to a hose on the rear axle. Drain the oil when the engineis warm. Place a receptacle that holds at least 15 liters (4 gal) under the drain plug.

Replace the engine oil filter (2) at the same time. Refer to the engine manual.

Deliver the drained oil and filter to environmentally correct handling

Diesel Engine – Fuel Filter Change.

Take great care when Removing filter. Wear protective gloves and goggles.

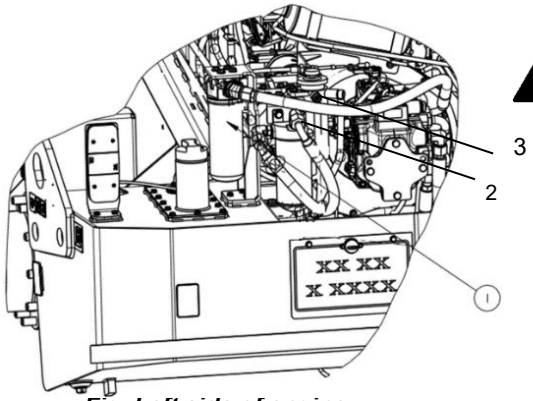


Fig. Left side of engine
1. Oil filter
2. Fuel filter
3. Mud Filter

Remove the Fuel filter using the spanner.

Lubricate the O-ring with clean lubrication oil

Installed the Both filter on the filter head.

Rotate the filter until touches the surface of the filter head. Rotate filter another ¾ of a revaluation after contact.

The air needs to be removed from fuel system after filter installation.

Hydraulic fluid filter - Replacement

Carefully clean round the hydraulic filter.

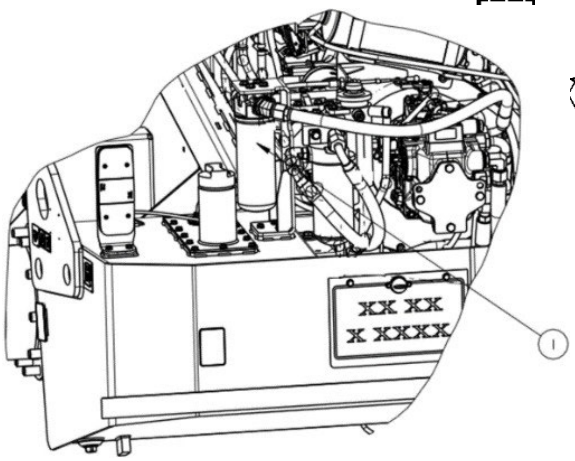


Fig. Left side of engine
1. Oil filter

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

Make sure that the old seal is not left on the filter head. Leakage will otherwise occur between the new and old seal.

Thoroughly clean the sealing surfaces on the filter head.

Apply a thin coat of fresh hydraulic fluid to the seal on the new filter. Screw tight the filter by hand.

First tighten the filter until its seal is in contact with the filter attachment. Then turn an additional half revolution. Do not tighten the filter too hard as this could damage the seal.

Start the engine and check that there is no leakage of hydraulic fluid from the filter. Check level of fluid in the sight glass (3) and top up as required

Rear axle's planetary gears - Draining the oil

Never work under the roller when the engine is running. Park on a level surface. Block the wheels securely.

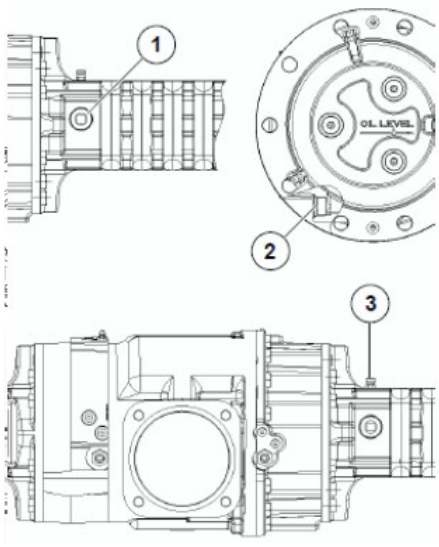


Fig. Differential - Draining
1. *Level/Filler plugs*
2. *Drain plugs*
3. *Breathers*

Before draining the oil, use the breather (3) to release possible internal pressure.

Wipe clean & remove one of the two level/filler plugs (1) and drain plug (2) and drain the oil into a suitable receptable. The volume is approximately 15 liters (16 qts)

Save the oil and hand in to an environment-friendly waste disposal station.

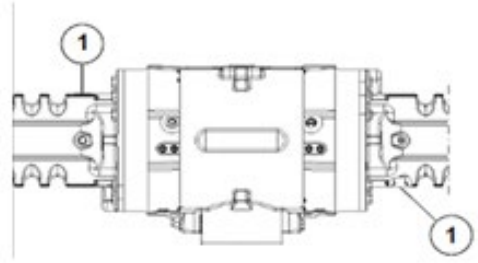


Fig. Differential - filling
1. Level/Filler plugs

Clean and refit the drainage plug (2) and tighten with torque (60Nm)

Fill with fresh oil in the level/filler hole until the oil level reaches the lower edge of the plug hole. Use transmission oil, see lubricant specification.

Note that it takes a while for the oil to be distributed in the axle. Do not fill the entire volume at once.

Refit the level/filler plug (1) and tighten with torque (25Nm).

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Rear axle's planetary gears - Draining the oil

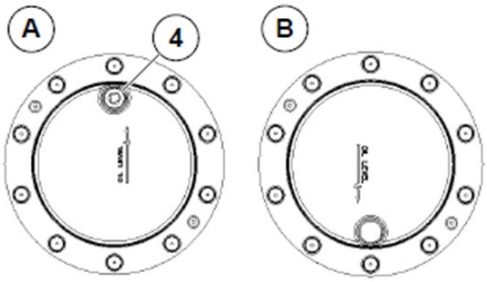


Fig. Oil drain - planet gear
4. Level/Filler plug

Before draining the oil rotate the wheel so that the plug (4) is at the highest positions (pos.A) and partially unscrew the plug to release possible pressure.

Then rotate the wheel so that the plug (4) is at its lowest position (pos.B).

Wipe clean and remove the plug (4) and drain the oil into a receptacle. The volume is approx. 2 liters (2.1 qts).

Save the oil and hand in to an environment-friendly waste disposal station

Drum gearbox - Oil change

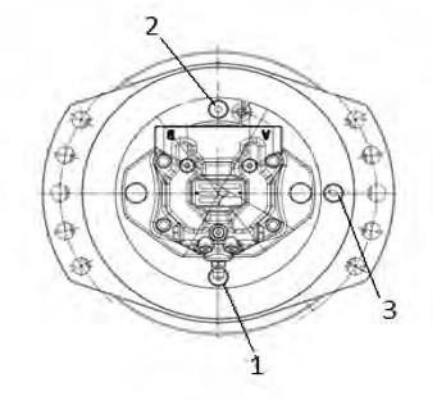


Fig. Drum gearbox
1. Drain plug
2. Filler plug
3. Level plug

Place the roller on a level surface with the plugs (1) and (2) as illustrated.

Wipe clean, unscrew the plugs (1, 2 and 3) and drain the oil into a suitable receptacle, capacity about 2.2 liters (0.58 gal.).

Refit the plug (1) and fill with oil up to the lower edge of the level plug hole (3).

Use transmission oil according to the lubricant specification.

Clean and refit the level plug (3) and filler plug (2).

Maintenance - 50h

Every 50 hours of operation

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

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

Air cleaner

Checking - Change the main air filter

Change the air cleaner main filter when the warning lamp on the control panel comes on when the engine is running at maximum speed.

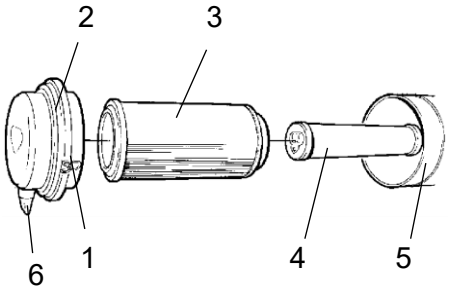


Fig. Air cleaner
1. Clips
2. Cover
3. Main filter
4. Backup filter
5. Filter housing
6. Dust valve

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.

Backup filter - Change

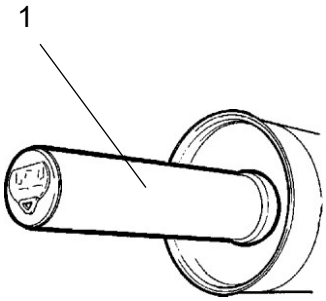


Fig. Air filter
1. Backup filter

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

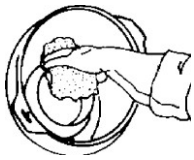
To change the backup filter (1), pull the old filter out of its holder, insert a new filter and reassemble the air cleaner in the reverse order.

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

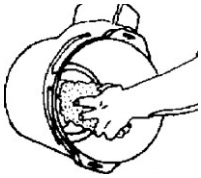
Air cleaner - Cleaning

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.

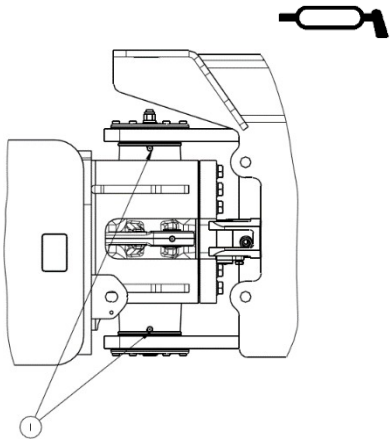


Fig. Steering hitch right side

Articulation - Lubrication

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

Turn the steering wheel fully to the left to gain access to all the steering system's lubricating nipples (4) on the right-hand side of the machine.

Use grease as per the lubricant specification

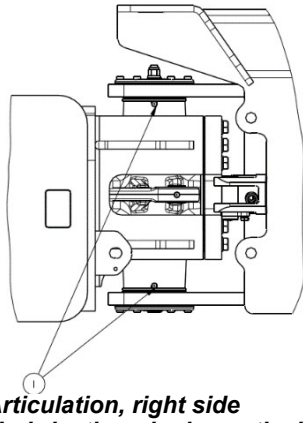


Fig. Articulation, right side
1. Lubricating nipples, articulation

Steering joint - Lubrication

Wipe off any dirt and grease from the nipples.

Grease each nipple (1) with five strokes of a hand-operated grease gun. Make sure that grease penetrates into the bearings.

If grease does not penetrate the bearings, it may be necessary to relieve the articulation joint with a jack while repeating the greasing process.

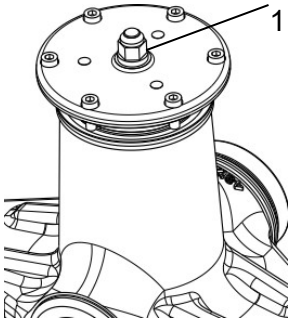


Fig. Steering hitch
1. Nut

Steering Hitch – Tightening

Nobody must be allowed near the steering joint when the engine is running. Risk of being crushed when the steering is operated. Switch off the engine and activate the parking brake before lubricating.

The easiest way to identify if you have this type of steering hitch is that it has a new type of nut (1) at the top as shown.

Actual torque (Nm) should be when the machines position is straight ahead.

M16	**174 Nm**

Tires - Air pressure - Wheel nuts - Tightening

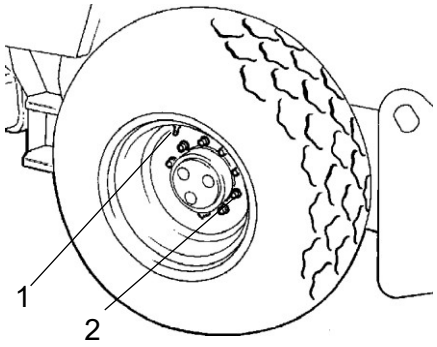


Fig. Wheels
1. Air valve
2. Wheel nut

Check the tire pressures using a pressure gauge.

Tires are filled with fluid, the air valve (1) must be in the "12 o'clock" position during pumping.

Recommended pressure: See Technical Specifications.

Check the tire pressure.

When changing the tires it is important that both of them have the same rolling radius. This is necessary to ensure proper functioning of the anti-slip in the rear axle.

Check the tightening torque of the wheel nuts (2) at 630 Nm (465 lbf.ft).

Check both wheels and all nuts. (This only applies to a new machine or newly fitted wheels).

Check the safety manual that accompanies the roller before filling the tires with air.

Maintenance - 250h

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

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

Rear axle differential - Check oil level

Never work under the roller when the engine is running. Park on a level surface. Block the wheels securely.

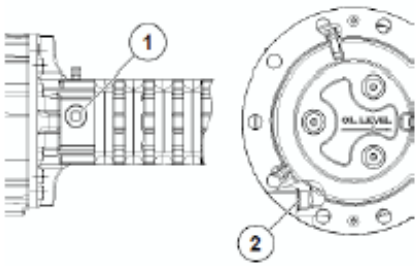


Fig. Level check - differential housing
1. Level/Filler plug

Wipe clean and remove the level plug (1) and check that the oil level reaches the lower edge of the plug hole. Top up with oil to the right level if the level is low. Use transmission oil, see lubricant specification.

Clean and refit the plug.

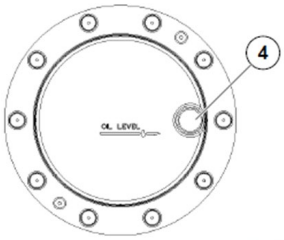


Fig. Level check - planetary gear, std
4. Level/Filler plug

Rear axle planetary gears - Check oil level

Position the roller with the plug in the planetary gear (4) in the "9 o'clock" position.

Wipe clean and remove the level plug (1) and check that the oil level reaches the lower edge of the plug hole. Top off with oil to the right level if the level is low. Use transmission oil. See lubrication specification.

Clean and refit the plug.

Check the fluid level in the same way on the rear axle's other planetary gear.

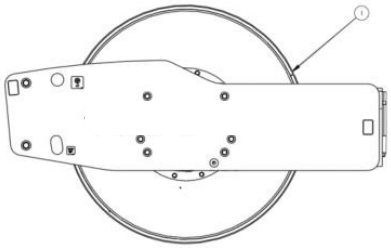


Fig. Left Drum side
1. Groove

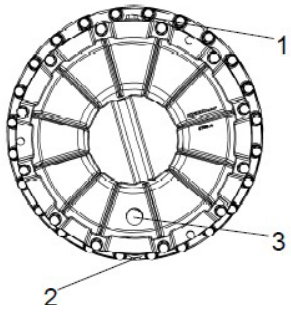


Fig. Left drum side
1. Filler plug
2. Drain plug
3. Sight glass

Drum Cartridge - Checking the oil level

Position the roller on a flat surface with the groove (1) on the inside of the drum aligned with the top of the drum frame

The oil level should now reach the sight glass (3).

If necessary, release the filler plug (1) and fill to halfway up the sight glass.

Clean the magnetic filler plug(1) of any metallic residue, before reinstalling it.

Do not overfill with oil - risk for overheating.

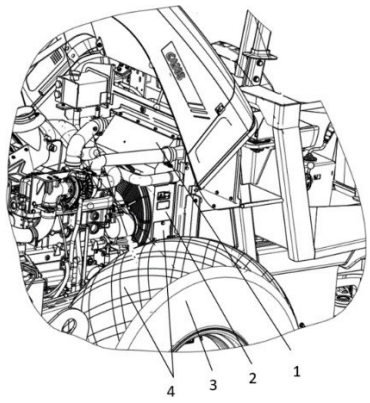


Fig. Engine compartment
1. Charge Air cooler
2. Radiator
3. Hy. Fluid cooler
4. Door for cleaning radiator

Radiator - Check/Cleaning

Check that air can pass unobstructed through the radiator(2).

Clean a dirty radiator using compressed air or a high-pressure water jet.

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

Be careful when using a high-pressure washer - do not place the nozzle too close to the radiator.

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

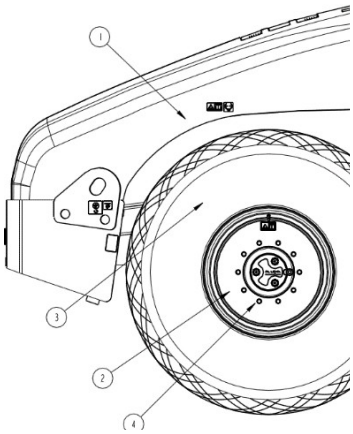


Fig. Right side of machine
1. Steering pump
2. Rear axle
3. Engine suspension
4. Wheel nuts

Bolted joints - Checking tightening torque

Steering pump to diesel engine (1) 55 Nm, lightly oiled

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

Engine suspension (3). Check that all the M12 bolts (x20) are tightened, 70 Nm, and lightly oiled.

Wheel nuts (4). Check that all nuts are tightened, 630 Nm oiled.

(The above applies to new or replaced components only).

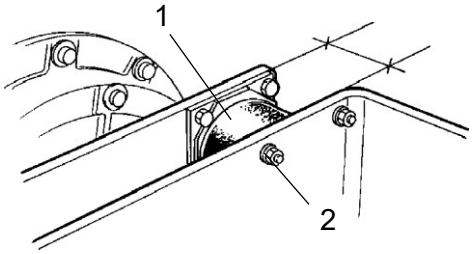


Fig. Drum, vibration side
1. Rubber element
2. Fastening screws

Rubber elements and fastening screws - Check

Check all rubber elements (1), replace all of the elements if more than 25% of them on one side of the drum are cracked deeper than 10-15 mm (0.4-0.6 in).

Check using a knife blade or pointed object.

Check also that the screw fasteners (2) are tightened.

Drum rubber elements change is 18 months or 2000h, which is earliest.

Battery - Check electrolyte level

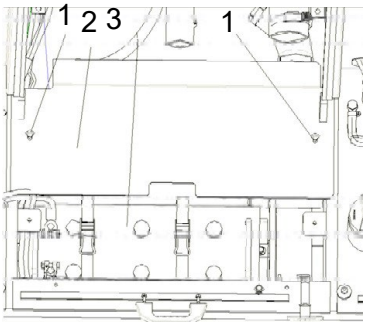


Fig. Battery shelf
1. Wing nuts/Studs
2. Battery cover
3. Battery

Never use a naked flame when checking the battery as the electrolyte emits explosive gas while the alternator is charging.

Open the engine cover and undo the wing nuts/studs (1).

Raise the battery cover (2).

Wipe the top of the battery.

Wear safety goggles. The battery contains corrosive acid. Rinse with water if electrolyte comes into contact with the body.

Battery cell

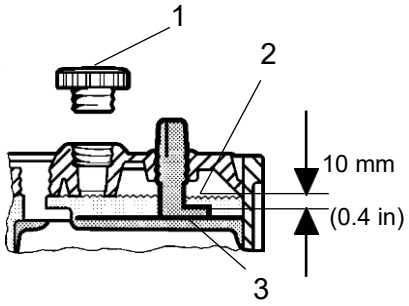


Fig. Electrolyte level in battery
1. Cell cap
2. Electrolyte level
3. Plate

Take off the cell caps (1) and make sure that electrolyte (2) is about 10 mm (0.4 in) above the plates (3). Check the level of all cells. Top off with distilled water to the right level if the level is low.

If the ambient temperature is below freezing, run the engine for a while before topping off with distilled water. Otherwise the electrolyte might freeze.

Make sure that ventilation holes in the cell cover are not clogged, then put the cover back on.

The cable shoes should be clean and well tightened. Clean corroded cable shoes and grease them with acid-free Vaseline.

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

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

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

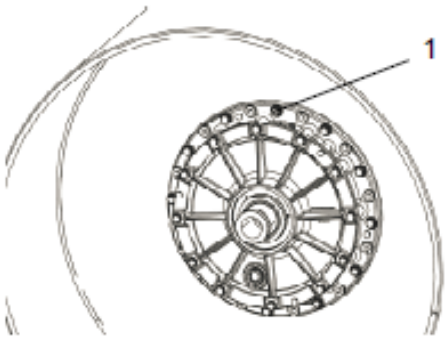


Fig. Drum
1. Ventilation screw

Drum cartridge - Cleaning the ventilation screw

Clean the drum's ventilation hole and ventilation screw (1). The hole is required to eliminate excess pressure inside the drum.

Maintenance - 500h

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

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

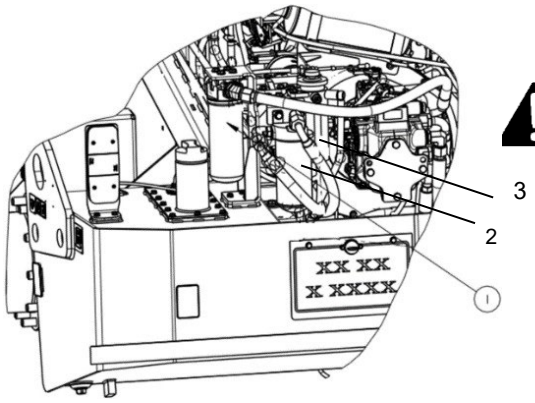


Fig. Left side of engine
1. Oil filter
2. Fuel filter
3. Mud Filter

Diesel Engine – Fuel Filter and water separator change

Take great care when Removing filter. Wear protective gloves and goggles.

Remove the Fuel filter & water Separator using the wrench.

Lubricate the O-ring with clean lubrication oil

Installed the Both filter on the filter head.

Rotate the filter until touches the surface of the filter head. Rotate filter another ¾ of a revaluation after contact.

The air needs to be removed from fuel system after filter installation.

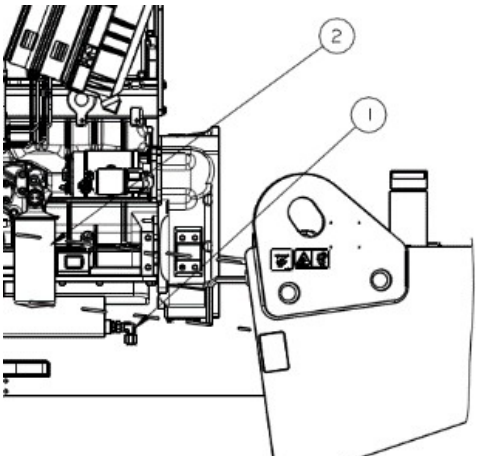


Fig. Left side of engine
1. Drain plug
2. Oil filter

Diesel engine - Oil and Filter change

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

The oil drain plug (1) is most easily accessible from the bottom of the engine and is located attached to a hose on the rear axle. Drain the oil when the engineis warm. Place a receptacle that holds at least 15 liters (4 gal) under the drain plug.

Replace the engine oil filter (2) at the same time. Refer to the engine manual.

Deliver the drained oil and filter to environmentally correct handling.

Bleeder filter - Inspection/Cleaning

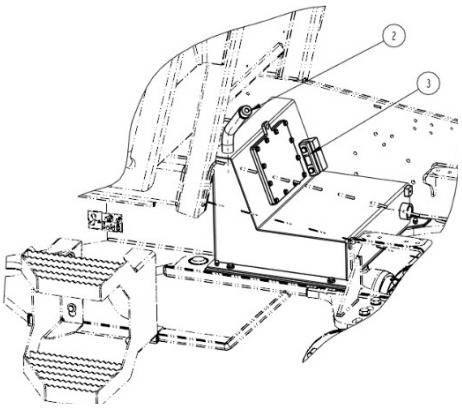


Fig. Hydraulic reservoir
2. Filler cap/Air filter
3. Sight glass

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

Always wear protective goggles when working with compressed air.

Check that the bleeder filter (2) is not clogged. Air should be able to pass through the cap unobstructed in both directions.

Start the engine and check that there is no leakage of hydraulic fluid from the filter. Check level of fluid in the sight glass (3) and top up as required.

Drum cartridge - Cleaning the ventilation screw

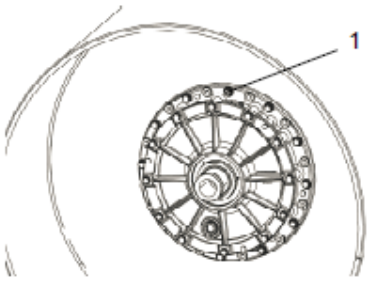


Fig. Drum
1. Ventilation screw

Clean the drum's ventilation hole and ventilation screw (1). The hole is required to eliminate excess pressure inside the drum.

Maintenance - 1000h

Performed after 1000 operating hours (each year)

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

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

Hydraulic fluid filter - Replacement

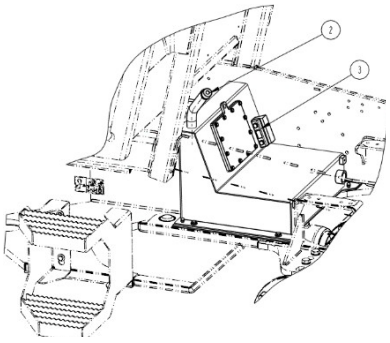


Fig. Hydraulic reservoir
2. Filler cap
3. Sight glass

Undo the cover/bleeder filter (2) on top of the reservoir so that over-pressure inside the reservoir can be eliminated.

Check that the bleeder filter (2) is not clogged, air must flow through the cap in both directions.

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

Wear protective goggles when working with compressed air.

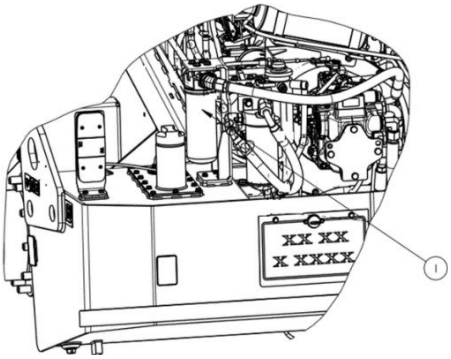


Fig. Engine compartment
1. Hydraulic fluid filter (x1)

Carefully clean round the hydraulic filter.

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

Make sure that the old seal is not left on the filter head. Leakage will otherwise occur between the new and old seal.

Thoroughly clean the sealing surfaces on the filter head.

Apply a thin coat of fresh hydraulic fluid to the seal on the new filter. Screw tight the filter by hand.

First tighten the filter until its seal is in contact with the filter attachment. Then turn an additional half revolution. Do not tighten the filter too hard as this could damage the seal.

Start the engine and check that there is no leakage of hydraulic fluid from the filter. Check level of fluid in the sight glass (3) and top up as required.

Hydraulic fluid reservoir - Draining

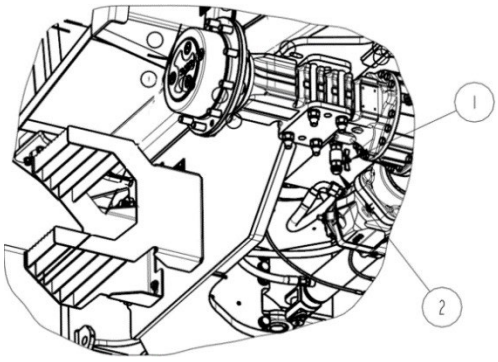


Fig. Hydraulic reservoir, bottom
1. Drainage tap
2. Plug

Condensate in the hydraulic reservoir is drained via the plug (2).

Drainage must be performed when the roller has been stationary for an extended period, e.g. after being stationary overnight.

Drain as follows:

- Remove the plug (2).

- Place a container under the tap. - Open the tap (1). Drain off any condensate.

- Close the drainage tap and refit the plug.

Save the condensate and hydraulic fluid and hand it in to an environment-friendly waste disposal station.

Fuel tank - Drainage

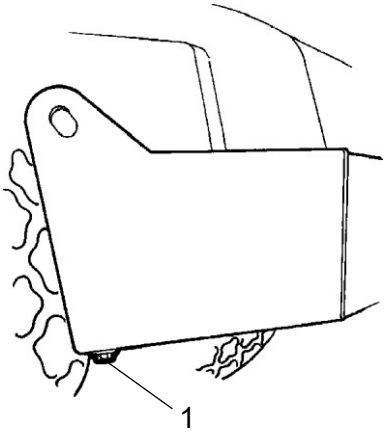


Fig. Fuel tank
1. Drainage plug

Water and sediment in the fuel tank are removed via the drainage plug (1) in the bottom of the fuel tank.

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

Drainage must be performed when the roller has been stationary for an extended period, e.g. after being stationary overnight. The fuel level should be as low as possible.

The roller should preferably have been standing with this side slightly lower, so that water and sediment have gathered near the drainage plug (1).

Save the condensate and sediment and hand it in to an environment-friendly waste disposal station.

Drain as follows:

- Place a container under the plug (1).

- Remove the plug (1).

- Drain out the condensate and sediment until only pure fuel emerges at the plug.

- Screw in the plug again.

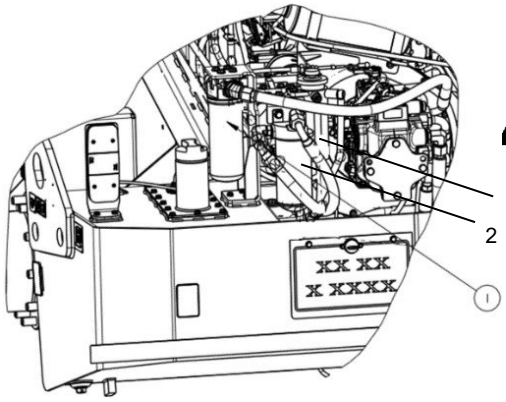


Fig. Left side of engine
1. Oil filter
2. Fuel filter
3. Mud Filter

Diesel Engine – Fuel Filter and water separator change

Take great care when Removing filter. Wear protective gloves and goggles.

Remove the Fuel filter & water separator using the spanner.

Lubricate the O-ring with clean lubrication oil

Installed the Both filter on the filter head.

Rotate the filter until touches the surface of the filter head. Rotate filter another ¾ of a revaluation after contact.

The air needs to be removed from fuel system after filter installation.

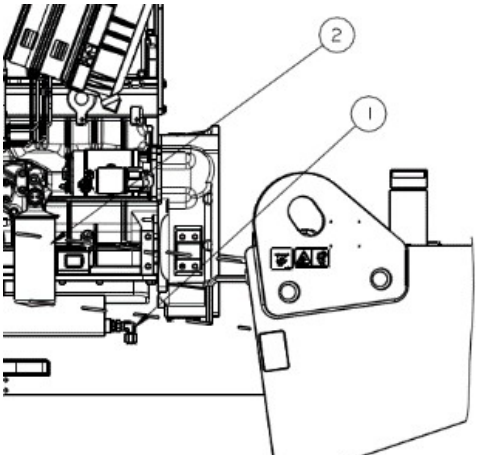


Fig. Left side of engine
1. Drain plug
2. Oil filter

Diesel engine - Oil and Filter change

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

The oil drain plug (1) is most easily accessible from the bottom of the engine and is located attached to a hose on the rear axle. Drain the oil when the engineis warm. Place a receptacle that holds at least 15 liters (4 gal) under the drain plug.

Replace the engine oil filter (2) at the same time. Refer to the engine manual.

Deliver the drained oil and filter to environmentally correct handling.

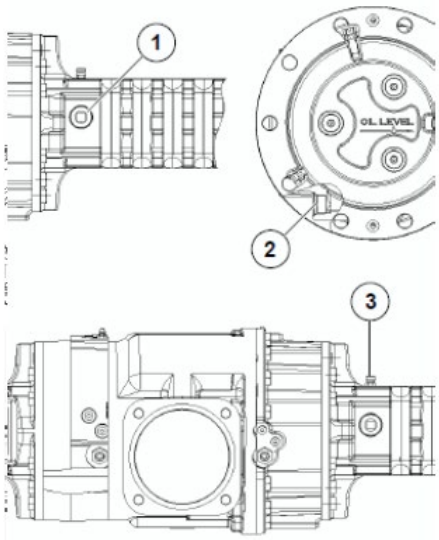


Fig. Differential - Draining
4. Level/Filler plugs
5. Drain plugs
6. Breathers

Rear axle's planetary gears - Change the oil

Never work under the roller when the engine is running. Park on a level surface. Block the wheels securely.

Before draining the oil, use the breather (3) to release possible internal pressure.

Wipe clean & remove one of the two level/filler plugs (1) and drain plug (2) and drain the oil into a suitable receptable. The volume is approximately 15 liters (16 qts)

Save the oil and hand in to an environment-friendly waste disposal station.

Clean and refit the drainage plug (2) and tighten with torque (60Nm)

Fill with fresh oil in the level/filler hole until the oil level reaches the lower edge of the plug hole. Use transmission oil, see lubricant specification.

Note that it takes a while for the oil to be distributed in the axle. Do not fill the entire volume at once.

Refit the level/filler plug (1) and tighten with torque (25Nm).

Rear axle's planetary gears - Draining the oil

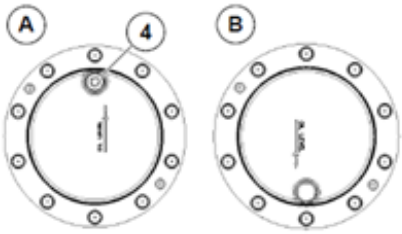


Fig. Draining the oil - planetary gear, std
4. Level/Filler plug

Position the roller with the plug (4) at its lowest position.

Wipe clean and remove the plug (4) and drain the oil into a receptacle. The volume check specification.

Save the oil and hand in to an environment-friendly waste disposal station.

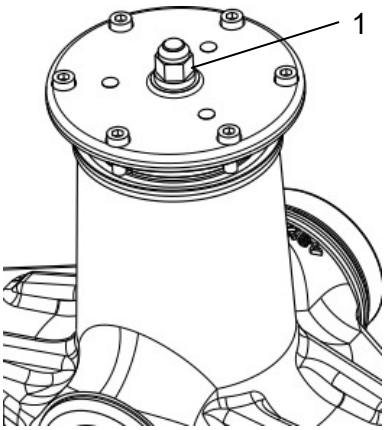


Fig. Steering hitch
1. Nut

Steering Hitch – Tightening

Nobody must be allowed near the steering joint when the engine is running. Risk of being crushed when the steering is operated. Switch off the engine and activate the parking brake before lubricating.

The easiest way to identify if you have this type of steering hitch is that it has a new type of nut (1) at the top as shown.

Actual torque (Nm) should be when the machines position is straight ahead

M16	**174 Nm**

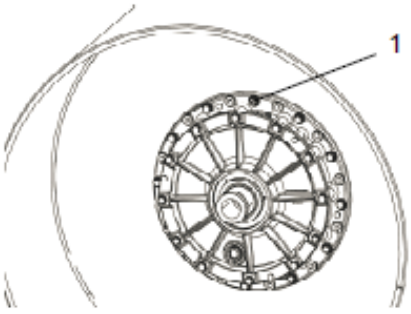


Fig. Drum
1. Ventilation screw

Drum cartridge - Cleaning the ventilation screw

Clean the drum's ventilation hole and ventilation screw (1). The hole is required to eliminate excess pressure inside the drum.

Drum gearbox - Oil change

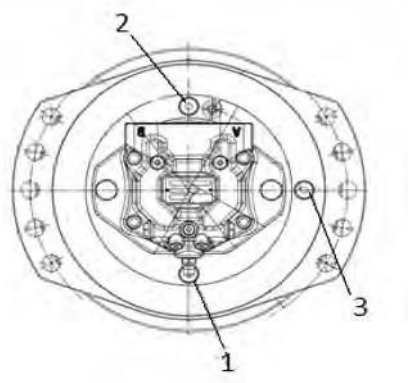


Fig. Drum gearbox
1. Drain plug
2. Filler plug
3. Level plug

Place the roller on a level surface with the plugs (1) and (2) as illustrated

Wipe clean, unscrew the plugs (1, 2 and 3) and drain the oil into a suitable receptacle, capacity about 2.2 liters (0.58 gal.)

Refit the plug (1) and fill with oil up to the lower edge of the level plug hole (3).

Use transmission oil according to the lubricant specification.

Clean and refit the level plug (3) and filler plug (2).

Maintenance - 2000h

Performed after 2000 operating hours

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

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

Hydraulic reservoir - Changing the fluid

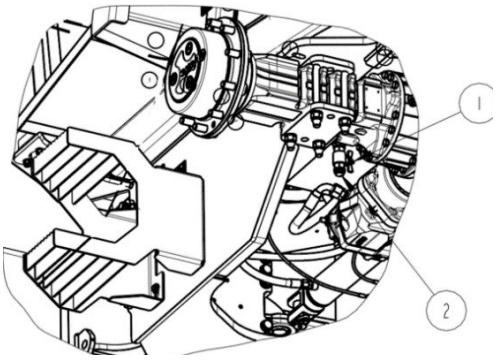


Fig. Hydraulic reservoir, bottom
1. Stop cock (3/4")
2. Plug

Observe care when draining the hydraulic fluid. Wear protective gloves and goggles.

Place a receptacle that holds at least 60 liters (15.9 gal)) beside the roller.

Unscrew the drain plug (2).

Open the stock cock and allow the oil to run through a hose to the drainage receptacle.

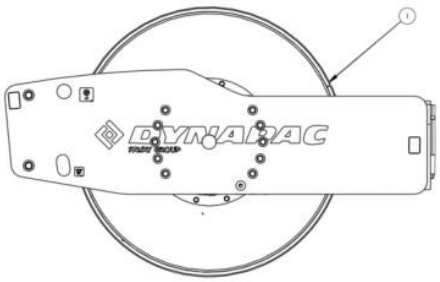
Refit the plug.

Deliver the drained fluid to environmentally correct handling.

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

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

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



1. Groove

Drum cartridge- oil change

Position the roller on flat surface with the groove (1) on the inside of the drum aligned with the top of the drum frame.

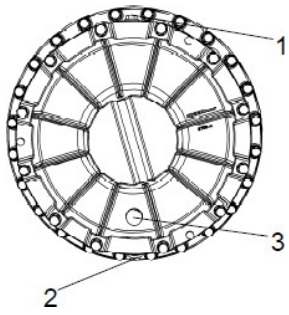


Fig. Left drum side
1. Filler plug
2. Drain plug
3. Sight glass

Place a receptacle for about 5 lit underneath the drain plug.

Observe care when draining drum oil/hot drum oil. Wear protective gloves and goggles.

Save the oil and dispose of it in an approved manner.

Clean and remove the drain plug (1). Allow all of the oil to drain off.

Fill with oil according to "Drum cartridge - Checking the oil level."

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

Repeat the procedure on the opposite side.

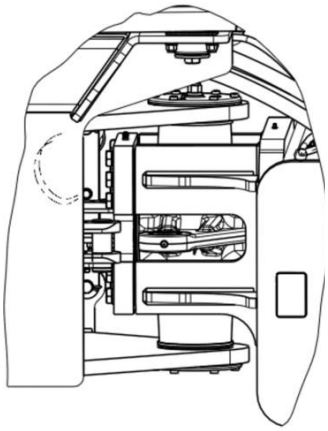


Fig. Steering hitch

Steering hitch - Check

Inspect the steering hitch to detect any damage or cracks.

Check and tighten any loose bolts.

Check also for any stiffness and play.

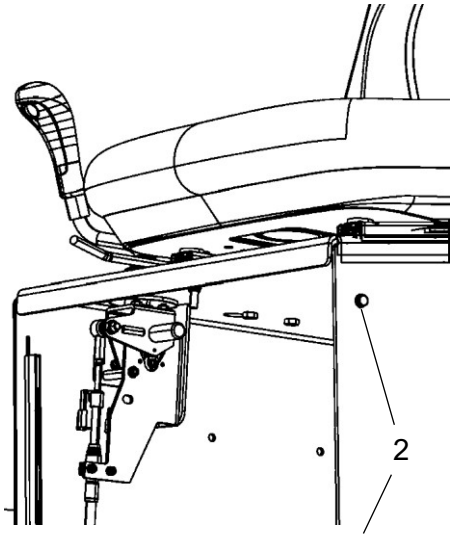


Fig. F/B control
2. Screws

Controls - Lubrication

Grease Forward/Back- throttle mechanical mechanism. Take away the outer hatch down below the seat by loosening the screws (2). Grease the workings with oil.

Refit the hatch.

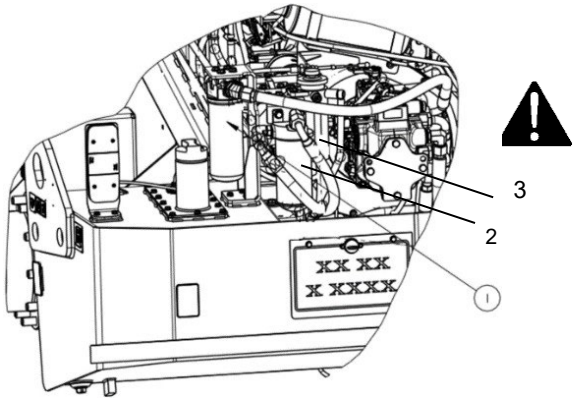


Fig. Left side of engine
1. Oil filter
2. Fuel filter
3. Mud Filter

Diesel Engine – Fuel Filter and water separator change

Take great care when Removing filter. Wear protective gloves and goggles.

Remove the Fuel filter & water separator using the spanner.

Lubricate the O-ring with clean lubrication oil

Installed the Both filter on the filter head.

Rotate the filter until touches the surface of the filter head. Rotate filter another ¾ of a revaluation after contact.

The air needs to be removed from fuel system after filter installation.

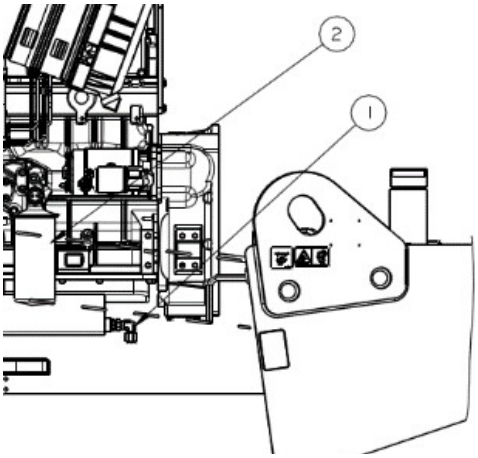


Fig. Left side of engine
1. Drain plug
2. Oil filter

Diesel engine - Oil and Filter change

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

The oil drain plug (1) is most easily accessible from the bottom of the engine and is located attached to a hose on the rear axle. Drain the oil when the engineis warm. Place a receptacle that holds at least 15 liters (4 gal) under the drain plug.

Replace the engine oil filter (2) at the same time. Refer to the engine manual.

Deliver the drained oil and filter to environmentally correct handling.

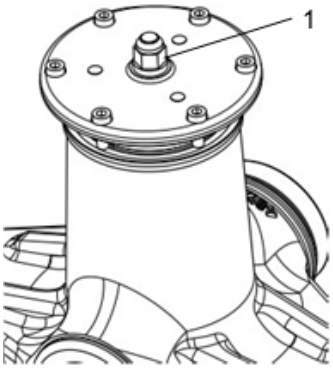


Fig. Steering hitch
1. Nut

Steering Hitch – Tightening

Nobody must be allowed near the steering joint when the engine is running. Risk of being crushed when the steering is operated. Switch off the engine and activate the parking brake before lubricating.

The easiest way to identify if you have this type of steering hitch is that it has a new type of nut (1) at the top as shown.

Actual torque (Nm) should be when the machines position is straight ahead

M16	**174 Nm**

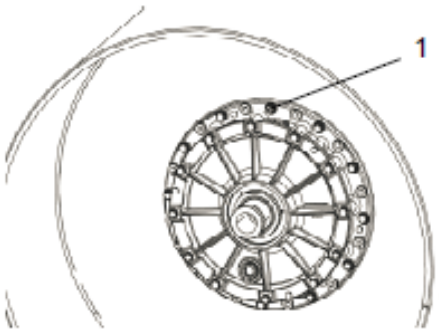


Fig. Drum
1. Ventilation screw

Drum cartridge - Cleaning the ventilation screw

Clean the drum's ventilation hole and ventilation screw (1). The hole is required to eliminate excess pressure inside the drum.

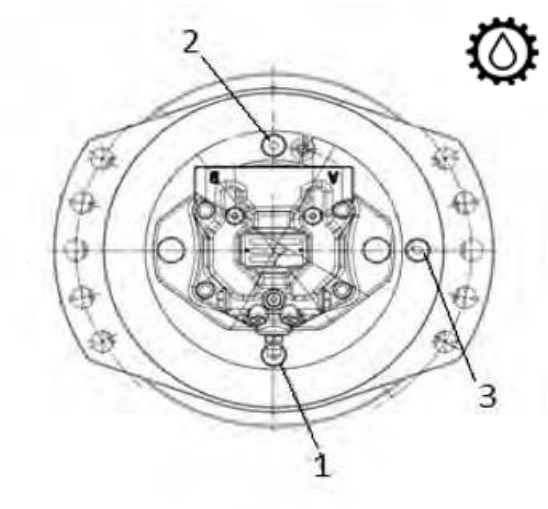


Fig. Drum gearbox
1.Drain plug
2.Filler plug
3.Level plug

Drum gearbox - Oil change

Place the roller on a level surface with the plugs (1) and (2) as illustrated.

Wipe clean, unscrew the plugs (1, 2 and 3) and drain the oil into a suitable receptacle, capacity about 2.2 liters (0.58 gal.).

Refit the plug (1) and fill with oil up to the lower edge of the level plug hole (3).

Use transmission oil according to the lubricant specification.

Clean and refit the level plug (3) and filler plug (2).

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