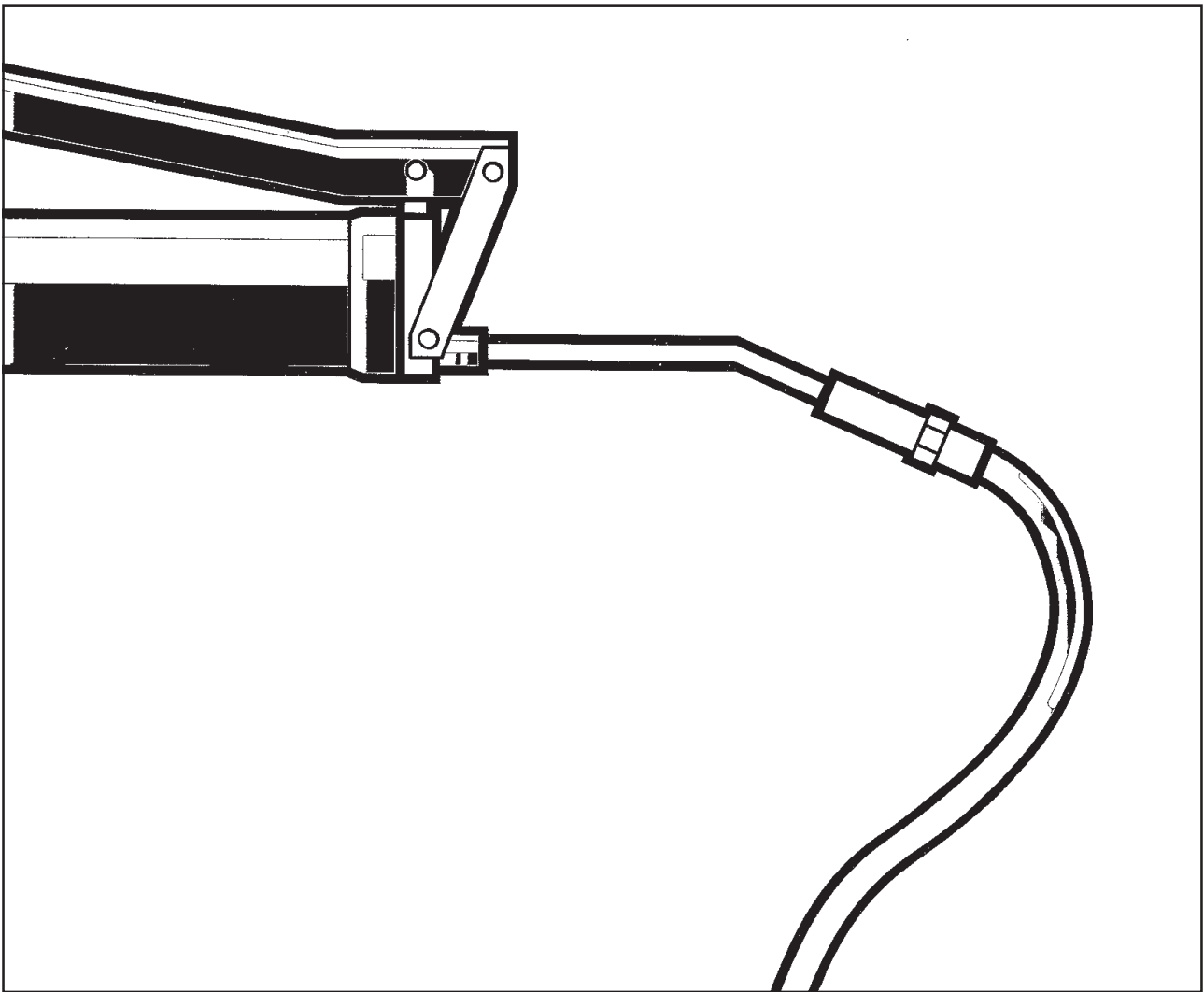


DYNAPAC CP142 MAINTENANCE

M142EN1



DYNAPAC

Box 504, SE-371 23 Karlskrona, Sweden
Phone: +46 455 30 60 00, Fax: +46 455 30 60 30
www.dynapac.com

DYNAPAC

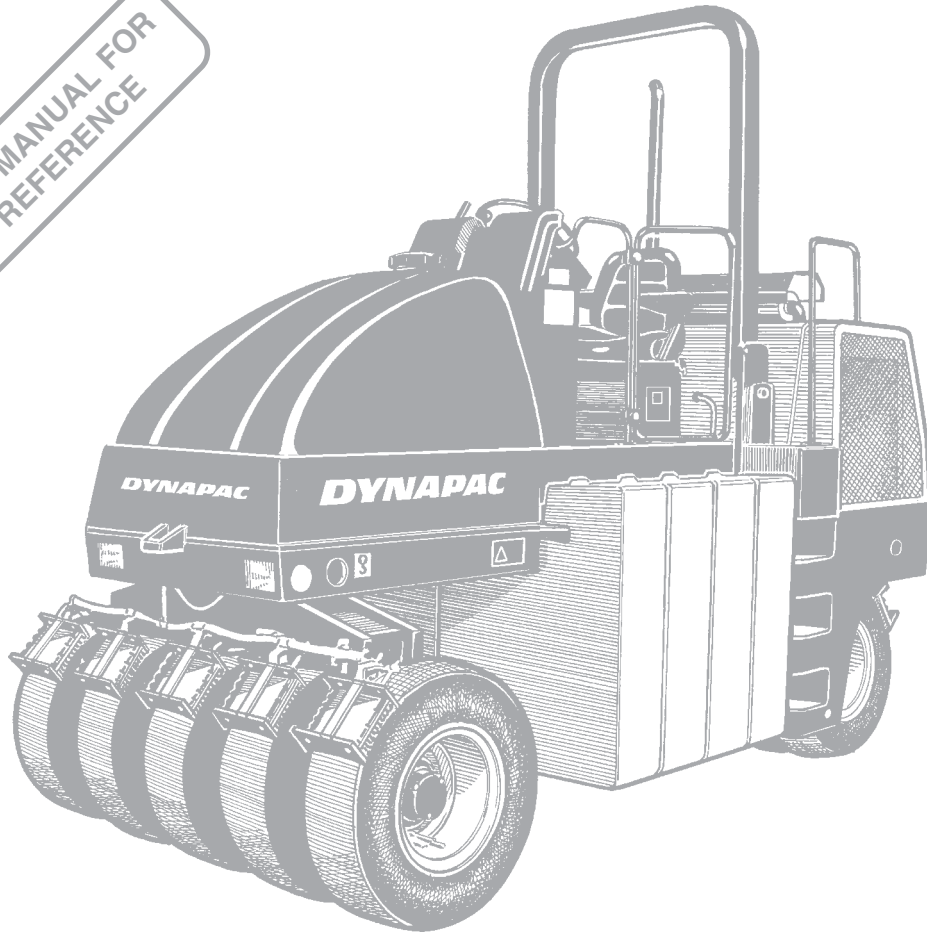
Pneumatic Tire Roller CP142

Maintenance M142EN1, May 2004

**Diesel engine:
Cummins 4B4.5 - 99C**

**These instructions apply from:
CP142 PIN (S/N) *2163BR2000***

**KEEP THIS MANUAL FOR
FUTURE REFERENCE**



The CP142 Pneumatic Tire Roller uses a modular ballast system which consists of bolt on ballast boxes that provide an accurate and uniform tire load. The roller is designed for compaction of roads, airfields, dams and similar constructions.

The CP142 compacts asphalt, concrete, base courses and subbase courses efficiently and at a high rate. Seperate information is available on request concerning accessories and optional equipment.

The illustrated machine in this manual can be equipped with optional equipment.

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WARNING SYMBOLS

WARNING



Safety instruction – Personal Safety

CAUTION



Special caution – Machine or component damage

GENERAL

WARNING



Read through the entire manual before starting any maintenance operations.

WARNING



Ensure good ventilation (air extraction) if the diesel engine is run indoors.

It is important that the roller is maintained correctly to ensure proper function. It should be kept clean so that any leakage, loose bolts and loose connections can be discovered in time.

Make a habit of walking round the roller to check it every day before starting the first shift – including under the machine. This is often the easiest way of discovering any leakage.



SPARE A THOUGHT FOR THE ENVIRONMENT! Do not let oil, fuel and other environmentally hazardous substances contaminate the environment.

This manual contains instructions for periodic attention which should normally be carried out by the roller's driver.

CAUTION



There are additional instructions relating to the diesel engine, for which the manufacturer's instructions are detailed in the engine manual. This is found under a separate flap in the roller's product binder.

CALIFORNIA






Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

LUBRICANTS AND SYMBOLS
















Always use high-quality lubricants, in the quantities specified. Excess grease or oil can promote overheating, resulting in premature wear.

	ENGINE OIL ambient air temperature -10°C – +50°C (14°F – 122°F)	Shell Rimula Super 15W/40 or equivalent API CH-4 or equivalent
	HYDRAULIC OIL ambient air temperature -10°C – +40°C (14°F – 104°F) ambient air temperature above +40°C (above +104°F)	Shell Tellus TX 68 or equivalent. Shell Tellus TX 100 or equivalent.
	GREASE	Shell Retinax LX2 or equivalent.
	FUEL	See the engine manual.
	COOLANT mixed 50/50 with water	GlycoShell or equivalent. Anti-freeze protection down to about -37°C (-36°F).



When driving in extremely high or low ambient temperatures, other lubricants are needed. Refer to the chapter entitled “Special Instructions” or contact Dynapac.

	Engine, oil level		Oil for lubrication
	Engine, oil filter		Battery
	Hydraulic oil reservoir, level		Tire pressure
	Hydraulic fluid filter		Sprinkler
	Coolant, level		Sprinkler water
	Fuel filter		Recycling
	Air filter		

TECHNICAL SPECIFICATIONS

Weights and dimensions

CP142

Service weight with ROPS and STD ballast (kg/lbs)	11950/26,345
Service weight with ROPS without ballast (kg/lbs)	5800/12,787
Service weight with ROPS and max. ballast (kg/lbs)	14000/30,865
Length, std. equipped roller, (mm/inch)	3580/141
Width, std. equipped roller, (mm/inch)	1760/69
Height, std. equipped roller incl. ROPS, (mm/inch)	2990/118
Height without ROPS, (mm/inch)	2275/90

Fluid volumes

Litre (gal or qts)

Hydraulic reservoir	75 l	(19.8 gal)
Hydraulic system	100 l	(26.5 gal)
Lubrication oil, diesel engine	9,5 l	(10 qts)
Coolant, diesel engine	20 l	(5.5 gal)
Fuel tank	150 l	(40 gal)
Water tank	480 l	(127 gal)

Electrical data

Battery	12 V, 90 Ah
Alternator	12 V, 105 A
Fuses	See under heading "Electrical System"

Tires (standard)

Tire dimensions	7.50 x 15 14 Ply
Tire pressure:	
• Minimum	240 kPa (2,4 kp/cm ²) (35 psi)
• Maximum	830 kPa (8,3 kp/cm ²) (120 psi)

TECHNICAL SPECIFICATIONS

Tightening torque

Tightening torque in Nm (lbf.ft) for oiled bolts when using a torque wrench.

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

CAUTION



ROPS bolts must **always** be tightened dry.

ROPS

Bolt size:	M20 (P/N 904487)
Strength class:	10.9
Tightening torque:	498 Nm

Hydraulsystem

Opening pressure (MPa)

Drive system	45,0
Supply system	2,0
Steering system	14,0
Brake release	1,5

TECHNICAL SPECIFICATIONS

Vibrations – Drivers seat (ISO 2631)

Vibration levels have been measured according to the operational cycle described in the EU-directive 2000/14/EC on machines equipped for the EU-market with operator seat in transport position.

Whole-body vibration is measured at less than the action value of 0.5 m/s² specified in EU directive 2002/44/EC. (The limit value is 1.15 m/s².)

Hand/arm vibration is measured at less than the action value of 2.5 m/s² specified in the same directive. (The limit value is 5 m/s².)

CAUTION



Vibration levels may vary when driving on different courses and with different seat positions.

Acoustic values

Sound levels have been measured according to the operational cycle described in the EU-directive 2004/14/EC on machines equipped for the EU-market with operator seat in transport position.

Model	Guaranteed acoustic power level dB(A)	Acoustic pressure level, operator's ear (platform)dB(A)	Acoustic pressure level, operator's ear (cab)dB(A)
CP142	105	89	-

CAUTION



Noise level can vary when driving on different courses and with different seat positions.

MAINTENANCE SCHEDULE

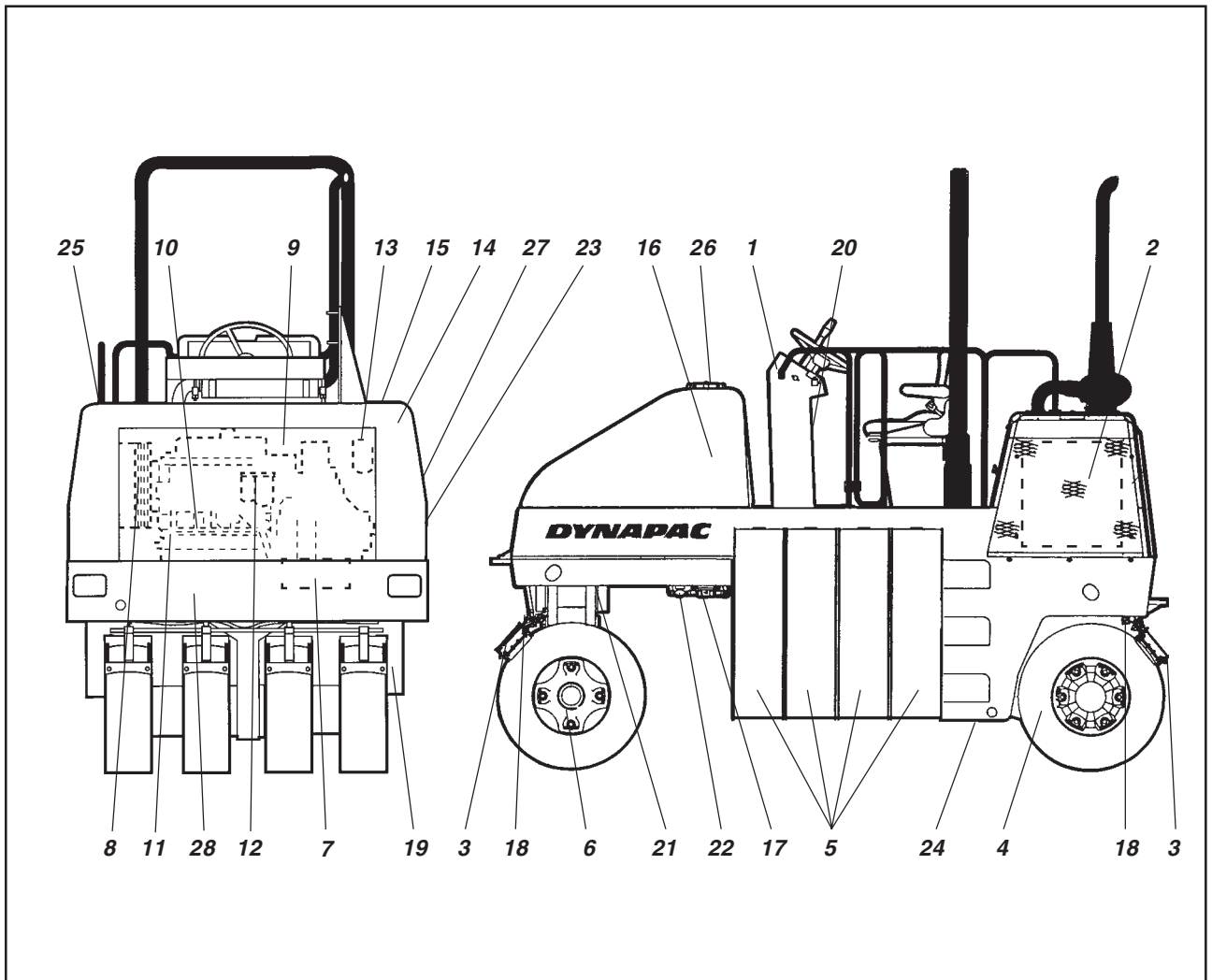


Fig. 1 Service points

- | | |
|----------------------------------|--|
| 1. Instrument panel and fuse box | 15. Hydraulic fluid filling |
| 2. Radiators (water/oil) | 16. Water tank, sprinkler |
| 3. Scrapers | 17. Water pump |
| 4. Tires | 18. Sprinklers |
| 5. Ballast boxes | 19. Fuel tank |
| 6. Wheel nuts | 20. Fusebox |
| 7. Battery | 21. Steering bearing, oscillation shafts |
| 8. Fan belt | 22. Steering cylinder |
| 9. Air cleaner | 23. Fuel filling |
| 10. Engine dipstick | 24. Fuel drainplug |
| 11. Engine oil filter | 25. Coolant, filling |
| 12. Fuel filter | 26. Water tank, filling |
| 13. Hydraulic filter | 27. Radiator (oil) |
| 14. Hydraulic sightglass | 28. Pre-filter, fuel |

MAINTENANCE MEASURES

The periodic measures are intended to be performed primarily with the specified hours of operation, secondarily for the periods: daily, weekly, etc.



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



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

Every 10 hours of operation (Daily)

Items in fig. 1	Action	See page	Comments
	Before starting each day		
14	Check level in hydraulic reservoir	9	
2, 27	Check that cooling air is unrestricted	9	
19	Refuel	9	
2	Check diesel engine coolant level	10	See engine manual
10	Check diesel engine oil level	10	See engine manual
3	Check setting of scrapers	11	
17, 18	Check sprinkler system	11, 12, 13	
26	Fill the water tank	13	
	Test the brakes	13	

Every 50 hours of operation (Weekly)

Items in fig. 1	Action	See page	Comments
9	Clean the air cleaner filter element and ensure that hoses and connections are tight	14	
4	Check the tire pressure	15	
6	Check the wheel nut torque	15	
5	Check the ballast bolt torque	15	
21, 22	Lubricate the steering cylinder, steering bearing and oscillation shafts	16	
	<p>CAUTION </p> After the first 50 hours of operation change all the oil filters and lubricating oils, but not the hydraulic fluid.		

MAINTENANCE MEASURES

Every 250 hours of operation (Monthly)

Items in fig. 1	Action	See page	Comments
2, 27	Clean the radiator	17	
7	Check the battery	17	

Every 500 hours of operation (Every three months)

Items in fig. 1	Action	See page	Comments
10, 11	Change engine oil and oil filter	18	See engine manual
12	Change engine fuel filter		See engine manual
28	Change the fuel pre-filter	19	
	Lubricate controls	19	
16	Drain sediments from water tank	22	

Every 1000 hours of operation (Every six months)

Items in fig. 1	Action	See page	Comments
8	Check the fan, belt tension and alternator.		See engine manual
	Check engine valve clearance		See engine manual
13	Change the hydraulic filters	20	
(14)	Drain condensate from hydraulic reservoir	21	
9	Change air cleaner main filter	21	
24	Drain condensate from fuel tank	22	
	Check engine valve clearances		See engine manual

Every 2000 hours of operation (Yearly)

Items in fig. 1	Action	See page	Comments
(14)	Change fluid in hydraulic reservoir	22	
16	Clean the water tank	22	
19	Clean the fuel tank	22	

EVERY 10 HOURS OF OPERATION (Daily)

Hydraulic reservoir – Checking the level

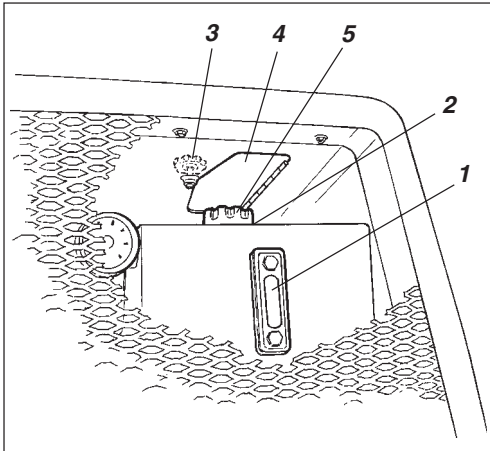


Fig. 2 Hydraulic reservoir

1. Sight glass
2. Filler pipe
3. Screw
4. Protective cover
5. Filler cap

WARNING



Place the roller on a level base. The engine must be switched off and the reserve/parking brake knob pushed in for all checking and adjustments on the roller unless otherwise specified.

Check the sight glass reading (1)

Top up with fresh hydraulic fluid if the level is 20 mm (0.8 in) or more below the upper edge of the glass, or if no fluid can be seen in the sight glass.

Loosen screw (3) one turn.

Fold the protective cover (4) out of the way.

Wipe clean round the filler cap (5) before removing it.

Fill with fresh, clean hydraulic fluid of the grade stipulated in the Lubricant Specification.

Air circulation – Checking

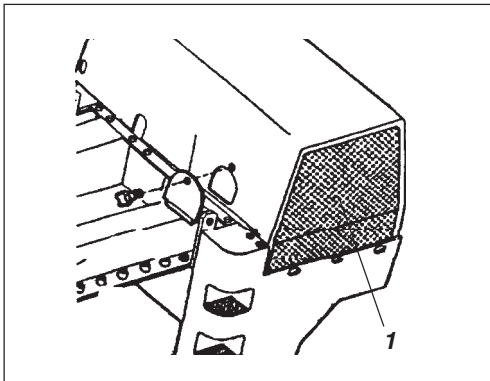


Fig. 3 Cooling air grille

1. Protective grille

Make sure that the engine has unimpeded circulation of cooling air through the protective grille (1) to the engine.

Fuel tank – Refueling

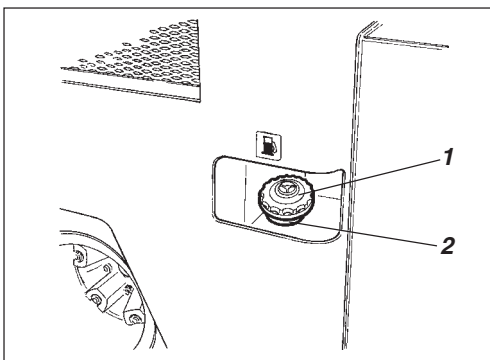


Fig. 4 Fuel tank

1. Tank cap
2. Filler pipe

Refuel every day. Top off to the lower edge of the filler pipe. Use diesel fuel in accordance with the engine manufacturer's specifications.

WARNING



Stop the diesel engine. Short (press) the filler gun against a non-insulated part of the roller before refueling, and against the filler pipe (2) while refueling is in progress.

WARNING



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

The tank holds 140 litres (37 gal).

EVERY 10 HOURS OF OPERATION (Daily)

Coolant level – Check

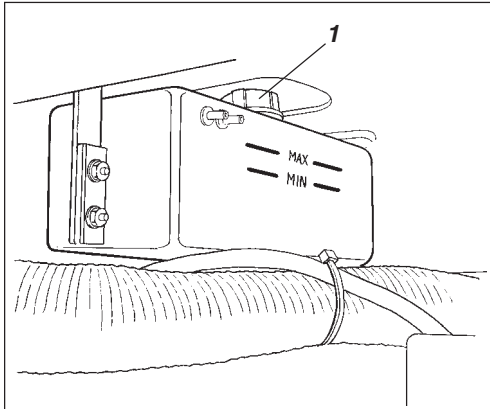


Fig. 5 Radiator
1. Filler cap

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



WARNING
Danger of scalding. Take great caution if the radiator cap must be opened while the engine is hot. Wear protective gloves and goggles.

Fill with coolant consisting of 50% water and 50% antifreeze. See the lubricant specification in these instructions and the engine manual.



CAUTION
Flush the system every other year and change the coolant. Ensure also that air can flow unrestricted through the radiator.

Diesel engine – Checking the oil level

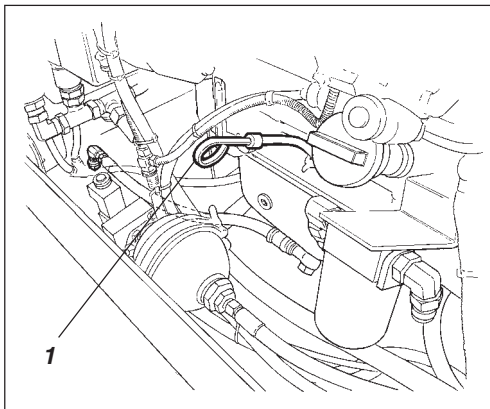


Fig. 6 Diesel engine
1. Dipstick



WARNING
Place the roller on a level base. The engine must be switched off and the reserve/parking brake knob pushed in for all checking and adjustments on the roller unless otherwise specified.



WARNING
Beware of hot parts of the engine and the hot radiator when taking out the oil dipstick. Risk for burns.

Pull the dipstick (1) up and check that the oil level is between the upper and lower marks. See the engine manual for further details.

EVERY 10 HOURS OF OPERATION (Daily)

Scrapers – Check / Adjustment

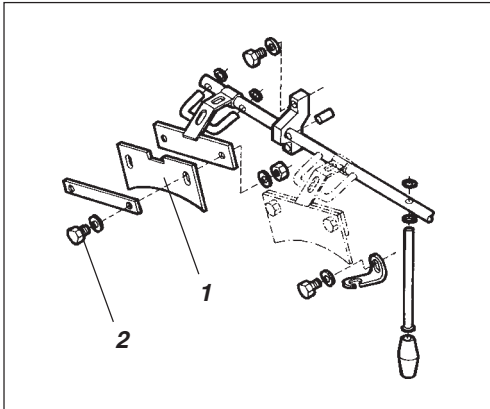


Fig. 7 Scrapers

1. Scraper blade
2. Adjustment screw

Check that the scraper blades (1) touch the tire surface evenly. Blades can be adjusted for full and even tire contact.

If necessary, adjust the distance to the tire as follows: Undo the two screws (2) holding the scraper blade. Position the scraper blade (1) then retighten the attachment screws. Adjust all scraper blades in the same way.

Sprinklersystem – Kontroll / Rengöring

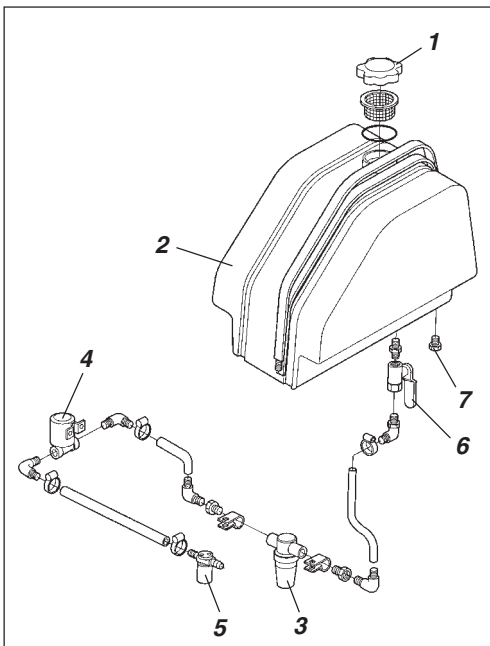


Fig. 8 Sprinklersystem

1. Påfyllningslock/sil
2. Tank
3. Filter
4. Vattenpump
5. Magnetventil
6. Avstängningsventil
7. Avtappningsplugg

Check the sprinkler system for proper operation. Solenoid (5) valve must emit sound to indicate that it is working.

Start the sprinkler system and make sure that no nozzle is blocked. If necessary, clean any clogged nozzle.

The filter (3) is accessible for cleaning after you have emptied the tank (2) and removed the filter bowls. Empty the bowls and clean them using water. Listen, or place a hand on the pump (4), to ensure that it is working.

It is not necessary to empty the tank to clean the filter if the machine has a stop valve (6). It is enough to turn off the water.

EVERY 10 HOURS OF OPERATION (Daily)

Nozzle – Disassembling / Clean

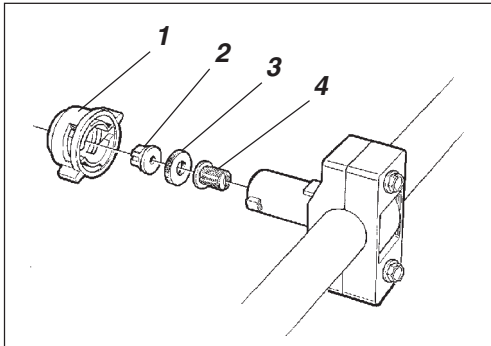


Fig. 9 Nozzle

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

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



Use protective goggles when working with compressed air.

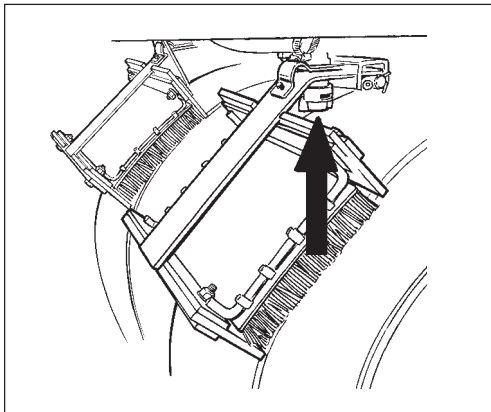


Fig. 10 Nozzle

Check and exchange or clean clogged or worn nozzles and strainers. Cap is removed with one quarter turn by hand without tools.

EVERY 10 HOURS OF OPERATION (Daily)

Water tank – Filling

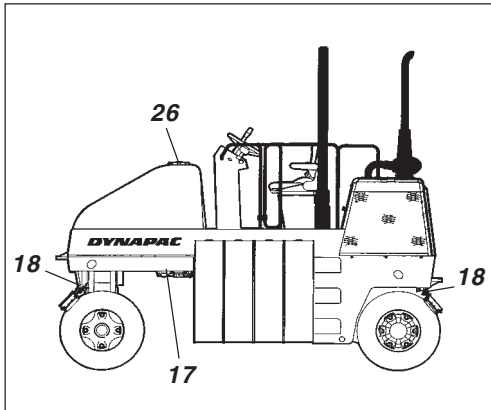


Fig. 11 Water tank

- 17. Water pump and filter
- 18. Nozzle
- 26. Filler cap

Watering is required until the tires reach working temperature when rolling asphalt compounds.

CAUTION



Only use clean water in the tank to keep the nozzles (18) free from dirt.

Screw off the tank cap (26) and fill with pure water; do not remove the strainer.

Check the sprinkler system before operation.



Sole additive: Small amount of environment-friendly antifreeze liquid.

Brakes – Check

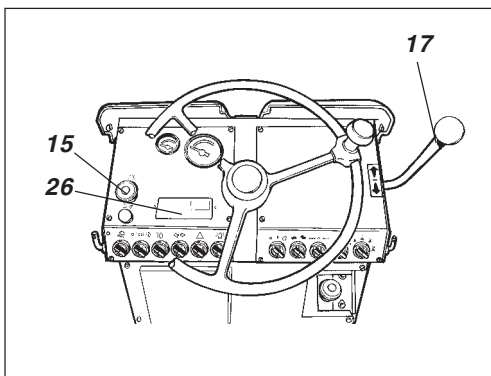


Fig. 12 Instrument panel

- 15. Reserve/parking brake knob
- 17. Forward/reverse controls
- 26. Brake warning lamp

WARNING



Check operation of the brakes as follows:

Drive the roller **slowly** forward.

Push in the reserve/parking brake knob (15). The brake warning lamp (26) on the instrument panel should light and the roller should stop.

After testing the brakes, set the forward/reverse lever (17) in neutral.

Pull up the reserve/parking brake knob (15).

The roller is now ready for operation.

EVERY 50 HOURS OF OPERATION (Weekly)

Air cleaner – Check/Cleaning

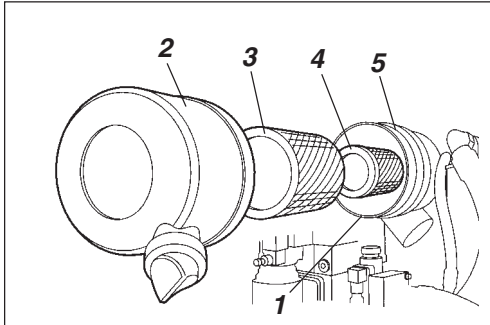


Fig. 13 Air cleaner

1. Locking braces
2. Cover
3. Main filter
4. Backup filter
5. Filter housing

WARNING



Place the roller on a level base. The engine must be switched off and the reserve/parking brake knob pushed in for all checking and adjustments on the roller unless otherwise specified.

CAUTION



Replace or clean the main filter of the air cleaner when the warning lamp on the instrument panel lights at full engine revs.

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

Do not remove the backup filter (4).

Main filter – Cleaning with compressed air

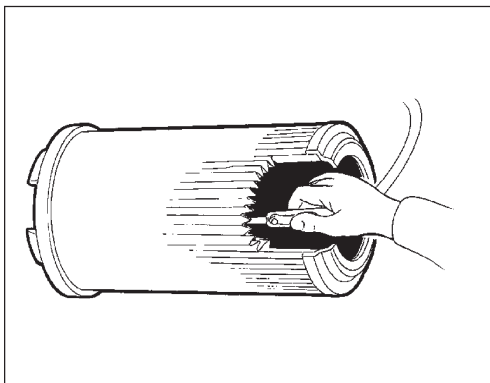


Fig. 14 Main filter

Use compressed air at a maximum pressure of 5 bar (72 psi) to clean the main filter by blowing up and down along the inside of the pleated paper filter.

Hold the air nozzle at least 2 to 3 cm (0.8-1.2 in) from the paper pleats so as not to tear the paper.

WARNING



Use protective goggles when working with compressed air.

Wipe the inside of the cover (2) and the filter housing (5).

CAUTION



Ensure that the hose clips between the filter housing and the intake hose are tightened and that the hoses are intact. Inspect the entire hose system all the way to the engine.

CAUTION



Change the main filter after cleaning it five times.

Backup filter – Replacement

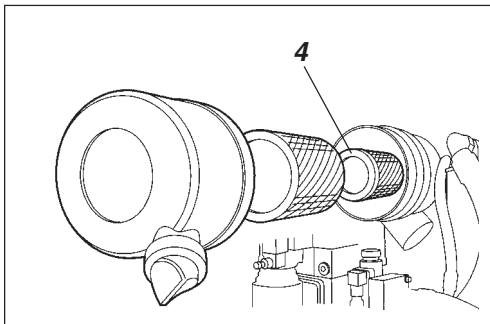


Fig. 15 Air filter

4. Backup filter

Replace the backup filter with a new one after cleaning or changing the main filter five times. The backup filter cannot be cleaned and reused.

To change the backup filter (4), pull out the used filter from its holder, insert a new filter and reassemble the air cleaner in the reverse order to the instructions given in the figure above.

EVERY 50 HOURS OF OPERATION (Weekly)

Tire pressure – Check

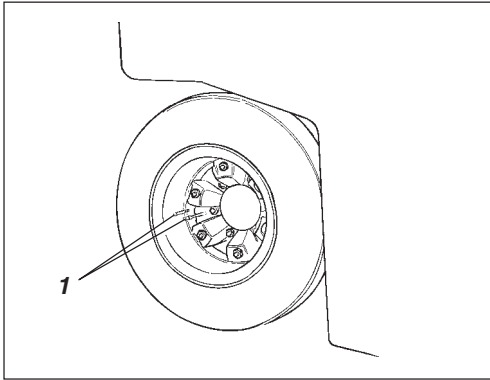


Fig. 16 Wheel
1. Filling nipples

WARNING



Wear protective goggles when working with compressed air.

Check the tires with a pressure gauge.

Check tire and No. of Ply, use the GROUND CONTACT PRESSURES table in the Operation Manual to find correct pressure as the actual ballast and roller weight is confirmed.

When changing tires it is essential that all tires have the same rolling radius and amount of bearings.

Tightening torque of wheel nuts – Check

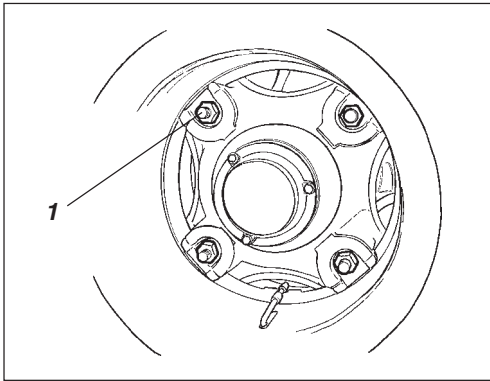


Fig. 17 Wheel
1. Wheel nut

Check that all the nuts (1) are tight, 204 Nm (20,4 kpm) tightening torque.

Check all tires and all the nuts.

(New machines or newly fitted wheels only).

Ballast bolts – Check

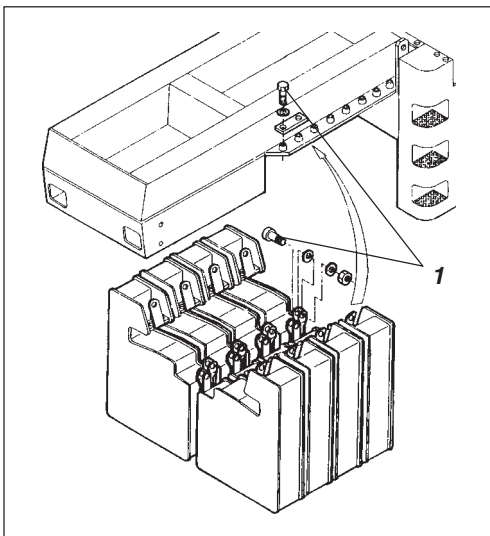


Fig. 18 Ballast boxes
1. Bolts

Check that the ballast bolts (1) are tightened (see tightening torque under the Technical Specifications heading).

EVERY 50 HOURS OF OPERATION (Weekly)

Front suspension – Lubrication

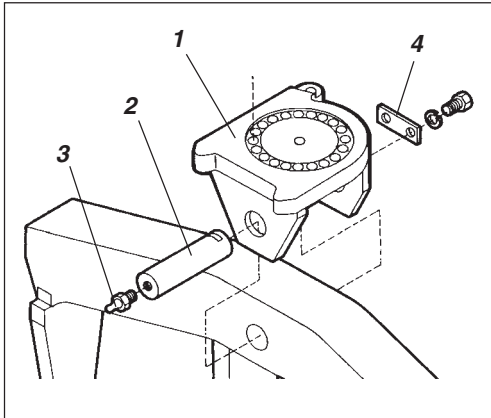


Fig. 19 Steering joint, assembly

1. Steering bearing
2. Suspension tap
3. Grease fitting
4. Lock plate

Lubrication nipples to the steering bearing is located under the rotating suspension flange.

Lubricate the steering bearing with 2 strokes of the grease gun.



The suspension tap (2) must not rotate. Check if the lock plate is missing or damage.

Grease the front suspension main pin (2) with 3 strokes of the grease gun.

Front oscillation shaft – Lubrication

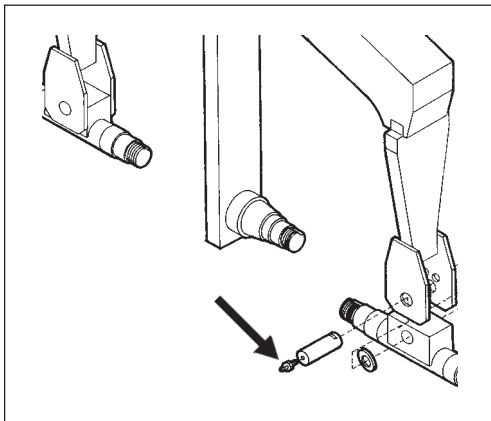


Fig. 20 Oscilleringsaxel

Wipe all the fittings clean from dirt and grease.

Lubricate each fitting with five strokes of the grease gun. Make sure that grease enters the pin.

If grease does not enter the pin it may be necessary to relieve the articulated joint with a jack and repeat the greasing procedure.

Steering cylinder – Lubrication

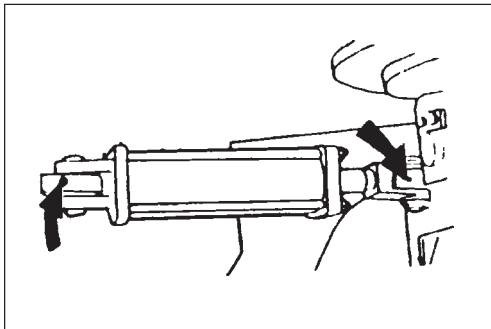


Fig. 21 Steering cylinder

Wipe all the fittings clean from dirt and grease.

Lubricate each fitting with two strokes of the grease gun.

Leave a little grease on the fittings after greasing. This will prevent dirt from entering the fittings.

EVERY 250 HOURS OF OPERATION (Monthly)

Hydraulic fluid cooler Checking – Cleaning

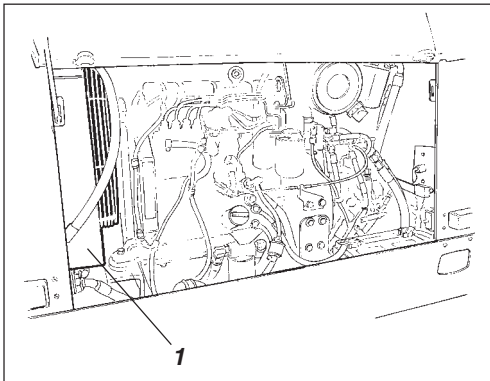


Fig. 22 Engine compartment
1. Hydraulic fluid cooler



WARNING

Place the roller on a level base. The engine must be switched off and the reserve/parking brake knob pushed in for all checking and adjustments on the roller unless otherwise specified.

Check the radiator for leakage, damage or accumulation of dirt.

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

Blow or wash the radiator in the opposite direction to that of the cooling air.



CAUTION

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



WARNING

Wear protective goggles when working with compressed air or with high pressure washing.



WARNING

Make sure there are no open flames in the vicinity when checking the electrolyte level. An explosive gas is formed in the battery during the charging process.

Open the engine cover at the far rear of the machine.

Wipe the top of the battery (2).



WARNING

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

Battery – Check electrolyte level

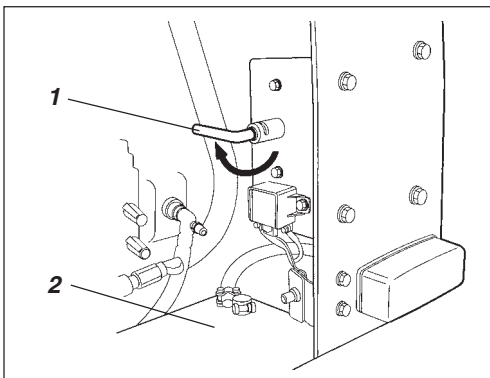


Fig. 23 Battery
1. Master switch
2. Battery

EVERY 250 HOURS OF OPERATION (Monthly)

Battery cell

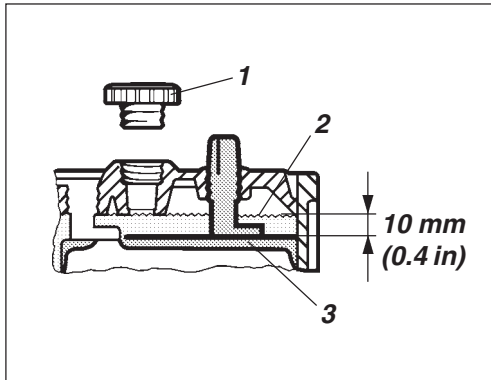


Fig. 24 Proper level of battery electrolyte

1. Cell cover
2. Electrolyte level
3. Plate

Remove the cell covers (1) and check that the fluid level (2) is about 10 mm (0.4 in) above the plates (3). Check the level in all the cells. If the level is lower, top up to the correct level with distilled water. If the ambient air temperature is below freezing point, the engine should be run for a while after the distilled water is added, otherwise there is a risk that the water might freeze.

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

The cable terminals must be properly tightened and clean. Corroded cable connections should be cleaned and greased with alkaline Vaseline.



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



Dispose of the old battery in the approved environmentally suitable manner – batteries contain toxic lead.



When carrying out electrical welding on the machine, disconnect the battery's negative cable and then all the electrical connections leading to the alternator.

Diesel engine – Changing the filter and oil

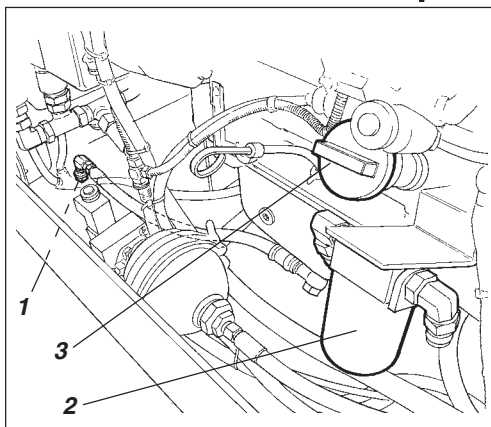


Fig. 25 Left side of engine

1. Drain plug
2. Oil filter
3. Oil filling



Position the roller on a level surface. Stop the engine and apply the parking brake/ reserve brake.

The oil drain plug (1) is most easily accessible from underneath the engine compartment. Drain the oil while the engine is warm. Place a receptacle for at least 15 litres under the drain plug.



Danger of being scalded when draining off hot oil. Protect your hands.

Change the engine oil filter (2) at the same opportunity. See also the engine manual. Fill with engine oil, see Lubricant specification for correct grade of oil, and check the oil level on the dipstick.



Dispose of the drained oil and filter properly.

EVERY 500 HOURS OF OPERATION (Every three months)

Fuel pre-filter – Cleaning

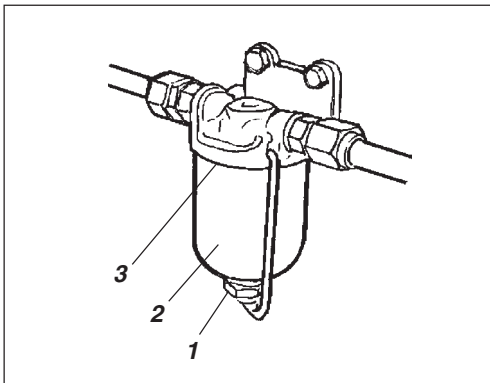


Fig. 26 Engine

1. Screw
2. Glass bowl
3. Filter

WARNING



Place the machine on a level surface. Activate the parking brake and shut off the engine.

Open the engine compartment cover. Undo the screw (1) and remove the glass bowl (2) and the filter (3). Clean the bowl and the filter with an appropriate non-flammable liquid.



Collect the diesel and cleaning liquid to environmentally correct handling.

Reassemble in reverse order.

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

WARNING



Make sure that ventilation (extraction) is adequate if the engine is run indoors. Risk of carbon monoxide poisoning.

Controls and joints – Lubrication

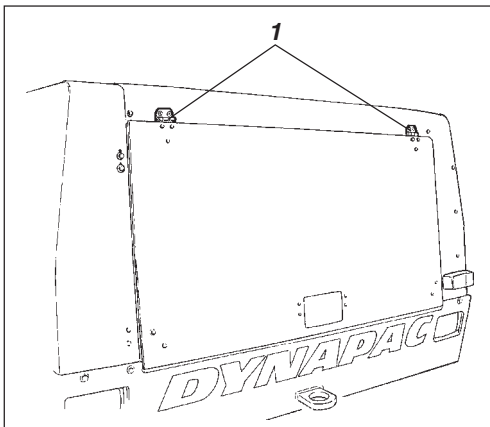


Fig. 27 Engine cover

1. Hinge

Grease the engine hood hinges (1) and sliding rails of the operator's seat. Lubricate all other joints and controls with oil. See Lubricant Specification.

EVERY 1000 HOURS OF OPERATION (Every six months)

Drive belt, tensioner bearing and fan hub – Check

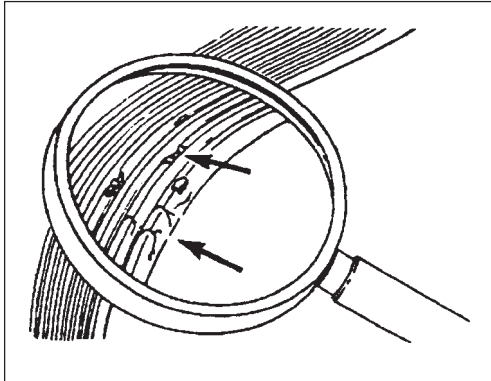


Fig. 28 Drive belt checking



Place the roller on a level base. The engine must be switched off and the reserve/parking brake knob pushed in for all checking and adjustments on the roller unless otherwise specified.

Remove the belt and complete the following steps:

Inspect the belt for damage.



Replace the belt if worn or damaged.

Hydraulic filters – Changing

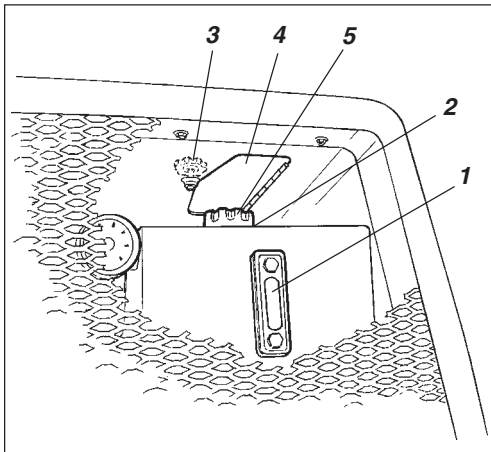


Fig. 29 Hydraulic reservoir

1. Oil sight glass
2. Filler hose
3. Screw
4. Cover
5. Filler cap

Loosen the screw (3).
Open the cover out of the way (4).

Wipe clean around the cover/breather filter (5) before removing the cover.

Loosen the cap/breather filter (5) on top of the reservoir so that any overpressure inside is eliminated.

Make sure that the breather filter (5) is not clogged; air must pass unobstructed through the cap in both directions.

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



Wear protective goggles when working with compressed air.

Clean thoroughly around the hydraulic filters.



Remove the oil filters (6) and dispose of them properly. They are not reusable and cannot be cleaned.



Make certain that the old seal is removed from the filter head. Leakage will otherwise occur between the old and the new seal.

Clean the sealing surface of the seal on the filter housing thoroughly.

Apply a thin coat of hydraulic oil on the new filter seal. Tighten the filters by hand.



Screw in the filter until the seal makes contact with the filter head. Then tighten another half turn. Do not tighten the filter too much. It could damage the seal.

Start the engine and ensure that no hydraulic fluid is leaking from the filters. Check the fluid level in the sight glass (1) and top off as necessary.



Make sure that ventilation (extraction) is adequate if the engine is run indoors. Risk of carbon monoxide poisoning.

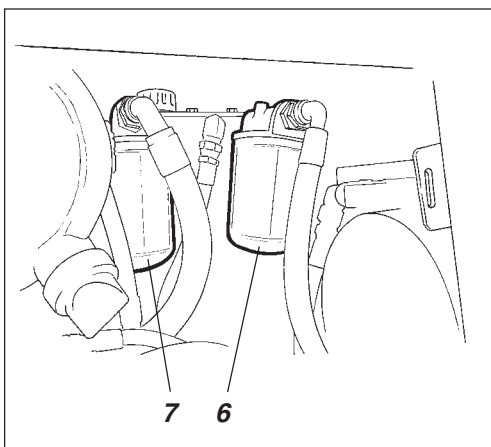


Fig. 30 Hydraulic filter

6. Suction filter
7. Return filter

EVERY 1000 HOURS OF OPERATION (Every six months)

Hydraulic tank – Drainage

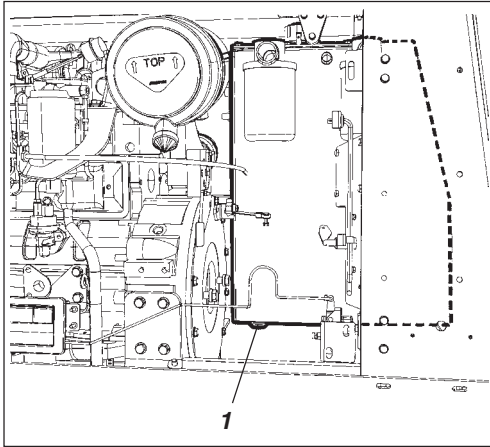


Fig. 31 Hydraulic tank, underside
1. Plug

Condensate in the hydraulic tank is removed via the plug (1).

Draining shall be done before start. An extra draining is recommended if the roller has been standing still for some time. Drain as follows:

Remove the plug (1).

Place a container under.

Let any trapped condensate run out.

Refit the plug (1).



Collect condensation water and enclosed hydraulic oil and deliver to environmentally correct handling.

Air filter – Changing

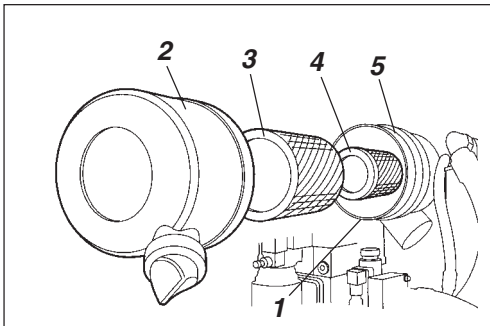


Fig. 32 Air cleaner
1. Locking braces
2. Cover
3. Main filter
4. Backup filter
5. Filter housing

Replace the main filter (3) of the air cleaner even if it has not yet been cleaned five times; see under the heading "Every 50 hours of operation" for changing the filter.



If the filter is not replaced when clogged, the engine will emit smoke and lose power and there will be serious risk of damage to the engine.

Change also the safety filter (backup filter) (4).

EVERY 2000 HOURS OF OPERATION (Yearly)

Hydraulic reservoir – Changing the fluid

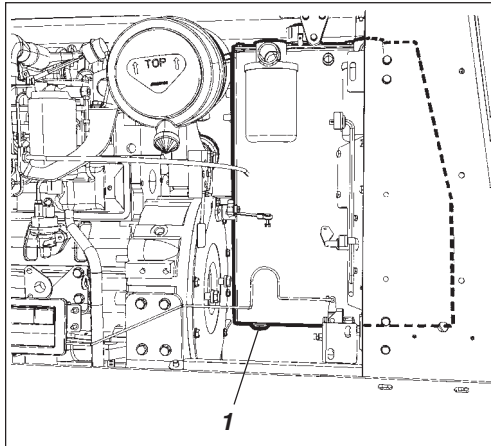


Fig. 33 Hydraulic reservoir, underneath
1. Plug



WARNING Place the roller on a level base. The engine must be switched off and the reserve/parking brake knob pushed in for all checking and adjustments on the roller unless otherwise specified.



WARNING Danger of being burned when draining hot oil. Protect your hands.

Drain the hydraulic fluid as follows:



Hold a receptacle underneath. The receptacle should hold at least 75 quarts. Loosen the plug (1). Drain the reservoir, save the fluid and dispose of it properly. Screw in the plug (1).

Fill with fresh hydraulic fluid according to the instructions under the heading "Hydraulic reservoir—checking the level." Change the hydraulic filters at the same time.

Start the engine and operate the various hydraulic functions.



WARNING Make sure that ventilation (extraction) is adequate if the engine is run indoors. Risk of carbon monoxide poisoning.

Water tank – Cleaning

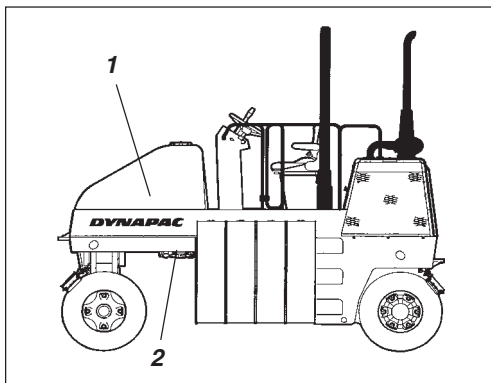


Fig. 34 Water tank
1. Water tank
2. Drain plug

Beware of the risk of freezing in winter. Drain the tank, pump and piping.

Remove the drain plug (2) and drain off the water.

Clean the inside of the tank with water and a suitable detergent for plastic material.

Refit the plug and check tightness.



The water tank is made of plastic (polythene) and is recyclable.

Fuel tank – Cleaning

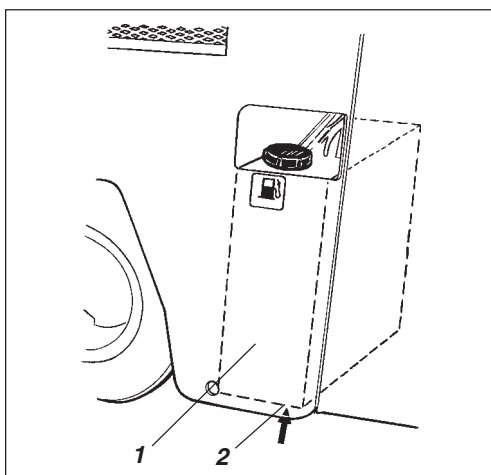


Fig. 35 Fuel tank
1. Fuel tank
2. Drain plug

Loosen the drain plug (2) underneath the fuel tank and drain the fuel into a receptacle.

Clean the tank, refit the plug and check tightness.



CAUTION Do not leave empty tank. Maintain always full.



Save the fuel and dispose of it properly.

LONG-TERM PARKING

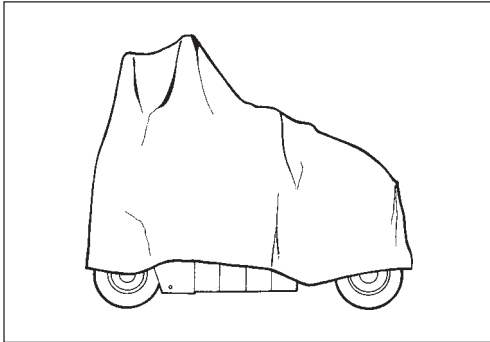


Fig. 36 Protecting the roller from the elements



For long-term parking (longer than one month), the following instructions should be followed.

These instructions apply for parking lasting up to 6 months.

Before re-commissioning the roller, the points marked with an asterisk * must be performed.

Diesel engine

- * See the manufacturer's instructions in the engine instruction manual, which is supplied together with the roller.

Battery

- * Remove the battery from the roller, clean its exterior, check its electrolyte level and recharge it once a month.

Air cleaner, exhaust pipe

- * Cover the air cleaner or its opening with plastic or tape, and cover also the exhaust pipe's opening. This is done so as to prevent moisture from penetrating into the engine.

Fuel tank

Fill the fuel tank to the brim to prevent condensation.

Hydraulic reservoir

Drain off any condensation water and fill the hydraulic reservoir to the uppermost level mark.

Steering cylinder, hinges etc.

Grease the steering-joint bearings and both bearings of the steering cylinder. Grease the piston rod of the steering cylinder with inhibitor grease. Also grease hinges of the engine compartment and cab doors, and both ends (bright parts) of the forward/reverse control.

Tires

Jack up the frame, so that the tires do not take any load.

Covers, tarpaulin

- * Place the instrument cover on the steering column. Cover the entire machine with a tarpaulin, which should hang some way off the ground. If possible, store the roller indoors, preferably in a building with a uniform temperature.

Sprinkler system

- * Drain the water tank and hoses completely. The filter housing and the water pump must be emptied. Remove all the sprinkler nozzles.

SPECIAL INSTRUCTIONS

Standard oils and other recommended fluids

On leaving the factory, the various systems and components are filled with oil or fluid as indicated in the Lubrication specification and are thus suitable for operation in ambient temperatures between -10°C and $+40^{\circ}\text{C}$ (14°F - 104°F)



A maximum temperature of $+35^{\circ}\text{C}$ (95°F) applies for biological hydraulic fluid.

The following recommendations apply for operation in higher ambient temperatures, up to a maximum of $+50^{\circ}\text{C}$ (122°F):

Higher ambient temperature above $+40^{\circ}\text{C}$ (104°F)

The diesel engine can be run at this temperature using the normal oil, but for other components the following fluids must be used: Hydraulic system using mineral fluid Shell Tellus TX100 or equivalent. Other components using transmission oil: Shell Spirax AX 85W/140, or equivalent.

Temperature

The temperature limits apply to standard versions of the roller. Rollers that are fitted with additional equipment, such as noise suppression, etc, may require extra observation in the higher temperature ranges.

High-pressure washing



Never aim a water jet directly at the cap of the fuel tank or hydraulic reservoir. This is especially important when using a high-pressure jet.

Do not spray water directly on electric components or the instrument panel. Put a plastic bag over the filler cap of the fuel tank and secure with an elastic band. This will prevent water from entering the venting hole in the filler cap. This could otherwise cause operational disturbance, such as a clogged filter.

Fire fighting

In the event of fire in the machine, use an ABE powder fire extinguisher if possible. A BE-type carbon dioxide fire extinguisher may also be used.

Protective structure (ROPS)

If the roller is equipped with a protective structure (ROPS, Roll Over Protective Structure), or protective cab, the structure or cab must on no account be subjected to welding or the drilling of holes. Never attempt to repair a damaged structure or cab; they must be replaced with new ones.

Starting aid

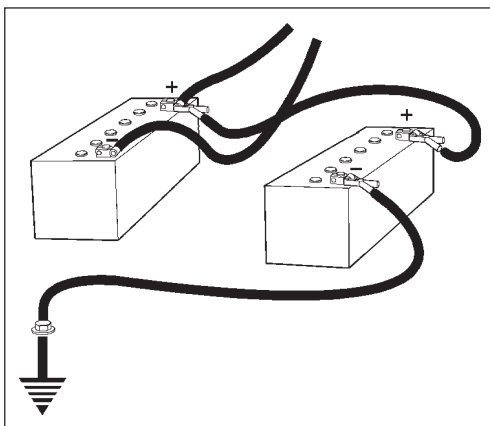


Fig. 37 Starting aid



Do not connect the negative cable to the negative pole of the discharged battery, because in the event of a spark, the oxyhydrogen gas that is emitted around the battery could explode.



Always ensure that voltage of the jump-start battery is the same as that of the discharged battery.

Switch off the ignition and all power consuming items. Switch off the engine in the assisting machine. First connect the positive pole of the jump-start battery to the positive pole of the discharged battery and then connect the negative pole of the jump-start battery to a bolt or the engine lifting lug in the machine to the discharged battery. Start the engine of the assisting machine and let it run for a while. Attempt to start the other machine. Disconnect the cables in the reverse order.

ELECTRICAL SYSTEM, FUSES

Fuses and relays

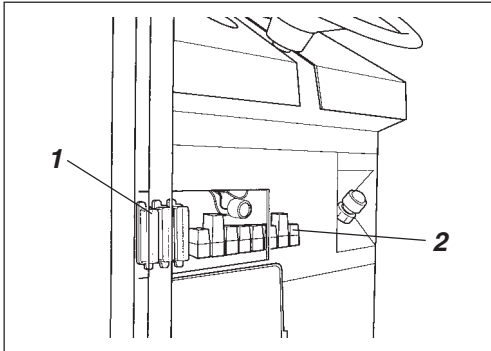


Fig. 38 Instrument panel
 1. Fuse-boxes (x3)
 2. Relays (x8)

The electrical control and monitoring system is protected by 17 fuses.

The fuse boxes (1) are located underneath the instrument panel.

The machine is equipped with a 12V electrical system and an alternating current generator.



Connect the battery to the correct polarity (- to chassis). The cable between the battery and the alternator should not be disconnected when the engine is running.

Fuses

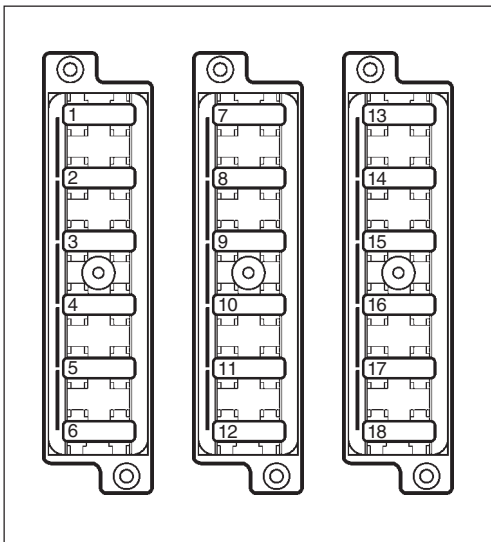


Fig. 39 Fuse-boxes



Before carrying out any electric welding on the machine, disconnect the battery grounding cable and then all terminals to the alternator.

The fuses listed below protect the electrical regulating and control system.

7,5 A	1. Starting	7,5 A	13. Driving lights front
10 A	2. Sprinkler	5 A	14. Driving lights rear
3 A	3. Display panel	10 A	15. Direction indicator
7,5 A	4. Horn	-	16. Reserve
3 A	5. Back-alarm	5 A	17. Direction indicator (right front/rear)
7,5 A	6. Rotating beacon	7,5 A	18. Direction indicator (left front/rear)
3 A	7. Instrument		
	8. Reserve		
15 A	9. Working lights front		
15 A	10. Working lights rear		
7,5 A	11. Traffic lights front		
7,5 A	12. Traffic lights rear		

Relays

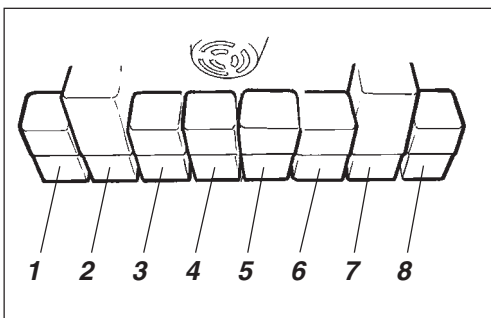


Fig. 40 Electrical system relays

1. Main relay
2. Neutral start relay
3. Neutral relay
4. High/low speed
5. Sprinkler relay
6. Light relay
7. Turn relay
8. Stop light relay

The electrical system relays are also located under the instrument panel beside the fuse box.

