DYNAPAC

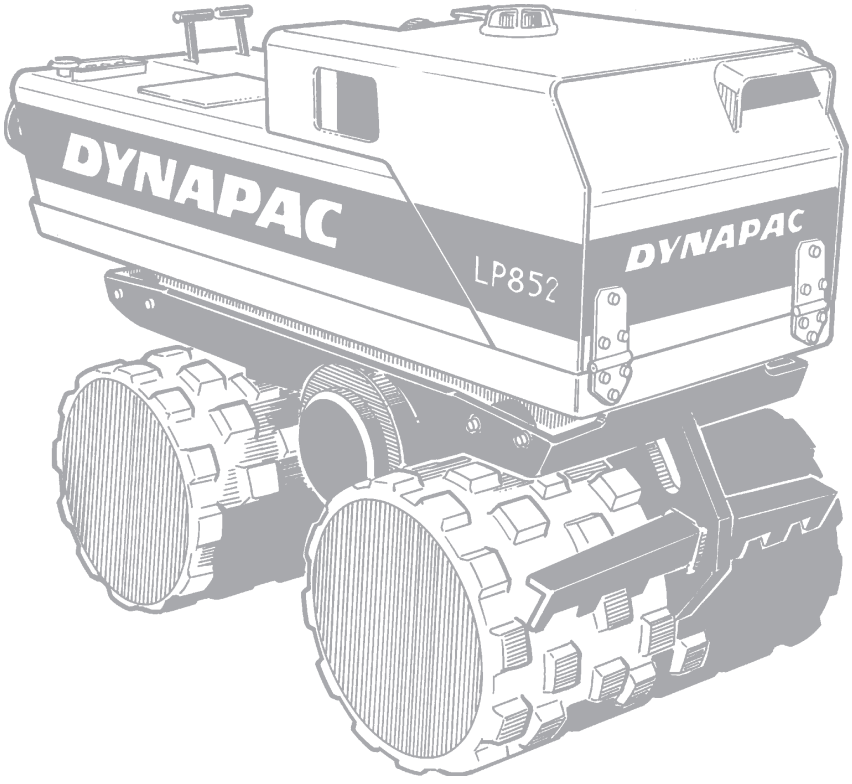
Vibratory Trench Compactor
LP 852

Operation & Maintenance
ILP852EN3, March 2002

KEEP THIS MANUAL HANDY FOR FUTURE REFERENCE

Diesel engine:
Hatz 2G40

These instructions apply from:
LP 852 PIN (S/N) *48600052*



Dynapac LP 852 is a vibratory padfoot roller that is designed to cope with many different types of compaction work. The roller is designed essentially for compaction tasks in pipe trenches, around the foundations of buildings, backfilling against supporting walls, and also for road construction. The machine is equally suitable for work in confined spaces as for major compaction jobs.

Like all other machines that are powered by combustion engines, the plate is designed for operation in well-ventilated areas.

CONTENTS

WARNING SYMBOLS

WARNING Indicates danger or hazardous procedure that could result in serious or fatal personal injury if the warning is ignored.

CAUTION Indicates danger or hazardous procedure that could result in damage to machine or property if the warning is ignored.

Safety instructions

The safety instructions are included in this manual and must be studied by the operator. Always follow the safety rules and keep the manual available for future use.

Read through the entire manual before starting any maintenance operations.

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

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.

GENERAL

It is important that the machine 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 inspecting the machine every day before starting up by checking all round it to detect any sign of leakage or other faults.

SPARE A THOUGHT FOR THE ENVIRONMENT! Do not let oil, fuel and other environmentally hazardous substances contaminate the environment. Always dispose of used filters, drained oil and any remaining fuel properly.

This manual contains instructions for periodic attention which should normally be carried out by the operator.

There are additional instructions relating to the engine, for which the manufacturer's instructions are detailed in the engine manual.

MACHINE PLATE

Fill in all data below, when delivering and commissioning the machine.

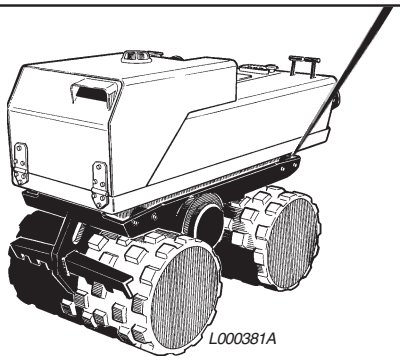
DYNAPAC CE

Metso Dynapac AB
Box 504, SE-371 23 Karlskrona Sweden

Type | Operating mass kg | Rated Power kW | Year of Mfg

Product **I**dentification **N**umber

358090SE



..... Engine Model

..... Engine Number

SAFETY INSTRUCTIONS (FOR ALL LIGHT PRODUCTS)

Symbols

The signal words WARNING and CAUTION used in the safety instructions have the following meanings:

WARNING: Indicates danger or hazardous procedure that could lead to serious or mortal injury if the warning is neglected.

CAUTION: Indicates danger or hazardous procedure that could lead to machine or property damage if the warning is neglected.

Important rules for your safety

The machine must not be modified without the prior consent of the manufacturer. Use only original parts. Use only the accessories recommended by Dynapac. If modifications not approved by Dynapac are carried out, these could result in serious injury to yourself or other personnel.

- These recommendations are based on international safety standards.
- You must also observe any local safety regulations which may be in force. Read all instructions carefully before operating the machine. Keep the instructions in a safe place.
- Signs and stickers giving important information about safety and maintenance are supplied with every machine. Make sure that they are always legible. The ordering numbers for new stickers can be found in the spare parts list.
- Use of the machine and its accessories is restricted to the applications specified in the product literature.
- For reasons of product safety, the machine must not be modified in any way.
- Replace damaged parts immediately. Replace all wear parts in good time.

Be alert

Always pay attention to what you are doing, and use your common sense. Do not use the machine if you are tired or under the influence of drugs, alcohol or other substances which can effect your vision, reaction ability or judgement.

Safety equipment

Long exposure to loud noise without ear protectors can cause permanent damage to hearing.

Long exposure to vibrations can damage the hands, fingers and wrists. Do not use the machine if you experience discomfort, cramp or pain. Consult a doctor before resuming work with the machine.

Always use approved safety equipment. The operator, and people in the immediate vicinity of the working area, must wear:

- Safety helmet
- Safety goggles
- Ear protectors
- Dust mask in dusty environments
- High-visibility clothing
- Protective gloves
- Protective shoes

Avoid wearing loosely fitting clothing that might get caught in the machine. If you have long hair, cover it with a hair net. Vibrations from hand-held machines are transmitted into the hands via the handles of the machine. Dynapac machines feature a handle design that absorbs a large part of the machine vibrations. The vibrations are not eliminated entirely, but it is possible to use the machines for longer periods of time without the risk of injury.
Be alert to acoustic signals from other machines in the working area.

Working area

Do not use the machine near flammable material or in explosive environments. Sparks can be emitted from the exhaust pipe, and these can ignite flammable material. When you take a pause or have finished working with the machine, do not park it on or near flammable materials. The exhaust pipe can get very hot during operation, and can cause certain material to ignite. Make sure that there are no other personnel inside the working area while the machine is in use. Keep the worksite clean and free of extraneous objects. Store the machine in a safe place, out of unauthorized's reach, preferably in a locked container.

Filling with fuel (Gasoline/diesel)

Petrol has an extremely low flash-point and can be explosive in certain situations. Do not smoke. Make sure that worksite ventilation is good.

Keep away from all hot or spark-generating objects when handling fuel. Wait until the machine has cooled before filling the tank. Fill the tank at least 3 metres away from where you intend to use the machine. Avoid spilling petrol, diesel or oil on the ground. Protect your hands from contact with petrol, diesel and oil.

Open the tank cap slowly to release any overpressure that might exist in the tank. Do not overfill the tank. Inspect the machine for fuel leakage regularly.

Do not use a machine that is leaking fuel.

Starting the machine

Before starting read instruction book and make your self familiar with the machine and make sure that:

- All handles are free from grease, oil and dirt.
- The machine does not show any obvious faults.
- All protective devices are securely fastened in their places.
- All control levers in ”neutral” position.

Start the machine according to the instruction-book.

Operation

Keep your feet well clear of the machine.

Do not operate the machine in poorly ventilated spaces. There is a risk of carbon monoxide poisoning.

Use the machine only for the purpose for which it is intended. Make sure you know how to stop the machine quickly in the event of an emergency situation.

Always take extreme care when driving the machine on slopes. Always drive straight up and down on slopes. Do not exceed the maximum gradability of the machine according to the instruction book. Stay clear of machine when operating on a slope or in a trench.

Do not touch the engine, the exhaust pipe or the eccentric element of the machine. They gets very hot during operation and can cause burn injuries.

Do not touch V-belts or rotating parts during operation.

Parking

Park the machine on ground as level and firm as possible. Before leaving machine:

- Apply the parking brake.
- Shut off the engine and pull the ignition key out.

Loading/Unloading

Never remain under or in the immediate vicinity of the machine when it is lifted by a crane. Only use marked lifting points. Always make sure that all lifting devices are dimensioned for the weight of the products.

Maintenance

Maintenance work must only be carried out by skilled personnel. Keep unauthorized persons away from the machine. Do not carry out maintenance work while the machine is moving or the engine is running.

Working with the hydraulic system

Regular maintenance of the hydraulic system is important. Minor damage or a split hose or coupling can have devastating consequences. Bear in mind that the hydraulic hoses are made of rubber and can deteriorate with age, which can result in splitting. In all cases of uncertainty with regard to durability or wear, replace the hoses with new original hoses from Dynapac.

Working with battery

The battery contains poisonous and corrosive sulphuric acid. Wear protective glasses and avoid getting acid on your skin, clothes or on the machines. If you get sulphuric acid on yourself, rinse the skin with water. If you get acid in your eyes, rinse them with water for at least 15 minutes and seek immediate medical treatment. The gas that is emitted by the battery is explosive. When fitting or replacing a battery, always take care so that you do not short- circuit the battery poles.

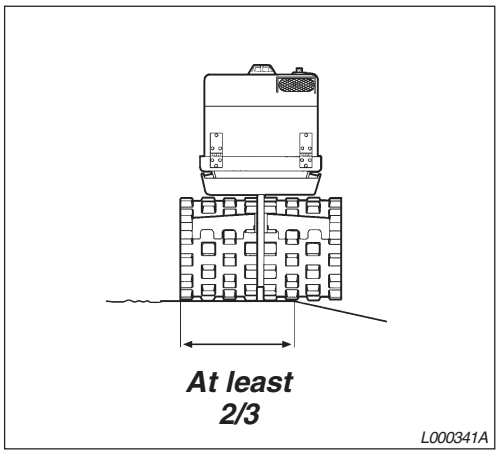
Repair

Never use a machine that is damaged. Qualified repair work requires trained personnel, please contact your nearest authorized workshop.

Extinguishing fires

If there is a fire in or on the machine, it is best to use an ABE-class fire extinguisher. However, a BE-class CO_2 extinguisher is also suitable.

Driving near an edge

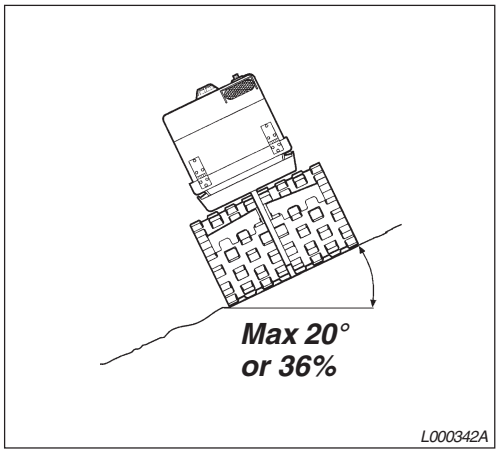


Machine location when operating on edges

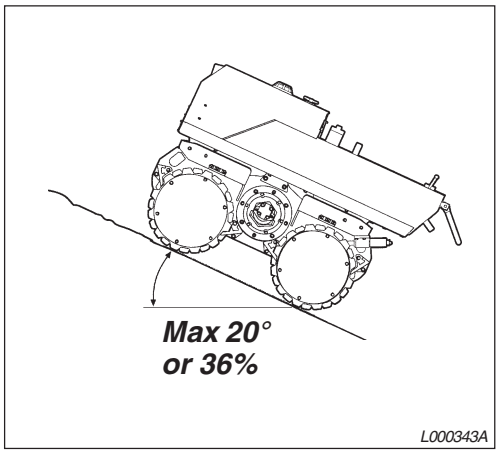
When driving near an edge, at least two thirds of the plate must be on firm solid ground.

If the machine tips over, switch off the engine before attempting to lift the machine.

Slopes



Tipping angle on side slopes



Driving on slopes

Make sure that the work site is safe. Wet and loose earth reduces manoeuvrability especially on sloping ground. Always observe particular caution on sloping and uneven terrain.

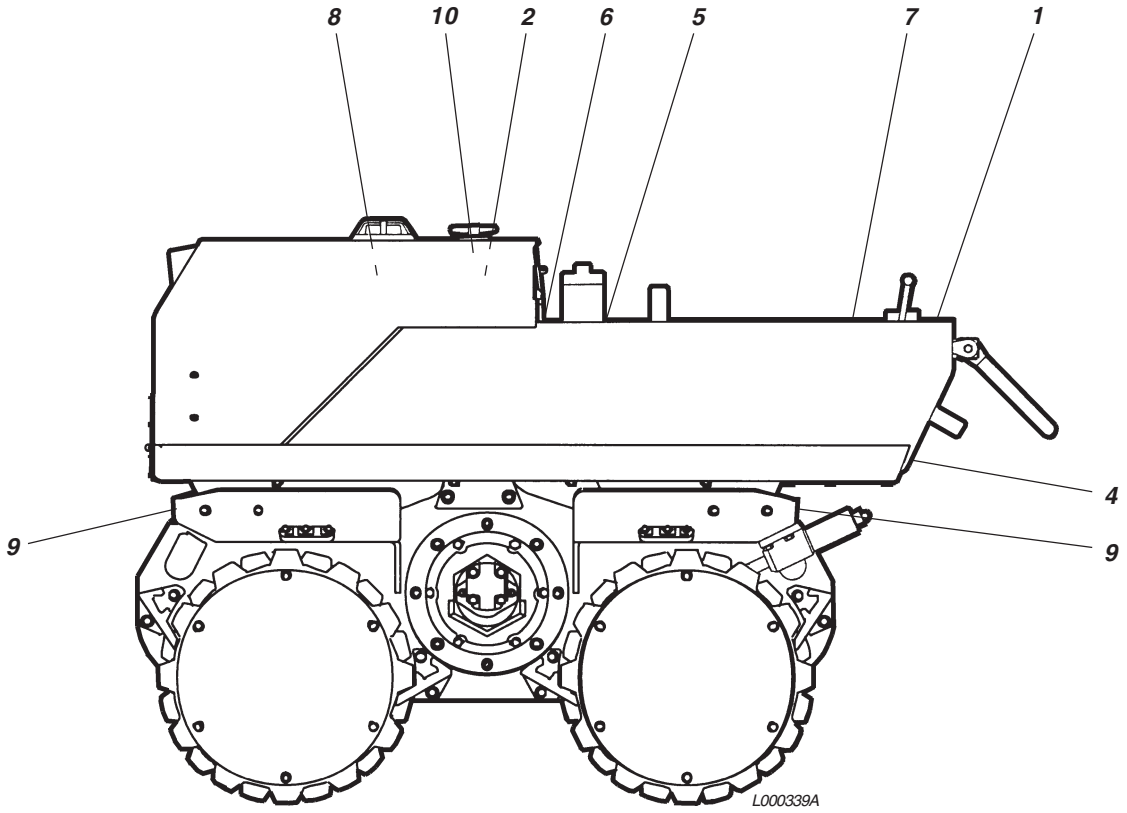
Where possible, avoid all driving across a slope. Instead, drive up and down on sloping ground.

Never work on slopes that are greater than the capability of the machine. Maximum slope of the machine in operation is 20° (depending on condition of the ground).

The tilting angle is measured on a hard, level surface with the machine stationary. Vibration switched OFF and all tanks full. Remember that loose ground, vibration switched ON, and driving speed can all cause the machine to topple even on a smaller slope than specified here.

Never leave the machine unattended with the engine running.

SAFETY DECALS, LOCATION/DESCRIPTION



SAFETY DECALS, LOCATION/DESCRIPTION

1.

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

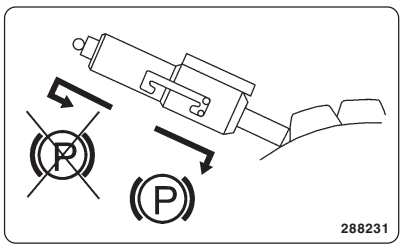
2.

Warning - hot surfaces in the engine compartment. Do not touch.

3.

Warning, hand and arm entanglement. Never reach into the hazardous area.

4.

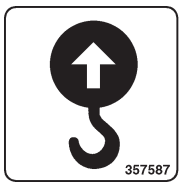


Parking brake

5.

Diesel

6.

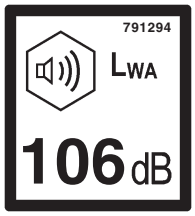


Lifting point

7.

Use ear protectors

8.

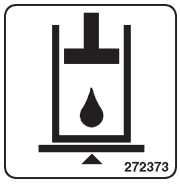


Guaranteed Sound Power level

9.

Securing point

10.



Hydraulic fluid level

FUEL AND LUBRICANTS

	ENGINE OIL	Use SAE 15W / 40: Volume: 3,0 lit. (3.2 qts) Shell Rimula TX15W-40
	HYDRAULIC FLUID	Use mineral-based hydraulic fluid Volume: 60,0 lit. (16 gal) Shell Tellus TX68 or equivalent
Bio-Hydr	**BIODEGRADABLE HYDRAULIC FLUID**	Shell Naturelle HF-E68 On delivery from the factory the machine may have been filled with biodegradable fluid. Always use the same type of oil when changing or topping off.
	FUEL	Use diesel oil which satisfy EN 590 or DIN 51601 Volume: 17,0 lit. (18 qts)

Stop the engine before refilling the fuel tank. Never refuel near an open flame or sparks, which could start a fire. Don't smoke. Use pure fuel and clean filling equipment. Take care not to spill fuel.

Service parts P/N

	Hatz 2G40
Engine air filter element	23 95 96
Engine oil filter	23 83 80
Engine fuel filter	23 83 60
Hydraulic filter	93 53 77

TECHNICAL DATA

	LP 852 850 mm (33,5 in) wide drums	LP 852 630 mm (24,8 in) wide drums
Weight		
Net Weight	1590 kg (3510 lbs)	1450 kg (3200 lbs)
Operating Weight	1610 kg (3550 lbs)	1470 kg (3240 lbs)
Performance		
Travel Speed	0-4 km/h (0-2,5 mph)	
Operating Speed	0-2 km/h (0-1,2 mph)	
Brakes		
Service Brake	Hydrostatic	
Parking Brake	Mechanical	
Capacties		
Engine Oil	3,0 lit. (3,2 qts)	
Fuel Tank	17,0 lit. (18 qts)	
Hydraulic Tank	60,0 lit. (16 gal)	
Engine		
Make/Model	Hatz 2G40 2-cylinder diesel	
Rated Power	13,1kW (18 hp)	
Rated Speed	2500 rpm	
Cooling System	Air cooled	
Air Cleaner	Dry Type	
Electrical System		
Battery voltage	12 V	
Battery Capacity	50 Ah	
Alternator	280 W	
Starter Motor	1,7 kW (2,3 hp)	
Steering		
Steering System	Skid Steering	
Control	Hydrostatic	
Traction System		
Pump	Gear Type	
Motors	Radial Piston	
Pressure Relief Valve	30 MPa (4350 psi) manual 28 MPa (4060 psi) cable/IR-control	

TECHNICAL DATA

Vibration System

Pump	Gear Type	
Motor	Gear Type	
Vibration Frequency	30 Hz	(1800 rpm)
Centrifugal Force	65 kN	(14600 lbs)
Amplitude	1,8 mm	(0,07 in)
Pressure Relief Valve	12 MPa	1740 psi)

Ergonomics

Noise level	Sound pressure level at the operator's place according to ISO 6394:
L_{pA} dB (A) =	78, Cable and IR-control (distance 7,5m.) 92, Manual control
	Sound power level according to ISO 3744:
L_{wA} dB (A) =	106 dB(A)
Vibration values	The hand-arm vibration values according to ISO 5349 (manual control):
a m/s^2 =	7,5 (manuell version)

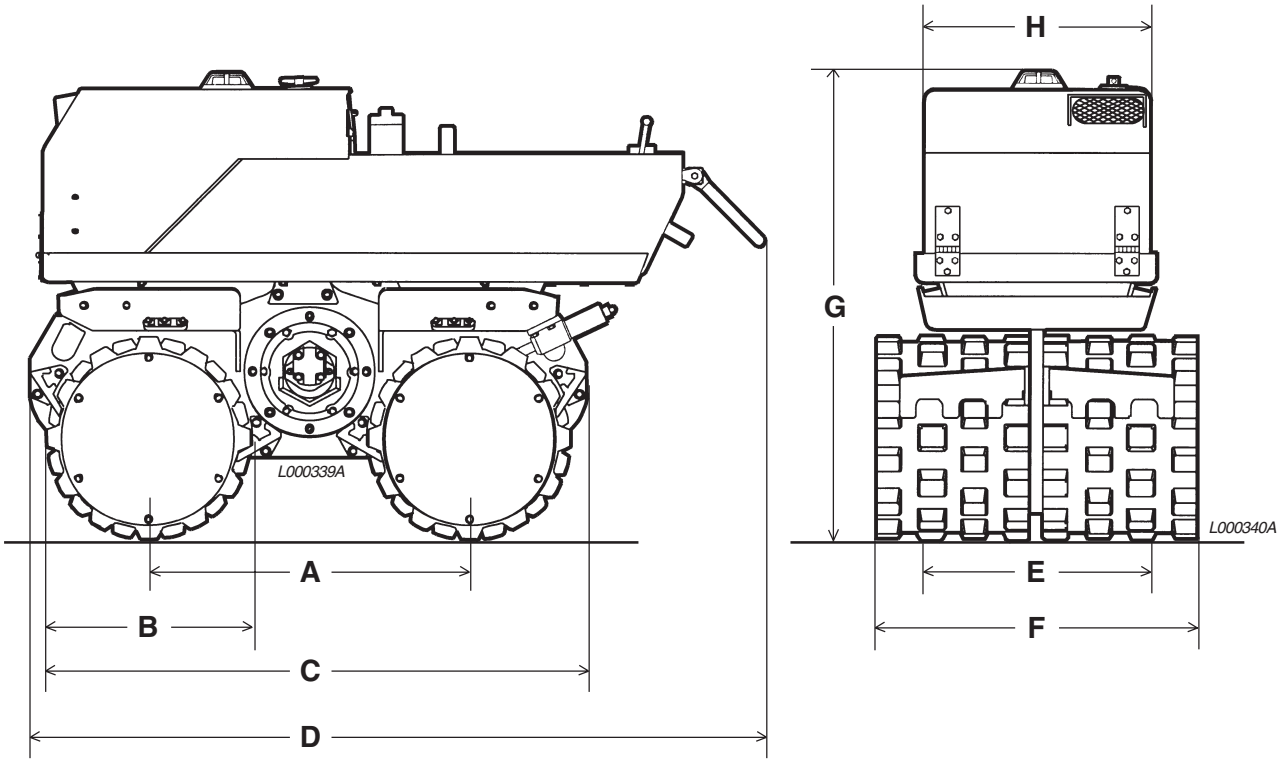
The above noise level and vibration values were determined at normal speed of the engine with the vibration on. The machine was placed on an elastic base. During operation these values may differ because of the actual operational conditions.

Noise level according to EU directive 2000/14/EC for EU equipped machine, on macadam course with vibration switched ON:

Measured sound power level,
L_{wA}, dB(A) = 104

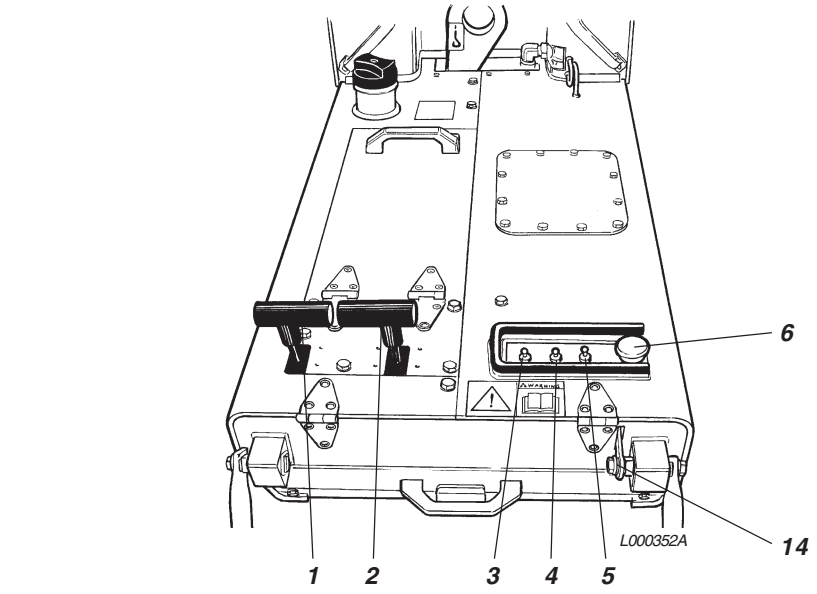
Guaranteed sound power level,
L_{wA}, dB(A) = 106

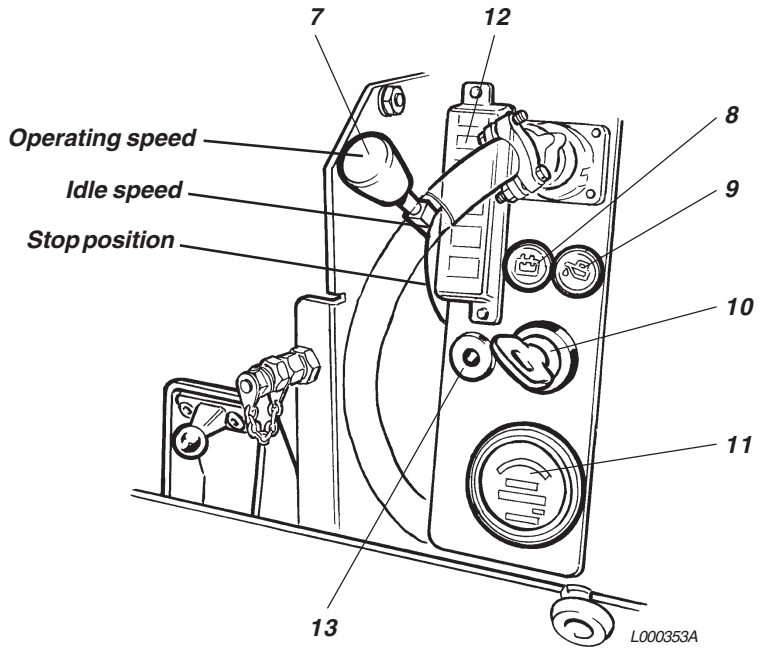
TECHNICAL DATA – DIMENSIONES



	LP 852
A mm	850
B mm	535
C mm	1385
D mm	1920
E mm	630 (630 mm, 24,8 in, wide drums)
F mm	850 (850 mm, 33,5 in, wide drums)
G mm	1190
H mm	630

CONTROLS – MANUALLY OPERATED



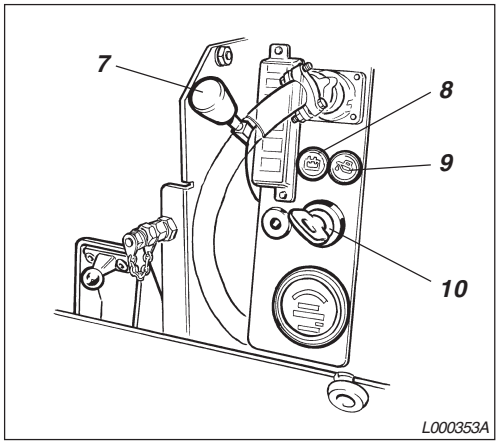


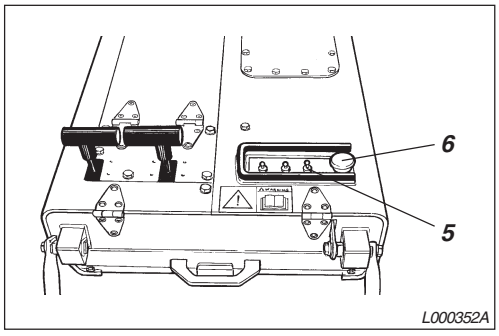
1. *Control lever for forward and reverse left side*
2. *Control lever for forward and reverse right side*
3. *Switch Manual / IR*
4. *Switch high (forward only) / low speed. Vibration can only be used when switch (4) is in low*
5. *Switch for vibration on-off (clockwise / counterclockwise)*
6. *Emergency stop*
7. *Throttle control*
8. *Control lamp for charging*
9. *Control lamp for oil pressure*
10. *Key Switch*
11. *Hour meter*
12. *Fuse box*
13. *Holder for charging cable*
14. *Inductive sensor for push-stop*

CHECKS BEFORE STARTING

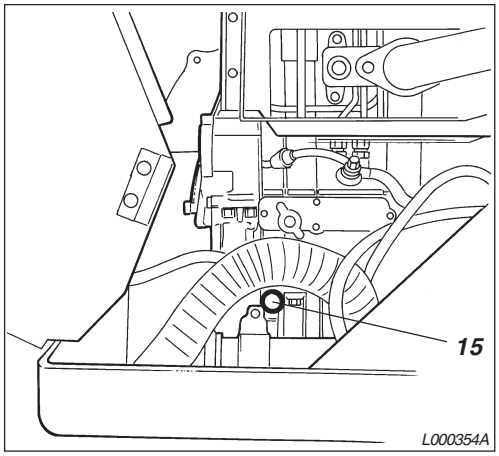
Observe the safety regulations. Ensure that "Daily" Maintenance has been carried out, see schedule.
- Check engine oil level.
- Check hydraulic oil level.
- Check fuel level.
- Check function of control levers.
- Check function of back-up safety bar.
- Check scraper adjustment.
- Check function emergency brake.
- Visually inspect the machine for hydraulic leaks and loose bolts.

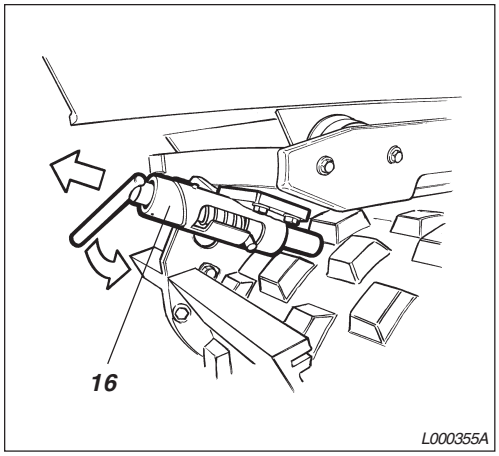
Starting the engine, manual controls





1. Set throttle control (7) to full speed.
2. Turn vibration switch (5) to **O**.
3. Pull out the Emergency Stop Button (6).
4. Turn the ignition switch (10) clockwise pos. I until control lamps for battery charge (8) and engine oil (9) pressure lights up, then turn the switch further pos. II to engage the starter motor. Release immediately as engine starts firing.
5. Observe that control lamps (8) and (9), lights go out.
6. A few minutes running at low speed will allow the engine to warm up to working temperature. During cold start-up avoid high speed operation of hydraulic components until the system is warmed up to provide adequate lubrication.
7. Starting at low temperatures pull out the cold-start button (15).
8. Pull out the mechanical parking brake (16).





OPERATION – MANUALLY OPERATED

Stopping the engine, manual controls.

1. Stop the machine and turn off vibrations (5).
2. Press down throttle control (7) and let engine idle a couple of minutes.
3. Turn the key (10) to zero to switch off the engine.
4. Press in parking brake (16) during transportation and parking.

Operating, manual controls.

Warning! Be sure that your working area is safe. Wet and loose soils reduce the traction abilities of the machine, especially on grades. Always travel slowly on a grade and over rough terrain.
Never drive up or down inclinations which exceed the gradability of the machine.
- Don't leave the machine with the engine running.
- Don't allow any passenger on the machine.

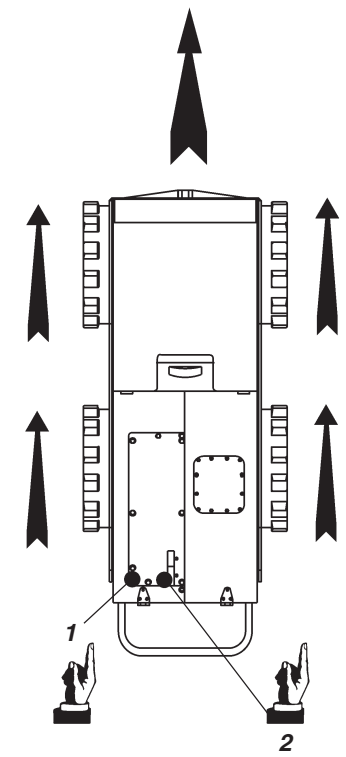
Travel

1. Note!! Always release the parking brake (16) before moving the machine.
2. Check back-up safety bar (14). When bar is depressed the machine stops immediately. Be sure that the bar is always functioning properly.
3. Set the throttle control (7) to full speed. **(Note! Operating speed.)**
4. Select Speed Switch (4) position. “High” speed is used for moving the machine, but only when driving forward. "Low" speed is used for compaction. When driving up on a slope the LP roller change itself to low speed.
5. Regulate travel speed using the control levers (1, 2). For forward and reverse travel, move both levers simultaneously. The left lever controls the drums on the left side of the machine and the right lever controls the drums on the right side of the machine.
6. To steer in right direction, use left lever applying traction to drums on the left side and turning the machine to the right. Use the right lever to steer to the left. To turn on the spot move one lever forward and the other lever in reverse, drums will counter-rotate. On soft material the drums dig into the ground.

Vibration

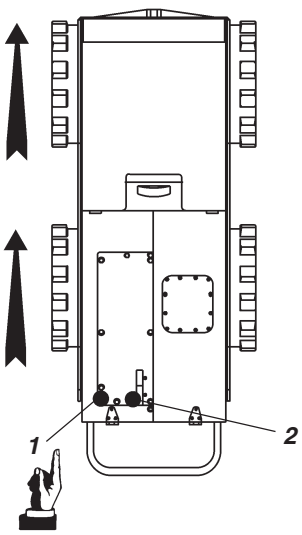
Caution! Never use vibration on hard surfaces such as frozen ground or concrete. Use vibration only when machine is moving.

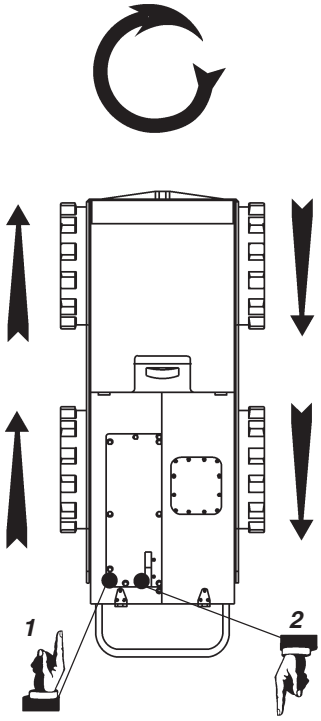
The Vibration Switch (5) functions only when the Speed Switch (4) is set to "Low", it will not operate in "High".
The switch has 3 positions; ON Forward, OFF, and ON Reverse. This allows the operator to select the direction of rotation of the eccentric shaft to improve traction. Under normal operating conditions the switch may be set to vibrate in forward, if traction is satisfactory when reversing there is no need to change. When traction conditions get more difficult the switch may be set to ON Reverse, the counter clockwise motion of the eccentric shaft assists traction.



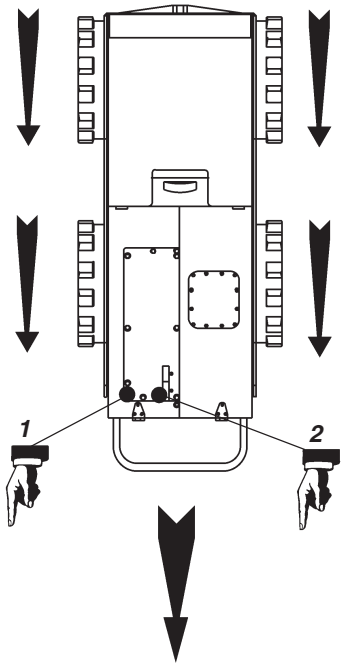
Driving the machine forward

Driving the machine to the right

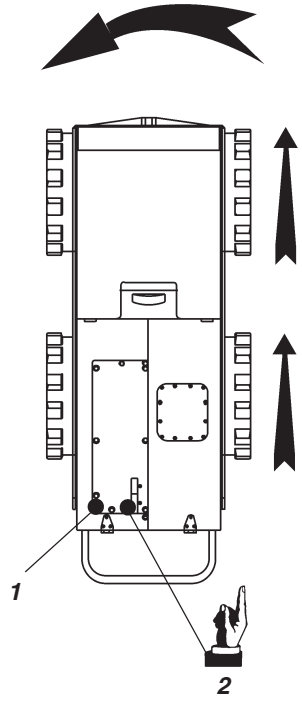




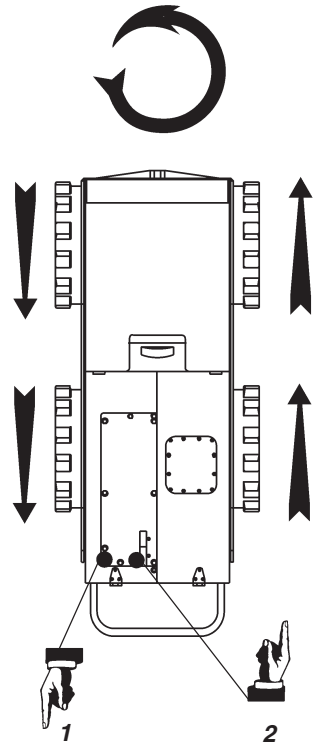
Turning the machine to the right



Driving the machine reverse

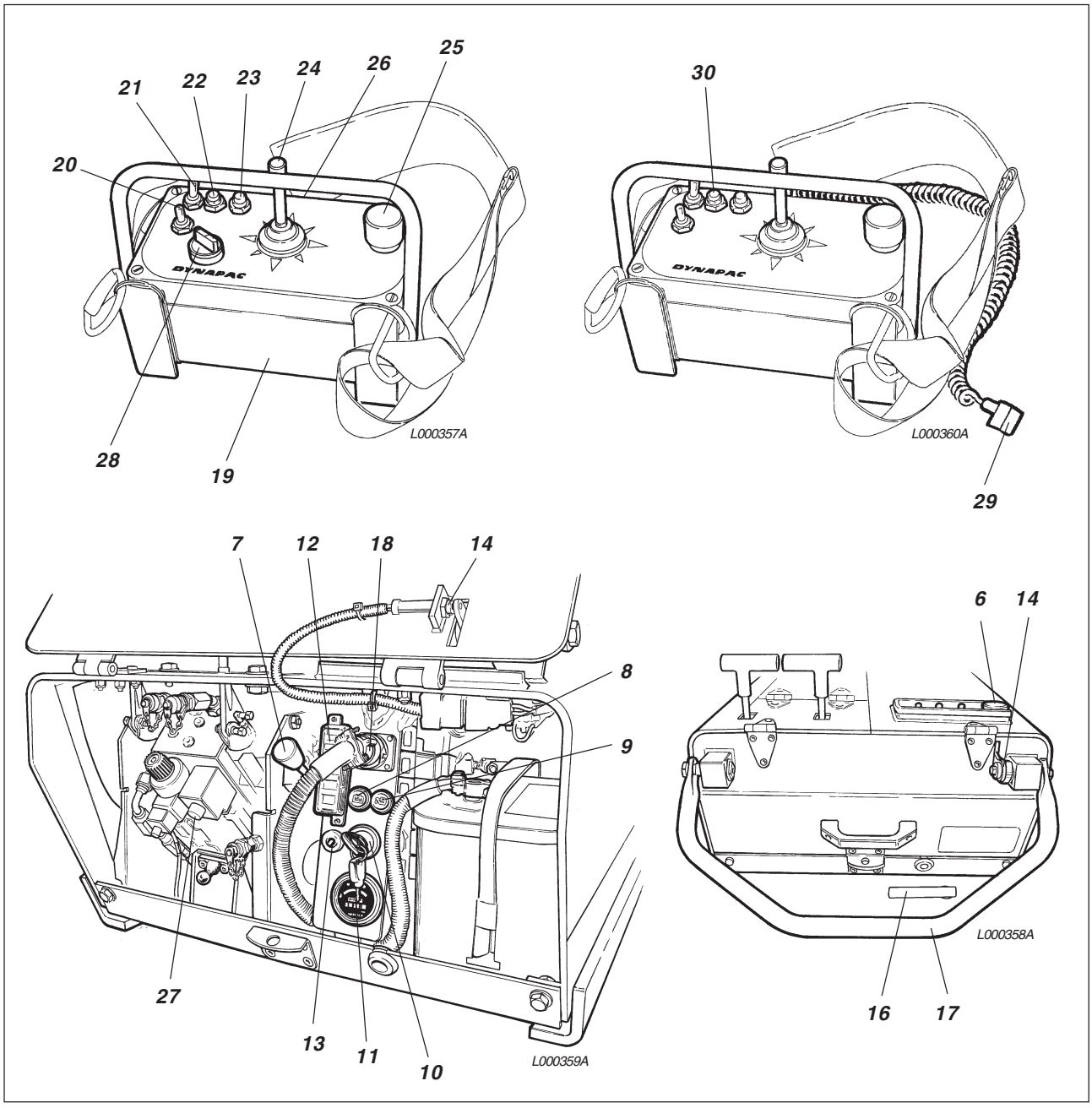


Driving the machine to the left



Turning the machine to the left

CONTROLS – CABLE AND INFRARED OPERATED

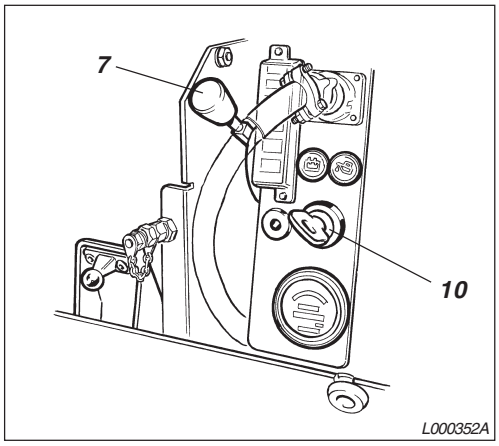


6. *Emergency stop*
7. *Throttle control*
8. *Control lamp for charging*
9. *Control lamp for oil pressure*
10. *Key Switch*
11. *Hour meter*
12. *Fuse box*
13. *Holder for charging cable*
14. *Micro switch for push stop*
15. *-*
16. *Parkingbrake*
17. *Push stop bar*
18. *Connection for cable remote control and for Infrared receiver*
19. *Transmitter for IR*
20. *Switch for vibration on / off, clockwise / counter-clockwise*
21. *Switch high / low speed*
22. *Switch on/off engine (IR transmitter)*
23. *Switch start engine*
24. *Joystick for travel*
25. *Stop push-button for IR transmitter*
26. *Connection for charge cable*
27. *Towing valve, must be screwed out fully when the machine is in operation (Manual only)*
28. *Frequency selector for IR frequency, must be in same position as the receiver*
29. *Transmitter for cable control*
30. *Switch on/off engine (cable control)*

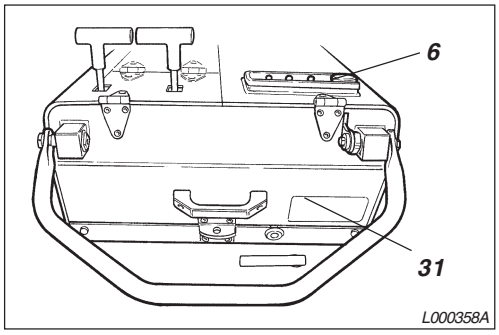
CHECKS BEFORE STARTING

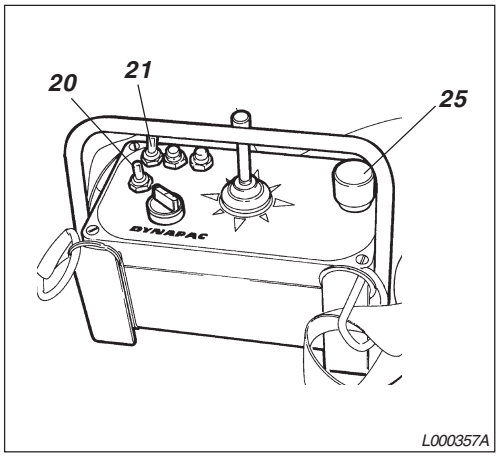
Observe the safety regulations. Ensure that "Daily" Maintenance has been carried out, see schedule.
- Check engine oil level.
- Check hydraulic oil level.
- Check fuel level.
- Check function of control levers.
- Check function of back-up safety bar.
- Check scraper adjustment.
- Check function emergency brake.
- Visually inspect the machine for hydraulic leaks and loose bolts.

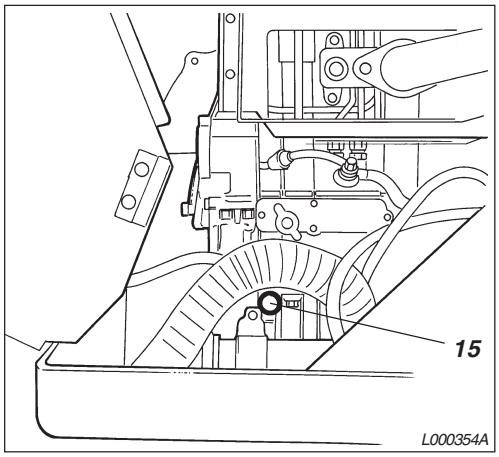
Starting the engine, Cable and IR-control

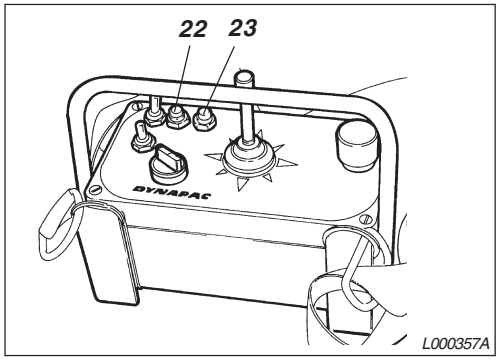


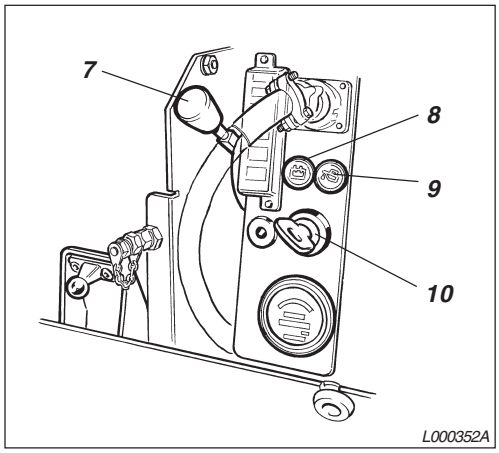
1. Set throttle control (7) to full speed.
2. Turn the ignition switch (10) clockwise to position **I**.
3. Close cover (31) and pull out emergency button (6).
4. Set switch vibration (20) in middle position.
5. Set switch High/Low (21) in position Low.
6. Release stop switch (25) by turning it clockwise, on the remote control.
7. When starting in cold conditions pull cold start button (15).

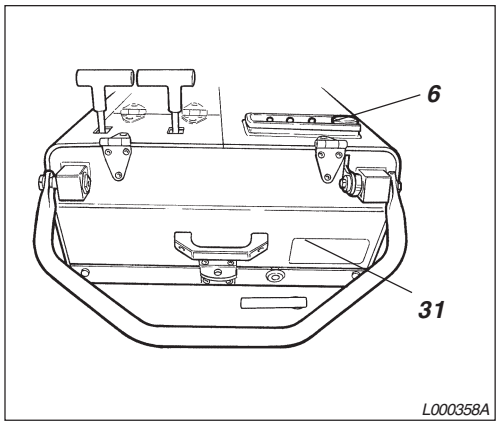


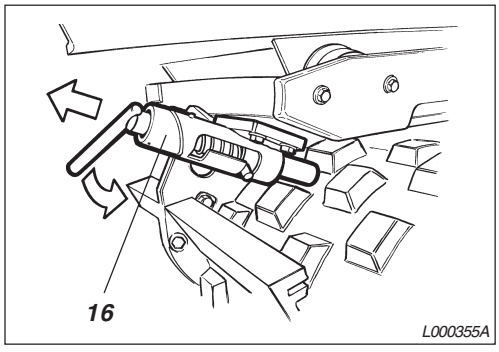












8. Turn the starter key (10) (or press down on/off-button (22) IR-control) which activates the main-relay, check that lamps for charge (8) and oil pressure (9) lights up. Open cover (29) and check.

9. Press down start button (23) on remote control or turn on switch (10) on the machine. As soon as the engine is running, release the button/ starting key.

   ! The engine can only be started when charge- and oil pressure lamp is glowing.

10. Adjust the speed control (7) and let the engine idle for 5 - 10 minutes depending on air temperature.

11. Check warning light for oil pressure (8) and charge (9) goes out.

12. Close the cover (29) before driving.

13. Pull out the mechanical parking brake (16).

OPERATION – REMOTE CONTROLS

Stopping the engine Cable and IR-control

1. Stop vibrations, move switch (20) in middle position.
2. Press down throttle control (7) and let the engine idle for a couple of minutes.
3. Stop the engine, turning key (10) (If it is cable control)/ or press on/off-button (22) on IR transmitter) or use igniting key (10) turn to "0".

NOTE! When the machine have been stopped from cable or IR remote control, key or on/off button (22) you have to turn key (10) or press on/off-button (22) again so lamps for charge (8) and oil pressure (9) lights up before it is possible to start the engine by the ignition key (10).

4. When the engine have stopped turn igniting key (10) to "**O**" position or press down emergency button (6) to avoid discharge of the battery.
5. Press down stop button (25) on remote control (to avoid discharge of the battery in it).
6. Put the remote control in transport mode and connect the charging cable; see under the heading "Controls-Cable and IR control".
7. Push in parking brake (16) during parking or transportation.

Operating, Cable and IR-control

Warning! Be sure that your working area is safe. Wet and loose soils reduce the traction abilities of the machine, especially on grades. Always travel slowly on a grade and over rough terrain.

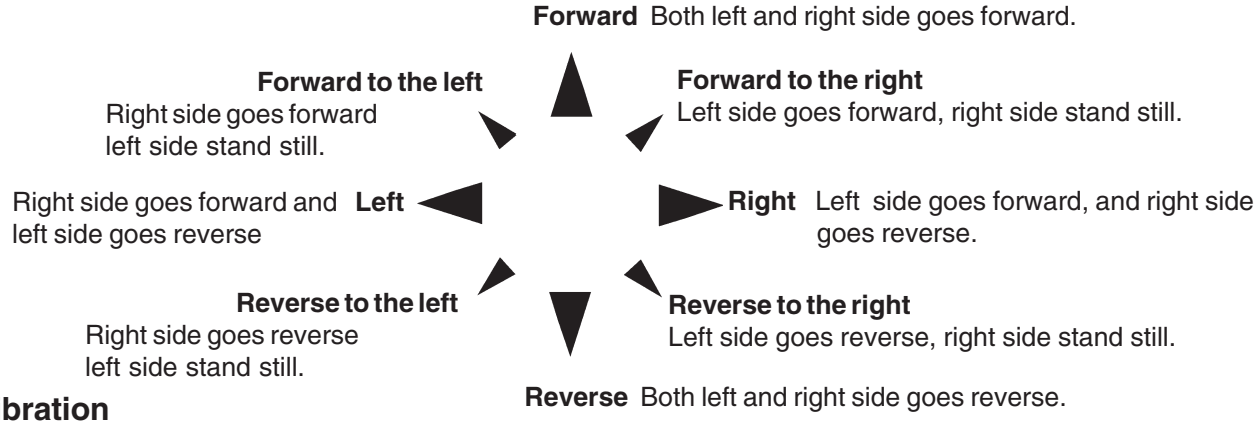
- Don't leave the machine with the engine running.
- Don't allow any passenger on the machine.

Travel

1. Back-up safety bar (17). The drive stops as soon as the bar is pushed in. Be sure that the bar is always functioning properly.
2. Set the throttle control (7) to full speed. (Note! Operating speed.)
3. Select Speed Switch position. "High" speed is used when transporting the machine, "Low" speed is used for compacting.

Steering

Positions on joystick on remote control gives following function on the machine.

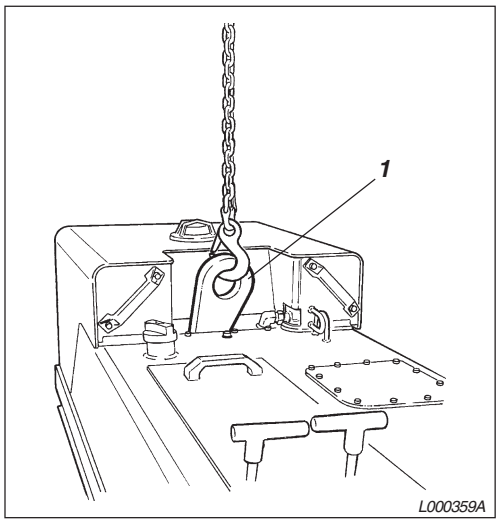


Vibration

Caution! Never use vibration on hard surfaces such as frozen ground or concrete. Use vibration only when machine is moving.

The Vibration Switch (20) functions only when the Speed Switch (21) is set to "Low", it will not operate in "High". The Vibration Switch has 3 positions; ON Forward, OFF, and ON Reverse. the operator to select the direction of rotation of the eccentric shaft to improve traction. Under normal operating conditions the switch may be set to vibrate in forward, if traction is satisfactory when reversing there is no need to change. When traction conditions get more difficult the switch may be set to ON Reverse, the counterclockwise motion of the eccentric shaft assists traction.

Lifting/Salvaging



Machine ready for lifting
1. Lifting lug

Never walk or stand under a hoisted machine.

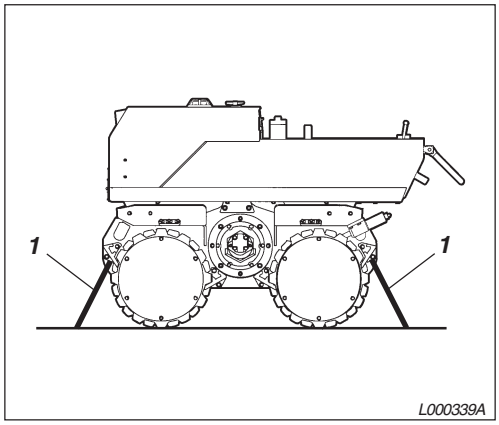
Connect lifting hook in lifteye (1). Make sure that parking brake is locked when lifting the machine.

All lifting devices must be dimensioned to meet all regulations.

Weight, kg (lbs) :

850 mm (33.5 in) wide drums	1600 (3,528)
630 mm (24.8 in) wide drums	1460 (3,220)

Transportation



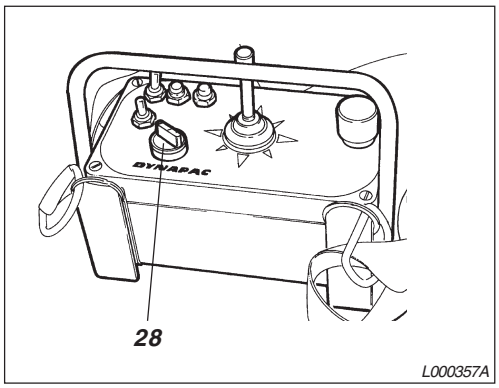
Machine ready for transportation
1. Lashing strap

Always lash the machine securely for all transportation. Use the front and rear towing attachments to lash the machine.

Clamp down the roller with lashing strap (1) both front and rear; decals indicate the fixing points.

CHANNEL CHOICE FOR IR EQUIPMENT (DUAL)

Transmitter

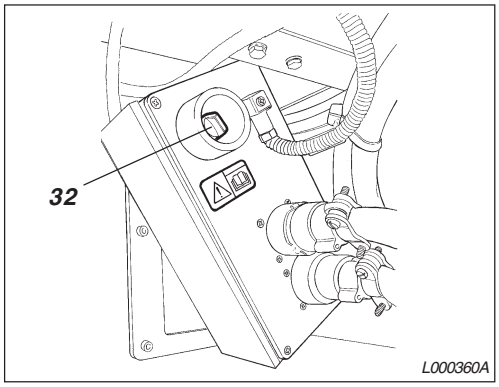


Changing the code

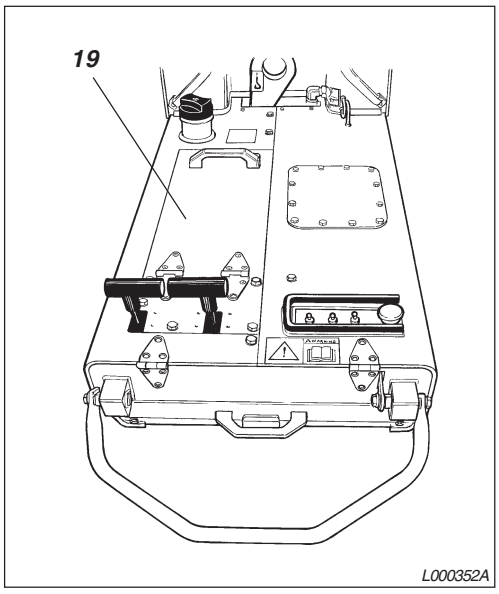
This adjustment is necessary only if several machines are used in the same place at the same time.

Ensure that the frequency selector (28) on the IR transmitter is in the same position as the frequency knob (32) on the receiver unit.

Receiver

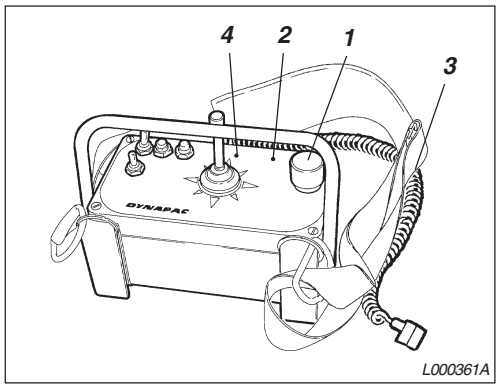


Storage of the transmitter unit and place for the receiver unit



The IR transmitter (19) and the receiver unit, including the charging cable, are located under the cover; see under the "Controls-Cable and IR control" heading.

CHARGING IR TRANSMITTER



1. Stop button
2. Charge indicator
3. Charge cable
4. Function indicator

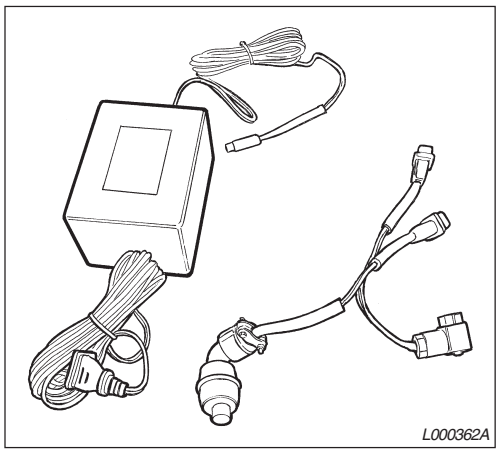
Transmitter is equipped with a sealed lead acid 6 volt 3,2 A/h.battery (P/N 288278)

Capacity of battery 6 - 12 hours transmitting time. Charge time 2 hours gives 4 hours transmitting time. Charge time 8 hours gives full transmitting time.

Fully charged battery gives a range of 65 m (213 feet). If operating into direct sunlight or with a low battery charge the range may decrease. When the range for transmitter reaches 5 meter (16 feet) it's time to recharge the battery. To avoid discharge always press in stop button (1) when it's not in use, and also when charging the transmitter.

The transmitter is equipped with a diode (2) which indicates it is time to recharge transmitter battery. When diode starts to flash 1 - 1,5 hours of capacity reamains. *When diode is lit, recharge the battery emediately.* The charge cable (3) is long enough to use the transmitter when battery is discharged.
Diode (4) indicates when any function is activated.

Charging options



A charging adapter that can be used in a standard wall outlet, if you which to charge the transmitter on an another place than in the machine.

Ordernumber : 239767, 115V
239875, 220V

MAINTENANCE – SERVICE POINTS

1. Engine Oil
2. Tank for Hydraulic Oil
3. Fuel Tank
4. Air Cleaner evacuator valve
5. Scraper
6. Engine Oil Filter
7. Hydraulic Filter
8. Fuel Filter
9. Engine Air Filter
10. Battery
11. Engine cooling system
12. Fuel Filter (dewatering)

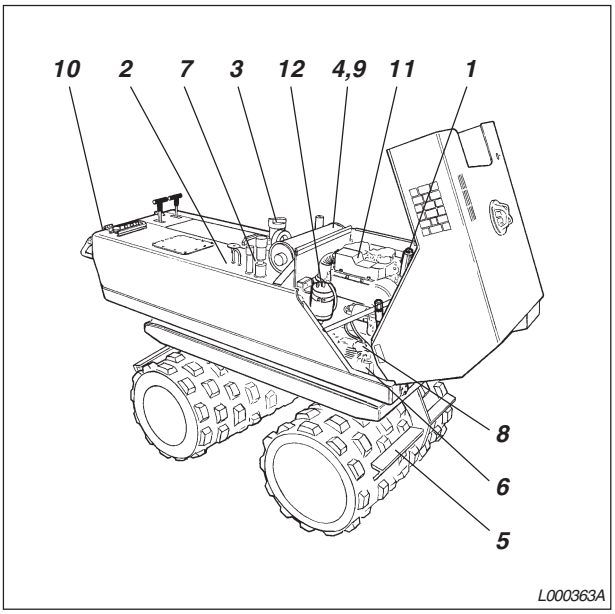


Fig 1

Study the engine instruction manual and follow the maintenance instructions.

On new machines, the engine valve clearance must be checked and if necessary adjusted after 25 hours of operation. Also inspect the engine spacer bolts after 25 hours of operation. Change the engine oil and filter after the first 50 hours of operation, and the hydraulic filter and hydraulic fluid after 150 hours of operation.

Every 10 hours (Daily)

Item in fig.	Maintenance	see page	Comments
1	Check the Engine Oil Level	27	
2	Check Hydraulic Oil Level	27	
3	Check Fuel Tank Level	27	
4	Check Air Cleaner evacuator valve	27	
5	Check Scraper adjustment	27	
	Check all bolts and nuts for thigtness		

MAINTENANCE – SERVICE POINTS

Every 250 Hours

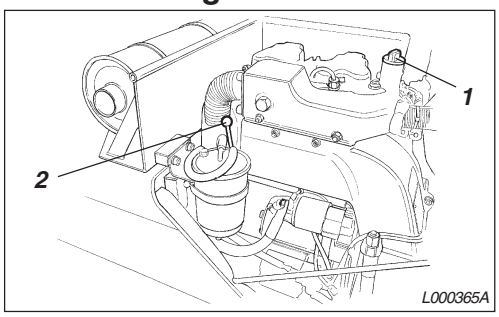
Item in fig.	Maintenance	see page	Comments
6	Replace the Engine Oil Filter	28	
1	Drain and refill Engine Oil	28	
11	Check and clean the engine cooling air system	28	
11	Check and set the engines tappet clearance		See engine manual
7	Replace the Hydraulic Filter	28	
8	Replace the Fuel Filter	29	
12	Drain Fuel Filter (dewateringfilter)	29	
9	Replace the Air Filter	29	
10	Check that the battery terminals are clean and tight	30	
	Check the engine spacer bolts	30	

Every 1000 Hours

Item in fig.	Maintenance	see page	Comments
2	Change the Hydraulic Oil	31	
7	Change Hydraulic Filter	31	

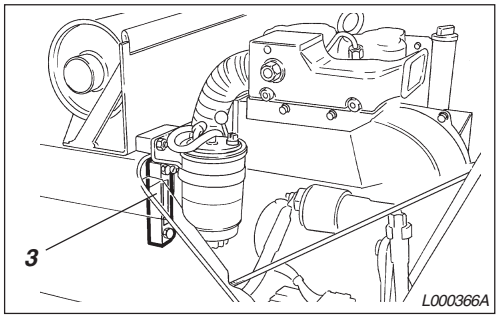
MAINTENANCE – EVERY 10 HOURS

Check the engine oil level



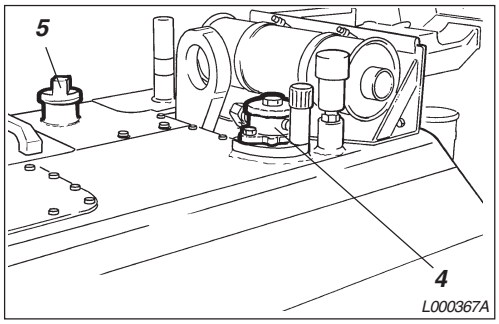
1. Stop the engine an wait for a couple of minutes. The machine must be in horizontal position.
2. Remove any dirt in the area of the oil dipstick.
3. Check the oil level on dipstick (1), refill oil (2) to upper mark if necessary.

Check hydraulic oil level



1. Wipe of the oil level gauge (3) and check that the level is in the middle of the glass. If necessary fill up (4). If the level is sinking check for leakage.

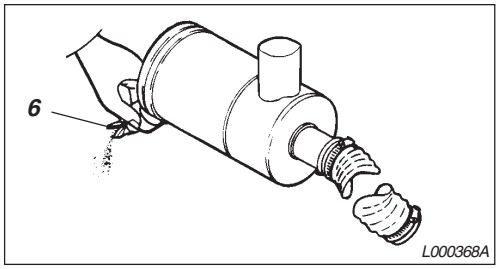
Check fuel tank level



1. Fill up fuel tank (5) every day use diesel with the following specifications.
   DIN 51 601 - DK
   BS 2869 A1 / A2
   ASTM 975 - 1D / 2D

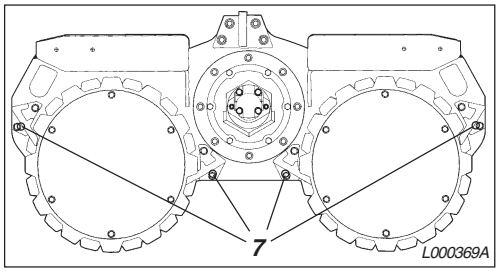
Warning! Fire hazard!
When working on the fuel system do not use open fire, do not smoke, do not refuel in closed rooms. Dirty fuel can cause malfunctions or engine damage.

Check air cleaner



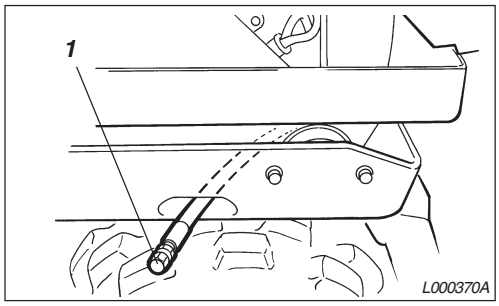
1. Check air inlet opening clean if necessary
2. Check dust extractor valve (6) for free flow, remove any blockage by pressing together.
   Check connecting hoses and clamps condition.

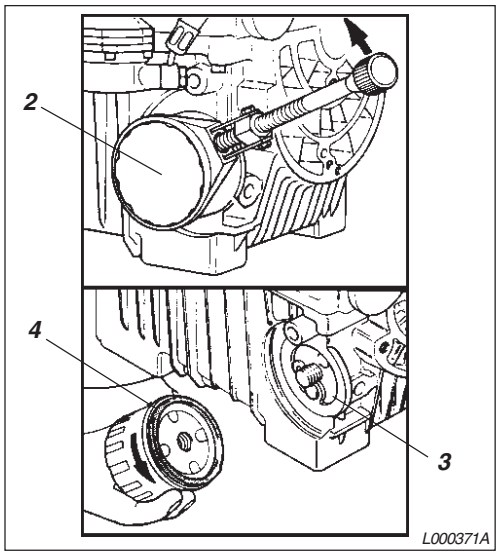
Check the scraper adjustment



1. Make sure that every scraper do not touch the pads on the drums. Adjust if necessary distance to 3-5 mm (0.1-0.2 in). With screws (7).

Replace the Engine Oil and Engine Oil Filter



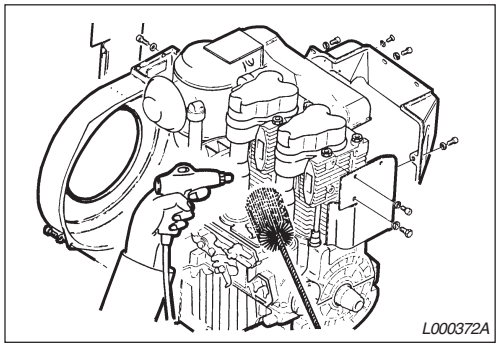


Pls also read engine instruction book.

Warning of scalding due to hot oil.

1. Only drain off engine oil when the engine is warm.
2. Unscrew oil drain plug (1) and drain off oil completely.
3. Refit the oil drain plug (1) and thigten.
4. Using a band wrench, loosen the lub.-oil filter (2) and remove. Always replace the lub.-oil filter.
5. Clean the sealing surface (3) thoroughly.
6. Lightly oil the sealing ring (4) of the new lub.-oil filter.
7. Insert lub.-oil filter P/N 238380 and thighten by hand.
8. Fill up with engine oil.
9. After a short test run, check that the lub.-oil filter is sealed, tighten if necessary.

Check and clean the engine cooling air system

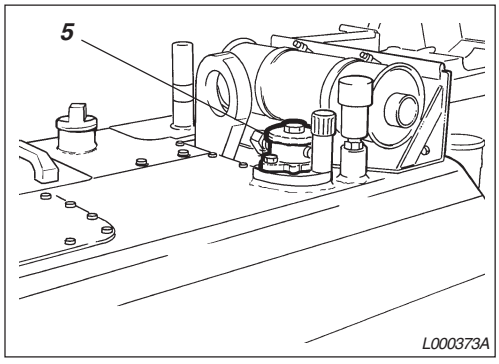


Warning of scalding due to hot engine.

Always make sure that the engine is cold.

1. Remove all air guides.
2. Dry-clean all air guides, as well as the entire cooling air region including cylinder heads, cylinders and flywheel fins, and blow out with compressed air.

Replace hydraulic oil filter



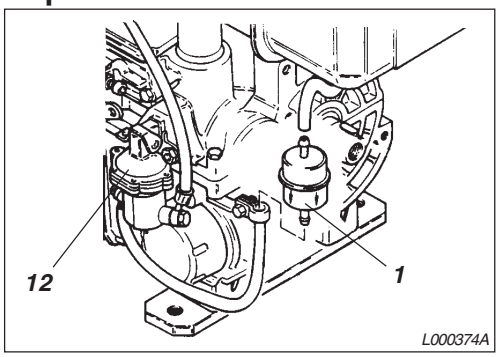
Check and set the engines tappet clearance

See engine instruction book.

Warning of scalding due to hot oil.

1. Clean the area around the filter cover (5) unscrew it, and replace the filter element (6) the filter element is one time type and should be disposed in an environmentally way.
2. Place the new filter in the chamber and check condition of the o-ring (7) on the cover.
3. Screw back the cover and check that there is no leakage.

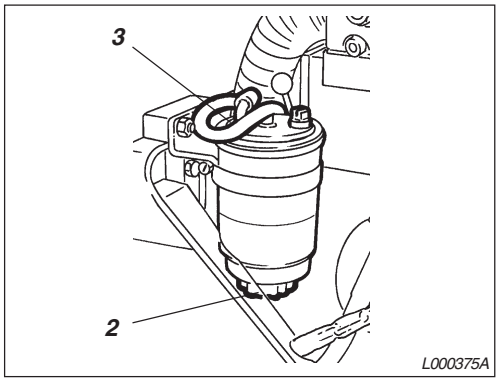
Replace the fuel filter



Warning! When working on the fuel system do not use open fire, do not smoke. Catch running out fuel.

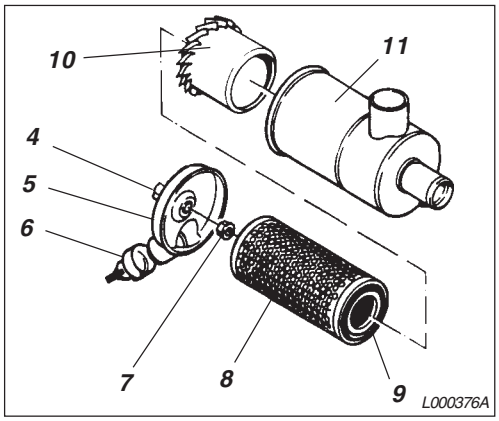
1. Remove the hose on each side of the filter (1) P/N 238360, catch running out fuel, then change the filter make sure that the flow direction marked with an arrow is mounted towards the pump.

Drain fuel filter



(dewateringfilter)
Unscrew drain nut (2) on the bottom of the filter. Drain until fuel is free from water, catch outcoming liquid in a can. Refit the drain nut and open bleeding screw (3) and pump with hand pump (12) until fuel is free from air.

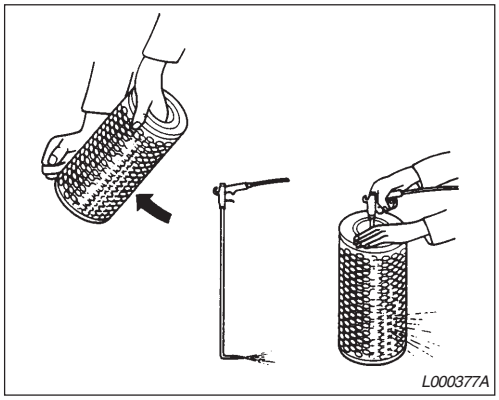
Replace the air filter



Filter cartridge may be cleaned up to twice, but must be replaced after an operation period of max. 2 years. P/N 239596

1. Undo wing nut (4) and remove cover (5) with dust-extractor valve (6).
2. Examine cover and dust-extractor valve for deformation, aging and cracks, replace if necessary.
3. Unscrew collar-nut (7).
4. Pull out filter cartridge (8) carefully.
5. The cartridge may not longer be used if there is damage to the filter or in the area of the lipseal (9).
6. Pull guide (10) from filter housing (11).
7. Clean all parts - apart from the filter cartridge. Do not spray into the inlet opening to the engine.
8. Replace or clean up the filter cartridge.
9. Assembly is carried out in reverse order. Check the seal insert of collar nut (7), replace the collar nut if the seal insert is missing. Ensure that the dust extractor valve is correctly positioned downwards.

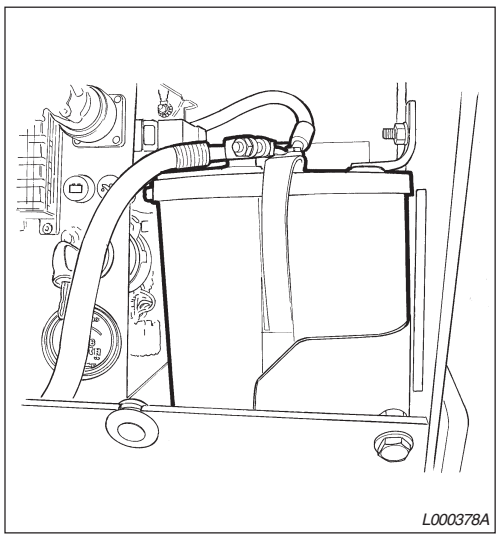
Cleaning the filter cartridge



1. Tap the filter cartridge against the ball of your hand until no more dust falls out. Do not knock the filter cartridge against hard objects.

2. Using a compressed-air pistol with a bent tube insert, blow through the cartridge from the inside with dry compressed air, moving up and down, until no more dust is emitted. The pressure must not exceed max. 5 bar. Replace the filter when it is wet or oily.

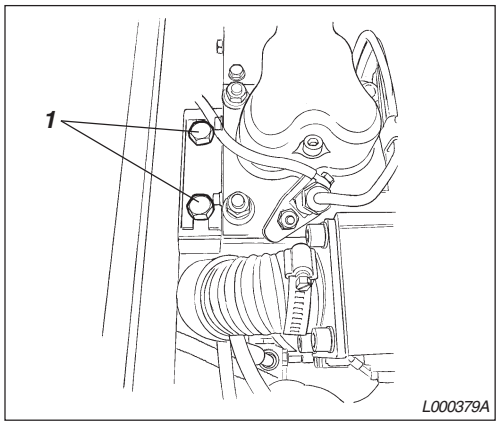
Check that the battery terminals are clean and tight



Warning ! When working on the battery do not use open fire, do not smoke! Do not let skin or clothes come in contact with acid! Do not lay any tools on the battery! Remove the plugs before starting to charge the battery to avoid the accumulation of highly explosive gases.
Dispose of batteries environmentally.

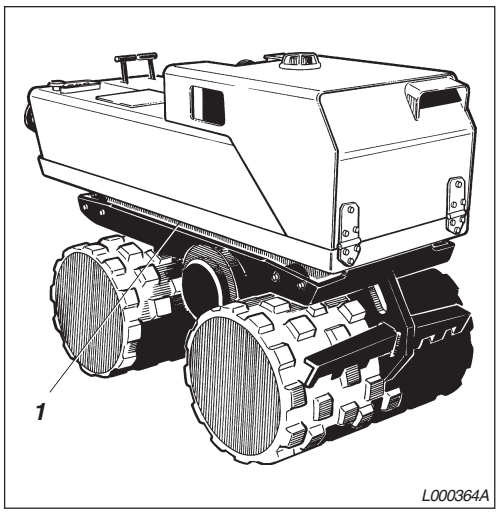
1. Clean the battery poles and clamps and cover them with acid free grease (Vaseline).
2. Tighten the terminal clamps.
3. Check the battery bracket, fastening.

Check the engine spacer bolts



Ensure that the engine spacer bolts are properly tightened.

Replace the Hydraulic Oil and the Hydraulic Filter



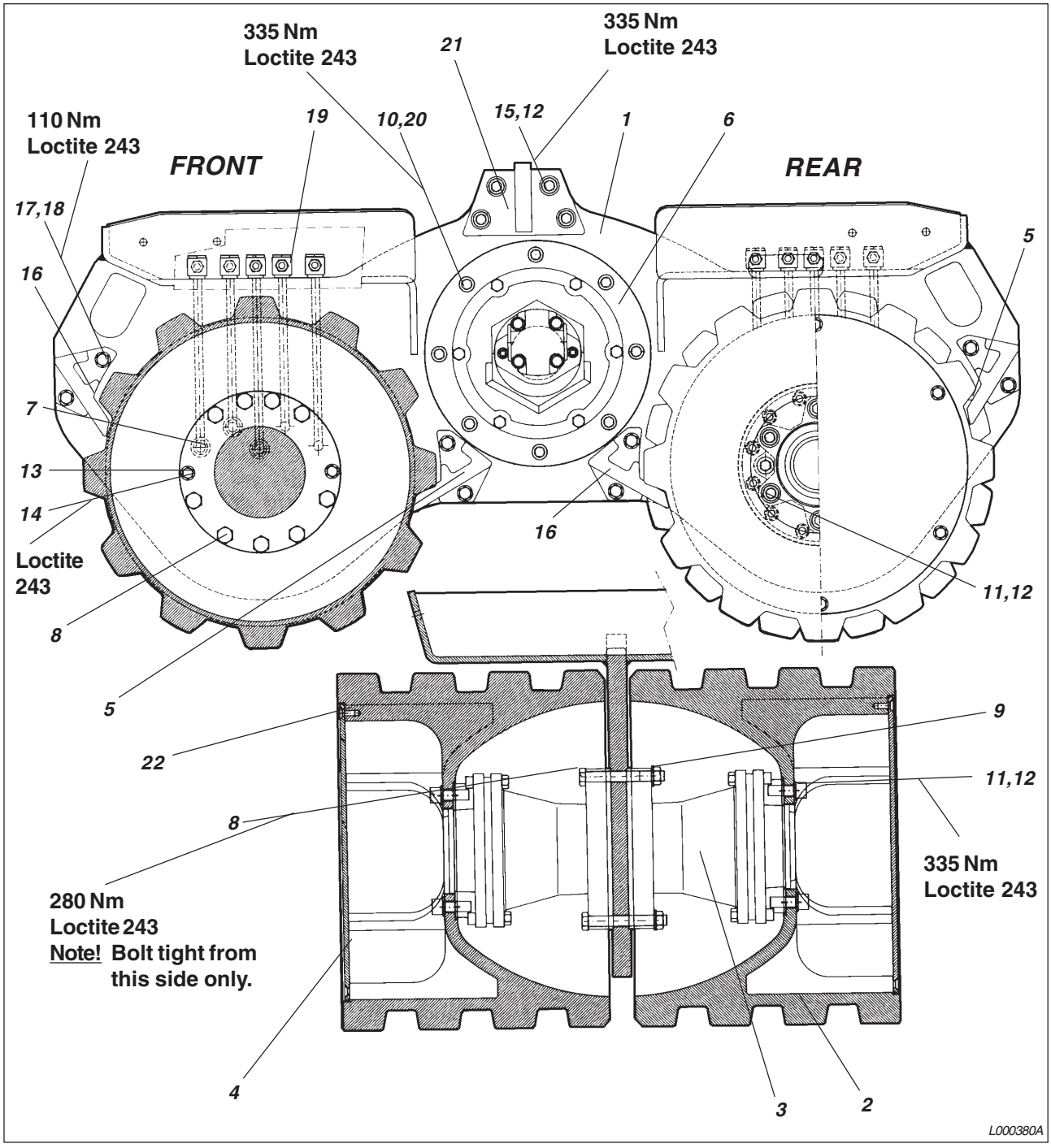
Caution! of scalding due to hot oil. Catch running out hydraulic oil and dispose of environmentally.

1. Place a receptacle of at least 60 litres (16 gal.) under the hydraulic oil tank. Clean the area around, and remove the oil drain plug (1).
2. Remove the cover on the hydraulic tank and clean it on the inside.
3. Assemble the cover and drain plug again with new sealing.
4. Change the filter element.
5. Fill with hydraulic fluid.
6. Check the oil level meter (3); see under the "Maintenance-Every 10 hours of operation" heading.

Clean the fuel tank.

1. Place a receptacle of at least 17 litres (18 qts) under the fuel tank on the left side on the machine. Clean the area around, and remove the drain plug (1).
2. Drain the tank and clean. Refit the drain plug with new seal.
3. Refill the tank. And check that there is no leaks.

MAINTENANCE – CHANGE OF DRUM



1. Lift the machine at one end.
2. Remove the scrapers (5), (16) with screw (17).
3. Unscrew screws (22) on both sides and remove cover (4).
4. Unscrew screw (11) and remove the drum.
5. Clean the contact surfaces carefully.
6. Mount new drum and fasten with screw (11).
   Note! Torque, and locking.
7. Assemble cover (4). Note that there is a seal.
8. Place the scrapers (5) and (16)
   Note! Torque, and locking.

Change the O rings when assembling the drum motors. Fasten the wheelmotor with bolt (14) and washer (13) on both sides. Then fix with the bolt (8) and nut (9) and tight to final torque 280 Nm in a star pattern.

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