

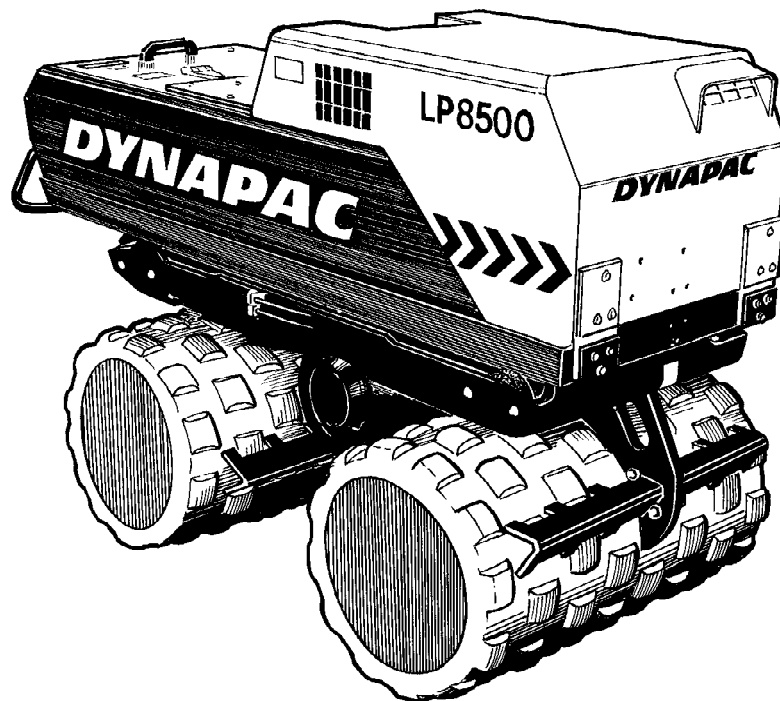
Instruction manual

ILP8500-1EN2.pdf
Operation & Maintenance

Vibratory Trench Compactor
LP8500

Diesel engine
Hatz 2G40

Serial number
18500001



Dynapac LP 8500 is a vibratory padfoot roller that is designed to cope with many different types of compaction work. The roller is designed for compaction tasks in pipe trenches, around the foundations of buildings and factories, backfilling against supporting walls and for road works. The machine is equally suitable for work in confined spaces and for major compaction jobs.

Like all other machinery powered by combustion engines, the LP 8500 is designed for use in well-ventilated areas.

Table of Contents

Introduction	1
Safety Instructions	3
Safety - when operating	7
Technical specifications - Noise/Vibrations/Electrical	9
Technical specifications - Dimensions	11
Technical specifications - Weights and volumes	13
Technical specifications - General	15
Machine plate - Identification	19
Machine specifications- Decals.....	20
Machine description - Electrical system.....	23
Operation - Radio remote control unit.....	27
Operation - Manual	31
Miscellaneous	37
Maintenance - Lubricants and symbols	39
Maintenance - Maintenance schedule	41
Maintenance - 10h	43
Maintenance - 250h	45
Maintenance - 1000h	51
Maintenance - Other	53

Introduction

Warning symbols



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



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

Safety information



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



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



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

General

This manual contains instructions for machine operation and maintenance.

The machine must be correctly maintained for maximal performance.

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

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

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



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

This manual contains instructions for periodic maintenance normally carried out by the operator.



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

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 result in serious or mortal injury if the warning is disregarded.



Caution! Indicates danger or hazardous procedure that could result in damage to machinery or property if the warning is disregarded



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 others.

- 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 they are legible. The ordering numbers for new stickers can be found in the spare parts list.
- Machine and accessories may only be used for their intended purpose.
- 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.

Always pay attention to what you are doing.

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:

- A protective helmet
- Protective goggles
- Hearing protection
- Mask in dusty environments
- Reflective 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.

This will occur regardless of whether the forward/reverse lever is in neutral or the drive mode.

Dynapac machines feature a handle design that absorbs a large part of the machine vibrations. Depending on the operation, ground conditions and exposure time, the recommended limits for hand/arm vibrations may be exceeded. Where necessary, take suitable measures such as wearing protective gloves or not vibrating on previously compacted material.

Be alert to acoustic signals from other machines in the working area.

Do not use a machine that is leaking fuel.

The 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 up fuel (Petrol/Diesel)

Petrol has an extremely low flash point and can be explosive in certain situations. Do not smoke! Ensure there is good ventilation.



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 to avoid fire. 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. Always take care to use the right type of fuel. Do not overfill the tank. Inspect the machine for fuel leakage regularly.

Before starting

read the instruction manual and thoroughly familiarise yourself with the machine and all its functions, and check that:



- All handles are free from grease, oil and dirt.
- The machine has no visible faults.
- All protective devices are securely fastened into place.
- All control levers are in the 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.

Only use the machine for the purpose for which it is intended. Ensure that you know how to stop the machine in the event of an emergency.



Always exercise extreme caution when driving the machine on slopes. Always ensure that all personnel in the vicinity are higher up the slope than the machine. Always drive straight up and down on slopes. Do not exceed the maximum gradability of the machine according to the instruction book. Always stay clear of the machine when operating on slopes or in trenches.

Never touch the engine, exhaust system or eccentric element of the machine. They become extremely hot during operation and may result in burns. Do not touch the V-belts or the rotating parts during operation.

Parking

Always park the machine on ground which is as level and firm as possible.

Before leaving the machine:

- Apply the parking brake
- Turn off the engine and remove the ignition key.

**Loading/Unloading**

Under no circumstances remain under or in the immediate vicinity of the machine when it is being lifted by a crane or similar appliance. Only use marked lifting points. Always make sure that all lifting devices are dimensioned for the weight of the machine.

Maintenance

Maintenance work may only be carried out by skilled personnel. Never carry out any type of maintenance work while the machine is in motion or the engine running.

Working with the hydraulic system

Regular maintenance of hydraulic systems is extremely important. Minor damage or split hoses/couplings can have devastating consequences. Bear in mind that the hydraulic hoses are made of rubber and can deteriorate with age, with the consequent risk of splitting. Whenever there are uncertainties as to durability and wear, replace hoses with new original hoses from Dynapac.

Working with batteries

Batteries contain toxic and corrosive sulphuric acid. Wear protective glasses and avoid getting acid on your skin, clothes or on the machine. 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 inflammable and explosive. When fitting or changing batteries, always be careful not to short circuit the battery terminals.

Repairs

Never use a machine that is damaged.

As qualified repairs require trained personnel, please get in touch with your nearest authorized workshop.

Extinguishing fires

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

Battery charging

Use a voltage-regulated battery charger (constant voltage). A switched two-stage charger with constant voltage is recommended. A two-stage charger automatically reduces the charging voltage (14.4 V) to trickle charging (13.3 V) when the battery is fully charged.

Suitable battery chargers for 230 Volt:

Optima Model RTC 12/7-S-230

LADAC Model LADAC 512

Tudor Model 61715 Tudor

Storage/Trickle charging

A discharged battery will freeze at a temperature of about (-7°C). A fully charged battery will freeze at (-67°C). A battery that is not being used should be fully charged before being put aside. Trickle charging is not normally required during a period of 6 to 8 months. If a battery has not been in use for a long period, it is recommended that it be fully charged before being used. Trickle charging is recommended a couple of times during the season (especially in winter).

Safety - when operating

Slopes

Ensure that the work area is secure. Wet and loose earth reduces manoeuvrability especially on sloping ground. Always exercise extreme caution on sloping and uneven terrain.

Never work on slopes that exceed the capabilities of the machine. The maximum slope of the machine in operation is 20° (depending on the 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 lesser slope than specified here.

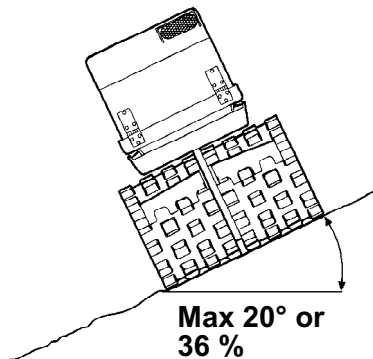


Fig. Operation on slopes

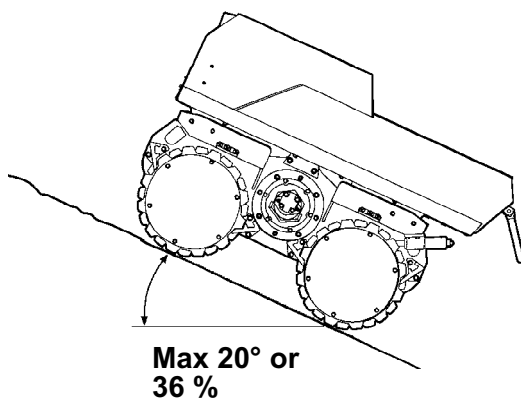


Fig. Operation on slopes



Where possible, avoid driving across slopes. Instead, drive straight up and down when working on sloping ground.



Never leave the machine with the engine running.

Driving near edges

When driving near edges at least 2/3 of the plate must rest on firm, solid ground.



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

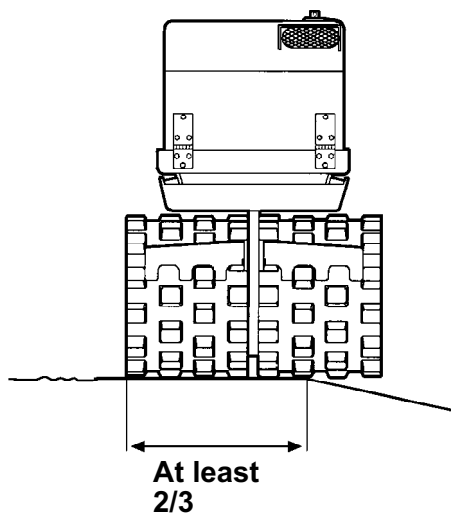


Fig. The positioning of the machine when driving near edges

**Technical specifications -
Noise/Vibrations/Electrical****Noise levels**

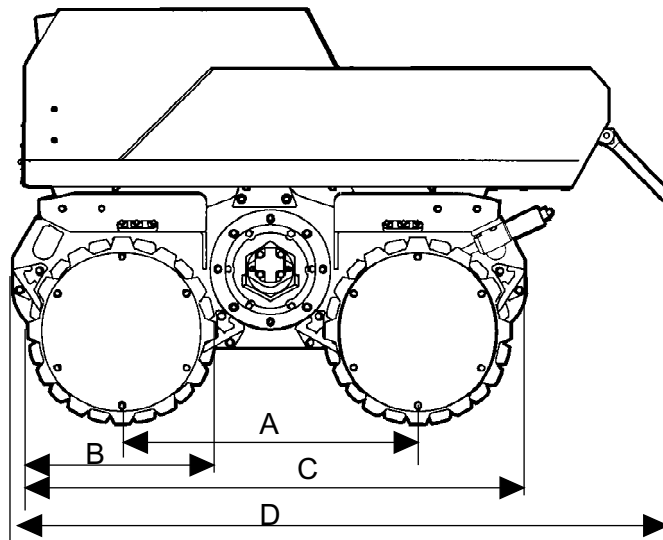
The below noise and vibration levels have been determined in accordance with the operating cycle on a macadam base described in EU Directive 2000/14/EC

Guaranteed acoustic power level, L_{wA} dB (A)	106
Sound pressure level at operator's ear (ISO 6396), L_{pA} dB (A)	92
Hand and arm vibrations (ISO 5349-1), a_{hv} m/s ²	-

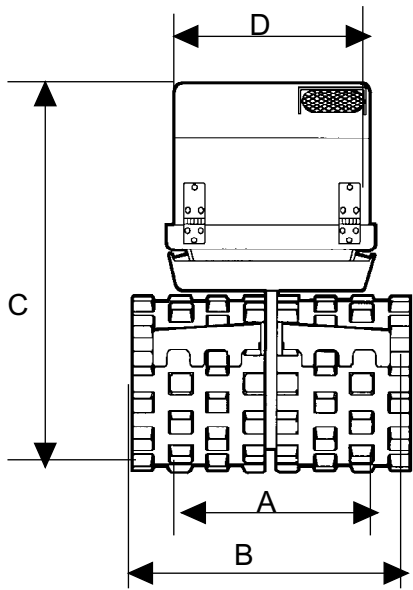
Values may differ from those above depending on operating conditions.

Electrical system

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

Technical specifications - Dimensions

Dimensions	mm	in
A	850	33
B	535	21
C	1385	55
D	1875	74



Dimensions	mm	in
A	630	25
B	850	33
C	1207	47
D	630	25

Technical specifications - Weights and volumes**Fluid volumes**

Fuel tank	17.0 liters	18.0 qts
Water tank	- liters	- gal
Engine oil	2.5 liters	2.1 qts
Hydraulic oil tank	21.0 liters	5.6 gal

Weights**Alt 1****Alt 2**

Net weight	1650 kg	3638 lbs	-	kg	-	lbs
Operating weight EN500	1675 kg	3693 lbs	-	kg	-	lbs

Compaction data

Vibration frequency	32	Hz	1800	rpm
Centrifugal force	65	kN	14600	lbs
Amplitude	1.2	mm	0.04	in

Technical specifications - General**Engine**

Manufacture/Model	Hatz 2G40 2-cylinder Diesel
Rated Power	12.5 kW (17.5 hp)
Rated Speed	2500 rpm
Cooling System	Air cooled + hydraulic oil cooler + fan
Air Filter	Dry Type

Electrical system

Battery Voltage	12 V
Generator Capacity	50Ah
Fuses	1 x 30A, 1 x 40A
Generator	330W
Starter Motor	1.7 kW (2.3hp)

Traction system

Pump	Gear Type
Engines	Radial Piston
Pressure Valve	26.5 MPa

Control system

Normal control	Radio
Temporary control	With switches on the machine

Brake system

Service brake	Hydrostatic
Parking brake	Mechanical

Performance

Travel speed	0-4 km/h (0-2.5 mph)
Operating speed	0-2 km/h (0-1.2 mph)

Vibration system

Pump	Gear Type	
Motor	Gear Type	
Safety Valve	15 MPa	2175 psi

Radio remote control unit

Operating ambient temperature	-20 to +65°C
Rated Degree of Protection	IP 65

TRANSMITTER

	Nano-L-A2-1
Transmission frequency range	433.100-434.750 MHz, 25mW FM
The use of synthesizer technology permits frequencies to be selected in accordance with the appropriate waveband for the country of use.	
Low frequency modulation	FSK signal to CCITT V.23
Data repetition frequency	Approx. 60 ms
Baud rate	1200 baud (bits per second)
Range	Up to 50m
Power input	60-100mA
RF output	Max. 10mW
Weight (without battery)	Nano-L 1.0 kg
Size (L x B x H)	24.7 x 13.9 x 11.7 cm

RECEIVER

	PNN-Compact
Reception frequency range	433.100-434.750 MHz
Data security:	
Generates a CRC code with a Hamming distance of 4. Generates a neutral position	
Addressing of each transmitter with its own unique combination (max. 216 possible combinations).	

Data reception security:

Two separate evaluators, CRC, stop/start switch and neutral position. Contact loading for commands.

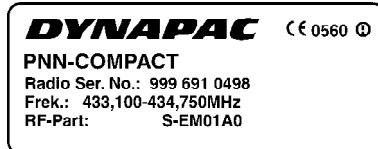
Typical switching voltage	12 V
Maximum switching current	60 A resp. 2 A (depending on coil type)
Weight	PNN-Compact 2.4 kg
Size (L x B x H incl. plate)	22 x 16 x 6 cm

BATTERY

7.2 V/0.6 Ah

CHARGING UNIT

Operating voltage/external charging unit	12V/24 V DC, 110 V/230 V AC
Operating voltage/PNN-Compact	12 V DC

Data signs

Data signs are placed behind the battery on the transmitter and receiver. Data comprises the serial number, the model and frequency band. The transmitter and receiver have the same serial number.

Always specify the serial number when making inquiries about control equipment.

Machine plate - Identification**Machine plate**

Fill in all data below when delivering and commissioning the machine

DYNAPAC 			
Dynapac Compaction Equipment AB Box 504, SE-371 23 Karlskrona Sweden			
Type	Operating mass kg	Rated Power kW	Year of Mfg
Product Identification Number			

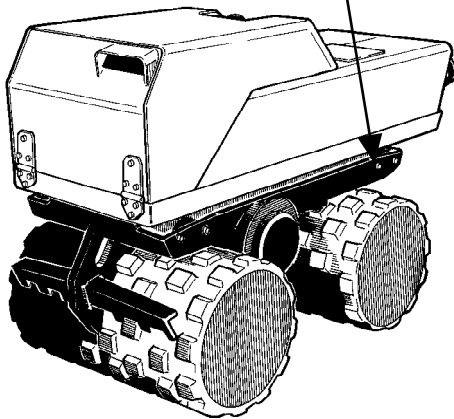


Fig. Location of machine plate.

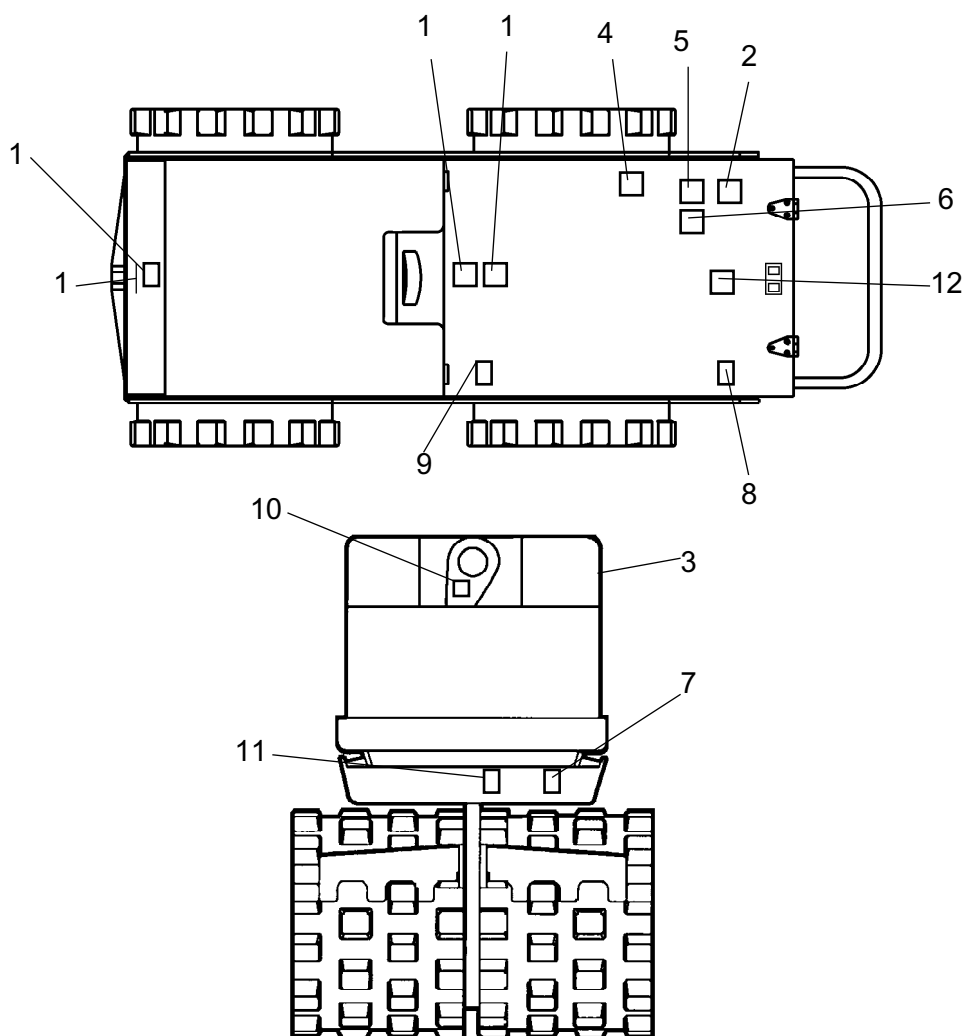
DYNAPAC 			
Dynapac Compaction Equipment AB Box 504, SE-371 23 Karlskrona Sweden			
Type	Operating mass kg	Rated Power kW	Year of Mfg
Product Identification Number			

Engine model

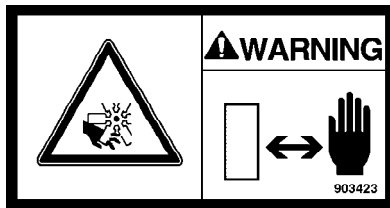
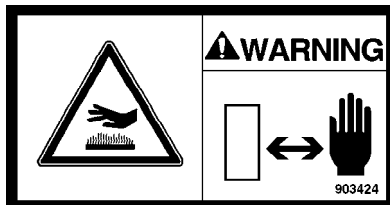
Engine number

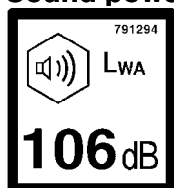
The plate specifies the manufacturer's name and address, the type of machine, the PIN product identification number (serial number), operating weight, engine power and year of manufacture. (on machines supplied to outside the EU, there are no CE markings and in some cases no year of manufacture.)

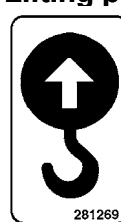
When ordering spare parts specify the machine's PIN number.

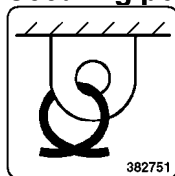
Safety decals**Machine specifications- Decals****Location of decals**

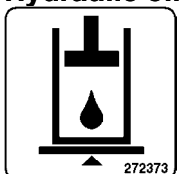
	Item no.		Item no.
1. Warning - rotating engine components	903423	7. Brakes	389944
2. Warning - read the instruction manual	904680	8. Battery isolation switch	904835
3. Warning - hot surfaces	903424	9. Diesel fuel	991658
4. Hydraulic oil level	272373	10. Lifting point	281269
5. Use ear protectors	281898	11. Securing point	382715
6. Sound power level	791294	12. Starting instructions	389816

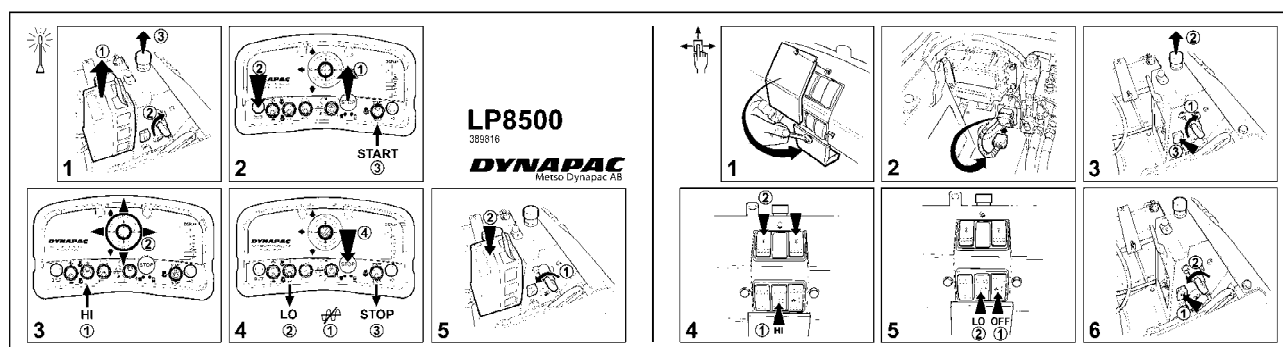
**903423****- Warning of rotating engine components.****Keep your hands at a safe distance from the danger zone.****903459****- Instruction manual****The operator must read the safety, operation and maintenance instructions before operating the machine.****903424****- Warning of hot surfaces in the engine compartment.****Keep your hands at a safe distance from the danger zone.**

Info-decals
Sound power level

Diesel fuel

Lifting point

Ear protectors

Securing point

Battery isolation switch

Hydraulic oil level

Hand brake

Starting instructions


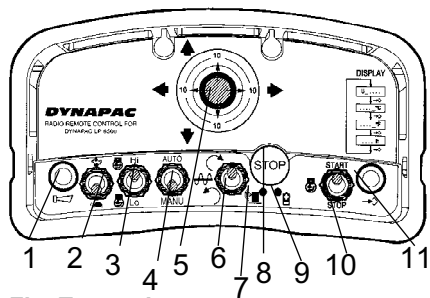
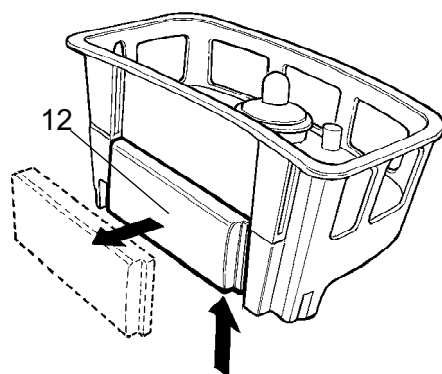
Machine description - Electrical system


Fig. Transmitter

1. Horn
2. Speed switch, High/Low
3. Engine speed switch, High/Low
4. Vibration switch, Manual/Automatic
5. Joystick
6. Vibration switch, Direction
7. Transmitter indicator, On
8. Emergency stop button/Transmitter, On/Off
9. Low battery indicator
10. Stop/Start switch, Engine
11. Push button to alter frequency/browse through values on the display



Removing the battery from the transmitter.
12. Battery

The transmitter


Even operators already used to working with remote radio-controlled machines must also read through this manual before using the machine.



Only trained personnel who are fully conversant with the control system may operate the machine.



If any errors occur in the system, immediately switch off at the stop/start switch on the transmitter and throw the battery disconnect switch on the machine and disconnect the cable to the receiver.



All troubleshooting and repairs must be carried out by Dynapac-authorized service personnel.



The transmitter battery is not charged and before starting work for the first time must be charged for 12 hours in the accompanying battery charger.

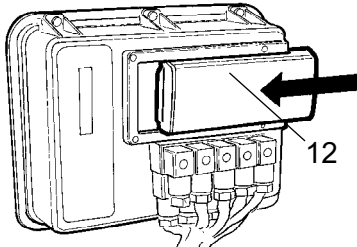
The transmitter may only be used with a receiver having the same address code (and serial number) as the transmitter. To use another transmitter, you must code it so that its address code corresponds to that of the receiver.

The range is 50 meters (55 yards) depending on the surroundings and possible radio interference. In case of radio interference (interruption to radio communications), the transmitting frequency may be altered by pressing buttons 1 and 11 simultaneously. The frequency may be altered in 25-kHz steps (67 steps) for each push of the button (0-67 channels).

The transmitter is supplied with 2 1000 mAh Ni-Cad batteries. Insert the battery into the transmitter by sliding it into its slot until it locks into position. To remove the battery, press the catch and slide the battery sideways and then outwards. The operating time for a fully charged battery is 8-10 hours.

The transmitter is equipped with a red LED which lights up when it is time to change the battery. The transmitter may now be used for a further 15 minutes.

Change the battery and check that the slot and contact surfaces are clean. When the battery is removed, radio communications are broken. Charge the battery in the receiver on the machine or in a separate table-top charger.



and inserting it in the receiver for charging.
12. Battery

If the battery is not in use, it should be trickle-charged every four weeks. We recommend the battery be removed from the transmitter when not in use for longer periods.

Battery charger (optional)



Only use the charger in a dry environment with min-max temperatures between 0°C and 40°C. A charged battery is concentrated energy. Never keep a battery where it can be short-circuited.

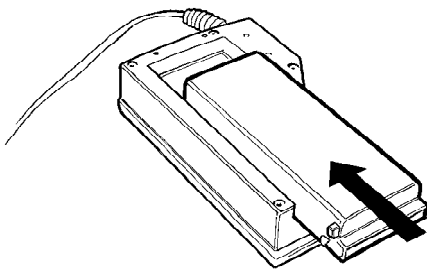


Fig. Battery charger

A steady green light indicates that the charger is ready for charging. Place the battery in the charger. If the battery is completely discharged, the yellow LED flashes slowly during pre-charging. A constant yellow light indicates that the battery is charging. The battery is fully charged when the yellow LED begins to flash quickly. Charging time 3-5 hours. The battery will not be harmed if it is left in the charger after it is fully charged.

Receiver

The receiver is mounted in the machine below the rear service cover. It is equipped with an antenna, display and integrated battery charger for the transmitter batteries.

It takes 1 hour to charge the transmitter battery in the receiver.

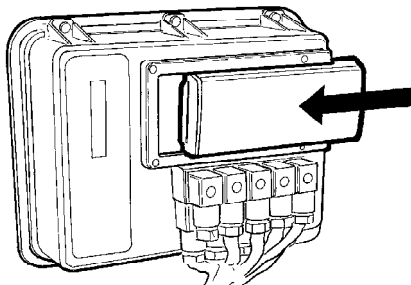


Fig. Receiver

Listing

The display shows:	
Battery voltage, machine	U - XX.X
Temperature in hydraulic reservoir (°C)	-XX.°C
Temperature in hydraulic reservoir (°F):	XXX - °F
(Y is displayed if the number of operating hours exceeds 9999, otherwise Y is not shown).	XXXXYh
Error messages	Err - XX
Transmitter battery charge level	Ch - XX
Idling	Ch - 01
When the charging process is initiated or if there is no battery to be charged.	
Pre-charging	Ch - 02
If the battery voltage is below 5.6 V, the battery is pre-charged for 1 second in every 30 until the voltage reaches 5.6 V	
Fast charging	Ch - 03
The battery is fast charged when battery voltage is between 5.6 and 9.6 V. The charging process is terminated when the cell voltage drops ($\Delta V = -20$ mV), if the cell temperature does not lie within the -10 to +60°C (14 to 140°F) range, or if the battery voltage does not increase for two hours.	
Trickle charging	Ch - 04
A fully charged battery is charged every 30th second to maintain the voltage	
The display shows the battery voltage first and then the other values, rolling. To browse through the values press the frequency-change button (11) on the far right of the transmitter (with the receiver in operating mode).	
A number of error codes are also shown on the display	(Err - XX)
The following error messages (error codes) on the receiver's display will stop the diesel engine or prevent it starting:	
Low engine oil pressure	Err - 01
Remedy: Check/top up oil	
High temperature in hydraulics system	Err - 02

Listing

Remedy: Let the machine cool down.
Check the components of the traction system and the eccentric shaft if the ambient temperature is extremely high.

Toggle switch activated

Err - 03

*

Toggle switch activated

Err - 05

**

CAN bus locking

Err - 04

Error messages (error codes) that do not stop the engine

The alternator does not charge.

Err - 05

*

The alternator does not charge.

Err - 03

**

Radio contact broken during operation.

Err - 10

Remedy: Change frequency if this occurs

Emergency stop (push stop)

Err - 06

**

An output is closed due to excessively high power consumption (short-circuit)

Err - 30

**

***Listing:**

* Error code applicable for version 1.60

** Error code applicable for version 1.90

Operation - Radio remote control unit

Starting the engine by remote control

In transport mode the transmitter should be placed under the rear service cover.

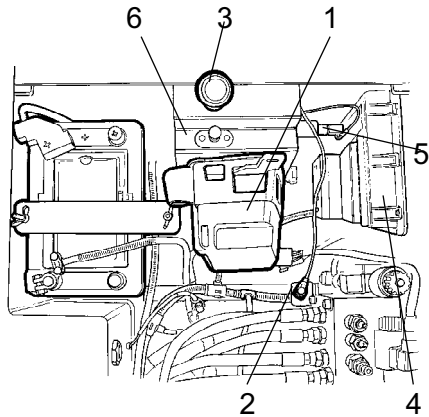


Fig. location of transmitter, etc.

- 1. Transmitter
- 2. Antenna
- 3. Emergency stop knob
- 4. Receiver
- 5. Master switch
- 6. Buzzer

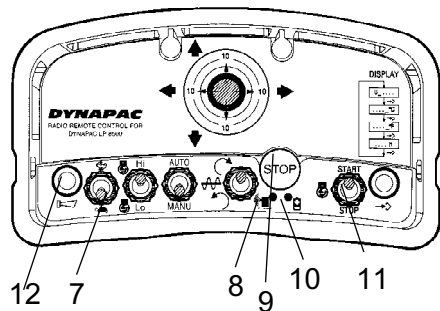


Fig. Transmitter

- 7. Speed switch, High/Low
- 8. Transmitter indicator, On
- 9. Emergency stop button
- 10. Low-battery indicator
- 11. Stop/Start switch, engine
- 12. Signal horn

2. Close the service cover and pull out the emergency stop knob (3) on the machine.

3. Release the emergency stop knob (9) on the transmitter. A green LED (8) indicates that the receiver is on.

4. Check the battery status. The low-battery warning light (10) should not be on. Always have an extra fully-charged battery to hand.



Wait 4-5 seconds. Press the horn button (12) on the transmitter to initiate communications with the receiver.

5. Set the engine revs switch (7) to "Low". 6. Press the Stop/Start switch forward (11) until the engine starts. Release the Stop/Start switch once the engine has started.

7. A new attempt to start the machine may be made after 7 seconds.



Starting gas may not be used.

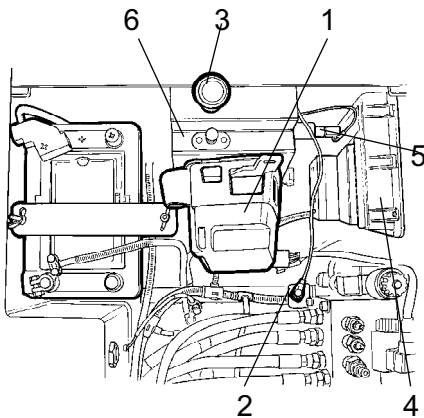


Fig. Location of transmitter, etc.
 1. Transmitter
 2. Antenna
 3. Emergency stop knob
 4. Receiver
 5. Master switch
 6. Buzzer

Remote operation



Make sure that the work site is secure. Wet and loose ground reduce the machine's operating capacity.



Never leave the machine with the engine running. Always switch off the master switch. Do not allow passengers on the machine.



Do not operate the machine at distances exceeding 20 meters (22 yards). Always keep the working area and the machine under proper supervision.



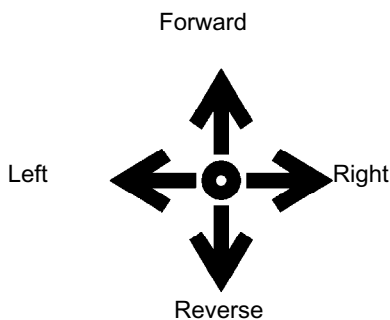
Never entrust the transmitter to anyone not fully conversant with the machine, its operation and safety directives.



High speed mode may only be selected after at least 30 seconds operation at low speed.

Steering/operation via remote control

The various positions of the remote control joystick function as follows:



Forward

The machine moves forward.

Reverse

The machine reverses

Right

The machine turns (rotates) to the right.

Left

The machine turn (rotates) to the left.

0

The machine stops if the joystick is released.



Before starting work, check that the machine stops when the joystick is released.

Fig. Position of joystick

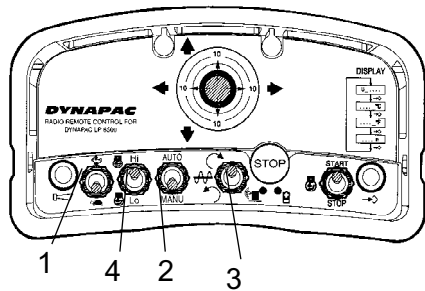


Fig. Transmitter

1. Speed switch, High/Low

**2. Vibration switch,
Manual/Automatic**

3. Vibration switch, Direction

4. Engine speed switch

Switch (2) in automatic position:

Vibration is activated when operating at low speed. To optimize traction, the direction of vibration changes automatically as the machine is moved backwards and forwards.

When the speed switch (1) is set to "High", automatic vibration stops. It is resumed once speed is set to "Low" again. Vibration stops in manual mode.

Switch (2) in manual position:

In position  vibration is clockwise.

In position  vibration is anti-clockwise.

When the engine speed switch (4) is set to "Low", automatic vibration stops. The switch (3) must be set to the intermediate position when returning to high engine speed in order for automatic vibration to resume.

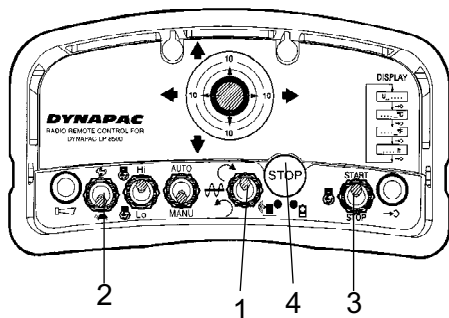


Fig. Transmitter

- 1. Vibration switch, Direction
- 2. Speed switch, High/Low
- 3. Stop/Start switch, Engine
- 4. Emergency stop button/Transmitter On/Off

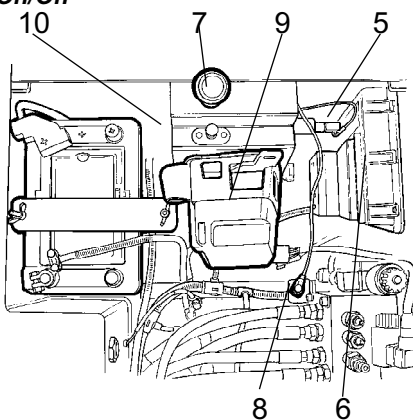


Fig. Location of transmitter, etc.

- 5. Master switch
- 6 Receiver.
- 7. Emergency stop button
- 8. Antenna
- 9. Transmitter
- 10. Buzzer

Stopping the machine by remote control



The machine will stop immediately when the emergency stop button is pressed. Always make sure that the emergency stop button works.



When the transmitter joystick is released, the machine stops immediately. Make sure the joystick works and that it returns to the neutral position when it is released. The machine stops immediately the On/Off button on the transmitter is switched off.

1. Stop vibration, turn the vibration (1) to neutral.
2. Set speed switch (2) to "Low" (tortoise).
3. Set engine revs switch to "Low".
4. Let the engine idle for a minute.
5. Push the Stop/Start switch (3) back.
6. The buzzer sounds when the engine stops.
7. Open the rear service cover and twist the battery disconnect (5) back to stop the buzzer.
8. Press the emergency stop button (4) to switch off the transmitter. The green LED is extinguished.
9. Set the receiver to transport mode in the machine or keep it in a safe place.
10. Charge the transmitter battery after the day's work so that a fully-charged battery is always available.



Always store the transmitter securely to prevent unauthorized persons starting the machine.

Operation - Manual

Before starting engine, temporary operation

Observe the ordinary safety regulations. Ensure that daily maintenance has been carried out. See schedule.

- Check engine oil level
- Check hydraulic oil level
- Check fuel level
- Check that the steering levers are working
- Check that the emergency stop button is working
- Check scraper adjustment
- Check that the parking brake is working
- Visually inspect the machine for hydraulic oil leaks and loose bolts.

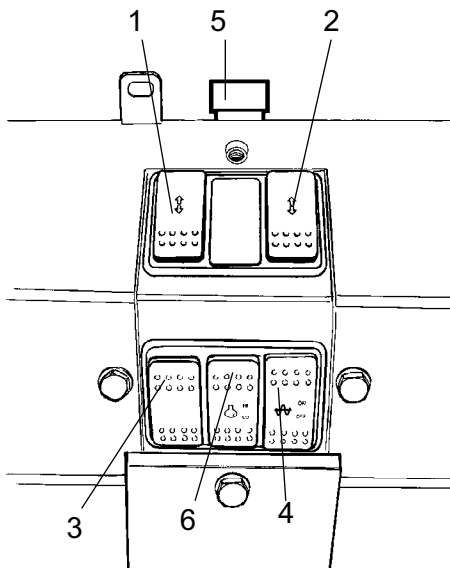


Fig. Control panel for temporary operation.

1. Control switch for Forward/Reverse, left side

2. Control switch for Forward/Reverse, right side

3. Engine speed switch High/Low.
Vibration can only be used when switched to "Low"

4. Vibration switch, On/Off
(clockwise/anti-clockwise)

5. Emergency stop button

6. Throttle control

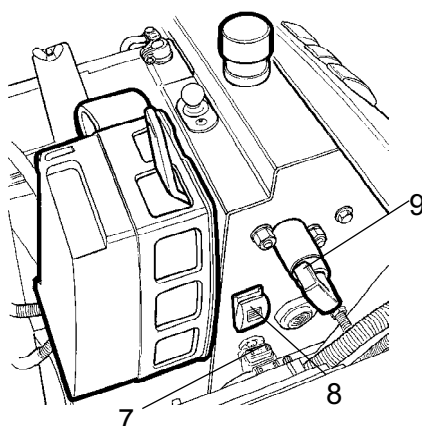


Fig. Location of transmitter.

7. Fuse box

8. Starting button

9. Battery disconnecter

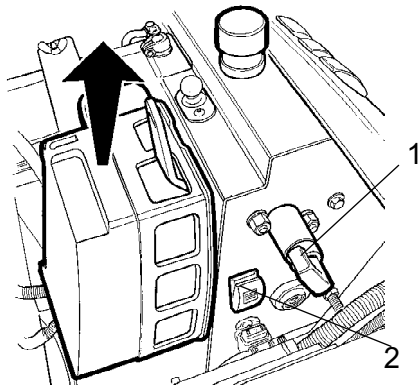


Fig Transmitter
1. Master switch
2. Starting button

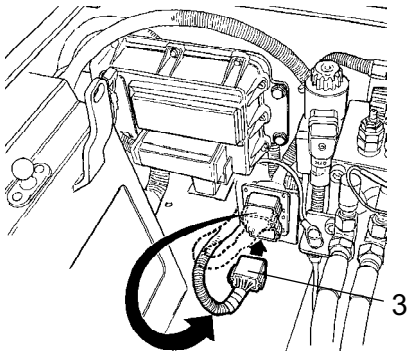


Fig Electrical system
3. Contact

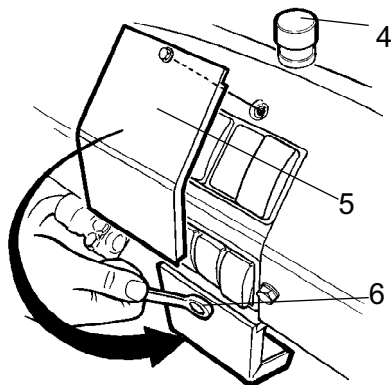


Fig Control panel
4. Emergency stop button
5. Protective cover
6. Screw

Starting the engine, manual control

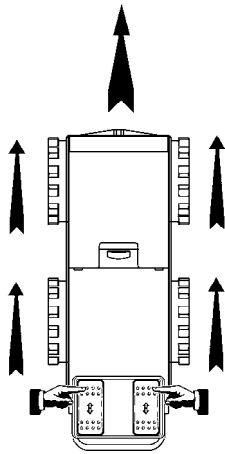
1. Take out the transmitter and store it securely.
2. Open the rear service cover. Move the cable from the upper to the lower contact (3).
3. Remove the protective cover (5) from the manual buttons. Attach with screw (6)(see illustration).
4. Pull out emergency stop button (4). Insert and turn the battery disconnector (1) to the locked position. The buzzer sounds when the power is switched on and stops again once the engine starts.
5. Press the start button (2).
6. Close the rear service cover.



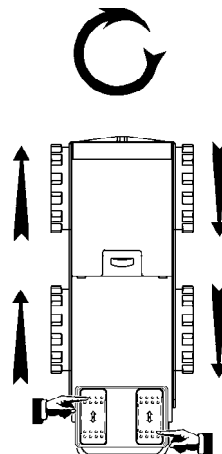
Prior to operation, check that the push stop is working. Move the push stop forward when the machine runs backwards. The machine should stop immediately the push stop is pressed.



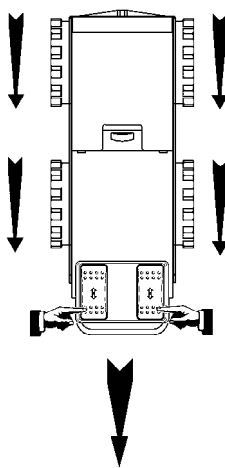
Never walk beside the machine when it is operating.

Operation, temporary operating

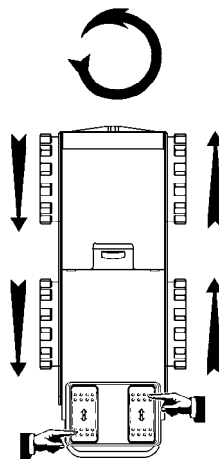
Running the machine forward



Turning the machine to the right



Running the machine backwards



Turning the machine to the left



Warning! Check that the work site is secure. Wet and loose soil will impair machine traction, especially on sloping ground. Always operate the machine slowly on sloping and uneven terrain. Never operate the machine upwards or downwards on slopes that exceed the maximum permitted angle of inclination.

- Never leave the machine with the engine running.**
- Never allow anyone to ride on the machine.**

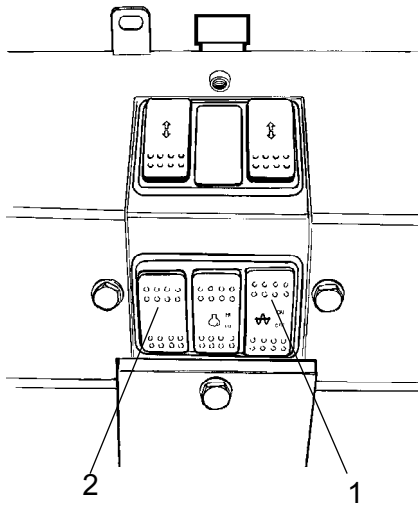


Fig. Control panel for temporary operating.

- 1. Vibration switch**
- 2. Speed switch**

Vibration, temporary operating

The vibration switch (1) only functions when the speed switch (2) is set to "Low". It will not function when set to "High".

The vibration switch (1) has three positions: ON Forward, OFF, ON Reverse.

This allows the operator to select the direction of rotation on the eccentric shaft in order to improve traction.



Never use vibration on hard surfaces such as frozen ground or concrete. Only use vibration when the machine is moving.

Stopping the engine, temporary operating

1. Turn off vibration switch (1).
2. Set the speed switches (2) and (3) to "Low" and allow engine to idle for a minute or two.
3. Press in Stop/Start button (4).

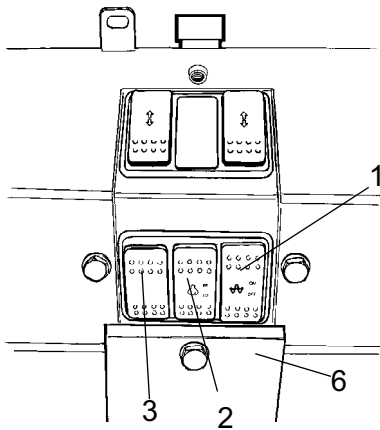


Fig. Control panel for temporary operating

- 1. Vibration switch**
- 2. Speed switch**
- 3. Speed switch**
- 6. Service cover**

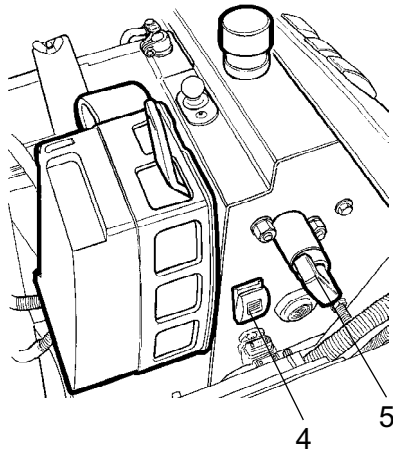


Fig. Stopping the machine
4. Stop/Start switch
5. Battery disconnect

4. Turn and switch off the battery disconnect (5).
5. Close the rear service cover and replace the protective cover (6) over the buttons.

Miscellaneous

Lifting

Lifting the roller



Never walk or stand under a lifted machine.



Attach lifting hook to lifting lug (1). Ensure that the parking brake is on when the machine is raised.



All lifting gear must be dimensioned in accordance with applicable regulations.

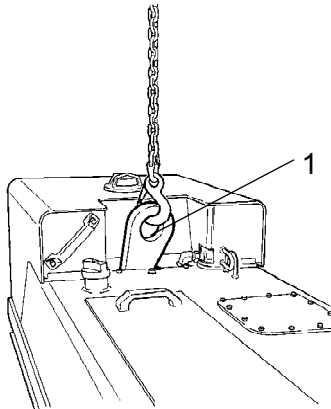


Fig. Machine ready for lifting
1. Lifting lug

Weight kg, (lbs):

850 mm (33.5 in) wide drums 1675 kg (3.693 lbs)

Transport

Transporting rollers



The maximum clamping force per fixing lug is 40 kN

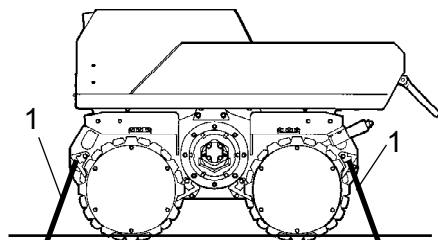


Fig. Long-term parking
1. Straps

Strap down the machine at the front and rear; decals indicate the fixing points.



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



It is forbidden to tow the machine.

Maintenance - Lubricants and symbols

	ENGINE OIL	Use SAE 15W/40: Volume 2.5 lit. Shell universal TX15W-40
	HYDRAULIC OIL	Use mineral-based hydraulic oil. Volume: 22 lit. Shell Tellus TX 68 or equivalent.
	FUEL	Use diesel oil which conforms to EN 500 or DIN 51601 Volume 17 lit.
	GREASE, ECCENTRIC ELEMENT	SKF LGHQ3-50



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

Spare parts for service

Air filter element	239596
Oil filter, engine	238380
Fuel filter, engine	238360
Hydraulic oil filter	935377

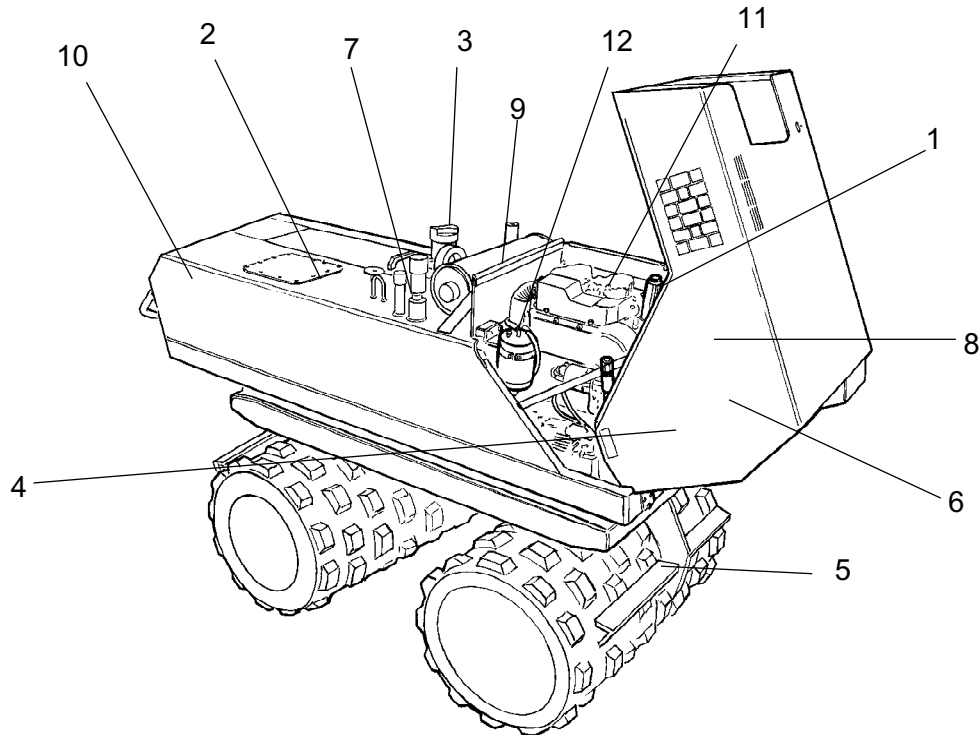
Maintenance - Maintenance schedule**Service and service points**

Fig. Service and service points

- | | |
|--|----------------------------------|
| 1. Filling of engine oil | 7. Hydraulic oil filter |
| 2. Hydraulic oil tank | 8. Fuel filter |
| 3. Fuel tank | 9. Muffler |
| 4. Air cleaner with dust extractor valve | 10. Battery |
| 5. Scraper | 11. Engine cooling system |
| 6. Engine oil filter | 12. Fuel filter (water draining) |



Study the engine instruction book and also follow the maintenance instructions.



On new engines, after 25 hours running the engine valve clearances must be checked and adjusted if necessary. Also check the engine spacer bolts after 25 hours running. The motor oil and filter must be replaced after the first 50 hours of running, and the hydraulic oil filter after 150 hours

Every ten operating hours (Daily)

Please consult the list of contents for page and section references!

Action	Comment
Before the first start of the day	
Check the engine oil level	See the engine instruction manual
Check the hydraulic oil level	
Check the level of the fuel tank	
Check the dust extractor valve on the air cleaner	
Check scraper adjustment	
Check the tightness of all nuts and bolts	

Every 250 operating hours (Every month)

Please consult the list of contents for page and section references!

Action	Comment
Replace the engine oil filter	See the engine instruction manual
Change engine oil	See the engine instruction manual
Check and clean the engine air cooling system	
Check and adjust engine valve clearances	See the engine instruction manual
Change the hydraulic oil filter	
Change the fuel filter	
Drain the fuel filter (Dewatering filter)	
Change the engine air filter	
Check that the battery terminals are clean and tight.	
Check the engine spacer bolts	

Every 1000 operating hours (Every year)

Please consult the list of contents for page and section references!

Action	Comment
Change hydraulic oil	
Replace hydraulic oil filter	
Clean fuel tank	

Maintenance - 10h



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

Check the engine oil level

1. Stop the engine and wait a few minutes. The machine must be horizontal. 2. Clean away any dirt from around the dipstick. 3. Check the oil level on dipstick (2). Top up with oil if necessary (1) to the upper marking.

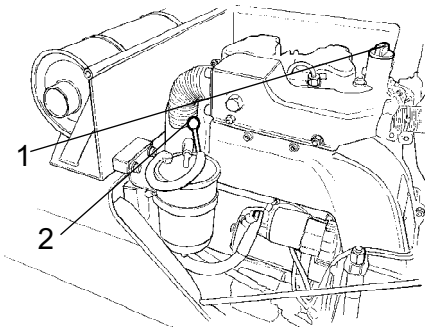


Fig. Engine
1. Filling oil
2. Dipstick

Check hydraulic oil level

1. Wipe off the oil level gauge (1) and check that the level is in the centre of the gauge. Refill if necessary. Look for leaks if the level falls.

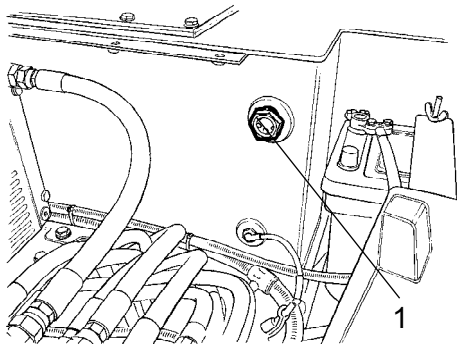


Fig. Hydraulic oil tank
1. Oil level gauge

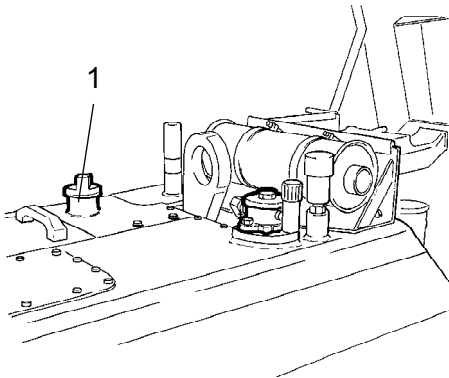


Fig. Fuel tank.
1. Tank cap

Check level in fuel tank.

1. Refill the fuel tank (1) every day using diesel of the following specifications: DIN 51 601-DK BS 2869 A1/A2 ASTM 975-ID/2D



Warning! Fire Hazard!

When working on the fuel system do not use open flames, do not smoke and do not fill fuel in confined spaces. Dirty or contaminated fuel may cause engine malfunction or damage.

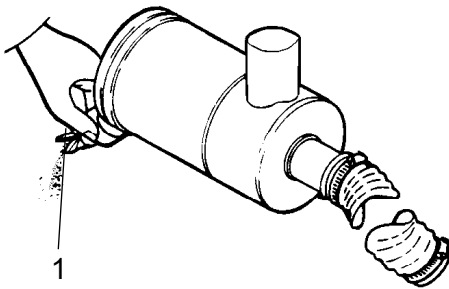


Fig. Air filter
1. Dust extractor valve

Checking air cleaners.

1. Check air intake. Clean if necessary.
2. Check dust extractor valve (1) for free flow. Remove any blockages by pressing together. Check connecting hoses and clamps.

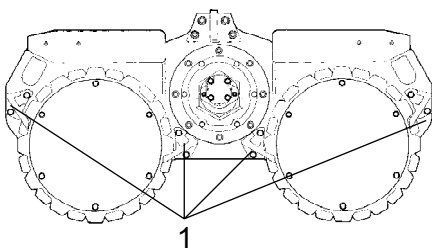


Fig. Scraper
1. Screw

Check scraper adjustment.

1. Make sure that none of the scrapers are touching the pads on the drums. If necessary, adjust gap to 3-5 mm with screw (1).

Maintenance - 250h



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

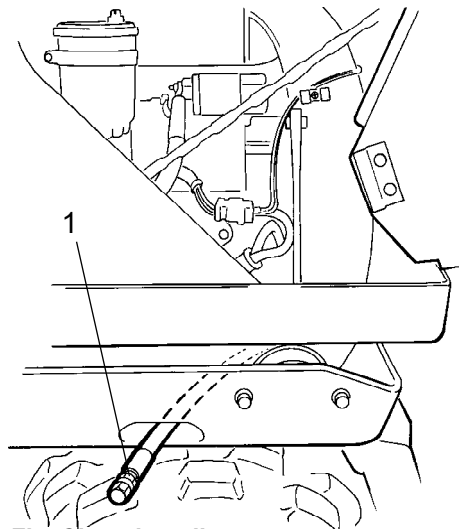


Fig. Changing oil
1. Draining oil

Replacing engine oil and oil filter

Please read the instruction manual for the engine.

1. Only drain engine oil while engine is warm.
2. Unscrew the oil drainage plug (1) and allow all of the oil to drain completely.
3. Replace the drainage plug (1) and tighten.

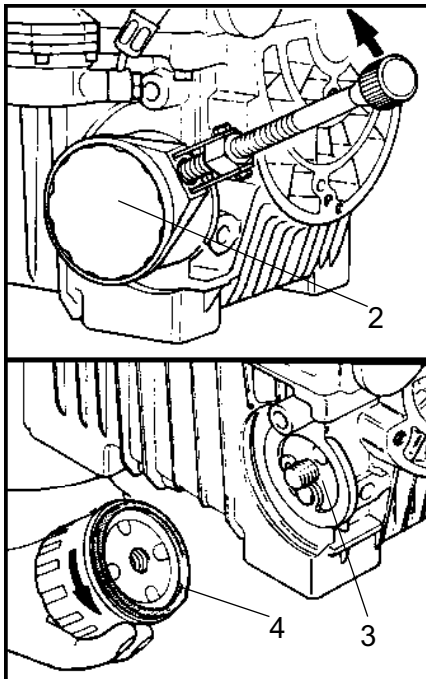


Fig.Engine oil change
2. Oil filter
3. Surrounding surface area
4. O-ring

4. Loosen and remove oil filter (2) using a band wrench. Always replace the oil filter.
5. Clean the surfaces (3) thoroughly.
6. Lightly oil the new oil filter's sealing ring (4).
7. Screw in oil filter P/N 238380 and hand tighten.
8. Fill with engine oil.
9. After a short test run, check that the oil filter is oil tight. Tighten if necessary.



Warning! Risk of scalding from hot engine oil.

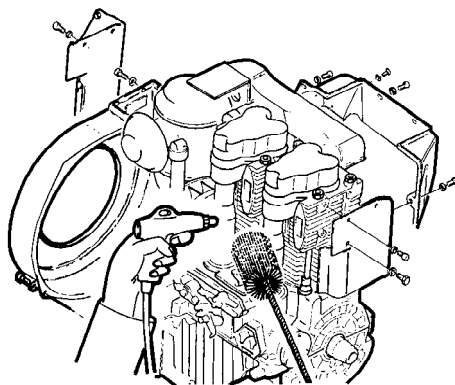


Fig. Cleaning of the engine cooling flanges.

Inspection and cleaning of the engine air cooling system

Always ensure that the engine is cold.

1. Remove all air guides.
2. Clean all air guides as well as the entire air cooling area including the cylinder head, cylinders and cooling flanges. Blow through with compressed air.

Check and adjust engine valve clearances.

See the engine instruction manual.



Warning! Risk of scalding from hot engine oil.

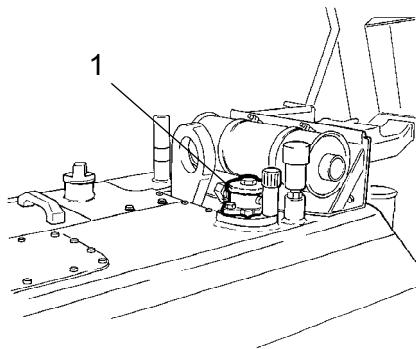


Fig. Changing hydraulic oil filter.
1. Cap

Changing hydraulic oil filter

1. Clean the area around the filter cap (1) and screw off the cap. Replace the filter element. The element is of a disposable type and should be disposed of in an environmentally friendly manner.
2. Insert the new filter in the housing and inspect the O-ring in the cover.
3. Screw the cover back on and ensure that there is no leakage.



Warning! Risk of scalding from hot oil.

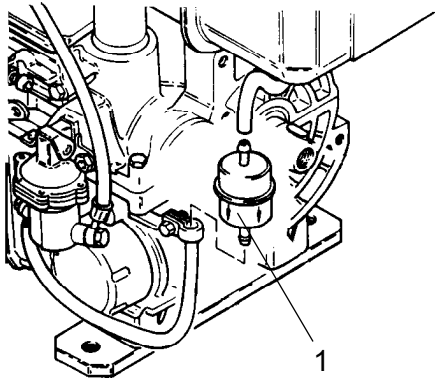


Fig. Changing the fuel filter
1. Fuel filter

Changing fuel filter

1. Remove the hose from each side of the filter (1). Clean up spilt fuel. Then replace the filter and make sure it is placed with the flow direction, marked with an arrow, towards the pump.



Warning! Do not smoke or use an open flame when working with the fuel system. Clean up spilt fuel.

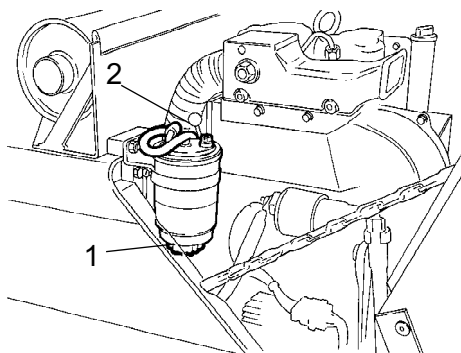


Fig. Draining the filter.

- 1. Drainage nut**
- 2. Bleeding screw**

Draining the dewatering filter

1. Loosen the drainage nut (1) at the bottom of the filter. Drain until fuel is free of water. Collect the fluid extracted in a fuel can. Tighten the drainage nut and loosen the bleeding screw (2).
2. Pump with the hand pump until the fuel is free of air and tighten the bleeding screw.

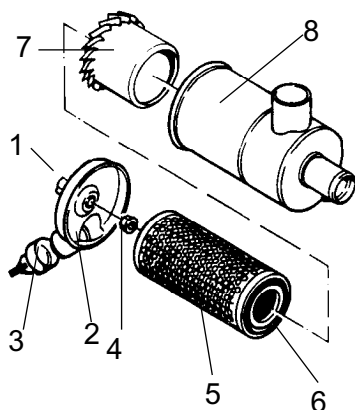


Fig. Air filter

- 1. Wing nuts**
- 2. Cover**
- 3. Dust extractor valve**
- 4. Nut**
- 5. Filter cartridge**
- 6. Seal**
- 7. Guide**
- 8. Filter case**

Changing the engine air filter

Filter cartridges may be cleaned twice and must be replaced after a maximum of two years' use.

Cleaning of filter cartridges

1. Loosen wing nut (1) and remove the cover (2) with the dust extractor valve (3).
2. Inspect the cover and dust extractor valve to check they are not deformed, too old or cracked. Replace if needed.
3. Unscrew collar nut (4).
4. Carefully pull out the filter cartridge (5).
5. The cartridge may not continue in use if the filter or the seal (6) is damaged.
6. Pull the guide (7) from filter housing (8).
7. Clean all parts with compressed air (except the filter cartridge which must be protected). Do not blow into the inlet to the engine.
8. Replace or clean the filter cartridge.
9. Reassemble in the reverse order. Check the seal insert of the collar nut (4). Replace the collar nut if the seal insert is missing. Ensure that the dust extractor valve is correctly positioned downwards.

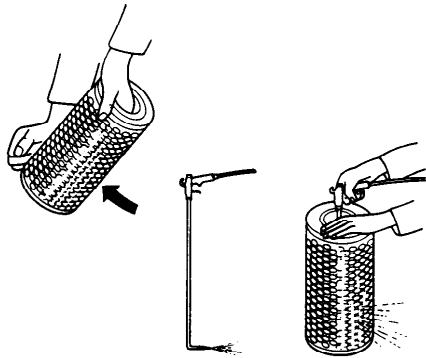


Fig. Cleaning of the filter cartridge.

Cleaning of the air filter cartridge

1. Tap the filter cartridge against the ball of your hand until no more dust falls out. Do not tap the filter cartridge against any hard objects.
2. Blow through the cartridge from the inside with dry, compressed air, moving forwards and backwards using an air nozzle until no more dust is extracted. The pressure may not exceed 5 bar. Replace the filter if it is soft or oily.

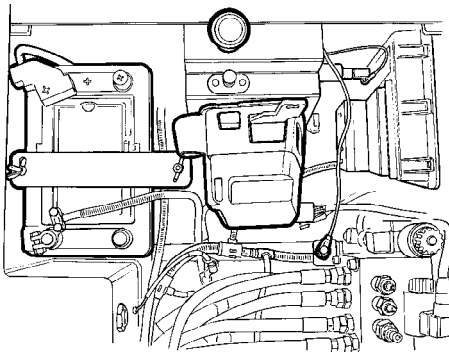


Fig. Battery location

Checking the battery terminals

Clean the battery terminals and cable shoes and apply a coating of acid-free grease (Vaseline).

2. Tighten the battery connectors.

3. Check the battery fastening bracket.



Warning! Do not smoke or use an open flame when working with the battery! Do not allow battery fluid to come into contact with clothing or the skin. Do not place any tools on the battery! Remove the plugs prior to charging the battery in order to avoid explosive gases collecting. Dispose of discarded batteries in an environmentally friendly manner.

Inspection of engine spacer bolts

Check that the engine spacer bolts (1) are properly tightened.

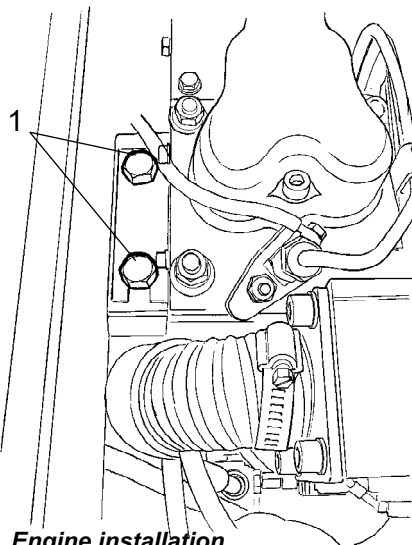


Fig. Engine installation
1. Engine spacer bolts

Maintenance - 1000h

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

Change hydraulic oil and hydraulic oil filter

1. Place a container of at least 20 liters under the hydraulic oil tank. Clean the surrounding area and remove the oil plug (1).

2. Remove the hydraulic oil tank cap and clean the inside surfaces (2).

3. Replace the oil plug with a new seal.

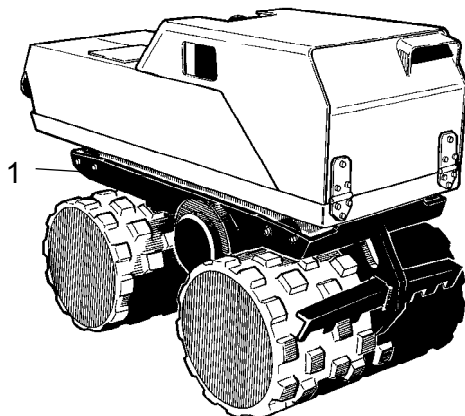


Fig. Changing hydraulic oil
1. Oil plug

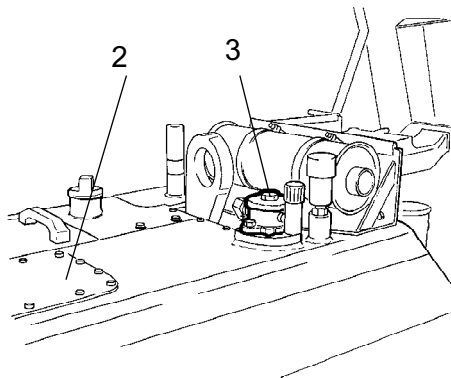


Fig. Hydraulic oil change
2. Cover
3. Filter element

4. Change filter element (3).

5. Fill with hydraulic oil.

6. Check the level gauge. Consult the section headed "Maintenance" - Every 10 operating hours.

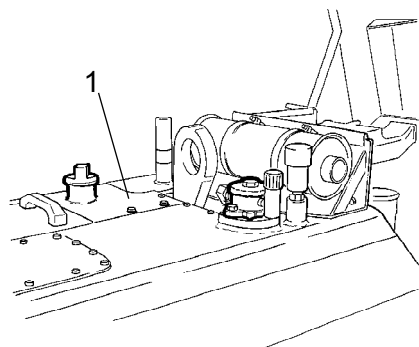


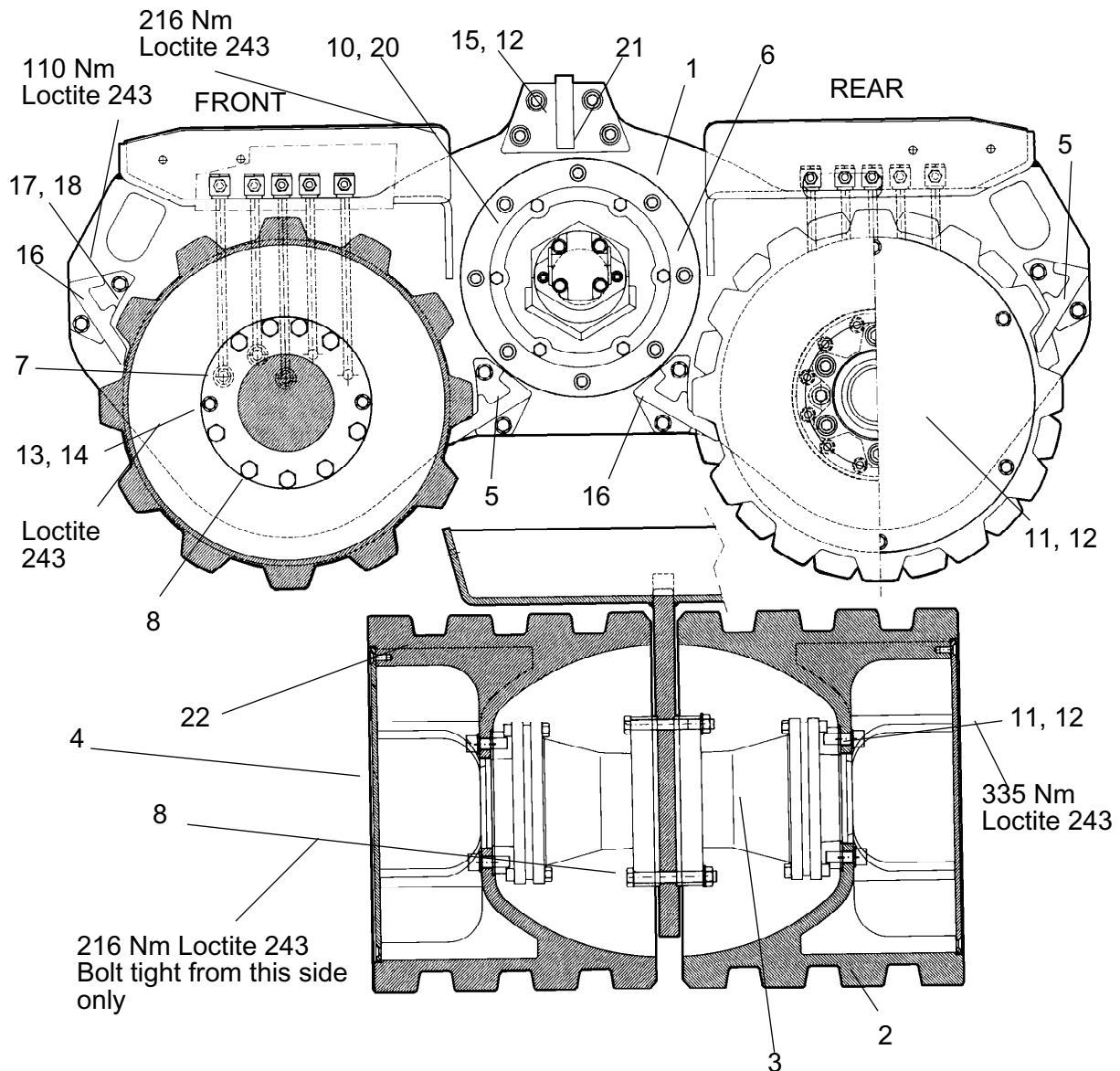
Fig. Fuel tank
1. Fuel tank

Cleaning of fuel tank

1. Place a container of at least 17 liters under the fuel tank (1) on the left side of the machine. Clean the surrounding area and remove the drainage plug.
2. Drain out the tank and clean. Replace the drainage plug with a new seal.
3. Refill the tank. Check for leaks.

Maintenance - Other

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 all contact surfaces carefully.
6. Mount new drum and screw tight with screw (11). Torque and locking fluid.
7. Mount cover (4).
8. Fit scrapers (5) and (16) Torque and locking fluid.

Change the O-rings when assembling the drum motors. Fasten the drum motors with screw (14) and washer (13) on both sides. Then fasten with bolt (8) and nut (9) and finally tighten to a torque of 216 Nm in star formation.

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