DYNAPAC
Part of the Atlas Copco Group

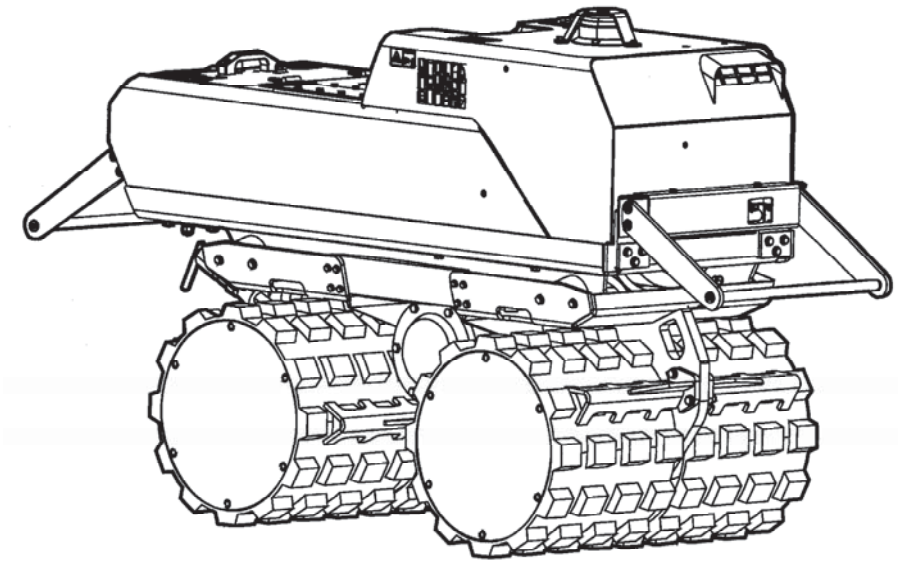
Instruction manual

ILP8504-1EN1.pdf
Operation & Maintenance

Vibratory Trench Compactor
LP8504

Diesel engine
Hatz 2G40

Serial number
***18501000*-**



We reserve the right to chnage specifications
Printed in Sweden

Table of Contents

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.

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

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 manufactuer's engine manual.

CE marking and Declaration of conformity

(Applies to machines marketed in EU/EEC)

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

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

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 may not be modified without the approval of the manufacturer.
Only use original parts.
Use only accessories recommended by Dynapac.
Modifications can result in serious injuries 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.
- Machines 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 and worn 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 following requirements apply to operators and persons in the immediate vicinity of the work area.
- Safety helmet
- Safety goggles
- Ear protectors
- Dust mask in dusty environments
- High-visibility clothing
- Protective gloves
- Protective footwear

Avoid loose-fitting clothing which can get caught in the machine. If you have long hair, cover it with a hair net.
Vibrations from handheld machinery are transmitted to the hands via the handles. Dynapac machines feature a handle design that absorbs much of the vibration. 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 or oil.

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 low flash-point and can be explosive in certain situations. Do not smoke! Make sure there is adequate 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

The battery contains poisonous 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 explosive. When fitting or replacing a battery, always take care so that you do not short-circuit the battery poles. The battery must not be exposed to naked flames, sparks, strong heat or anything else where there is a risk of explosion.

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 freezes at a temperature of approx. -7 °C. In a fully charged condition it first freezes at -67°C. If a battery is not being used, it shall be charged fully before being put aside. There is normally no need for maintenance charging during 6-8 months. If a battery has not been used for a long time, it is recommended that it should be fully charged before it is used again. Maintenance charging is recommended a couple of times during the season (especially during the winter season).

Safety - when operating

Slopes

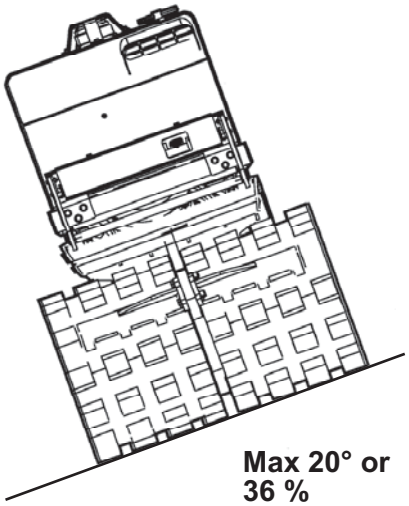


Fig. Operation on slopes

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.

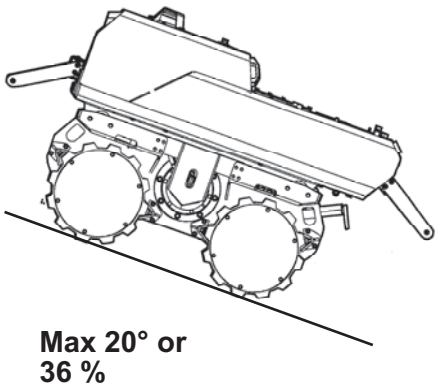


Fig. Operation on slopes

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.

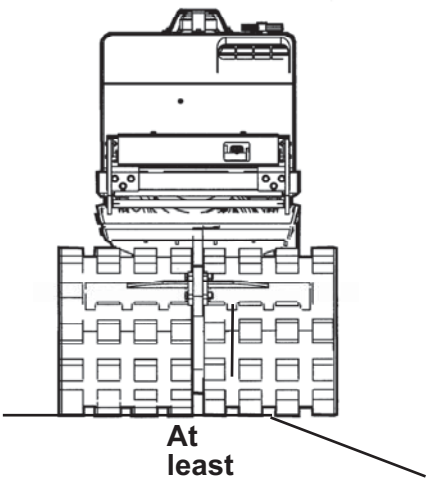


Fig. The positioning of the machine when driving near edges

Driving near edges

When operating along edges, at least 2/3 of the plate should be on a surface with full bearing strength.

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

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 Directive2000/14/EC

Measured sound power level, L_{wA}dB (A)	104
Guaranteed sound power level, L_{wA}dB (A)	106
Sound pressure level at operator's ear (EN 500-4), L_{pA}dB (A)	92
Hand and arm vibrations (EN500-4), a hv m/s 2	
Standard handle	-
Low vibration handle	-
Hand and arm vibrations, permitted working hours per day, (calculated on action value of 2.5 m/s2 as per 2002/44/EC),	
Standard handle	-
Low vibration handle	-

Values may differ from those above depending on operating conditions.

Machine directive

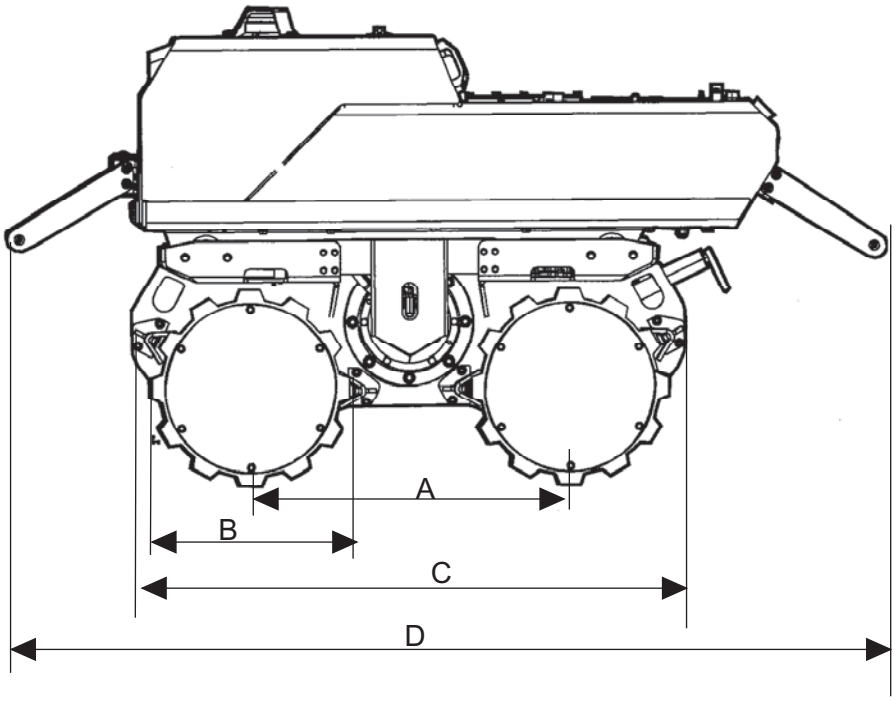
The machine is tested as follows:

EN13309:2000 / prEN13309:2008 "Construction machinery"

ISO13766:2006 (Earth moving machinery - Electromagnetic compatibility)

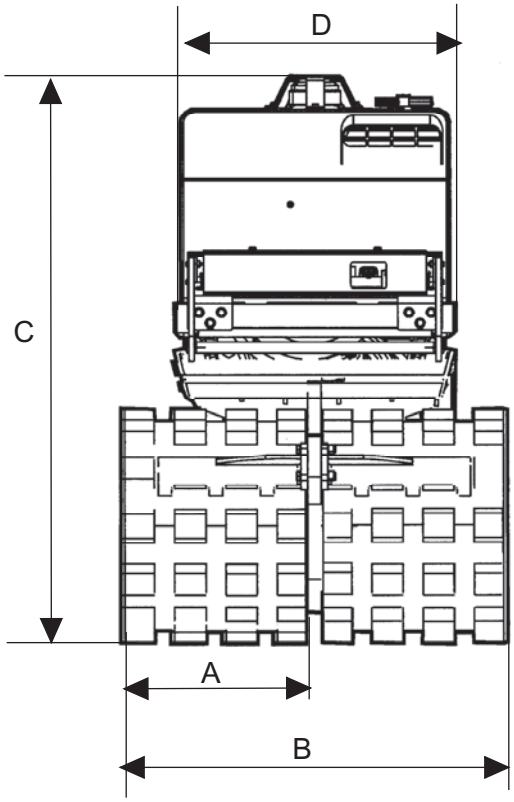
ETSI 301 489-1 v1.8.1 2008-04

Technical specifications - Dimensions



Dimensions	mm	in
A	850	33.5
B	535	21.1
C	1385	54.5
D	2330	91.7

Technical specifications - Weights and volumes



Dimensions	mm	in
A	405/295	15.9/11.6
B	850/630	33.5/24.8
C	1276	50.2
D	630	24.8

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

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

Electrical system

Battery Voltage	12 V
Generator Capacity	50Ah

Electrical system

Fuses	1 x 30A, 1 x 40A
Generator	330W
Starter Motor	1.7 kW (2.3hp)

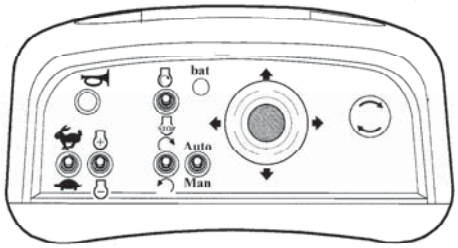


Fig. Transmitter

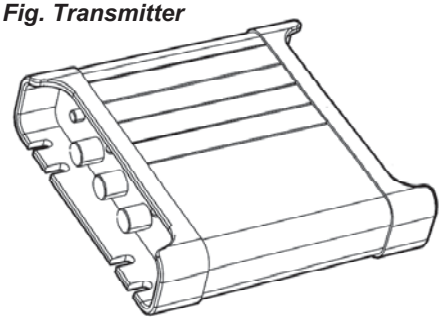
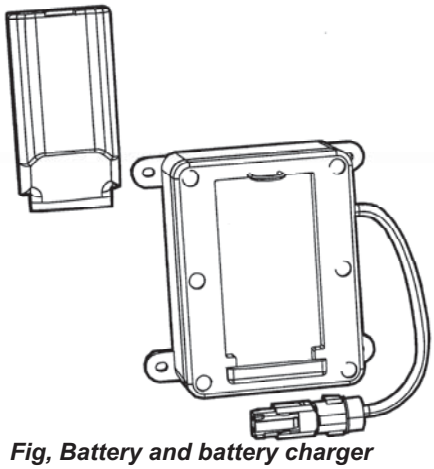


Fig. Receiver



Fig, Battery and battery charger

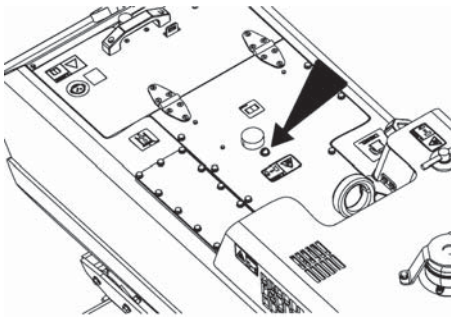


Fig. Location of antenna

Radio equipment

Transmitter:

Operating voltage	Battery NiMh 1500 mAh Can be operated without battery via cable control
Operating time	Up to 15 hours with a new battery.
Data display	Graphical, resolution 128 x 32
Protection class	IP66
Operating temperature	-25°C.....+85°C
Storage temperature	-40°C.....+85°C

Receiver:

Operating voltage	10.....32 V DC
General consumption	100 mA, without external charging at 12 V DC
Process	CPU design 2 robust safety switches (max 2A) Designed to fulfill EN 13849-1 PL e (EN951-1, Cat4)
Operating frequency	Bluetooth, 2.4 GHz
Indication, receiver	Triple-color LED Red/Green/Yellow
Indication, CAN status	Twin-color LED Red/Green
Protection class	IP67
Operating temperature	-25°C.....+85°C
Storage temperature	-40°C.....+85°C

Antenna: Is mounted on the machine behind the rear service hatch.

Transmitter battery: 2 x NiMh batteries supplied with the machine. Charging is performed in the machine's battery charger.-

Battery charger: Is mounted in the machine on the electrical box.

Data signs

The identity plate is positioned behind the battery on the transmitter. The identity plate shows the serial number, model designation and frequency band.

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

Machine plate - Identification

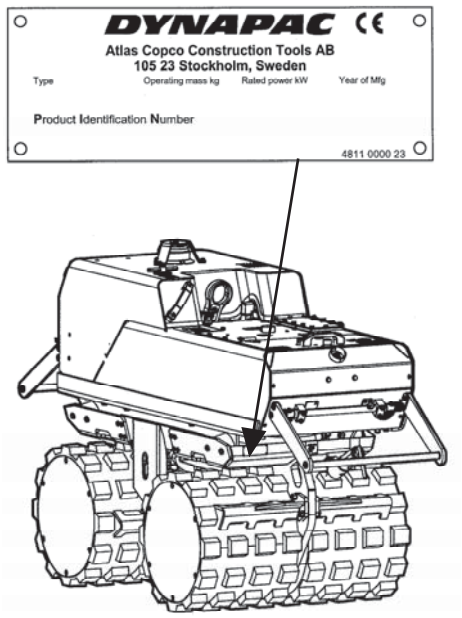


Fig. Location of machine plate.

Machine plate

Fill in all data below when delivering and commissioning the machine

DYNAPAC CE
Atlas Copco Construction Tools AB
105 23 Stockholm, Sweden
Type Operating mass kg Rated power kW Year of Mfg
Product Identification Number
4811 0000 23

Engine model

Engine number

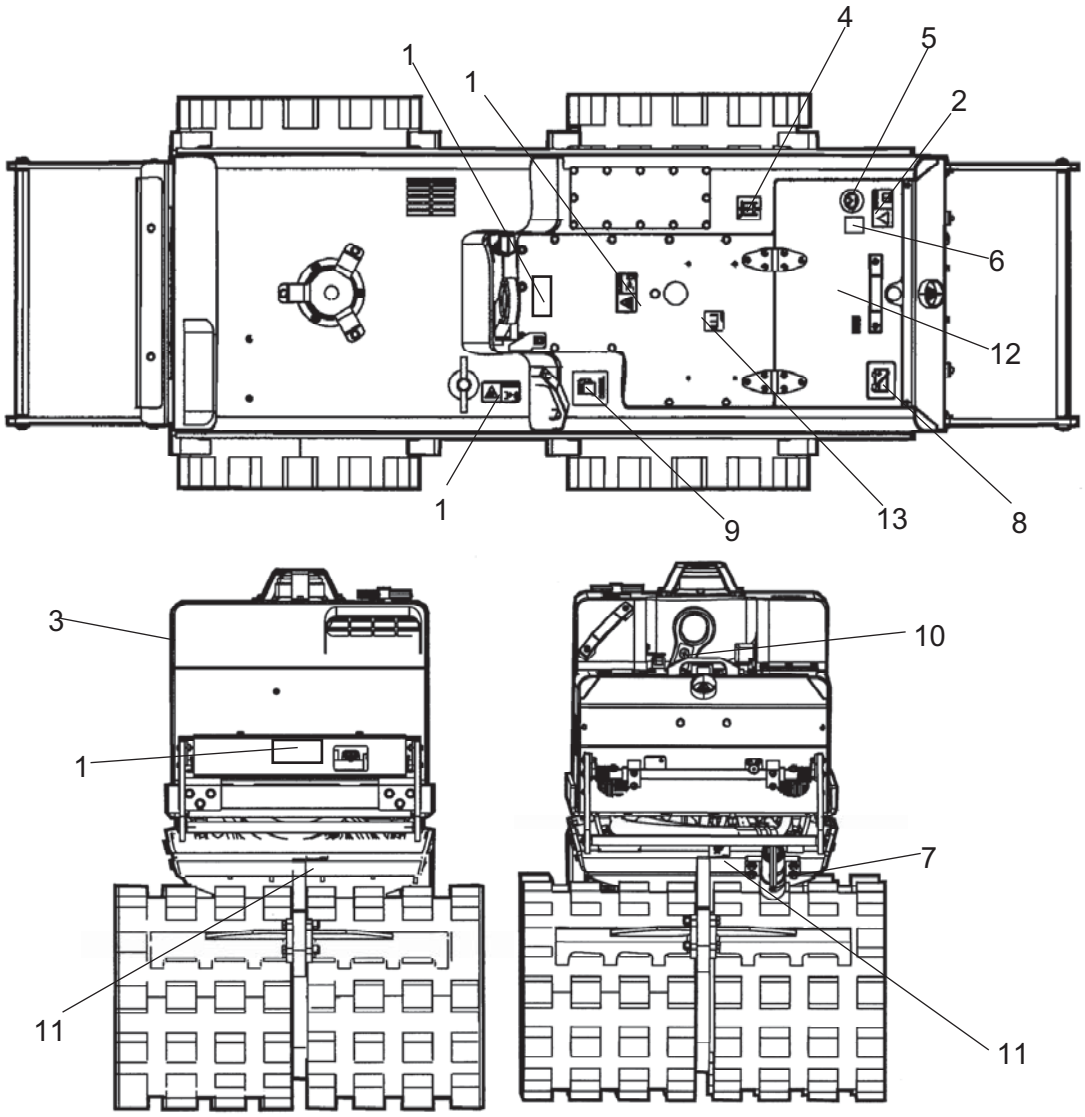
The plate states the maker's name and address, type of machine, PIN - product identification number (serial number), working weight, engine power and year of manufacture.

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

Safety decals

Machine specifications- Decals

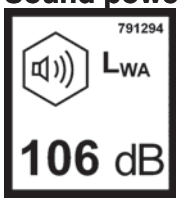
Location of decals



	Item no.		Item no.
1. Warning - rotating engine components	4700903423	7. Brakes	4700389944
2. Warning - read the instruction manual	4700904680	8. Battery isolation switch	4700904835
3. Warning - hot surfaces	4700903424	9. Diesel fuel	4700991658
4. Hydraulic oil level	4700272373	10. Lifting point	4700357587
5. Use ear protectors	4700281898	11. Securing point	4700382715
6. Sound power level	4700791294	12. Starting instructions	4700389816
		13. Warning - read the instruction manual	4700903425

Info-decals

Sound power level



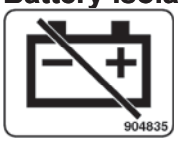
Diesel fuel

Lifting point

Ear protectors

Securing point

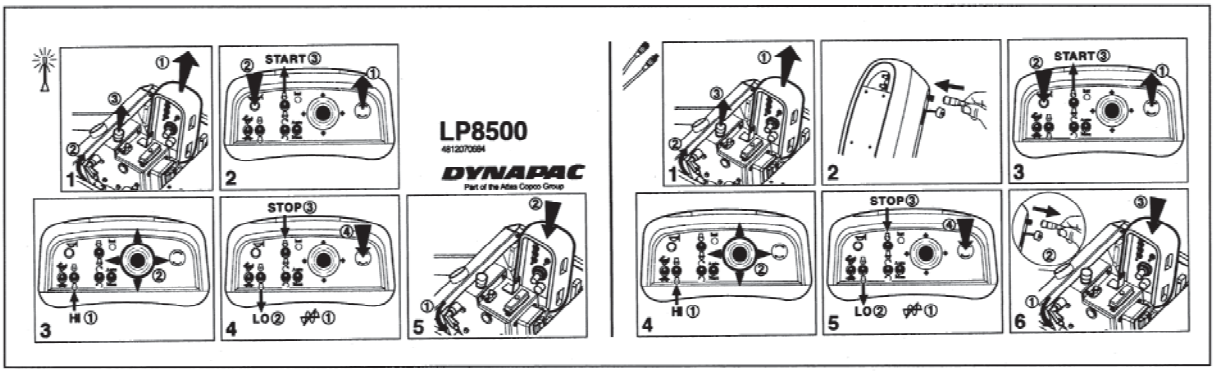
Battery isolation switch



Hydraulic oil level

Hand brake

Starting instructions



903423
Warning - Rotating engine components.

Keep your hands at a safe distance from the danger zone.

903459
Warning - Instruction manual

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

903424
Warning - Hot surfaces in the engine compartment.

Keep your hands at a safe distance from the danger zone.

Machine description - Electrical system

The transmitter

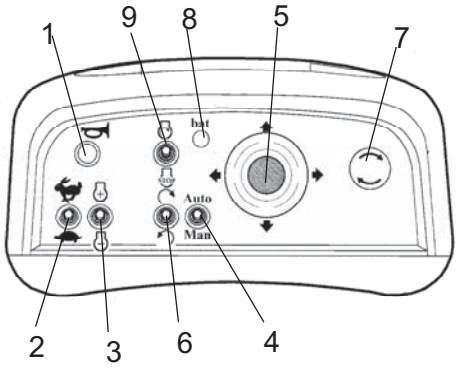


Fig. Transmitter
1. Horn
2. Speed, High/Low
3. Engine speed, High/Low
4. Vibration Manual/Automatic
5. Joystick
6. Vibration, direction
7. Transmitter On/Off
8. Indicator for low battery voltage
9. Start/Stop switch, engine

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

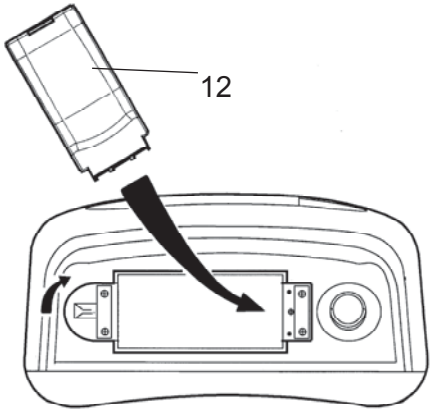
Only trained personnel who are fully conversant with the control system may operate the machine.

If any errors occur in the system, immediately switch off at the stop/start switch on the transmitter and throw the battery disconnector 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 can only be used together with a receiver that has the same address code as the transmitter. To use another transmitter, the transmitter must first be coded so that its address code agrees with the receiver's.

Coding shall be performed by authorized service personnel



Fitting the battery to the transmitter
12. Battery

The range is about 30 meters depending on the surroundings and any radio interference.

The transmitter is supplied with 2 NiMh batteries, 1500 mAh. The battery is located in the transmitter by sliding it into the groove until it locks in place. To remove the battery, twist the lock on the transmitter. The operating time for a fully charged battery is about 15 hours.

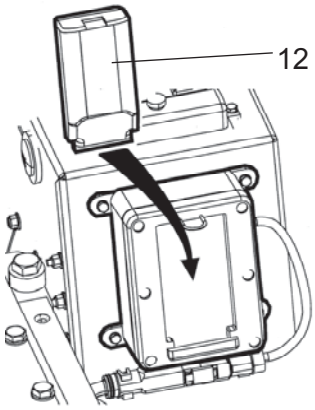
The transmitter is fitted with a LED that lights yellow for 10 seconds when it is time to change the battery. Change the battery and check that the groove and contact surfaces are clean. Radio communication is broken when the battery is removed. Charge the battery in the machine during operation. The transmitter can be used without the battery if one connects the supplied cable between the transmitter and the machine.

System:

Status:	Indication LED:
Battery discharged	Constant yellow light for 10 seconds
Battery, low charge	Flashing yellow light
Joystick in wrong position when starting machine	Green/Red
No connection	Fast flashing green light
Normal operation mode	Slow flashing green light

Fault:

Internal fault, transmitter	Constant red light for 10 seconds



Fitting the battery in the machine's charger
12. Battery

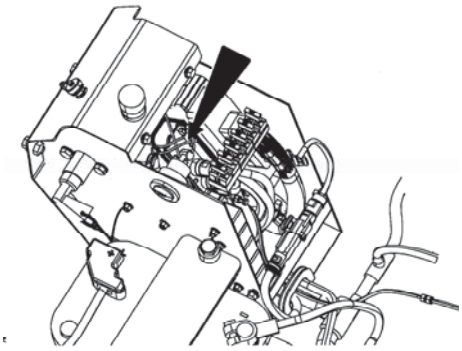


Fig. Receiver

Receiver

The receiver is mounted under the electrical box cover. The electrical box is located under the rear service hatch.

For radio or general indication, a triple-colored LED is used, labeled RX

System:	**Indication on RX:**
No connection	Constant green light
Safety relay (RCSS):	
Connected, RCSS = ON	Fast flashing green light
Connected, RCSS = OFF	Slow flashing green light
Fault indications:	
RX, internal fault	Constant red light
TX, internal fault	Fast flashing red light

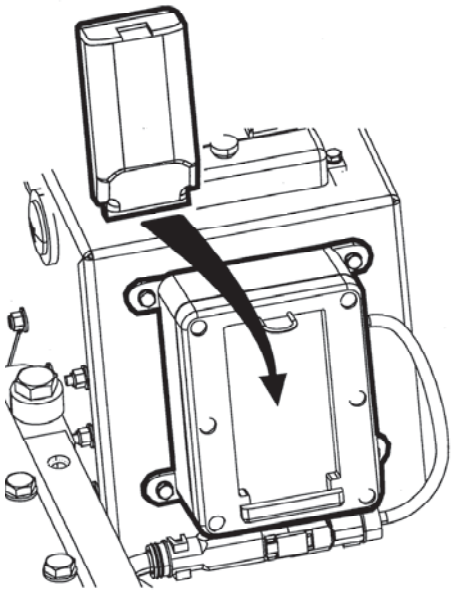


Fig. Battery charger

Battery charger

Before charging the battery, make sure that the battery charger's and the battery's contact surfaces are cleaned and dry
Never store the battery so that it can be short circuited. Never expose the battery to fire or intense heat.

Two batteries are supplied with the machine on delivery. The battery can be charged in the machine during operation.

The battery charger is mounted on the front of the electrical box, under the rear service hatch.

The extra battery can be charged in the battery charger during operation.

A newly charged battery has an operating time of about 15 hours.

If both batteries are discharged, it is possible to use the transmitter together with the supplied cable for cable control. A longer cable is available as an accessory to the machine

Remember the environment! Used batteries shall be recycled

The machine's range of applications

The machine's range of applications

The machine's range of applications

Dynapac LP 8504 is a vibratory padfoot roller that is designed to cope with many different types of compaction work. The roller is designed for compaction applications in trenches, around the foundations of buildings and factories, backfilling against supporting walls, and for road works.

The machine is suitable both for working in confined spaces as well for large compaction jobs.

LP 8504 is intended for use in well-ventitated areas, like all other machines with combustion engines.

When operating the LP roller, follow the instructions in the manual; do not sit or stand on the machine when it is working. Otherwise this can interfere with functionality and cause personal injury.

The LP roller must not be towed behind vehicles.

Do not operate on steeper slopes than recommended in this manual.

Operation

Starting the engine by remote control

Do not use starting gas
If the charging and oil pressure symbols do not extinguish, the machine shall be shut off. Fault tracing and repair shall be performed by authorized service personnel before the machine is started again.

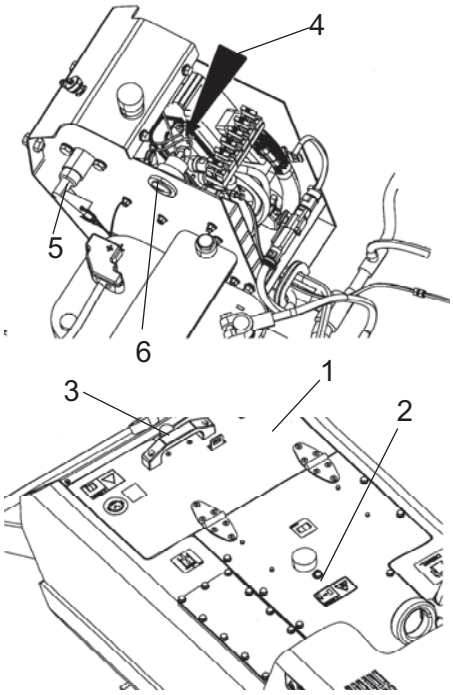


Fig. location of transmitter etc.
1. Transmitter
2.Antenna
3. Emergency stop
4. Receiver
5. Main switch
6. Buzzer

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

1. Open the rear service hatch and extract the transmitter. Insert and turn the battery disconnector (5) to the locked position. The buzzer (6) will sound when the power is turned on. The buzzer will stop when the engine starts.

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

3. Release the start/stop button (8) on the transmitter. The LED will flash slowly with a green light during normal operation. When the transmitter is turned on, the following will be shown on the data display:

The flashing warning light (11) that is mounted on the hood is activated when the battery disconnector and emergency stop are activated.

Hours: Engine running hours
PLCv.: Software version for the machine's ECU.
RX v.: Software version for the receiver.
TX v.: Software version for the radio transmitter
Press [Horn] to start: Software version for the radio transmitter.

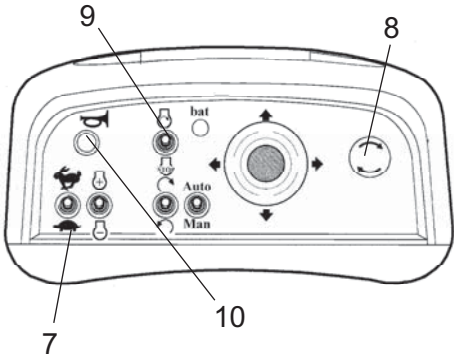


Fig. Transmitter
7. Speed, High/Low
8. Start/stop button, transmitter
9. Start switch, engine
10. Horn

4. Depress the horn button (10) until contact is established between the transmitter and receiver.

The following symbols can or will be shown on the data display:

Symbol	Description
	Radio contact established between transmitter and receiver
	Alarm, charging
	Alarm, low oil pressure
	Fault codes: **05**: Tilt switch activated The switch is located behind the engine on the right side of the machine. **06**: Rear contact sensor activated **07**: Front contact sensor activated
	Radio contact lost between transmitter and receiver
	Transmitter connected via cable control

5. Set the switch for engine speed (7) to “Low”. (-)

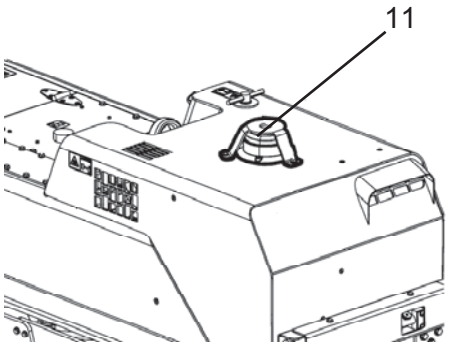


Fig. Warning light
11.Warning light

6. Start the engine with the toggle switch (9), release when the engine has started.

7. Check the battery status.

8. Check the oil pressure

9. A new start attempt can be made after 3 seconds. If the start motor is used for more than 20 seconds, a delay is activated for 8 seconds.

Steering/operation via remote control

Make sure the work site is safe. Wet and loose surfaces reduce the driving ability of the machine.

Do not leave the machine without first stopping the engine and turning off the main switch. It is forbidden to carry passengers on the machine.

Do not maneuver the machine at greater distances than 20 meters. Always keep a good view of the work site and the machine.

Do not hand over the transmitter to anyone who is not familiar with the machine and its operation and the safety directive.

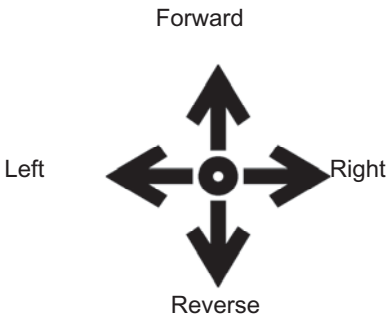


Fig. Position of joystick

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.

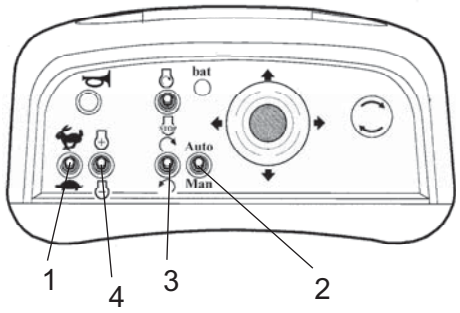


Fig. Transmitter
1. Speed switch, High/Low
2. Vibration switch, Manual/Automatic
3. Vibration switch, Direction
4. Engine speed switch

Driving with automatic vibration

Toggle switch for vibration (2) in position AUTO: Vibration is activated when the joystick is used and the machine is driven at low speed. For the best tractive force, the vibration direction is changed automatically when the machine is driven forwards or backwards.

The machine shall always been driven at the highest engine speed when vibration is used. The toggle switch for engine speed (4) is then in position (+).

Toggle switch (1) shall be in the position for low speed.

The vibration position may not be used when the engine is at idle.

Vibration is stopped automatically when the machine stops

Driving with manual vibration

Toggle switch for vibration (2) in position MAN

The starting position for toggle switch (3) is in neutral position.

Toggle switch (1) shall be in the position for low speed.

The machine shall always been driven at the highest engine speed when vibration is used. The toggle switch for engine speed (4) is then in position (+).

The vibration position may not be used when the engine is at idle.

Toggle 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”, the automatic vibration is stopped. Toggle switch (3) must be set to the intermediate position when returning to high engine speed in order for the automatic vibration to be resumed.

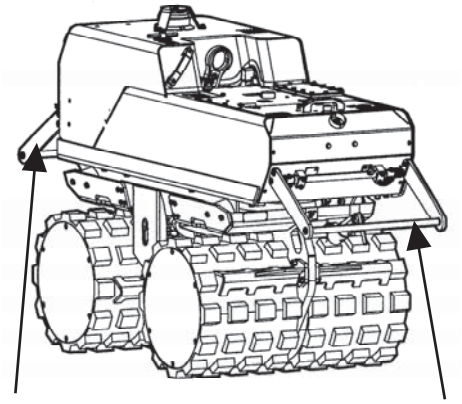


Fig. Contact sensor

Activated contact sensor

There are two contact sensors mounted on the machine. If either of these are activated during operation, driving in that direction is stopped. It is possible to drive the machine in the opposite direction until the contact sensor has been reset.

If the machine gets stuck in a trench

To drive the machine when both of the contact sensors are activated, depress the horn button for more than 1 second. Keep the button depressed while driving with the joystick.

This driving mode shall only be used when the machine has become stuck

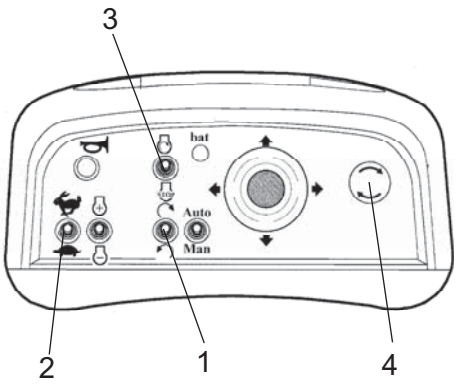


Fig. Transmitter

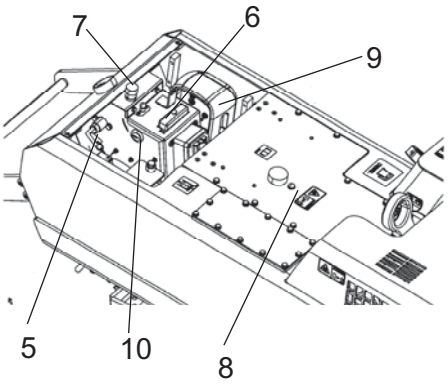


Fig. Location of transmitter, etc.
5. Master switch
6 Receiver.
7. Emergency stop button
8. Antenna
9. Transmitter
10. Buzzer

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. Set the vibration switch (1) in neutral position.
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 disconnector (5) back to stop the buzzer.
8. Turn off the transmitter with the Start/stop button (4), the green indicator LED goes off.
9. Place the transmitter in its transport position in the machine or store it in a safe place.

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

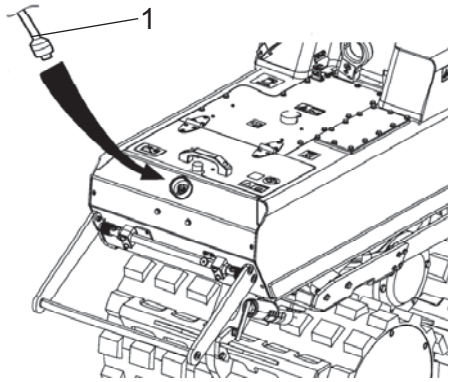


Fig. Mounting cable control in the machine

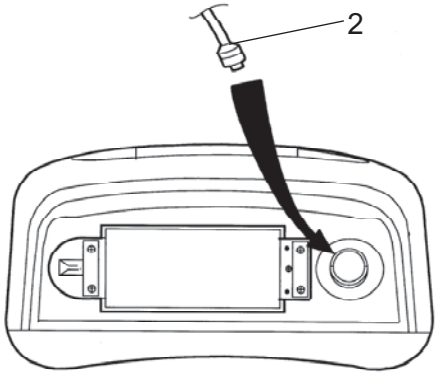


Fig. Mounting cable control in the transmitter

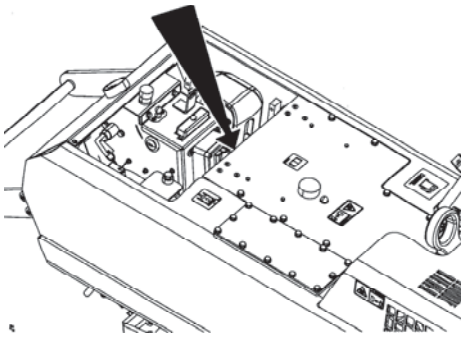


Fig.Cable storage

Start/ Driving/Stop with cable control

Start:

The connector shall be cleaned before mounting the cable.
Damaged connectors shall be replaced by authorized service personnel.

1. Mount the cable in the machine

2. Mount the cable in the transmitter

The machine is now ready for use.

Use the same procedure for start/stop and driving as when using radio control.

When cable control is used, the transmitter battery is not needed. The transmitter receives power via the cable.

Charge the transmitter battery while the machine is operating.

Stop:

Use the same procedure for start/stop and driving as when using radio control.

Loosen the cable from the machine and the transmitter.

Store the cable in the pocket under the center hatch.

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.

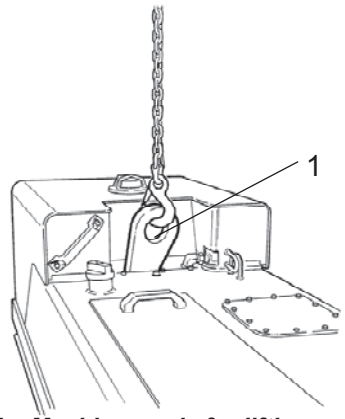


Fig. Machine ready for lifting
1. Lifting lug

Transport

Transporting rollers

The maximum clamping force per fixing lug is 40 kN

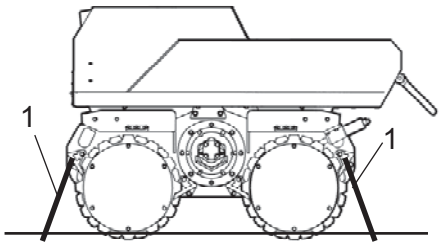


Fig. Long-term parking
1. Straps

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, Shell Rimula R3 U 15W-40 or corresponding Volume, liter (qts): 2, 5 l (2.64)
	**Grease, eccentric element**	SKF LGHQ3-50
	**Hydraulic fluid**	Use mineral based hydraulic oil Shell Tellus TX32 or corresponding Volume, liter (qts):23 (24.30)
	**Fuel**	Use diesel fuel that fulfills EN 590 or DIN 51601 Volume, liter (qts): 17 (17.96)

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.

Maintenance - Maintenance schedule

Service and service points

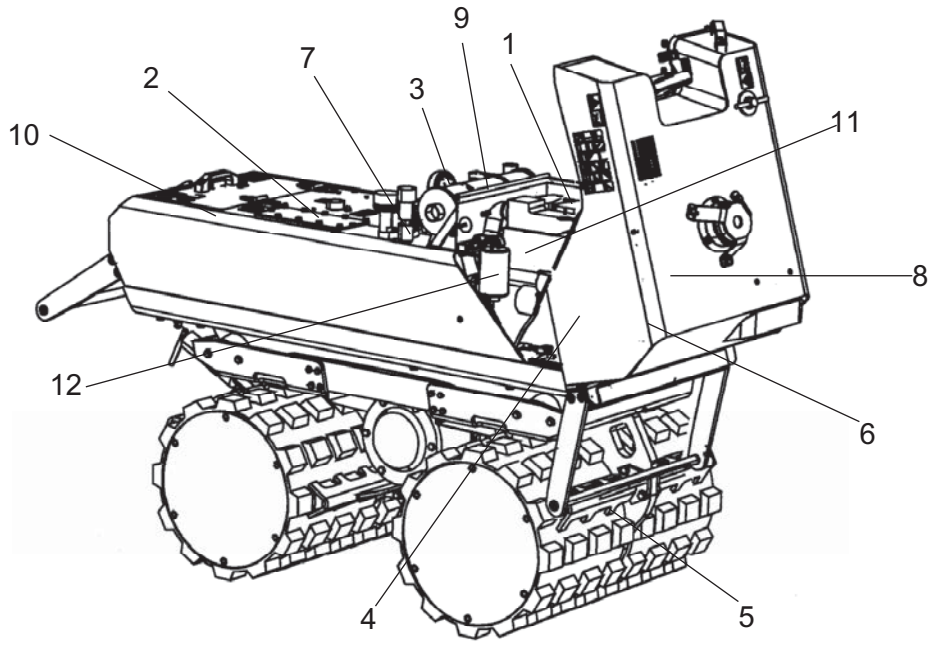


Fig. Service and service points

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

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

Check the engine oil level

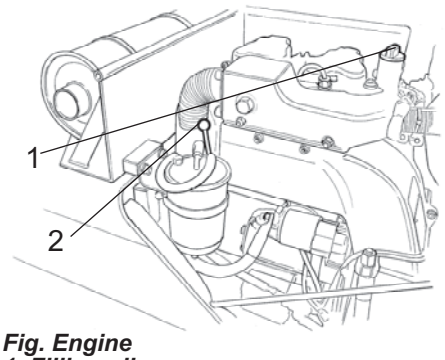


Fig. Engine
1. Filling oil
2. Dipstick

1. Stop the engine a 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.

Check hydraulic oil level

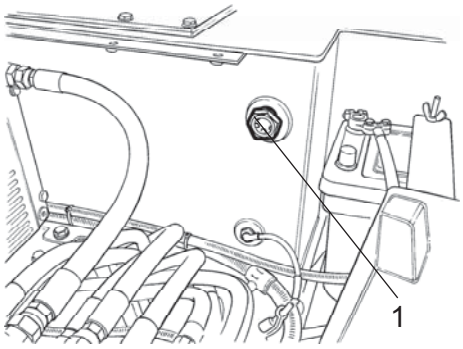


Fig. Hydraulic oil tank
1. Oil level guage

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.

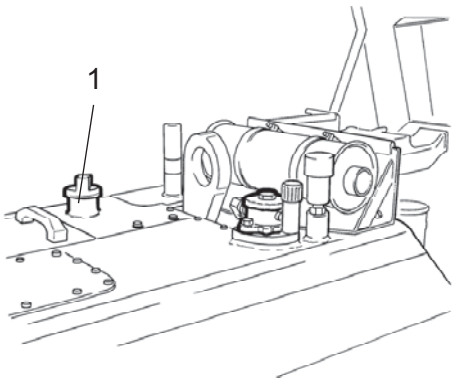


Fig. Fuel tank.
1. Tank cap

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.

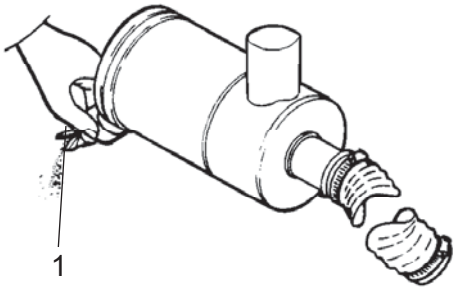


Fig. Air filter
1. Dust extractor valve

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.

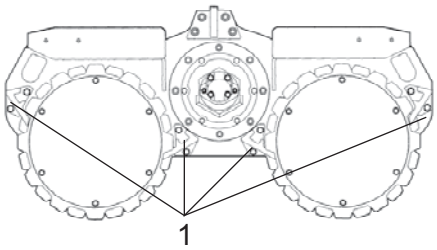


Fig. Scraper
1. Screw

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

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

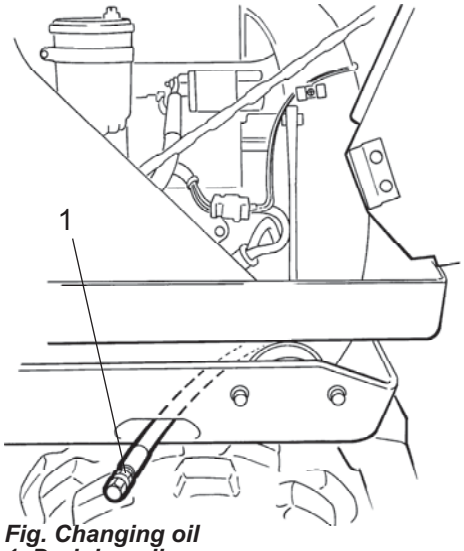


Fig. Changing oil
1. Draining oil

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.

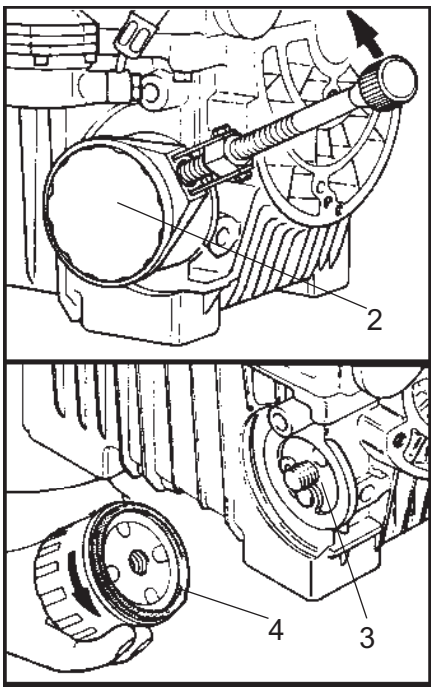


Fig.Engine oil change
2. Oil filter
3. Surrounding surface area
4. O-ring

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.

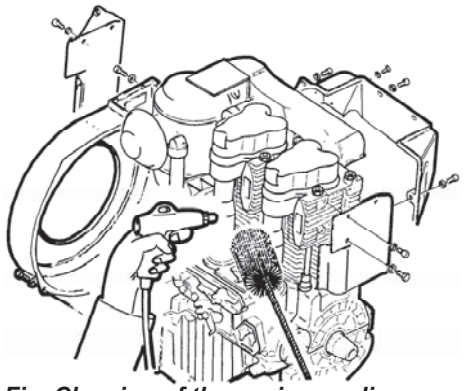


Fig. Cleaning of the engine cooling flanges.

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.

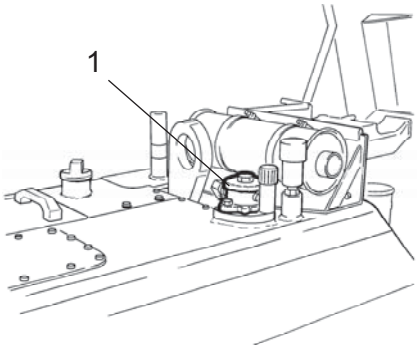


Fig. Changing hydraulic oil filter.
1. Cap

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.

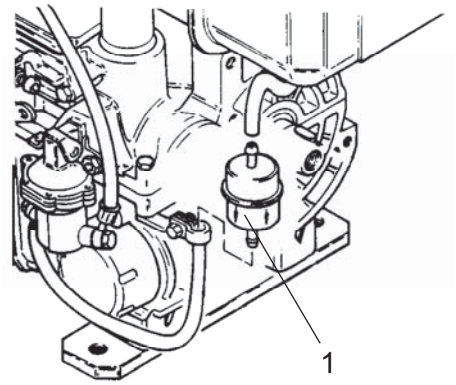


Fig. Changing the fuel filter
1. Fuel filter

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.

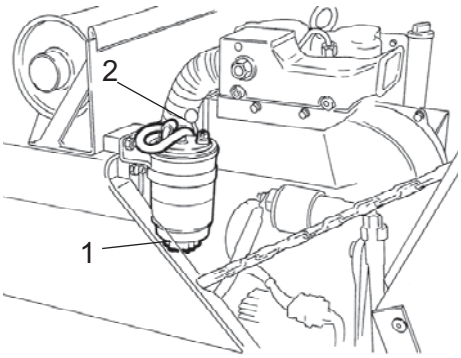


Fig. Draining the filter.
1. Drainage nut
2. Bleeding screw

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.

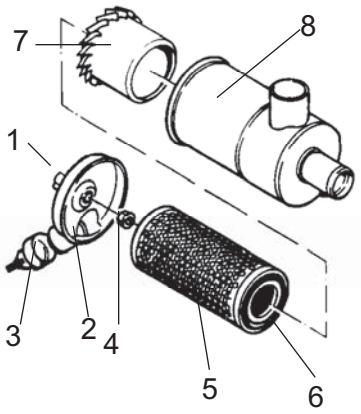


Fig. Air filter
1. Wing nuts
2. Cover
3. Dust extractor valve
4. Nut
5. Filter cartridge
6. Seal
7. Guide
8. Filter case

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.

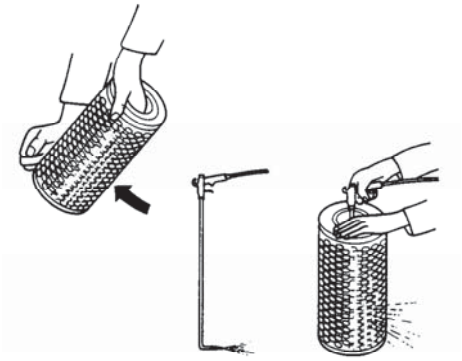


Fig. Cleaning of the filter cartridge.

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.

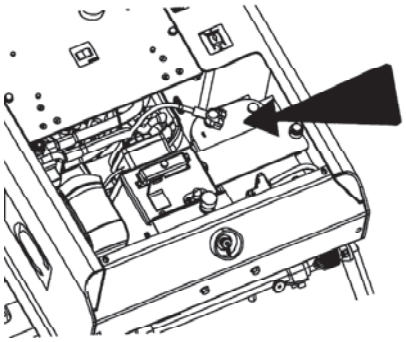


Fig. Battery location

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.

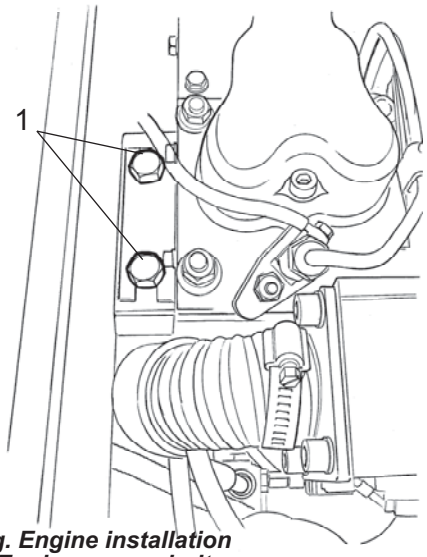


Fig. Engine installation
1. Engine spacer bolts

Inspection of engine spacer bolts

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

Maintenance - 1000h

Ensue 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

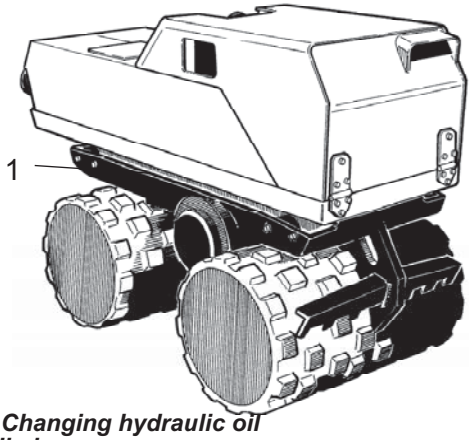


Fig. Changing hydraulic oil
1. Oil plug

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.

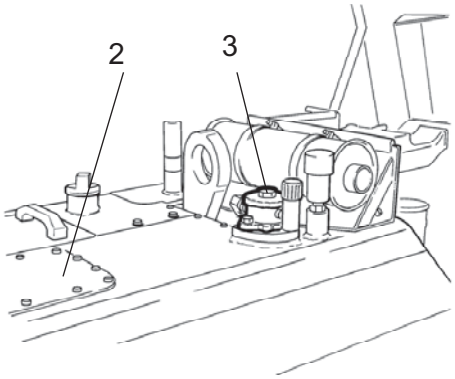


Fig. Hydraulic oil change
2. Cover
3. Filter element

4. Change filter element (3).

5. Fill with hydraulic oil.

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

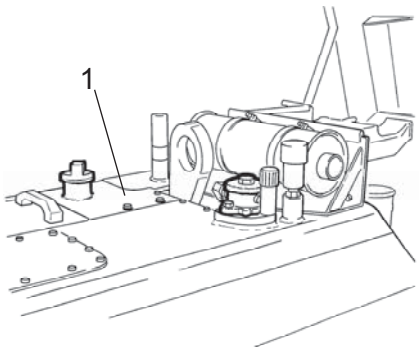


Fig. Fuel tank
1. Fuel tank

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.

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