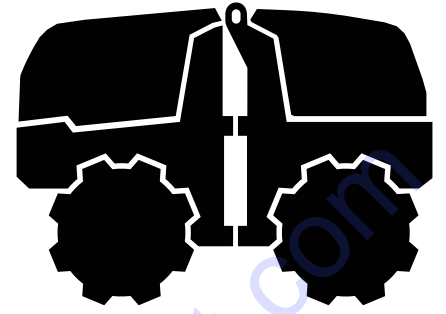




# Husqvarna®



LP 9505

en-GB Operator's manual

1 - 46

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## Introduction

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### Owner responsibility

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**WARNING:**

Compaction, especially when DRY compaction, generates dust that comes from the material being compacted, which frequently contains silica. Silica is a basic component of sand quartz, brick clay, granite and numerous other minerals and rocks. Exposure to excessive amount of such dust can cause:

Respiratory disease (affecting your ability to breathe), including chronic bronchitis, silicosis and pulmonary fibrosis from exposure to silica. These diseases may be fatal;

Skin irritation and rash.

Cancer according to NTP\* and IARC\*\*/ National Toxicology Program International Agency for Research on Cancer.

Take precautionary steps:

Avoid inhalation of and skin contact with dust, mist and fumes.

Wear and ensure that all bystanders wear appropriate respiratory protection such as dust masks designed to filter out microscopic particles. (See OSHA 29 CFR Part 1926.1153).

To minimize dust emissions, wet compact when feasible. If dry compaction is necessary, use an appropriate dust extractor.

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It is the owner's/employers's responsibility that the operator has sufficient knowledge about how to use the product safely. Supervisors and operators must have read and understood the Operator's Manual. They must be aware of:

- The product's safety instructions.
- The product's range of applications and limitations.
- How the product is to be used and maintained.

National/Local regulations could restrict the use of this product. Find out what regulations are applicable where you work before you start using the product.

### Proposition 65

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**WARNING:**

The engine exhaust from this product contains chemicals known for the State of California causes cancer, birth defects or other reproductive harm.

---

### Product description

The trench compactor LP 9505 is a articulated joint trench compactor operated with a radio remote control. It has a robust design.

To choose the correct accessories, see the spare parts list.

### Intended use

The product is suitable for compaction of medium to deep layers of cohesive and granular soils on limited areas such as trenches, construction back-fills and on roads. No other use is permitted.

The LP trench compactor must only be used in well-ventilated areas, as is the case for all combustion engine machines.

The LP trench compactor has hydraulic brakes, and must therefore not be towed behind vehicles.

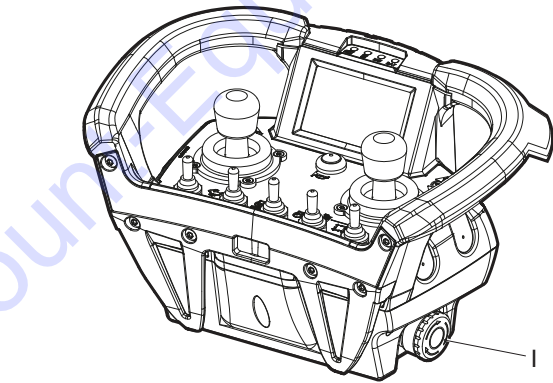
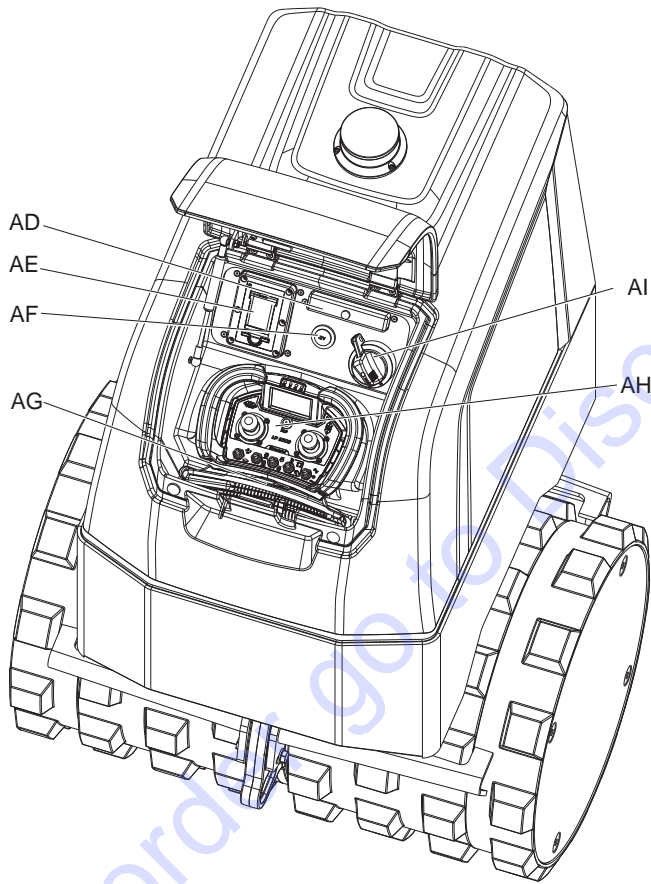
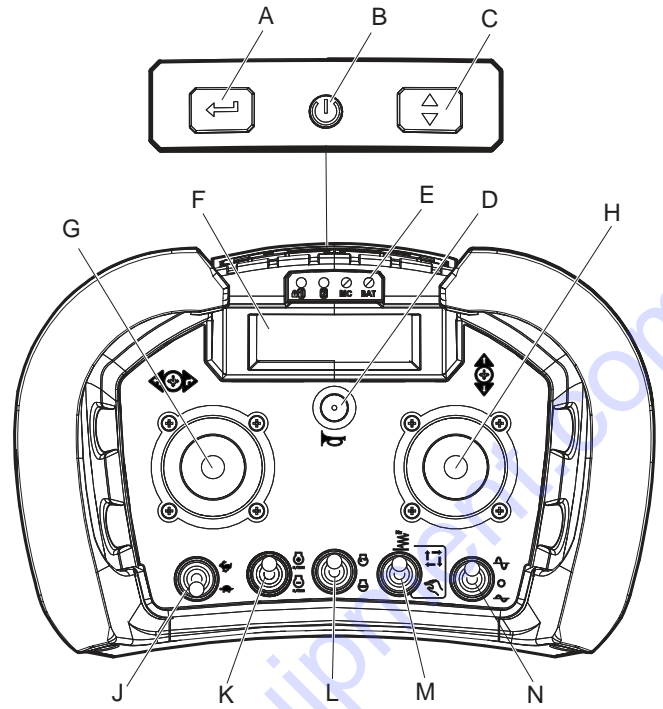
Never operate on steeper slopes than recommended in this manual.

For professional use only.



- M. Radio receiver
- N. Electronic Control Unit (ECU)
- O. Antenna
- P. Service port
- Q. Rotating beacon
- R. Starter battery
- S. Buzzer
- T. Fuel suction strainer
- U. Fuel tank
- V. Fuel filling cap
- W. Engine oil filling cap
- X. Cooling water cap
- Y. Cooling water expansion tank
- Z. Engine oil filter
- AA. Silencer
- AB. Air filter
- AC. Horn

## Remote control

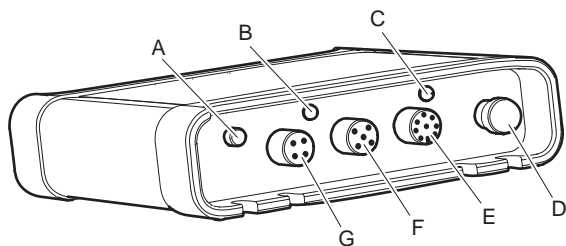


- AD. Fuse box
- AE. Radio battery charger
- AF. 12V power socket
- AG. Cable for cable remote control
- AH. Remote control
- AI. Battery disconnecter

- A. Enter
- B. ON/OFF remote control
- C. Scroll up/down, long press to scroll fast
- D. Horn
- E. Indicator for battery voltage
- F. Display
- G. Joystick, right/left
- H. Joystick, forward/reverse
- I. Machine stop
- J. Operating speed
- K. Engine rpm
- L. Engine, start/stop
- M. Vibration, manual/automatic
- N. Vibration, high/low amplitude

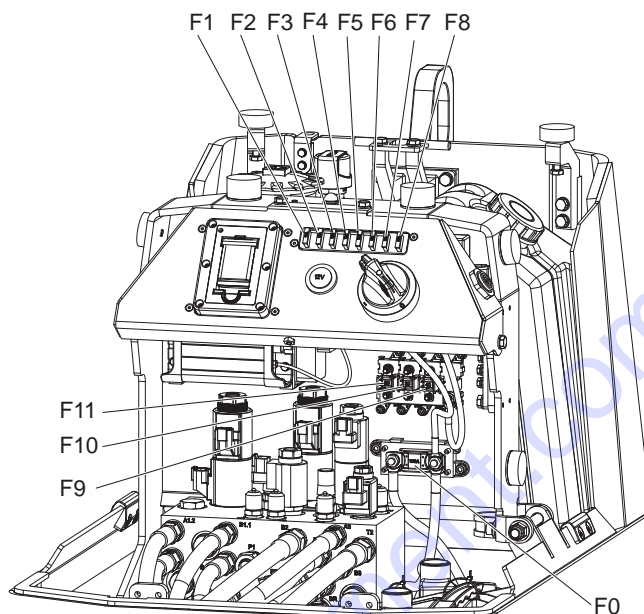
## Radio receiver

The radio receiver is placed in the electrical consol under the rear hood.



- A. Antenna
- B. Status LED
- C. RX LED
- D. Pairing button
- E. Cable remote control
- F. CAN
- G. Power

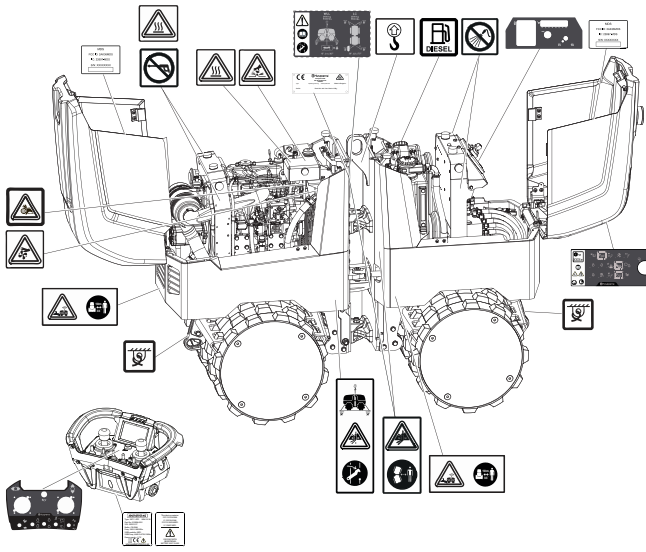
## Fuses



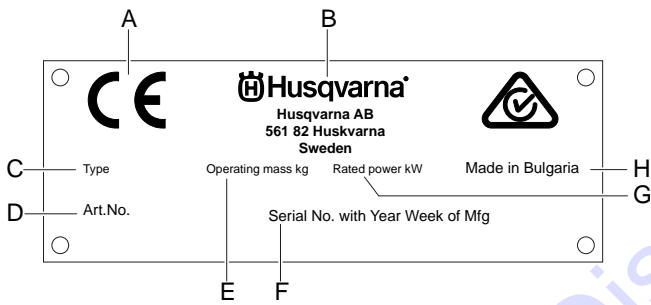
- F0** - 150A, Starter motor.
- F1** - 7.5A, ECU.
- F2** - 7.5A, ECU.
- F3** - 7.5A, ECU.
- F4** - 7.5A, ECU.
- F5** - 7.5A, ECU.
- F6** - 5A, Diesel pump and diesel tank level switch.
- F7** - 5A, Radio battery charger.
- F8** - 10A, 12V power socket.
- F9** - 40A, Throttle solenoid.
- F10** - 30A, Starter motor and shut-off solenoid.
- F11** - 30A, Glow plugs.

# Symbols on the product

The machine is fitted with symbols and decals containing important information about personal safety and machine maintenance. The decals must be in such condition that they are easy to read. New decals can be ordered from the spare parts list.



## Machine data plate

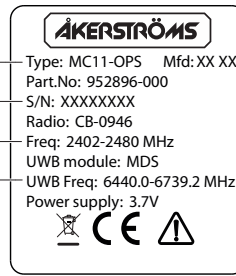


- A. The CE symbol means that the machine is EC-approved. See the EC Declaration of Conformity which is delivered with the machine for more information.
- B. Company logo, name and address
- C. Machine type
- D. Article number
- E. Operating mass kg
- F. Serial number with year and week of manufacturing
- G. Rated power kW
- H. Made in Bulgaria

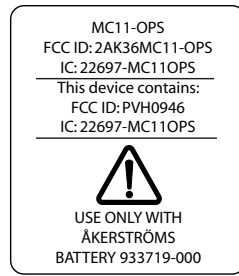
**Note:** Other symbols or decals on the machine refer to certification requirements for some markets.

## Remote control data labels

The data labels are positioned on the bottom of the remote control.

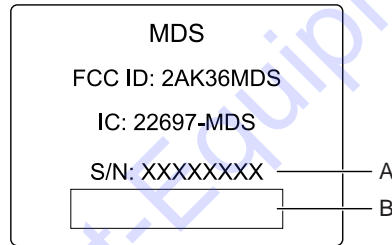


- A. Model designation
- B. Serial number
- C. Frequency band
- D. Frequency band UWB module



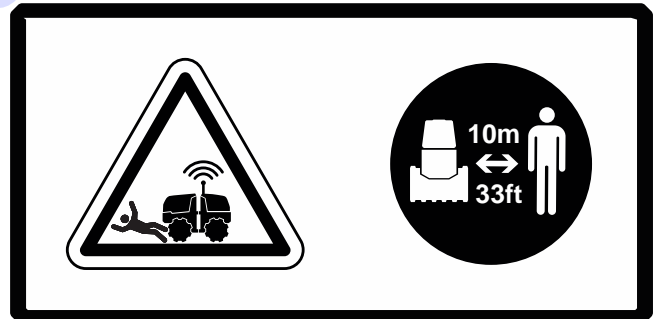
## MDS data labels

The data labels are positioned on the front MDS module and the rear MDS module.



- A. Serial number
- B. Bar code

## Remote controlled machine warning



The machine is remote controlled, operate the machine in a safe manner. Keep distance to the machine during operation.

### Articulation warning



Articulated machine contains moving parts, which gives risks to squeeze the operator. Keep distance to the machine during operation.

### Rotating fan blade warning



Warning for rotating fan blade. Keep your hands at a safe distance from the danger zone.

### Rotating parts warning



Warning for rotating parts. Keep your hands at a safe distance from the danger zone.

### Pressure cap warning



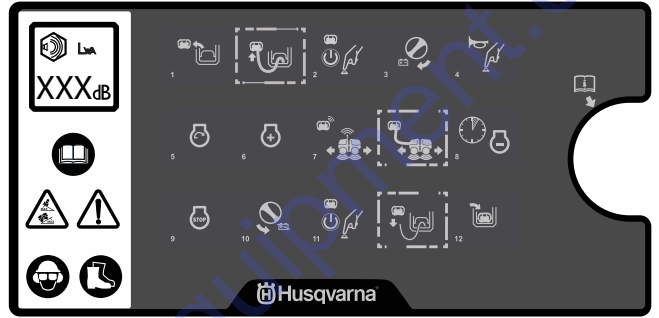
Warning for cap under pressure.

### Hot surface warning



Warning for hot surface.

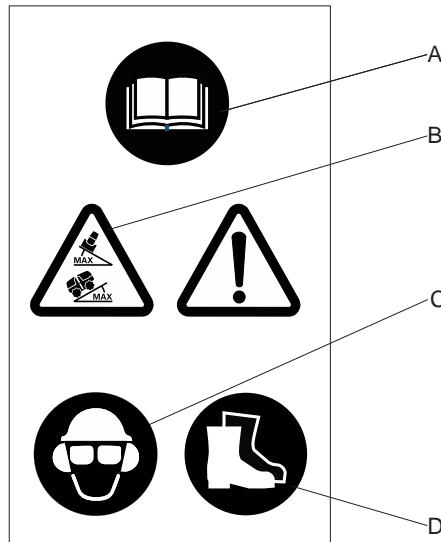
### Start instruction decal



The decal shows the start instruction procedure.



The label indicates the guaranteed noise level corresponding to EC-directive 2000/14/EC. See "Technical data" for accurate noise level.



- A. Operator's manual. The operator must read the safety, operation and maintenance instructions before operating the machine.
- B. Safety decal, maximum slope angle. The operator must read the safety, operation and maintenance instructions before operating the machine.
- C. Use helmet, ear and eye protectors.



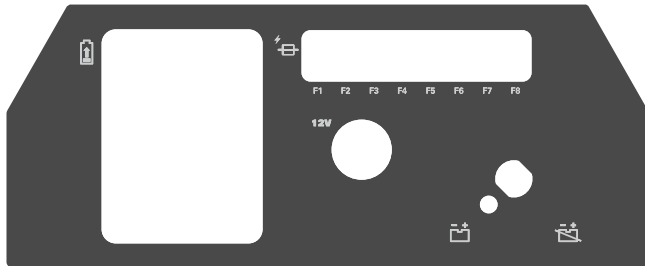
D. Use personal protective equipment.

### Remote control decal



The decal shows the functions on the remote control.

### Electric panel decal



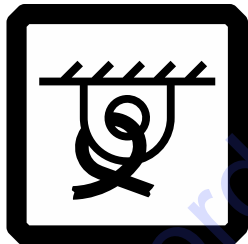
The decal shows the functions on the electrical panel.

### Diesel fuel decal



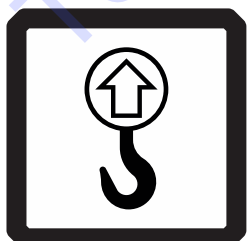
The decal shows where to fill the diesel fuel on the machine.

### Securing point decal



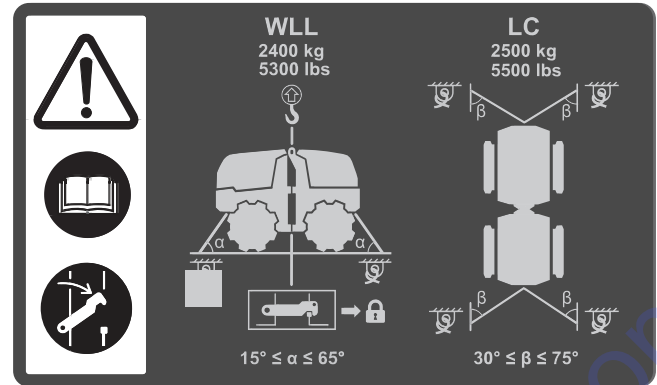
The decal shows the securing point on the machine.

### Lifting point decal



The decal shows the lifting point on the machine.

### Lift and tie down decal



The decal shows how to lift and tie down the machine.

### Do not spray with water decal



Do not spray with water.

### Squeeze warning



Warning for the risk to be squeezed in the articulation joint during lift and transport. Always lock the articulation joint before lifting and transportation.

## Do not pressure wash decal



Do not wash with high pressure.

## Safety

To reduce the risk of serious injury or death to yourself or others, read and understand the Operator's manual before installing, operating, repairing, maintaining, or changing accessories on the machine.

Post this Operator's manual at work locations, provide copies to employees, and make sure that everyone reads the Operator's manual before operating or servicing the machine. For professional use only.

In addition, the operator or the operator's employer must assess the specific risks that may be present as a result of each use of the machine.

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

### Safety definitions



#### **WARNING:**

Used if there is risk of injury or death for the operator or bystanders if the instructions in the manual are not obeyed.



#### **CAUTION:**

Used if there is a risk of damage to the product, other materials or the adjacent area if the instructions in the manual are not obeyed.

**Note:** Used to give more information that is necessary in a given situation.

### Personal precautions and qualifications

Only qualified and trained persons may operate or maintain the machine. They must be physically able to handle the bulk, weight, and power of the machine. Always use your common sense and good judgement.

### Personal protective equipment

Always use approved protective equipment. Operators and all other persons in the working area must wear protective equipment, including at a minimum:

- Protective helmet
- Hearing protection
- Impact resistant eye protection with side protection
- Respiratory protection when appropriate
- Protective gloves
- Proper protective boots

- Appropriate work overall or similar clothing (not loose-fitting) that covers your arms and legs.

### Drugs, alcohol or medication



#### **WARNING: Drugs, alcohol or medication**

Drugs, alcohol or medication may impair your judgment and powers of concentration. Poor reactions and incorrect assessments can lead to severe accidents or death.

- ◆ Never use the machine when you are tired or under the influence of drugs, alcohol or medication.
- ◆ No person who is under the influence of drugs, alcohol or medication may operate the machine.

### Operation, precautions



#### **WARNING: Explosion hazard**

If a warm machine or exhaust pipe comes into contact with explosives, an explosion could occur. During operating with certain materials, sparks and ignition can occur. Explosions will lead to severe injuries or death.

- ◆ Never operate the machine in any explosive environment.
- ◆ Never use the machine near flammable materials, fumes or dust.
- ◆ Make sure that there are no undetected sources of gas or explosives.
- ◆ Avoid contact with the warm exhaust pipe or the bottom of the machine.



#### **WARNING: Fire hazard**

If a fire starts in the machine, it can cause injury.

- ◆ If possible use an ABE-class powder extinguisher, otherwise use a BE-type carbon dioxide fire extinguisher.



#### **WARNING: Fuel hazard**

The fuel is flammable and fuel fumes can explode when ignited, causing serious injury or death.

- ◆ Protect your skin from contact with the fuel. If fuel has penetrated the skin, consult a qualified health professional.
- ◆ Never remove the filler cap, or fill the fuel tank when the machine is hot.
- ◆ Fill the fuel tank outdoors or in a clean and well ventilated place, free from sparks and open flames. Fill the fuel tank at least 10 m (30 ft) from the place where the machine is to be used.
- ◆ Release the filler cap slowly to let pressure escape.
- ◆ Never overfill the fuel tank.
- ◆ Make sure the filler cap is screwed on when the machine is used.
- ◆ Avoid spilling fuel on the machine, wipe off any spilled fuel.
- ◆ Check regularly for fuel leaks. Never use the machine if it is leaking fuel.
- ◆ Never use the machine in the proximity of material that can generate sparks. Remove all hot or spark-generating devices before starting the machine.
- ◆ Never smoke when filling the fuel tank or when working with the machine or servicing it.
- ◆ Only store fuel in a container that is specially constructed and approved for the purpose.
- ◆ Consumed fuel and oil containers must be taken care of and returned to the retailer.
- ◆ Never use your fingers to check for fluid leaks.



**WARNING: Unexpected movements**

The machine is exposed to heavy strains during operation. If the machine breaks or gets stuck, there may be sudden and unexpected movement that can cause injuries.

- ◆ Always inspect the machine prior to use. Never use the machine if you suspect that it is damaged.
- ◆ Keep your feet away from the machine.
- ◆ Never sit on the machine.
- ◆ Never strike or abuse the machine.
- ◆ Pay attention and look at what you are doing.



**WARNING: Engine running hazard**

Vibrations from the engine can cause material changes, this can cause the machine to move and cause injuries.

- ◆ Never leave the machine with the engine running.
- ◆ Ensure that only authorized personnel operate the machine.
- ◆ Never give the remote control to anyone who is not fully familiar with the machine, its operation and safety directives.



**WARNING: Operational hazard**

If the operator is not fully familiar with the remote control system when operating the machine, it may lead to sudden and unexpected movements of the machine which can cause injuries.

- ◆ Always study this Operational manual carefully before operating the machine.
- ◆ Only trained personnel who are fully familiar with the remote control system may operate the machine.



**WARNING: System error hazard**

Errors in the system can cause injury. If any error occurs in the system:

- ◆ Push the machine stop button on the remote control.
- ◆ Switch off the remote control.
- ◆ Switch off the battery disconnecter.



**WARNING: Dust and fume hazard**

Dusts and/or fumes generated or dispersed when using the machine may cause serious and permanent respiratory disease, illness, or other bodily injury (for example, silicosis or other irreversible lung disease that can be fatal, cancer, birth defects, and/or skin inflammation).

Some dusts and fumes created by compaction work contain substances known to cause respiratory disease, cancer, birth defects, or other reproductive harm. Some examples of such substances are:

- Crystalline silica, cement, and other masonry products.
- Arsenic and chromium from chemically-treated rubber.
- Lead from lead-based paints.

Dust and fumes in the air can be invisible to the naked eye, so do not rely on eye sight to determine if there is dust or fumes in the air.

To reduce the risk of exposure to dust and fumes, do all of the following:

- ◆ Perform site-specific risk assessment. The risk assessment must include dust and fumes created by the use of the machine and the potential for disturbing existing dust.
- ◆ Use proper engineering controls to minimize the amount of dust and fumes in the air and to minimize build-up on equipment, surfaces, clothing, and body parts. Examples of controls include: exhaust ventilation and dust collection systems, and water sprays. Control dusts and fumes at the source where possible. Make sure that controls are properly installed, maintained and correctly used.
- ◆ Wear, maintain and correctly use respiratory protection as instructed by your employer and as required by

occupational health and safety regulations. The respiratory protection must be effective for the type of substance at issue (and if applicable, approved by relevant governmental authority).

- ◆ Work in a well ventilated area.
- ◆ If the machine has an exhaust, direct the exhaust so as to reduce disturbance of dust in a dust filled environment.
- ◆ Operate and maintain the machine as recommended in the operating and safety instructions
- ◆ Wear washable or disposable protective clothes at the worksite, shower and change into clean clothes before leaving the worksite to reduce exposure of dust and fumes to yourself, other persons, cars, homes, and other areas.
- ◆ Avoid eating, drinking, and using tobacco products in areas where there is dust or fumes.
- ◆ Wash your hands and face thoroughly as soon as possible upon leaving the exposure area, and always before eating, drinking, using tobacco products, or making contact with other persons.
- ◆ Comply with all applicable laws and regulations, including occupational health and safety regulations.
- ◆ Participate in air monitoring, medical examination programs, and health and safety training programs provided by your employer or trade organizations and in accordance with occupational health and safety regulations and recommendations. Consult with physicians experienced in relevant occupational medicine.
- ◆ Work with your employer and trade organization to reduce dust and fume exposure at the worksite and to reduce the risks. Effective health and safety programs, policies and procedures for protecting workers and others against harmful exposure to dust and fumes must be established and implemented based on advice from health and safety experts. Consult with experts.



**WARNING: Exhaust gas hazard**

The exhaust gas from the machine's combustion engine contains carbon monoxide which is poisonous, and chemicals known to cause cancer, birth defects, or other reproductive harm. Inhalation of exhaust fumes can cause serious injury, illness, or death.

- ◆ Never inhale exhaust fumes.
- ◆ Ensure good ventilation (extraction of air by fan if necessary).



**WARNING: Battery hazard**

The battery contains poisonous and corrosive sulphuric acid and can explode, this can cause injury.

- ◆ Never expose the battery to naked flames, sparks, strong heat, or anything else where there is a risk of explosion.

- ◆ Avoid getting acid on your skin, clothes or on the machine.
- ◆ Wear protective glasses to avoid getting acid in your eyes, if you get acid in your eyes rinse them with water for at least 15 minutes and seek immediate medical treatment.
- ◆ Never short-circuit the battery poles when fitting or replacing the battery.



**WARNING: Projectiles**

Failure of the work piece, of accessories, or even of the machine itself may generate high velocity projectiles. During operating, splinters or other particles from the compacted material may become projectiles and cause personal injury by striking the operator or other persons. To reduce these risk:

- ◆ Use approved personal protective equipment and safety helmet, including impact resistant eye protection with side protection.
- ◆ Make sure that no unauthorised persons trespass into the working zone.
- ◆ Keep the workplace free from foreign objects.



**WARNING: Hydraulic system hazard**

Hydraulic hoses are made of rubber and can deteriorate with age, with the consequent risk of splitting. This can cause injuries.

- ◆ Maintain the hydraulic system regularly.
- ◆ Whenever there are uncertainties as to durability and wear, replace hoses with new original hoses.



**WARNING: Slope hazards**

During operation, secure the machine so it can not turn over or slip if it is placed on a sloping ground. A turn over or slip can lead to severe accidents and result in personal injury.

- ◆ Always ensure that all personnel in the working area are higher up the slope than the machine.
- ◆ Always operate the machine straight up and down when placed on slopes.
- ◆ Never exceed the maximum recommended slope angle when operating the machine. Follow the recommendations.



**WARNING: Motion hazards**

When using the machine to perform work-related activities, you may experience discomfort in the hands, arms, shoulders, neck, or other parts of the body.

- ◆ Adopt a comfortable posture while maintaining secure footing and avoiding awkward off-balanced postures.
- ◆ Changing posture during extended tasks may help avoid discomfort and fatigue.
- ◆ In case of persistent or recurring symptoms, consult a qualified health professional.

**WARNING: Trapping hazard**

There is a risk of neck ware, hair, gloves, and clothes getting dragged into or caught by rotating machine parts. This may cause choking, scalping, lacerations, or death. To reduce the risk:

- ◆ Never grab or touch a rotating machine part.
- ◆ Avoid wearing clothing, neck ware or gloves that may get caught.
- ◆ Cover long hair with a hair net.

**WARNING: Electrical hazard**

The machine is not electrically insulated. If the machine comes into contact with electricity, may result in serious injuries or death.

- ◆ Never operate the machine near any electric wire or other source of electricity.
- ◆ Make sure that there are no concealed wires or other sources of electricity in the working area.

**WARNING: Concealed object hazard**

During operating, concealed wires and pipes constitute a danger that can result in serious injury.

- ◆ Check the composition of the material before operating.
- ◆ Watch out for concealed cables and pipes for example electricity, telephone, water, gas, and sewage lines.
- ◆ If the machine seems to have hit a concealed object, switch off the machine immediately.
- ◆ Make sure that there is no danger before continuing.

**WARNING: Involuntary start**

Involuntary start of the machine may cause injury.

- ◆ Keep your hands away from the start and stop device until you are ready to start the machine.
- ◆ Learn how the machine is switched off in the event of an emergency.

**WARNING: Noise hazard**

High noise levels can cause permanent and disabling hearing loss and other problems such as tinnitus (ringing, buzzing, whistling, or humming in the ears).

To reduce risks and prevent an unnecessary increase in noise levels:

- ◆ Risk assessment of these hazards and implementation of appropriate controls is essential.
- ◆ Operate and maintain the machine as recommended in these instructions.
- ◆ If the machine has a silencer, check that it is in place and in good working condition.
- ◆ Always use hearing protection.

**Transport, precautions****WARNING: Loading and unloading hazard**

When the machine is lifted by a crane and similar appliance, this can lead to injury.

- ◆ Use marked lifting points.
- ◆ Make sure that all lifting devices are dimensioned for the weight of the machine.
- ◆ Never remain under or in the immediate vicinity of the machine.

**Maintenance, precautions****WARNING: Machine modification**

Any machine modification may result in bodily injuries to yourself or others.

- ◆ Never modify the machine. Modified machines are not covered by warranty or product liability.
- ◆ Always use original parts and accessories approved by Husqvarna.
- ◆ Change damaged parts immediately.
- ◆ Replace worn components in good time.

**WARNING: Hot oil hazard**

When changing the oil or oil filter on a hot machine, there is a risk of burns.

- ◆ Wait until the machine has cooled down before changing the oil or oil filter.

**WARNING: High temperature**

The machine become hot during operation. Touching warm parts can lead to burns.

- ◆ Never touch a hot cover.
- ◆ Never touch a hot exhaust pipe.
- ◆ Never touch a hot frame.
- ◆ Wait until the machine has cooled down before opening the covers or carrying out maintenance work.

**Note:** Any use of a quick-charger to charge the battery can shorten the life time of the battery.

**Storage, precautions**

- ◆ Keep the machine in a safe place, out of the reach of children and locked up.

# Operation



## **WARNING: Danger zone hazard**

Operator and other personnel must stay clear of the danger zone, the machine is powerful and can cause personal injuries.

- ◆ It is not allowed to operate the machine within the danger zone of 2 m (6.6 ft).
- ◆ You are responsible to ensure that animals and onlookers are not within the working area. Do not operate until the working area is clear and you are standing firmly. It is not allowed to operate the machine when any other personnel is within the hazard zone of 10 m (33 ft).
- ◆ Always keep the working area and the machine within the range of vision.



## **WARNING: Engine running hazard**

Vibrations from the engine can cause material changes, this can cause the machine to move and cause injuries.

- ◆ Never leave the machine with the engine running.
- ◆ Ensure that only authorized personnel operate the machine.
- ◆ Never give the remote control to anyone who is not fully familiar with the machine, its operation and safety directives.

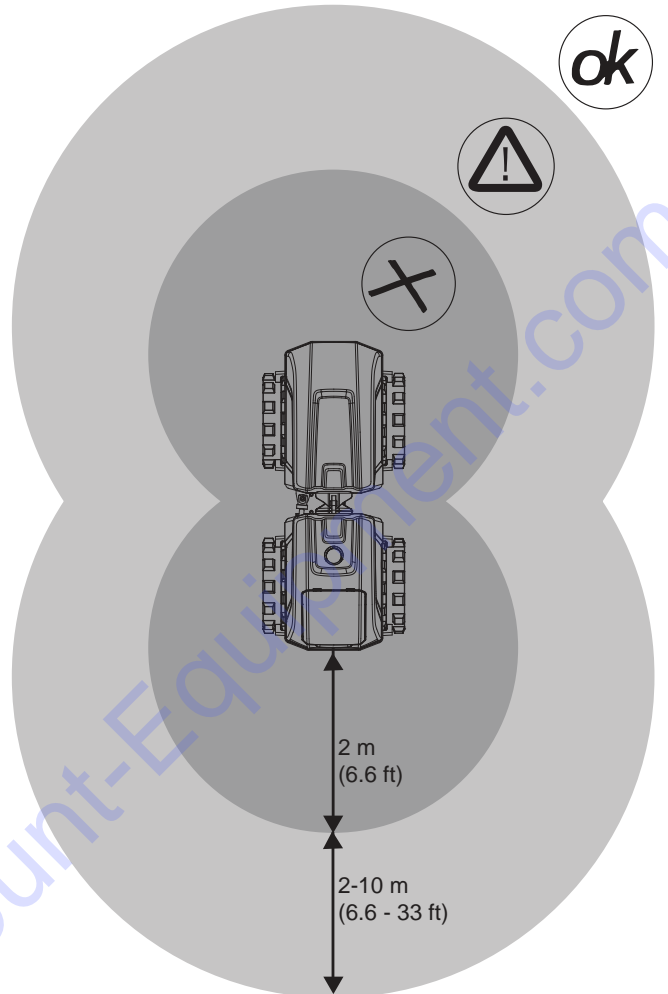


## **WARNING: Operational hazard**

If the operator is not fully familiar with the remote control system when operating the machine, it may lead to sudden and unexpected movements of the machine which can cause injuries.

- ◆ Always study this Operational manual carefully before operating the machine.
- ◆ Only trained personnel who are fully familiar with the remote control system may operate the machine.

## Danger zone



- Danger zone is within 2 m (6.6 ft) of the machine.
- Hazard zone is between 2 and 10 m (6.6 and 33 ft) from the machine.
- Safe zone is greater than 10 m (33 ft) from the machine.
- Do not operate the machine at a greater distance than 20 m (66 ft).
- Always keep the working area and the machine within the range of vision.

## Automatic hydraulic brakes

The machine is equipped with automatic hydraulic brakes that can be activated at any time by:

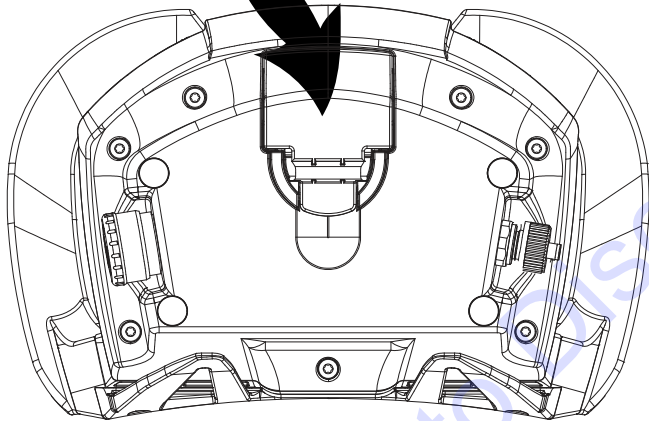
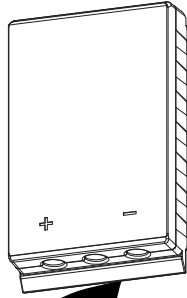
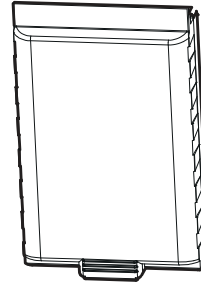
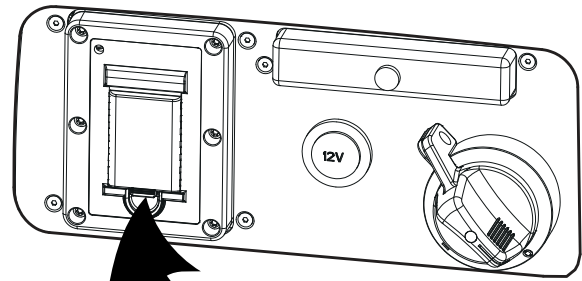
1. Releasing the joysticks on the remote control.
2. Setting rpm to low (-).
3. Pressing the machine stop (will also stop the engine).
4. Turning over the remote control.

## Remote control

The remote control and radio receiver are paired together. If another remote control is used, it must be paired with the radio receiver. See section "Pairing function" for more information.

The range is between 2 m (6 ft) to approximately 20 m (66 ft), depending on the surroundings.

- ◆ Two Li-Ion batteries are supplied with the machine on delivery.
- ◆ Insert the battery into the battery compartment on the remote control's backside. Open the hatch and place the battery with connector plates first and downwards. Remove the battery by opening the hatch and lift it up.

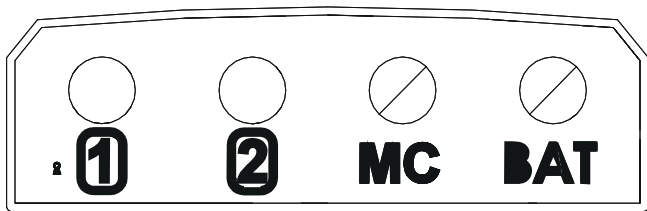


- ◆ The operating time for a fully-charged battery is about 8 hours. The remote control has a yellow LED that flashes and makes a warning sound, when it is time to charge the battery. The battery can then be used for another 15 minutes. Change the battery and make sure that the slot and contact surfaces are clean.
- ◆ The extra battery can be charged in the charger on the machine during operation. The charger is mounted in the electrical panel, under the hatch. Before charging the battery, make sure that the charger's and battery's contact surfaces are clean and dry.

- ◆ Radio communication is interrupted when the battery is removed from the remote control.
- ◆ The remote control can be used without the battery if it is connected to the machine with the supplied cable.
- ◆ The battery must be trickle-charged every four weeks, if the remote control is not used. Remove the battery if the remote control is not used for a long period.
- ◆ An optional desktop battery charger can be ordered, see the spare parts list.

## LED panel indications

**Note:** If the remote control detect a fault during start up or operation, on any of the remote control's self-tests the BAT status indicator will indicate continuously red light, after that the remote control will shut down.

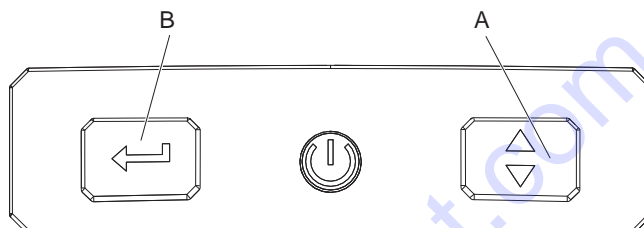


LED	Indications	Description
1	Constant yellow light.	Front MDS out of function.
2	Constant yellow light.	Rear MDS out of function.
MC	No light.	No link established.
	Flashing green light.	Link established. Main contactor OFF.
	Constant green light.	Link established. Main contactor ON.
	Constant yellow light.	Main contactor ON. Movements disabled due to tilting of the remote control.
	Constant red light.	Main contactor locked. MC can not be activated due to one of the following reasons: - Machine STOP button is pressed. - Tilting of the remote control. - Joystick not centered. - Configuration menus (User or Admin) active.
BAT	Flashing green light.	OK
	Flashing yellow light.	Low battery voltage. Operation can continue approximately 15 minutes depending on battery condition. Change the battery.
	Constant yellow light.	Battery empty. Remote control will shut-off.
	Constant red light.	Hardware fault.

## Configuration menu

There are two access levels to the configuration menu, one for **users** (Users Config.1 (1)) and one **advanced** (Misc Config.1 (1)), the advanced menu is PIN locked.

- ◆ When the remote control is started, the menus can be accessed.
- ◆ To enter the **user menu**, press and hold down Enter (B) approximately 2 seconds.



- ◆ The **user menu** has as default the following default configurations; Auto-off 2 minutes, Power save off, Brightness 25%, LCD contrast 6, and PIN 0000. With default value 0000, the remote control can be started without PIN.

User Config.1(1)	Choices				
Auto-off	2 min	5 min	15 min	Off	
Power save	Off	On			
Brightness	25%	50%	75%	100%	Off
LCD contrast	6	0-20			
PIN (user)	0000	0000-9999			
Exit	→				

- ◆ To enter the **advanced menu**, press and hold down Enter (B) and Scroll up/down (A) approximately 2 seconds.
- ◆ The **advanced menu** is PIN locked, the default value is 0000.

Misc. Config.1(1)	Choices	
PIN (admin)	0000	0000-9999
Service mode	----	
Exit	→	

- ◆ To change the configuration values; Scroll up/down (A) until wanted row is entered and highlighted, long press to scroll fast. To choose the wanted row, press Enter (B). Scroll up/down (A) to change the value and then press Enter (B).

## PIN codes

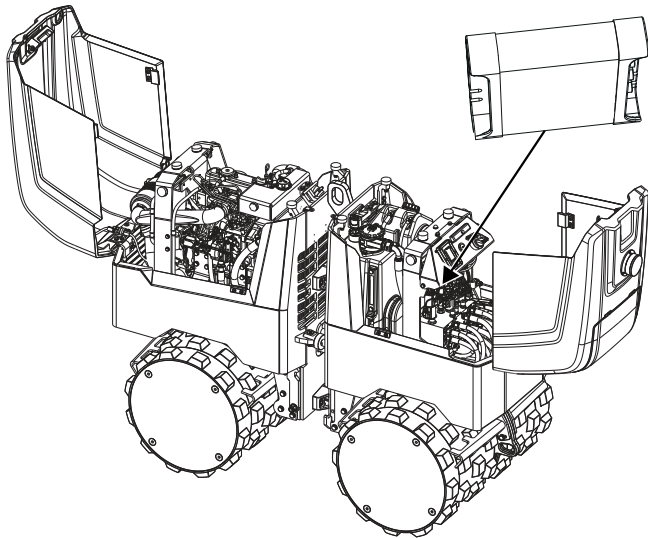
- ◆ PIN (user) is necessary to start the remote control and shall be set by the operator in order to prevent unauthorized access to the machine. With default value 0000, the remote control can be started without PIN.
- ◆ PIN (admin) shall be set by owner at delivery in order to lock the admin menu and secure access if PIN (user) is



changed. Default value is 0000. This PIN is necessary to enter the advanced configuration menu and it can also be used to start the remote control and reset or change the PIN (user) in the user menu.

## Radio receiver

The radio receiver is mounted in the electrical console under the rear hood.



For radio or general indication, a LED labeled RX is used.

Indication on RX LED	Status
Fast green light 50/50 ms.	No connection.
Slow green light 30/970 ms.	The radio receiver is connected. Safety relay (RCSS) is ON.
Green light 50/250 ms.	The radio receiver is connected. Safety relay (RCSS) is OFF.
Steady yellow light.	50% timeout.
Constant red light.	Internal fault, RX (radio receiver).
Fast flashing red light.	Internal fault, TX (remote control).

## Pairing function

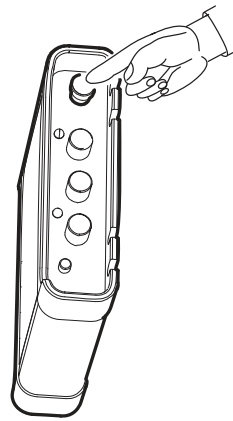
The radio receiver and remote control have a pairing function so that a remote control can be paired with the radio receiver. Only a paired remote control and radio receiver can be used.

The radio receiver provides indications, visible from outside, to show that the radio receiver is in pairing mode and that the remote control has successfully been paired with the radio receiver.

The time to complete the pairing may be up to 30 seconds.

### Set the radio receiver in pairing mode:

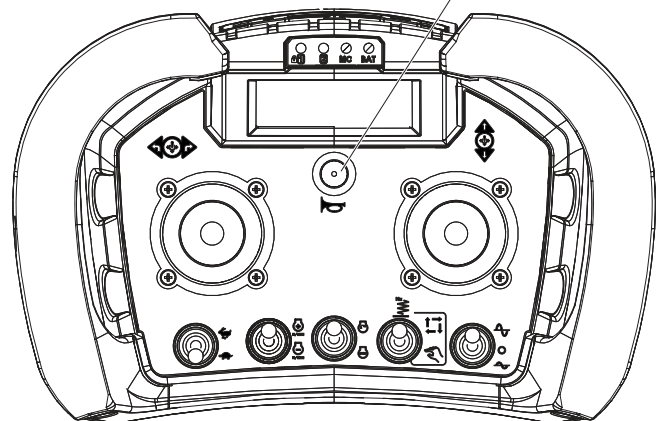
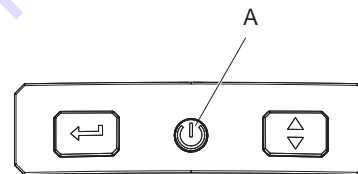
1. Turn the battery disconnecter to position I.
2. Press the black button until pairing is indicated on the RX LED, approximately 3 seconds.



Pairing indication	Radio receiver indication on RX LED
In pairing mode	Green/yellow 50/50 ms.
Paired	Steady green.

### Set the remote control to pairing mode:

3. Move and hold one of the joysticks from center position.
4. Start the remote control by pressing the ON/OFF button (A).
5. Keep holding the joystick out and press the horn button (B) until pairing is indicated on the display and the BAT LED. Approximately 10 seconds.



6. Release the joystick and horn button.

Remote control display	Remote control LED	Pairing indications
<b>Pairing:</b> <div style="border: 1px solid black; padding: 5px; margin: 5px;">           Pairing Mode            ***Pairing!***         </div>	Green/ yellow 100/100 ms.	Pairing
<b>Pairing ready:</b> <div style="border: 1px solid black; padding: 5px; margin: 5px;">           Pairing Mode            ***Pairing!***            BT connected            Pairing ready!            Restart unit         </div>	Steady green.	Pairing ready
<b>Link timeout:</b> <div style="border: 1px solid black; padding: 5px; margin: 5px;">           Pairing Mode            ***Pairing!***            BT ERROR            Pairing fail!            Restart unit!         </div>	Green/ yellow 100/100 ms.	Pairing failed

- ◆ When pairing has been successfully accomplished, restart the remote control by pressing the ON/OFF button. Restart the radio receiver by turning the battery disconnecter to 0 and back to 1. The remote control BAT LED will then show flashing green light 2s/1s.
- ◆ If pairing has not been indicated within 30 seconds, start all over again. If still no success, contact Discount-equipment

### Machine distance sensors

The machine is equipped with Machine Distance Sensors (MDS). MDS has the purpose to prevent the operator from operating the machine while in the danger zone < 2 m (6.6 ft) from the machine.



#### **WARNING: Squashing hazard**

The minimum distance between the operator and the machine must be at least 2 m (6.6 ft).

- ◆ Always ensure that the distance sensors are working properly and that the machine stops if the remote control is located within the danger zone.

**Note:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

**Note:** This device complies with Part 15 of the FCC Rules and with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

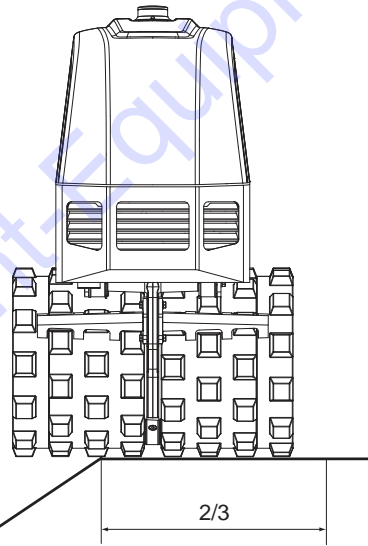
### Operating near edges



#### **WARNING: Overturning hazard**

When operating along edges, at least  $\frac{2}{3}$  of the machine must be on a surface with full bearing strength, otherwise the machine can tip over.

- ◆ Always ensure that all personnel in the working area are on the safe side of the edge.
- ◆ Switch off the machine and lift it back on surface with full bearing strength.



### Operating on slopes



#### **WARNING: Slope hazards**

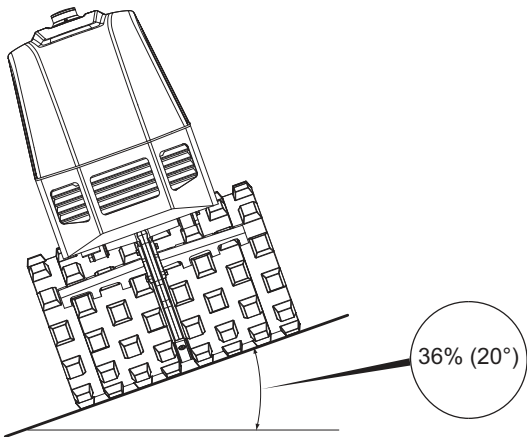
During operation, secure the machine so it can not turn over or slip if it is placed on a sloping ground. A turn over or slip can lead to severe accidents and result in personal injury.

- ◆ Always ensure that all personnel in the working area are higher up the slope than the machine.
- ◆ Always operate the machine straight up and down when placed on slopes.
- ◆ Never exceed the maximum recommended slope angle when operating the machine. Follow the recommendations.

**Note:** Remember that wet or loose ground, vibration switched ON, and driving speed can all cause the machine to turn over or slip even on a lesser slope than specified here. Always exercise extreme caution on sloping and uneven terrain.

## Tilt

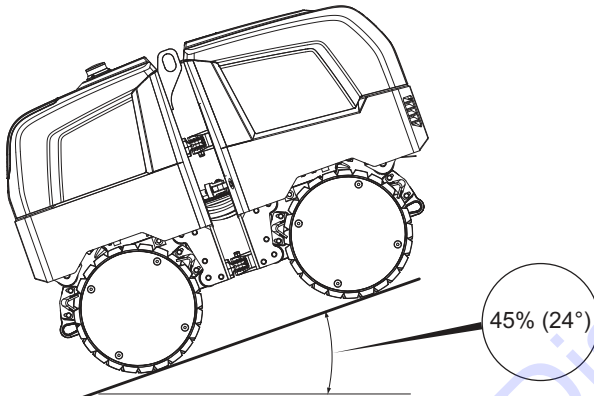
- ◆ The maximum tilt of the machine is 36% (20°).



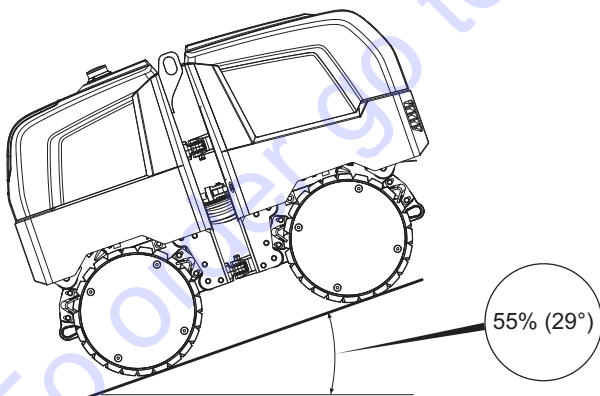
- ◆ The tilting angle is measured on a hard level surface with the machine stationary. Vibration switched OFF and all tanks full.

## Gradeability

- ◆ The maximum gradeability of the machine with vibration switched on is 45% (24°).



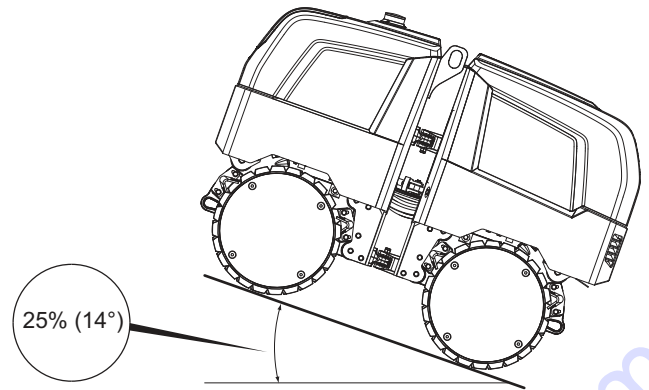
- ◆ The maximum gradeability of the machine with vibration switched off is 55% (29°).



- ◆ The inclination angle is measured on a hard level surface with the machine stationary. Vibration switched OFF and all tanks full.

## Operating downhill

- ◆ The maximum slope angle for operating the machine downhill is 25% (14°).

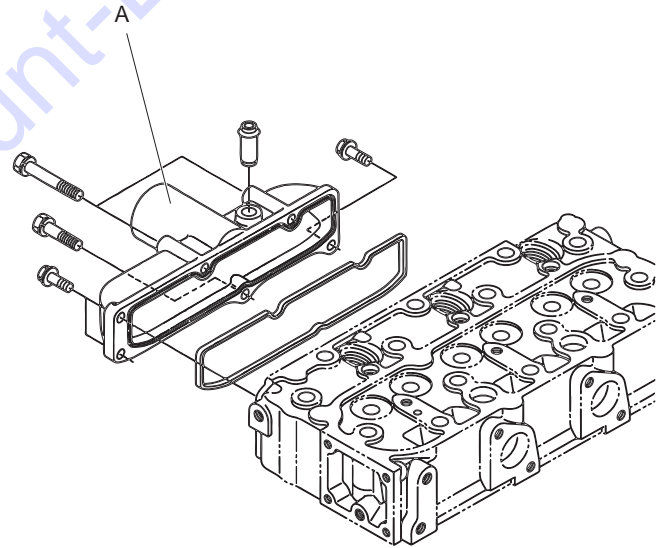


- ◆ The slope angle is measured on a hard level surface with the machine stationary. Vibration switched OFF and all tanks full.

## After machine turn over

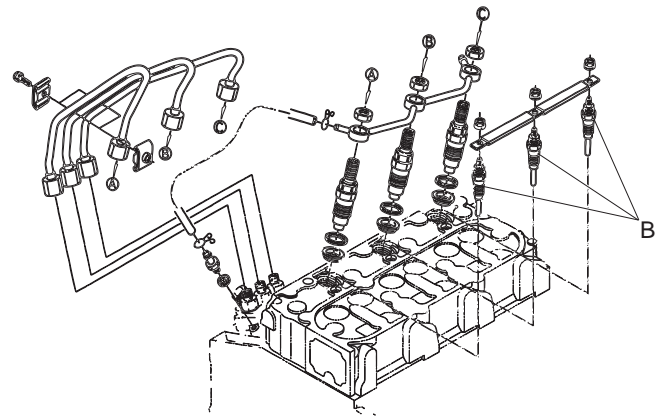
**Note:** Do not start the machine directly after the machine was turned over.

1. Disconnect electric connection to battery minus.
2. Remove the air cleaner rubber hose.
3. Remove the inlet manifold (A), and check if unusual amount/large quantity of oil is applied inside the manifold. A thin layer of oil on the wall inside is normal, it is coming from oil fork of the crank case ventilation.



If there is more oil than normal, follow the next steps.

4. Remove all three glow plugs (B).



5. Turn the crankshaft slowly by hand on front pulley bolt. If difficult to touch it, try to crank the engine by turning the fan (more than five turns).
6. Check if oil is pushed out of the glow plug holes.  
If yes, crank the engine until no oil comes out.
7. Clean the inlet manifold and air cleaner rubber hose.
8. Check if oil has entered the air cleaner.  
If yes, clean the service cover and replace the air filter elements.
9. Install the three glow plugs, service cover, and air cleaner rubber hose.
10. Reconnect electric connection to battery minus.
11. Check the engine oil level and refill if necessary.
12. Start the engine. Black smoke might appear within the first minutes of operation. This is normal after a machine turn over incident, when the engine has fallen on side.

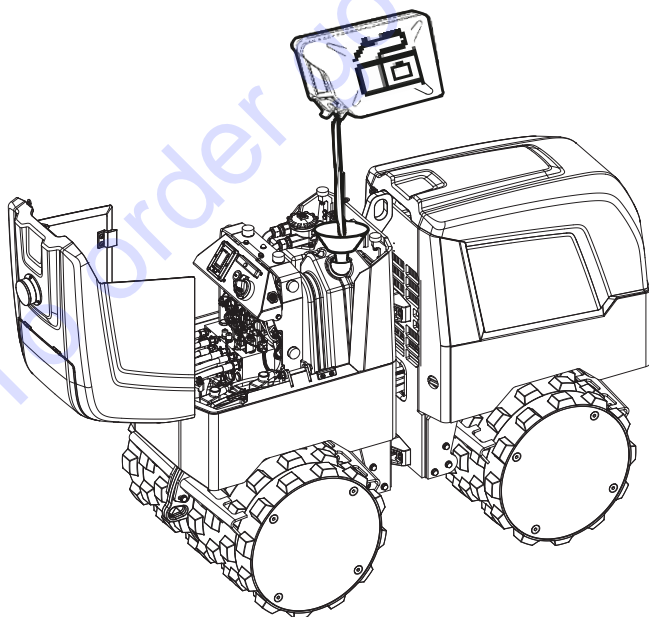
## To fill fuel



### **WARNING: Fuel hazard**

The fuel is extremely flammable and fuel fumes can explode when ignited, causing serious injury or death.

- ◆ Protect your skin from contact with the fuel.
  - ◆ Never remove the filler cap or fill the fuel tank when the machine is hot.
  - ◆ Never smoke when filling the fuel tank or when working with the machine or servicing it.
  - ◆ Avoid spilling fuel and wipe off any fuel spilled on the machine.
1. Stop the engine and let it cool down before filling the tank.
  2. Release the filler cap slowly to let any pressure escape.
  3. Fill the fuel tank.



4. Never overfill the tank. Due to the movement of the fuel within the tank, it is possible to have fuel at a higher level than the tank cap, which can lead to a spillage of fuel if the tank cap is opened. This can be avoided by only opening the tank cap when the machine is on level ground and the tank cap is at the fuel tank's highest point.

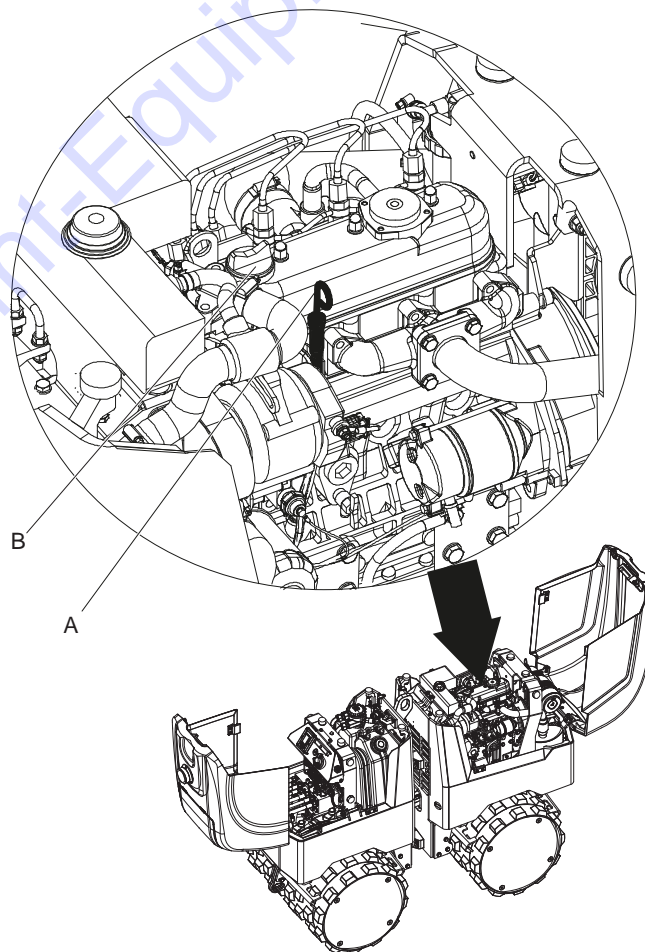
## Start and stop

### Before starting

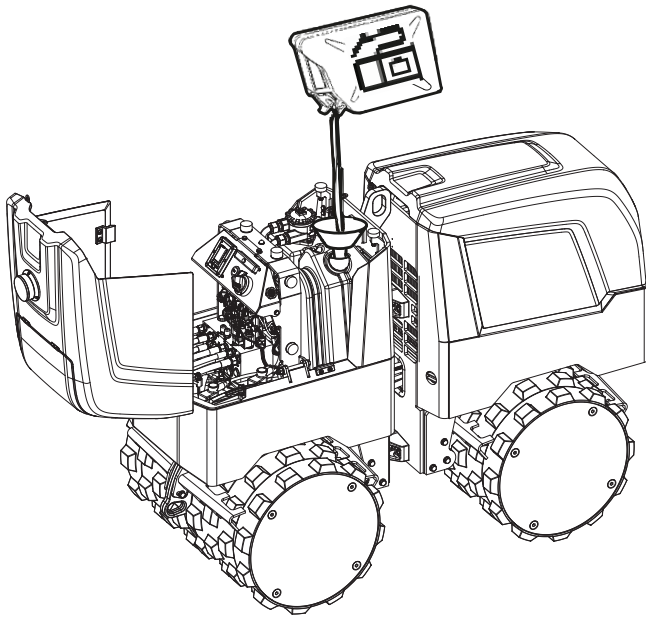
Follow the general safety precautions supplied with the machine at delivery. We recommend to study the engine manual supplied with the machine. Check that the maintenance routines have been carried out. Keep the machine turned off during all checks and procedures before starting.

**Note:** To avoid machine damage, the articulation lock must always be disengaged during operation.

1. Check the engine oil level by the dip stick (A) and top up (B) if needed.



2. Fill the fuel tank with fuel.



3. Release the articulation lock to enable steering.
4. Check that all the controls are intact and not damaged.
5. Make sure that there is no oil leakage, and that all bolted joints are tightened.

---

**Note:** Always store the remote control securely to prevent unauthorized starting of the machine.

---

**Note:** Any use of a start gas can shorten the life of the engine. Never use start gas.

---

**Note:** During operation oil leaks can occur and bolted joints can come loose, this can cause engine breakdown.

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**Note:** If the engine fails to start, wait for 3 seconds before a new attempt to start. If the starter motor is used for more than 20 seconds, a delay is activated for 8 seconds.

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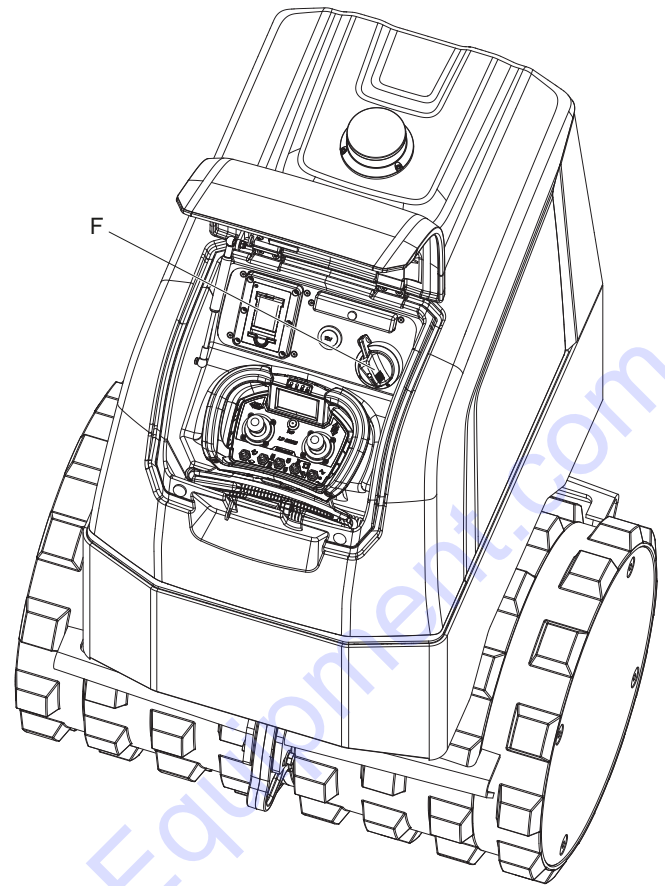
### Starting the engine

1. Open the hatch and pick up the remote control.
2. Turn the battery disconnecter (F) to position I. The buzzer sounds and the rotating beacon is active when the power is switched on.

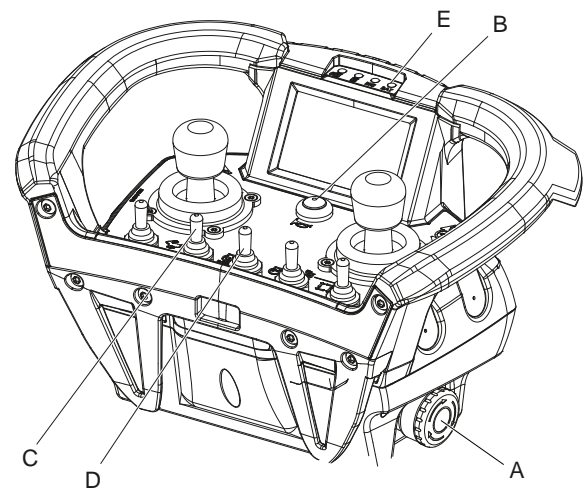
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**Note:** Make sure that the buzzer sounds and the rotating beacon is active when the battery disconnecter is switched on.

---



3. Release the machine stop button (A) on the remote control. The BAT LED (E) will flash slowly with a green light during normal operation.



4. Press the horn button (B) to establish contact between the remote control and radio receiver.

---

**Note:** Make sure that the horn is sounding every time the horn button is pushed.

---

5. Set the switch for engine speed (C) to low.
6. Start the engine with the start/stop switch (D), release when the engine has started. The buzzer stops sounding.

7. Check the battery status. If the BAT LED (E) lights yellow or red, change to a fully charged battery.

### System information

When the remote control is turned on, the following data will be shown on the display:



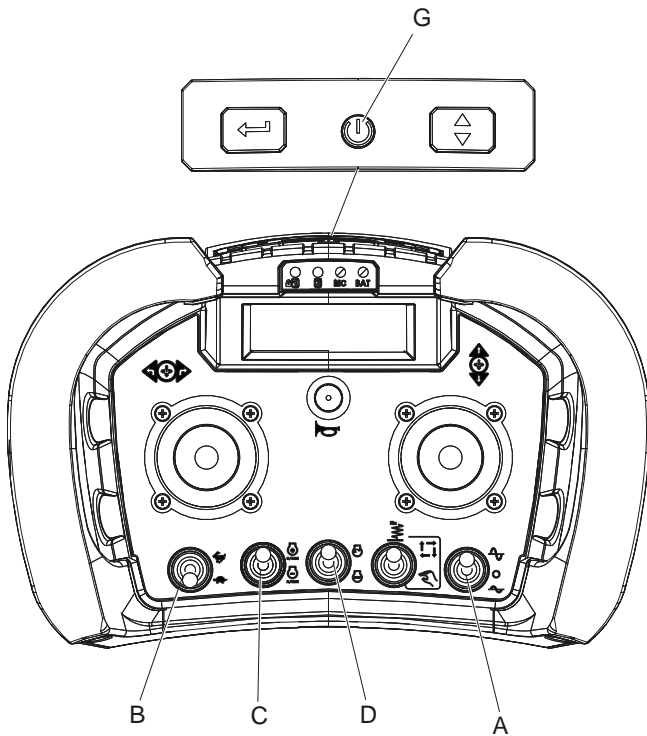
- A. Engine running hours.
- B. Software version for the machine's ECU (Electronic Control Unit).
- C. Software version for the remote control.
- D. Software version for the radio receiver.

Symbol	Type	Description	Action
	Alarm	Oil pressure engine low	Engine shut down
	Alarm	High engine temperature	Engine shut down
	Alarm	High hydraulic oil temperature	Engine shut down
	Alarm	Hydraulic oil level low	Engine shut down
	Alarm	Radio link down	Engine shut down
	Alarm	Canbus 0 Radio error	Engine shut down
	Warning	Canbus 1 MDS error	Stop movement and vibration
	Warning	No signal from front or rear MDS	Safety distance increased to 4 m (157 in.)

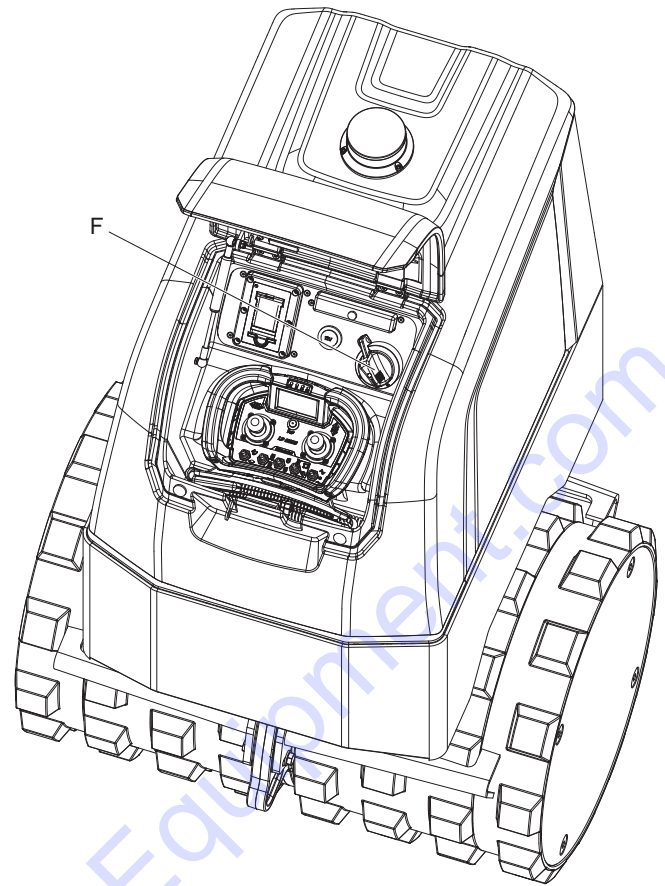
	Warning	Operator outside operating range (too close or too far from the machine)	Stop movement and vibration
	Warning	Remote control tilting	Stop movement and vibration
	Information	Machine Battery low	
	Information	Glow plugs active	
	Information	Hydraulic filter needs to be replaced	
	Information	Air Filter needs to be cleaned or replaced	
	Information	Diesel level low	
	Information	Time for service	
	Information	Cable remote control active	Slow speed

## Stopping the engine

1. Set the vibration switch (A) to neutral position.



2. Set the operating speed switch (B) to low (tortoise).
3. Set the engine speed switch (C) to low.
4. Let the engine idle for a few minutes.
5. Stop the engine with the start/stop switch (D). The buzzer sounds when the engine stops.
6. Open the hatch and turn the battery disconnecter (F) to position 0. Lock the battery disconnecter with a padlock.



7. Turn off the remote control with the ON/OFF button (G), the green MC LED indicator light turns off.
8. Store the remote control securely under the hatch and lock the hatch to prevent unauthorized start of the machine.

PIN (user) is necessary to start the remote control and shall be set by the operator in order to prevent unauthorized access to the machine. With default value 0000, the remote control can be started without PIN.

---

**Note:** The machine will stop immediately when the machine stop button is pressed. Make sure that the machine stop is always in working order.

---

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**Note:** The machine stops immediately when the joysticks are released. Make sure that the joysticks are working and that they returns to zero mode when released.

---

---

**Note:** The machine stops immediately when the remote control is turned off.

---

### Cable remote control

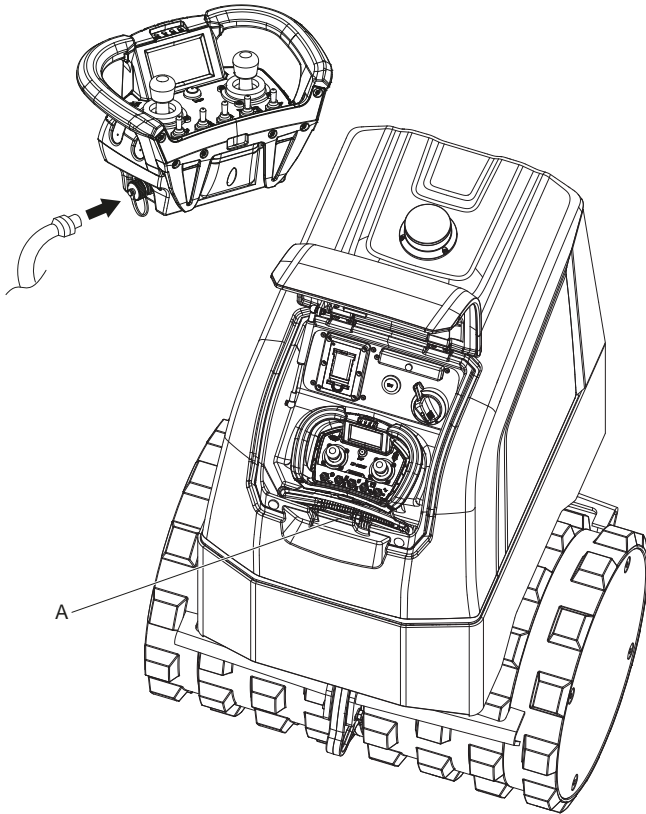
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**Note:** The connector must be cleaned before mounting the cable. Damaged connectors must be replaced by authorized personnel.

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- ◆ The machine can be operated by cable remote control.
- ◆ When cable remote control is used, the remote control battery is not needed. The remote control receives power via the cable.

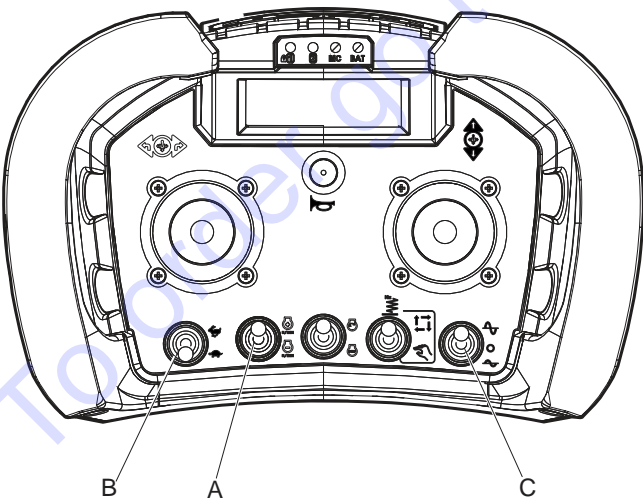
- ◆ Take out the loose end of the cable (A) from the compartment under the hatch. Mount the cable on the remote control. The machine is ready to use.



- ◆ Use the same procedure for start/stop and operating as when using radio remote control.
- ◆ The cable is always connected to the machine and stored in the compartment under the hatch when not in use.

## Operating with vibration

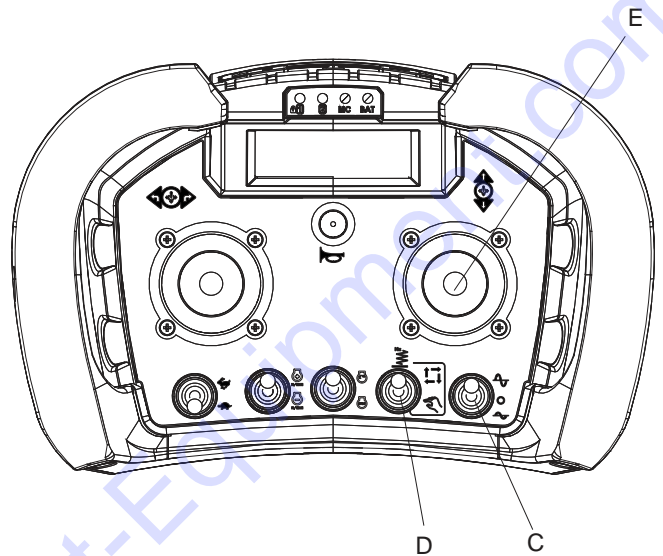
**Note:** The vibration position must not be used when the engine is idling.



- ◆ The machine must always be operated at the highest engine rpm, the engine rpm switch (A) is then in position +.
- ◆ Operating speed switch (B) must be in the position for low speed in order to enable vibration.
- ◆ The vibration can be set to high or low amplitude (C).

Symbol	Description
	High amplitude.
<b>O</b>	Vibration OFF.
	Low amplitude.

## Automatic vibration



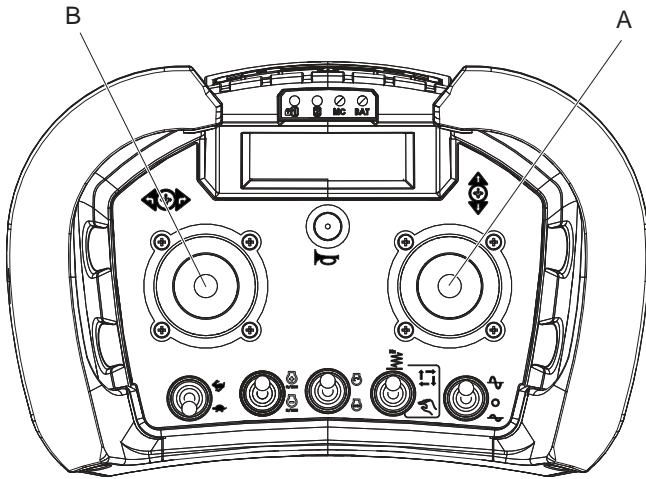
1. Set the vibration switch (C) to position **O**.
2. Set the switch (D) in upper position with rotating symbol for automatic vibration.
3. Select high or low amplitude with vibration switch (C).
4. Vibration is automatically activated when the forward and reverse joystick (E) is used and the machine is operated at low speed.
5. When the vibration switch (C) is set to position **O**, the automatic vibration is stopped.

## Manual vibration

1. Set the vibration switch (C) to position **O**.
2. Set the switch (D) in position with hand symbol for manual vibration.
3. Activate vibration by setting the vibration switch (C) to high or low amplitude.
4. Vibration is stopped by changing back to **O** position.



## Remote control



- ◆ **Forward operation:**

Move the right joystick (A) forward.

- ◆ **Reverse operation:**

Move the right joystick (A) backward.

- ◆ **Right operation:**

Move the left joystick (B) to the right.

- ◆ **Left operation:**

Move the left joystick (B) to the left.

- ◆ **Stop the machine:**

Release the joysticks (A and B) and the machine will stop.

## When taking a break

- ◆ Stop the machine and shut off the engine during breaks.
- ◆ During all breaks you must put the remote control away so that there is no risk for unintentional start.

## Parking

Always park the machine on level ground. Before leaving it:

- ◆ Turn off the engine, the remote control, and the battery disconnecter.
- ◆ Lock the battery disconnecter with a padlock.
- ◆ Store the remote control securely under the hatch and lock the hatch to prevent unauthorized start of the machine.
- ◆ PIN (user) is necessary to start the remote control and shall be set by the operator in order to prevent unauthorized access to the machine. With default value 0000, the remote control can be started without PIN.

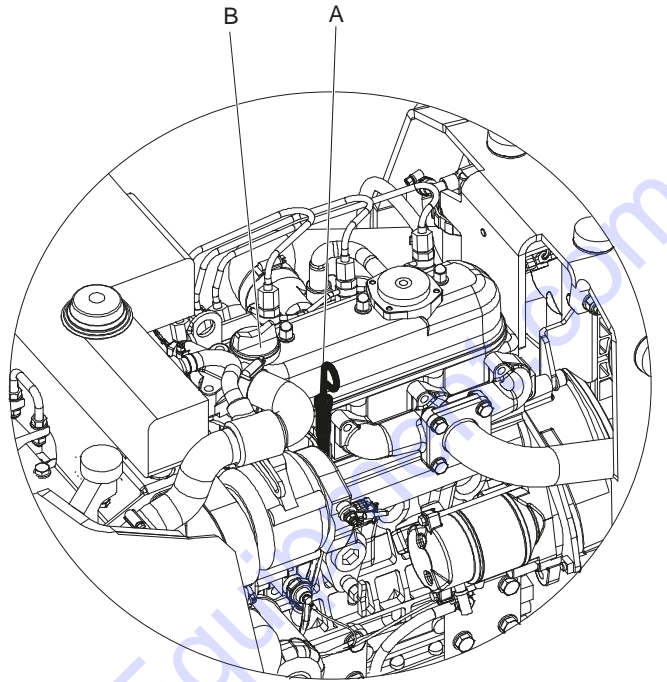
# Maintenance



## **WARNING: Scalding hazard**

During maintenance there is a risk of scalding from hot engine oil.

3. Fill with oil (B) to the upper marking if necessary. See engine manual for more information.

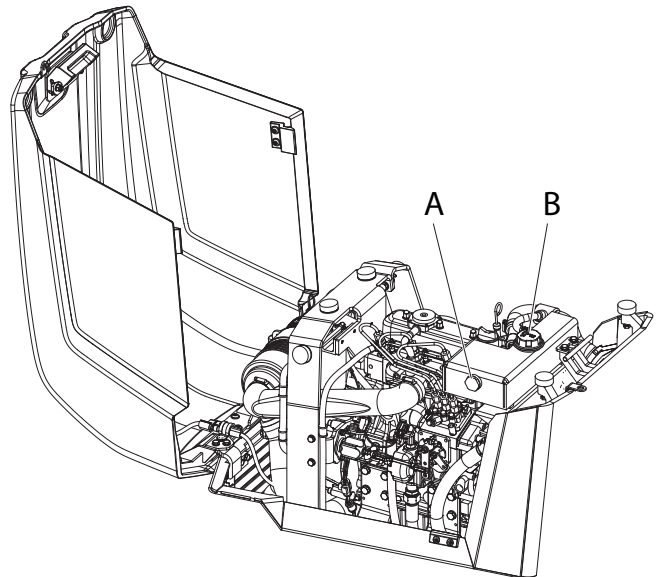


## **Checking for oil leaks**

- ◆ Check the engine and the hydraulic components for oil leaks.
- ◆ Check for oil on the ground under the machine. Oil leaks are easier detected by checking on the ground than on the machine.

## **Checking and filling the coolant level**

1. Stop the engine and wait for a few minutes. The machine must be in a horizontal position.
2. Check the coolant level in the level glass (A). The level must be in the middle of the glass. Fill with coolant (B) if necessary.



- ◆ Always ensure that the engine is below scalding temperature.

Regular maintenance is a basic requirement for the continued safe and efficient use of the machine. Follow the maintenance instructions carefully.

- ◆ Before undertaking any maintenance, turn the machine off.
- ◆ Before undertaking any maintenance, disconnect the battery terminals.
- ◆ Before starting maintenance on the machine, clean it in order to avoid exposure to hazardous substances. See "Dust and fume hazard".
- ◆ Use only authorised parts. Any damage or malfunction caused by the use of unauthorised parts is not covered by warranty or product liability.
- ◆ Before starting any maintenance clean and check the machine for any leakages or other faults.
- ◆ When cleaning mechanical parts with solvent, comply with appropriate health and safety regulations and ensure there is satisfactory ventilation.
- ◆ For major service of the machine, contact Discount-equipment.
- ◆ After each service, check that the machine's vibration level is normal. If not, contact the nearest authorised workshop.

## **Every 10 hours of operation (daily)**

Maintenance routines:

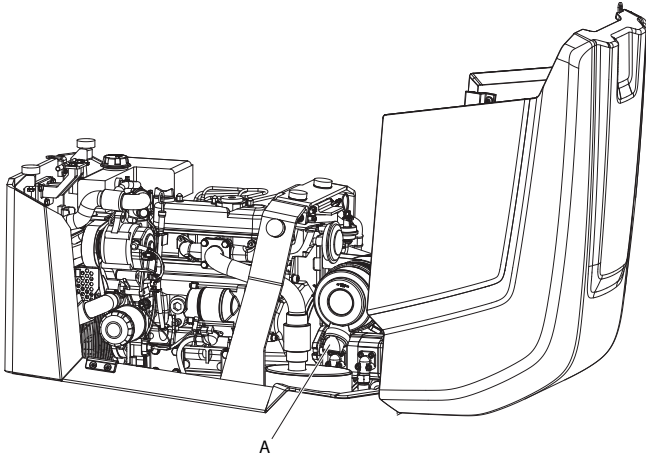
- ◆ Check and fill engine oil.
- ◆ Check for oil leaks.
- ◆ Check and fill the coolant level.
- ◆ Check the vacuator valve on the air filter.
- ◆ Check the air filter element.
- ◆ Check and fill fuel level.
- ◆ Drain the water separator in the fuel filter.
- ◆ Check the hydraulic oil level.
- ◆ Check the scraper adjustment.
- ◆ Check the tightness of all nuts and bolts.
- ◆ Check the functions of the remote control and the radio receiver.
- ◆ Check the MDS.
- ◆ Clean the machine.
- ◆ Check the articulation joints.

## **Checking and filling engine oil**

1. Stop the engine and wait for a few minutes. The machine must be in a horizontal position.
2. Check the oil level on the dipstick (A).

## Checking the vacuator valve on the air filter

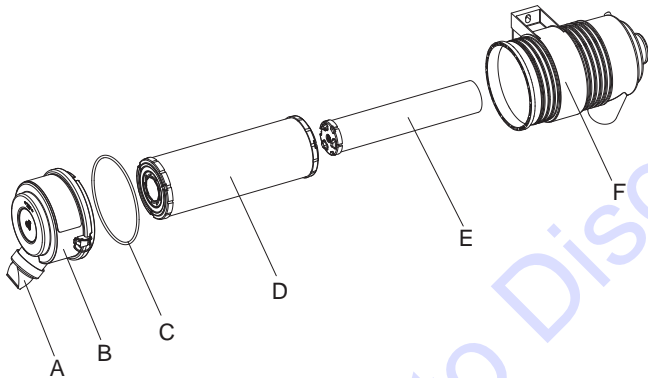
- ◆ Check vacuator valve (A) for free flow. Visually check and physically squeeze to make sure the valve is flexible and not inverted, damaged or plugged.



## Checking the air filter element

**Note:** If the remote control displays the air filter symbol, the filters must be cleaned or replaced immediately.

1. Unlatch and remove the service cover (B) with the vacuator valve (A). Make sure the O-ring (C) is seated in the cover and that it is not damaged.



2. Remove the primary filter (D) by gently move the end back and forth, to break the seal. Then rotate while pulling straight out.

**Note:** Avoid knocking the filter against the housing (F).

3. Check the primary filter (D) for leakages or damage. Replace if the filter is damaged, wet, or oily.

**Note:** Never install a damaged filter. Use of a damaged filter can cause serious damage on the motor.

See the section "Replacing air filter element" for more information.

4. If necessary, clean the primary filter (D) by tapping it against the palm of the hand until all loose dust is dislodged. Keep the hole/sealing surface facing up, in order to avoid dust from entering the filter. After six times of cleaning, replace the primary filter (D).

**Note:** Never tap the primary filter (D) against any hard objects.

See the section "Replacing air filter element" for more information.

5. Check the safety filter (E) for leakages or damage. Do not remove the safety filter (E) unless it is damaged or due for replacement.

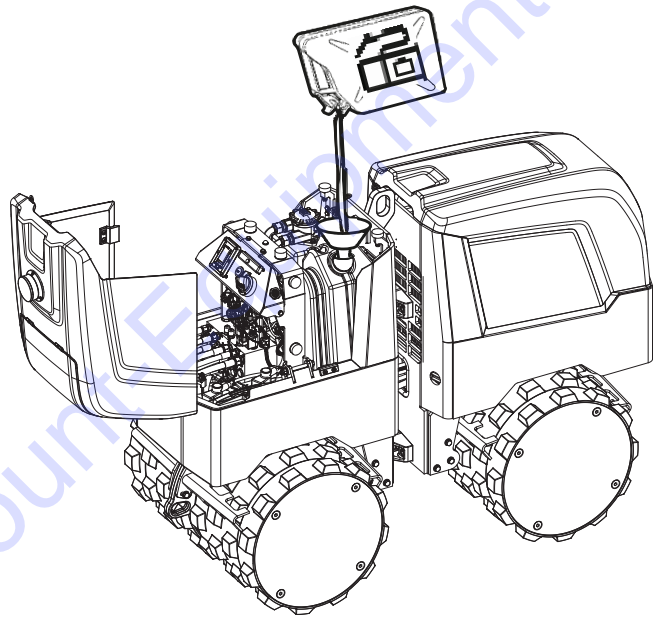
See the section "Replacing air filter element" for more information.

6. Refit the primary filter (D) and the service cover (B).

**Note:** Never use the service cover to push the filter into place.

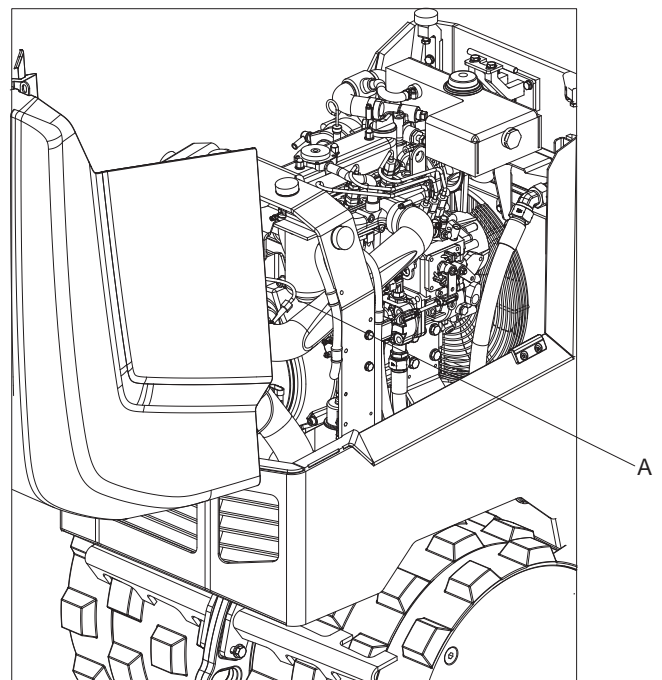
## Checking and filling fuel level

- ◆ Check the fuel level.
- ◆ Fill the fuel tank if necessary.



## Draining the water separator in the fuel filter

1. Loosen the drainage plug (A).

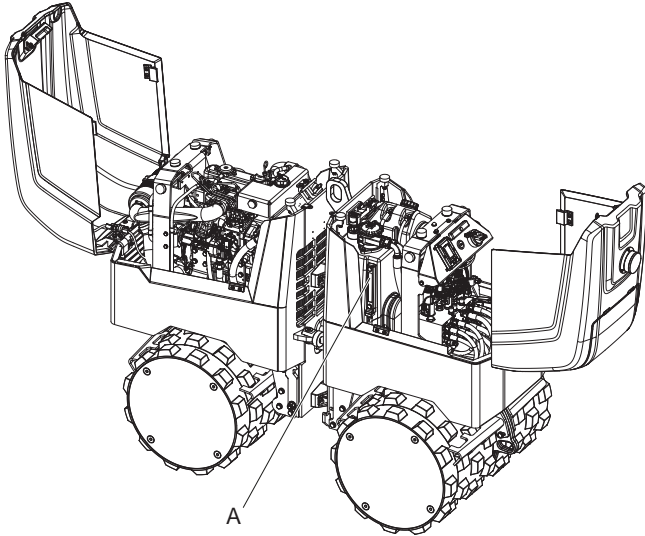


2. Drain until the fuel is free from water. Collect the fluid extracted in a fuel can.

- Tighten the drainage plug (A).

### Checking the hydraulic oil level

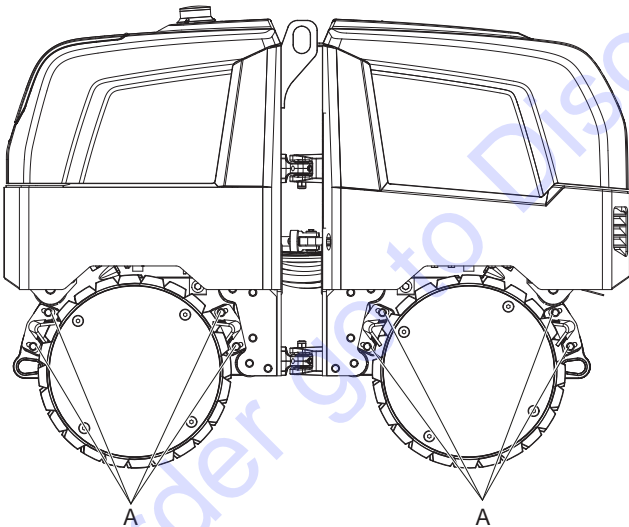
- Wipe off the oil level glass (A).



- Check that the level is approximately 10 mm (0.39 in.) from the top of the level glass. Refill if necessary.
- Check for leaks if the level falls.

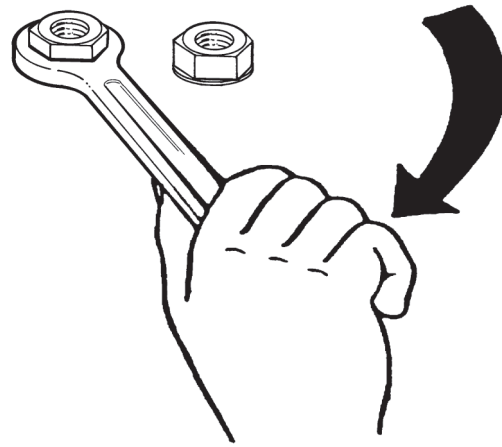
### Checking the scraper adjustment

- Make sure that the scraper blades are not touching the drums.
- If necessary, loosen the screws (A) and adjust the scrapers for clearance.



### Checking the tightness of all nuts and bolts

- Check all screws and nuts.
- Tighten if necessary.



### Checking the functions of the remote control and the radio receiver

- Check that all functions of the remote control are working properly.
- If there are any problems, consult Discount-equipment

### Checking the distance sensors

- Check that the distance sensors are working by checking that the machine stops when the remote control is 2 m (6.6 ft.) from the machine.
- If there are any problems, consult Discount-equipment.

### Cleaning the machine

**Note:** Never aim a water jet directly at the fuel filler cap.

- Do not spray water directly onto electrical components or the remote control panel.
- Place a plastic bag over the fuel filler cap and secure with a rubber band. (This will prevent water from entering the venting hole in the filler cap. Otherwise this could cause operational disturbances, such as clogged filters.)

### Checking the articulation joints

- Check that the articulation joints are intact and not damaged.
- If necessary, replace damaged components.

### After the first 50 hours of operation

Maintenance routines:

- Replace the engine oil and oil filter cartridge.
- Replace the hydraulic oil filter.

### Replacing the engine oil and oil filter cartridge



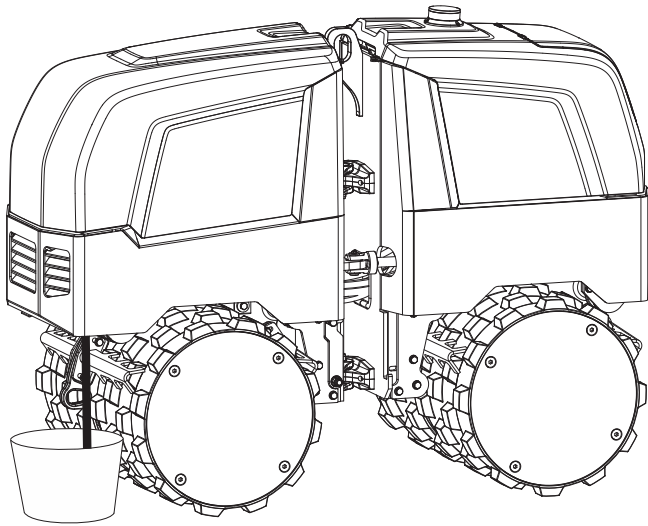
#### **WARNING: Scalding hazard**

During maintenance there is a risk of scalding from hot engine oil.

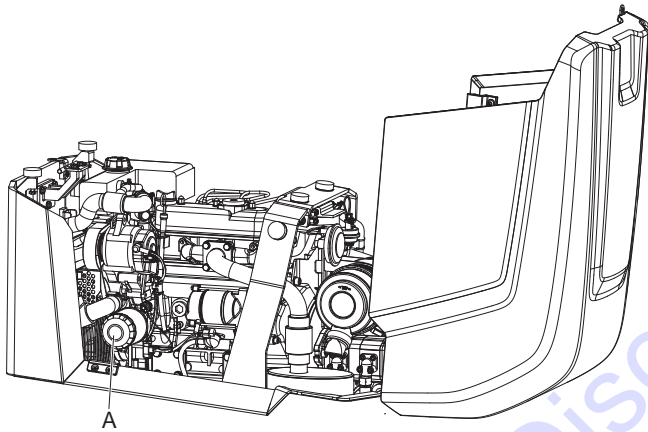
- Always ensure that the engine is below scalding temperature.

Only drain the engine oil while engine is warm.

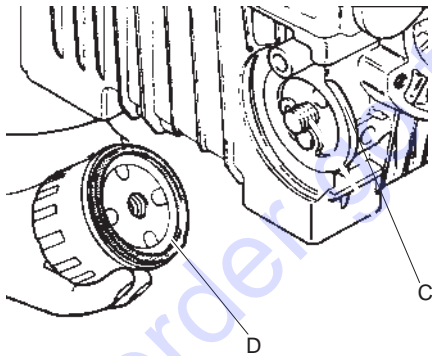
1. Unscrew the drain plug and drain all the oil. Use a container with at least 5.5 liter (1.45 gallon) capacity.



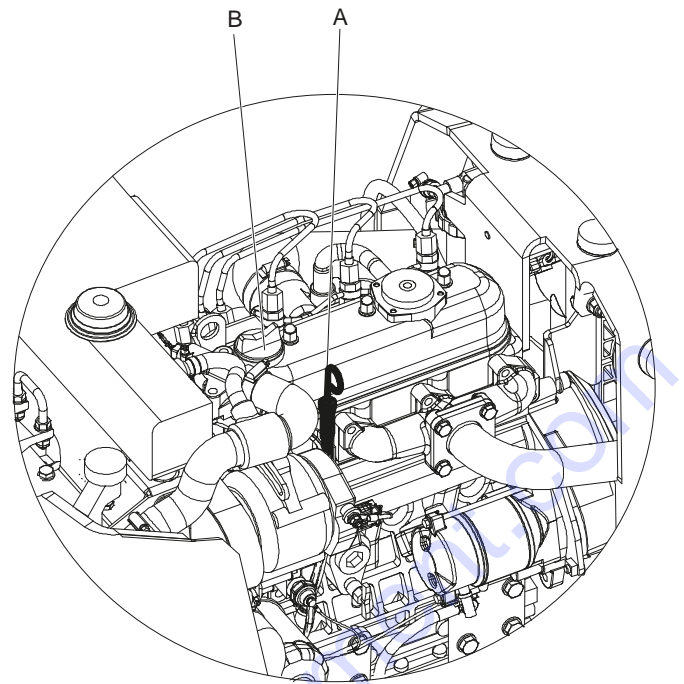
2. Refit the drain plug and tighten. Replace the seal if it is damaged.
3. Loosen the oil filter (A) by using a band wrench.



4. Clean the surfaces (C) carefully.



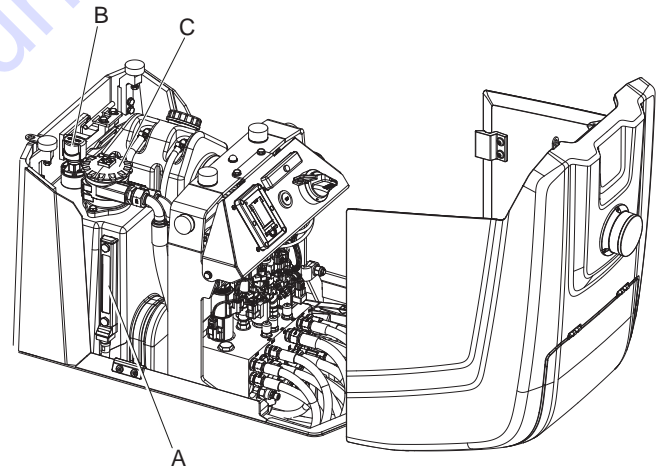
5. Put some oil on the sealing before mounting the new filter. Replace the oil filter (D) and tighten by hand.
6. Fill with oil (B) until the level is at the upper marking on the dipstick (A).



7. Run for a short time to make sure that the oil filter do not leak. If necessary tighten.
8. Check the oil level on the dipstick (A). Fill with oil (B) to the upper marking if necessary.

### Replacing the hydraulic oil filter

1. Clean the area around the filter cover and then unscrew the cover (C).



2. Remove the filter element. The element is a disposable type and must be disposed of in an environmentally-friendly manner.
3. Insert the new filter in the housing and check the O-ring in the cover.
4. Screw the cover (C) back on and make sure there is no leakage.
5. Check that the level is approximately 10 mm (0.39 in.) from the top of the level glass (A).
6. Refill (B) if necessary.

## Every 50 hours of operation (or weekly)

Maintenance routines:

- ◆ Check of fuel pipes and clamps.
- ◆ Check intake air line.
- ◆ Check fan belt tension.
- ◆ Check of radiator hoses and clamps.

### Checking of fuel pipes and clamps

- ◆ Check all fuel pipes and clamps.
- ◆ Replace if necessary.

See engine manual for more information.

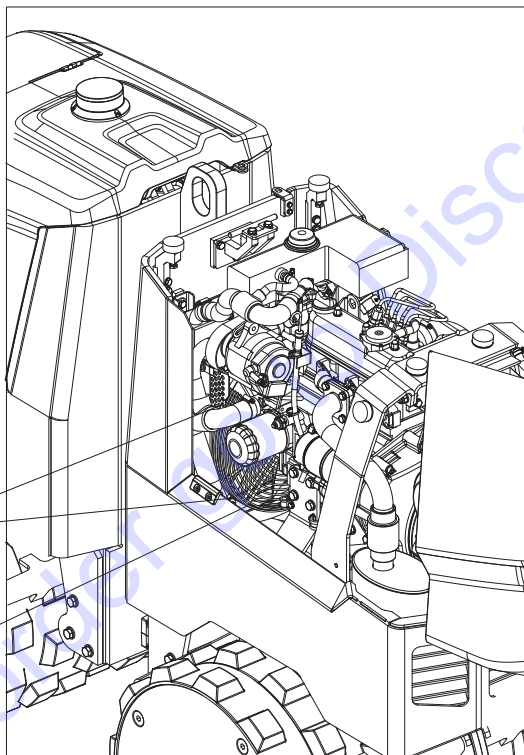
### Checking intake air line

**Note:** Any leaks in the intake piping will admit dust directly to the engine.

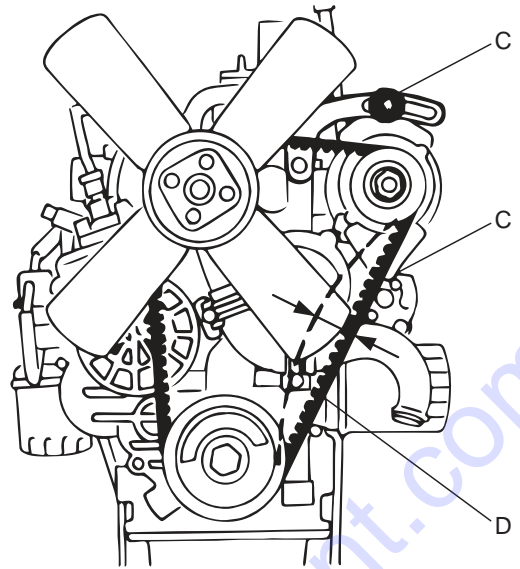
- ◆ Check the air cleaner system for leaks or damage.  
The air cleaner system includes all connecting hoses, mounting bands, clamps, bolts, and connections.
- ◆ Replace if necessary.

### Checking fan belt tension

1. Remove the fan guard (A) on the right hand side by loosen the screws (B).



2. Check the tension of the fan belt (D) , by applying a moderate pressure with your thumb between the pulley.



3. The fan belt (D) deflection must be between 7-9 mm (0.28-0.35 in.) during pressure in the middle of the span.
4. If tension is incorrect do the following:  
Loosen the alternator mounting bolts (C)  
Place a lever between the alternator and the engine block.  
Pull the alternator out until the deflection of the fan belt (D) is between 7 and 9 mm (0.28-0.35 in.).  
Tighten the alternator mounting bolts (C).
5. Replace the fan belt (D) if necessary.
6. Refit the fan guard (A).

### Checking radiator hoses and clamps

- ◆ Check all radiator hoses and clamps.
  - ◆ Replace if necessary.
- See engine manual for more information.

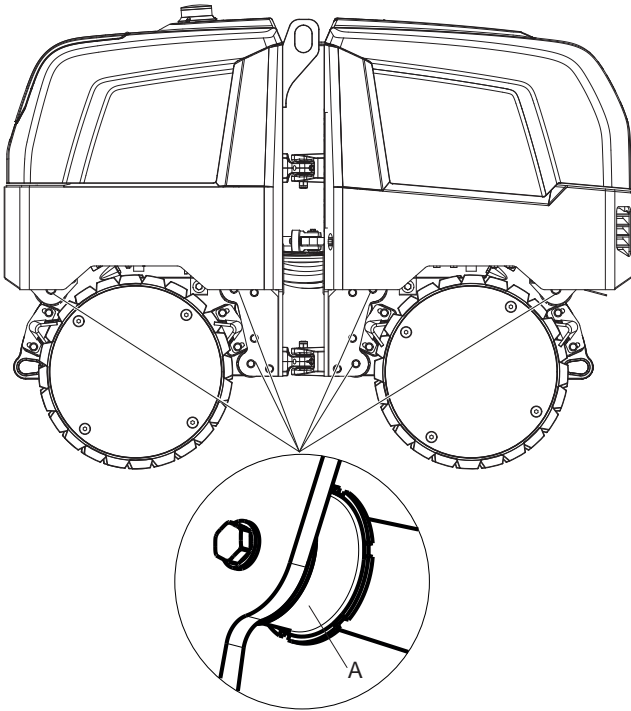
## Every 250 hours of operation (every month)

Maintenance routines:

- ◆ Check the air filter element.
- ◆ Check the shock absorbers.
- ◆ Check the battery connections.
- ◆ Clean the outside of the radiator core.
- ◆ Replace the engine oil and oil filter cartridge.
- ◆ Replace the hydraulic oil filter.

## Checking the shock absorbers

- ◆ Check all the shock absorbers (A) for cracks or if they are exhausted. There are six shock absorbers (A) on each side of the machine.



- ◆ Replace the shock absorbers (A) if they are damaged or worn out.

## Checking the battery connections

- ◆ Clean the battery poles and cable shoes and apply a coating of acid-free grease (Vaseline).
- ◆ Tighten the battery connections.
- ◆ Check the attachment of the battery.

## Cleaning the outside of the radiator core

- ◆ Clean the outside of the radiator core to prevent loss of cooling performance.

## Replacing the engine oil and oil filter cartridge



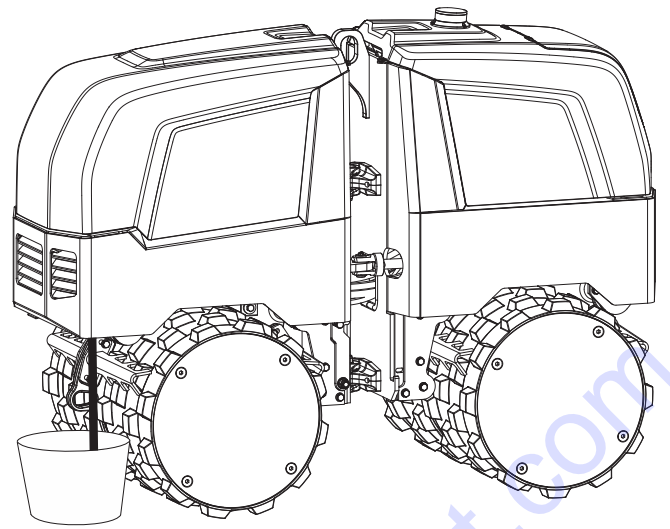
### **WARNING: Scalding hazard**

During maintenance there is a risk of scalding from hot engine oil.

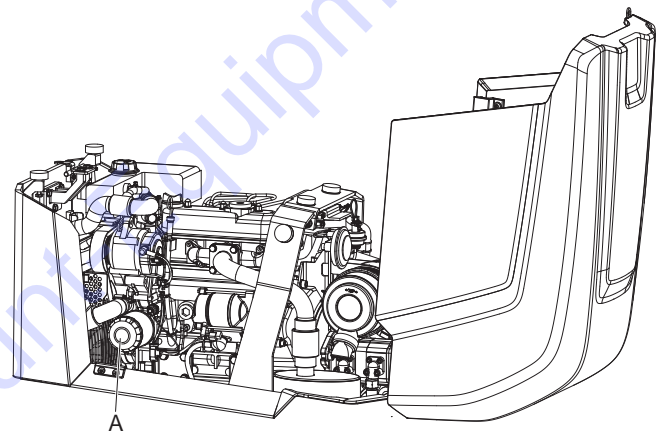
- ▶ Always ensure that the engine is below scalding temperature.

Only drain the engine oil while engine is warm.

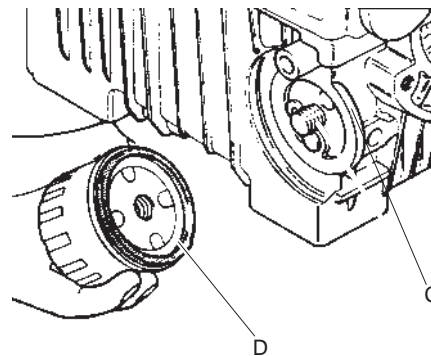
1. Unscrew the drain plug and drain all the oil. Use a container with at least 5.5 liter (1.45 gallon) capacity.



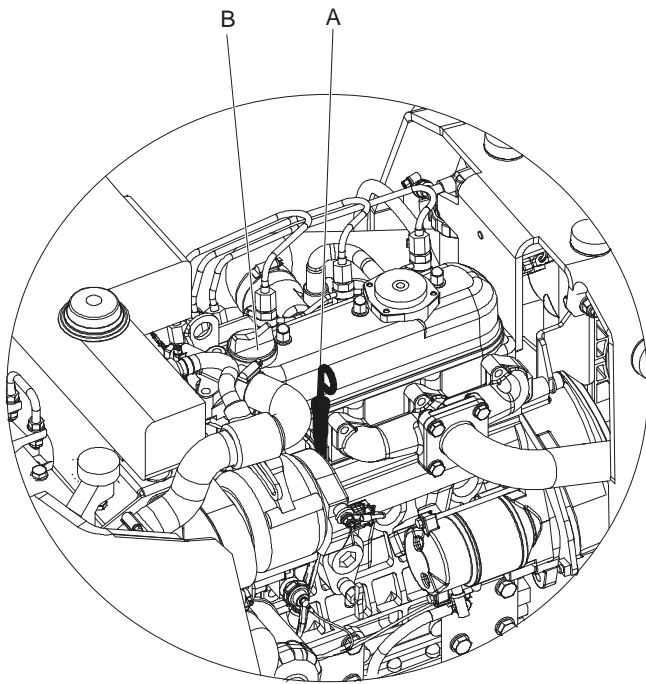
2. Refit the drain plug and tighten. Replace the seal if it is damaged.
3. Loosen the oil filter (A) by using a band wrench.



4. Clean the surfaces (C) carefully.



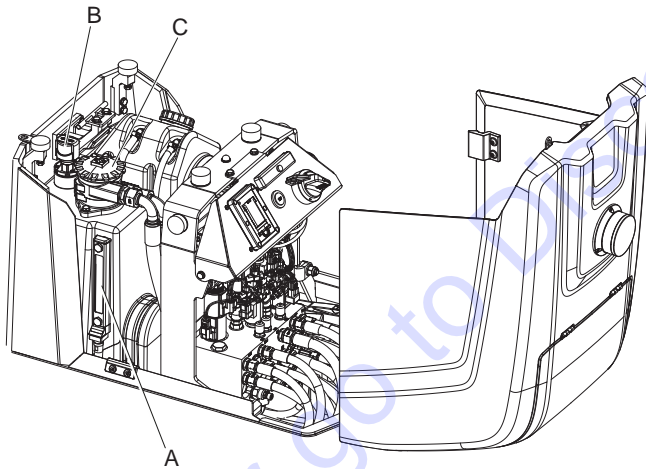
5. Put some oil on the sealing before mounting the new filter. Replace the oil filter (D) and tighten by hand.
6. Fill with oil (B) until the level is at the upper marking on the dipstick (A).



7. Run for a short time to make sure that the oil filter do not leak. If necessary tighten.
8. Check the oil level on the dipstick (A). Fill with oil (B) to the upper marking if necessary.

### Replacing the hydraulic oil filter

1. Clean the area around the filter cover and then unscrew the cover (C).



2. Remove the filter element. The element is a disposable type and must be disposed of in an environmentally-friendly manner.
3. Insert the new filter in the housing and check the O-ring in the cover.
4. Screw the cover (C) back on and make sure there is no leakage.
5. Check that the level is approximately 10 mm (0.39 in.) from the top of the level glass (A).
6. Refill (B) if necessary.

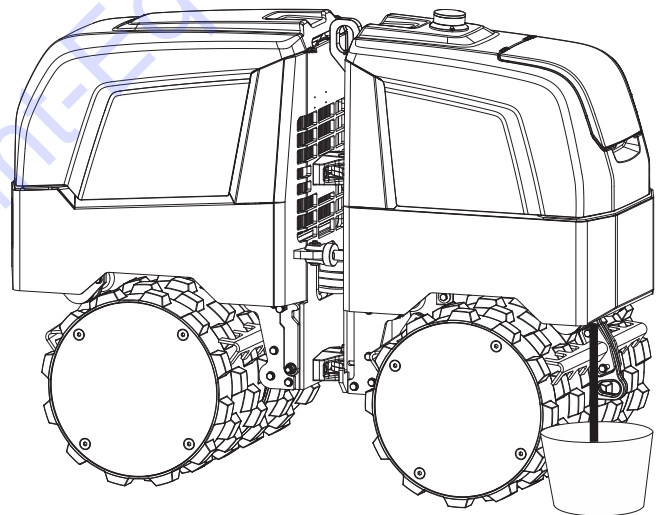
### Every 500 hours of operation (or yearly)

Maintenance routines:

- ◆ Replace the hydraulic oil and the hydraulic oil filter.
- ◆ Check the hydraulic reservoir cover/breather.
- ◆ Replace oil in the eccentric housing.
- ◆ Remove sediment from the fuel tank.
- ◆ Replace fuel pre-filter and filter.
- ◆ Check coolant freezing point.
- ◆ Cleaning of water jacket (radiator interior).
- ◆ Replace the fan belt.
- ◆ Replace the air filter element
- ◆ Check of damage in electric wiring and loose connections.
- ◆ Check the valve clearance.

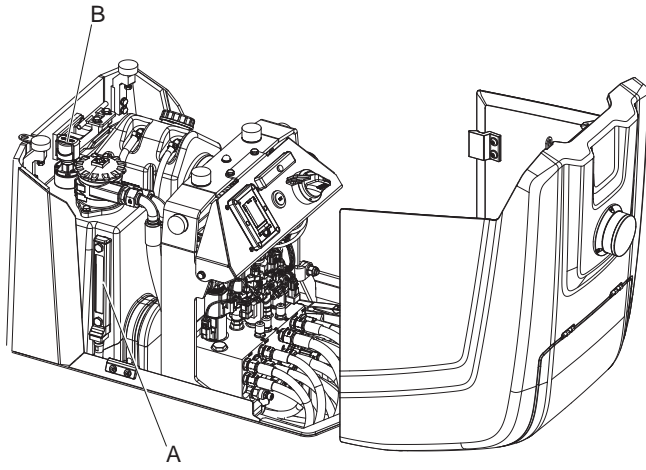
### Replacing the hydraulic oil and the hydraulic oil filter

1. Remove the hydraulic drain plug.
2. Empty the tank. Use a container with at least 15 liter (4 gallon) capacity.



3. Replace the hydraulic oil filter (see section 'Replacing the hydraulic oil filter').
4. Refit the drain plug and tighten. Replace the seal if it is damaged.
5. Fill with hydraulic oil (B) until the level is approximately 10 mm (0.39 in.) from the top of the level glass (A).





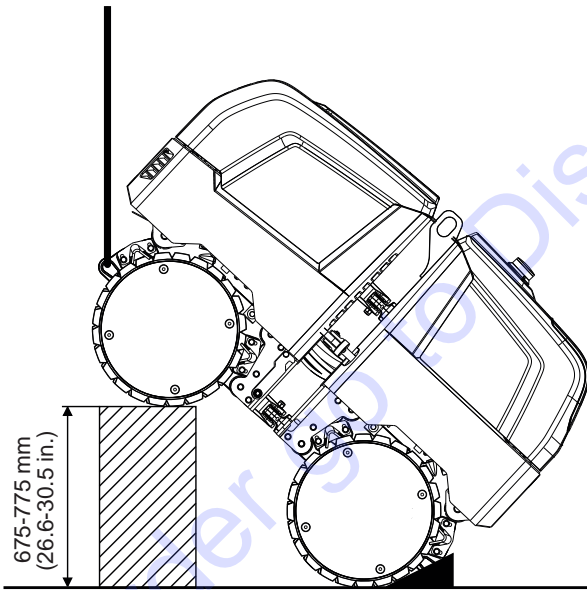
6. Run the machine for a short time to aerate the system.
7. Check that the hydraulic oil level is approximately 10 mm (0.39 in.) from the top of the level glass.
8. Refill if necessary.

### Checking the hydraulic reservoir cover/breather

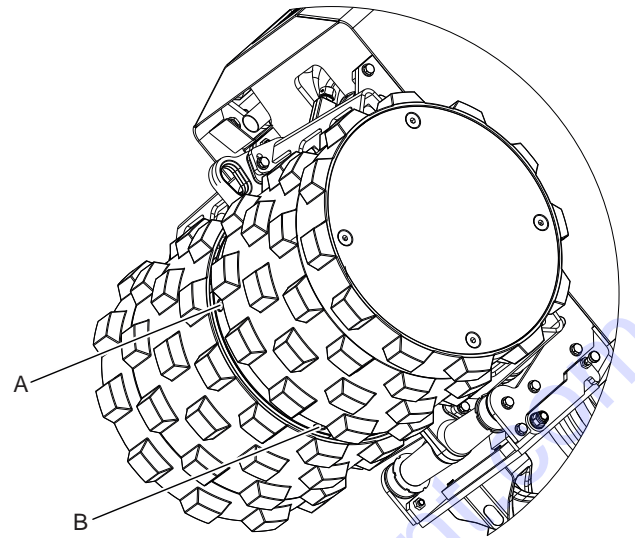
- ◆ Check that the cover/breather is undamaged and working properly.
- ◆ Replace if damaged or clogged.

### Replacing oil in the eccentric housing

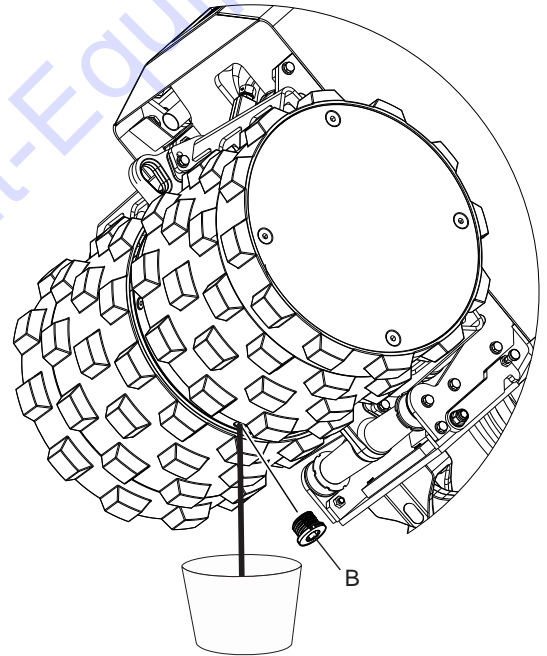
1. Lift one side of the machine to a height of 675-775 mm (26.6-30.5 in.) and support it safely.



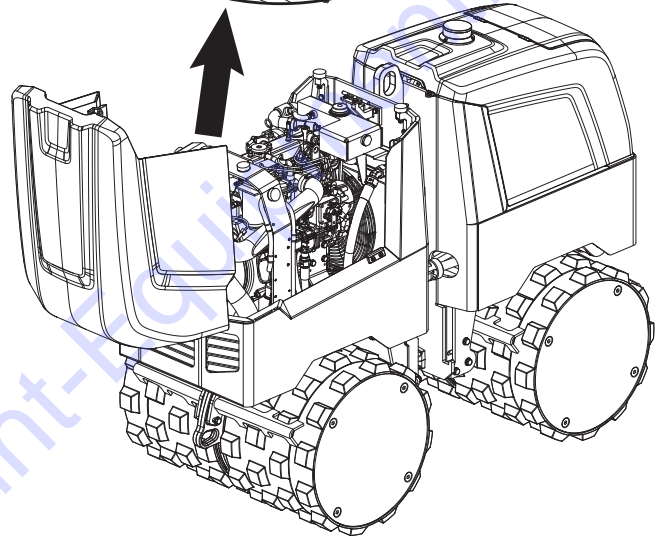
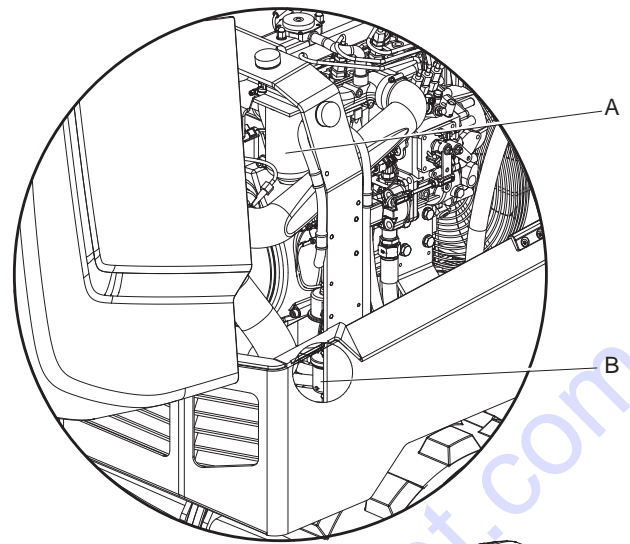
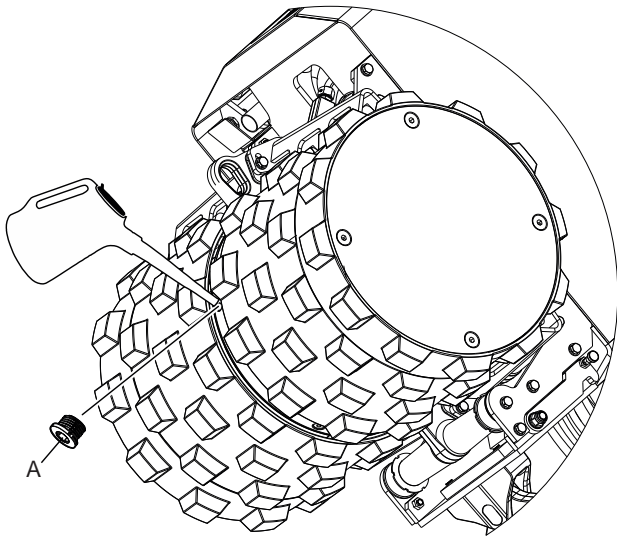
2. Unscrew the filling plug (A) on the elevated drum.



3. Unscrew the drain plug (B) and drain all the oil. Use a container with at least 1 liter (2.11 gallon) capacity.



4. Refit the drain plug (B).
5. Fill with oil. See machine data for oil volume and oil quality.



6. Refit the filling plug (A).
7. Repeat the same procedure for the other side of the machine

### Removing sediment from the fuel tank

1. Disconnect the fuel level sensor and the fuel hoses.
2. Remove the clamp and lift out the fuel tank from the machine.
3. Drain the tank and clean.
4. Clean the strainer.
5. Refit the tank.
6. Refill the tank, check for leaks.

### Replacing the fuel pre-filter and filter

The replacement intervals for fuel filters depend on how heavily contaminated the fuel is.

1. Remove the fuel filter (A) by using a band wrench.

2. Install a new filter.
3. Release the hoses on both sides of the pre-filter (B) and replace it.
4. When fitting the new pre-filter make sure that the arrow on the filter correspond with the direction of flow of the fuel.

See the engine manual for more information.

### Checking the coolant freezing point

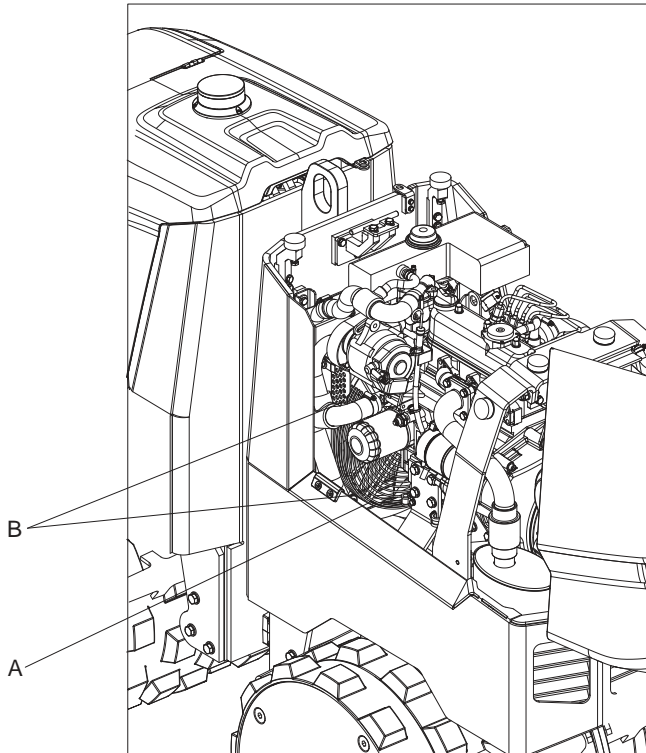
- ◆ Check that the coolant freezing point is between  $-30^{\circ}\text{C}$  and  $-38^{\circ}\text{C}$ .
- ◆ Replace if necessary.

### Cleaning of water jacket (radiator interior)

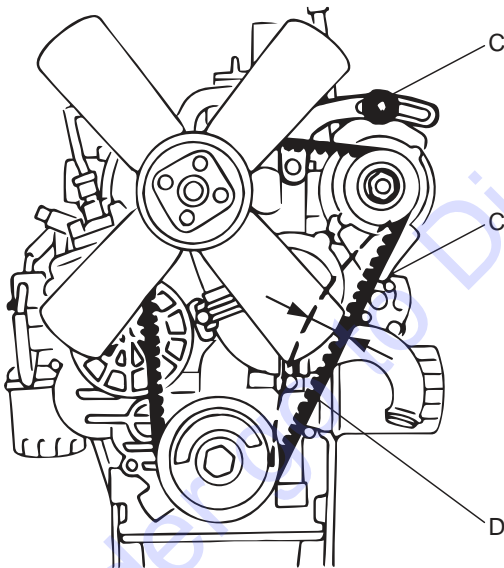
- ◆ Clean the water jacket (radiator interior).
- See engine manual for more information.

## Replacing the fan belt

1. Remove the fan guard (A) on the right hand side by loosening the screws (B).



2. Loosen the alternator mounting bolts (C).

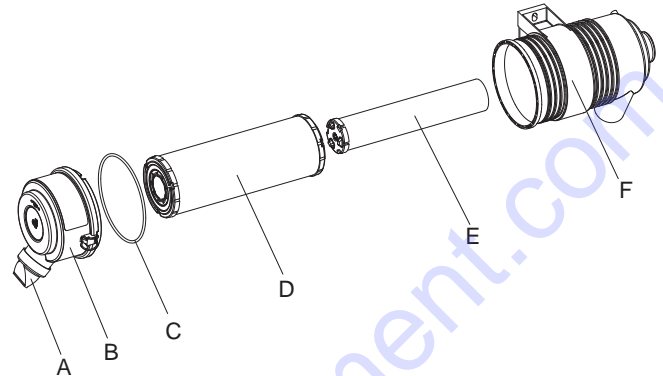


3. Replace the fan belt (D).
4. Adjust the tension and tighten the alternator mounting bolts (C).
5. Refit the fan guard (A).  
See the engine manual for more information.

## Replacing the air filter element

**Note:** If the remote control displays the air filter symbol, the filters must be cleaned or replaced immediately.

1. Unlatch and remove the service cover (B) with the vacuator valve (A). Make sure the O-ring (C) is seated in the cover and that it is not damaged.



2. Remove the primary filter (D) by gently move the end back and forth, to break the seal. Then rotate while pulling straight out.

**Note:** Avoid knocking the filter against the housing (F).

Replace the safety filter (E) every third primary filter (D) change. Remove by follow the same procedure as for the primary filter. Cover the air cleaner outlet tube to avoid any unfiltered contaminant from entering the engine.

3. Wipe the filter sealing surface and the inside of the filter housing (F) with a clean cloth.
4. Inspect the old filter for any signs of leaks. A streak of dust on the clean side of the filter is a telltale sign. Remove any cause of leaks before installing a new filter.
5. Inspect the new filter carefully, paying attention to the inside of the open end, which is the sealing area. Never wipe the filter's sealing area as a new radial seal filter may have a lubricant on the seal to aid installation.

**Note:** Never install a damaged filter. Use of a damaged filter can cause serious damage on the motor.

6. Refit the primary filter (D) and the service cover (B). If replacing the safety filter (E), this must be seated into position before installing the primary filter (D).

**Note:** Never use the service cover to push the filter into place.

## Checking of damage in electric wiring and loose connections

- ◆ Check the condition of the cable harness and connectors.
- ◆ Replace or repair if necessary.

### Checking the valve clearance

- ◆ Check the valve clearance.
- ◆ Adjust if necessary.

See engine manual for more information.

### Every 1000 hours of operation (or every second years)

Maintenance routines:

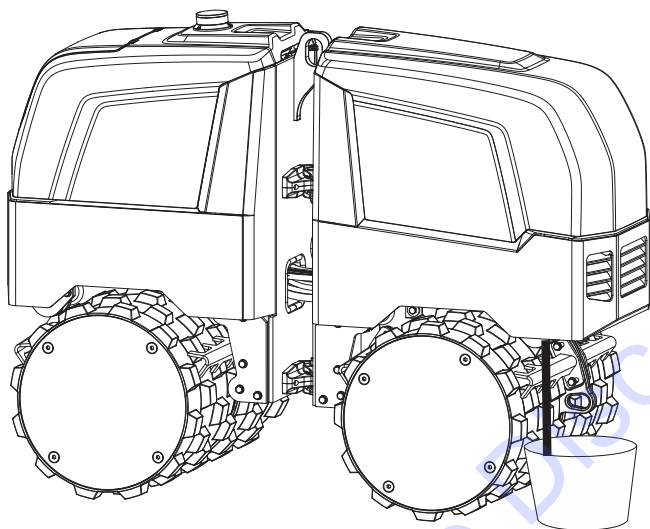
- ◆ Replace radiator hoses and clamps.
- ◆ Replace radiator coolant.
- ◆ Replace fuel pipes and clamps.

### Replacing the radiator hoses and clamps

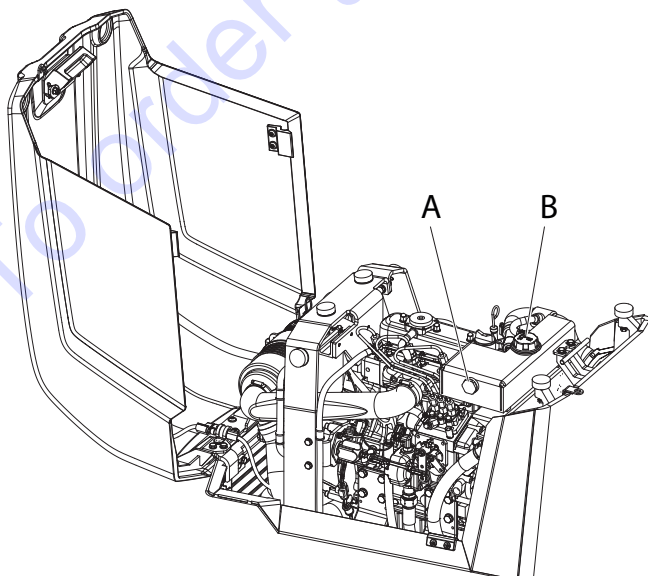
- ◆ Replace radiator hoses and clamps.
- See engine manual for more information.

### Replacing the radiator coolant

- ◆ Unscrew the drain plug and drain all the coolant. Use a container with at least 5.5 liter (14.5 gallon) capacity.



- ◆ Refit the drain plug and tighten. Replace the seal if it is damaged.
- ◆ Fill with coolant (B) until the level is at the center of the level glass (A). Squeezing the cooler hose will help aerate the system while filling.



- ◆ Run for a short time to aerate the system.
- ◆ Check the coolant level in the level glass (A). The level must be in the middle of the glass. Fill with coolant (B) if necessary.

See engine manual for more information.

### Replacing the fuel pipes and clamps

- ◆ Replace the fuel pipes and clamps.
- See engine manual for more information.

### Every 1500 hours of operation

Maintenance routines:

- ◆ Check of fuel injection nozzle injection pressure.

### Checking of the fuel injection nozzle and injection pressure

- ◆ Consult Discount-equipment for this service. See engine manual for more information.

### Every 3000 hours of operation

Maintenance routines:

- ◆ Check of fuel injection pump.

### Checking of fuel injection pump

- ◆ Consult Discount-equipment for this service. See engine manual for more information.

### 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.

### Storage and trickle charging

Never leave a machine with a discharged battery. A discharged battery freezes at a temperature of about  $-7^{\circ}\text{C}$  ( $19^{\circ}\text{F}$ ). A fully charged battery will freeze at  $-67^{\circ}\text{C}$  ( $-89^{\circ}\text{F}$ ). A battery that is not being used must 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 must be fully charged before being used. Trickle charging is recommended a couple of times during the season (especially in winter).

## Maintenance schedule

	Every 10 hours of operation	After the first 50 hours of operation	Every 50 hours of operation	Every 250 hours of operation	Every 500 hours of operation	Every 1000 hours of operation	Every 1500 hours of operation	Every 3000 hours of operation
Checking and filling the engine oil	x							
Checking for oil leaks	x							
Checking and filling the coolant level	x							
Checking the vacuator valve on the air filter	x							
Checking the air filter element *	x							
Checking and filling fuel level	x							
Draining the water separator in the fuel filter *	x							
Checking the hydraulic oil level	x							
Checking the scraper adjustment	x							
Checking the tightness of all nuts and bolts	x							
Checking the functions of the remote control and the radio receiver	x							
Checking the distance sensors	x							
Cleaning the machine	x							
Checking the articulation joints	x							
Replacing the engine oil and oil filter cartridge		x		x				
Replacing the hydraulic oil filter		x		x				
Checking of fuel pipes and clamps *			x					
Checking intake air line *			x					

	Every 10 hours of operation	After the first 50 hours of operation	Every 50 hours of operation	Every 250 hours of operation	Every 500 hours of operation	Every 1000 hours of operation	Every 1500 hours of operation	Every 3000 hours of operation
Checking fan belt tension *			x					
Checking radiator hoses and clamps *			x					
Checking shock absorbers				x				
Checking the battery connections				x				
Cleaning the outside of the radiator core				x				
Replacing the hydraulic oil and the hydraulic oil filter					x			
Checking the hydraulic reservoir cover/ breather					x			
Replacing oil in the eccentric housing					x			
Removing sediment from the fuel tank *					x			
Replacing the fuel pre-filter and filter					x			
Checking the coolant freezing point					x			
Cleaning of water jacket (radiator interior) *					x			
Replacing the fan belt *					x			
Replacing the air filter element *					x			
Checking of damage in electric wiring and loose connections *					x			
Checking the valve clearance *					x			
Replacing the radiator hoses and clamps *						x		

	Every 10 hours of operation	After the first 50 hours of operation	Every 50 hours of operation	Every 250 hours of operation	Every 500 hours of operation	Every 1000 hours of operation	Every 1500 hours of operation	Every 3000 hours of operation
Replacing the radiator coolant *						X		
Replacing the fuel pipes and clamps **						X		
Checking of fuel injection nozzle injection pressure **							X	
Checking of fuel injection pump **								X

\*\* Consult Discount-equipment for service \*

See engine manual for more information.

## Transportation, storage and disposal

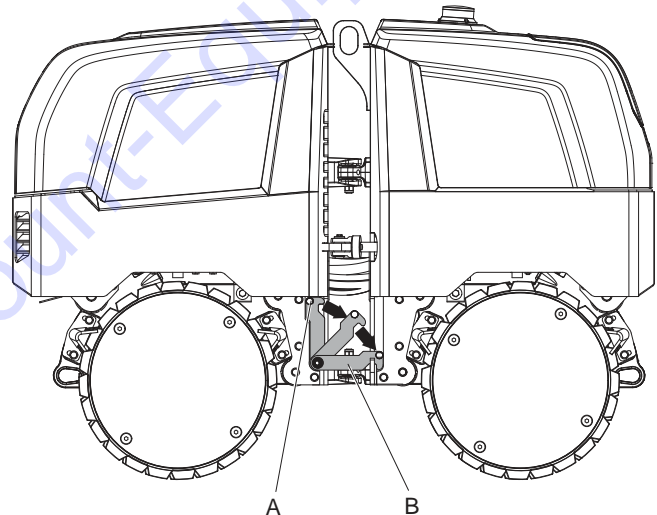
### Transportation



#### **WARNING: Transport hazard**

Never lift the machine without checking if it is intact. A damaged machine can fall apart, which can result in serious injury.

- ◆ Always shut the machine off during lifting and transport.
- ◆ Check the machine's data plate for information about the weight.
- ◆ Check that the shock absorbers, safety straps and lifting point are correctly attached and not damaged.
- ◆ Check that all equipment is dimensioned in accordance with applicable regulations.
- ◆ Make sure the loading area, shipping platform and contact areas on the machine is clean, free from ice, snow, and other slippery materials.
- ◆ Never tow the machine.
- ◆ Always lock the articulated joint. Pull out the locking knob (A) and engage the articulation lock (B). Let the locking knob click into place.

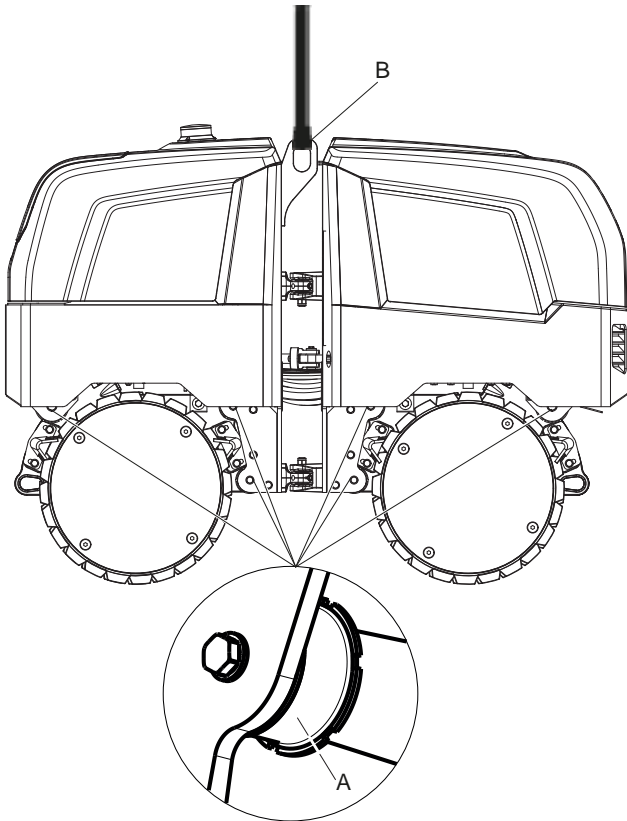


## Lifting the machine



### WARNING: Lifting hazard

Never lift the machine without checking if it is intact. A damaged machine can fall apart, which can result in serious injury.



- ◆ Always lock the articulated joint before lifting the machine.
- ◆ Never lift the machine by the lifting eye at the engine.
- ◆ Check the shock absorbers (A). If there are signs of damage, contact Discount-equipment.
- ◆ Before lifting the machine check that the lifting point (B) is not damaged. If there are signs of damage, contact an authorized workshop.
- ◆ Only lift the machine by the lifting point (B).
- ◆ The lifting point (B) can also be used for retrieving the machine.
- ◆ Always use a sling to lift the machine in order to avoid damage to the lifting point (B).
- ◆ Lift the machine gradually to prevent impact loads.
- ◆ Never walk or stand under a lifted machine.
- ◆ Use lifting equipment with a working load limit (WLL) of at least 2,400 kg (5,300 lbs).

## Secure transportation

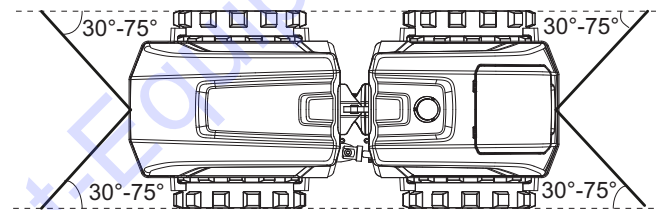
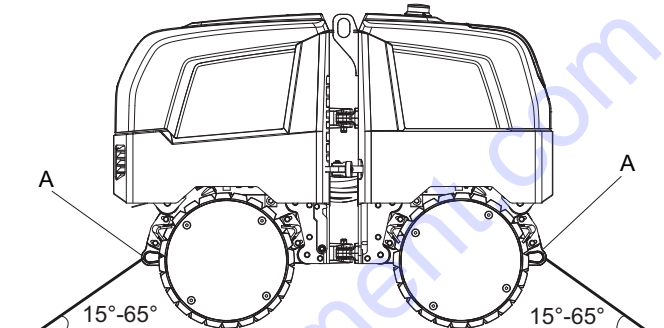


### WARNING: Transport hazard

Always strap the machine securely during all transportation, otherwise it can cause injury.

Secure the machine for road transportation.

- ◆ Use the front and rear securing points to secure the machine using four straps. The straps must be placed at angles between 30°-75° laterally, and 15°-65° in height.
- ◆ After positioning the machine on the transport vehicle, lock the articulation joint.
- ◆ Before securing the machine check that the securing points (A) are not damaged. If there are signs of damage, contact an authorized workshop.



- ◆ Use lashing equipment with a lashing capacity (LC) of at least 2,500 kg (5,500 lbs).

## Storage

- ◆ Empty the fuel tank before storing the machine.
- ◆ Clean the machine.
- ◆ Clean the air filter.
- ◆ Wipe off any oil and dust that has accumulated on the rubber parts.
- ◆ Cover the machine and store it in a dry, dust-free area.

## Disposal

A used machine must be treated and disposed of in such a way that the greatest possible portion of the material can be recycled and any negative influence on the environment is kept as low as possible, and in accordance with local restrictions.

Before a fuel driven machine is deposited it must be emptied and cleaned of all oil, fuel, and coolant. Remaining oil, fuel, and coolant must be dealt with in a way that does not adversely affect the environment.

Always send used filters, drained oil, drained coolant and fuel remnants to environmentally correct disposal.



# Technical data

## Machine data

Machine data	
<b>Engine</b>	
Type	Kubota D1105, 3-cylinder Diesel
Rated power kW (hp) *	18 (24.1)
Rated speed r.p.m.	2,800
Cooling system	Water cooled (combined water/hydraulic oil cooler) + fan
Air filter	Dry type
* As specified by engine manufacturer. The power rating of the engines indicated is the average net power output (at specified r.p.m.) of a typical production engine for the engine model measured to SAE J1995. Mass production engines may differ from this value. Actual power output for the engine installed in the final machine will depend on the operating speed, environmental conditions and other variables.	
<b>Traction system</b>	
Pump	Gear type
Engines	Radial Piston
Pressure relief valve, MPa (psi)	25 (3,626)
<b>Remote control system</b>	
Normal remote control	Radio
Temporary remote control	Cable
<b>Brake system</b>	
Service brake	Hydrostatic
Parking brake	SAHR (Spring Applied, Hydraulically Released)
<b>Performance</b>	
Operating speed, m/min (foot/min)	24 (79)
Transport speed, m/min (foot/min)	48 (157)
Maximum tilt, % (°)	36 (20)
Maximum gradeability with/without vibration, % (°)	45/55 (24/29)
Maximum slope angle for operation downhill, % (°)	25 (14)
Operating temperature, C°(F)	Between -6 (+21) to +45 (+113)
<b>Compaction data</b>	
Vibration frequency, Hz (r.p.m.)	42 (2,520)
Centrifugal force low/high, kN (lbf)	36/72 (8,093/16,186)
Amplitude low/high, mm (in.)	0.55/1.1 (0.02/0.04)
<b>Vibration system</b>	
Pump	Gear type
Motor	Gear type
Pressure relief valve, Mpa (psi)	21 (3,046)
<b>Fluid volumes</b>	
Fuel tank, litres (qts)	30.0 (31.7)
Crankcase oil capacity, litres (qts)	5.1 (5.39)

<b>Machine data</b>	
Hydraulic oil, litres (qts)	21.5 (22.7)
Eccentric element, litres (qts)	0.8 (0.84)
Coolant, litres (qts)	5 (5.3)
Fuel consumption, litres/hour (qts/h)	3.5 (3.7)

<b>Fluids</b>	
Engine oil	Shell Rimula R4 L 15W-40
Eccentric element oil	Shell Omala S4 GX 150
Hydraulic oil	Shell Tellus S2 V 46
Coolant	Shell Premium Antifreeze Longlife 774 D-F
Fuel	Use only ultra low sulfur diesel (0.0015% or 15 p.p.m.) that complies with EN 590 or DIN 51601. <b>NOTE:</b> Never use bio-diesel! Bio-diesel will harm the fuel hoses.

<b>Electrical system</b>	
Battery Voltage, V	12
Generator Capacity, A	40
Fuses, A	2x5, 6x10, 2x30, 1x40, 1x150
Generator, W	360
Starter motor, kW (hp)	1.2 (1.6)

## Weights

<b>Weights</b>	<b>850 mm (33.5 in.)</b>
Net weight, kg (lbs)	1,660 (3,660)
Operating weight EN500, kg (lbs)	1,675 (3,693)

## Radio equipment

<b>Radio equipment</b>	
Operating frequency	2402-2480 MHz, FHSS
<b>Remote control</b>	
Battery specification	3.7 V Li-Ion, 1.95 Ah
Battery life	Up to 8 hours with a new battery
Battery	2 x Li-Ion batteries supplied with the machine . The remote control can be operated without battery via cable remote control.
Data display	Graphic LCD, 128 x 64 pixels
Indication on CAN status	Single-colour LED, Yellow
Indication on main contact	Triple-colour LED, Red/Green/Yellow
Indication on battery	Triple-colour LED, Red/Green/Yellow
Dimensions, mm (in.)	260 x 165 x 150 (10 x 6.5 x 5.9)
Protection class	IP 67
Weight, kg (lb)	1.3 (2.9)
Operating temperature with (for) battery, °C (°F)	Between -20 (-4) and +55 (+131)

Operating temperature excluding battery, °C (°F)	Between -25 (-13) and +85 (+185)
Storage temperature with (for) battery, °C (°F)	Between -20 (-4) and +35 (+95)
Storage temperature excluding battery, °C (°F)	Between -40 (-40) and +85 (+185)
Charging temperature for battery, °C (°F)	Between +10 (+50) and +45 (+113)
<b>Radio receiver</b>	
Operating voltage	12/24 V DC, negative grounded system
General consumption	100 mA, without external load at 12 V
Processor monitoring	2 CPU design, 2 solid state safety switches (RCSS). Designed to fulfill ISO 13849-1, Cat3, PI d.
Indication on radio receiver	Triple-colour LED, Red/Green/Yellow
Indication on CAN status	Twin-colour LED Red/Green
Dimensions, mm (in.)	152 x 141 x 36 (6 x 5.5 x 1.4)
Protection class	IP 67
Weight, kg (lb)	0.65 (1.43)
Operating temperature, °C (°F)	Between -25 (-13) and +70 (+158)
Storage temperature, °C (°F)	Between -40 (-40) and +85 (+185)

### Noise declaration statement

Guaranteed sound power level **L<sub>w</sub>** according to EN ISO 3744 in accordance with directive 2000/14/EC.

Sound pressure level **L<sub>p</sub>** according to EN ISO 11201, EN 500-4.

These declared values were obtained by laboratory type testing in accordance with the stated directive or standards and are suitable for comparison with the declared values of other machines tested in accordance with the same directive or standards. These declared values are not suitable for use in risk assessments and values measured in individual work places may be higher. The actual exposure values and risk of harm experienced by an individual user are unique and depend upon the way the user works, in what material the machine is used, as well as upon the exposure time and the physical condition of the user, and the condition of the machine.

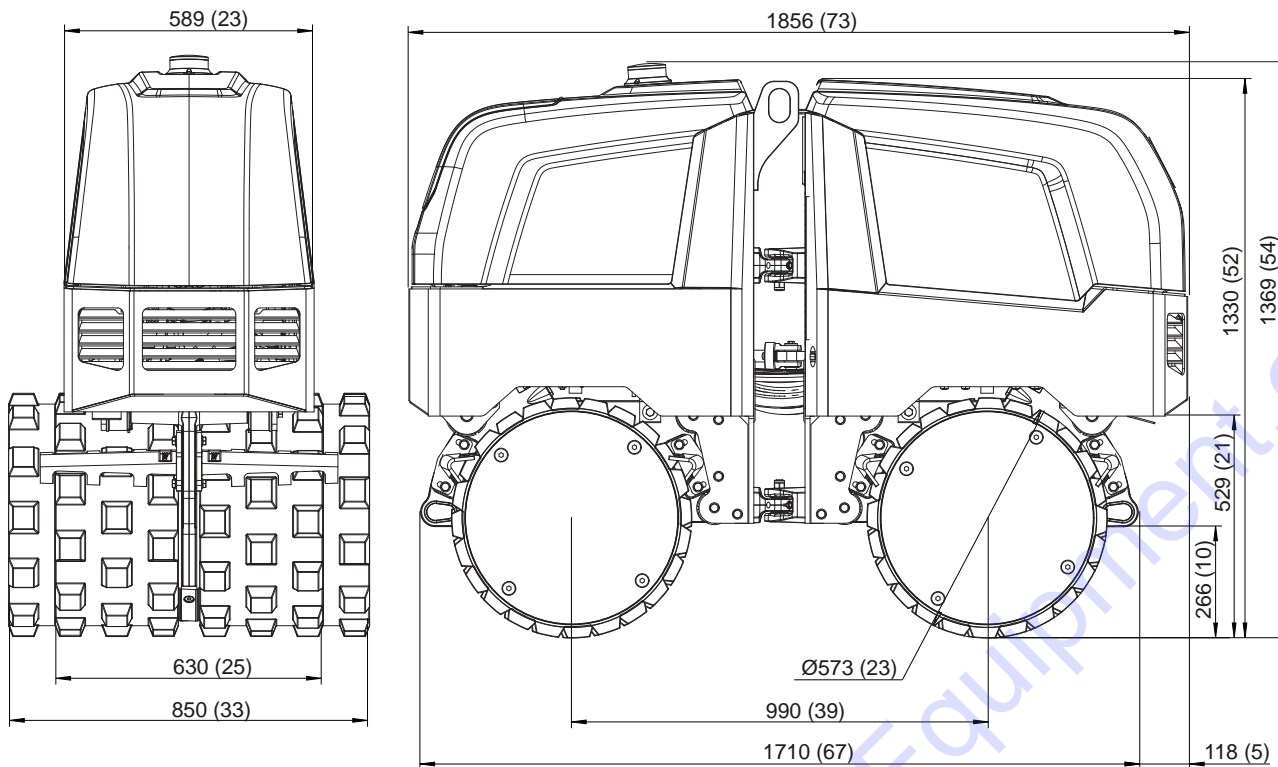
We, Husqvarna AB, cannot be held liable for the consequences of using the declared values, instead of values reflecting the actual exposure, in an individual risk assessment in a work place situation over which we have no control.

### Noise data

	Noise		
	Declared values		
	Sound pressure	Sound power	
	EN ISO 11201	2000/14/EC	
Type	L <sub>p</sub> at operator's ear dB(A) rel 20 µPa	L <sub>w</sub> guaranteed dB(A) rel 1pW	L <sub>w</sub> measured dB(A) rel 1pW
LP 9505	83	106	103

## Dimensions

mm (in.)



## Accessories

### Scraper kit

- ◆ If the extension rings are removed order a scraper kit for 630 mm (24.8 in.) width, see the spare parts list.
- ◆ As default, the machine is maximal width.
- ◆ For changing the scrapers, unscrew the scrapers and change, use thread-locking fluid for the screws.

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