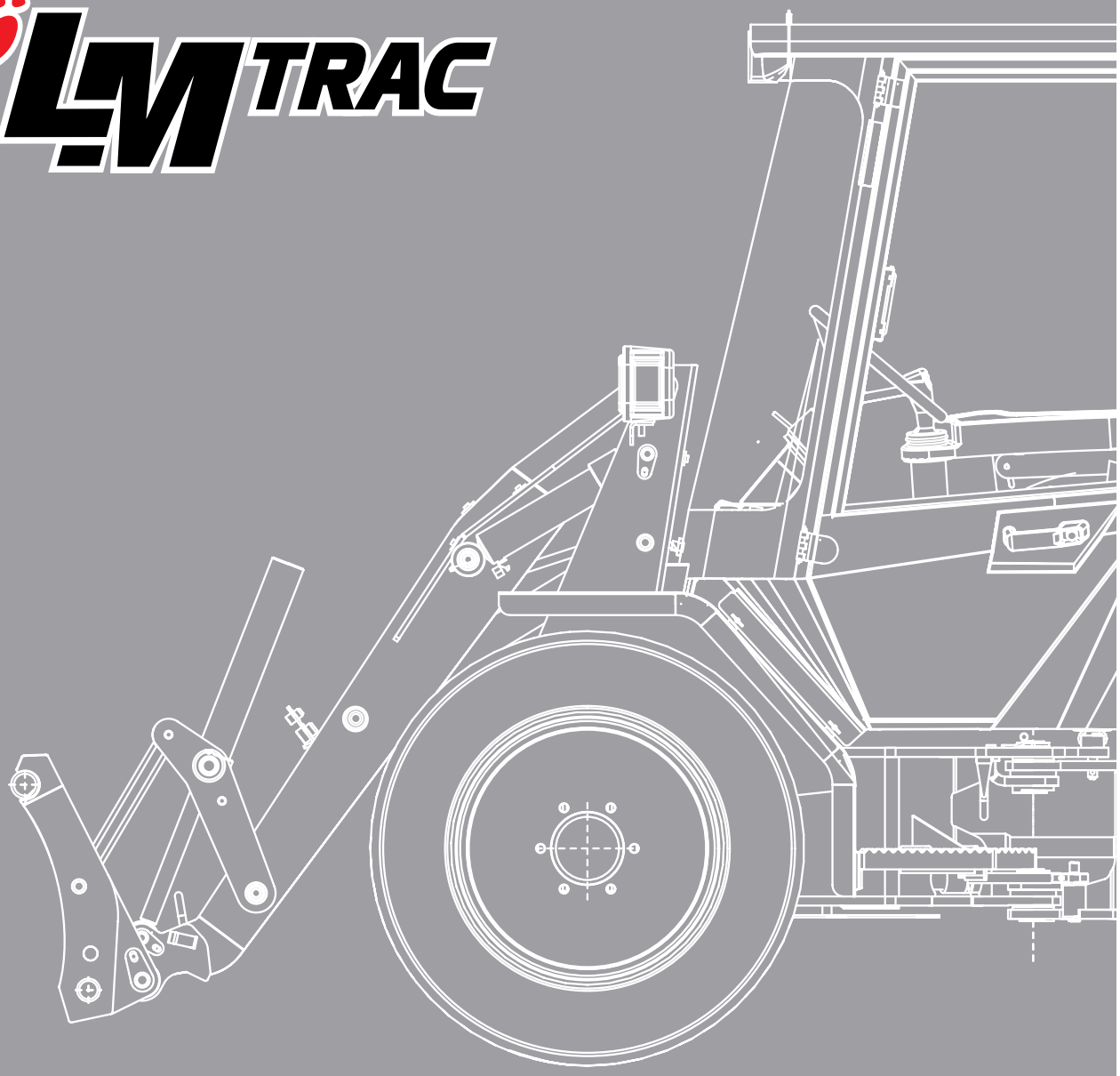
# OWNER'S MANUAL



## LM Trac 586

## 1.0 INTRODUCTION

Congratulations on the purchase of a new LM Trac multipurpose machine. This machine is a high-quality product of Oy LAIMU Ab's innovative design and professional know-how.

The machine is made of high quality materials and it uses components of well-known manufacturers. Strict quality requirements and quality control criteria are followed during all stages of design and production.

This manual contains the information needed for machine operation and maintenance, as well as instructions for safe working procedures. The manual also includes advice in case of malfunctions.

By following the instructions given and performing the instructed maintenances on time you ensure trouble-free and long service life for your machine.

Pay special attention to the safety instructions concerning the use and maintenance of the machine!

People operating the machine must read and understand the instructions given in this manual before operating the machine. People performing maintenance work on the machine must read and understand the instructions concerning the maintenance work before beginning the maintenance work.

The user guide must always follow the machine. If the manual becomes illegible or if it is lost, get a new manual or additional manuals from a LM Trac dealer.

Due to long-term and continuous product development we reserve the right to make design and technical changes without prior notice.

Of the reasons mentioned it is possible that the machine does not fully correspond with the information given in this manual.

Get the latest product information from a LM Trac dealer and new updated manual if needed.

**Oy LAIMU Ab**

**Info!**



All possible has been made to ensure the adequacy and accuracy of the information in this manual. We do not accept responsibility for direct or indirect damages caused by the errors on this manual.

**Oy LAIMU Ab**

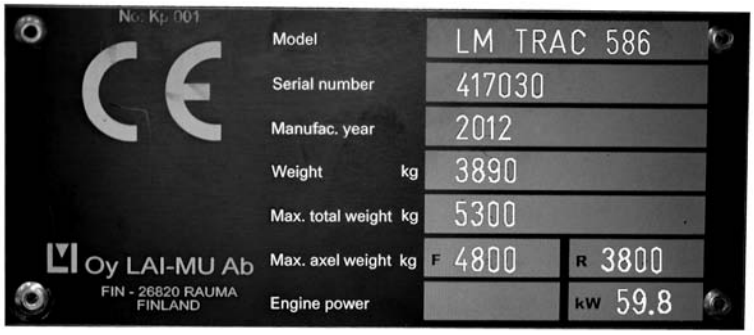
## 1.1 Machine information and manufacturing plate

Fill the information on the rows below:

| | | |
|---|---|---|
| Owner: | _____ | _____ |
| Address: | _____ | _____ |
| Telephone number: | _____ | _____ |
| | Model | Serial Number |
| Multipurpose machine: | _____ | _____ |
| Engine: | _____ | _____ |
| Dealer: | _____ | _____ |
| Spare parts dealer: | _____ | _____ |
| Service center: | _____ | _____ |

The manufacturing plate (A) is located on the front frame below the cab-in door.


Fig. 1.




Markings on the manufacturing plate:

CE marking, as well as:

The machine model, serial number, year of manufacture, weight, max. total weight, max. axle load front / rear, the engine power.

The engine manufacturing plate (B) is located on the side of the hydraulic reservoir tank, as well as on the right side of the engine cover.


Fig. 2.


The engine manufacturing includes the model and serial numbers.

## 1.2 User Manual

This manual consists of seven (7) different sections;

01 Introduction
- Table of Contents
02 Security
03 Structure of the Machine
04 Cabin and Controls
05 Driving and Operating
06 Maintenance
07 Technical Specifications

The LM multipurpose machine includes the latest technology and its use and maintenance place certain requirements on the user. By reading this manual and adopting the given information, you can ensure a safe and technically correct way to use and maintain this machine.

The manual's content is intended to be as clear as possible, and every effort was made to ensure its accuracy and adequacy. Because of the wide range of operating conditions and procedures, it is nevertheless possible that some of the relevant information has been omitted or is incorrect. The operator of the machine must take this into account and act accordingly.

This book also does not include operating/maintenance instructions for the multipurpose machine implements. The operator of the machine must read and understand the security, operation and maintenance instructions of the implements which can be attached to the multipurpose machine.

## 1.3 Safety and environmental protection

The machine is manufactured to be as environmentally friendly and safe to use as possible. The operator is solely responsible for ensuring that the machine is used in a way which respects the environment, surroundings and their safety.

Read and understand section: 02 Safety.

## 1.4 Structural changes

The changes on the structure of the machine and / or operating system always require Oy LAIMU Ab's written consent or the machine warranty will be void.

## 1.5 Liability for defects and warranty

Oy LAIMU Ab's defect liability / warranty does not cover damage demonstrably incurred by actions against the instructions of this manual.

**NOTES:**

## Table of Contents

## 2.0 SAFETY

Using and maintaining the machine must be done in compliance with all applicable laws and regulations.

Manual safety and operating instructions must be observed!

Maintenance and adjustment instructions must be followed. They are to ensure the smooth and safe operation and a long, economic service-life for the machine.

If a problem occurs with the machine you can not solve and remove, please contact LM-Trac service.

Stop working immediately if there is any slight chance that the fault causes danger of personal injury or danger of damaging the machine.

### 2.1 Markings and Symbols

**Varoitus! Varning! Warning!**

The warning label warns about the danger of personal injury and / or serious property damage and instructs how to eliminate these risks.

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With Note! we want to draw your attention to an issue or activity that will guide you to the most safe and economical way of working with the machine.

**Info!**

Info! provides you with general information such as authority regulations in different contexts (i.e. disposal), protecting the implement and environment when working and maintaining the machine etc.

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### 2.2 Safety Guidelines

The best insurance against accidents is to follow the safety guidelines. Carefully read and understand this part before working with the machine. Each person operating the machine, regardless of experience, must be read and understand this section before using the machine. The machine owner must be inform the machine operators of these instructions. Keep the user manual in the place reserved for it.

#### 2.2.1 Before operating

- Get to know the machine and be aware of its limitations.Read the user manual before starting the machine.
- Follow all the warning and instruction labels on the machine.
- Do not operate the machine under the influence of alcohol, drugs or intoxicating substances.Fatigue can also be dangerous.
- Explore the surroundings before working and the attachment of implements.
- Do not use baggy, worn or too loose-fitting clothing.Clothes can be caught in rotating parts or to control devices and cause accidents. Use correct protective clothing, helmet, safety shoes, protective glasses, hearing protection and working gloves etc. such as occupational safety and health regulations require.
- Do not allow passengers on the machine while working.
- Check the mechanical parts for wear and proper adjustments.Replace any worn or damaged parts immediately. Check the tension of bolts and nuts at regular intervals.
- Keep the machine clean.Accumulated soil, grease, dust and grass can ignite and cause accidents.

- Use only implements and additional tools approved by Oy Lai-Mu Ab.
- Before starting, make sure that the machine is equipped with the necessary amount of fuel and oil, and that the machine is lubricated and all necessary maintenances are done.
- Do not change the structure of the machine. It can lead to safety risks that can not be predicted.
- Do not let unlearned operators use the machine.The borrower of the implement is responsible for any damage or accidents.

### 2.2.2 During operation

- Get in and out of the machine in a safe manner.Always use the handles and steps. Never touch the controls when getting on the machine. Never jump into or out of the machine.
- Start and drive the machine only from the driver's seat.Never get out of the driver's seat while the engine is running.
- Before starting the machine, make sure that all controls are in neutral or off.
- Do not start the engine by shorting the starter motor terminals.Do not try to bypass the ignition switch, the machine may start and begin moving.
- Do not start the engine in an enclosed or poorly ventilated area.Exhaust gases are poisonous.
- Make sure that all safety devices are attached and hatches closed.Install new safety equipment to replace damaged or missing ones.
- Prevent the machine from tipping over.Match the speed to the prevailing conditions and do not drive on too steep slopes.
- Keep the doors and hatches closed while driving.Do not drive the machine from outside the cab.
- Use the machine controls in a safe manner.Press the accelerator pedal slowly, it will prevent the machine from starting in a jerky disruptive way.
- Plan your route and avoid obstacles.
- Keep the required distance from ditches and steep ramps.Be especially careful in the rain and in wet or icy / snowy surface.
- Pay attention to other road users.Mind where you are driving and use the beacon light according to the local road traffic act and regulations.
- Keep in mind that the stability of the machine will change according to the load.Keep loads as low as possible.
- When driving downhill, let the machines power transmission do the braking.Avoid the use of the brake pedal to reduce speed.
- Do not change the direction of travel and speed when driving on slopes.
- If the machine tips over, hold the steering wheel, do not jump.
- Carefully follow the use and safety instructions of the working equipment.
- Do not go to the swivel joint area of the crane while the engine is running.

### 2.2.3 After operation

- ► Park the multipurpose machine on firm, level ground.
- ► Lower all implements to the ground.
- ► Stop the engine.
- ► Remove the ignition key.
- ► Lock the doors.

► Open the main power switch.

### 2.3 During maintenance work

- Park the machine on a flat, hard surface, lower the implements on the ground and stop the engine.
- Note that the hydraulic system pressure may remain after stopping the engine.
- If you disconnect the hydraulic components, make sure that the oil has cooled down enough to avoid burns.
- Open joints gently so that the oil does not reverse by force.
- Before starting the engine, exhaust system, radiator, or hydraulics is, let it cool down completely.
- Always stop the engine before refueling.Avoid splashing and overfills.
- Do not smoke while refueling and servicing of the battery!Make sure that there are no sparks or open flame near the fuel tank or the battey. The battery discharges combustible gases, especially during charging.
- Read the "booster battery" on section 5.3.4, before using the booster battery during the startup.
- Do not place metal objects on the battery terminals.
- To prevent short circuits and sparks, always disconnect the negative lead first and connect the positive cable first.
- Keep your first-aid kit and fire extinguisher available.
- Do not remove the radiator or expansion tank cap, before the fluid has cooled down.Turn the cap open carefully, and let the pressure slowly discharge.

**Varoitus! Varning! Warning!**

Forcefully erupting pin-sharp hydraulic oil spray may be invisible, and penetrate through clothing and skin causing serious injury.

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Never check for leaks by hand, but please use a piece of cardboard. Wear work gloves and face shield. If the oil penetrates the skin, seek medical attention immediately. Oil can cause gangrene, a serious inflammation and allergic reactions.

- Battery and the battery acid contain heavy metals. Dispose of batteries in accordance with current laws and regulations.
- Comply with all applicable laws and regulations when disposing of oil, antifreeze, solvents, batteries and battery acid.
- Wear a face shield or goggles to protect eyes and respiratory system against dust and other particles.
- Never go under the machine, unless you are sure that it is firmly supported and stays in place.Use suitable axle stands or other reliable support systems.
- Lock the machine frame joint with a locking pin before lifting the machine.
- Do not lift the swinging rear axle from the middle.
- Never go under uplifted linkage, unless it is locked in place with the support stand.

### 2.4 Labels and plates

- Follow all label instructions on the machine.
- Keep the labels and plates clean and legible.
- Clean labels with soap and water, dry with a soft cloth.
- Replace damaged or worn labels with new ones.

- If you replace the components with a label, make sure that the new label is installed in the same place.
- Install the new labels on a dry, clean and grease-free surface.Installation temperature must be at least +10 ° C.

Notes:

## 3.0 MACHINE STRUCTURE

Knowing the structure of the machine is important for safe and effective use and maintenance. This section covers the structure of the machine, the locations and description of main components.

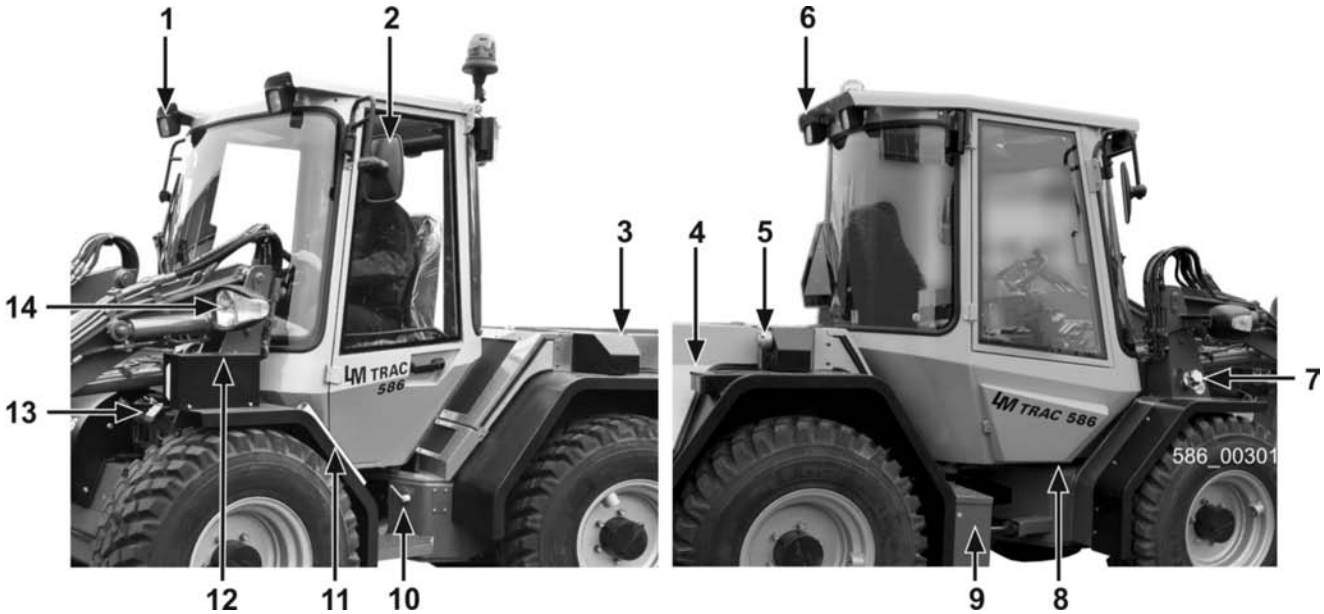
Detailed instructions for operating and maintaining the machine can be found in the Operating the Machine and Maintenance sections.

### 3.1 The Main Components and External Devices

Fig. 3.


| | | |
|---|---|---|
| 1. Cab | 2. Beacon light, section 4.8. page 32 | 3. The engine and hydr. pumps |
| 4. Rear lifting device | 5. Auxiliary heater plugs | 6. Backup power socket |
| 7. Hydraulic drive motor | 8. Orbitrol, steering gear | 9. Front lifting device |

Fig. 4.

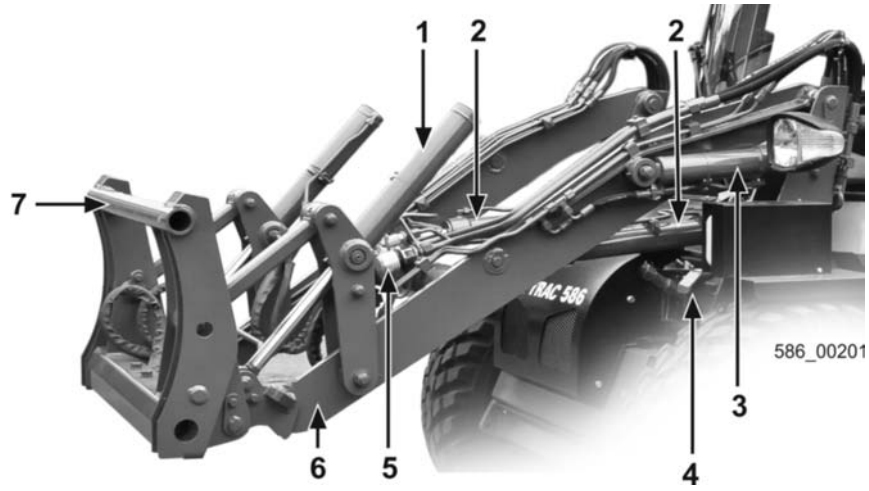



| | | |
|---|---|---|
| 1. Front headlights | 2. Side mirrors | 3. Engine hydraulics and the rear tank line |
| 4. Tail lights | 5. Trailer plug and rear cylinder hydraulics | |
| 6. Rear work lighst | 7. Fuel tank, filling | 8. Cab air filter |
| 9. Battery | 10. Main Power Switch | 11. Maintenance support stand |

| | | |
|---|---|---|
| 12. Windshield washer fluide container | 13. Ploughing support | 14. Headlights |

### 3.1.1 Front lifting device

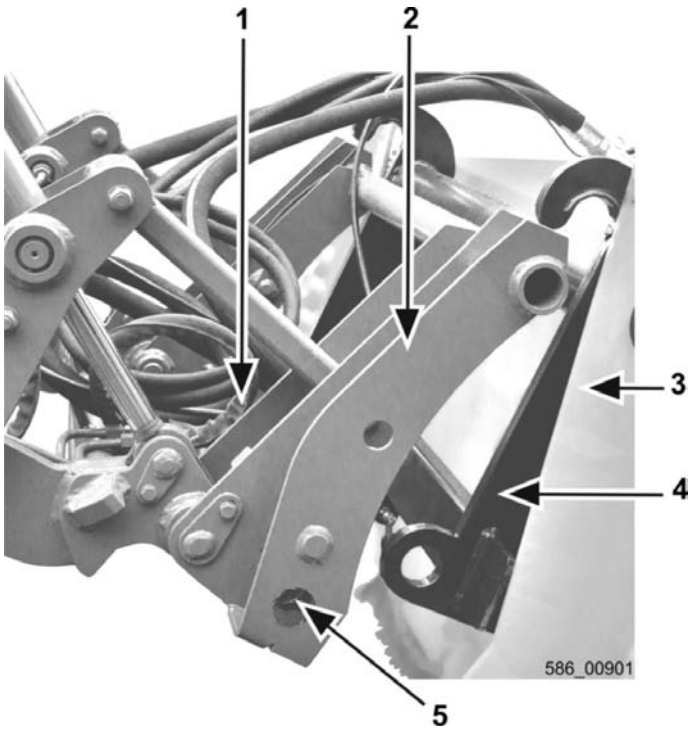
Fig. 5.




| | | |
|---|---|---|
| 1. Loader cylinders | 2. Lifting cylinders | 3. Stability cylinders |
| 4. Shaft supports | 5. Hydraulic quick couplers | 6. Lifting shafts |
| 7. Quick attachment device | | |

**Quick attachment device**

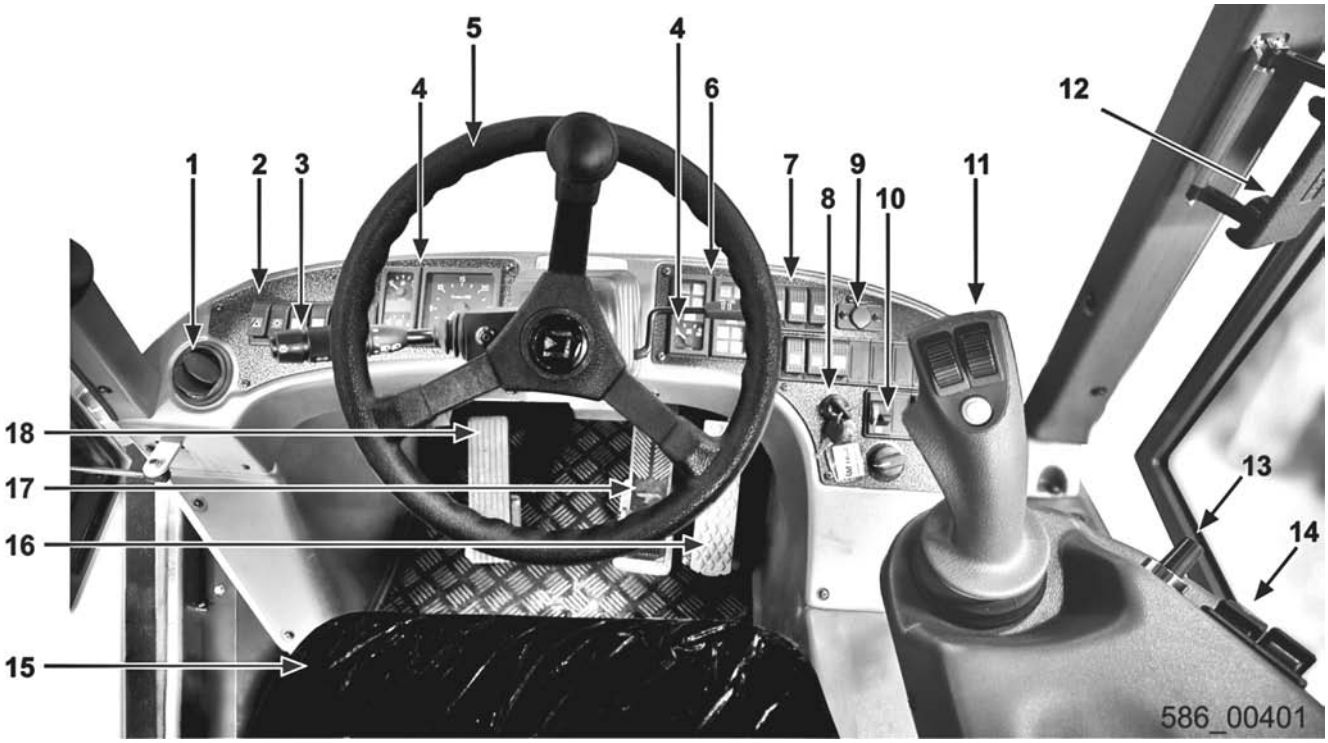
Fig. 6.




| | | |
|---|---|---|
| 1. Locking cylinder fir the implement locking pins | | 2. Quick attachment device |
| 3. Implement | 4. Implement mounting bracket | 5. Locking pins |

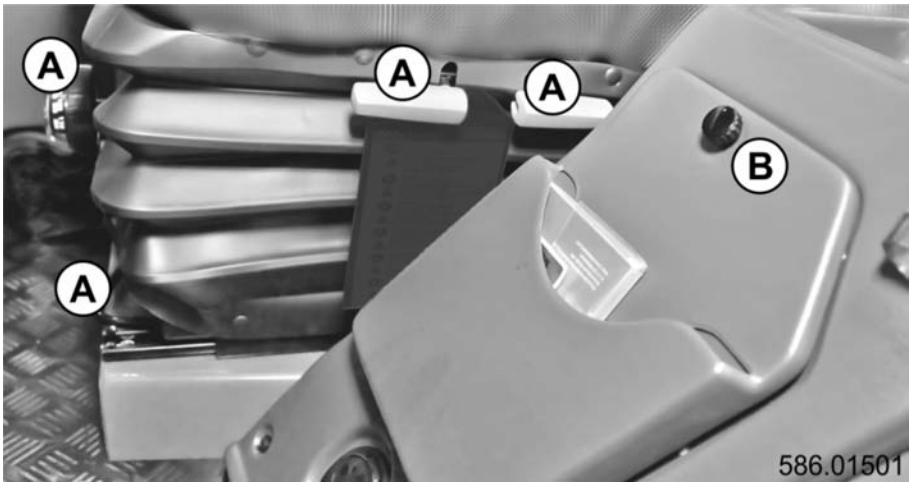
## 3.2 Cab interior

Fig. 7.




| | | |
|---|---|---|
| 1. Air vents | 2. Light switch panel | 3. Multipurpose switch |
| 4. Instrumentation | 5. Steering wheel | 6. Indicator light panel |
| 7. Function switch panel | 8. Ignition | 9. Power plug |
| 10. Heater & Air conditioning | 11. Boom control lever (joystick) | 12. Cab ventilation door |
| 13. Motor hydraulics control | 14. Motor hydr. switches | 15. Seat |
| 16. Accelerator | 17. Brake pedal | 18. Inching pedal |

Fig. 8.

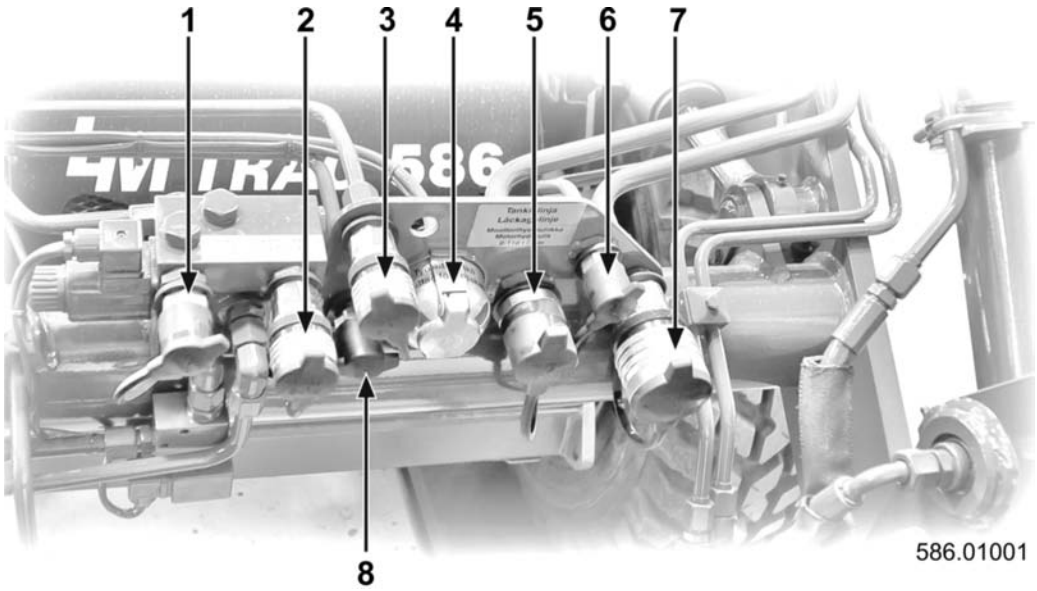


**A. The seat adjustments**

**B. Document compartment, under which the main electric panel, fuses and relays.**

## 3.3 Hydraulic jacks (depending on the features of your multipurpose machine)

**In the front**

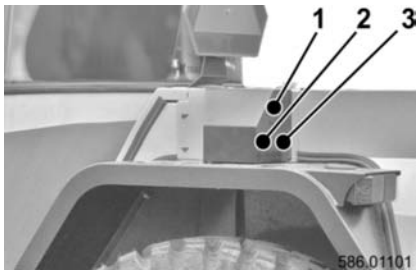



| | |
|---|---|
| 1. ½” -nipple, cyl.hydraulics plug (nipple = male) | 2. ½ "frame, cyl.hydraulics quick connector (frame = female) |
| 3. ½" frame, (cyl.hydraulics quick connector) | 4. Socket for implement electricity |
| 5. 1" nipple (motor hydraulics quick connector) | 6. ½" nipple, (tank line quick connector) |
| 7. 1" frame (motor hydraulics quick connector) | 8. ½" nipple (cyl.hydraulics quick connector) |

**Rear left**

Motor hydraulic connectors (depending on the machine features):

Fig. 9.



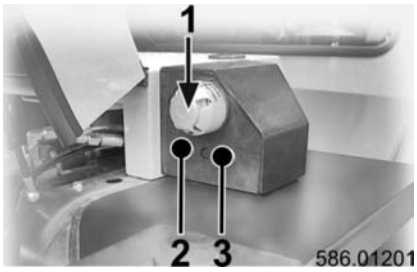

| |
|---|
| 1. ½" nipple (overflow) |
| 2. 1”-nipple |
| 3. 1”-frame |

Always connect the motor overflow in a dedicated ½" quick coupling (1)

**Rear right**

Cylinder hydraulics quick connectors and electrical outlet (depending on the machine features):

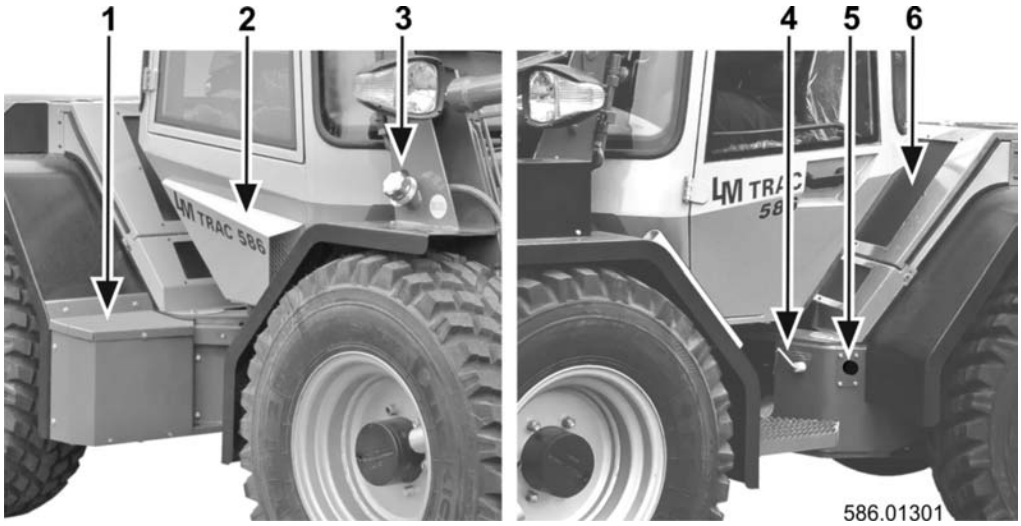
Fig. 10.




| |
|---|
| 1. Power outlet for rear |
| 2. ½”-frame |
| 3. ½”-nipple |

Implement mounted to rear or on top of the hood receives power from the power outlet (1).

### 3.4 Battery, power switches and boxes, pa-tank




| | | |
|---|---|---|
| 1. Battery | 2. Cab air filter | 3. Tank refueling |
| 4. Main Power Switch | 5. Backup power socket | 6. Radiators and condenser |

The battery is maintenance-free and does not require any special maintenance. However, make sure that the battery cables are properly connected and that the cable clamps and the battery casing are clean. Make sure that the battery is securely attached.

Main power switch (4) and backup power socket (5) are located on the left side of the frame, the rear wheel at the front.

**Varoitus! Varning! Warning!**

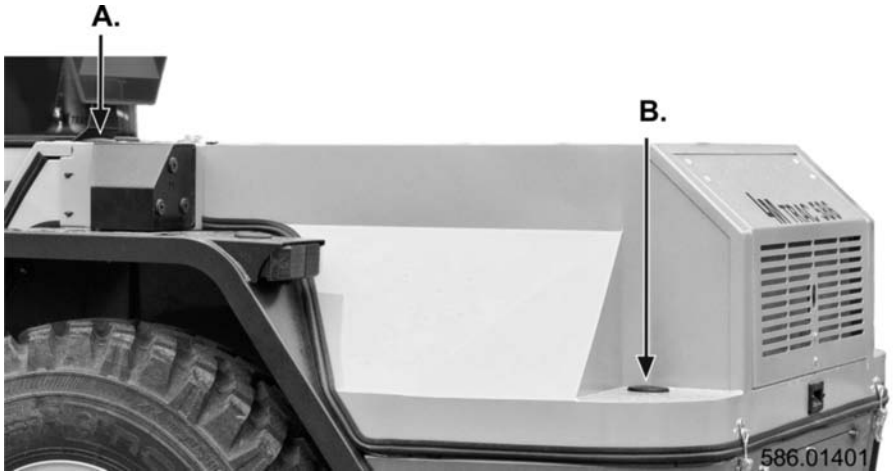
Main Power Switch must not be disconnected while the engine is running!

Main Power Switch turns off all electrical power between battery and the machine.

The optional backup power socket and the jumper cable allow power administration and uptake reliably and easily.

## 3.5 Hood mounted implements

Fig. 11.




A and B; mounting rail fastening holes / 4 pcs.

Variety of implements can be mounted on top of the engine cover, such as pallets and containers. Mounting is done on separate mounting rails or directly on holes on the frame. Mounting rail attachment points A and B. The mounting rails can be purchased from the nearest Lai-Mu representative.

**Note!** A hood mounted implement limits the access to the engine compartment.

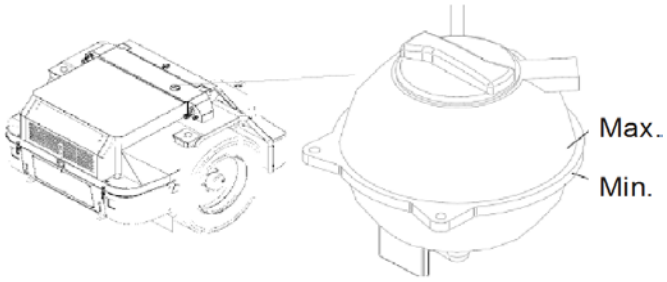
### 3.6 Coolant expansion tank

**Varoitus! Varning! Warning!**

Open hot engine expansion tank cap slowly and carefully!

Spraying pressurized hot liquid causes severe burns.

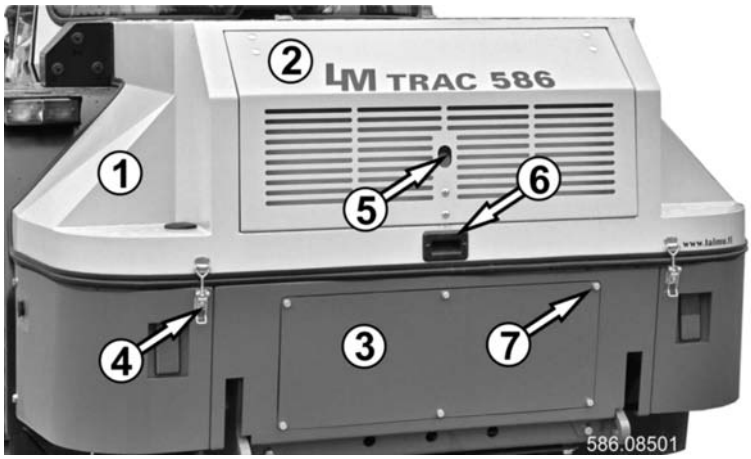
Fig. 12.




The coolant level must be between the MIN and MAX marks. Add coolant as needed. Make sure the coolant is frost resistant in the autumn.

### 3.7 Moottoritila

Fig. 13.




| | | |
|---|---|---|
| 1. Hood | 2. Hood latch | 3. Service hatch |
| 4. Hood latches | 5. Hood hatch latch | 6. Hood lift handle |
| 7. Service hatch mounting screws | | |

Primarily the whole hood (1) is lifted up when maintenance and repair is done to the components in the engine compartment. If, however, there is a implement mounted on the hood which prevents lifting it, necessary checks can be performed via the hood hatch (2).

Service hatch (3) provides access to oil filter (and other components).

**Hood opening:**

Open the latches (4) 2 pcs and lift the hood up by lifting the handle (6). The hood lifts and stays up on gas struts.

**Hood hatch opening:**

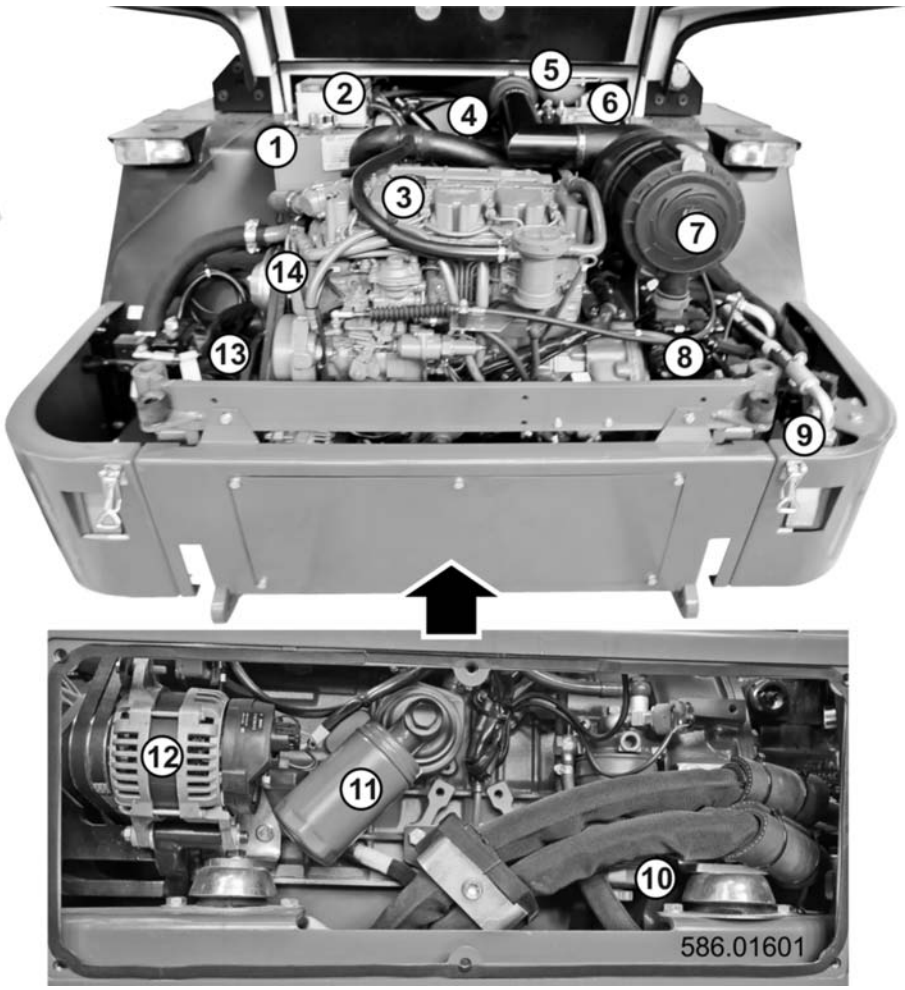
Pull the latch (5) up and at the same time pull the entire hatch (2) backwards. The hatch comes off completely, it is not hinged.

**Service hatch opening:**

Open the bolts (7) 6 pcs and remove the hatch.

### 3.7.1 The engine compartment components

Fig. 14.




| | | |
|---|---|---|
| 1. Hydr. oil tank and measuring cylinder. | 2. Fuse and relaybox *<br>3. | 4. Engine. |
| 5. Blower, coolers and condensers. | 6. Coolant expansion tank. | 7. Hydr. return filter. |
| 8. The air filter and dust pocket. | 9. Driving hydr. and blower hydraulic pump | 10. Hydr. pressure filter. |
| 11. Fuel filter. | 12. Oil Filter. | 13. Charger. |
| 14. Work hydraulics pump. | 15. Air conditioning compressor. (Depending on equipment). | |

Air conditioning compressor. (Depending on equipment).

* Fuse and relay box (2) includes relays and the following fuses:

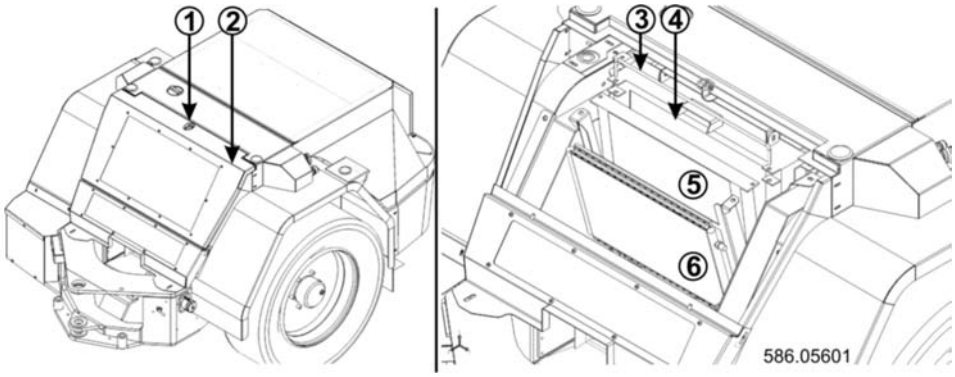
- Main power 80A
- Ignition 50A
- Glow 50A

These fuses are of type MAXI

### 3.7.2 Radiators

Radiators are located on the rear axle

Fig. 15.




| | | |
|---|---|---|
| 1. Pin | 2. Grille | 3. Locking rod |
| 4. Combustion engine radiator core | 5. Hydraulic oil radiator core | 6. Air condition condenser |

To clean radiator / condenser:

- ► Remove the pin (1)
- ► Lift the front grille (2) out of position.
- ► Release the lock bar (3), gently separate the radiator cores (4, 5, and 6) from each other.

Only separate the radiator cores the amount necessary to carry out the cleaning.

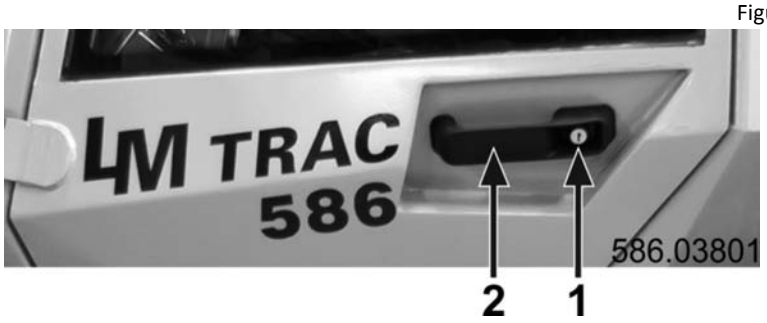
**Varoitus! Varning! Warning!**

Do not point intense pressure / spray on the radiator cores.

# 4.0 CABIN AND CONTROLS

## 4.1 Doors and locks

Figure 16.




Open the door from the outside by pressing the opening button (1) and pulling the handle (2).

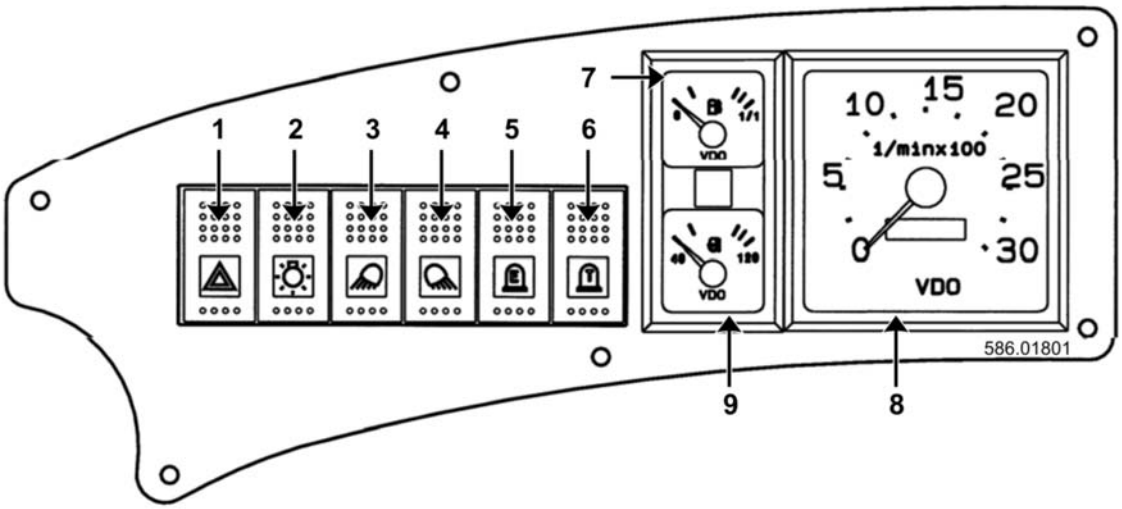
The door can be locked with the key.

Figure 17.


Open the door from the inside by lifting the lever (1)

## 4.2 Instrument panel, left

Figure 18.




| | | |
|---|---|---|
| 1. Warning flasher switch | 2. Parking/headlight switch | 3. Front working light switch |
| 4. Rear working light switch | 5. Front roof beacon switch (*) | 6. Rear roof beacon switch (*) |
| 7. Engine temperature gauge | 8. Fuel gauge | 9. Tachometer/operating hour counter |

**(*) Depending on the equipment level of the machine!**


**7. Fuel gauge.**

The fuel gauge displays the amount of fuel remaining in the fuel tank.


**8. Tachometer/operating hour counter.**

**A. Tachometer**

The tachometer displays the running speed of the engine (r/min). The numbers on the display are multiplied by a hundred. For example, 10 = 1,000 r/min.

**B. Operating hour counter**

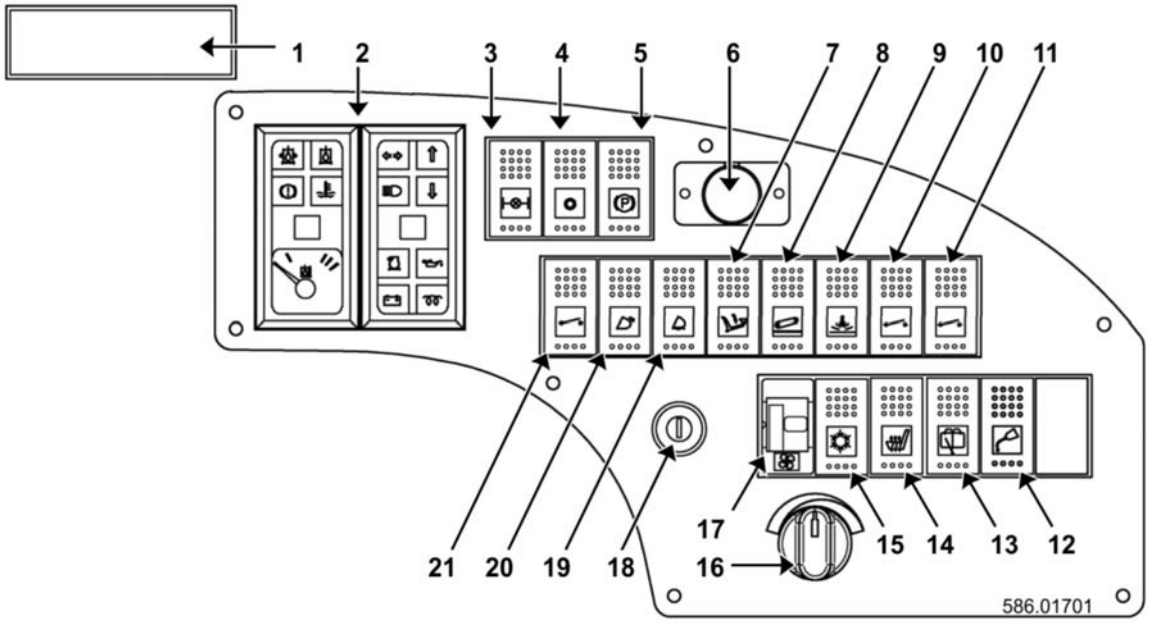
The operating hour counter displays engine total running time. The display consists of hours and hour decimals.


**9. Engine temperature gauge**

The engine temperature gauge displays the temperature of the engine coolant.

## 4.3 Dashboard, right

Figure 19.




| | |
|---|---|
| 1. General alarm light | 2. Indicator panel |
| 3. Differential lock (front) | 4. Light / heavy duty (*) |
| 5. Parking brake switch | 6. Power take-out socket |
| 7. Rear lifter lift/lower switch (*) | 8. Rear lifter float switch (*) |
| 9. Rear cylinder hydraulics switch | 10. Rear tool power supply 1 (*) |
| 11. Rear tool power supply 2 (*) | 12. Central lubrication switch (*) |
| 13. Rear window wiper/washer switch (*) | 14. Seat/mirror heating switch (*) |
| 15. Air conditioning switch (*) | 16. Heating adjustment |

| | |
|---|---|
| 17. Heater fan switch | 18. Ignition switch |
| 19. Fork flex switch | 20. Tool lock switch |
| 21. Front tool power supply switch | |

**(*) Depending on the equipment level of the machine!**

### 1. General alarm indicator

This amber light will blink if one of the following warnings is activated:

- Engine oil pressure
- Hydraulic pressure filter
- Hydraulic return filter
- Engine temperature
- Engine air filter
- Brake circuit pressure

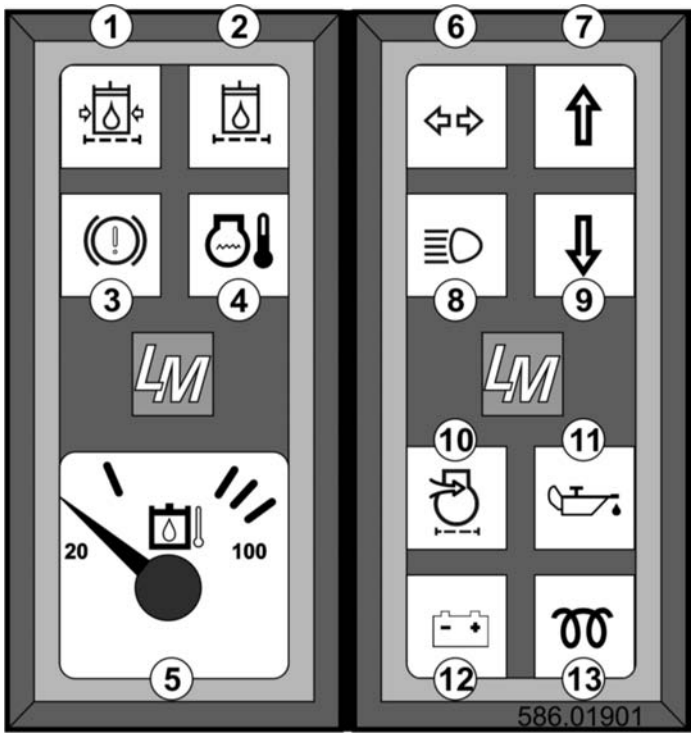
**Varoitus! Varning! Warning!**

When the amber alarm light blinks, discontinue using the machine immediately and turn off the engine!

Determine the cause of the alarm and perform the necessary maintenance before operating the machine.

### 2. Indicator panel

Figure 20.




| | |
|---|---|
| 1. Pressure filter (drive hydraulics) indicator | 2. Pressure filter (operating hydraulics) indicator |
| 3. Brake circuit pressure indicator | 4. Engine coolant indicator |
| 5. Hydraulic oil temperature gauge | 6. Turn signal indicator |
| 7. Running direction forward, indicator | 8. High beam indicator |
| 9. Running direction backward, indicator | 10. Not used |
| 11. Engine oil pressure indicator | 12. Charge indicator |
| 13. Glow indicator | |

## 4.4 Symbols and their meaning

Learn the symbols and their meanings to make the use of the machine easy.

**Warning flasher switch**

All of the machine's flashers can be switched on by pressing the lower part of the switch. The indicator on the switch flashes in time with the flashers.

**Parking/headlight switch**

The switch has 3 positions:

1. Top part pressed: Lights off
2. Centre position: Parking lights are on
3. Bottom part pressed: Headlights are on. Switching between low and high beam is done using the multi-purpose switch on the steering column.

The parking lights operate even when power is switched off; remember to switch off the headlights before stopping the engine.

**Front working light switch**

The front working lights switch on when the lower part of this switch is pressed. The indicator on the switch is lit when the front working lights are on.

**Rear working light switch.**

The rear working lights switch on when the lower part of this switch is pressed. The indicator on the switch is lit when the rear working lights are on.

**Front roof beacon switch (if installed).**

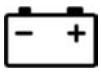
The beacon switches on when the lower part of this switch is pressed. The indicator on the switch is lit when the beacon is on.

**Rear roof beacon switch (if installed).**

The beacon switches on when the lower part of this switch is pressed. The indicator on the switch is lit when the beacon is on.

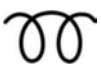
**Hydraulic oil temperature gauge**

This gauge displays the temperature of the hydraulic oil. Normal temperature during use is approx. 80°C.



**Charge indicator**

This indicator is lit when an error occurs in the charging system. The light is lit when power is switched on, and turns off once the engine has started. If the indicator lights up while driving, determine the cause.



**Glow indicator**

This indicator is lit when the automatic glow system is operational.

**Engine oil pressure indicator**

This indicator is lit when the engine oil pressure falls too low. The light is lit when power is switched on, and turns off once the engine has started. If the indicator lights up while driving, check the engine oil level.

**High beam indicator**

The blue indicator is lit when the high beam headlights are switched on. You can switch between low beam and high beam using the multi-purpose switch on the steering column.

**Reverse indicator**

This indicator is lit when REVERSE is selected

**Forward indicator**

This indicator is lit when FORWARD is selected as the driving direction.

**Turn signal indicator**

This indicator will flash when the left or right turn signal is switched on. The turn signal can be switched on from the multi-purpose switch on the steering column.

**Pressure filter indicator**

This indicator is lit when the driving hydraulics pressure filter is clogged. Replace the filter as soon as possible.

**Return filter indicator**

This indicator is lit when the operating hydraulics pressure filter is clogged.

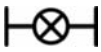
Replace the filter as soon as possible.

**Brake circuit pressure indicator**

This indicator is lit when the brake circuit pressure falls too low. Determine and correct the cause for the pressure decrease before resuming work.

**Coolant indicator**

This indicator is lit when the engine temperature rises too high. If the indicator lights up while driving, check the reading of the engine temperature gauge (7). Determine and correct the cause for the overheating before resuming work.



**Differential lock switch**

This switch is used to switch the differential lock on the front axle on and off. When the lock is engaged, drive as straight as possible and avoid steep turns. The lock is not recommended for speeds over 10 km/h. The indicator on the switch is lit when the differential lock is on.

PROGRAM

**PROGRAM Light / heavy duty**

Drive programme switch.
For more information, see 5.8 Light / heavy duty page 45.

**Parking brake switch**

The parking brake is switched on by means of spring force, and released by hydraulic pressure. The brake is always on when the engine is stopped. The indicator on the switch is lit when the parking brake is on. Always apply the parking brake before stopping the engine.

**Power take-out socket**

The power take-out socket is plug-type, and it can be used to power a mobile phone, for example. The largest allowed current draw is 10 A when the roof beacon is switched off.

**Front tool power supply switch**

This switch is used to connect power to the power take-out socket located on the front fork. Power is disconnected when the switch is released. The indicator on the switch is lit when power is switched on.

**Front tool lock switch**

The front tool lock is opened and closed by holding the lower edge of the switch down and at the same time as using the hydraulic cylinder control (roll the joystick to the left).

**Fork flex switch**

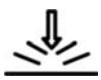
This switch is used to switch the fork flex on and off . Fork flex improves machine handling during transit when a heavy tool is attached to the fork. The flex must be switched off while working.

**Rear lifter switch**

This switch is used to raise and lower the rear lifter. The rear lifter will not rise if floating is switched on.

**Rear lifter float switch**

This switch is used to switch the rear lifter float on and off. Remember to switch off the float before lifting the rear lifter. The indicator on the switch is lit when floating is switched on.



**Rear cylinder hydraulics switch**

This switch is used to route oil flow to the cylinder hydraulics quick connectors located at the back of the machine.


**Rear tool power supply 1**

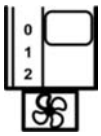
This switch is used to connect power to the first power take-out socket located at the rear of the machine. Power is disconnected when the switch is released.


**Rear tool power supply 2**

This switch is used to connect power to the second power take-out socket located at the rear of the machine. Power is disconnected when the switch is released.

**Ignition switch**

A more detailed explanation of ignition switch operation can be found under “Engine operation”.




**Fan switch**

The fan switch has 4 positions:

0) Off

1) Speed I

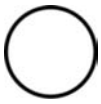
2) Speed II

3) Speed III

The highest speed is intended for quick cabin heating and windscreen defrosting. The lowest speed is usually used together with air conditioning to create the lowest possible draft.

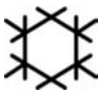
**Heater control**

This control is used to regulate the amount of water entering the heater core. Turing the knob to the right increases cabin temperature. Turning the knob all the way to the left closes water circulation into the heater core.



**Air conditioning control**

This control is used to adjust the power of the air conditioning. Do not operate the air conditioning at a too high power in order to avoid over-cooling the cabin.

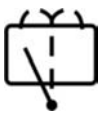


**Air conditioning switch**

This switch is used to switch the air conditioning on and off . The air conditioning only operates when the fan is on. Turn the ventilation filters to direct air upwards, away from the driver’s body.

**Seat/mirror heating switch**

This switch is used to switch the heating of the seat and external mirrors on and off. The indicator on the switch is lit when the heating is switched on. Remember to turn off the heating when it is no longer required.



**Rear window wiper/washer**

The switch has three positions:

0) Off

1) Rear window wiper on

2) Rear window washer on

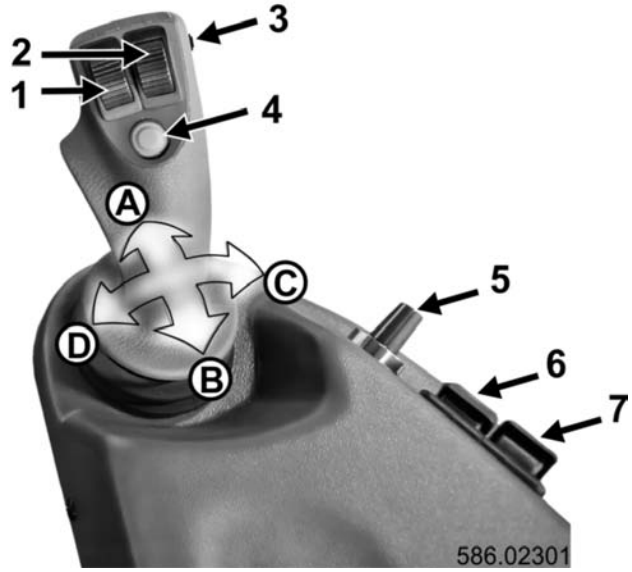
The switch returns to position 1 when released.


**Central hydraulic lubrication switch**

The operation of the central hydraulic lubrication system is explained in more detail in this manual, and in the manual supplied with the system.

## 4.5 Joystick and engine hydraulics switches

Figure 21.




**Joystick movements:**

**A. Forward: Fork lowering**

**B. Backward: Fork rising**

**C. Right: Ladle emptying**

**D. Left: Ladle filling**

**1. Cylinder hydraulic control.**

This action controls the rate of oil flow to the hydraulic cylinder, which control the forks quick release connectors. (Combined together with the locking switch = tool locked / tool open).

**2. Cylinder hydraulic control.**

This action controls the rate of oil flow to the hydraulic cylinders, which control the forks quick release connectors.

**3. Fork floating switch**

This switch is used to switch the floating of the fork on and off

**4. Driving direction switch**

Pressing the button always reverses the driving direction. A light on the instrument panel lights up and shows the direction of travel with an arrow, whenever someone selects a driving direction. Additional instructions are shown in the manual section “Driving and operating."

**Varoitus! Varning! Warning!**

Never switch on floating when the fork is up! A falling tool may cause a severe accident!

**5. Engine hydraulics control**

This rotating control (potentiometer) is used to adjust the oil flow to the tool connected to the engine hydraulics quick connectors at the front of the machine. Output can be steplessly adjusted between 10 and 100 l/min. Engine hydraulic power can be taken out from both the fork’s quick connectors and the quick connectors on the left side of the machine’s rear part. Output for the rear take-out cannot be adjusted.

### 6. Engine hydraulics switch (front)

This switch is used to route oil flow to the engine hydraulics quick connectors on the fork. For more information, see “Working with the multi-purpose machine.”

### 7. Engine hydraulics switch (rear)

This switch is used to route oil flow to the engine hydraulics quick connectors located at the back of the machine. For more information, see “Working with the multi-purpose machine.”

## 4.6 Steering column multi-purpose lever/switch

Figure 22.


**Multi-purpose switch functions:**

1. Horn
► Press the button at the end of the lever.
2. Right turn signal
► Lift up the lever. Remember to move the lever back to the centre position after the turn.
3. Left turn signal
► Pull down the lever. Remember to move the lever back to the centre position after the turn.
4. Windscreen washer.
► Switch on the windscreen washer by pressing the collar in the direction of the arrow.
5. Windscreen wiper.
► Switch on the windscreen wiper by turning the sleeve.
6. Low beam headlights.
► Switch on the low beam headlights by pulling the lever in the first position towards the steering wheel (I).
7. High beam headlights.
► Pull the lever one step towards the steering wheel to position II; the high beam headlights are switched on and a blue indicator light is lit on the dashboard.
8. Low beam/high beam.
► Switch between low beam and high beam by pulling the lever towards the steering wheel (point 8).

### Pedals

Figure 23.


**1. Crawling pedal**

The machine also features a crawling pedal that can be used to slow down the machine when a higher engine RPM is required (such as when sweeping streets or cutting down plants).

**2. Brake pedal**

The machine features a separate brake pedal that can be used when necessary.

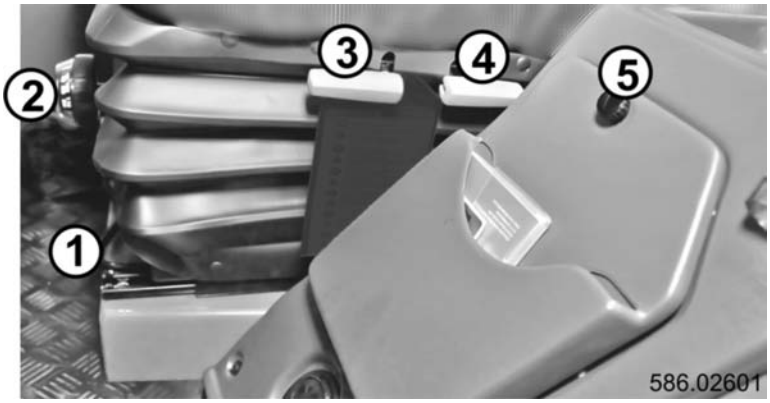
Combined use of the brake pedal and accelerator may be applied to move the machine with very high precision, such as when connecting a tool.

**3. Accelerator**

Pressing the pedal increases engine RPM, causing the drive pump automation to adjust oil output to the drive motor. Drive speed may be steplessly adjusted both forward and back, while the engine RPM remains at the highest torque point.

## 4.7 Seat and document compartment

Figure 24.




**Seat adjustments**

1. Longitudinal seat adjustment.
2. Seat flex adjustment.
3. Seat cushion front edge adjustment.
4. Seat cushion rear edge adjustment.

**Varoitus! Varning! Warning!**

Stop the machine before adjusting the seat.

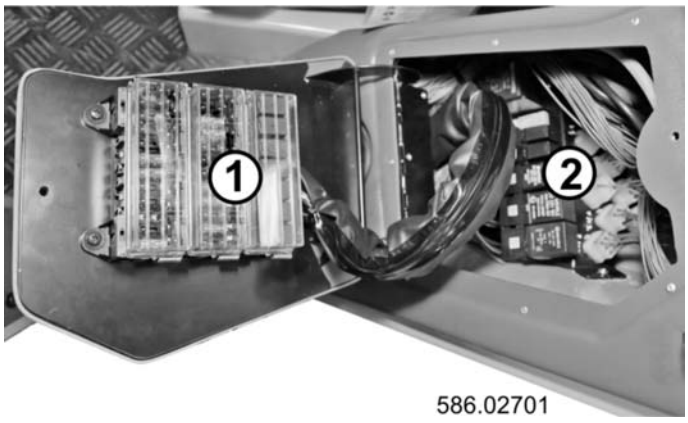
**5 Document compartment**

Store the machine operating manual and documents in the document compartment located on the left side of the driver seat.

**Electrical switchboard below the document compartment.**

Open the document compartment fastener (5) and twist open the compartment on its hinges. The machine's fuses and relays are located behind the cover.

Figure 25.




1. Fuses
2. Relays

### Radio

Figure 26.


The radio is located on the ceiling panel, to the right of the driver. The radio is provided with its own user manual.

### Dome light

The dome light is located above the door, and its switch is located on the light itself. Remember to turn off the dome light before exiting the cabin.

### Heater vents

Figure 27.


### Air vents

The cabin has 7 air vents. The vents may be rotated, and their flaps may be turned to the desired position. The vents may also be closed.

### Recirculation vents

Figure 28.


The recirculation vents are located to the right of the driver's feet. The recirculation vents are normally kept closed. The vents are opened when quick heating of the cabin air is required.

The vents must be kept open whenever air conditioning is used.

### Right side window

Figure 29.


The window may be opened to improve cabin ventilation. Open the window by pulling back on the handle (1), and press it to the right to lock the window in the open position. Close the side window in the reverse order. Ensure that the window is properly closed before leaving the cabin.

Huomaa! Notera! Note!

The right side window also functions as an emergency exit as follows:

- ► Pull out the hinge pin (3) by lifting it by the ring (2).
- ► Push the window fully open.

**Info!**

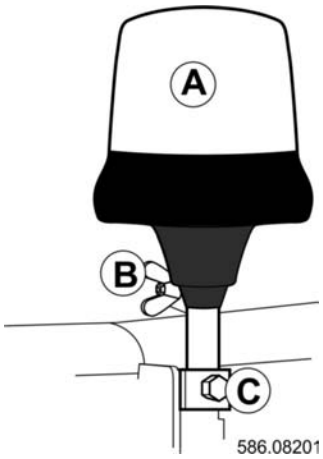
The emergency exit must always be in working order.

- ► Regularly check that the hinge pin can be easily removed by pulling on the ring.

- ► After inspection, remember to reinstall the hinge pin.
- ► Never block the emergency exit with extraneous items; exit must always be available.
- ► Do not attach any extra accessories in this area (inside or outside the cabin).
- ► The edges of the emergency exit must not have any protruding parts that may stick to clothing when exiting through the emergency exit.

## 4.8 Flashing beacon

Figure 30.




You can remove the flashing beacon (A) from its stand by loosening the wing nut (B), or turn it down by loosening the fastener (C).

**Info!**

When using the flashing beacon, follow local traffic legislation.

# 5.0 DRIVING AND USE

## 5.1 General

- Follow safe working methods and the instructions related to safety and use provided in this manual.
- Never operate a machine that is not in working order. Before setting off, always check that the lights, indicators, gauges and controls operate flawlessly and are also operational while driving.
- Perform all maintenance on time following the instructions provided in this manual.
- Carefully read the paragraphs labelled “Warning” and “Note” before using the machine.
- Familiarise yourself with the controls and the operation of the machine and tool before starting use.
- Perform daily maintenance according to the maintenance programme.

### 5.1.1 Running-in of new machine

Special attention should be paid to the running-in of a new machine, since it also affects the durability of the machine in the future. At the start of the running-in, apply light and variable load to the machine. Flexible use and variable loads help the different machine parts even out.

- ► Warm the engine and hydraulics before loading them.
- ► Do not operate the engine at idle or full load for longer than 5 minutes.
- ► Avoid maintaining regular speed.
- ► Avoid rapid braking or changes in driving direction.
- ► Perform the first 50-hour service according to the instructions in this manual.

Huomaa! Notera! Note!

**Pay attention to the engine oil pressure and temperature while driving.**
**Regularly check the coolant and motor oil levels. Also pay attention to the attachment of screws, nuts and hoses, and any abrasions (wheels, exhaust, axles, water hoses etc.). Tighten if necessary.**

## 5.2 Start-up preparations

### 5.2.1 Inspections before starting the machine

- ► Walk around the machine and visually check for damage, leaks (oil/fluid) and wear.
- ► Check engine oil level.
- ► Check coolant level.
- ► Clean grille and radiator.
- ► Refuel as required.
- ► Check hydraulic oil level.
- ► Clean the air filter dust pocket.
- ► Check the operation of all warning lights, and the hour counter reading.
- ► Check the operation of headlights.
- ► Check the condition of the tyres and their inflation pressure, at least visually.
- ► Inspect the condition of the safety cabin.
- ► Inspect the condition of all decals.

### 5.2.2 Fuel types

Heating oil must not be used as fuel for the engine. If a tax-free fuel is used, it must be motor-grade.

Figure 31.


The fuel tank is filled using the filler neck on top of the right front wheel.
The following lists examples of acceptable tax-free fuel types:

Table: 14

| Supplier | Grade |
|---|---|
| Fortum | Tempera Green (summer/winter grade)<br>Tempera 5G<br>Tempera 3G |
| Shell | Thermo City (summer grade)<br>Thermo City (winter grade)<br>Thermo City Premium (summer grade) |
| Esso | Essoheat LS<br>Essolene LS |
| Teboil | Hilight Motor (summer grade)<br>Hilight Motor (winter grade) |

**Info!**
The fuel tank is at an overpressure of 0.35 bar.

### 5.2.3 Seat adjustments

Huomaa! Notera! Note!
**Adjust the seat before starting the engine!**

**Standard seat**

Figure 32.


Table: 15

| | | |
|---|---|---|
| 1. Backrest tilt adjustment.<br>Lift the handle and tilt the backrest. | 2. Suspension stiffness adjustment.<br>Adjust the suspension by rotating. | 3. Longitudinal adjustment.<br>Lift the handle and adjust the longitudinal position. |
| 4. Seat cushion front edge adjustment.<br>Lift the handle and adjust the height of the seat cushion's front edge. | 5. Seat cushion rear edge adjustment.<br>Lift the handle and adjust the height of the seat cushion's rear edge. | |

### Seat with air suspension

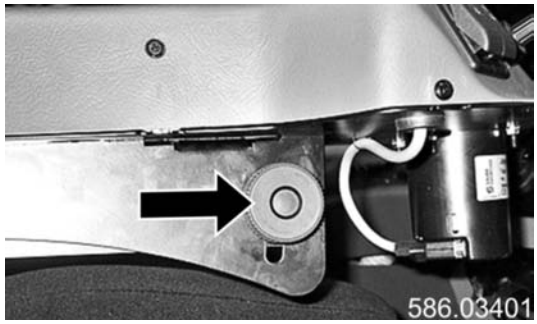
Figure 33.


Table: 6

| | | |
|---|---|---|
| 1. Backrest tilt adjustment.<br>Lift the lever and tilt the backrest. | 2. Suspension stiffness adjustment.<br>Adjust by pulling/pushing the knob. | 3. Longitudinal adjustment.<br>Lift the handle and adjust the longitudinal position. |
| 4. Seat cushion front edge adjustment.<br>Lift the handle and adjust the height of the seat cushion's front edge. | 5. Seat cushion rear edge adjustment.<br>Lift the handle and adjust the height of the seat cushion's rear edge. | |

### Elbow rest adjustment

Figure 34.




By loosening the adjustment screw (pictured), you can steplessly adjust the height of the right elbow rest.

Remember to tighten the adjustment screw.

### Adjust mirrors

Figure 35.

Adjust the external and internal mirrors before setting off.

## 5.3 Starting the engine

Huomaa! Notera! Note!

**Read all safety instructions.**
**Read all safety decals.**
**Never run the engine in a closed space.**
**Never start the engine while outside.**
**Always sit on the seat.**

Do not operate the starter for more than 30 seconds at a time. If the engine does not start within 30 seconds, wait 2 minutes before trying again.

### 5.3.1 Starter lock

*Switch 5, See 4.3 on page 26.*

**Info!**

The machine is equipped with a starter lock. The engine will not start if the parking brake is not on.

### 5.3.2 Starting


Figure 36.

1. Check that the parking brake is engaged.
2. Check that all the controls are neutral or off (including engine hydraulics).
3. Turn on the main power switch.
4. Turn on the power.
5. Check that the following warning lights turn on:

- Engine oil pressure
- Charge
- Parking brake
- Glow indicator

6. Wait for the glow indicator to turn off, press the accelerator half way down, and turn the ignition switch to the starting position.
7. Once the engine has started, release the ignition key and allow the accelerator to rise up fully.
8. Check that the engine oil pressure and charge indicators turn off. If a warning light remains on, stop the engine and determine the cause.

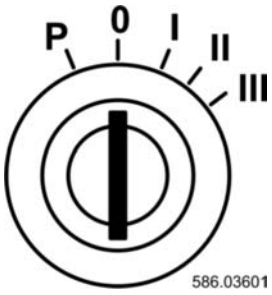



Figure 37.

**Ignition switch positions:**

**P.** Not used
**O.** Power off
**I.** Power on
**II.** Not used
**III.** Start

### 5.3.3 Cold-starting the engine

During cold weather, we recommend using either an engine block heater or another type of auxiliary heater.

Switch on the heater well in advance before starting the engine. Using a heater will significantly reduce engine wear during cold starts, and it also improves cabin heating.

**Varoitus! Varning! Warning!**

**Using ether as a starting aid is expressly forbidden under any conditions.**

Perform items 1–5 under “Starting”.

2) If the engine does not start on the first go, disconnect and reconnect power to re-enable glow plug heating.

3) Perform items 5, 6, and 7 under “Starting”.

### 5.3.4 Using auxiliary battery

**Varoitus! Varning! Warning!**

**Battery gases may explode. Do not smoke near the battery and ensure no open flames or sparks are present.**

Huomaa! Notera! Note!

**If the machine’s battery is frozen, do not try to start it with an auxiliary battery. Carefully follow the instructions provided.**

The machine has an auxiliary power socket next to the main power switch on the left side; this socket is used to supply auxiliary power.

If a cable with a suitable plug is not available, provide auxiliary power using starter cables from the battery of another machine as follows:

1. Drive the assisting machine close enough to the multi-purpose machine to allow the cables to connect them. THE MACHINES MUST NOT TOUCH EACH OTHER.
2. Set all controls to neutral on both machines.
3. Use protective glasses and rubber gloves.
4. Use the red starter cable to connect the positive terminals of the auxiliary battery and the machine battery.
5. Connect the black starter cable to the negative terminal of the auxiliary battery.
6. Connect one end of the black cable to the frame of the multi-purpose machine.
7. Turn on the main power switch.
8. Start the engine of the assisting machine and let it run for a while.
9. Start the engine of the multi-purpose machine.
10. Detach the starter cables in reverse order (6, 5, and 4).

## 5.4 Warm-up operation

Carry out the following actions after starting the engine, but before starting work:

1. Let the engine run at increased idle for 2 minutes under normal temperature, and for about 5 minutes in cold weather (winter conditions).
2. Raise and lower the fork a few times in cold weather.
3. Do not drive/operate the machine until it is warm enough, that is, the engine runs steadily and the hydraulics operate normally.

## 5.5 Stopping the engine

Huomaa! Notera! Note!

**Always lower all tools and apply the parking brake before stopping the engine.**

1. Drive the machine onto hard, level terrain.
2. Lower all tools on the ground and apply the parking brake.
3. Lower the engine RPM to idle, and move all controls to neutral or off.

4. Let the engine run at idle for a few minutes to cool it down.
5. Turn the ignition key to the O position and remove the key.
6. Switch off the main power switch and place the key inside the cabin.
7. Lock the cabin door before leaving the machine.

## 5.6 Working with the multi-purpose machine

### 5.6.1 Driving

The functions related to driving the LM TRAC 585 multi-purpose machine are managed using three pedals.


Figure 38.

**The accelerator (3)** provides stepless adjustment of driving speed along the entire speed range, both forward and back.

Pressing the accelerator increases driving speed, while the engine RPM is kept at the highest torque point. This achieves the best possible fuel efficiency, and hydraulic output remains stable.

Lifting the accelerator reduces driving speed, and the hydrostatic power train also operates as a brake. Rapidly lifting the accelerator will therefore rapidly stop the machine. This means that by lifting the accelerator at different speeds, you can largely replace the brake pedal.

Adjust your driving speed to suit the situation and avoid rapidly lifting the accelerator (= braking forcefully).

**The brake pedal (2)** is usually only required to keep the machine stable on a slope.

**The crawl pedal (1)** can be used to reduce driving speed at high engine RPM.

This is useful when higher hydraulic output is temporarily required for the attached tools, for example. Press the accelerator (3) and the crawl pedal (1) simultaneously.

This adjusts the engine RPM with the accelerator, and the machine's driving speed with the crawl pedal. The driving speed of the machine is reduced when the crawl pedal is pressed.

Huomaa! Notera! Note!

**If high output and low speed is required for a longer time, we recommend switching the driving programme. See the instructions under "Light/heavy duty" in this manual. See 5.8 on page 45.**

### 5.6.2 Change of driving direction


Figure 39.

Driving direction can be changed by pressing the switch at the end of the joystick. The switch reverses the driving direction.

See 4.5 Joystick and engine hydraulics switches page 31.

Huomaa! Notera! Note!

**Driving direction must only be changed when the machine is at a standstill.**

Completely release the accelerator and lightly press on the brake before changing the driving direction. When the driving direction changes, immediately release the brake pedal and press the accelerator down to achieve the desired driving speed.

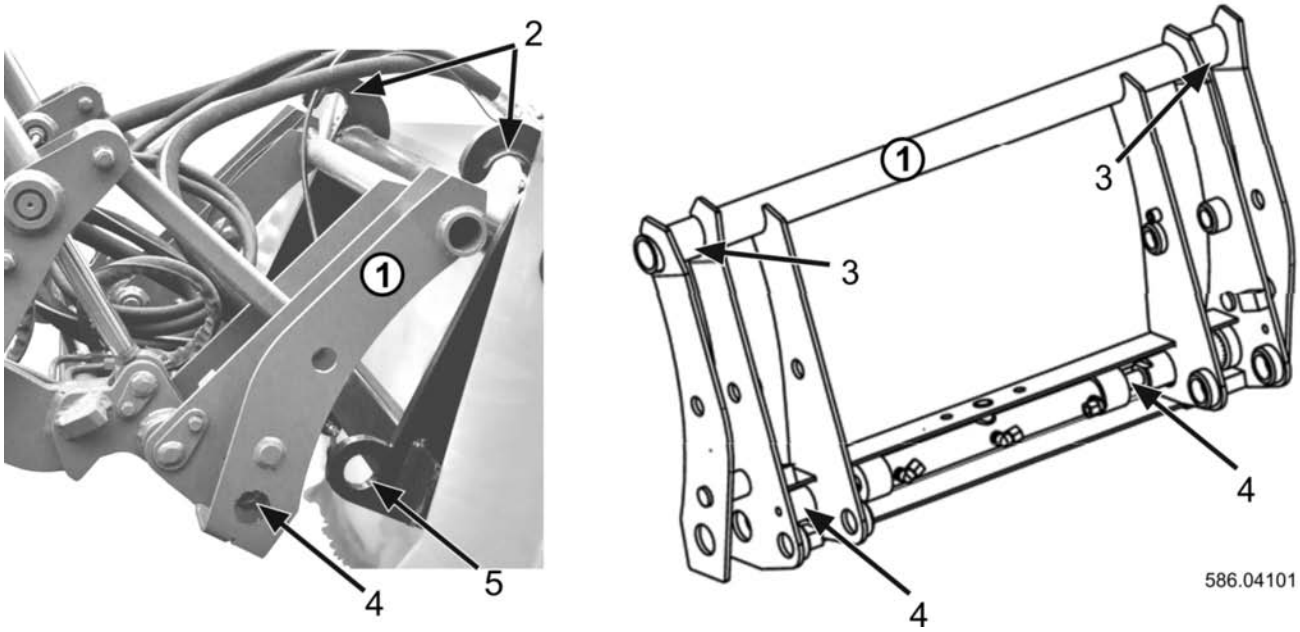
Setting the switch in the middle position enables the powertrain's neutral position.

## 5.7 Connecting tools

The machine fork is generally delivered with a “KUNTA 500” type quick tool attachment. Tool attachment of some other type is also available by order. The tool is electro-hydraulically locked from the cabin.

### 5.7.1 Connecting tools at front

Figure 40.




**Connect a front tool as follows:**

A. Lower the fork and turn the quick attachment frame (1) to the ladle emptying position.
B. Drive behind the tool and lift the fork so that the hooks on the tool (2) attach to the diagonal bar of the quick attachment device (3).
C. Lift the fork up and turn the quick attachment device to the ladle filling position, causing the attachment pins (4) to enter the attachment holes (5) of the tool.

**Connect hydraulic hoses:**

**Varoitus! Varning! Warning!**

**Before setting off, ensure that the pins are properly in place.**

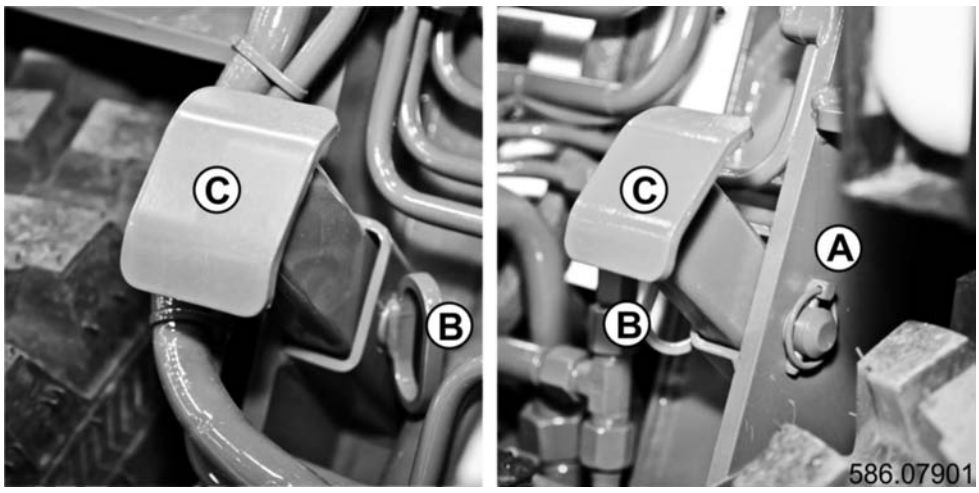
**Release a front-attached tool as follows:**

A. Lower the tool onto a level platform and press the tool lock switch, withdrawing the attachment pins towards the centre line of the machine.
B. Turn the quick attachment frame in the ladle emptying position and lower the fork, releasing the tool hooks.
C. Reverse the machine away from the tool.

### 5.7.2 Fork support

The fork support is intended to support the front fork when ploughing, for example.

Figure 41.




- ► Remove the R grommets (A).
- ► Pull out the locking pins (B).
- ► Lower the fork to the most suitable working height for the tool.
- ► Lift the fork support to a suitable working height (same on both sides), and install the locking pins (B) and R grommets (A).

**Info!**

*The fork support is adjustable to four different heights.*

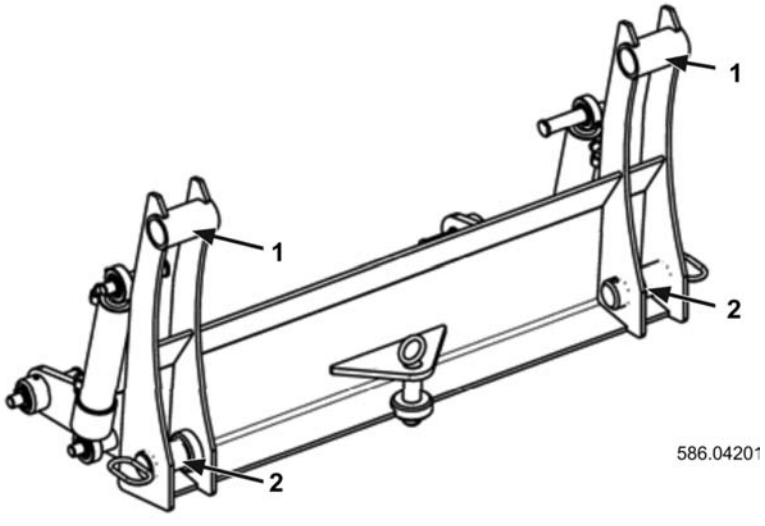
**Varoitus! Varning! Warning!**

**Never access areas under the fork unless the fork is supported with the maintenance stand! See 6.1.3 Front fork maintenance stand page 49.**

### 5.7.3 Connecting tools at back

An optional rear lifter is available for connecting tools. Tools are connected to the rear lifter manually, using separate pins.

Figure 42.




1. Tool hook attachment points.
2. Attachment pins.

**Connect a rear tool as follows:**

A. Remove the attachment pins (remove the ring pins and pull out the pins).
B. Lower the rear lifter fully and reverse the machine in front of the tool.
C. Lift up the lifter to attach the tool hooks to their correct locations (1).
D. Lift the rear lifter fully up and install the attachment pins.
E. Lock the pins in place with ring pins.

**Remove a rear tool as follows:**

A. Lower the tool onto level ground.
B. Remove the tool attachment pins and fully lower the rear lifter.
C. Drive the machine away from the tool and install the attachment pins on the lifter.
D. Lock the pins in place with ring pins.

### 5.7.4 Connecting/removing hydraulic hoses

Figure 43.


- ► Lower the fork, and lower the tool in the quick attachment device onto level ground.
- ► Turn off the machine's engine.
- ► When connecting a hydraulic hose to a tool, remove the protective plug from the connector and ensure that the quick connectors (on both the machine and tool) are absolutely clean; if necessary, clean them before attaching.
- ► Pull back on the quick connector's locking pin, press the connector into place and let go of the lock ring to lock the connector into place.
- ► When removing the hydraulic hose of a tool, clean the top of the connector (if necessary), pull back on the lock ring, and remove the quick connector.
- ► Immediately reinstall clean protective plugs on the connector.
- ► Wipe off any excess hydraulic oil.

### 5.7.5 Trailer hitch

If the machine is equipped with a trailer hitch, a pulling tool or trailer may be attached to it.

The trailer hitch is standard in all machines with a rear lifter.

The trailer hitch has a knob with a diameter of 30 mm.

Huomaa! Notera! Note!

**Remember to lock the knob with a ring pin before setting off.**

## 5.8 Light / heavy duty

By using the switch on the dashboard, you can select a driving programme that is suited for your work. The driving programme affects the characteristics of the powertrain and diesel engine.

**PROGRAM**

**Light duty**

The machine quickly accelerates to maximum speed. This feature can be used during transfer, ploughing and other work that do not require a high oil output from the operating hydraulics while working.

**Heavy duty**

This feature is used when the working hydraulics require a high amount of oil in relation to the driving speed. Such tasks include sweeping, cutting grass and plants, and snow-moving.

The crawl pedal achieves the same effect.

**Info!**

The maximum driving speed and pulling power are similar for both programmes.

## 5.9 Tools with hydraulic motor operation

Tools with hydraulic motor operation can be attached to the front and rear of the machine and on the bonnet. The hydraulic output of the tool installed at the rear cannot be adjusted. The hydraulic output of the tool installed in the front can be adjusted using the potentiometer in the front elbow rest of the seat. The potentiometer values result in the following approximate output.

### 5.9.1 Adjustable hydraulic output for front output

| Potentiometer output | Output (approximate) |
|---|---|
| 1 | 10 l/min |
| 2 | 20 l/min |
| 3 | 30 l/min |
| 4 | 40 l/min |
| 5 | 50 l/min |
| 6 | 67 l/min |
| 7 | 70 l/min |
| 8 | 80 l/min |
| 9 | 90 l/min |
| 10 | 100 l/min |

Adjust output for the front tool according to the tool manual.

Huomaa! Notera! Note!

**Always remember to check the highest allowed output from the tool manual or type plate.**
**Never exceed the highest allowed output, and always use the lowest possible value.**

# 6.0 MAINTENANCE

## 6.1 General

Correct, timely maintenance is one of the key requirements for the machine's operational reliability. The operator of the machine plays an essential role when it comes to maintenance, since all maintenance operations listed in this manual must be completed at regular hourly intervals.

The intervals for periodic maintenance listed in the table apply to machines operating under normal conditions. Machines under heavy load must be serviced more frequently.

► In this manual, this paragraph symbol indicates a requested work performance.

The work stages have been registered in their completion sequence.

### Varoitus! Varning! Warning!

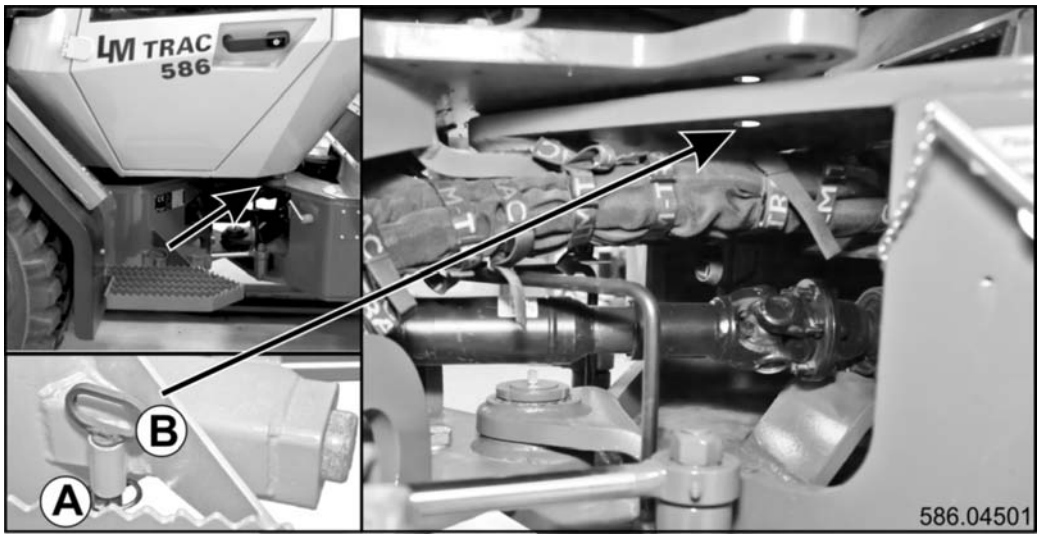
**To avoid personnel injury, carry out the following procedures before starting maintenance:**

► Drive the machine onto hard level terrain.
► Apply the parking brake.
► Lower all tools onto the ground and stop the engine.
► Disconnect the main breaker and remove the key from the ignition.
► Attach a tag to the steering wheel that forbids starting the machine.

**If the maintenance requires lifting the machine, proceed as follows:**

► Lock the body link using a locking pin as follows:

Figure 44.




A. Remove the ring pin
B. Move the locking pin to the locking holes on the body link (see figure), and lock into place with the ring pin.

### Huomaa! Notera! Note!

**Once maintenance is complete, remember to remove the locking pin from the body link!**

### 6.1.1 Lifting the machine

**Varoitus! Varning! Warning!**

**The machine has a rocking rear axle. Do not lift the machine at the mid-point of the rear axle!**

**Info!**

*Only use applicable lifting tools with sufficient strength.*

When the machine has been lifted up, support it or its parts using approved stands with sufficient strength.

Never go under the machine before it has been secured in place in a safe manner that corresponds to all applicable regulations.

### 6.1.2 Access

Some of the serviceable locations on the machine are placed behind hatches. Once work is complete, remember to close all the hatches.

Figure 45.


Open the latches (1) and lift up the bonnet (2). If accessories have been installed on the bonnet, open the upper service hatch (3) and/or the lower service hatch (4) as required.

Figure 46.


A. The 6 fasteners of the lower engine service hatch. Must be removed for oil and fuel filter replacement, and for draining the fuel filter's water trap.
B. The 2 fasteners of the engine underpan. Must be opened for oil change and draining of the hydraulic oil tanks. The underpan has hinges at the front edge.

**Behind the cockpit:**

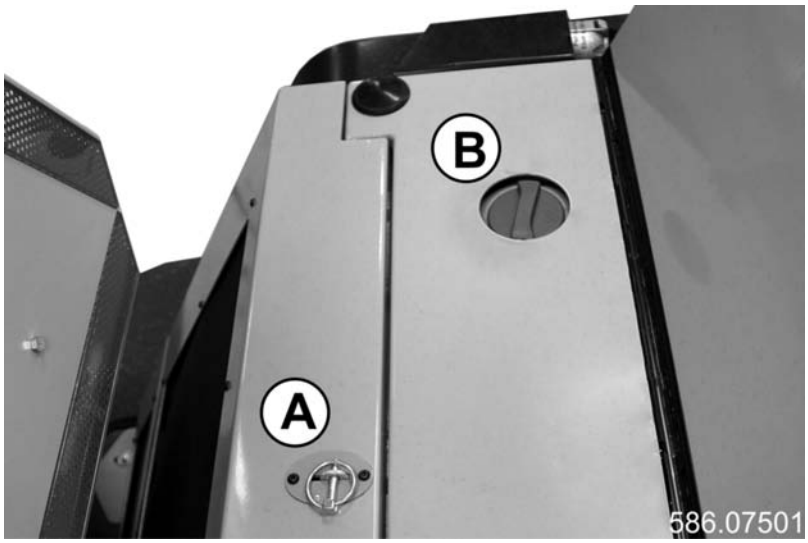
A. Opening radiator/condenser cores:
► Remove the grommet, front grille, and locking bar. Carefully turn the cores/ condensers. See 3.7.2 on page 23.

B. Cooling system expansion tank cap.

Huomaa! Notera! Note!

**Open carefully while engine is hot! Hot steam or coolant causes severe burns.**

Figure 47.

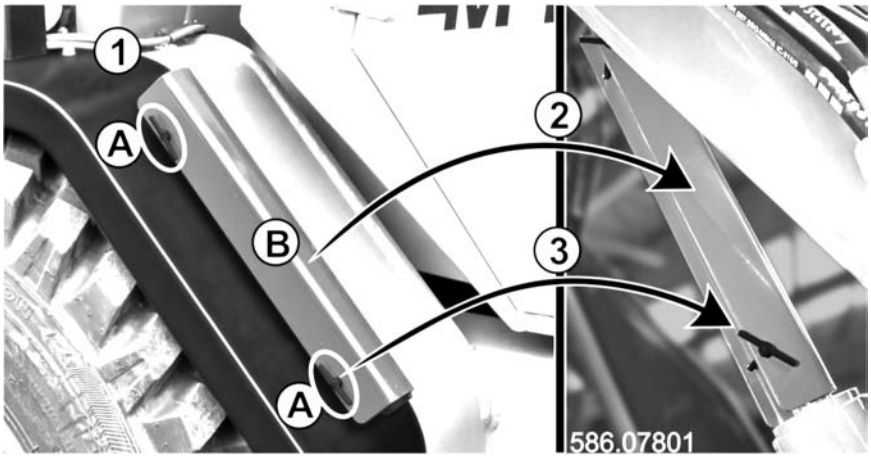



### 6.1.3 Front fork maintenance stand

Varoitus! Varning! Warning!

**Always install the front fork maintenance stand before accessing the underside of the fork in its upright position.**

Figure 48.




The fork maintenance stand is attached to the left front mudguard.

1. Remove the maintenance stand by opening the 2 wingnuts and pulling out the locking screws (A).
2. When the fork is up, install the maintenance stand (B) on the piston shaft of the lifting cylinder.
3. Lock the stand in place with the locking screws.

### 6.1.4 Towing the machine

**Varoitus! Varning! Warning!**

**AS A RULE, TOWING THE MACHINE IS FORBIDDEN!**

**Info!**

*If the machine must be transported, a transport platform must be used.*

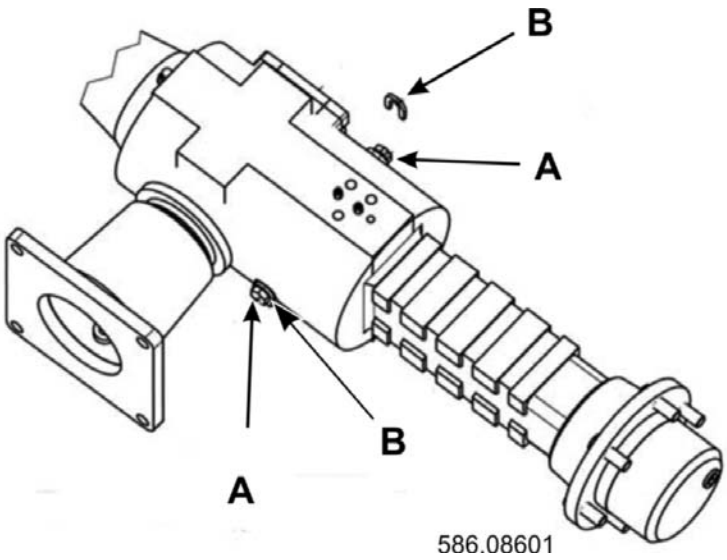
In case of emergency, the machine may be **towed for a short distance (max. 20 m)**.

In this case, the following instructions must be closely followed:

- Towing speed may not exceed 5 km/h.
- Towing distance may **not exceed 20 m**.
- Before towing, the axles and drive engine must be checked for defects. These components have parts that may cause additional damage if they are moved while damaged.
- If the engine is not running, the parking brake must be released according to the below procedure.

### 6.1.5 Releasing parking brake for towing

Figure 49.




A. Fastener (width across flats 24 mm) B. Lock plate

- ► Loosen the fasteners (A) slightly.
- ► Remove the lock plates (B) and store them securely.
- ► Tighten the fasteners (A).
- ► The parking brake is now released.
- ► After towing, reinstall the lock plates (B).
- ► Tighten the fasteners (1) to 95–115 Nm.

### 6.1.6 Lowering the fork in case of failure

If the fork is up but the engine cannot be started or there is no power, contact an authorised service location.

**Varoitus! Varning! Warning!**

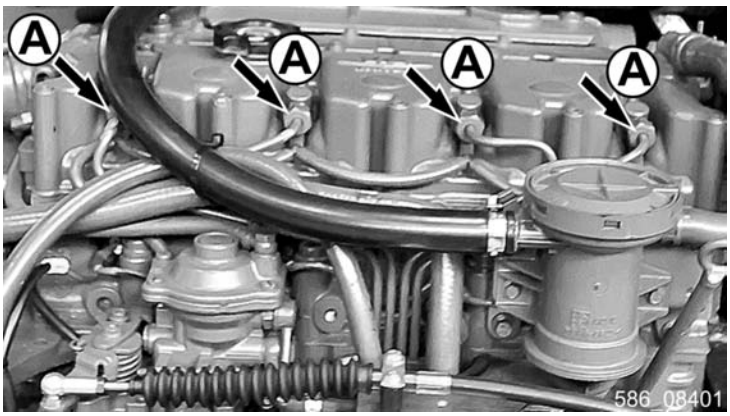
**Never access areas under the fork unless the fork is supported with the maintenance stand.**

### 6.1.7 Bleeding the engine

The fuel must be bled if the machine has run out of fuel or the fuel filter has been replaced.

Bleed the system as follows:

Figure 50.




1. Loosen at least two of the spray pipe connections (A).
2. Use the starter to turn the engine, until there are no air bubbles in the fuel leaking out of the spray pipes.
3. Carefully tighten all the loosened spray pipes.

### 6.1.8 Pressure accumulators

Figure 51.


The machine has three pressure accumulators, one for the brakes and two for the floating fork. These accumulators retain pressure even when the engine is stopped. This must be taken into account while servicing or repairing the machine.

**Varoitus! Varning! Warning!**

**Never open the hydraulic connections without first making sure that all the pressure accumulators are at zero pressure. If you are unsure about what you are doing, do not touch the hydraulic system pipes and hoses.**

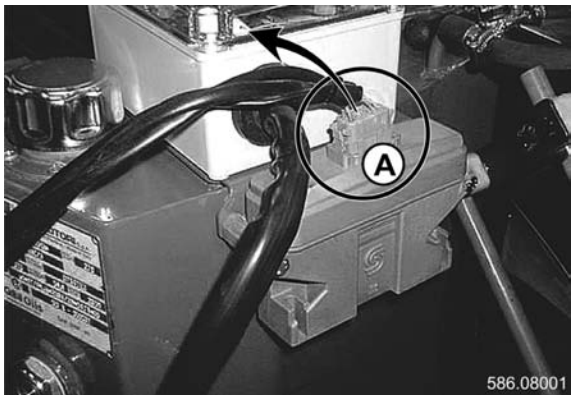
### 6.1.9 Welding

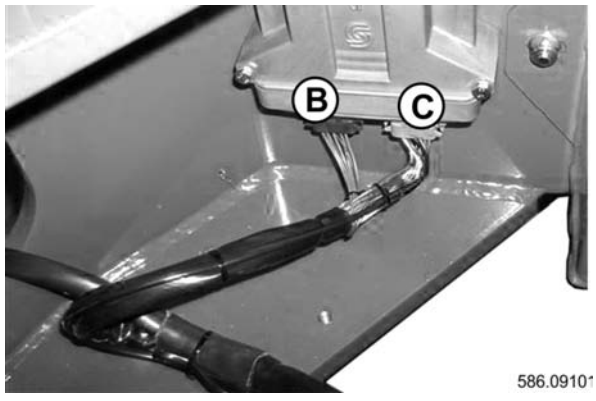
If welding is required on the machine or a tool attached to it, proceed as follows:

1. Turn the main power switch to OFF.
2. Remove the wire leading to the radiator fan control unit (A) from below the bonnet (see Figure 586.08001).

Figure 52.

Figure 53.




3. Remove the wires (B and C) leading to the drive system control unit on the front right of the rear frame, see Figure 586.09101.

4. Protect the hydraulic hoses and electrical wires against sparks, and take fire safety into account.
5. Attach the earthing electrode for the welding device as close to the welded point as possible.

### 6.1.10 Fire safety

The risk of fire can be reduced by keeping the machine clean under all circumstances.

► Remove all foreign material and dirt at the beginning of the workday. Pay special attention to cleaning the engine and exhaust systems.

The operator is responsible for the regular cleaning of the machine.

► Repair any leaks and immediately wipe off any spilled oil or fuel.

The fuel is inflammable and may cause a fire or an explosion.

**Info!**

*Do not refuel or service the fuel system while welding, or in the vicinity of open flames, burning cigarettes etc. Sparks or flames may cause an explosion of the gases erupting from the batteries.*

**Varoitus! Varning! Warning!**

**To avoid accidents, proceed as follows:**

- Always disconnect the negative battery cable first and connect it last.
- When using a booster battery to start the machine, follow the instructions provided in this manual.
- Never short circuit the battery terminals with a metal object.
- Never weld, grind, or smoke near the batteries.
- Check electrical equipment for loose connections or damaged insulation.
- Repair or replace all loose or damaged parts.

## 6.2 Hazardous waste

Collect all hazardous waste generated during maintenance. Deliver waste oil, used filters and anti-freeze to a hazardous waste processing plant.

Oily rags must be disposed of in a safe manner following all applicable regulations.

Batteries contain corrosive acids and heavy metals; ensure that they are disposed of following all valid regulations.

Huomaa! Notera! Note!

**Never dispose of hazardous waste by allowing it to discharge into the soil or the sewage system!**

**Info!**

*Always ensure that hazardous waste is disposed of according to regulations. Take good care of the environment and avoid polluting it with foreign materials.*

## 6.3 Periodic maintenance table

Locations for periodic maintenance

Table: 6

| Location / maintenance task: | Maintenance interval (hours) | | | | | | Y |
|---|---|---|---|---|---|---|---|
| | 10 | 50 | 250 | 500 | 1000 | 2000 | 2yrs |
| 1. Engine oil level check, See 6.5.1 on page 56. | X | | | | | | |
| 2. Engine coolant level check, See 6.5.2 on page 57. | X | | | | | | |
| 3. Tyre inflation pressure check, See 6.5.3 on page 57. | X | | | | | | |
| 4. Check for possible fluid leaks, See 6.5.4 on page 57. | X | | | | | | |
| 5. Washer fluid level check, See 6.5.5 on page 58. | X | | | | | | |
| 6. Hydraulic oil level check, See 6.5.6 on page 58. | X | | | | | | |
| 7. Lubrication of lifting cylinder joints, See 6.5.7 on page 59. | X | | | | | | |
| 8. Lubrication of front fork and rear lifter joints, See 6.5.7 on page 59. | X | | | | | | |
| 9. Lubrication of ball joints on ladle cylinders, See 6.5.7 on page 59. | X | | | | | | |
| 10. Lubrication of joints on idler and tie rod, See 6.5.7 on page 59. | X | | | | | | |
| 11. Lubrication of ball joints on steering cylinder, See 6.5.7 on page 59. | X | | | | | | |
| 12. Lubrication of body link, See 6.5.7 on page 59. | X | | | | | | |
| 13. Cabin air filter cleaning, See 6.6.1 on page 60. | | X | | | | | |
| 14. Draining of fuel filter water trap, See 6.6.2 on page 60. | | X | | | | | |
| 15. Engine air filter cleaning, See 6.6.3 on page 61. | | X | | | | | |
| 16. Radiator/condenser core cleaning, See 6.6.4 on page 62. | | X | | | | | |
| 17. Alternator belt tension check, See 6.6.5 on page 62. | | X | | | | | |
| 18. Wheel fastener tightening torque check, See 6.6.6 on page 63. | | X | | | | | |
| 19. Brake pedal play check, See 6.7.1 on page 64. | | | X | | | | |
| 20. Pressure accumulator pressure check, See 6.7.2 on page 64. | | | X | | | | |
| 21. Engine oil change and filter replacement, See 6.7.3 on page 64. | | (O) | X | | | | |
| 22. Engine air filter replacement, See 6.7.4 on page 66. | | | X | | | | |
| 23. Wheel hub oil level check, See 6.7.5 on page 67. | | | X | | | | |
| 24. Lubrication of articulated shaft universal joints, See 6.5.7 on page 59. | | | X | | | | |
| 25. Lubrication of articulated shaft support bearings, See 6.5.7 on page 59. | | | X | | | | |
| 26. Lubrication of rear axle rocker joint, 6.10.7 p. 59 | | | X | | | | |
| 27. Differential and adapter oil level check See 6.7.7 on page 68. | | | X | | | | |
| 28. Fuel filter replacement, See 6.7.8 on page 69. | | | X | | | | |
| 29. Check for leaks, tightening of joints and connectors, See 6.7.9 on page 69. | | | X | | | | |
| 30. Hydraulic oil return filter replacement, See 6.8.1 on page 70. | | (O) | | X | | | |
| 31. Differential and adapter oil change, See 6.9.1 on page 71. | | | | | X | | |
| 32. Fuel tank cleaning, See 6.9.2 on page 71. | | | | | X | | |
| 33. Brake function check, See 6.9.3 on page 71. | | | | | X | | |
| 34. Engine air filter and safety element replacement, See 6.9.4 on page 72. | | | | | X | | |
| 35. Pressure measurement and adjustment of steering hydraulics, See 6.9.5 on page 72. | | | | | X | | |
| 36. Pressure measurement and adjustment of operating hydraulics, See 6.9.6 on page 72. | | | | | X | | |
| 37. Steering hydraulics filter replacement, See 6.9.7 on page 72. | | (O) | | | X | | |
| 38. Wheel hub oil change, See 6.9.8 on page 73. | | | | | X | | |
| 39. Hydraulic oil tank cleaning and oil replacement, See 6.9.9 on page 73. | | | | | X | | |
| 40. Cabin fresh air filter replacement, See 6.9.10 on page 74. | | | | | X | | |
| 41. Battery check, See 6.9.11 on page 74. | | | | | | | |
| 42. Alternator wiring check, See 6.10.1 on page 75. | | | | | | X | |
| 43. Starter motor wiring check, See 6.10.2 on page 75. | | | | | | X | |
| 44. Nozzle inspection and cleaning, See 6.10.3 on page 75. | | | | | | X | |
| 45. Cooling system cleaning and fluid replacement, See 6.11.1 on page 75. | | | | | | | X |

Note!

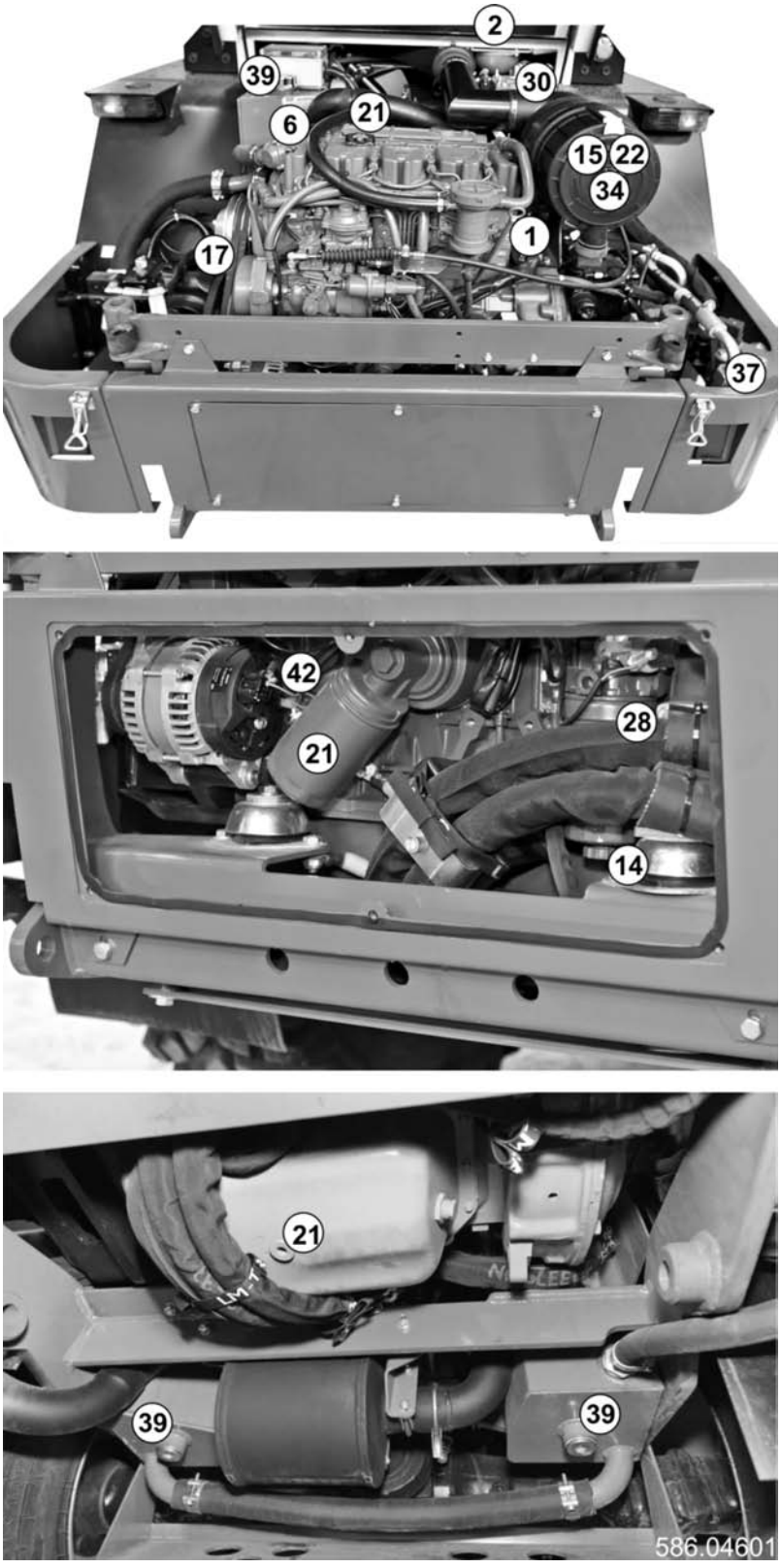
- ► The 10-hour service must be completed each day before starting the engine.
- ► The 50-hour service must be completed at least once a week.
- ► The 500-hour service must be completed at least once every 6 months.
- ► The 1,000-hour service must be completed at least once a year.
- ► 2 yrs refers to service that must be completed every two years, regardless of operating hours.
- ► (O) means that the service is first carried out after 50 hours of operation, and afterwards at the intervals marked with X.

The above intervals are based on normal operating conditions. When working under sub-optimal conditions, reduce the intervals accordingly.

### 6.3.1 Service locations in the engine compartment.

The reference numbers in the figure also refer to the locations in the maintenance table.

Figure 54.

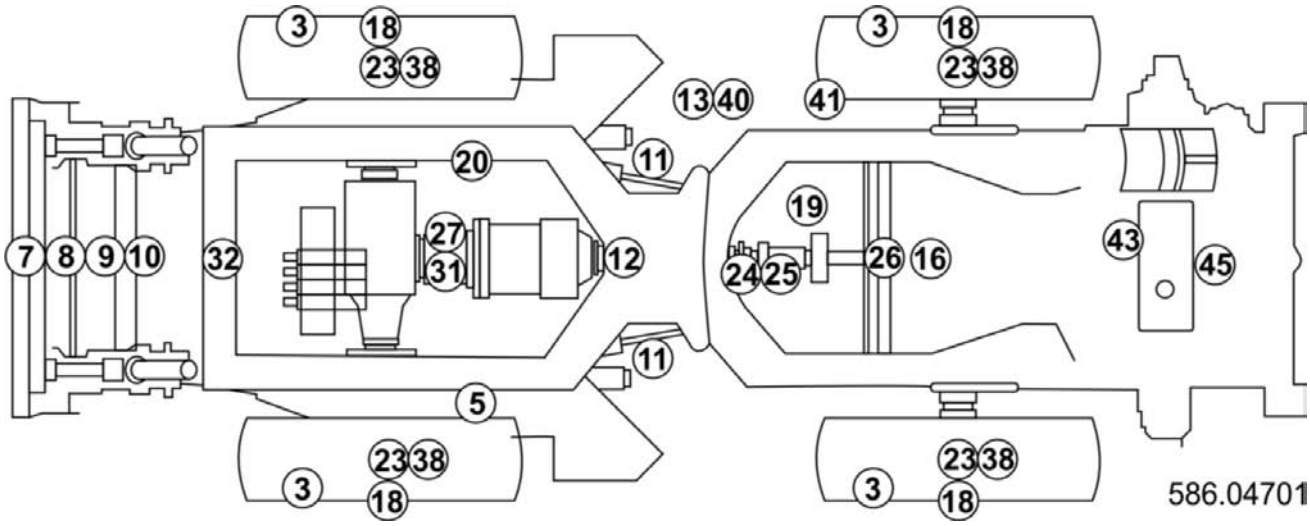



1. Oil dipstick
2. Cooling system expansion tank
6. Hydraulic oil level sight glass.
14. Fuel filter water drain.
15. Engine air filter cleaning.
17. Alternator V-belt.
21/21. Oil change and filter replacement: oil filler neck/ filter/drain plug.
22. Engine air filter replacement.
28. Fuel filter replacement.
30. Hydraulic oil return filter replacement.
34. Air filter safety element replacement.
37. Steering hydraulics filter replacement.
39. Hydraulic oil replacement.
42. Alternator and starter motor wiring check.

### 6.3.2 Other service locations

The reference numbers in the figure also refer to the locations in the maintenance table.

Figure 55.




| | |
|---|---|
| 3. Tyre inflation pressure | 5. Washer fluid level |
| 7. Lubrication of lifting cylinder joints | 8. Lubrication of front fork and rear lifter joints |
| 9. Lubrication of ball joints on ladle cylinders | 10. Lubrication of joints on idler and tie rod |
| 11. Lubrication of ball joints on steering cylinder | 12. Lubrication of body link |
| 13. Cabin air filter cleaning | 16. Radiator/condenser core cleaning |
| 18. Wheel fastener tightening torque check | 19. Brake pedal play check |
| 20. Pressure accumulator pressure check | 24. Lubrication of articulated shaft universal joints |
| 25. Lubrication of articulated shaft support bearings | 26. Lubrication of rear axle rocker joint |
| 27. Differential and adapter oil level check | 28. Fuel filter replacement |
| 31. Differential and adapter oil change | 32. Fuel tank cleaning |
| 33. Brake function check | 34. Engine air filter safety element replacement |
| 37. Steering hydraulics filter replacement | 38. Wheel hub oil change |
| 40. Cabin fresh air filter replacement | 41. Battery check |
| 43. Starter motor wiring check | 45. Cooling system cleaning and fluid replacement |

## 6.4 Recommended lubricants and volumes

Table: 7

| Lubrication point | Volume | Quality recommendation | OEM | Notes |
|---|---|---|---|---|
| Fuel tank | 70 l | DIN EN590 Diesel oil * | DIN EN 590 Diesel oil | Use either summer orwinter grade according to temperature |
| Cooling system | 14 l | Water/glycol 50/50% | Water/glycol 50/50% | Never use only water |
| Motor oil | 6.4 l | 15W/40 API CG-4, CF-4, CF, SH ASEA 98 E2, B4, B3, A2 | Castrol CDR 10W/30 | Use 5W/30 at temperatures below -15°C |
| Hydraulic oil | 110 l | ISO-VG46 DIN 51524 part 1 DIN 51502 | Castrol AWH 46 | |
| Rear axle differential | 4 l | API GL5-LS | Castrol LS-90 | Oil must contain additives suitable for oil bath type brakes |
| Front axle differential | 4 l | API GL5-LS | Castrol LS-90 | |
| Front axle adapter | 0.6 l | API GL5-LS | Castrol LS-90 | |
| Wheel hubs (4 pcs) | 4 x 0.35 l | API GL5-LS | Castrol LS-90 | |
| Washer fluid | 3.8 l | Water/washer fluid 50/50% | Water/washer fluid 50/50% | Never use only water |
| Lubrication points | | Molybdene sulphide grease | Castrol MS1 Grease | |

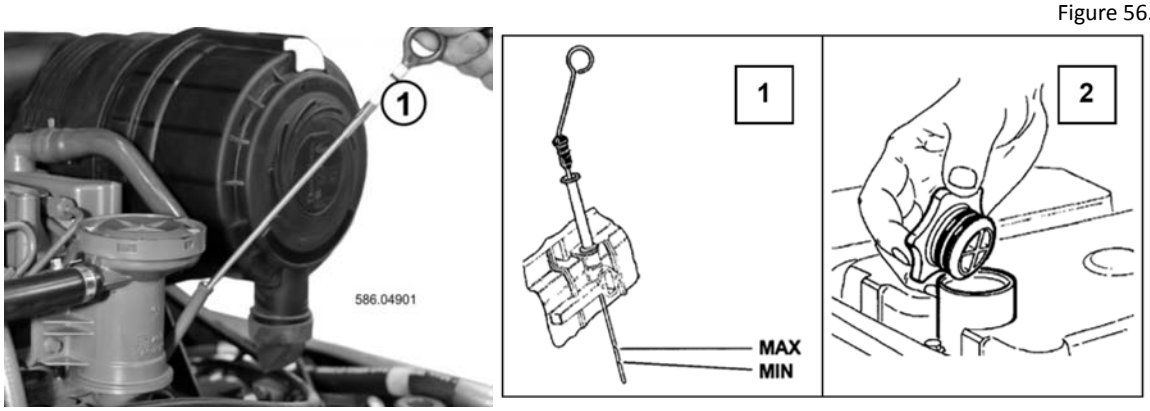
* See “Fuel Grades” in this manual.

## 6.5 10-hour service

Perform the following maintenance procedures daily, before starting the engine.

### 6.5.1 Engine oil level check

Figure 56.




1. Dipstick 2. Oil filler neck.

When checking the oil level, the machine must be on a level surface. The oil level must be between the marks on the dipstick.

1. Turn off the engine a few minutes before the check.
2. Pull out the dipstick (1), wipe it clean, and reinsert it for a moment.
3. Pull the dipstick out again and verify that the oil level is between the “Max” and “Min” marks.

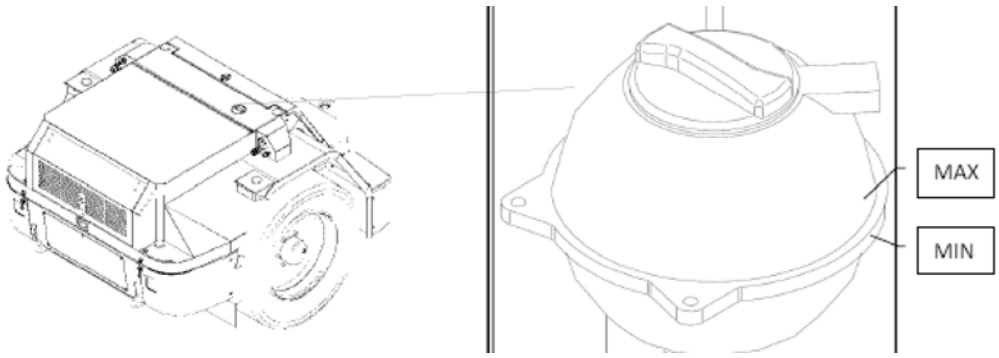
If necessary, add the recommended oil and recheck the oil level.

**Info!**

*The grade of the oil added must match the oil in the engine.*

### 6.5.2 Engine coolant level check

Figure 57.

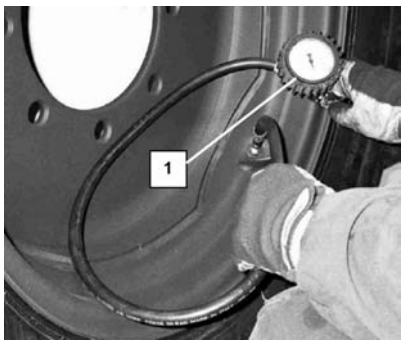



The level of the coolant must be between the “Min” and “Max” lines when cold. Add clean water as necessary. Remember to periodically check the freezing point of the coolant.

### 6.5.3 Tyre inflation pressure check

A tyre pressure of 2.5–3.0 bar is used under normal conditions.

Figure 58.




1. Air pressure gauge

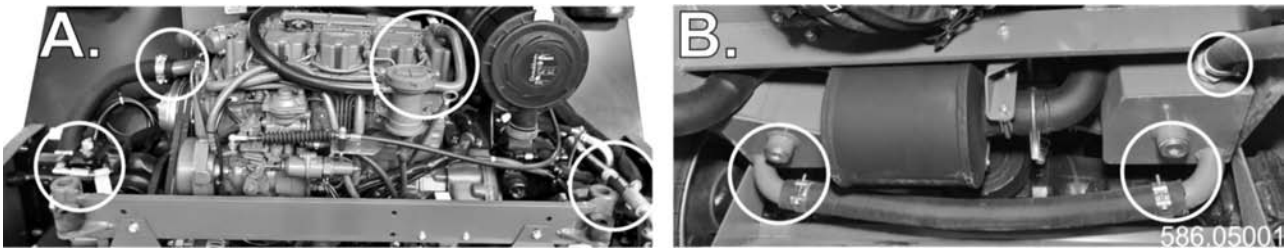
However, the tyre pressure may be varied depending on the operation and operating conditions of the machine. The allowed tolerance is 1.7–5.7 bar.

### 6.5.4 Check for possible fluid leaks

A daily visual check must be performed.

During periodic maintenance, check that all hoses and plugs are tight. If any leaks are detected, repair them before starting the machine.

Figure 59.




Check the following areas, for example:

A. Engine compartment.
B. Below the engine underpan.

Check the following in the machine:

- Connections of fluid and hydraulic hoses, radiators/condensers, drain/filler plugs etc.

### 6.5.5 Washer fluid level check

The washer fluid tank is located on the left front mudguard.

Figure 60.


1. Filler neck

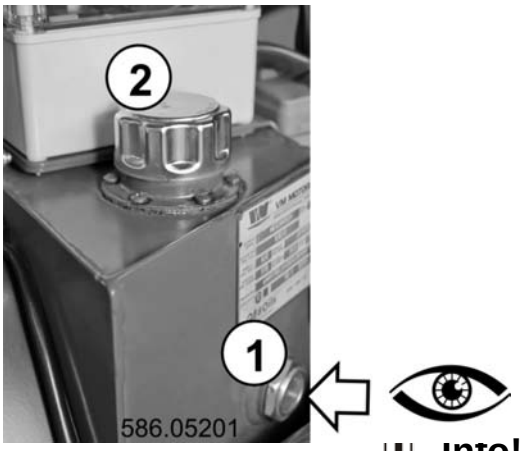
Always ensure that the tank has a sufficient level of fluid. Add washer fluid in the water. Ensure that the freezing point of the coolant is sufficiently low for the season.

### 6.5.6 Hydraulic oil level check

The level of hydraulic oil can be checked using the sight glass on the left hydraulic oil tank in the engine compartment. The oil level must be visible on the sight glass.

When checking the oil level, the machine must be on level ground with the tools lowered, and the oil must be cool.

Figure 61.




1. Sight glass

Oil can be added through the filler neck (2) (breather cap) on the tank, or through the leak oil connector at pressure.

When adding oil, ensure that the oil and the area around the filler neck are clean.

**INTO!**

*The grade of the added oil must match the oil in the tank.*
*The hydraulic oil tank is at an overpressure of 0.35 bar.*

### 6.5.7 Lubrication

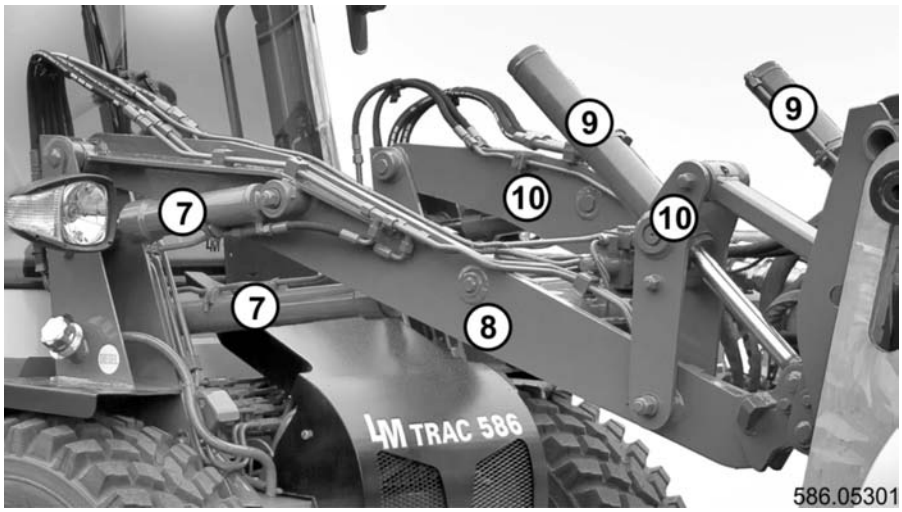
If the machine is equipped with central lubrication, only the universal joints of the articulated shafts are lubricated with a manual grease gun. If the machine does not have central lubrication, all the grease nipples are lubricated using a manual grease gun.

**Lubrication using a manual grease gun:**

- ► Clean the grease nipples and the tip of the grease gun.
- ► Press the tip of the grease gun perpendicular to the grease nipple, and apply a suitable amount of lubricant. The articulated shaft universal joints should be lubricated until the lubricant is visible underneath all the joint cup seals.

**Lubricate the following points (7–12):**

Figure 62.



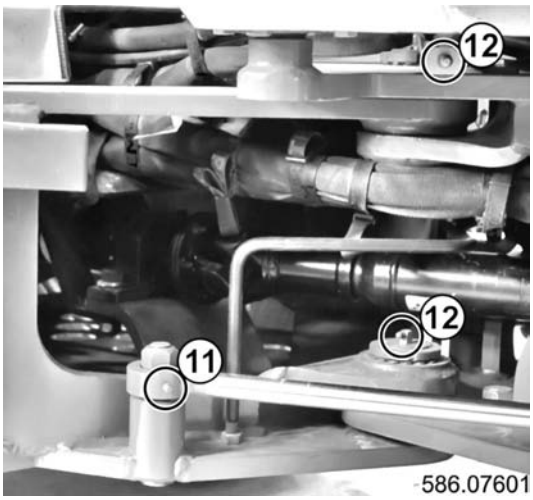

7) Ball joints for lifting and stabilisation cylinders (8 nipples).

8) Joint pins for front fork and rear lifter (10 nipples).

9) Ball joints for ladle cylinders (6 nipples).

10) Joint pins on idler and tie rod (8 nipples).

Figure 63.



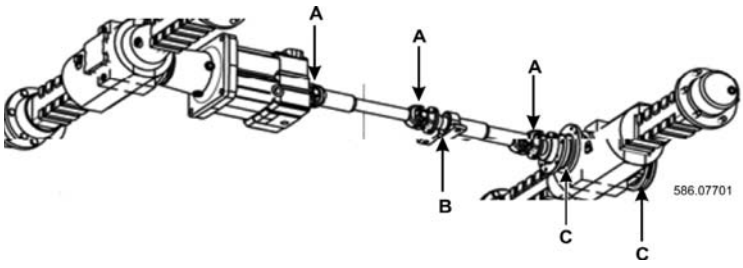

11) Ball joints for steering cylinders (2 nipples per side)

12) Ball joints for body links (2 nipples), on right side of machine.

Figure below:

A. Universal joints.
B. Support bearing.
C. Rear axle rocker joints.

Figure 64.



## 6.6 50-hour service

This service must be performed weekly, even if 50 hours of operation is not reached. The 50 h service also includes the tasks from the 10-hour service.

### 6.6.1 Cabin air filter cleaning

Figure 65.


1. Hatch 2. Filter

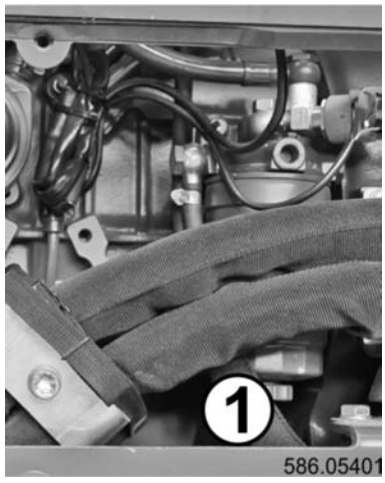
- ► Open the fastener (2) and the air filter cover (1) on the right side of the cabin.
- ► Remove the air filter (3) and use compressed air to clean it.
- ► Clean from the inside out, and avoid rupturing the fibres on the filter.
- ► Check the condition of the filter and its seals. Replace the filter in case of damage.

### 6.6.2 Draining of fuel filter water trap

Figure 66.

1. Drain tap

- ► Place a leak-tight container underneath the fuel filter and open the drain tap at the bottom of the filter.
- ► Close the tap when clean fuel flows out.
- ► Bleed the fuel system if necessary.
- ► Start the engine and check for leaks.



### 6.6.3 Engine air filter cleaning

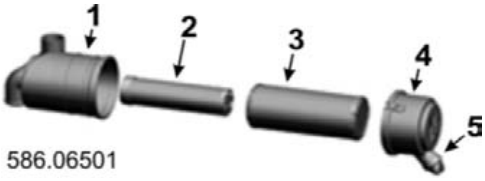
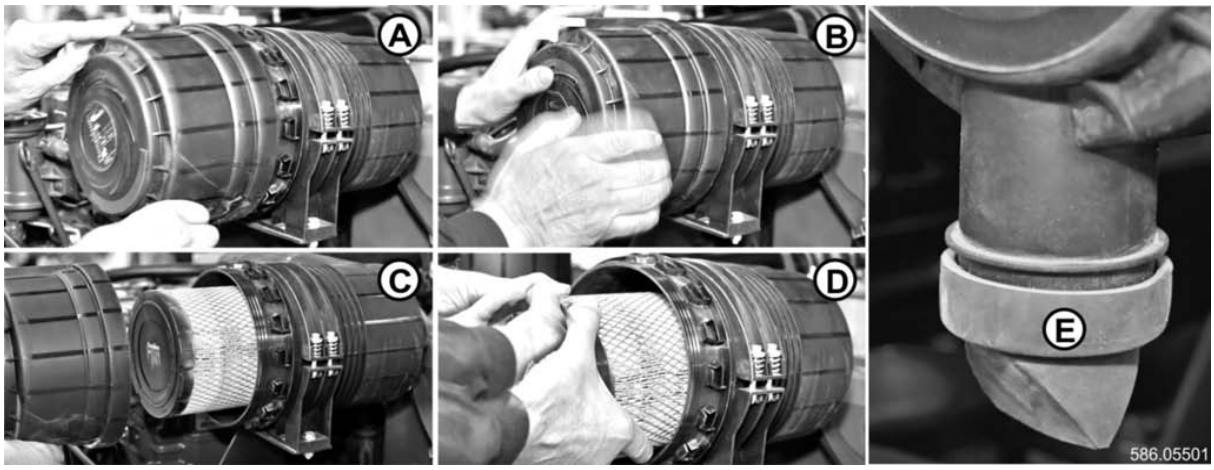



Figure 67.
1. Filter case. 2. Safety element. 3. Filter element. 4. Filter case cover. 5. Dust pocket.

To ensure a long operating life for a modern, turbo-charged engine, maintaining the good condition of the air filter is essential.

Figure 68.




Proceed as follows:

1. Stop the engine and remove the air filter's protective cover by removing the fasteners (A), rotating the cover, and pulling it out (B) and (C).
2. Pull out the filter element by rotating it (D).
   ► Inspect the filter element. If the element looks tidy and is in good condition, you can clean off the loose dust and dirt by lightly knocking on it. If the element is dirty or damaged, it must absolutely be replaced.

Huomaa! Notera! Note!

**If the filter element is damaged, the safety element must also be replaced.**

► Otherwise, check the condition of the safety element, but do not touch the safety element if it is in working order.

**Info!**

*Filter manufacturers do not recommend cleaning the filter element with compressed air, since compressed air can easily tear the fibres of the filter paper and ruin a good filter element without leaving a visual indication of this.*

► If you absolutely need to use compressed air, use very low pressure and direct the air from the inside of the filter outwards. Limit air pressure to 2–3 bar, and do not press the air nozzle against the filter paper or too close to it.
► Inspect the condition of the filter element's rubber seals.

3. Clean the protective cover and the dust pocket (E) on the cover.
   ► Install the filter element and protective cover in the reverse order.

**Info!**

*The safety element must be replaced latest when the main element has been cleaned five times.*

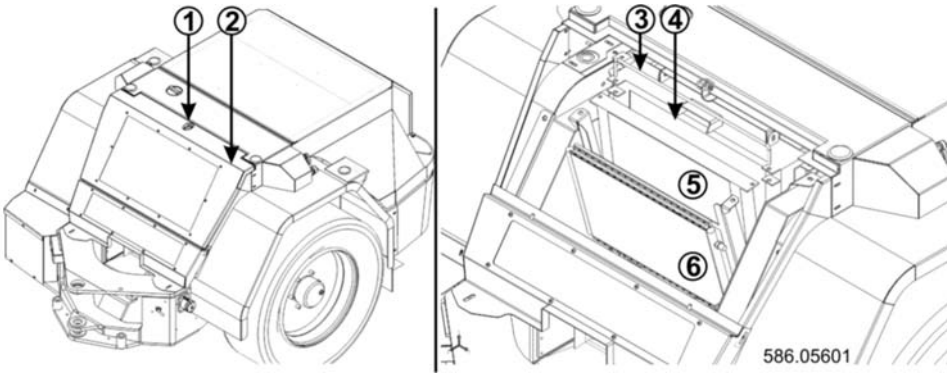
Huomaa! Notera! Note!

**Never run the engine without the air filter element.**

### 6.6.4 Radiator/condenser core cleaning

The cores are located on the rear axle. To clean the cores, remove the locking pin (1) and lift the front grille (2) off. Release the locking rod (3), after which you can carefully pry apart the cores (4, 5 or 6 depending on the equipment level). Only pry apart the cores as much as is necessary to perform the cleaning.

Figure 69.




Huomaa! Notera! Note!

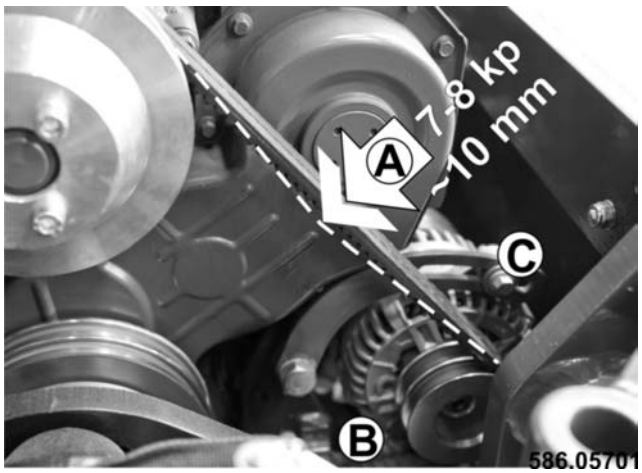
**Never use a pressure washer! It may damage the lamels of the core.**

If necessary, clean the cores using a suitable solvent and water and/or compressed air.

### 6.6.5 Alternator belt tension check/adjustment

► Inspect the alternator V-belts. If the belts are worn or oily, replace them.

Figure 70.



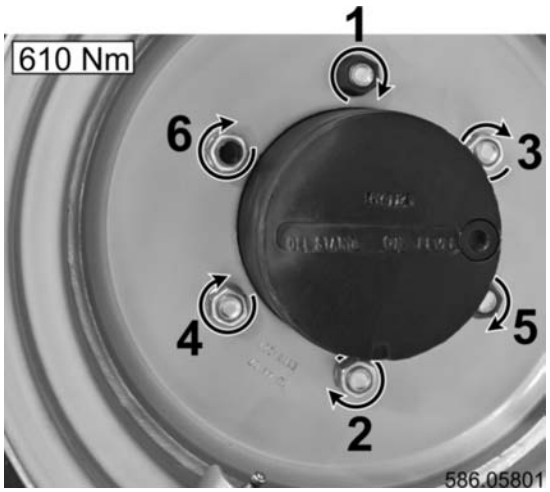

► Press one belt with your thumb, applying a force of 7–8 kp.
The belt must flex by approx. 10 mm.

Adjusting belt tension:

1. Loosen the fastener (B) (fastener below the alternator).
2. Loosen the adjustment locking screw (C).
3. Adjust belt tension by turning the alternator.
4. Tighten the adjustment locking screw (C), and check belt tension.
5. Tighten fastener (B) or redo items 2–4.

### 6.6.6 Wheel fastener tightening torque check

Figure 71.



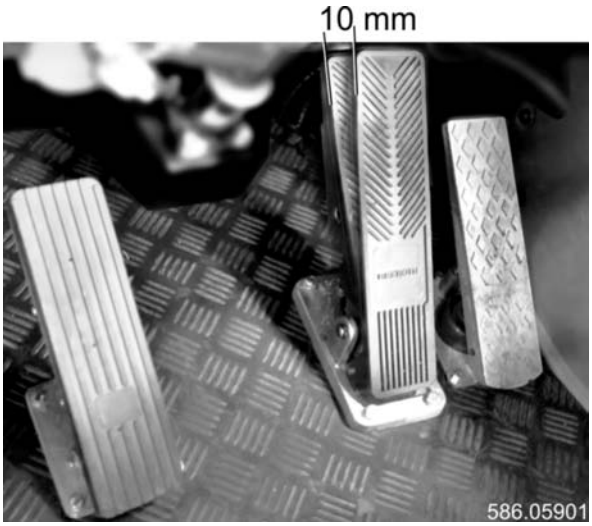

The tension of the wheel fasteners must be checked each day during the first 50 operating hours of the machine. The tightening torque is 610 Nm, and the tightening order is numbered in Figure 71.

## 6.7 250-hour service

Perform 10-hour and 50-hour service at the same time.

### 6.7.1 Brake pedal play check

Figure 72.




The brake pedal must have approx. 10 mm of play. Adjust if necessary.

### 6.7.2 Pressure accumulator pressure check

- ► Park the machine on level ground, do not apply the parking brake.
- ► Stop the engine and press the brake pedal enough times to turn on the brake pressure warning light.

There must be at least 4 pedal presses before the light turns on.

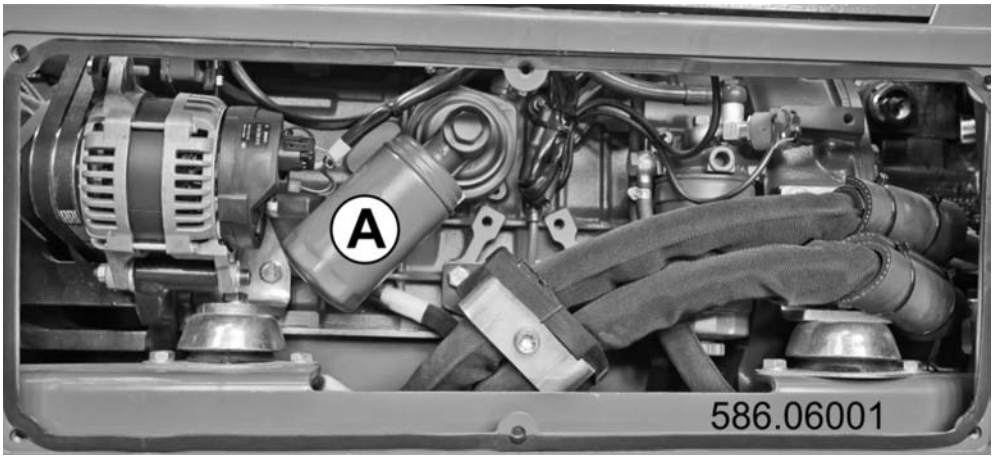
### 6.7.3 Engine oil change and filter replacement

- Always replace the oil filter when changing the oil.
- Change the oil and filter after the first 50 operating hours.
- Carry out the next oil and filter changes every 250 hours.

**Filter replacement**

- ► Stop the engine and wait for approx. 10 minutes to allow the oil to cool slightly.
- ► Place a pan under the filter (A).

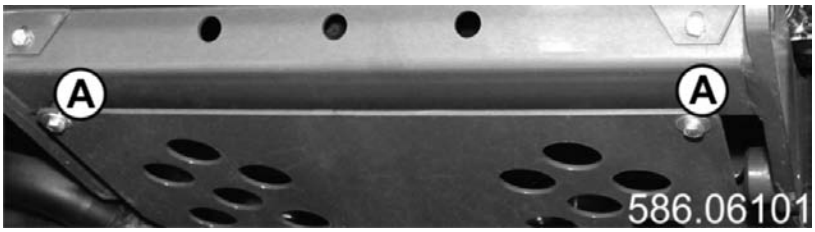
Figure 73.




- ► Remove the oil filter (A) using a filter wrench.
- ► Apply a thin coat of clean motor oil on the seal of the new filter, and install the filter.
- ► Tighten by hand, as over-tightening will damage the filter.

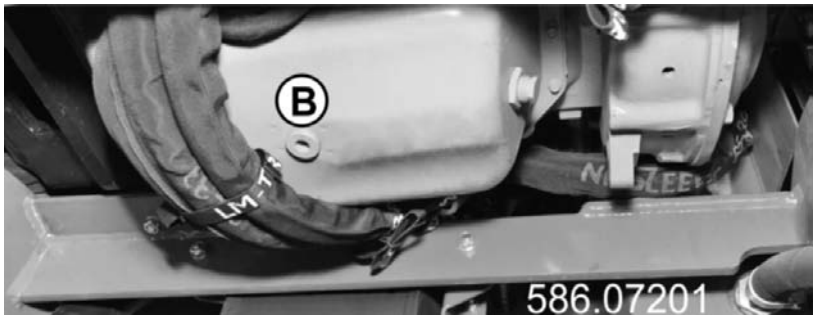
### Oil change

Figure 74.



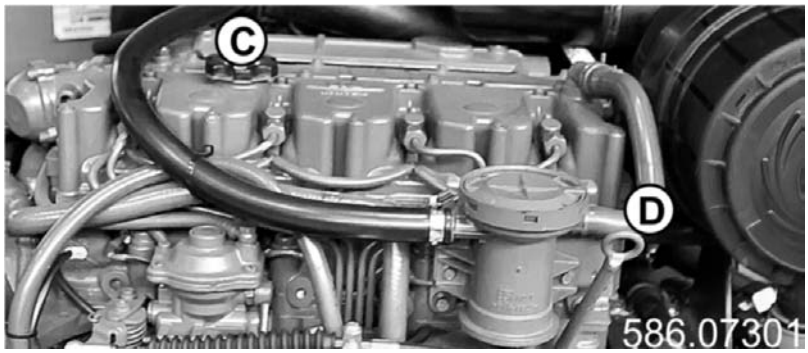

► Open the underpan fasteners (A) and lower the underpan until it rests on the hinges.

Figure 75.




► Place a pan under the engine and remove the oil drain plug (B) from the oil pan.
► Once all the oil has been drained, install and tighten the drain plug.

Figure 76.




► Pour recommended motor oil into the engine through the oil filler neck (C) on the valve cover. See the Technical Specifications for amount and grade.
► Check oil level on dipstick (D)
► Start the engine and let it run at idle for approx. 1 minute.
► Stop the engine and recheck the oil level on the dipstick (C).
► Add oil as necessary.

**Info!**

*To save time, first start draining the motor oil, then replace the oil filter, and finally complete the oil change.*

### 6.7.4 Engine air filter replacement

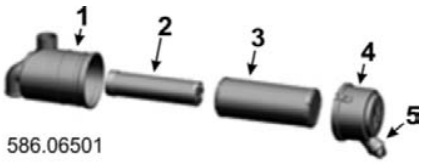
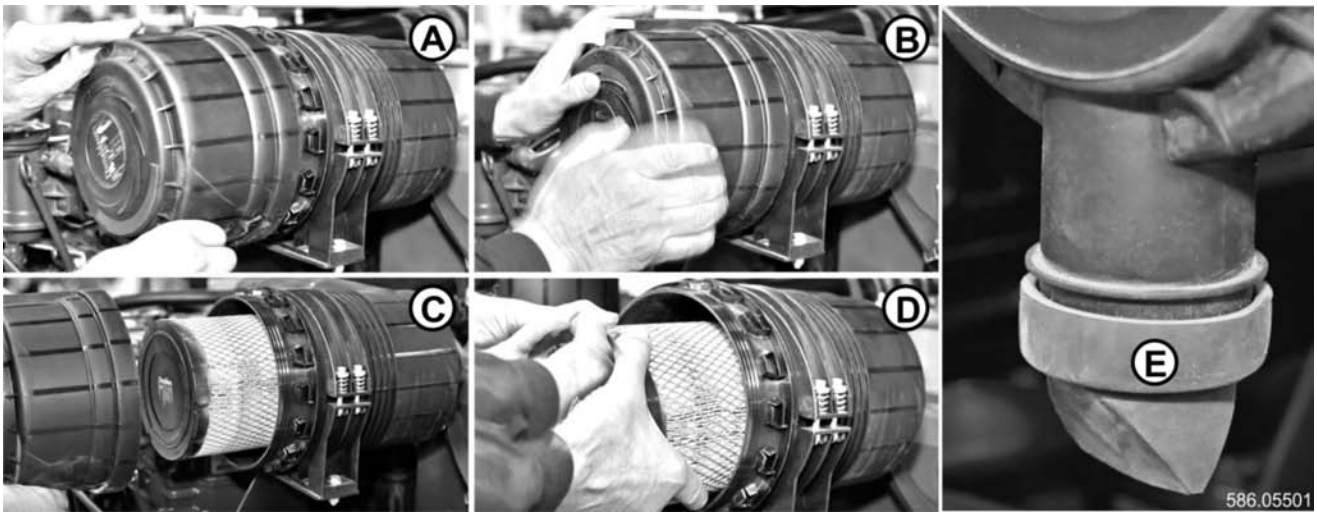



Figure 77.
1. Filter case
2. Safety element
3. Filter element
4. Filter case cover
5. Dust pocket

Figure 78.




Proceed as follows:

1. Stop the engine and remove the air filter's protective cover by removing the fasteners (A), rotating the cover, and pulling it out (B) and (C).
2. Pull out the filter element by rotating it (D).
   ► Inspect the condition of the case and filter rubber seals. Replace if necessary.
3. Clean the protective cover and the dust pocket (E) on the cover.
   ► Inspect the safety element. Replace the element, if it is dusty or damaged. If the safety element looks tidy and in order, do not remove it.
4. Install the filter element and protective cover in the reverse order.

**Info!**

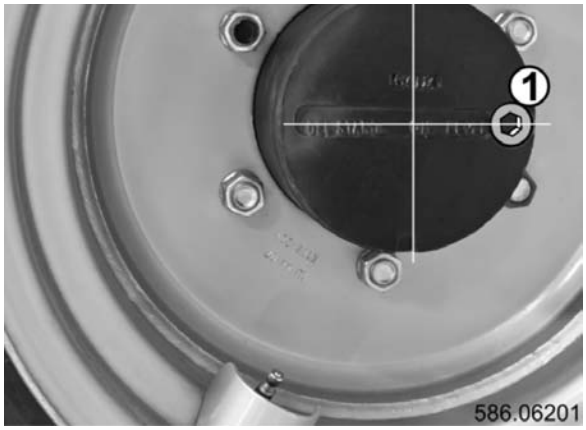
*The safety element must be replaced latest when the filter element has been cleaned five times.*

Huomaa! Notera! Note!

**Never run the engine without the air filter elements.**

### 6.7.5 Wheel hub oil level check

Figure 79.

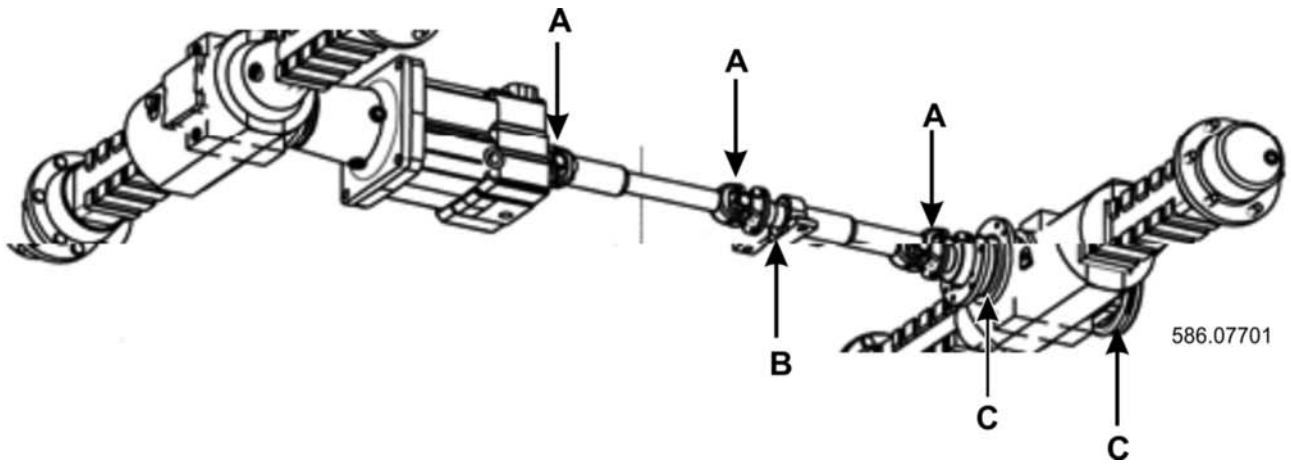



1. Oil level/drain/filler plug

► Park the machine on hard level terrain.
► Lift the machine up so that the wheel is just barely off the ground. Turn the wheel so that the oil level plug is at the same height with the centre of the hub, and remove the plug. The oil level must reach the lower edge of the plug.
► Add the correct type of oil as necessary and install the plug.
► Repeat the procedure for all wheel hubs.

### 6.7.6 Lubrication of articulated shafts, support bearing, and rocker joints

Figure 80.



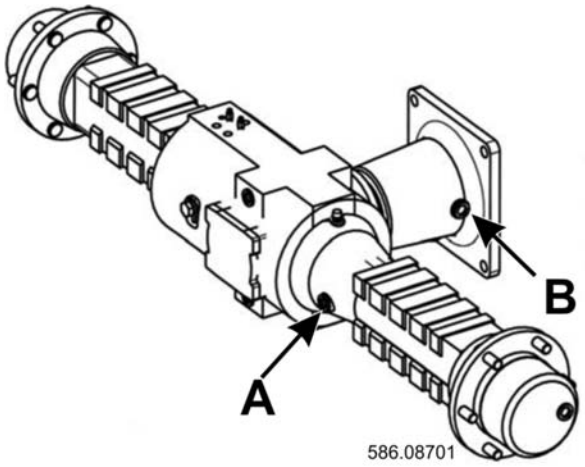

A. Grease nipples on articulated shaft universal joints
B. Grease nipple on support bearing
C. Grease nipples on rear axle rocker joints

► To simplify lubrication, park the machine on a lift or on top of a service pit.
► Apply the parking brake and prevent machine movement.
► Clean the nipples and apply high-quality grease to the locations marked in the figure.
► Wipe off any excess grease.

### 6.7.7 Differential and adapter oil level check

**Front axle and adapter**

Figure 81.

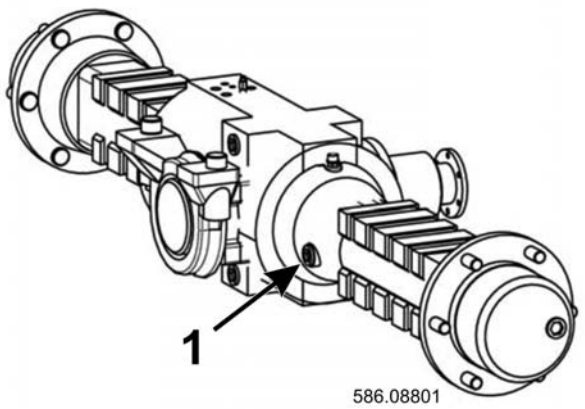



A. Front axle filler and inspection plug
B. Adapter filler and inspection plug

- ► Park the machine on hard level terrain.
- ► Apply the parking brake and prevent machine movement.
- ► Open the front axle filler/inspection plug and the adapter filler/inspection plug. The oil level must reach the lower edge of the plugs.
- ► Add the correct type of oil as necessary and close the plugs.

**Rear axle**

Figure 82.

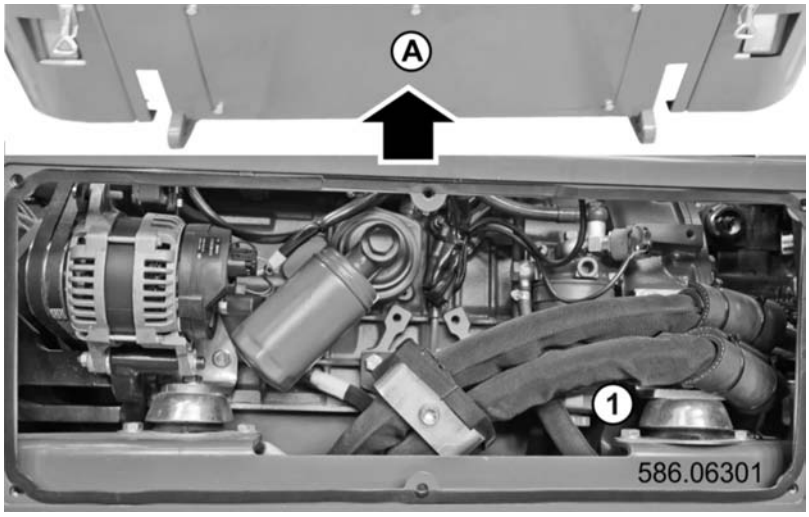



1. Rear axle filler and inspection plug

- ► Park the machine on hard level terrain.
- ► Apply the parking brake and prevent machine movement.
- ► Open the rear axle filler and inspection plug. The oil level must reach the lower edge of the plug.
- ► Add the correct type of oil as necessary and close the plug.

### 6.7.8 Fuel filter replacement

Figure 83.

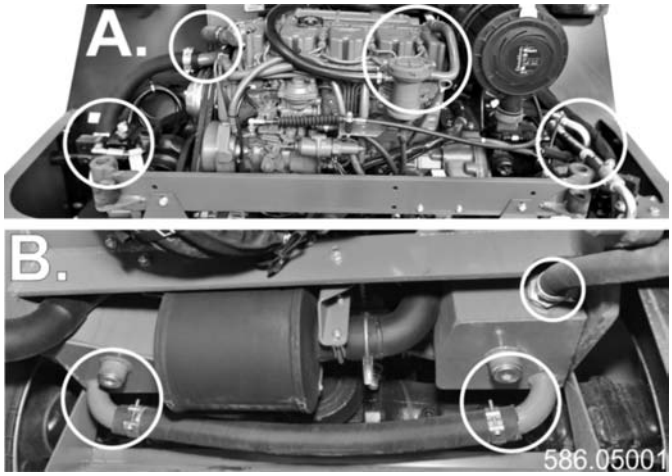



1. Fuel filter

- ► Park the machine on hard level terrain, and stop the engine.
- ► Remove the service hatch (A).
- ► Place a pan under the fuel filter, and remove the filter using a filter wrench.
- ► Apply a thin coat of clean diesel fuel on the seal of the new filter, and install the filter. Tighten by hand, as over-tightening will damage the filter.
- ► Finally, bleed the fuel system.

### 6.7.9 Leak check

Figure 84.




- ► Check all pipes, hoses and connectors for leaks.
- ► Tighten loose hose ties and replace all damaged parts.

Contact authorised service if you discover leaks in the hydraulic pumps or motors. Leaks in the axles or the engine also necessitate contacting authorised service.

## 6.8 500-hour service

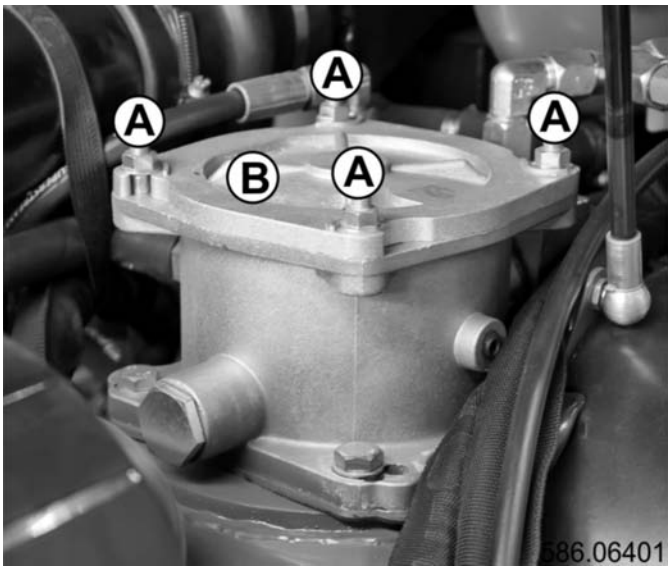
Perform 10-hour, 50-hour and 250-hour service at the same time.

### 6.8.1 Hydraulic oil return filter replacement

The hydraulic oil return filter removes dirt from the oil returning to the hydraulic tank.

► Park the machine on hard level terrain. Lower all tools, apply the parking brake and prevent machine movement.

Figure 85.




1. Loosen fasteners (A).
2. Turn the cover (B) clockwise and lift it up with the filter element.
3. Remove the old filter element.
4. Clean parts and seal surfaces.
5. Install a new filter element and O ring seal.
6. Install the filter element and cover.
7. Start engine and check for leaks.

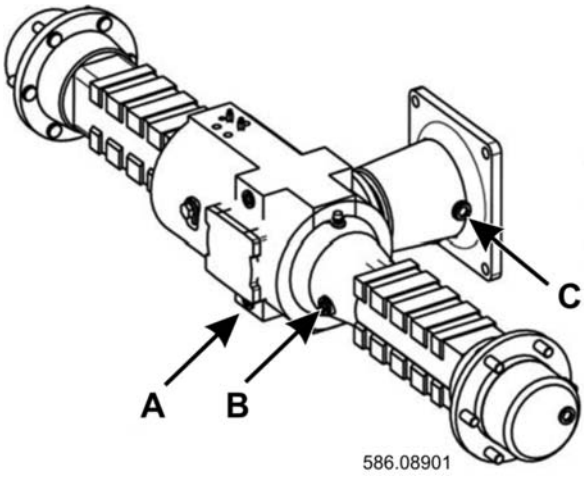
## 6.9 1,000-hour service

Perform 500-hour, 250-hour, 50-hour, and 10-hour service at the same time.

### 6.9.1 Differential and adapter oil change

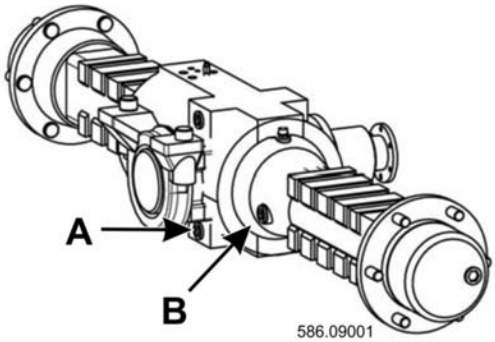
**Front axle**

Figure 86.




**Rear axle**

Figure 87.




**A**. Drain plug **B**. Level/filler plug **C**. Adapter level/filler plug.

- ► Park the machine on hard level terrain, and stop the engine.
- ► Place a pan under the differential drain plug, and remove the level and drain plugs.
- ► Once all the oil has been drained, close the drain plug.
- ► Use the correct type of oil to fill the differential up to the lower edge of the level plug, and close the plug.
- ► Repeat the procedure for the second axle.

### 6.9.2 Fuel tank cleaning

Condensed water from the fuel tank is removed through the plug at the bottom of the tank.

- ► Place a pan underneath the tank and remove the plug. Close the plug once clean fuel flows out.

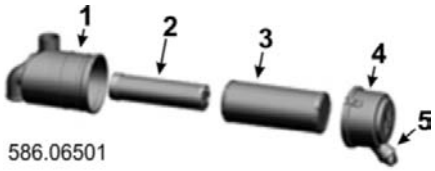
This work is best performed when the tank has a low amount of fuel.

### 6.9.3 Brake function check

Check the function of the operating brake and parking brake. The machine must stay firmly in place at a 20% inclination with the parking brake applied.

### 6.9.4 Engine air filter and safety element replacement

Figure 88.




1. Case 2. Safety element 3. Filter element 4. Cover 5. Dust pocket

- ► Stop the engine and remove the air filter cover (4).
- ► Remove the filter element and safety element (3 and 2), and clean the inside of the filter case (1) with a dry, lint-free cloth.
- ► Clean the dust pocket (4) and the filter case cover (5).
- ► Install the new safety element (2) and the new filter element (3).
- ► Close the air filter protective cover.

Huomaa! Notera! Note!

**Never run the engine without the air filter elements.**

### 6.9.5 Pressure measurement and adjustment of steering hydraulics

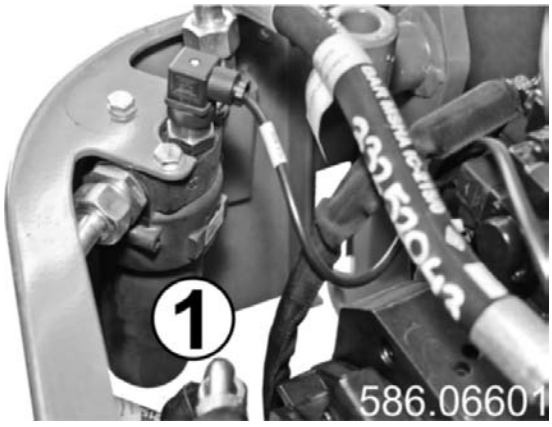
The pressure measurement and adjustment of steering hydraulics must be performed by an authorised service workshop.

### 6.9.6 Pressure measurement and adjustment of operating hydraulics

The pressure measurement and adjustment of operating hydraulics must be performed by an authorised service workshop.

### 6.9.7 Steering hydraulics filter replacement

Figure 89.




1. Filter cup

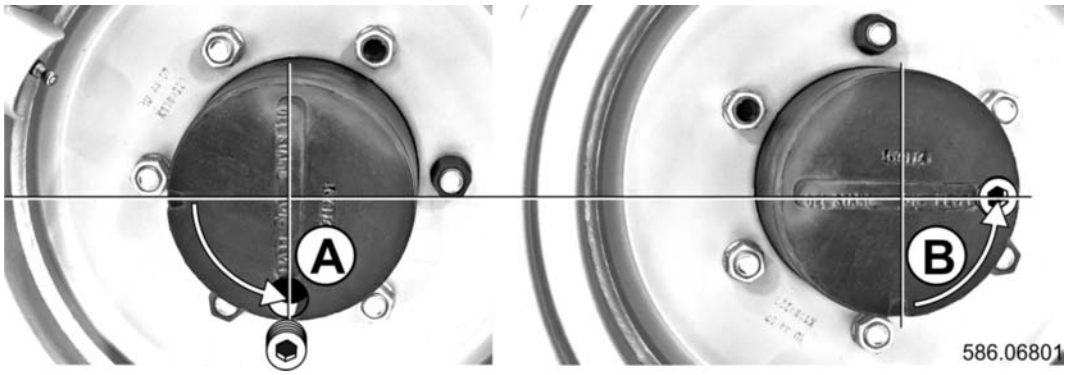
- ► Park the machine on hard level terrain, and place a pan under the filter.
- ► Remove the filter cup and the filter element.
- ► Wash the cup in diesel fuel, install a new element inside the cup, and install the filter cup.

**Info!**

*Hydraulic oil is normally replaced together with filter replacement, See 6.9.9 on page 73.*

### 6.9.8 Wheel hub oil change

Figure 90.



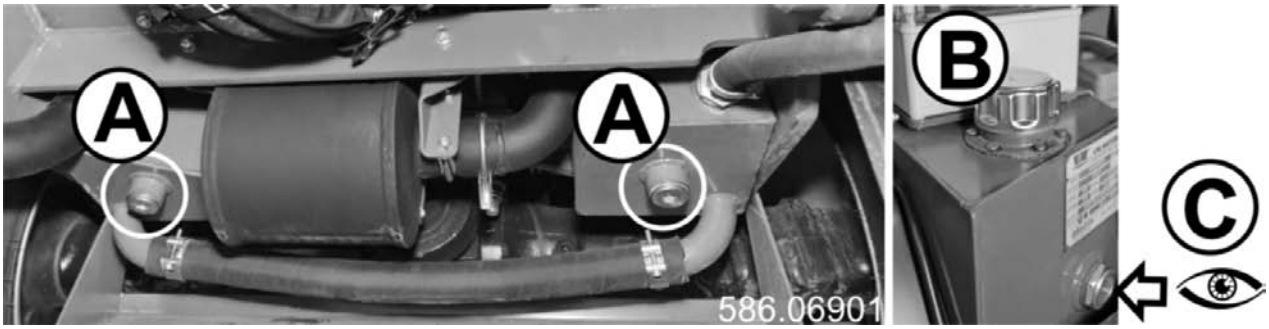

► Park the machine on hard level terrain.

1. Lift the machine up so that the wheel is just barely off the ground, and place a pan under the wheel hub.
2. Rotate the wheel so that the drain plug points straight down (A), and remove the plug.
3. Drain the oil into the pan.
4. Turn the wheel until the oil drain/filler hole is at the same height with the centre of the hub (B).
5. Add the correct type of oil until the lower edge of the hole is reached, and close the plug.
6. Repeat the above procedure for the other wheel hubs.

### 6.9.9 Hydraulic oil tank cleaning and oil replacement

The cleanliness of the system and the oil are essential for the functionality of the hydraulic system. Ensure absolute cleanliness when working with hydraulics.

Figure 91.




1. Open the engine underpan.
2. Place pans under the hydraulic oil tank drain plugs (A).
3. Remove the drain plugs and drain out all the oil.
4. Close the drain plugs and tighten them carefully.
5. Open the hydraulic tank breather cap (B) on the left side of the engine compartment.
6. Pour the correct grade of oil through the filler neck, until the oil level is visible in the sight glass (C); then close the breather cap (B).
7. Start the engine and let it run for a few minutes.
8. Stop the engine and check the oil level, add oil as necessary.
9. Start the engine and check that all hoses and plugs are tight.
10. Turn and attach the underpan in place.

### 6.9.10 Cabin fresh air filter replacement

Figure 92.


- ► Open the hatch (1) below the right cabin side window.
- ► Remove the filter (3) and dispose of it according to regulations.
- ► Install a new filter and close the hatch.

### 6.9.11 Battery check

Figure 93.


The battery (A) is located in its own compartment in front of the right rear wheel.

The battery is maintenance-free and requires no special service.

Check that the battery cables are properly attached, and that the cable connectors and the outside of the battery are clean.

Check that the battery is firmly attached.

**Info!**

*The main power switch is located on the left side of the machine in the same place, and it can be used to cut all power between the battery and the machine.*

## 6.10 2,000-hour service

Perform 1,000-hour, 500-hour, 250-hour, 50-hour, and 10-hour service at the same time.

### 6.10.1 Alternator wiring check

Inspect all the alternator wire connectors. Clean oxidised connectors and tighten loose connections. Replace damaged connectors.

Figure 94.


### 6.10.2 Starter motor wiring check

Inspect all starter motor wire connectors. Clean oxidised connectors and tighten loose connections. Replace damaged connectors.

### 6.10.3 Nozzle inspection and cleaning

The injectors' condition and opening pressure checks must be performed by authorised service.

## 6.11 2-year service

### 6.11.1 Cooling system cleaning and fluid replacement

1. Place a sufficiently large pan below the engine's lower hose.
2. Remove the expansion tank cap and disconnect the lower hose from the engine.
3. Let the coolant flow into the pan and install the lower hose.
4. Fit the lower hose in place and fill the cooling system with a mixture of clean water and radiator flush. Follow the mixing instructions on the radiator flush packaging.
5. Start the engine and let it run at idle for approx. 20 minutes.
6. Stop the engine and remove the radiator flush solution through the lower hose.
7. Fit the lower hose using a new hose clamp, and fill the cooling system with an anti-freeze mixture.
8. Start the engine and let it run for approx. 5 minutes.
9. Check the coolant level and add anti-freeze as necessary.
10. Ensure that there are no leaks.

## 6.12 Fuses and relays

The fuses and relays are located in the electrical switchboard below the document compartment.

The fuses are of MICRO type.

Figure 95.

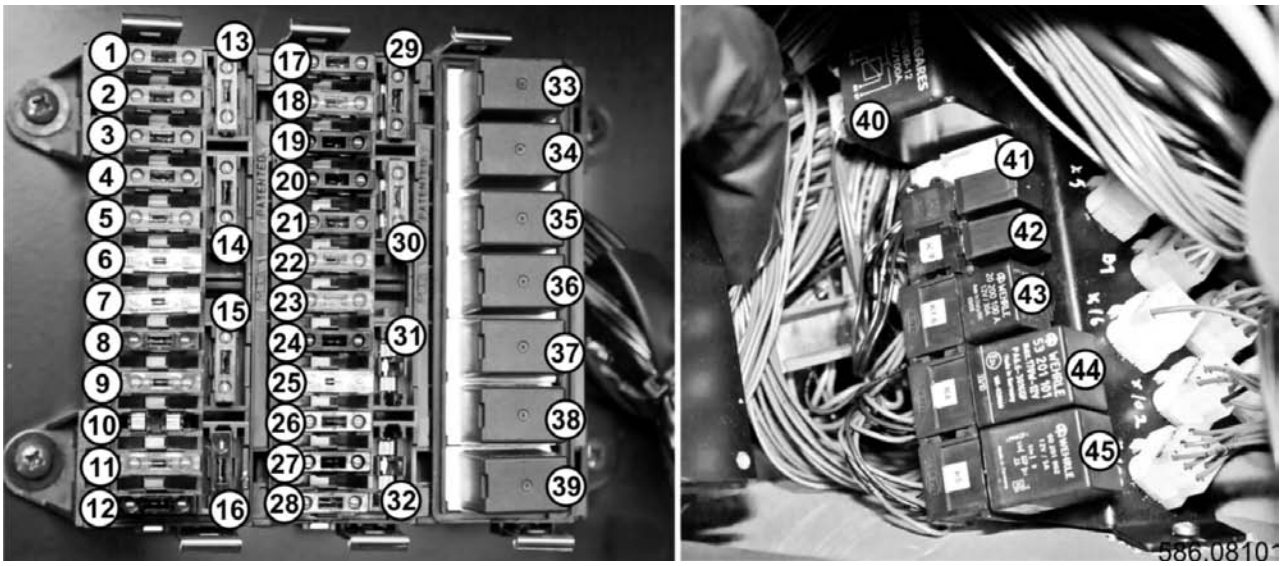



Table: 8

| No. | Circuit | Size | No. | Circuit | Size |
|---|---|---|---|---|---|
| 1 | Left parking/instrument light | 3 A | 24 | Mirror and seat heating | 15 A |
| 2 | Right parking light | 3 A | 25 | Fan/air conditioning | 20 A |
| 3 | Left low beam | 7.5 A | 26 | Ignition switch/glow excitation | 10 A |
| 4 | Right low beam | 7.5 A | 27 | Rear lifter/front switching valve/left cyl. hydr./ rear tool electricity | 15 A |
| 5 | High beams | 10 A | 28 | Tachometer (30) | 7.5 A |
| 6 | Front working lights | 20 A | 29 | Fuel/temperature/tachometer (15) | 7.5 A |
| 7 | Rear working lights | 20 A | 30 | Radio memory | 7.5 A |
| 8 | Direction indicators | 15 A | 31 | Not used | |
| 9 | Cabin temperature adjustment/Fan control | 10 A | 32 | Not used | |
| 10 | Not used | | | RELAYS | |
| 11 | Roof beacon/power take-out | 10 A | 33 | Rocker control relay | K15 |
| 12 | Safematic/brake light/dome light/radio stand-by (15) | 10 A | 34 | Central alarm activation relay | K13 |
| 13 | Emergency flashers | 10 A | 35 | Starter lock relay | K3 |
| 14 | Engine compartment light | 7.5 A | 36 | Front tool electricity (push-button) | K1.4 |
| 15 | Indicators | 3 A | 37 | Front tool electricity (rocker switch) | K1.3 |
| 16 | Lock/drive programme selection | 7.5 A | 38 | Pre-control | K1.2 |
| 17 | Parking brake | 15 A | 39 | Engine hydraulics lowering | K1.1 |
| 18 | Drive powertrain | 10 A | 40 | Main power relay | K2 |
| 19 | Pre-control main power | 15 A | 41 | Drive system relay | |
| 20 | Front socket/quick-release locks/fork floating and flexing | 15 A | 42 | Pre-control power cut-off relay | K7 |
| 21 | Engine stopper (15) | 20 A | 43 | Reversing lights | K1.6 |
| 22 | Windshield wiper/washer/horn | 10 A | 44 | Mist-off relay | K5 |
| 23 | Rear window wiper/washer | 3 A | 45 | Rocker relay | K9 |

**Only use the above fuse sizes!**

**The engine compartment** fuse and relay box has the following fuses: Main power 80A , Ignition 50A, Glow 50A (of MAXI type). See Engine compartment components 3.7.1 p. 22

## 6.13 Machine storage

### 6.13.1 Storing the multi-process machine for less than 2 months

No special actions are required, if:

- The machine has been regularly serviced
- The machine is clean
- Coolant has a suitable freezing point for the ambient temperature.
- The fuel tank is full.
- Battery storage has been arranged.

### 6.13.2 Storing the multi-process machine for more than 2 months

The following procedures are required, if the machine is left in storage for over 2 months:

- ► Clean the machine inside and out, and perform general lubrication.
- ► Let the engine run until it reaches normal temperature, and drive the machine for a while.
- ► Change engine oil and replace filter.
- ► Open the fuel filter drain tap, and let out any water and deposits. Close the tap.
- ► Clean the fuel tank and fill it with clean diesel fuel that suits the ambient temperature. Run the engine for approx. 5 minutes.
- ► Clean the engine air filter case and element.
- ► Drain and rinse the cooling system, and fill it with the recommended anti-freeze mixture.
- ► Ensure that the batteries are fully charged. If the machine is stored in a cold environment, remove the batteries. Check the battery charge every 30 days.
- ► Store the machine in a dry, warm space, and protect it against sunlight. Lift the machine's wheels of the ground using proper stands to support it.
- ► To prevent rust, grease all exposed cylinder shafts.

## 6.14 Machine commissioning

### 6.14.1 After a storage of less than 2 months

- ► Check that the batteries are fully charged.
- ► Check the oil and fluid amounts and tyre pressures.
- ► Perform general lubrication.
- ► Bleed the fuel system if necessary.
- ► Start the engine, but do not let it run above 1,000 r/min.
- ► Perform a test drive to ensure that all equipment works correctly.

### 6.14.2 After a storage of more than 2 months

- ► Check tyre pressures.
- ► Remove the protective covers and lower the machine.
- ► Open the fuel filter drain tap, and let out any water and deposits. Close the tap.
- ► Check engine oil level.
- ► Check coolant level.
- ► Check that the batteries are fully charged.
- ► Connect battery cables and tighten properly.
- ► Check hydraulic oil level.
- ► Check condition and tension of V-belt.
- ► Start the engine, but do not let it run above 1,000 r/min.
- ► Ensure that all covers and hatches are in place and properly attached.

**Varoitus! Varning! Warning!**

**Before starting the engine, ensure that all the controls are neutral and that the parking brake is on.**
**Never run the engine in a closed space. Sufficient ventilation must be ensured under all conditions.**

# 7.0 TECHNICAL SPECIFICATIONS

## 7.1 Dimensions

Table 9:

| DIMENSIONS | [mm] | WEIGHTS | [kg] |
|---|---|---|---|
| Length | 4,300 mm | Kerb weight | 3,790 kg |
| Height | 2,250 mm | Front axle weight | 1,700 kg |
| Wheelbase | 2,000 mm | Rear axle weight | 2,090 kg |
| Track width | 1,410 mm | Largest allowed weight for front axle | 5,300 kg |
| Turn radius, min | 1,600 mm | | |
| Turn radius, max | 3,400 mm | Largest allowed weight for rear axle | 5,300 kg |
| Ground clearance | 280 mm | | |

### 7.1.1 Engine, general

| | |
|---|---|
| Model: | Detroit D704 TE2, turbo diesel |
| Cylinder diameter: | 94 mm |
| Stroke: | 100 mm |
| Number of cylinders: | 4 pcs |
| Displacement: | 2,776 cm3 |
| Nominal output: | 60,5 kW (3000 r/min) |
| Maximum torque: | 290 Nm (1400 r/min) |
| Idle: | 900 ± 50 r/min |

### 7.1.2 Engine lubrication system

Gear-type pump and replaceable main flow filter.

| | |
|---|---|
| Oil filter: | Paper |
| Minimum oil pressure: | 1.5 bar |

### 7.1.3 Fuel system

| | |
|---|---|
| Fuel | Diesel* |
| Injection pump: | Row |
| Injection order: | 1-3-4-2 |
| Injection pressure: | 250 bar |
| Fuel filter: | Paper |

* Heating oil must not be used as fuel.

### 7.1.4 Cooling system

Thermostat-controlled, over pressurised. Hydraulic motor powered fan.

### 7.1.5 Drive hydraulics

Closed, load-sensing system with driving direction switching using an electric selection switch.

Load automation monitoring engine operation. Stepless speed range 0–40 km/h.

| | |
|---|---|
| Drive pump: | Linde, variable displacement axial piston pump |
| Drive motor: | Linde, variable displacement axial piston motor. |

| | |
|---|---|
| Pump output: | 160 l/min |
| Operating pressure: | 420 bar |

### 7.1.6 Work hydraulics

Load-sensing LS system.

| | |
|---|---|
| Pump: | Metaris (Rexroth), variable displacement axial piston pump |
| Valves: | 4-stem, electrically controlled |
| Pump output: | 130 l/min |
| Maximum pressure: | 200 bar |

### 7.1.7 Steering hydraulics

Hydrostatic body steering. Steering system oil flow is taken from the operating hydraulic circuit using a priority valve.

| | |
|---|---|
| Steering cylinders: | 2 pcs |

### 7.1.8 Other information concerning hydraulics

Hydraulic oil cooler below engine radiator.

| | |
|---|---|
| Oil volume: | approx. 110 l |

### 7.1.9 Brakes

Built-in wet multi-disc brakes on both the front and rear axles. The parking brake only affects the front axle.

During normal operation, the hydrostatic powertrain is used for deceleration.

### 7.1.10 Axles

Front: unsuspended rigid axle.

Rear: unsuspended rocker axle.

### 7.1.11 Tyres

| | |
|---|---|
| Standard tyres: | 315/60R 22.5 |

Inflation pressure:

- Minimum allowed pressure:1.7 bar
- Maximum allowed pressure:5.7 bar

Tyre pressures may vary depending on use. A general pressure guideline is 2.5–3.0 bar both front and back, unless otherwise noted on the tool.

### 7.1.12 Electrical system

| | |
|---|---|
| Voltage: | 12 V |
| Starter motor: | 2.2 kW |
| AC alternator: | 85 A |
| Battery: | 12 V, 145 Ah |
| Earth: | Negative |
| Fuses: | See page XXX |
| Headlight bulb: | H7/12V/55W |
| Working light bulb: | H3/12V/55W |
| Parking light bulb: | T4W/12V/4W |

| | |
|---|---|
| Turn indicator bulb: | P21W/12V/21W |
| Brake light bulb: | P21W/12V/21W |
| Warning light bulb: | H3/12V/55W |
| Engine compartment light bulb: | C5W/12V/5W |
| Cabin dome light bulb: | C10W/12V/10W |

### 7.1.13 Air conditioning (Accessory)

| | |
|---|---|
| Refrigerant charge (R 134): | 1.35 kg |

Other information:

## 8.0 Troubleshooting and repair

The following contains a few instructions for troubleshooting. The list is only indicative and should not be considered a full troubleshooting diagram.

If the instructions below are not enough to remove the disturbance, we recommend that you contact authorised service.

Always remember to check all fuses, oil levels and filters before contacting service or initiating repair.

### 8.1 Disturbance, cause, corrective action

Table 10:

| Disturbance | Cause | Corrective action |
|---|---|---|
| Engine does not start or starting is difficult: | Out of fuel or wrong fuel grade? | Refuel, use suitable fuel for the temperature! |
| | Air or water in fuel system? | Drain water from tank!<br>Check fuel pipe connections, repair as necessary!<br>Bleed the fuel system! |
| | Too high oil viscosity? | Use suitable oil for the temperature! |
| | Flat battery? | Charge or replace battery! |
| | Fuse 21 or 26 out? | Replace fuse. See instructions! |
| Low engine power: | Low fuel? | Refuel! |
| | Clogged air filter? | Clean or replace filter! |
| | Clogged fuel filter? | Replace filter! |
| The engine stops: | Out of fuel? | Refuel and bleed the fuel system! |
| Abnormal exhaust gas colour: | Low-quality fuel? | Use correct type of fuel! |
| | Excess oil in the engine? | Drain out the excess oil! |
| Too high a coolant temperature: | Too little coolant? | Refill to correct level! |
| | Blocked radiator fins? | Clean fins! |
| | Dirty anti-freeze? | Rinse cooling system, replace fluid! |
| | Overload? | Reduce engine load! |
| | Low-quality fuel? | Use correct type of fuel! |
| Machine not moving at the desired speed: | Too little hydraulic oil? | Add oil to reach correct level! |
| | Drive hydraulics filter clogged? | Replace filter! |
| Machine not moving at all: | Fuse number 18 out? | Replace fuse! See instructions! |
| Machine not moving forward or in reverse: | Broken driving direction switch? | Let authorised service replace the switch and inspect the circuit. |
| Driving programme not changing: | Fuse number 16 out? | Replace fuse! See instructions! |
| Forks not moving: | Fuse number 19 out? | Replace fuse! See instructions! |
| Floating not working: | Fuse number 20 out? | Replace fuse! See instructions! |
| Rear lifter not working: | Fuse number 27 out? | Replace fuse! See instructions! |
| Front cylinder hydraulics not working: | Tool electricity button faulty. | Let authorised service replace the button and inspect the circuit. |
| Rear cylinder hydraulics not working: | Fuse number 27 out? | Replace fuse! See instructions! |

## 9.0 Service memo

Always remember to write down completed service in the appropriate place in the service memo!

In the tables.

The operating hours listed under periodic maintenance are the current readings for the machine's operating hour counter.

Also remember to complete the 10-hour and 50-hour service and the 2-year service on time.

 Huomaa! Notera! Note!

**Timely and correct maintenance is a prerequisite for keeping your warranty in effect.**
**The periodic maintenance table is table nr. 32 p 89**
Make a copy of the table and write down the completed service, the technician, and the workshop. Give a copy to the customer or attach it to the machine's documentation.

Table 11:

| 10-hour service/daily inspections and lubrication |
|---|
| Perform the 10-hour service/inspection daily and together with all periodic maintenance!<br><br>The inspections and lubrication points can be found in the maintenance table.<br><br>NOTE!<br>Perform the daily inspections and lubrication regularly to ensure a long and effective operating life for your machine. |

Table 12:

| 50 h service/every 50 h/min. once a week | **Service done** |
|---|---|
| Complete this service at 50-hour intervals, or at least once a week, together with the 10-hour service items.<br><br>When the machine's hour counter shows 50 hours, complete the 10 and 50 hour service and the items marked with O in the 50-hour column.<br>The work to be completed can be found in the maintenance table.<br><br>NOTE!<br>This service is essential for the continued reliability of a new machine! | Date: _____<br><br>Counter reading: _____<br>Technician:<br><br>Stamp: |

Table 13:

| Hour counter reading: 250 hours | **Service done** |
|---|---|
| Complete this service when the machine's hour counter reads 250 hours!<br>Complete the service items for 10, 50, and 250 hours.<br><br>The work to be completed can be found in the maintenance table.<br><br>NOTE!<br>Timely periodic maintenance and daily inspections (10 hour maintenance) ensure an effective and long operating life for your machine! | Date: _____<br><br>Counter reading: _____<br>Technician:<br><br>Stamp: |

Table 14:

| Hour counter reading: 750 hours | **Service done** |
|---|---|
| Complete this service when the machine's hour counter reads 750 hours!<br>Complete the service items for 10, 50, and 250 hours.<br><br>The work to be completed can be found in the maintenance table.<br><br>NOTE!<br>Timely periodic maintenance and daily inspections (10 hour maintenance) ensure an effective and long operating life for your machine! | Date: _____<br><br>Counter reading: _____<br>Technician:<br><br>Stamp: |

Table 15:

| Hour counter reading: 1,000 hours | **Service done** |
|---|---|
| Complete this service when the machine's hour counter reads 1000 hours!<br>Complete the service items for 10, 50, 250, 500, and 1,000 hours.<br>The work to be completed can be found in the maintenance table.<br><br>NOTE!<br>Timely periodic maintenance and daily inspections (10 hour maintenance) ensure an effective and long operating life for your machine! | Date: _____<br><br>Counter reading: _____<br>Technician:<br><br>Stamp: |

Table 16:

| Hour counter reading: 1250 hours | **Service done** |
|---|---|
| Complete this service when the machine's hour counter reads 1250 hours!<br>Complete the service items for 10, 50, and 250 hours.<br><br>The work to be completed can be found in the maintenance table.<br><br>NOTE!<br>Timely periodic maintenance and daily inspections (10 hour maintenance) ensure an effective and long operating life for your machine! | Date: _____<br><br>Counter reading: _____<br>Technician:<br><br>Stamp: |

Table 17:

| Hour counter reading: 1500 hours | **Service done** |
|---|---|
| Complete this service when the machine's hour counter reads 1500 hours!<br>Complete the service items for 10, 50, 250, and 500 hours.<br><br>The work to be completed can be found in the maintenance table.<br><br>NOTE!<br>Timely periodic maintenance and daily inspections (10 hour maintenance) ensure an effective and long operating life for your machine! | Date: _____<br><br>Counter reading: _____<br>Technician:<br><br>Stamp: |

Table 18:

| Hour counter reading: 1750 hours | **Service done** |
|---|---|
| Complete this service when the machine's hour counter reads 1750 hours!<br>Complete the service items for 10, 50, and 250 hours.<br><br>The work to be completed can be found in the maintenance table.<br><br>NOTE!<br>Timely periodic maintenance and daily inspections (10 hour maintenance) ensure an effective and long operating life for your machine! | Date: _____<br><br>Counter reading: _____<br>Technician:<br><br>Stamp: |

Table 19:

| Hour counter reading: 2000 hours | **Service done** |
|---|---|
| Complete this service when the machine's hour counter reads 2000 hours!<br>Complete the service items for 10, 50, 250, 500, 1,000, and 2,000 hours.<br>The work to be completed can be found in the maintenance table.<br><br>NOTE!<br>Timely periodic maintenance and daily inspections (10 hour maintenance) ensure an effective and long operating life for your machine! | Date: _____<br><br>Counter reading:_____<br>Technician:<br><br>Stamp: |

Table 20:

| Hour counter reading: 2250 hours | **Service done** |
|---|---|
| Complete this service when the machine's hour counter reads 2250 hours!<br>Complete the service items for 10, 50, and 250 hours.<br><br>The work to be completed can be found in the maintenance table.<br><br>NOTE!<br>Timely periodic maintenance and daily inspections (10 hour maintenance) ensure an effective and long operating life for your machine! | Date: _____<br><br>Counter reading:_____<br>Technician:<br><br>Stamp: |

Table 21:

| Hour counter reading: 2500 hours | **Service done** |
|---|---|
| Complete this service when the machine's hour counter reads 2500 hours!<br>Complete the service items for 10, 50, 250, and 500 hours.<br><br>The work to be completed can be found in the maintenance table.<br><br>NOTE!<br>Timely periodic maintenance and daily inspections (10 hour maintenance) ensure an effective and long operating life for your machine! | Date: _____<br><br>Counter reading:_____<br>Technician:<br><br>Stamp: |

Table 22:

| Hour counter reading: 2750 hours | **Service done** |
|---|---|
| Complete this service when the machine's hour counter reads 2750 hours!<br>Complete the service items for 10, 50, and 250 hours.<br><br>The work to be completed can be found in the maintenance table.<br><br>NOTE!<br>Timely periodic maintenance and daily inspections (10 hour maintenance) ensure an effective and long operating life for your machine! | Date: _____<br><br>Counter reading: _____<br>Technician:<br><br>Stamp: |

Table 23:

| Hour counter reading: 3000 hours | **Service done** |
|---|---|
| Complete this service when the machine's hour counter reads 3000 hours!<br>Complete the service items for 10, 50, 250, 500, and 1,000 hours.<br>The work to be completed can be found in the maintenance table.<br><br>NOTE!<br>Timely periodic maintenance and daily inspections (10 hour maintenance) ensure an effective and long operating life for your machine! | Date: _____<br><br>Counter reading: _____<br>Technician:<br><br>Stamp: |

Table 24:

| Hour counter reading: 3250 hours | **Service done** |
|---|---|
| Complete this service when the machine's hour counter reads 3250 hours!<br>Complete the service items for 10, 50, and 250 hours.<br><br>The work to be completed can be found in the maintenance table.<br><br>NOTE!<br>Timely periodic maintenance and daily inspections (10 hour maintenance) ensure an effective and long operating life for your machine! | Date: _____<br><br>Counter reading: _____<br>Technician:<br><br>Stamp: |

Table 25:

| Hour counter reading: 3500 hours | **Service done** |
|---|---|
| Complete this service when the machine's hour counter reads 2500 hours!<br>Complete the service items for 10, 50, 250, and 500 hours.<br><br>The work to be completed can be found in the maintenance table.<br><br>NOTE!<br>Timely periodic maintenance and daily inspections (10 hour maintenance) ensure an effective and long operating life for your machine! | Date: _____<br><br>Counter reading: _____<br>Technician:<br><br>Stamp: |

Table 26:

| Hour counter reading: 3750 hours | **Service done** |
|---|---|
| Complete this service when the machine's hour counter reads 3750 hours!<br>Complete the service items for 10, 50, and 250 hours.<br><br>The work to be completed can be found in the maintenance table.<br><br>NOTE!<br>Timely periodic maintenance and daily inspections (10 hour maintenance) ensure an effective and long operating life for your machine! | Date: _____<br><br>Counter reading: _____<br>Technician:<br><br>Stamp: |

Table 27:

| Hour counter reading: 4000 hours | **Service done** |
|---|---|
| Complete this service when the machine's hour counter reads 4000 hours!<br>Complete the service items for 10, 50, 250, 500, and 1,000 hours.<br>The work to be completed can be found in the maintenance table.<br><br>NOTE!<br>Timely periodic maintenance and daily inspections (10 hour maintenance) ensure an effective and long operating life for your machine! | Date: _____<br><br>Counter reading: _____<br>Technician:<br><br>Stamp: |

Table 28:

| Hour counter reading: 4250 hours | **Service done** |
|---|---|
| Complete this service when the machine's hour counter reads 4250 hours!<br>Complete the service items for 10, 50, and 250 hours.<br><br>The work to be completed can be found in the maintenance table.<br><br>NOTE!<br>Timely periodic maintenance and daily inspections (10 hour maintenance) ensure an effective and long operating life for your machine! | Date: _____<br><br>Counter reading: _____<br>Technician:<br><br>Stamp: |

Table 29:

| Hour counter reading: 4500 hours | **Service done** |
|---|---|
| Complete this service when the machine's hour counter reads 4500 hours!<br>Complete the service items for 10, 50, 250, and 500 hours.<br><br>The work to be completed can be found in the maintenance table.<br><br>NOTE!<br>Timely periodic maintenance and daily inspections (10 hour maintenance) ensure an effective and long operating life for your machine! | Date: _____<br><br>Counter reading: _____<br>Technician:<br><br>Stamp: |

Table 30:

| Hour counter reading: 4750 hours | **Service done** |
|---|---|
| Complete this service when the machine's hour counter reads 4750 hours!<br>Complete the service items for 10, 50, and 250 hours.<br><br>The work to be completed can be found in the maintenance table.<br><br>NOTE!<br>Timely periodic maintenance and daily inspections (10 hour maintenance) ensure an effective and long operating life for your machine! | Date: _____<br><br>Counter reading: _____<br>Technician:<br><br>Stamp: |

Table 31:

| Hour counter reading: 5000 hours | **Service done** |
|---|---|
| Complete this service when the machine's hour counter reads 5000 hours!<br>Complete the service items for 10, 50, 250, 500, and 1,000 hours.<br>The work to be completed can be found in the maintenance table.<br><br>NOTE!<br>Timely periodic maintenance and daily inspections (10 hour maintenance) ensure an effective and long operating life for your machine! | Date: _____<br><br>Counter reading: _____<br>Technician:<br><br>Stamp: |

Huomaa! Notera! Note!

**Remember to rinse the cooling system and replace the coolant every two (2) years!**

Huomaa! Notera! Note!

**Even from this point on, ensure that your machine is periodically serviced according to this service programme. This ensures a good, productive operating life and high resale value for your machine.**

**Note!** Make a copy of this page and note down the completed service, the technician, and the workshop.

Table: 32

| **Service location table** Location / maintenance task: | Maintenance interval (hours) | | | | | | Y |
|---|---|---|---|---|---|---|---|
| | 10 | 50 | 250 | 500 | 1000 | 2000 | 2 yrs |
| 1. Engine oil level check. See 6.5.1 / p. 56. | X | | | | | | |
| 2. Engine coolant level check. See 6.5.2 / p. 57. | X | | | | | | |
| 3. Tyre inflation pressure check. See 6.5.3 / p. 57. | X | | | | | | |
| 4. Check for possible fluid leaks. See 6.5.4 / p. 57. | X | | | | | | |
| 5. Washer fluid level check. See 6.5.5 / p. 58. | X | | | | | | |
| 6. Hydraulic oil level check. See 6.5.6 / p. 58. | X | | | | | | |
| 7. Lubrication of lifting cylinder joints. See 6.5.7 / p. 59. | X | | | | | | |
| 8. Lubrication of front fork and rear lifter joints. See 6.5.7 / p. 59. | X | | | | | | |
| 9. Lubrication of ball joints on ladle cylinders. See 6.5.7 / p. 59. | X | | | | | | |
| 10. Lubrication of joints on idler and tie rod. See 6.5.7 / p. 59. | X | | | | | | |
| 11. Lubrication of ball joints on steering cylinder. See 6.5.7 / p. 59. | X | | | | | | |
| 12. Lubrication of body link. See 6.5.7 / p. 59. | X | | | | | | |
| 13. Cabin air filter cleaning. See 6.6.1 / p. 60. | | X | | | | | |
| 14. Draining of fuel filter water trap. See 6.6.2 / p. 60. | | X | | | | | |
| 15. Engine air filter cleaning. See 6.6.3 / p. 61. | | X | | | | | |
| 16. Radiator/condenser core cleaning. See 6.6.4 / p. 62. | | X | | | | | |
| 17. Alternator belt tension check/adjustment. See 6.6.5 / p. 62. | | X | | | | | |
| 18. Wheel fastener tightening torque check. See 6.6.6 / p. 63. | | X | | | | | |
| 19. Brake pedal play check. See 6.7.1 / p. 64. | | | X | | | | |
| 20. Pressure accumulator pressure check. See 6.7.2 / p. 64. | | | X | | | | |
| 21. Engine oil change and filter replacement. See 6.7.3 / p. 64. | | (O) | X | | | | |
| 22. Engine air filter replacement. See 6.7.4 / p. 66. | | | X | | | | |
| 23. Wheel hub oil level check. See 6.7.5 / p. 67. | | | X | | | | |
| 24. Lubrication of articulated shaft universal joints. See 6.7.6 / p. 67. | | | X | | | | |
| 25. Lubrication of articulated shaft support bearing. See 6.7.6 / p. 67. | | | X | | | | |
| 26. Lubrication of rear axle rocker joint. See 6.7.7 / p. 68. | | | X | | | | |
| 27. Differential and adapter oil level check See 6.7.7 / p. 68. | | | X | | | | |
| 28. Fuel filter replacement. See 6.7.8 / p. 69. | | | X | | | | |
| 29. Check for leaks, tightening of joints and connectors. See 6.7.9 / p. 69. | | | X | | | | |
| 30. Hydraulic oil return filter replacement. See 6.8.1 / p. 70. | | (O) | | X | | | |
| 31. Differential and adapter oil change. See 6.9.1 / p. 71. | | | | | X | | |
| 32. Fuel tank cleaning. See 6.9.2 / p. 71. | | | | | X | | |
| 33. Brake function check. See 6.9.3 / p. 71. | | | | | X | | |
| 34. Engine air filter safety element replacement. See 6.9.4 / p. 72. | | | | | X | | |
| 35. Pressure measurement and adjustment of steering hydraulics. See 6.9.5 / p. 72. | | | | | X | | |
| 36. Pressure measurement and adjustment of operating hydraulics. See 6.9.6 / p. 72. | | | | | X | | |
| 37. Steering hydraulics filter replacement. See 6.9.7 / p. 72. | | (O) | | | X | | |
| 38. Wheel hub oil change. See 6.9.8 / p. 73. | | | | | X | | |
| 39. Hydraulic oil tank cleaning and oil replacement. See 6.9.9 / p. 73. | | | | | X | | |
| 40. Cabin fresh air filter replacement. See 6.9.10 / p. 74. | | | | | X | | |
| 41. Battery check. See 6.11.1 / p. 75. | | | | | | | |
| 42. Alternator wiring check. See 6.10.1 / p. 75. | | | | | | X | |
| 43. Starter motor wiring check. See 6.10.2 / p. 75. | | | | | | X | |
| 44. Nozzle inspection and cleaning. See 6.10.2 / p. 75. | | | | | | X | |
| 45. Cooling system cleaning and fluid replacement. See 6.11.1 / p. 75. | | | | | | | X |

Note! Items 1 to 12 daily, and items 13 to 18 every 50 hours or at least weekly!

Date, technician's signature and print name: Workshop stamp:

Notes:


LM TOOLS
LM CABINS
LM TRAC