Instruction manual

Operating & Maintenance

Vibratory roller
CC722/7200

Engine
Cummins QSB 6.7 C (IIIB/T4i)

Serial number
10000326xxA007761 - 10000361xxA014104 -

Translation of original instruction

Reservation for changes
Printed in Sweden
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Introduction

The machine

Dynapac CC722/7200 is a self-propelled vibratory tandem roller in the 17 tonnes class with 2130 mm wide drums. It features power drive, brakes, vibration and water sprinkler on both drums.

CC722/7200 is the largest mass-produced vibratory tandem roller in the world.

Intended use

This machine generally achieves the required density after just a few runs, even when compacting thick layers of asphalt, roller-compacted concrete or thick asphalt mixtures.

The larger diameter of the drums also makes the machine suitable for work with softer mixtures, despite the service weight of 17 tons.

Warning symbols

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

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

Safety information

It is recommended to at least train operators in handling and daily maintenance of the machine in accordance with the instruction manual. Passengers are not allowed on the machine, and you must sit in the seat when operating the machine.

The safety manual supplied with the machine must be read by all roller operators. Always follow the safety instructions. Do not remove the manual from the machine.

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

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

Replace immediately the instruction manuals if lost, damaged or unreadable.

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

CALIFORNIA

Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

General

This manual contains instructions for machine operation and maintenance.

The machine must be correctly maintained for maximal performance.

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

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

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

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

This manual contains instructions for periodic maintenance, where maintenance after every 10 and 50 hours of operation can be performed by the machine operator. Other maintenance intervals must be carried out by accredited (Dynapac) service personnel.
Introduction

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

Specific maintenance and checks on diesel engines must be carried out by the engine supplier's certified personnel.

CE marking and Declaration of conformity

(Applies to machines marketed in EU/EEC)

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

A "Declaration of conformity" is supplied with this machine, which specifies the applicable regulations and directives with supplements, as well as the harmonized standards and other regulations that are applied and according to the regulations must be declared in writing.
Safety - General instructions

(Also read the safety manual)

1. The operator must be familiar with the contents of the OPERATION section before starting the roller.

2. Ensure that all instructions in the MAINTENANCE section are followed.

3. Only trained and/or experienced operators are to operate the roller. Passengers are not permitted on the roller. Remain seated at all times when operating the roller.

4. Never use the roller if it is in need of adjustment or repair.

5. Only mount and dismount the roller when it is stationary. Use the intended footsteps, grips and rails. Always use the three-point grip (both feet and one hand, or one foot and both hands) when mounting or dismounting the machine. Never jump down from the machine.

6. The ROPS (Roll Over Protective Structure) should always be used when the machine is operated on unsafe ground.

7. Drive slowly in sharp bends.

8. Avoid driving across slopes. Drive straight up or straight down the slope.

9. Never operate with roller outside the edge, if the substrate does not have full bearing strength or is close to a slope. Avoid operating close to edges and ditches and the like as well as on poor ground conditions that influence the bearing strength and capacity to support the roller.

10. Make sure that there are no obstacles in the direction of travel, on the ground, in front of or behind the roller, or overhead.

11. Drive particularly carefully on uneven ground.

12. Use the safety equipment provided. The seat belt must be worn on machines fitted with ROPS/ROPS-cab.

13. Keep the roller clean. Clean any dirt or grease that accumulates on the operator platform immediately. Keep all signs and decals clean and legible.

14. Safety measures before refueling:
   - Stop the engine
   - Do not smoke.
   - No naked flames in the vicinity of the roller.
   - Earth the filling equipment nozzle to the tank opening to avoid sparks.

15. Before repairs or service:
   - Chock the drums/wheels.
   - Lock the articulation if necessary.
   - Place blocks under overhanging equipment, such as strike-off blade and chip spreader.
16. Hearing protection is recommended if the noise level exceeds 80 dB(A). The noise level can vary depending on the equipment on the machine and the surface the machine is being used on.

17. Do not make any changes or modifications to the roller that could affect safety. Changes are only to be made after written approval has been given by Dynapac.

18. Avoid using the roller before the hydraulic fluid has reached its normal working temperature. Braking distances can be longer than normal when the fluid is cold. See instructions in the STOP section.

19. For your own protection always wear:
   - helmet
   - working boots with steel toecaps
   - ear protectors
   - reflecting clothing/high visibility jacket
   - working gloves
Safety - when operating

Prevent persons from entering or remaining in the danger area, i.e. a distance of at least 7 m (23 ft) in all directions from operating machines. The operator may allow a person to remain in the risk zone, however he/she must be attentive and operate the machine only when the person is fully visible or has given a clear indication of where he or she is.

Avoid driving across a slope. Drive straight up and down sloping ground.

Work driving

Avoid operating close to edges and ditches and the like as well as on poor ground conditions that influence the bearing strength and capacity to support the roller. Pay attention to potential obstacles above the machine, such as overhead cables and the branches of trees etc.

Pay particular attention to the stability of the substrate when compacting close to edges and holes. Do not compact with a large overlap from the previous track in order to maintain roller stability. Consider other compaction methods such as remote-control or a walk-behind roller close to steep slopes or where the bearing strength of the substrate is unknown.

To exit the cab in an emergency, release the hammer on the rear right post and break the rear window.

It is recommended that ROPS (Roll Over Protective Structure) or a ROPS-approved cab is always used when driving on slopes or unsafe ground. Always wear a seat belt.
Safety - when operating

Driving near edges

⚠️ Never operate with roller outside the edge, if the substrate does not have full bearing strength or is close to a slope.

⚠️ Keep in mind that the machine's center of gravity moves outwards when steering. For example, the center of gravity moves to the right when you steer to the left.
Safety (Optional)

Air conditioning (Optional)

⚠️ The system contains pressurized refrigerant. It is forbidden to release refrigerants into the atmosphere.

⚠️ Work on the refrigerant circuit is only to be carried out by authorized companies.

⚠️ The cooling system is pressurized. Incorrect handling can result in serious personal injury. Do not disconnect or undo the hose couplings.

⚠️ The system must be refilled with an approved refrigerant by authorized personnel when necessary. Refer to the technical specifications.
Special instructions

Standard lubricants and other recommended oils and fluids

Before leaving the factory, the systems and components are filled with the oils and fluids specified in the lubricant specification. These are suitable for ambient temperatures in the range -15°C to +40°C (5°F - 105°F).

⚠️ The maximum ambient temperature for biological hydraulic fluid is +35°C (95°F).

Higher ambient temperatures, above +40°C (104°F)

For operation of the machine at higher ambient temperatures, however maximum +50°C (122°F), the following recommendations apply:

The diesel engine can be run at this temperature using normal oil. However, the following fluids must be used for other components:

Hydraulic system - mineral oil Shell Tellus S2V100 or similar.

Other components that use transmission oil: Shell Spirax AX 85W/140 or equivalent.

Lower ambient temperature - Freeze risk

Make sure that the watering system is empty/drained of water (sprinkler, hoses, tank/s) or that anti-freeze has been added, to prevent the system freezing.

Temperatures

The temperature limits apply to standard versions of rollers.

Rollers equipped with additional equipment, such as noise suppression, may need to be more carefully monitored in the higher temperature ranges.

High pressure cleaning

Do not spray water directly onto electrical components or the instrument panels.

Place a plastic bag over the fuel filler cap and secure with a rubber band. This is to avoid high pressure water entering the vent hole in the filler cap. This could cause malfunctions, such as the blocking of filters.
Special instructions

Never aim the water jet directly at the fuel tank cap, or into exhaust pipe. This is particularly important when using a high-pressure cleaner.

Fire fighting
If the machine catches fire, use an ABC-class powder fire extinguisher.
A BE-class carbon dioxide fire extinguisher can also be used.

Roll Over Protective Structure (ROPS), ROPS approved cab

If the machine is fitted with a Roll Over Protective Structure (ROPS, or ROPS approved cab) never carry out any welding or drilling in the structure or cab.

Never attempt to repair a damaged ROPS structure or cab. These must be replaced with new ROPS structure or cabs.

Battery handling

When removing batteries, always disconnect the negative cable first.

When fitting batteries, always connect the positive cable first.

Dispose of old batteries in an environmentally friendly way. Batteries contain toxic lead.

Do not use a quick-charger for charging the battery. This may shorten battery life.
Jump starting

Do not connect the negative cable to the negative terminal on the dead battery. A spark can ignite the oxy-hydrogen gas formed around the battery.

Check that the battery used for jump starting has the same voltage as the dead battery.

Turn the ignition and all power consuming equipment off. Switch off the engine on the machine which is providing jump start power.

First connect the jump start battery's positive terminal (1) to the flat battery's positive terminal (2). Then connect the jump start battery's negative terminal (3) to, for example, a bolt (4) or the lifting eye on the machine with the flat battery.

Start the engine on the power providing machine. Let it run for a while. Now try to start the other machine. Disconnect the cables in the reverse order.
Technical specifications

Vibrations - Operator station
(ISO 2631)

<table>
<thead>
<tr>
<th>The vibration levels are measured in accordance with the operational cycle described in EU directive 2000/14/EC on machines equipped for the EU market, with vibration switched on, on soft polymer material and with the operator’s seat in the transport position.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured whole-body vibrations are below the action value of 0.5 m/s² as specified in Directive 2002/44/EC. (Limit is 1.15 m/s²)</td>
</tr>
<tr>
<td>Measured hand/arm vibrations also were below the action level of 2.5 m/s² specified in the same directive. (Limit is 5 m/s²)</td>
</tr>
</tbody>
</table>

Noise level

The noise level is measured in accordance with the operational cycle described in EU directive 2000/14/EC on machines equipped for the EU market, on soft polymer material with vibration switched on and the operator's seat in the transport position.

Guaranteed sound power level, \( L_{WA} \) 

\[ 110 \text{ dB (A)} \]

Sound pressure level at the operator's ear (platform), \( L_{PA} \) 

\[ xx \text{ dB (A)} \]

Sound pressure level at the driver's ear (cab), \( L_{PA} \) 

\[ 88 \pm 3 \text{ dB (A)} \]

During operation the above values may differ because of the actual operational conditions.

Slopes

This angle has been measured on a hard, flat surface with the machine stationary.

The steering angle was zero, the vibration was switched OFF and all tanks were full.

Always take into consideration that loose ground, steering the machine, vibration on, machine speed across the ground and raising the center of gravity can all cause the machine to topple at smaller slope angles than those specified here.
## Technical specifications

### Dimensions, side view

![Diagram of machine dimensions](image)

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>mm</th>
<th>in</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Wheelbase</td>
<td>3754</td>
<td>148</td>
</tr>
<tr>
<td>D Drum diameter</td>
<td>1527</td>
<td>60</td>
</tr>
<tr>
<td>H₁ Height, with ROPS</td>
<td>3430</td>
<td>135</td>
</tr>
<tr>
<td>H₂ Height, with cab</td>
<td>3250</td>
<td>128</td>
</tr>
<tr>
<td>H₃ Height, w/o ROPS/cab</td>
<td>2630</td>
<td>104</td>
</tr>
<tr>
<td>K₁</td>
<td>400</td>
<td>16</td>
</tr>
<tr>
<td>K₂</td>
<td>400</td>
<td>16</td>
</tr>
<tr>
<td>L Length</td>
<td>5653</td>
<td>222.5</td>
</tr>
<tr>
<td>S Thickness, drum amplitude, Nominal</td>
<td>23</td>
<td>0.9</td>
</tr>
</tbody>
</table>
## Technical specifications

### Dimensions, top view

![Dimensions Diagram](image)

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>mm</th>
<th>in</th>
</tr>
</thead>
<tbody>
<tr>
<td>B Width, front</td>
<td>2430</td>
<td>96</td>
</tr>
<tr>
<td>O₁ Overhang, left</td>
<td>112</td>
<td>4,5</td>
</tr>
<tr>
<td>O₂ Overhang, right</td>
<td>112</td>
<td>4,5</td>
</tr>
<tr>
<td>R₁ Turning radius, external</td>
<td>8080</td>
<td>318</td>
</tr>
<tr>
<td>R₂ Turning radius, inner</td>
<td>5950</td>
<td>234</td>
</tr>
<tr>
<td>W₁ Width Platform, rear</td>
<td>2354</td>
<td>93</td>
</tr>
<tr>
<td>W₁ Width Cab, rear</td>
<td>2428</td>
<td>96</td>
</tr>
<tr>
<td>W₂ Drum width</td>
<td>2130</td>
<td>84</td>
</tr>
</tbody>
</table>
**Weights and volumes**

<table>
<thead>
<tr>
<th></th>
<th>kg</th>
<th>lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service weight, incl. ROPS (EN500)</td>
<td>16 780</td>
<td>37,000</td>
</tr>
<tr>
<td>Service weight, incl cab and ROPS</td>
<td>17 180</td>
<td>37,900</td>
</tr>
<tr>
<td>Service weight, max.</td>
<td>17 985</td>
<td>39,700</td>
</tr>
<tr>
<td>Weight, drum module</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- front</td>
<td>8 245</td>
<td>18,200</td>
</tr>
<tr>
<td>- rear</td>
<td>8 530</td>
<td>18,800</td>
</tr>
</tbody>
</table>

**Fluid volumes**

<table>
<thead>
<tr>
<th></th>
<th>liters</th>
<th>gallon (U.S.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel tank</td>
<td>335</td>
<td>88.5</td>
</tr>
<tr>
<td>Water tank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- front</td>
<td>670</td>
<td>177</td>
</tr>
<tr>
<td>- rear</td>
<td>670</td>
<td>177</td>
</tr>
</tbody>
</table>

**Working capacity**

**Compaction data**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Static linear load, front /rear</td>
<td>38,7 / 40,0 kg/cm</td>
<td>217 / 224 pli</td>
</tr>
<tr>
<td>Amplitude, high /low</td>
<td>0,84 / 0,39 mm</td>
<td>0.033 / 0.015 in</td>
</tr>
<tr>
<td>Vibration frequency, high / low amplitude</td>
<td>42 Hz</td>
<td>2 520 vpm</td>
</tr>
<tr>
<td>Centrifugal force, high / low amplitude</td>
<td>186 / 87 kN</td>
<td></td>
</tr>
</tbody>
</table>

*Note: The frequency is measured at high revs. The amplitude is measured as the real value and not the nominal.*

**Propulsion**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed range</td>
<td>0-11</td>
<td>0-7</td>
</tr>
<tr>
<td>Climbing capacity (theoretical)</td>
<td>30</td>
<td>%</td>
</tr>
</tbody>
</table>

4812158801_E.pdf  2018-04-03
Technical specifications

General

Engine
Manufacturer/Model | Cummins QSB 6.7 C
Power (SAE J1995) | 164 / 129 kW 223 / 175 hp
Engine speed | 2000 rpm

Electrical system
Battery | 12V 170Ah
Alternator | 12V 100A
Fuses | See the Electrical system section - fuses

Hydraulic system

<table>
<thead>
<tr>
<th>Opening pressure</th>
<th>MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive system</td>
<td>35</td>
</tr>
<tr>
<td>Supply system</td>
<td>2,0</td>
</tr>
<tr>
<td>Vibration system</td>
<td>35</td>
</tr>
<tr>
<td>Control systems</td>
<td>14</td>
</tr>
<tr>
<td>Brake release</td>
<td>1,5</td>
</tr>
</tbody>
</table>

ROPS - bolts

<table>
<thead>
<tr>
<th>Bolt dimensions</th>
<th>M36 (PN 4700904813)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strength class</td>
<td>10.9</td>
</tr>
<tr>
<td>Tightening torque</td>
<td>2170 Nm (Dacromet treated)</td>
</tr>
</tbody>
</table>

⚠️ ROPS-bolts which are to be torque tightened must be dry.
Technical specifications

Tightening torque

Tightening torque in Nm for oiled or dry bolts tightened with a torque wrench.

**Metric coarse screw thread, bright galvanized (fzb):**

<table>
<thead>
<tr>
<th>M - thread</th>
<th>8.8, Oiled</th>
<th>8.8, Dry</th>
<th>10.9, Oiled</th>
<th>10.9, Dry</th>
<th>12.9, Oiled</th>
<th>12.9, Dry</th>
</tr>
</thead>
<tbody>
<tr>
<td>M6</td>
<td>8,4</td>
<td>9,4</td>
<td>12</td>
<td>13,4</td>
<td>14,6</td>
<td>16,3</td>
</tr>
<tr>
<td>M8</td>
<td>21</td>
<td>23</td>
<td>28</td>
<td>32</td>
<td>34</td>
<td>38</td>
</tr>
<tr>
<td>M10</td>
<td>40</td>
<td>45</td>
<td>56</td>
<td>62</td>
<td>68</td>
<td>76</td>
</tr>
<tr>
<td>M12</td>
<td>70</td>
<td>78</td>
<td>98</td>
<td>110</td>
<td>117</td>
<td>131</td>
</tr>
<tr>
<td>M14</td>
<td>110</td>
<td>123</td>
<td>156</td>
<td>174</td>
<td>187</td>
<td>208</td>
</tr>
<tr>
<td>M16</td>
<td>169</td>
<td>190</td>
<td>240</td>
<td>270</td>
<td>290</td>
<td>320</td>
</tr>
<tr>
<td>M20</td>
<td>330</td>
<td>370</td>
<td>470</td>
<td>520</td>
<td>560</td>
<td>620</td>
</tr>
<tr>
<td>M22</td>
<td>446</td>
<td>497</td>
<td>626</td>
<td>699</td>
<td>752</td>
<td>839</td>
</tr>
<tr>
<td>M24</td>
<td>570</td>
<td>640</td>
<td>800</td>
<td>900</td>
<td>960</td>
<td>1080</td>
</tr>
<tr>
<td>M30</td>
<td>1130</td>
<td>1260</td>
<td>1580</td>
<td>1770</td>
<td>1900</td>
<td>2100</td>
</tr>
</tbody>
</table>

**Metric coarse thread, zinc-treated (Dacromet/GEOMET):**

<table>
<thead>
<tr>
<th>M - thread</th>
<th>10.9, Oiled</th>
<th>10.9, Dry</th>
<th>12.9, Oiled</th>
<th>12.9, Dry</th>
</tr>
</thead>
<tbody>
<tr>
<td>M6</td>
<td>12,0</td>
<td>15,0</td>
<td>14,6</td>
<td>18,3</td>
</tr>
<tr>
<td>M8</td>
<td>28</td>
<td>36</td>
<td>34</td>
<td>43</td>
</tr>
<tr>
<td>M10</td>
<td>56</td>
<td>70</td>
<td>68</td>
<td>86</td>
</tr>
<tr>
<td>M12</td>
<td>98</td>
<td>124</td>
<td>117</td>
<td>147</td>
</tr>
<tr>
<td>M14</td>
<td>156</td>
<td>196</td>
<td>187</td>
<td>234</td>
</tr>
<tr>
<td>M16</td>
<td>240</td>
<td>304</td>
<td>290</td>
<td>360</td>
</tr>
<tr>
<td>M20</td>
<td>470</td>
<td>585</td>
<td>560</td>
<td>698</td>
</tr>
<tr>
<td>M22</td>
<td>626</td>
<td>786</td>
<td>752</td>
<td>944</td>
</tr>
<tr>
<td>M24</td>
<td>800</td>
<td>1010</td>
<td>960</td>
<td>1215</td>
</tr>
<tr>
<td>M30</td>
<td>1580</td>
<td>1990</td>
<td>1900</td>
<td>2360</td>
</tr>
</tbody>
</table>
Machine description

Identification

Product identification number on the frame

The machine PIN (Product Identification Number) is punched on the right edge of the front frame.

Fig. PIN Front frame
1. Serial number

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>00123</td>
<td>V</td>
<td>x</td>
</tr>
</tbody>
</table>

Explanation of 17PIN serial number

A= Manufacturer
B= Family/Model
C= Check letter
F= Serial number
Machine plate

The machine type plate (1) is affixed on the left front edge of the operator's platform.

The plate specifies the manufacturer's name and address, the type of machine, the PIN product identification number (serial number), service weight, engine power and year of manufacture. If the machine is delivered outside of the EU, the sign may lack CE marking and year of manufacture.

Please state the machine's PIN (serial number) when ordering parts.

Engine plates

The engine's type plate (1) is located on top of the cylinder head cover.

The plate specifies the type of engine, its serial number and the engine specification.

Please specify the engine serial number when ordering spares. Refer also to the engine manual.

On certain machines there may be an engine plate along with the machine plate, if the original plate on the engine is covered with extra equipment/accessories.
Decals

Fig. Location, decals and signs

1. Warning, Crush zone 4700903422
2. Warning, Rotating engine components 4700903423
3. Warning, Hot surfaces 4700903424
4. Master switch 4700904835
5. Warning, Parking brake 47386084xx
6. Hydraulic fluid 4700272372
7. Hoisting plate 4700904870
8. Warning, Locking 4700908229
9. Diesel fuel 4811000345
10. Lifting point 4700588176
11. Warning, Instruction manual 4700903459
12. Noise power level 4700791280
13. Handbook compartment 4700903425
14. Warning, Brake release 4700904895
15. Fixing point 4700382751
16. Battery voltage, 12V 4700791491
17. Water 4700991657
18. Hydraulic fluid level 4700272373
19. Fuel with a low sulphur content 4811000344
Safety decals

Always make sure that all safety decals are completely legible, and remove dirt or order new decals if they have become illegible. Use the part number specified on each decal.

4700903422
Warning - Crush zone, articulation/drum.
Maintain a safe distance from the crush zone.
(Two crush zones on machines fitted with pivotal steering)

4700903423
Warning - Rotating engine components.
Keep your hands at a safe distance.

4700903424
Warning - Hot surfaces in the engine compartment.
Keep your hands at a safe distance.

4700904895
Warning - Brake disengagement
Study the towing chapter before disengaging the brakes.
Danger of being crushed.

4700903459
Warning - Instruction manual
The operator must read the safety, operation and maintenance instructions before operating the machine.

4700908229
Warning - Risk of crushing
The articulation must be locked when lifting.
Read the instruction manual.
4700904165
Warning - Toxic gas (option, ACC)
Read the instruction manual.

Info decals

- **Noise power level**
  - 110 dB

- **Diesel fuel**

- **Lifting point**

- **Hoisting plate**

- **Handbook compartment**

- **Master switch**

- **Battery voltage**
  - 12V

- **Water**

- **Hydraulic fluid level**

- **Hydraulic fluid**

- **Fixing point**

- **Fuel with a low sulphur content**
  - Ultra low Sulfur fuel only (< 15 ppm S)
## Instruments/Controls

### Locations - Instruments and controls

**Fig. Instruments and control panel**

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ignition lock</td>
</tr>
<tr>
<td>2</td>
<td>Emergency stop</td>
</tr>
<tr>
<td>3</td>
<td>Parking brake</td>
</tr>
<tr>
<td>4</td>
<td>Speed switch</td>
</tr>
<tr>
<td>5</td>
<td>Electric heater, Diesel engine</td>
</tr>
<tr>
<td>6</td>
<td>Hourmeter</td>
</tr>
<tr>
<td>7</td>
<td>Fuel level indicator</td>
</tr>
<tr>
<td>8</td>
<td>Warning lamp, charge</td>
</tr>
<tr>
<td>9</td>
<td>Warning lamp, fuel level</td>
</tr>
<tr>
<td>10</td>
<td>Warning lamp, engine temperature</td>
</tr>
<tr>
<td>11</td>
<td>Warning lamp, engine oil pressure</td>
</tr>
<tr>
<td>12</td>
<td>Warning lamp, hydraulic fluid temp</td>
</tr>
<tr>
<td>13</td>
<td>Warning lamp, brakes</td>
</tr>
<tr>
<td>14</td>
<td>Vibration, front/rear drum</td>
</tr>
<tr>
<td>15</td>
<td>Vibration switch, Man/Off/Auto</td>
</tr>
<tr>
<td>16</td>
<td>Amplitude selector</td>
</tr>
<tr>
<td>17</td>
<td>Speed/Frequency meter switch</td>
</tr>
<tr>
<td>18</td>
<td>Beeper</td>
</tr>
<tr>
<td>19</td>
<td>Speed limiter</td>
</tr>
<tr>
<td>20</td>
<td>Forward/reverse lever</td>
</tr>
<tr>
<td>21</td>
<td>Vibration</td>
</tr>
<tr>
<td>22</td>
<td>Speed/Frequency meter</td>
</tr>
<tr>
<td>23</td>
<td>Speedometer</td>
</tr>
<tr>
<td>24</td>
<td>Temperature gauge - Hydraulic fluid</td>
</tr>
<tr>
<td>25</td>
<td>Temperature gauge - Engine</td>
</tr>
<tr>
<td>26</td>
<td>Lock pedal</td>
</tr>
</tbody>
</table>

Source: 4812158801_E.pdf (2018-04-03)
# Machine description

<table>
<thead>
<tr>
<th>No</th>
<th>Designation</th>
<th>Symbol</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Warning lamp, Air filter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Warning lamp, Hydraulic fluid filter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Horn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Driving lights</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Full/Dipped beam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Direction indicator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Hazard indicators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Working lights backwards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>* Rotating beacon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Sprinkler switch, Man/Off/Auto</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>* = Option</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt; = DPF filter, emissions system</td>
</tr>
</tbody>
</table>

* = Option

## Function descriptions

<table>
<thead>
<tr>
<th>No</th>
<th>Designation</th>
<th>Symbol</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ignition lock</td>
<td><img src="image" alt="Ignition Lock" /></td>
<td>Position P-0: Shut off position, key can be removed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Position I-II: All instruments and electric controls are supplied with power. Glowing occurs, the starter can be activated when the lamp for glowing on the indicator panel goes out.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Position III: Starter motor activation.</td>
</tr>
<tr>
<td>2</td>
<td>Emergency stop</td>
<td><img src="image" alt="Emergency Stop" /></td>
<td>When pressed, the emergency stop is activated. The brakes are applied and the engine stops. Brace yourself for a sudden stop. <strong>NOTE:</strong> When starting the machine, the emergency stop must be inactive.</td>
</tr>
<tr>
<td>3</td>
<td>Parking brake</td>
<td><img src="image" alt="Parking Brake" /></td>
<td>In the right position, the parking brake is activated. <strong>NOTE:</strong> When starting the machine, the parking brake must be activated.</td>
</tr>
<tr>
<td>4</td>
<td>Speed switch, diesel engine</td>
<td><img src="image" alt="Speed Switch" /></td>
<td>Left position produces idling speed Middle position produces loading/unloading speed Right position produces working/transport speed <strong>NOTE:</strong> When starting the machine, the speed switch must be in the left position.</td>
</tr>
<tr>
<td>5</td>
<td>Indicator lamp, electric heater diesel engine (Yellow)</td>
<td><img src="image" alt="Indicator Lamp" /></td>
<td>Illuminates when the electric heater is active. The heater is normally activated when ignition is on. When the lamp turns off is the engine ready for start. For optimized engine emission is the heater activated when necessary even after the diesel engine has started. When this happens, normally the system voltage drops to a level where the charge lamp (8) lights up.</td>
</tr>
<tr>
<td>6</td>
<td>Hourmeter</td>
<td><img src="image" alt="Hourmeter" /></td>
<td>Displays the diesel engine's operating time in hours.</td>
</tr>
<tr>
<td>7</td>
<td>Fuel gauge</td>
<td><img src="image" alt="Fuel Gauge" /></td>
<td>Shows level in the fuel tank.</td>
</tr>
</tbody>
</table>

**NOTE:**

- When starting the machine, the emergency stop must be inactive.
- When starting the machine, the parking brake must be activated.
- When starting the machine, the speed switch must be in the left position.
<table>
<thead>
<tr>
<th>No</th>
<th>Designation</th>
<th>Symbol</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Warning lamp, charge (Red)</td>
<td>![Symbol]</td>
<td>Illuminates at reduced system voltage. Reduced system voltage can depend on that the alternator is not charging or on large power output. The lamp lights up normally while the electrical heater (5) is activated. If the lamp comes on without active electric heater at the same time, stop the diesel engine and locate the fault.</td>
</tr>
<tr>
<td>9</td>
<td>Warning lamp, low fuel level (Yellow)</td>
<td>![Symbol]</td>
<td>If the lamp comes on, there is only a small amount of fuel left. Refuel as soon as possible.</td>
</tr>
<tr>
<td>10</td>
<td>Warning lamp, engine oil temperature (Red)</td>
<td>![Symbol]</td>
<td>If the lamp comes on, the engine is too hot. Stop the diesel engine immediately and locate the fault. Refer also to the engine manual.</td>
</tr>
<tr>
<td>11</td>
<td>Warning lamp, oil pressure (Red)</td>
<td>![Symbol]</td>
<td>If the lamp comes on, the engine oil pressure is too low. Stop the diesel engine immediately and locate the fault.</td>
</tr>
<tr>
<td>12</td>
<td>Warning lamp, hydraulic fluid temperature (Red)</td>
<td>![Symbol]</td>
<td>If the lamp comes on, the hydraulic fluid is too hot. Do not drive the roller. Cool the fluid by allowing the engine to idle and locate the fault.</td>
</tr>
<tr>
<td>13</td>
<td>Warning lamp, brakes (Red)</td>
<td>![Symbol]</td>
<td>If the lamp comes on, the brake oil pressure is low or the parking brake knob is activated and the brakes are applied.</td>
</tr>
<tr>
<td>14</td>
<td>Warning lamp, air filter (Yellow)</td>
<td>![Symbol]</td>
<td>If the lamp comes on while the engine is running at full speed, the air filter must be cleaned or replaced.</td>
</tr>
<tr>
<td>15</td>
<td>Warning lamp, hydraulic fluid filter (Red)</td>
<td>![Symbol]</td>
<td>If the lamp comes on while the engine is running at full speed, the hydraulic filter must be changed.</td>
</tr>
<tr>
<td>16</td>
<td>Horn</td>
<td>![Symbol]</td>
<td>Press to sound the horn.</td>
</tr>
<tr>
<td>17</td>
<td>Driving lights</td>
<td>![Symbol]</td>
<td>Lights off. Parking lights on Driving lighting on</td>
</tr>
<tr>
<td>18</td>
<td>Full/Dipped beam</td>
<td>![Symbol]</td>
<td>In the right position, the switch lights up and the main beam is on. In the left position, the dipped beam is on.</td>
</tr>
<tr>
<td>19</td>
<td>Direction indicator</td>
<td>![Symbol]</td>
<td>In the left position, the left direction indicator flashes etc. The flashing function is switched off in the middle position</td>
</tr>
<tr>
<td>20</td>
<td>Hazard indicators</td>
<td>![Symbol]</td>
<td>In the right position, the hazard indicators come on and the switch lights up.</td>
</tr>
<tr>
<td>21</td>
<td>Working lights backwards</td>
<td>![Symbol]</td>
<td>In the right position, the rear working lights come on and the switch lights up.</td>
</tr>
<tr>
<td>22</td>
<td>Rotating beacon</td>
<td>![Symbol]</td>
<td>In the right position, the rotating beacon comes on and the switch lights up.</td>
</tr>
<tr>
<td>23</td>
<td>Sprinkler switch, Man/Off/Auto</td>
<td>![Symbol]</td>
<td>In the left position, the drums are continually watered. In the middle position, watering is off.</td>
</tr>
</tbody>
</table>
### Machine description

<table>
<thead>
<tr>
<th>No</th>
<th>Designation</th>
<th>Symbol</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>Vibration, front/rear drum</td>
<td><img src="image" alt="Vibration Front/rear Drum Symbol" /></td>
<td>In the left position, vibration is activated for the rear drum. In the middle position, vibration is activated for both drums. In the right position, vibration is activated for the front drum.</td>
</tr>
<tr>
<td>25</td>
<td>Vibration switch, Man/Off/Auto</td>
<td><img src="image" alt="Vibration Switch Symbol" /></td>
<td>In the left position, the vibration is switched on or off by the switch (31) on the forwards/reverse lever. In the middle position, the vibration system is off. In the right position, the vibration is switched on or off when the direction of travel is changed.</td>
</tr>
<tr>
<td>26</td>
<td>Amplitude selector</td>
<td><img src="image" alt="Amplitude Selector Symbol" /></td>
<td>The left position gives low amplitude. The right position gives high amplitude.</td>
</tr>
<tr>
<td>27</td>
<td>Speed/Frequency meter switch</td>
<td><img src="image" alt="Speed/Frequency Meter Switch Symbol" /></td>
<td>In the left position, the rear drum's vibration frequency is displayed. In the middle position, the diesel engine speed is displayed. In the right position, the front drum's vibration frequency is displayed.</td>
</tr>
<tr>
<td>28</td>
<td>Beeper</td>
<td><img src="image" alt="Beeper Symbol" /></td>
<td>Limits the movement of the Forward/Reverse lever, and hence the driving speed. The limiter can be bypassed.</td>
</tr>
<tr>
<td>29</td>
<td>Speed limiter</td>
<td><img src="image" alt="Speed Limiter Symbol" /></td>
<td>Limits the movement of the Forward/Reverse lever, and hence the driving speed. The limiter can be bypassed.</td>
</tr>
<tr>
<td>30</td>
<td>Forward/Reverse lever</td>
<td><img src="image" alt="Forward/Reverse Lever Symbol" /></td>
<td>NOTE: When starting the machine, the lever must be in neutral. The engine cannot be started if the forward/reverse lever is in any other position. The forward/reverse lever controls both the roller's driving direction and speed. When the lever is moved forward, the roller moves forward etc. The roller's speed is proportional to the distance the lever is from the neutral position. The further the lever is from the neutral position, the higher the speed.</td>
</tr>
<tr>
<td>31</td>
<td>Vibration ON/OFF</td>
<td><img src="image" alt="Vibration ON/OFF Symbol" /></td>
<td>Press once and release to switch the vibration on, press again to switch the vibration off. The above only applies when switch 25 is in the left position (position for manual vibration activation).</td>
</tr>
<tr>
<td>32</td>
<td>Speed/Frequency meter</td>
<td><img src="image" alt="Speed/Frequency Meter Symbol" /></td>
<td>Shows the diesel engine's speed or the current vibration frequency, depending on how switch 27 is set.</td>
</tr>
<tr>
<td>33</td>
<td>Speedometer</td>
<td><img src="image" alt="Speedometer Symbol" /></td>
<td>Shows the speed in km/h on the outer scale and the speed in mph on the inner scale.</td>
</tr>
<tr>
<td>34</td>
<td>Temperature gauge, hydraulic fluid</td>
<td><img src="image" alt="Temperature Gauge Symbol" /></td>
<td>Shows hydraulic fluid temperature. Normal temperature range is 65°-80°C (149°-176°F). Stop the engine if the gauge shows a temperature of more than 85°C (185°F). Locate the fault.</td>
</tr>
<tr>
<td>35</td>
<td>Temperature gauge, the diesel engine's coolant temperature</td>
<td><img src="image" alt="Temperature Gauge Symbol" /></td>
<td>Shows the diesel engine's coolant temperature. Normal temperature range is 85°-95°C (185°-203°F). Stop the engine if the gauge shows a temperature of more than 107°C (225°F). Locate the fault.</td>
</tr>
<tr>
<td>No</td>
<td>Designation</td>
<td>Symbol</td>
<td>Function</td>
</tr>
<tr>
<td>----</td>
<td>------------------------------------------------</td>
<td>--------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>36</td>
<td>Locking pedal</td>
<td></td>
<td>Disengages the control table to turn to the left or right operator's position.</td>
</tr>
<tr>
<td>37</td>
<td>Fuse boxes (on the left side of the steering column)</td>
<td>![symbol]</td>
<td>Contains fuses for the electrical system.</td>
</tr>
<tr>
<td>38</td>
<td>Diagnostics, diesel engine</td>
<td>![symbol]</td>
<td>When pressed, the error code is displayed with the fault indicating lamps 40 and 41.</td>
</tr>
<tr>
<td>39</td>
<td>Browse through engine error codes</td>
<td>![symbol]</td>
<td>When turned to the right, browse forwards in the error code list.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>When turned to the left, browse backwards in the error code list.</td>
</tr>
<tr>
<td>40</td>
<td>Fault indicating lamp (Yellow), less serious fault</td>
<td>![symbol]</td>
<td>Indicates a fault and shows the error code along with lamp 41.</td>
</tr>
<tr>
<td>41</td>
<td>Fault indicating lamp (Red), serious fault</td>
<td>![symbol]</td>
<td>Shows the error code along with lamp 40.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If the lamp lights continuously, stop the diesel engine immediately.</td>
</tr>
<tr>
<td>42</td>
<td>Information lamp, Delayed regeneration</td>
<td>![symbol]</td>
<td>The lamp comes on in the event of prevented (delayed) regeneration.</td>
</tr>
<tr>
<td>43</td>
<td>Regeneration switch with built-in lamp</td>
<td>![symbol]</td>
<td>In the left position, burnout is prevented and the lamp for delayed regeneration (42) shines continuously.</td>
</tr>
<tr>
<td></td>
<td>(the built-in lamp lights or flashes when the system calls for regeneration, depending on the amount of soot)</td>
<td>![symbol]</td>
<td>In the middle position, automatic regeneration of the DPF filter (Auto mode) is performed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>![symbol]</td>
<td>Turning to the right starts manual regeneration of the DPF filter.</td>
</tr>
<tr>
<td>44</td>
<td>Warning lamp, High exhaust temperature</td>
<td>![symbol]</td>
<td>The lamp lights in the event of high exhaust fume temperature.</td>
</tr>
</tbody>
</table>
Display/Regeneration of Diesel Particle Filter (DPF filter)

The lamp (DPF lamp) in the regeneration switch (3) comes on to indicate that the filter has reached a level such that regeneration of the filter will soon be required.

The lamp in the switch (3) starts to flash when the filter starts to become full.

Regeneration of the filter should then take place as soon as possible, as some reduction in engine power can be noted. If the switch (3) is in auto mode, regeneration starts automatically when required by the system.

The regeneration of the DPF filter lasts for approx. 30 minutes, and the machine can be operated as normal during this time.

⚠️ The auto mode is the normal mode. The delayed mode should only be used if you are in an unsuitable location, e.g. in a tunnel, under a roof, etc.

⚠️ The free space above the roller must not be less than the height of the cab. Temperatures in the region of 350°C (662°F) can be generated at the exhaust pipe when performing regeneration of the DPF filter.

If it is not appropriate to allow the machine to perform automatic regeneration, perhaps because the machine is in an unsuitable location or the prevailing working conditions do not permit this, it is possible to delay regeneration by activating delayed regeneration.

The regeneration switch (2) is then turned to the left, to the position for delayed filter regeneration, and the delayed regeneration lamp (1) comes on.
If delayed regeneration has been ongoing for so long that the DPF lamp (3) flashes and the engine control lamp (4) has come on, the filter must be regenerated manually before the filter becomes full.

Reduced motor power occurs automatically.

Manual regeneration is started by turning the DPF knob to the right; the knob springs back immediately to the automatic (middle) position.

If manual regeneration is not performed after a warning to do so, the engine heating lamp (5) comes on at the same time as DPF lamp continues to flash.

Continuing to work with the machine without activating regeneration will result in the need to service or replace the DPF filter, and the engine may also be damaged.

The lamp for high exhaust temperature (the HEST lamp) (6) comes on when the temperature of the exhaust fumes is high in conjunction with filter regeneration.

The lamp can also come on during normal engine use or during manual regeneration.
Locations - Instruments and controls, cab

Fig. Cab roof
1. Working lights, rear
2. Working lights, front
3. Windshield washer
4. Windshield wiper
5. Blower fan

Fig. Cab roof, left side
6. Left side window washer
7. Left side window wiper

Fig. Cab roof, right side
8. Fuse boxes
9. Right side window wiper
10. Right side window washer
11. Heater control
### Machine description

#### Function description of instruments and controls in the cab

<table>
<thead>
<tr>
<th>No</th>
<th>Designation</th>
<th>Symbol</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Front working lights, switch</td>
<td></td>
<td>Press to switch on the front working lights.</td>
</tr>
<tr>
<td>2</td>
<td>Rear working lights, switch</td>
<td></td>
<td>Press to switch on the rear working lights.</td>
</tr>
<tr>
<td>3</td>
<td>Windshield washer, switch</td>
<td></td>
<td>Press to wash the windshield.</td>
</tr>
<tr>
<td>4</td>
<td>Front wiper, switch</td>
<td></td>
<td>Press to operate the front screen wiper.</td>
</tr>
<tr>
<td>5</td>
<td>Blower fan, switch</td>
<td></td>
<td>Press to operate the blower fan.</td>
</tr>
<tr>
<td>6</td>
<td>Left side window washer, switch</td>
<td></td>
<td>Press to wash the left side window.</td>
</tr>
<tr>
<td>7</td>
<td>Left side window wiper, switch</td>
<td></td>
<td>Press to operate the left side window wiper.</td>
</tr>
<tr>
<td>8</td>
<td>Fuseboxes</td>
<td></td>
<td>Contain fuses for the electrical system in the cab.</td>
</tr>
<tr>
<td>9</td>
<td>Right side window wiper, switch</td>
<td></td>
<td>Press to operate the right side window wiper.</td>
</tr>
<tr>
<td>10</td>
<td>Right side window washer, switch</td>
<td></td>
<td>Press to wash the right side window.</td>
</tr>
<tr>
<td>11</td>
<td>Heater control</td>
<td></td>
<td>Turn to the right to increase heating.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Turn to the left to reduce heating.</td>
</tr>
</tbody>
</table>
The fan and AC switch (1) must be in the AC ON position to enable the fan switch (2) to work.

Ventilation: Set the switch (1) in the middle position to run the fan at low speed without AC. Cooling: Set the switch (1) in the low position, AC ON, to run the fan at low speed with AC. The fan speed can be increased in two steps with the changeover switch (2). Adjust the temperature with the thermostat control (3).
Machine description

Fuses

The figure shows the position of the fuses.

There are two fuse boxes on the left side of the panel (F1 & F2), as well as one fuse box by the battery disconnector switch under the platform (F4).

Fig. Fuse boxes on the side of the panel.

Fig. Fuse box by the battery disconnector switch

The table below gives fuse amperage and function. All fuses are flat pin fuses.

<table>
<thead>
<tr>
<th>Fuse box, upper (F1)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12V outlet</td>
<td>10A</td>
<td>5</td>
<td>Working lights</td>
</tr>
<tr>
<td>2</td>
<td>Direction indicator</td>
<td>10A</td>
<td>6</td>
<td>Driving lights</td>
</tr>
<tr>
<td>3</td>
<td>Cab heater</td>
<td>10A</td>
<td>7</td>
<td>Horn</td>
</tr>
<tr>
<td>4</td>
<td>Rotating beacon</td>
<td>10A</td>
<td>8</td>
<td>Starting</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fuse box, lower (F2)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sprinkler, main circuit</td>
<td>15A</td>
<td>5</td>
<td>Indicator panel, Beeper, LEDs</td>
</tr>
<tr>
<td>2</td>
<td>Sprinkler control, Brake light, Reversing alarm</td>
<td>10A</td>
<td>6</td>
<td>Measuring instrument</td>
</tr>
<tr>
<td>3</td>
<td>Vibration, Brake, Start (VBS)</td>
<td>10A</td>
<td>7</td>
<td>Speed sensor, Tachograph</td>
</tr>
<tr>
<td>4</td>
<td>Diesel engine</td>
<td>5A</td>
<td>8</td>
<td>Reserve</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fuse box (F4)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Main fuse, machine</td>
<td>30A</td>
<td>3</td>
<td>Main fuse, diesel engine</td>
</tr>
<tr>
<td>2</td>
<td>Main fuse, machine</td>
<td>30A</td>
<td>4</td>
<td>Reserve</td>
</tr>
</tbody>
</table>
Under the platform, close the battery disconnector switch, there are also two fuse holders for the diesel engine's preheating (F20, F21).

These are "screw connection" fuses, and both are 80A fuses.

**Fig. Fuses for the diesel engine's preheating.**

**Fuses in cab**

The electrical system in the cab has a separate fuse box located on the front right side of the cab roof.

The figure shows fuse amperage and function.

All fuses are flat pin fuses.

**Fig. Fuse box in cab (optional)**

1. Cab lighting/washers
2. Ventilation fan
3. Lights, rear
4. Lights, front
5. Wipers, front and sides
6. Cab heater
Relays in engine compartment

⚠ Connect the correct polarities (ground) to the battery. The cable between the battery and the alternator must not be disconnected when the engine is running.

<table>
<thead>
<tr>
<th>Relay Number</th>
<th>Description</th>
<th>Amperage</th>
</tr>
</thead>
<tbody>
<tr>
<td>K16</td>
<td>Overspeed relay, diesel engine</td>
<td>30A</td>
</tr>
<tr>
<td>K18</td>
<td>Shut-off relay, burnout</td>
<td>30A</td>
</tr>
<tr>
<td>K19</td>
<td>Shut-off relay, starter motor</td>
<td>30A</td>
</tr>
</tbody>
</table>

Fig. Engine compartment
1. Relay, preheating diesel engine (100A)
2. Relay, preheating diesel engine (100A)
3. Starter relay (120A)
4. Power socket 12V (Fuse 10A)
5. Relays (K16, K18, K19)

Relays in control column

<table>
<thead>
<tr>
<th>Relay Number</th>
<th>Description</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>K20</td>
<td>Interlock relay</td>
<td>4 sec.</td>
</tr>
<tr>
<td>K2</td>
<td>VBS relay</td>
<td></td>
</tr>
<tr>
<td>K12</td>
<td>Sprinkler relay</td>
<td>30A</td>
</tr>
<tr>
<td>K11</td>
<td>Neutral start</td>
<td>30A</td>
</tr>
<tr>
<td>K9</td>
<td>Indicator relay</td>
<td></td>
</tr>
<tr>
<td>U1</td>
<td>Tachograph (accessory)</td>
<td></td>
</tr>
</tbody>
</table>

Fig. Control column
Operation

Before starting

Master switch - Switching on

Remember to carry out daily maintenance. Refer to the maintenance instructions.

The battery master switch is located on the left side of the machine. Turn the key knob (1) to the on position. The entire roller is now supplied with power.

Water tanks - Level

When driving on asphalt, check that the water tanks are filled. See the relevant level gauges (1).

Control table - Setting

Depress the control table's locking pedal (1) and set it to the desired position. Release the pedal and check that the control table is locked in position before driving.

The machine can only be controlled from the seat that the control table is turned to, otherwise the interlock function is activated when the parking brake is released.
Operator's seat - Adjusting

Adjust the operator’s seat so that the position is comfortable and so that the controls are within easy reach.

The seat can be adjusted as illustrated.

![Operator's seat](image)

Fig. Operator’s seat  
1. Locking lever - length adjustment  
2. Backrest incline  
3. Weight adjustment

**Interlock**

The roller is equipped with Interlock.

The engine switches off 4 seconds after the operator rises from the seat.

The engine stops whether the forward/reverse lever is in the neutral or the drive position.

The engine does not stop if the parking brake is activated.

*Always make sure that the seat is secure before beginning operation.*

*Sit down for all operations!*
Parking brake

Make sure that the parking brake knob (1) is definitely activated (in the right-hand position).

The parking brake must be activated to start the diesel engine.

Instruments and lamps - Checking

Turn the starter switch (1) to position I. All warning lamps should light for about 5 seconds. During this time, make sure that the warning lamps light so that none of them is broken.

Check that the warning lamps for charging (5), oil pressure (7) and parking brake (8) light.

The hourmeter (6) records the number of hours as long as the engine is running.
Speed limiter

The machine is equipped with an adjustable speed limiter that can be disengaged during transport driving.

Undo the locking knob (1) on the limiter. Adjust the forward/reverse lever to the desired speed and lock the knob in this position.

If the speed limiter knob (2) is pulled out, the forward/reverse lever can be moved past the limits.

View

Before starting, make sure that the view forwards and backwards is unobstructed.

All cab windows should be clean and the rear view mirrors should be correctly adjusted.
Operator’s station

Always fasten the seat belt (1) that is provided if a ROPS (Roll Over Protective Structure) is fitted on the roller, and wear a protective helmet.

Always replace the seat belt (1) with a new one if it is worn or has been subjected to a heavy load.

- Check that rubber elements (2) on the platform are intact. Worn elements will impair comfort.

If the machine is fitted with a cab, make sure that the doors are closed when in motion.

Make sure that anti-slip (3) on the platform is in good condition. Replace with new anti-slip if friction is poor.

Fig. Operator’s station
1. Seat belt
2. Rubber ement
3. Anti-slip
Starting

Starting the engine

The steering column must be in the locked position in relation to the driver's seat from which you are intending to operate the machine, and the driver must be sitting on this driver's seat in order to start and operate the machine.

Make sure that the emergency stop button (1) is pulled out and the parking brake (9) is activated.

Set the forward/reverse lever (4) in neutral. The engine can only be started when the lever is in neutral.

Set the engine speed control (2) to idling.

Set the vibration switch (10) for manual/automatic vibration in the mid position (position 0).

Turn the ignition key (3) to the right to the first position. The preheating lamp (8) lights on the indicator panel. When the lamp goes out, turn the knob to the start position and release immediately the engine starts. This particularly important when starting the machine from cold.

Do not run the starter motor for too long. If the engine does not start immediately, wait a minute or so before trying again.

Starting gas is not to be used.

If the starter motor is activated for 30 seconds or more without the engine starting, the starter motor will be locked, preventing activation during a cooling process.

Let the engine idle for a few minutes to warm, longer if the ambient temperature is below +10°C (50°F).

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

While the engine is warming up, check that the warning lamps for oil pressure (6) and charging (7) are turned off.
The warning lamp for the parking brake (5) should remain on.

**When starting and driving a machine that is cold, remember that the hydraulic fluid is also cold and that braking distances can be longer than normal until the machine reaches the working temperature.**

---

**Driving**

**Operating the roller**

*Under no circumstances is the machine to be operated from the ground. The operator must be seated inside the machine during all operation.*

Set the speed control (2) in the desired working position, right position during transport/asphalt compaction and central position for loading/unloading.

Check that the steering is working correctly by turning the steering wheel once to the right and once to the left while the roller is stationary.

When compacting asphalt, remember to turn on the sprinkler system (3). Use AUT to save water.

*Make sure that the area in front of and behind the roller is clear.*

Inactivate the parking brake switch (9) and check that the parking brake warning lamp is off. Be prepared that the roller may begin to roll, if it is on a slope.

Carefully move the forward/reverse lever (11) forwards or backwards, depending on which direction of travel is required.

Speed increases as the lever is moved away from the neutral position.
The speed should always be controlled using the forward/reverse lever and never by changing the engine speed.

Test the reserve brake function by activating the parking brake switch (9) while the roller is moving forwards slowly.

The forward/reverse lever must then be returned to neutral before continuing driving.

While driving, check that the gauges display normal values and that the warning lamps are not lit. In the event of abnormal values or if the buzzer sounds, immediately stop the roller and the diesel engine. Check and remedy any fault; see also the chapter on maintenance and the engine manual.

Interlock/Emergency stop/Parking brake - Check

The interlock, emergency stop and parking brake must be checked daily before operating. A function check of the interlock and emergency stop requires a restart.

The interlock function is checked by the operator standing up from the seat when the roller is moving very slowly forwards/backwards. (Check in both directions). Hold the steering wheel firmly and brace yourself for a sudden stop. A buzzer goes on and after 4 seconds the engine switches off and the brakes are activated.

Check the function of the emergency stop by pressing the emergency stop when the roller is moving slowly forwards/backwards. (Check in both directions). Hold the steering wheel firmly and brace yourself for a sudden stop. The engine switches off and the brakes are activated.

Check the function of the parking brake by activating the parking brake when the roller is moving very slowly forwards/backwards. (Check in both directions). Hold the steering wheel and brace yourself for a sudden stop when the brakes are activated. The engine does not switch off.
**Vibration**

**Manual/Automatic vibration**

Manual or automatic vibration activation/deactivation is selected using switch (3).

In manual mode, the operator must activate vibration via the switch (1) on the forward/reverse lever (2).

In the automatic position, vibration is activated when the pre-set speed is reached. Vibration is automatically deactivated when the lowest pre-set speed is reached.

Turning on vibration is controlled with a micro-switch (6), which is influenced by two chambers on the shaft for the forward/reverse lever. The position for switching on and hence the speed can be adjusted:

- Cams close to each other: Vibration engaged at low speed.
- Cams apart: Vibration engaged at higher speed.

Ensure that vibration is engaged at the same speed in forward and reverse.

**Manual vibration - Switching on**

![Warning icon]

Never activate vibration when the roller is stationary. This can damage both the surface and the machine.

Switch vibration on and off using the switch (1) on the forward/reverse lever.

Always switch off vibration before the roller comes to a standstill.
Amplitude - Changeover

There are two settings for the drum vibration; use the switch (1) to select.

Turn the knob to the left for low amplitude and to the right for high amplitude.

Setting the amplitude may not be performed when vibration is in operation. Switch the vibration off first and wait until vibration stops before setting amplitude.

Braking

Reserve brake

Braking is normally activated using the forward/reverse lever. The hydrostatic transmission retards and slows the roller when the lever is moved towards the neutral position.

In addition, a disc brake in each drum motor acts as reserve brake when driving, and as a parking brake when stationary.

To brake, activate the parking brake (1), hold the steering wheel firmly and be prepared for a sudden stop.

After braking, return the forward/reverse lever to the neutral position and release the parking brake.
Switching off

Turn the speed switch back to idling (left position), allow the engine to idle a few minutes to cool down.

Check instruments and warning lamps to see if any faults are indicated. Switch off all lights and other electrical functions.

Activate the parking brake with the parking brake switch in right position (3).

Turn the ignition lock (1) to the left position and remove the ignition key. Lower and lock the instrument cover.

Parking

Chocking the drums

Never disembark from the machine when the engine running, unless the parking brake is activated.

Make sure that the roller is parked in a safe place with respect to other road users. Chock the drums if the roller is parked on sloping ground.

Keep in mind that there is a risk of freezing during the winter. Check the anti-freeze in the diesel engine and the screenwash bottle in the cab. Drain the water tanks, sprinkler pumps and water lines.
**Master switch**

Before leaving the roller for the day, switch the battery master switch (1) to the disconnected position and remove the key knob.

This will prevent battery discharging and will also make it difficult for unauthorized persons to start and operate the machine.
Long-term parking

The following instructions should be followed when long term parking (more than one month).

These measures apply when parking for a period of up to 6 months.

Before re-commissioning the roller, the points marked with an asterisk * must be returned to the pre-storage state.

Wash the machine and touch up the paint finish to avoid rusting.

Treat exposed parts with anti-rust agent, lubricate the machine thoroughly and apply grease to unpainted surfaces.

Engine

* Refer to the manufacturer’s instructions in the engine manual that is supplied with the roller.

Battery

* Remove the battery from the machine. Clean the battery, check that the electrolyte level is correct (see under the heading 'Every 50 hours of operation') and trickle-charge the battery once a month.

Air cleaner, exhaust pipe

* Cover the air cleaner (see under the heading 'Every 50 hours of operation' or 'Every 1000 hours of operation') or its opening with plastic or tape. Also cover the exhaust pipe opening. This is to avoid moisture entering the engine.

Sprinkler system

* Drain the water tank completely (see under the heading 'Every 2000 hours of operation'). Drain all hoses, filter housings and the water pump. Remove all sprinkler nozzles (see under the heading 'Every 10 hours of operation').

Fuel tank

Fill the fuel tank completely full to prevent condensation.
Long-term parking

Hydraulic reservoir
Fill the hydraulic reservoir to the uppermost level mark (see under the heading ‘Every 10 hours of operation.’)

Steering cylinder, hinges, etc.
Lubricate the steering joint bearings and both bearings on the steering cylinder with grease (see under the heading ‘Every 50 hours of operation’).

Grease the steering cylinder piston with conservation grease.

Grease the hinges on the doors to the engine compartment and the cab. Grease both ends of the forward/reverse control (bright parts) (see under the heading ‘Every 500 hours of operation’).

Hoods, tarpaulin
* Lower the instrument cover over the instrument panel.
* Cover the entire roller with a tarpaulin. A gap must be left between the tarpaulin and the ground.
* If possible, store the roller indoors and ideally in a building where the temperature is constant.
Lifting

Locking the articulation

Articulation must be locked to prevent inadvertent turning before lifting the roller.

Turn the steering wheel to the straight ahead position. Activate the parking brake.

Pull out the lowermost locking pin, which has a wire attached. Pull up the locking dowel (2), which also has a wire attached.

Fold out the locking arm (3) and position it over the locking lug on the rear machine frame.

Fit the locking dowel in the holes through the locking arm and locking lug and secure the dowel in position with the locking pin.

Lifting the roller

The machine's gross weight is specified on the hoisting plate (1). Refer also to the Technical specifications.

Lifting gear such as chains, steel wires, straps, and lifting hooks must conform with current regulations.

Stand well clear of the hoisted machine! Make sure that the lifting hooks are properly secured.
Unlocking the articulation

![Articulation lock in the open position](image)

1. Locking dowel
2. Locking arm
3. Locking lug

Remember to unlock the articulation before operating.

Fold the locking arm (3) back and secure it in the locking lug (4) with the locking dowel (2). The locking lug (4) is located on the tractor frame.

Towing/Recovering

The roller can be moved up to 300 meters (330 yards) using the instructions below.

**Short distance towing with the engine running**

![Propulsion pump](image)

1. Towing valve
2. Multifunction valve

Activate the parking brake and temporarily shut off the engine. Chock the drums to prevent the machine from rolling.

Open the right door to the engine compartment to access the propulsion pump.

Turn both towing valves (1) (middle hexagonal nuts) three turns counter clockwise, while holding the multifunction valve (2) (lowermost hexagonal nuts) in place. The valves are located on the upper side of the propulsion pump.

Start the engine and allow it to idle.

The roller can now be towed and can also be steered if the steering system is otherwise functioning.
Towing short distances when the engine is inoperative

⚠️ Chock the drums to prevent the roller moving when the brakes are mechanically disengaged.

Set a steel bar in the pump lever (2) and pump by moving the bar up and down until the brakes release or until a certain amount of hydraulic resistance can be felt.

The brakes are now disengaged and the roller can be towed at LOW speed.

⚠️ After towing. Pull the lever (1) to activate the brake.

⚠️ Always lock the pump with a padlock when it is not in use.
Towing the roller

⚠️ **Warning:** When towing/recovering, the roller must be braked by the towing vehicle. A towing bar must be used as the roller has no brakes.

⚠️ The roller must be towed slowly, max. 3 km/h (2 mph) and only towed short distances, max. 300 m (330 yards).

When towing/retrieving a machine, the towing device must be connected to both lifting holes. The pulling force must act longitudinally on the machine as shown in the figure. Maximum gross pulling force 265 kN (59575 lbf).

Reverse the towing preparations.

Roller prepared for transport

⚠️ **Warning:** Lock the articulation before lifting and transporting. Follow the instructions under the relevant heading.

Chock the drums (1) and secure the chocks to the transport vehicle.

Block up under the drum frame (2), to avoid overload on the rubber suspension of the drum when lashing.

Clamp down the roller with lashing strap (3) at all four corners; decals indicate the fixing points.

⚠️ Remember to return the articulation to its unlocked position before starting the roller.
1. Follow the SAFETY INSTRUCTIONS specified in the Safety Manual.

2. Make sure that all instructions in the MAINTENANCE section are followed.

3. Turn the master switch to the ON position.

4. Move the forward/reverse lever to the NEUTRAL position.

5. Set the vibration switch for Manual/Automatic in position 0.

6. Set the engine speed control to idle.

7. Set the parking brake switch in the activated position and make sure that the emergency stop is disengaged.

8. Start the engine and allow it to warm up.

9. Set the engine speed control to the operating position and inactivate the parking brake switch.

10. Operate the roller. Handle the forward/reverse lever with care.

11. Check the brakes. Remember that the braking distance will be longer if the roller is cold.

12. Use vibration only when the roller is in motion.

13. Check that the drums are thoroughly watered when watering is required.

14. IN AN EMERGENCY:
   - Push in the EMERGENCY STOP
   - Hold the steering wheel firmly.
   - Brace yourself for a sudden stop.

15. When parking:
   - Activate the parking brake switch.
   - Stop the engine and chock the drums.

16. When lifting: - Refer to the relevant section in the Instruction Manual.

17. When towing: - Refer to the relevant section in the Instruction Manual.

18. When transporting: - Refer to the relevant section in the Instruction Manual.

19. When recovering - Refer to the relevant section in the Instruction Manual.
Preventive maintenance

Complete maintenance is necessary for the machine to function satisfactorily and at the lowest possible cost.

The Maintenance section includes the periodic maintenance that must be carried out on the machine.

The recommended maintenance intervals assume that the machine is used in a normal environment and working conditions.

Acceptance and delivery inspection

The machine is tested and adjusted before it leaves the factory.

On arrival, before delivery to the customer, delivery inspection must be conducted as per the check list in the warranty document.

Any transport damage must be reported immediately to the transport company, as this is not covered by the product warranty.

Warranty

The warranty is only valid if the stipulated delivery inspection and the separate service inspection have been completed as per the warranty document, and when the machine has been registered for starting under the warranty.

The warranty is not valid if damage has been caused by inadequate service, incorrect use of the machine, the use of lubricants and hydraulic fluids other than those specified in the manual, or if any other adjustments have been made without the requisite authorisation.
Always use high-quality lubricants and the amounts recommended. Too much grease or oil can cause overheating, resulting in rapid wear.

### Fluid volumes

<table>
<thead>
<tr>
<th>Fluid volumes</th>
<th>liters</th>
<th>gallon (U.S.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic reservoir</td>
<td>120</td>
<td>31,7</td>
</tr>
<tr>
<td>Hydraulic system</td>
<td>25</td>
<td>6,6</td>
</tr>
<tr>
<td>Pump gear</td>
<td>3,1</td>
<td>0,82</td>
</tr>
<tr>
<td>Drum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Drum</td>
<td>53</td>
<td>14</td>
</tr>
<tr>
<td>- Gear box</td>
<td>3</td>
<td>0,79</td>
</tr>
<tr>
<td>Diesel engine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Oil</td>
<td>15,7</td>
<td>4,1</td>
</tr>
<tr>
<td>- Coolant</td>
<td>28</td>
<td>7,4</td>
</tr>
</tbody>
</table>

Other fuel and lubricants are required when operating in areas with extremely high or extremely low ambient temperatures. See the ‘Special instructions’ chapter, or consult Dynapac.

- **ENGINE OIL**
  - Air temperature -15°C - +50°C (5°F-122°F)
  - Dynapac engine oil 200
    - P/N 4812161855 (5 liters),
    - P/N 4812161856 (20 liters)

- **HYDRAULIC FLUID**
  - Air temperature -15°C - +50°C (5°F-122°F)
  - Dynapac hydraulic 300
    - P/N 4812161868 (20 liters),
    - P/N 4812161869 (209 liters)

- **BIOLOGICAL HYDRAULIC FLUID, PANOLIN**
  - Air temperature -10°C - +35°C (14°F-95°F)
  - When it leaves the factory, the machine may be filled with biologically degradable fluid.
  - The same type of fluid must be used when changing or topping up.
  - Dynapac Gear oil 300,
    - P/N 4812030756 (5 liters),
    - P/N 4812030117 (20 liters),
    - P/N 4812031574 (209 liters)

- **DRUM OIL**
  - Air temperature -15°C - +40°C (5°F-104°F)
  - Dynapac Roller Grease
    - P/N 4812030096 (0.4kg)

- **GREASE**
  - Lubrication points in addition to articulated joint
  - Dynapac Roller Grease
    - P/N 4812030096 (0.4kg)
### Maintenance - Lubricants and symbols

<table>
<thead>
<tr>
<th>Articulated joint</th>
<th>SKF LGHB2 (NLGI Class 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FUEL</strong></td>
<td>See engine manual.</td>
</tr>
<tr>
<td><strong>TRANSMISSION OIL</strong></td>
<td>Air temperature -15°C - +40°C (5°F-104°F)</td>
</tr>
<tr>
<td><strong>COOLANT</strong></td>
<td>Anti-freeze protection down to about -37°C (-34.6°F)</td>
</tr>
</tbody>
</table>

### Maintenance symbols

<table>
<thead>
<tr>
<th>Engine, oil level</th>
<th>Air filter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine, oil filter</td>
<td>Battery</td>
</tr>
<tr>
<td>Hydraulic reservoir, level</td>
<td>Sprinkler</td>
</tr>
<tr>
<td>Hydraulic fluid, filter</td>
<td>Sprinkler water</td>
</tr>
<tr>
<td>Drum, oil level</td>
<td>Recycling</td>
</tr>
<tr>
<td>Lubricating oil</td>
<td>Fuel filter</td>
</tr>
<tr>
<td>Coolant level</td>
<td>Pump gear, oil level</td>
</tr>
</tbody>
</table>
Fig. Service and maintenance points

1. Water tanks
2. Sprinkler system
3. Fuel tank
4. Engine mounting
5. Fuses
6. Drum oil filling/level
7. Scrapers
8. Rubber elements
9. Hydraulic pump operation
10. Hydraulic fluid filter
11. Articulation/steering cylinder
12. Hydraulic fluid reservoir
13. Battery
14. Radiator
15. Driving belts
16. Drum drive
17. Control table
18. Air filter
19. Engine oil level
20. Fuel filter
General
Periodic maintenance should be carried out after the number of hours specified. Use the daily, weekly etc. periods where number of hours cannot be used.

⚠️ Remove all dirt before filling, when checking oils and fuel and when lubricating using oil or grease.

⚠️ The manufacturer's instructions found in the engine manual also apply.
Specific maintenance and checks on diesel engines must be carried out by the engine supplier's certified personnel.

Every 10 hours of operation (Daily)
Refer to the contents to find the page number of the sections referred to!

<table>
<thead>
<tr>
<th>Pos. in fig</th>
<th>Action</th>
<th>Comment</th>
</tr>
</thead>
</table>
| Before starting up for the first time on that day
| 19         | Check the engine oil level                  | Refer to the engine manual           |
| 14         | Check the engine coolant level              | Refer to the engine manual           |
| 14         | Check for free circulation of cooling air   |                                      |
| 20         | Drain the fuel filter's water separator     | Refer to the engine manual           |
|            | Test the brakes                             |                                      |
| 2          | Check the sprinkler system                  |                                      |
| 7          | Check the scraper setting                   |                                      |
| 12         | Check the hydraulic reservoir level         |                                      |
| 3          | Refuel                                      |                                      |
| 1          | Fill the water tanks                        |                                      |
### Maintenance - Maintenance schedule

**After the FIRST 50 hours of operation**

Refer to the contents to find the page number of the sections referred to!

<table>
<thead>
<tr>
<th>Pos. in fig</th>
<th>Action</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Change the engine oil and oil filter</td>
<td>Refer to the engine manual</td>
</tr>
<tr>
<td>20</td>
<td>Change the fuel filter</td>
<td>Refer to the engine manual</td>
</tr>
<tr>
<td>10</td>
<td>Change the hydraulic fluid filter</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Change the oil in the pump gear</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Change the oil in the drum gearbox</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Change the oil in the drums</td>
<td></td>
</tr>
</tbody>
</table>

**Every 50 hours of operation (Weekly)**

Refer to the contents to find the page number of the sections referred to!

<table>
<thead>
<tr>
<th>Pos. in fig</th>
<th>Action</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Inspect/clean the filter element in the air cleaner</td>
<td>Replace as required</td>
</tr>
<tr>
<td></td>
<td>Check that hoses and couplings are not leaking</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Check rubber elements and bolted joints</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Lubricate the articulation and the steering cylinders' mountings.</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Check the hydraulic reservoir cover/breather</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Check the electrolyte level in the battery</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inspect the air conditioning</td>
<td>Optional</td>
</tr>
</tbody>
</table>

**Every 250 / 750 / 1250 / 1750 hours of operation**

Refer to the contents to find the page number of the sections referred to!

<table>
<thead>
<tr>
<th>Pos. in fig</th>
<th>Action</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Clean the outside of the hydraulic fluid cooler/water cooler</td>
<td>If necessary</td>
</tr>
<tr>
<td>15</td>
<td>Check belt tension for cooling fan and alternator</td>
<td>Refer to the engine manual</td>
</tr>
<tr>
<td></td>
<td>Check the oil level in the pump drive</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Check the oil level in the drum drive</td>
<td></td>
</tr>
</tbody>
</table>
## Maintenance - Maintenance schedule

### Every 500 / 1500 hours of operation

Refer to the contents to find the page number of the sections referred to!

<table>
<thead>
<tr>
<th>Pos. in fig</th>
<th>Action</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Clean the outside of the hydraulic fluid cooler/water cooler</td>
<td>If necessary</td>
</tr>
<tr>
<td>15</td>
<td>Check belt tension for cooling fan and alternator</td>
<td>Refer to the engine manual</td>
</tr>
<tr>
<td></td>
<td>Check the oil level in the pump drive</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Check the oil level in the drum drive</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Check the oil level in the drums</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Lubricate controls and joints</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Replace the engine fuel filter</td>
<td>Refer to the engine manual</td>
</tr>
<tr>
<td>19</td>
<td>Change the engine oil and oil filter</td>
<td>Refer to the engine manual</td>
</tr>
</tbody>
</table>

### Every 1000 hours of operation

Refer to the contents to find the page number of the sections referred to!

<table>
<thead>
<tr>
<th>Pos. in fig</th>
<th>Action</th>
<th>Comment</th>
</tr>
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<tbody>
<tr>
<td>14</td>
<td>Clean the outside of the hydraulic fluid cooler/water cooler</td>
<td>If necessary</td>
</tr>
<tr>
<td>15</td>
<td>Check belt tension for cooling fan and alternator</td>
<td>Refer to the engine manual</td>
</tr>
<tr>
<td></td>
<td>Check the oil level in the pump drive</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Check the oil level in the drum drive</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Check the oil level in the drums</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Lubricate controls and joints</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Replace the engine fuel filter</td>
<td>Refer to the engine manual</td>
</tr>
<tr>
<td>19</td>
<td>Change the engine oil and oil filter</td>
<td>Refer to the engine manual</td>
</tr>
<tr>
<td>15</td>
<td>Check engine valve clearances</td>
<td>Refer to the engine manual</td>
</tr>
<tr>
<td>10</td>
<td>Change the hydraulic fluid filter</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Replace the main filter in the air cleaner</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Drain condensate from fuel tank</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Drain condensate from hydraulic reservoir</td>
<td></td>
</tr>
</tbody>
</table>
## Maintenance - Maintenance schedule

**Every 2000 hours of operation**

Refer to the contents to find the page number of the sections referred to!

<table>
<thead>
<tr>
<th>Pos. in fig</th>
<th>Action</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Clean the outside of the hydraulic fluid cooler/water cooler</td>
<td>If necessary</td>
</tr>
<tr>
<td>15</td>
<td>Check belt tension for cooling fan and alternator</td>
<td>Refer to the engine manual</td>
</tr>
<tr>
<td></td>
<td>Check the oil level in the pump drive</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Check the oil level in the drum drive</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Check the oil level in the drums</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Lubricate controls and joints</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Replace the engine fuel filter</td>
<td>Refer to the engine manual</td>
</tr>
<tr>
<td>19</td>
<td>Change the engine oil and oil filter</td>
<td>Refer to the engine manual</td>
</tr>
<tr>
<td></td>
<td>Check engine valve clearances</td>
<td>Refer to the engine manual</td>
</tr>
<tr>
<td>15</td>
<td>Check the engine belt drive system</td>
<td>Refer to the engine manual</td>
</tr>
<tr>
<td>10</td>
<td>Change the hydraulic fluid filter</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Replace the main filter in the air cleaner</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Drain condensate from fuel tank</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Drain condensate from hydraulic reservoir</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Change the hydraulic fluid</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Replace the hydraulic fluid filters</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Change the oil in the drums</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Change the oil in the drum drive</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Change the oil in the pump drive</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Drain and clean the water tanks</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Check the condition of the articulation</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Replace the air cleaner's backup filter and main filter</td>
<td></td>
</tr>
</tbody>
</table>
Maintenance, 10h

Every 10 hours of operation (Daily)

Park the roller on a level surface. The engine must be switched off and the parking brake activated when checking or adjusting the roller, unless otherwise specified.

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

Diesel engine  Check oil level

Take care not to touch any hot parts of the engine or the radiator when removing the dipstick. Risk for burns.

The dipstick is located on the engine's right side.

Pull up the dipstick (1) and check that the oil level is between the upper and lower marks. For further details, refer to the engine's instruction manual.

Fig. Engine compartment
1. Dipstick
Coolant level - Check

Check that level of the coolant is between the max. and min. marks.

⚠️ Take great caution if the radiator cap must be opened while the engine is hot. Wear protective gloves and goggles.

Fill with a mixture of 50% water and 50% anti freeze. See the lubrication specification in these instructions and in the engine manual.

⚠️ Flush the system every other year and change the coolant. Make sure also that the air flow through the cooler is unobstructed.

Water separator - Drainage

Place a receptacle below the drainage tap located at the bottom of the fuel filter. Open the tap and collect the water and contaminants in the receptacle. Allow it to run until pure fuel comes out. Close the drainage tap.

♻️ Deliver the collected fluid to environmentally correct handling.
Brakes - Check

Check the brakes by carrying out the following:

Drive the roller slowly forwards.
Activate the parking brake switch (1), the brake warning lamp (3) on the instrument panel should come on and the roller should stop.

After testing the brakes, set the forward/reverse lever (2) in neutral.

Inactivate the parking brake switch.

The roller is now ready for operation.

Sprinkler system - Check, cleaning

Close the stop cock (1) and remove the housing from water filter (2) in order to clean the strainer and housing.
Nozzle - Dismantling/Cleaning

Dismantle the blocked nozzle by hand.

Blow the nozzle (2) and fine filter (4) clean using compressed air. Alternatively, fit replacement parts and clean the blocked parts at a later point in time.

After inspecting and carrying out any necessary cleaning, start the system and check that it works.

⚠️ **Wear protective goggles when working with compressed air.**

Scrapers - Check, adjustment

Adjust the scrapers so that a gap of 1-2 mm is obtained across the entire drum width.

Loosen the screws (1).

Move the scraper (2) to the correct position, 1-2 mm from the drum (3).

Replace the scraper with a new one if it is so worn that the required gap cannot be achieved.

Tighten the screws and the nuts.
Hydraulic reservoir, Level check - Filling

Place the roller on a level surface and check the fluid level in the sight glass (1).

Top up with new hydraulic fluid if the level is more than 19 mm from the upper edge of the sight glass.

Clean around the filler cap (5) before the cap is removed. Check that the strainer in the filler pipe is intact.

Fill with fresh hydraulic fluid of the grade indicated in the Lubricant specification.

Water tanks - Filling

Unscrew the tank cap, check that the strainer (1) is intact. If necessary, life out the strainer for cleaning.

Use clean water when filling.

Only additive: A small amount of environmentally friendly antifreeze.
Fuel tank - Filling

Refuel daily with diesel fuel up to the lower edge of the filler pipe (1). Follow the engine manufacturer’s specification with regard to the quality of diesel fuel.

⚠️ Stop the diesel engine. Short-circuit (press) the filler gun against a non-insulated part of the roller before refueling, and against the filler pipe (2) while refueling.

⚠️ Never refuel while the engine is running. Do not smoke and avoid spilling fuel.
Maintenance - 50h

Every 50 hours of operation (Weekly)

- **Park the roller on a level surface.**
- **The engine must be switched off and the parking brake activated when checking or adjusting the roller, unless otherwise specified.**

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

Air cleaner

**Checking - Change the main air filter**

- Change the air cleaner main filter when the warning lamp on the control panel comes on when the engine is running at maximum speed.

![Air cleaner diagram](image)

1. Clips
2. Cover
3. Main filter
4. Backup filter
5. Filter housing
6. Dust valve

- Release the clips (1), pull off the cover (2), and pull out the main filter (3).
- Do not remove the backup filter (4).
- Clean the air cleaner if necessary, see section Air cleaner - Cleaning.
- Check the condition of the dust valve (6); replace if necessary.
- When refitting the cover, make sure that the dust valve is positioned downwards.
Backup filter - Change

Change the backup filter with a new filter after every third replacement of the main filter.

To change the backup filter (1), pull the old filter out of its holder, insert a new filter and reassemble the air cleaner in the reverse order.

Clean the air cleaner if necessary, see section Air cleaner - Cleaning.

Air cleaner - Cleaning

Wipe clean the inside of the cover (2) and the filter housing (5). See the previous illustration.

Wipe also both surfaces for the outlet pipe; see adjacent figure.

Check that the hose clamps between the filter housing and the suction hose are tight and that the hoses are intact. Inspect the entire hose system, all the way to the engine.
Rubber elements and fastening screws - Check

Check all rubber elements (1), replace all of the elements if more than 20% of them on one side of the drum are cracked deeper than 10-15 mm (0.4-0.6 in).

Check using a knife blade or pointed object.

Check also that the screws/nuts (2) are tightened.

⚠️ The rubber elements' screws in the drum are locked with Loctite. Check the rubber elements on both sides of the drum.

Articulation and steering cylinder - Lubrication

Nobody must be allowed near the steering joint when the engine is running. Risk of being crushed when the steering is operated. Switch off the engine and activate the parking brake before lubricating.

Wipe the grease nipples clean. Lubricate the articulation nipples (1) with five strokes of the hand grease gun, and the steering cylinder bearings (2) with two strokes in each bearing. Make sure that grease penetrates into the bearings. If grease does not penetrate, it may be necessary to relieve the pressure on the articulation joint with a jack and then repeat the greasing process.
Hydraulic reservoir - Check/venting

Unscrew and make sure that the reservoir cap's ventilation hole (1) is not clogged, air must have unobstructed passage through the cap in both directions.

If blocked in either direction, clean with a little diesel oil and blow with compressed air until unblocked or replace the cap with a new one.

Wear protective goggles when working with compressed air.

Battery
Checking the electrolyte level

Make sure there is no open flame in the vicinity when checking the electrolyte level. Explosive gas is formed when the alternator charges the battery.

Open the left door of the engine compartment. Turn both quick-fit screws on the plate over the battery 1/4 turn counter-clockwise and fold out the plate.

Wear safety goggles. The battery contains acid, which is corrosive. In the event of contact with the acid, rinse with water.

When disconnecting the battery, always disconnect the negative cable first. When connecting the battery, always connect the positive cable first.

The cable shoes should be clean and tightened. Corroded cable shoes should be cleaned and greased with acid-proof Vaseline.

Wipe the top of the battery.
Battery cell

Take off the cell caps (1) and make sure that electrolyte (2) is about 10 mm (0.4 in) above the plates (3). Check the level of all cells. Top off with distilled water to the right level if the level is low.

If the ambient temperature is below freezing, run the engine for a while before topping off with distilled water. Otherwise the electrolyte might freeze.

Make sure that ventilation holes in the cell cover are not clogged, then put the cover back on.

The cable shoes should be clean and well tightened. Clean corroded cable shoes and grease them with acid-free Vaseline.

Always disconnect the negative cable first when disconnecting the battery. When connecting the battery, always connect the positive cable first.

Discard used batteries wisely. Batteries contain lead, which is harmful to the environment.

Before doing any electric welding on the machine, disconnect the battery ground cable and then all electrical connections to the alternator.
Maintenance measures - 250 h

Every 250/750/1250/1750..... hours of operation (every 3 months)

⚠️ Park the roller on a level surface. The engine must be switched off and the parking brake activated when checking or adjusting the roller, unless otherwise specified.

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

Pump drive - Oil level, Check - Filling

Position the roller on a level surface.

⚠️ When checking the oil level, switch the engine off and ensure that the parking brake is applied.

Open the right door of the engine compartment and unscrew the dipstick (1).

The oil level should be between the two marks on the lower edge of the dipstick.

Fill with transmission oil if required, see Lubricant Specification.

Ensure that the rubber gasket between the dipstick and the gear housing is in place, and screw in the dipstick.
Drum drive - Checking the oil level

Place the roller on a level surface so that filler plug (1) is at the top. Wipe around the plugs.

The oil level must reach the level plug (3).

If necessary, remove the filler plug and fill with oil in accordance with the lubricant specification, although not more than up to the level plug.
Maintenance measures - 500 h

Every 500/1500..... hours of operation (every six months)

Park the roller on a level surface.<br>The engine must be switched off and the parking brake activated when checking or adjusting the roller, unless otherwise specified.

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

Drum - Checking the oil level

Switch off the engine, activate the parking brake and disconnect the power.

Place the roller on a level surface so that level pin (1) is level with the top of the front frame member. Wipe around the plugs.

The oil level must reach the level plug (3).

If necessary, remove the filler plug (2) and fill with oil in accordance with the oil specification, although not more than up to the level plug.
Controls and moving joints - Lubrication

Lubricate the hinges for the hood, side windows and any cab doors with grease. Also lubricate the slide rails for the operator's seat and the control table's bearing with grease; lubricate other joints and controls with oil. See the lubricant specification.
Maintenance - 1000h

Performed after 1000 operating hours (each year)

**Park the roller on a level surface.**

The engine must be switched off and the parking brake activated when checking or adjusting the roller, unless otherwise specified.

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

Hydraulic fluid filter - Replacement

Clean thoroughly around the fluid filter.

Remove the fluid filters (1) and deliver to environmentally correct handling. They are single-use filters and cannot be cleaned.

Make sure that the old sealing rings are not left on the filter holders, as this could cause leakage between the new and old gaskets.

Thoroughly clean the sealing surfaces of the filter holders.

Apply a thin coat of fresh hydraulic fluid to the rubber seals on the new filters. Screw the filters tight by hand.

First tighten the filter until its seal is in contact with the filter attachment. Then turn an additional half revolution. Do not tighten the filter too hard as this could damage the gasket.

Start the engine and check that there is no leakage of hydraulic fluid from the filters. Check level of fluid in the sight glass (3) and top up as required.
Air filter - Change

Replace the main filter in the air cleaner (1). See under the heading 'Every 50 hours of operation' for information on changing the filter.

⚠️ If a blocked filter is not replaced, the exhaust fumes will be black and the engine will lose power. There is also a risk of severe damage to the engine.

Backup filter - Change

Change the backup filter with a new filter after every third replacement of the main filter.

To change the backup filter (1), pull the old filter out of its holder, insert a new filter and reassemble the air cleaner in the reverse order.

Clean the air cleaner if necessary, see section Air cleaner - Cleaning.
Fuel tank - Drainage

Water and sediment in the fuel tank are removed via the drain plug (1) in the bottom of the fuel tank.

Be very careful during draining. Do not drop the plug or else all the fuel will flow out.

Drainage must be performed when the roller has been stationary for an extended period, e.g. after being stationary overnight. The fuel level should be as low as possible.

The roller should preferably have been standing with this side slightly lower, so that water and sediment have gathered near the drain plug (1).

Collect the condensate and sediment in a container and deliver to environmentally correct handling.

Drain as follows:

- Place a container under the plug (1).
- Remove the plug (1).
- Drain out the condensate and sediment until only pure fuel emerges at the plug.
- Refit the plug again.
Hydraulic fluid reservoir - Draining

Condensate in the hydraulic reservoir is drained via the plug (1).

Be very careful during draining. Do not drop the plug or else all the hydraulic fluid will flow out.

Drainage must be performed when the roller has been stationary for an extended period, e.g. after being stationary overnight.

Drain as follows:
- Place a container under the plug (1).
- Remove the plug.
- Drain the condensate until pure hydraulic fluid runs out.
- Refit the plug again.

Collect the condensate and accompanying hydraulic fluid and deliver to environmentally correct handling.
Maintenance - 2000h

Performed after 2000 operating hours (every two years)

⚠️ Park the roller on a level surface. The engine must be switched off and the parking brake activated when checking or adjusting the roller, unless otherwise specified.

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

Hydraulic reservoir - Replacing the fluid/filters

⚠️ Before replacing the fluid, it is important that the roller has been warmed up for a sufficient length of time in order for the fluid to have warmed up and thinned prior to draining. This makes it easier for any contaminants to leave the reservoir with the fluid. Bear cleanliness in mind when working with hydraulic components.

Take great care when draining warm fluids and oils. Wear protective gloves and goggles.

Position the roller on a level surface.

Replace the hydraulic fluid filters and check the tank cap's ventilation, see section in 50h.

Position a collection receptacle for the required amount and drain off the hydraulic fluid.

Fill with hydraulic fluid in accordance with the lubricant specification, until the correct level is achieved in the sight glass.

Start the engine, drive and vibrate with the roller. Stop the engine, check the fluid level and check for leaks. Top up if necessary.

Dispose of the drained fluid for environmentally correct handling.
Drum - Changing the oil

**Switch off the engine, activate the parking brake and disconnect the power.**

Collect and dispose of the drained oil for environmentally correct handling.

Applies to both sides of the drum:

After warming up, place the roller on a flat surface so that the plugs (2) are at the bottom. Wipe around the plugs.

Remove the plug (2) on one side and drain the oil, approximately 27 liters, into a suitable receptacle.

Drain the oil in the same way on the other side. Clean the plugs and wait until all the oil has run out. Wipe up any spilled oil.

Drive the roller until the plugs (2) are at the top and the level pin is level with the top of the front frame member.

Fill with oil in accordance with the Lubricant specification until the level reaches the plug (3). Refit the plugs and wipe up any spilled oil.

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**Fig. Drum**

1. Level pin
2. Drain/filler plug, M30
3. Level plug, M12
Drum drive - Changing the oil

Applies to both drums:

⚠️ Before replacing the oil, it is important that the roller has been warmed up for a sufficient length of time in order for the oil to have warmed up and thinned prior to draining. This makes it easier for any contaminants to leave the reservoir with the fluid. Bear cleanliness in mind when working with hydraulic components.

*Take great care when draining warm fluids and oils. Wear protective gloves and goggles.*

Place the roller on a level surface so that drain plug (2) is at the bottom. Wipe around the plugs.

Place a receptacle under the drain plug and drain the oil. The receptacle must hold at least 4 liters.

Remove the filler plug (1) and the level plug (3). Wait until all the oil has run out. Clean any metal residue from the plugs. Refit the drain plug and fill with oil in accordance with the lubricant specification, although not more than up to the level plug. Refit the plugs.

Wipe up any spilled oil.
Pump drive - Changing the oil

When the pump drive has reached working temperature: Position the roller on a level surface.

⚠️ Switch off the engine, activate the parking brake and disconnect the power.

Recycle the oil in a container and dispose of it for environmentally correct handling.

Wipe around the plugs.

Unscrew the filler plug/dipstick (1) and the drain plug (2). Drain the oil, approx. 4 liters.

Clean and refit the drain plug.

Fill with new transmission oil according to the lubricant specification. Fill slowly so that the oil has time to level out.

Check with the dipstick and do not overfill. Tighten the filler plug/dipstick and wipe up any spilled oil.