Vibratory Roller

CC100

Maintenance
M100EN1, 99-10-15

Diesel Engine:

CC 100 Deutz F2L 1011F, Isuzu 3 LD1PW-05

These instructions apply from:

CC 100
Deutz PIN (S/N) *60710100*
Isuzu PIN (S/N) *60750100*

CC 100 are primarily designed for repair work on asphalt but are also ideal for the compaction of new layers on small streets, pavements and cycle tracks. They are frequently used as a complement to larger rollers for the compaction of transverse joints and areas with limited access.
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WARNING SYMBOLS

WARNING - Personal safety may be involved.

CAUTION - Damage to component or machine.

GENERAL

Read all the instruction thoroughly before carrying out any servicing operations.

Ensure that ventilation is adequate (extractor) when running the engine indoors.

Proper care of the roller is essential to ensure satisfactory operation. Keep the machine clean so that any leakage, loose bolts or loose connections can be easily detected.

TAKE CARE OF THE ENVIRONMENT Do not spill oil or fuel, or leave anything else that could be detrimental to the environment.

This manual contains directions for periodical servicing which should normally be carried out by the operator.

In addition, instructions in the manual provided by the engine manufacturer also apply. This is included in the product folder accompanying the roller. List of Contens.

This roller is fitted with an alternator. See the "MAINTENANCE" manual and decal on the machine for instructions with regard to any electric welding.

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.
**LUBRICANTS, SYMBOLS**

Always use high quality lubricants in the quantities stipulated. Too much oil or grease may result in overheating and subsequent excessive wear.

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>ENGINE OIL, Ambient temperature</th>
<th>HYDRAULIC FLUID Ambient air temperature</th>
<th>BIODEGRADABLE HYDRAULIC FLUID</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Engine Oil" /></td>
<td>-10°C to +50°C (+14°F to +122°F)</td>
<td>-10°C – +40°C (14°F - 104°F) above +40°C (above 104°F)</td>
<td>BP Bioyd SE-S 68, Shell Naturelle HF-E68. On delivery from the factory the machine may have been filled with biodegradable fluid. The same type must be used when changing or topping up the fluid</td>
</tr>
<tr>
<td><img src="image" alt="Oil Filter" /></td>
<td>Shell Rimula SAE 15W/40 or equivalent</td>
<td>Shell Tellus Oil TX68 or corresponding</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Battery" /></td>
<td>API Service CD/SE, CD/SF</td>
<td>Shell Tellus Oil T100 or corresponding</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Battery" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Grease" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Grease" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Fuel" /></td>
<td></td>
<td></td>
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<tr>
<td><img src="image" alt="Fuel" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Coolant" /></td>
<td></td>
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<tr>
<td><img src="image" alt="Coolant" /></td>
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<tr>
<td><img src="image" alt="Coolant" /></td>
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</tr>
</tbody>
</table>

**DRUM OIL, Ambient temperature**

-15°C to +40°C (+5°F to +104°F) above +40°C (+104°F)

Shell Spirax SAE 80W/90, HD API, GL-5

Shell Spirax HD85W/140 or equivalent

**GREASE**

Shell Calithia EPT2 or equivalent

**FUEL**

See engine manual

**COOLANT, (Isuzu)**
mixed 50/50 with water

Shell Anti Freeze 402 or equivalent

Anti-freeze down to about -35°C.

Other lubricants are required when operating at extremely high or low temperatures. See chapter, "Special instructions", or get in touch with Dynapac.

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>Engine, oil level</th>
<th>Air cleaner</th>
<th>Air cleaner</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Engine Oil" /></td>
<td><img src="image" alt="Engine Oil" /></td>
<td><img src="image" alt="Engine Oil" /></td>
<td><img src="image" alt="Engine Oil" /></td>
</tr>
<tr>
<td><img src="image" alt="Oil Filter" /></td>
<td><img src="image" alt="Oil Filter" /></td>
<td><img src="image" alt="Oil Filter" /></td>
<td><img src="image" alt="Oil Filter" /></td>
</tr>
<tr>
<td><img src="image" alt="Battery" /></td>
<td><img src="image" alt="Battery" /></td>
<td><img src="image" alt="Battery" /></td>
<td><img src="image" alt="Battery" /></td>
</tr>
<tr>
<td><img src="image" alt="Hydraulic Reservoir" /></td>
<td><img src="image" alt="Hydraulic Reservoir" /></td>
<td><img src="image" alt="Hydraulic Reservoir" /></td>
<td><img src="image" alt="Hydraulic Reservoir" /></td>
</tr>
<tr>
<td><img src="image" alt="Sprinkler" /></td>
<td><img src="image" alt="Sprinkler" /></td>
<td><img src="image" alt="Sprinkler" /></td>
<td><img src="image" alt="Sprinkler" /></td>
</tr>
<tr>
<td><img src="image" alt="Drum Oil" /></td>
<td><img src="image" alt="Drum Oil" /></td>
<td><img src="image" alt="Drum Oil" /></td>
<td><img src="image" alt="Drum Oil" /></td>
</tr>
<tr>
<td><img src="image" alt="Fuel Filter" /></td>
<td><img src="image" alt="Fuel Filter" /></td>
<td><img src="image" alt="Fuel Filter" /></td>
<td><img src="image" alt="Fuel Filter" /></td>
</tr>
<tr>
<td><img src="image" alt="Coolant Level" /></td>
<td><img src="image" alt="Coolant Level" /></td>
<td><img src="image" alt="Coolant Level" /></td>
<td><img src="image" alt="Coolant Level" /></td>
</tr>
</tbody>
</table>
SPECIFICATIONS

Weight, Dimensions

<table>
<thead>
<tr>
<th></th>
<th>Litres</th>
<th>(gal or qts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight CECE,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>standard equipped roller</td>
<td>2350</td>
<td>(5.181)</td>
</tr>
<tr>
<td>Length, standard equipped roller</td>
<td>2395</td>
<td>(94.29)</td>
</tr>
<tr>
<td>Width, standard equipped roller</td>
<td>1150</td>
<td>(45.27)</td>
</tr>
<tr>
<td>Height, standard equipped roller</td>
<td>1755</td>
<td>(69.09)</td>
</tr>
<tr>
<td>Height, roller with ROPS</td>
<td>2640</td>
<td>(103.93)</td>
</tr>
<tr>
<td>Height, roller with cab</td>
<td>2590</td>
<td>(101.96)</td>
</tr>
</tbody>
</table>

Fluid volumes

<table>
<thead>
<tr>
<th></th>
<th>Litres</th>
<th>(gal or qts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic reservoir</td>
<td>40</td>
<td>(10.6 gal)</td>
</tr>
<tr>
<td>Fuel tank</td>
<td>50</td>
<td>(13.2 gal)</td>
</tr>
<tr>
<td>Water tank</td>
<td>160</td>
<td>(42.2 gal)</td>
</tr>
<tr>
<td>Water tank</td>
<td>200</td>
<td>(52.8 gal)</td>
</tr>
<tr>
<td>Diesel Engine (Deutz F2L 1011F)</td>
<td>6,5</td>
<td>(6.9 qts)</td>
</tr>
<tr>
<td>Diesel Engine (Isuzu 3 LD1PW-05)</td>
<td>6,5</td>
<td>(6.9 qts)</td>
</tr>
<tr>
<td>Drum</td>
<td>4,0</td>
<td>(4.2 qts)</td>
</tr>
<tr>
<td>Coolant (Isuzu 3 LD1PW-05)</td>
<td>2,5</td>
<td>(2.7 qts)</td>
</tr>
</tbody>
</table>

Electrical system

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery</td>
<td>12 V 75 Ah</td>
</tr>
<tr>
<td>Alternator</td>
<td>12 V 60 A</td>
</tr>
<tr>
<td>Fuses</td>
<td>5, 7, 10, 15 A</td>
</tr>
</tbody>
</table>

Vibration data

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Static linear load</td>
<td>10,3 (57.7)</td>
</tr>
<tr>
<td>Amplitude</td>
<td>0,50 (0.02)</td>
</tr>
<tr>
<td>Frequency</td>
<td>56,0 (3,360)</td>
</tr>
<tr>
<td>Centrifugal force</td>
<td>21,5 (4.83)</td>
</tr>
</tbody>
</table>

Traction

<table>
<thead>
<tr>
<th></th>
<th>Deutz</th>
<th>Isuzu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed range km/h</td>
<td>0-10,0</td>
<td>0-10,0</td>
</tr>
<tr>
<td>Climbing ability (theoretical) %</td>
<td>0,50</td>
<td>0,50</td>
</tr>
</tbody>
</table>
**SPECIFICATIONS Contd.**

**Tightening torque**

Tightening torque in Nm, for oiled bolts when using torque wrench.

<table>
<thead>
<tr>
<th>M</th>
<th>STRENGTH CLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8.8</td>
</tr>
<tr>
<td>Thread</td>
<td></td>
</tr>
<tr>
<td>M4</td>
<td>2.5</td>
</tr>
<tr>
<td>M5</td>
<td>4.9</td>
</tr>
<tr>
<td>M6</td>
<td>8.4</td>
</tr>
<tr>
<td>M8</td>
<td>21</td>
</tr>
<tr>
<td>M10</td>
<td>40</td>
</tr>
<tr>
<td>M12</td>
<td>70</td>
</tr>
<tr>
<td>M16</td>
<td>169</td>
</tr>
<tr>
<td>M20</td>
<td>330</td>
</tr>
<tr>
<td>M24</td>
<td>570</td>
</tr>
<tr>
<td>M30</td>
<td>1130</td>
</tr>
<tr>
<td>M36</td>
<td>1960</td>
</tr>
</tbody>
</table>

**ROPS**

The ROPS bolts must *always* be torque-tightened dry.

Bolt size: M16
Strength class: 10.9
Tightening torque: 240 Nm

**Hydraulic system**

<table>
<thead>
<tr>
<th>Opening pressure MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive system</td>
</tr>
<tr>
<td>Supply system</td>
</tr>
<tr>
<td>Vibration system</td>
</tr>
<tr>
<td>Steering system</td>
</tr>
<tr>
<td>Brake release</td>
</tr>
</tbody>
</table>

**Noise levels (ISO 6394)**

**NOISE LEVEL WITHOUT VIBRATION (dBA)**
(Measured on hard supporting surface)

<table>
<thead>
<tr>
<th>Sound-proofed roller</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operator’s position</td>
</tr>
<tr>
<td>Seven metres from machine</td>
</tr>
</tbody>
</table>

**Operator’s position - Vibrations (ISO 2631)**

Measured with vibration switched on and on a foam rubber mat

Vibration on the operator’s seat is 0.06 m/s²
Vibration on the floor of the operator’s position is 0.06 m/s²
(The limit value is 0.5 m/s²).
MAINTENANCE SCHEDULE

Read all the instructions thoroughly before carrying out any servicing operations.

Proper care of the roller is essential to ensure satisfactory operation. Keep the machine clean so that any leakage, loose bolts or loose connections can be easily detected. Make a habit of inspecting the roller every day before starting up by checking all round and underneath the machine to detect any sign of leakage or other faults.

Fig. 1 Service points

1 Fuel tank 11 Hydraulic fluid filling
2 Refuelling 12 Hydraulic fluid reservoir
3 Radiator 13 Hydraulic fluid filter
4 Air cleaner 14 Hydraulic fluid sight glass
5 Battery 15 Steering joint
6 Diesel engine 16 Steering cylinder mounts
7 Water tank 17 Filling plugs, drum
8 Sprinkler system/drum 18 Oil level in drum
9 Scrapers/drum 19 Forward/Reverse lever
10 Rubber elements and mounting bolts 20 Reserve/parking brake knob
MAINTENANCE MEASURES

The periodic measures should be carried out primarily on reaching the stated number of operating hours, and secondarily in connection with the periods daily, weekly, etc.

Always clean off the surrounding dirt before filling or checking oil and fuel, and before lubricating with oil or grease.

The manufacturer’s instructions noted in the engine manual also apply for diesel engines.

Every 10 hours of operation (Daily)

<table>
<thead>
<tr>
<th>Item in Measures</th>
<th>See page</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 - Check oil level in diesel engine</td>
<td></td>
<td>See engine manual</td>
</tr>
<tr>
<td>3 - Check that circulation of cooling air is unobstructed</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>3 - Check coolant level, (Isuzu)</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>20 - Check the brakes</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>1 - Fill the fuel tank</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>9 - Check setting of the scraper/Drum</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>14 - Check level in hydraulic reservoir</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>8 - Check the sprinkler system/Drum</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

Every 50 hours of operation (Weekly)

<table>
<thead>
<tr>
<th>Item in Measures</th>
<th>See page</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 - Check air cleaner indicator</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>15 - Lubricate the steering joints</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>16 - Lubricate the steering cylinder mounts</td>
<td>14</td>
<td></td>
</tr>
</tbody>
</table>

After the first 50 hours of operation, change all oil filters and lubricating oils. But not the hydraulic fluid.
### MAINTENANCE MEASURES

#### Every 250 hours of operation (Monthly)

<table>
<thead>
<tr>
<th>Item in Fig. 1</th>
<th>Measure</th>
<th>See page</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Clean the outside of the hydraulic fluid cooler</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Check the battery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Change the lubricating oil of the diesel engine</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Isuzu)</td>
<td></td>
<td>See engine manual</td>
</tr>
<tr>
<td>6</td>
<td>Clean the engine cooling fins</td>
<td></td>
<td>See engine manual</td>
</tr>
</tbody>
</table>

#### Every 500 hours of operation (Every 3 months)

<table>
<thead>
<tr>
<th>Item in Fig. 1</th>
<th>Measure</th>
<th>See page</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Check oil level in rear drum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Check the cap/vent of the hydraulic reservoir</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Lubricate controls and pivots</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Check rubber elements and bolted joints</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Change the lubricating oil of the diesel engine</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Deutz)</td>
<td></td>
<td>See engine manual</td>
</tr>
<tr>
<td>6</td>
<td>Change engine oil filter</td>
<td></td>
<td>See engine manual</td>
</tr>
<tr>
<td>6</td>
<td>Check engine V-belts</td>
<td></td>
<td>See engine manual</td>
</tr>
<tr>
<td>6</td>
<td>Change the engine fuel filter (Isuzu)</td>
<td></td>
<td>See engine manual</td>
</tr>
</tbody>
</table>

#### Every 1000 hours of operation (Every 6 months)

<table>
<thead>
<tr>
<th>Item in Fig. 1</th>
<th>Measure</th>
<th>See page</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Change the hydraulic filter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Drain off condense water from the hydraulic</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>reservoir</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Change the main filter in the air cleaner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Change the engine fuel filter (Deutz)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Change the engine pre-filter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Check the engine cogged V-belt</td>
<td></td>
<td>See engine manual</td>
</tr>
<tr>
<td>6</td>
<td>Check engine valve clearance</td>
<td></td>
<td>See engine manual</td>
</tr>
</tbody>
</table>

#### Every 2000 hours of operation (Yearly)

<table>
<thead>
<tr>
<th>Item in Fig. 1</th>
<th>Measure</th>
<th>See page</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Change the fluid in hydraulic reservoir</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Change oil in rear drum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Clean the water tank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Clean the fuel tank</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EVERY 10 HOURS OF OPERATION (Daily)

**Coolant level - Check, filling (Circulation of cooling air)**

![Fig. 2 Radiator](image)

1. Radiator cap

**Air circulation - Checking**

![Fig. 3 Right side of roller](image)

1. Air grill

**Brakes - Check**

![Fig. 4 Instrument panel](image)

6. Reserve/parking brake knob
9. Brake warning lamp

**ISUZU**

⚠️ Take the greatest care if the radiator cap must be opened while the engine is hot. Danger of being scalded. Wear protective gloves and goggles.

When filling or topping up, use coolant that consists of a mixture of 50% water and 50% anti-freeze medium. See page 3 in this manual and in the engine manual.

⚠️ Change the coolant and flush the system every other year. Ensure that air can flow unrestricted through the radiator.

Ensure that the air grille is not clogged and that cooling air flows freely round the engine.

**Check the brakes as follows:**

1. Drive the roller **slowly** forward.

2. Push the reserve/parking brake knob (6). The brake warning lamp (9) shall light and the roller shall stop.

3. After checking the brakes, put the forward/reverse lever in neutral before resetting the reserve/parking brake knob.

4. Pull out the reserve/parking brake knob.
**Fuel tank - Filling**

Refuel the roller every day before starting work. Fill fuel up to the lower edge of the filler pipe. Use diesel fuel.

![Fig. 5 Fuel tank](image)

1. Filler cap

**Stop the engine. Press the filler nozzle against the filler pipe (1) to earth it while refuelling.**

(See the engine manufacturer’s recommendations with regard to quality of the fuel.)

---

**Scrapers Checking - Adjustment**

Ensure that the scrapers are undamaged. Adjust the scraper as follows:

1. Loosen the mounting bolts (1) and adjust the scraper in relation to the drum, tighten the mounting bolts.

2. If the scraper does not make contact all the way across the drum, loosen the adjusting screws (2) and push the scraper against the drum and then tighten the adjusting screws.

![Fig. 6 Drum](image)

1. Mounting bolts
2. Adjusting screws

---

**Hydraulic reservoir - Checking**

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

2. Top up with fresh hydraulic fluid if the level is 20 mm (0.8 in) or more below the upper edge of the sight glass, or if no fluid is visible in the sight glass.

![Fig. 7 Hydraulic fluid reservoir](image)

1. Fluid level glass
EVERY 10 HOURS OF OPERATION (Daily)

Hydraulic reservoir - Filling

Open the engine hood fully and screw off the filler cap (1) and top up with fresh fluid as required. See page 3 with regard to the right grade of hydraulic fluid.

Sprinkler system/drum
Checking - Cleaning

Fill with fresh water through the tank filter.

Make sure the sprinkler nozzles (1) are not clogged. Clean the nozzles as required, and the water filter that is located adjacent to the water pump, see fig. 10 and 11 below.

Nozzle
Dismantling - Cleaning

Dismantle the clogged nozzle. Blow the nozzle and strainer clean with compressed air, or replace with clean items and then clean the parts that are removed at a later opportunity.

Wear protective goggles when working with compressed air.
EVERY 10 HOURS OF OPERATION (Daily)

Pump system/drum
Checking - Cleaning

To clean, close the stop cock (2). Loosen the filter housing (1). Clean the insert and filter housing with water. Place one hand on the water pump, or listen, to check that the pump is working. There is also a drain cock on the end piece of the water pump.

Fig. 11 Pump system
1. Waterfilter
2. Stop cock
3. Waterpump
EVERY 50 HOURS OF OPERATION (Weekly)

Air cleaner
Checking the indicator

Make sure that the engine hood is fully open. Change or clean the main filter (4) fig.13 of the air cleaner when the indicator (1) is in the red zone while the engine is running at full revs.

![Air cleaner](Fig. 12 Air cleaner
1. Indicator)

Air cleaner
Dismantling - Assembly

1. Loosen the wing nut (5) and pull out the main filter (4). Do not remove the backup filter (2).

2. Wipe the outside of the filter housing clean with a clean rag. Change or clean the main filter.

![Air cleaner](Fig. 13 Air cleaner
1. Filter housing
2. Backup filter
3. Wing nut
4. Main filter
5. Wing nut)

Fit a new backup filter every third time the main filter is changed, or after cleaning it three times. The backup filter cannot be cleaned and reused.

Main filter - Cleaning with compressed air

3. Blow up and down the inside of the filter element. Hold the nozzle at least 20 or 30 mm (0.8 or 1.2 in) away from the pleats to avoid tearing the paper.

![Main filter](Fig. 14 Main filter)

Change the main filter after cleaning it five times.

Wear protective goggles when working with compressed air.
EVERY 50 HOURS OF OPERATION (Weekly)

Steering cylinder and steering joint - Lubrication

Risk of injury. Keep everyone clear of the articulated steering mechanism while the engine is running.

1. Turn the steering wheel fully to the left to gain access to all four lubricating nipples on the right-hand side of the machine. Switch off the engine and electric power.

2. Wipe all the nipples clean and lubricate each nipple with five strokes of the grease gun. Make sure that grease penetrates the bearings. Use grease recommended on page 3. Leave a little grease on the nipples after greasing. This will prevent dirt from entering the nipples.
Battery Checking

Check the electrolyte level

1. Open the engine cover fully.
2. Wipe the top of the battery.
3. Take off the cell caps and check that electrolyte level is about 10 mm (1/2 in) above the plates. Check the level of all cells. Top up with distilled water as required to the correct level. If ambient temperature is below freezing, the engine should be run for a while after topping up with distilled water, ie, there is otherwise a risk that the battery fluid will freeze.
4. Make sure the venting holes in the cell caps are not clogged. Refit the caps.
5. Battery terminals must be clean and well tightened. Clean the terminals if corroded and grease them with acid-free Vaseline.

Always release the negative cable first when disconnecting the battery.
When connecting the battery, always fit the positive cable first.

Dispose of the old battery properly when replacing it. The battery contains lead which is detrimental to the environment.

Never use an open flame when checking the battery. The electrolyte emits explosive gas while the alternator is charging.

Take care when using a high-pressure washing unit, hold the nozzle at a safe distance from the cooler.

Wear protective goggles when working with compressed air or high-pressure wash.

Ensure that the flow of air through the cooler is not obstructed.
Clean a dirty cooler using compressed air or a high-pressure washing unit.
Blow or wash the cooler in the opposite direction to the normal flow of cooling air.

Fig. 16 Engine compartment
1. Hydraulic fluid cooler

Fig. 17 Battery shelf
1. Battery

Fig. 18 Electrolyte level in battery
1. Cell cap
2. Electrolyte level
3. Plate
EVERY 250 HOURS OF OPERATION (Monthly)

Diesel engine - Oil change

ISUZU

1. Run the engine warm before draining.

![Warning] Ensure that ventilation is adequate (extractor) when running the engine indoors. (Hazardous carbon dioxide fumes).

![Warning] Switch off the engine and push the reserve/parking brake knob.

2. Place a receptacle for at least 8 litres underneath the drain plug.

![Warning] Risk of scalding when draining hot oil. Protect your hands and arms.

3. Unscrew the drain plug (1) and allow all of the oil to drain off. Refit the plug.

4. Fill with fresh engine oil, see page 3 or the engine manual with regard to the right grade of oil.
Hydraulic reservoir cap
Checking

Make sure that the reservoir cap is not clogged. Air must be able to flow freely in both directions through the cap. Clean with a little diesel oil if either direction is clogged, and blow clear with compressed air to ensure free flow. Replace the cap with a new one if this cannot be done.

![Fig. 20 Engine compartement](image)
1. Reservoir cap

Drum - Checking the oil level

1. Position the roller on a level surface and drive slowly forward until the oil plug (1) is in line with one of the inspection holes (2).

![Fig. 21 Drum, vibrator side](image)
1. Oil plug
2. Inspection hole

Switch off the engine and push the reserve/parking brake knob.

2. Screw out the plug and ensure that the oil level reaches the lower edge of the hole. Top up with fresh transmission oil as required, see page 3 with regard to the right quality of the oil.

3. Clean the magnetic oil plug (1) to remove any metal particles and then refit the plug.

Rubber elements and fastening bolts - Checking

1. Make sure that the rubber elements are undamaged and free from cracks.

2. Check that the mounting bolts are tight.

3. Change all the elements if more than 25% on one side of the drum have cracks that are deeper than 10 to 15 mm. (1/2 in.)

4. Check the rubber elements on both sides of the drum.
Controls - Lubrication

Lubricate the forward/reverse controls in the engine compartment with a few drops of oil. If the controls start to become stiff after a long period of use, take off the cover and the forward/reverse lever at the operator’s station and lubricate the mechanism.

Fig. 23 Engine compartment
1. Forward/Reverse controls

Controls - Lubrication

Lubricate the forward/reverse control mechanism. Take off the protective cover (1) by removing the screws (2) at the top of the cover, and lubricate the mechanism with oil.

Fig. 24 Operator’s position
1. Forward/Reverse control
2. Mounting screws

DEUTZ

1. Run the engine warm before draining.

Ensure that ventilation is adequate (extractor) when running the engine indoors. (Hazardous carbon dioxide fumes).

Place the roller on a level surface, switch the engine OFF and apply the reserve/parking brake.

2. Place a receptacle for at least 8 litres underneath the drain plug.

Risk of scalding when draining hot oil. Protect your hands and arms.

3. Unscrew the drain plug (1) and allow all of the oil to drain off. Refit the plug.

4. Fill with fresh engine oil, see page 3 or the engine manual with regard to the right grade of oil.

Fig. 25 Engine compartment, right-hand side
1. Oil drain
EVERY 500 HOURS OF OPERATION (Every 3 months)

Oil filter - Change

1. Remove the oil filter (1), discard it and fit a new one.

2. Ensure that the belt (2) is not cracked or otherwise damaged. Replace as required.

3. Check the belt tension. Tension the belt if it can be pressed down with the thumb by more than 10 mm at the middle between the two pulleys.

   See the engine manual for detailed instructions with the regard to changing the oil and filter, and tensioning the V-belt.

4. Start the engine and ensure that there is no leakage from the oil filter or drain plug.

   Ensure that ventilation is adequate (extractor) when running the engine indoors. (Hazardous carbon dioxide fumes).

5. Refit the engine protective plate.

Changing the fuel filter

ISUZU

1. Loosen, screw off and discard the fuel filter (1), and fit a new one.

2. Collect the fuel that runs out.

   See the engine manual for detailed instructions for changing the fuel filter.

3. Start the engine and ensure that the fuel filter is tight.

   Ensure that ventilation is adequate (extractor) when running the engine indoors. (Hazardous carbon dioxide fumes).
EVERY 500 HOURS OF OPERATION (Every 3 months)

Hydraulic fluid filter - Change

1. Loosen the six mounting screws (1).
2. Remove the protective plate (2).

3. Loosen the red cover (3) and pull up the filter cartridge (4).
4. Refit the red cap temporarily to prevent dust and dirt from entering the reservoir.

5. Loosen the filter cartridge (4) from the grip (5) and discard the cartridge.
6. Fit a new cartridge to the grip and insert the unit into the filter holder (6). Refit the red cover.
7. Start the engine and allow it to run at full revs for half a minute and ensure that the filter cover (3) does not leak.

Ensure that ventilation is adequate (extractor) when running the engine indoors. (Hazardous carbon dioxide fumes).
EVERY 1000 HOURS OF OPERATION (Yearly)

Hydraulic reservoir - Changing the oil

Drain off condensed water from the hydraulic reservoir via the drain plug (1).

⚠️ Be careful when draining off the water. Do not drop the plug so that hydraulic fluid runs out.

Drain as follows:
1. Put a can underneath the plug.
2. Loosen the plug and allow any water to run out.
3. Tighten the plug.

Changing the air cleaner

Change the main filter of the air cleaner even if it has not yet been cleaned the specified five times. See page 13 with regard to changing the filter.

Changing the fuel filter

1. Loosen, screw off and discard the fuel filter (1), and fit a new one.
2. Collect the fuel that runs out.

⚠️ See the engine manual for detailed instructions for changing the fuel filter.
3. Start the engine and ensure that the fuel filter is tight.

⚠️ Ensure that ventilation is adequate (extractor) when running the engine indoors. (Hazardous carbon dioxide fumes).
EVERY 1000 HOURS OF OPERATION (Yearly)

Changing the engine pre-filter

1. Loosen the hose clips (2) with the aid of a screwdriver.
2. Remove and discard the pre-filter (1).
3. Collect fuel that runs out.
4. Fit a new pre-filter and tighten the hose clips.
5. Start the engine and ensure that the pre-filter is tight.

Ensure that ventilation is adequate (extractor) when running the engine indoors. (Hazardous carbon dioxide fumes).

Fig. 35 Engine compartment
1. Pre-filter
2. Hose clips
Every 2000 Hours of Operation (Yearly)

Hydraulic fluid reservoir - Changing the fluid

Risk of scalding when draining hot oil. Protect your hands.

1. Arrange a vessel of at least 40 litres to drain the fluid.
2. Unscrew the drain plug (1) and allow all the fluid to run out and then refit the plug.
3. Fill with fresh hydraulic fluid in accordance with the quality recommendations on page 3.
4. Change the hydraulic filter, see page 20.
5. Start the engine and operate the various hydraulic functions, check the fluid level and top up as required, see page 10.

Ensure that ventilation is adequate (extractor) when running the engine indoors. (Hazardous carbon dioxide fumes).

1. Position the roller on a level surface and slowly drive the roller till the oil plug (1) is at the bottom.
2. Place a vessel for at least 6 litres under the plug.
3. Unscrew the plug and allow all the oil to drain off.
4. See page 17 with regard to filling with oil.

Drum - Changing the oil

Risk of scalding when draining hot oil. Protect your hands.

1. Position the roller on a level surface and slowly drive the roller till the oil plug (1) is at the bottom.
2. Place a vessel for at least 6 litres under the plug.
3. Unscrew the plug and allow all the oil to drain off.
4. See page 17 with regard to filling with oil.

Water tank - Draining

Remember the risk of freezing during the winter period. Drain the water tank, pumps and piping.

1. The water tank is drained most easily by screwing off the water filter (1). (A drain plug is also provided at the bottom of the tank).
EVERY 2000 HOURS OF OPERATION (Yearly)

Water pump - Draining

1. Open the drain cock (2) to empty the water pump (1).

Water tank - Cleaning

1. Clean the inside of the tank with water, mixed with a suitable detergent for cleaning the plastic surface.
2. Refit the water filter, or the drain plug, and check for leakage.

   The water tank is made of polythene plastic and is recyclable.

Fuel tank - Cleaning

The tank is easiest to clean when it is almost empty. Empty any remaining fuel and sediment using a suitable pump, eg, an oil draining pump (1). Collect the contents in a suitable receptacle.

   The fuel tank is made of polythene plastic and is recyclable.
LONG-TERM PARKING

The following directions must be followed when parking the machine for longer periods than one month.

The measures described apply for a standstill of up to six months.

Before reusing the roller again the items marked ✯ must be attended to.

**Fig. 42 Weather-protected roller**

<table>
<thead>
<tr>
<th>Component</th>
<th>Instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel engine</td>
<td>✯ See the manufacturer’s instructions in the engine manual that accompanies the roller.</td>
</tr>
<tr>
<td>Battery</td>
<td>✯ Remove the battery from the roller, clean the outside, ensure that the electrolyte level is correct and trickle-charge the battery once every month.</td>
</tr>
<tr>
<td>Air cleaner, exhaust pipe</td>
<td>✯ Cover the air cleaner, or its intake opening, with plastic foil or tape. Cover the opening of the exhaust pipe. This must be done to prevent the penetration of moisture into the engine.</td>
</tr>
<tr>
<td>Fuel tank</td>
<td>Fill the fuel tank fully, ie, to prevent condensation and rust.</td>
</tr>
<tr>
<td>Hydraulic reservoir</td>
<td>Drain off any condense water from the hydraulic reservoir</td>
</tr>
<tr>
<td>Sprinkler system</td>
<td>✯ Drain all water from the tank. Hoses, filter housing, and water pump must also be drained. Remove all sprinkler nozzles of the drum and wheels. Also drain the emulsion tank and hoses, filter housing and pump.</td>
</tr>
<tr>
<td>Steering cylinder, hinges, etc.</td>
<td>Lubricate the steering joint bearings, and both bearings of the steering cylinder with grease. Coat the piston rod of the steering cylinder with rust preventive grease. Also grease the hinges of the engine hood, seat guides, revs control and both ends (bright parts) of the forward/reverse control.</td>
</tr>
<tr>
<td>Covers, tarpaulin</td>
<td>✯ Lower the instrument shield on the steering column. Cover the whole machine with a tarpaulin.</td>
</tr>
<tr>
<td></td>
<td>NOTE: The tarpaulin must hang free from the ground (see figure 42). Store the roller indoors if possible, preferably at an even temperature.</td>
</tr>
</tbody>
</table>
**SPECIAL INSTRUCTIONS**

**Standard oils and other recommended fluids**

On leaving the factory the various systems and components are filled with oil or fluid as indicated on page 3 and are thus suitable for operation in ambient temperatures between \(-10°C (+15°F)\) and \(+40°C (+104°F)\). The following recommendations apply for operation in higher ambient temperatures up to a maximum of \(+50°C (+122°F)\):

**Higher ambient temperature, maximum +50°C (+122°F)**

The engine can be used at this temperature using normal oil but for other components the following oils must be used:

- Hydraulic system: Shell Tellus Oil T100 or equivalent.
- Other components using transmission oil: Shell Spirax HD 85W/140 or equivalent.

**Temperature**

Temperature limits apply to standard versions of the roller.

Rollers equipped with additional fittings such as noise absorbents, etc., may require extra observation in the higher temperature ranges.

**High-pressure wash**

Do not direct the water jet at the filler cap (applies to both fuel tank and the hydraulic reservoir). This is especially important when using a high-pressure jet.

Put a plastic bag over the filler cap and secure with an elastic band. This will prevent water under pressure from being forced through the breather hole, which would otherwise cause malfunctioning, eg, clogging of the filter. Do not direct the jet against electric components or the instrument panel.

**Fire fighting**

In the event of fire on the machine the ABE powder type extinguisher should preferably be used. The BE carbon dioxide type extinguisher is also suitable.

**Protection frame (ROPS), safety cab**

If the roller is equipped with a protection frame (ROPS, Roll Over Protecting Structure), or a safety cab, then no welding or drilling of holes whatsoever is permitted on the protection frame or the cab. Never attempt to repair a damaged frame or cab, it must be replaced with a new one.

**Starting assistance**

When using an auxiliary starting battery, always connect its positive terminal to the positive terminal of the roller battery, and negative to negative.
The machine is equipped with a 12 volt electrical system and an alternator.

![Warning symbol]
Connect the battery to the correct polarity. (- to ground).
The cable between the alternator and battery must not be disconnected while the engine is running.

![Warning symbol]
Before carrying out any electric welding on the machine, disconnect the battery grounding cable and then all terminals to the alternator.

The electrical regulating and control system is protected by flat-pin fuses fitted in the fuse boxes located on the steering column.

Fig. 43 and 44 show the ampere rating of the various fuses and their function.
The left-hand fuse box is fitted on all machines.
The right-hand fuse box is fitted only on machines that are equipped with electrical accessories.

**Fig. 43** Left fuse box (Standard)
- 10 A 1. Brake valve, warning panel, hour meter
- 10 A 2. Vibration valve
- 7.5 A 3. Water pump
- 7.5 A 4. Horn
- 7.5 A 5. Water pump (combi)
- 6. Reversing signal

**Fig. 44** Right fuse box (Accessories)
- 10 A 1. Front headlights, position light, left, rear light, right
- 10 A 2. Rear headlights, position light, right rear light, left, number plate illumination
- 5 A 3. Direction indicators, right
- 5 A 4. Direction indicators, left
- 10 A 5. Hazard beacon
- 10 A 6. Direction indicator relay