• DESCRIPTION
• OPERATION
• MAINTENANCE

OPERATORS MANUAL
CC 21
VIBRATORY ROLLER
SERIES 2
OM-10205 Eng
## CONTENTS

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**Fig 1b**

**Fig 1c**

**Fig 1a** Instrument panel
1. BEFORE STARTING THE MACHINE, YOU MUST HAVE READ AND UNDERSTOOD THE CONTENTS OF THE OPERATING INSTRUCTIONS.

2. RELEVANT MACHINE MAINTENANCE AND OPERATING INSTRUCTIONS MUST ALSO BE OBSERVED.

3. ONLY TRAINED AND EXPERIENCED OPERATORS MAY OPERATE THE MACHINE.

4. NEVER USE THE MACHINE IF IT IS IN NEED OF ADJUSTMENT AND/OR REPAIR.

5. OBSERVE ALL SAFETY PRECAUTIONS.

6. REMEMBER THE RISK OF OVERTURNING. AVOID DRIVING ADJACENT TO LARGE HOLES IN THE GROUND OR NEAR EDGES THAT MAY GIVE WAY.

7. BEFORE DRIVING, CHECK THE PERFORMANCE OF ALL CONTROLS, THE BRAKES AND STEERING.

8. BEFORE STARTING:
   - MOVE THE FORWARD/REVERSE LEVER TO THE NEUTRAL POSITION
   - ADJUST THE POSITION OF THE SEAT SO THAT THE CONTROLS ARE EASY TO REACH.

9. DRIVE WITH EXTRA CARE ON UNEVEN SURFACES.

10. BEFORE STARTING TO DRIVE AND WHEN CHANGING THE DIRECTION OF TRAVEL, CHECK THAT NO-ONE IS IN YOUR WAY.

11. NEVER CARRY PASSENGERS ON THE MACHINE.

12. CLIMB ONTO AND LEAVE THE MACHINE ONLY WHEN IT IS STATIONARY. USE THE STEPS, HANDLES AND HANDRAILS PROVIDED.

13. BEFORE LEAVING THE MACHINE, SWITCH OFF VIBRATION, MOVE THE FORWARD/REVERSE LEVER TO THE NEUTRAL POSITION, APPLY THE HANDBRAKE AND STOP THE ENGINE.

14. KEEP THE MACHINE CLEAN; AVOID DIRT AND GREASE ON THE OPERATOR'S PLATFORM.

15. KEEP ALL SIGNS AND STICKERS CLEAN AND LEGIBLE.

16. BEFORE CARRYING OUT REPAIR AND SERVICE WORK, STOP THE ENGINE, FIT BLOCKS UNDER THE DRUMS AND LOCK THE ARTICULATED JOINT.

17. SAFETY PRECAUTIONS TO BE OBSERVED WHEN REFUELLING:
   - STOP THE ENGINE
   - AVOID NAKED FLAMES
   - SHORT-CIRCUIT THE FUEL FILLER NOZZLE TO THE FRAME, TO AVOID SPARKS BEING GENERATED AT THE FILLER OPENING.

18. MAKE NO CHANGES/MODIFICATIONS TO THE MACHINE THAT MAY AFFECT SAFETY. ALL MODIFICATIONS REQUIRE PRIOR APPROVAL IN WRITING FROM DYNAPAC.
DESCRIPTION OF THE FUNCTIONS OF INSTRUMENTS AND CONTROLS

Fig 2a Instrument panel

1 Compaction-meter *
2 Speedometer
3 Frequency meter
4 Forward/reverse lever
5 Vibration, ON/OFF
6 Vibration selector, MAN-O-AUT
7 Amplitude selector - front drum
8 Amplitude selector - rear drum
9 Sprinkler switch, MAN-O-AUT
10 Frequency meter, ON/OFF
11 Throttle
12 Stop control (only Deutz)
13 Direction of travel indicator *
14 Working lights, ON/OFF
15 Rotating beacon *
16 Driving lights, ON/OFF
17 Hazard warning lamps *
18 Horn
19 Handbrake switch
20 Switch
21 Starter switch
22 Handbrake warning lamp
23 Emergency stop control
24 Oil pressure warning lamp
25 Voltmeter
26 Fuel gauge
27 Temperature gauge - hydraulic oil
28 Temperature gauge - engine coolant/oil
29 Full/dipped headlights (selector)
30 Air cleaner warning lamp
31 Tachometer/operating hour meter

* Accessory
# Description of the Functions of Instruments and Controls

---

**Fig 3**

<table>
<thead>
<tr>
<th>No. in Fig 3</th>
<th>Description</th>
<th>Symbol</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Compaction meter (accessory)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Speedometer</td>
<td></td>
<td>This shows the roller speed from 0 to 10.5 km/h (0 to 6.5 mph).</td>
</tr>
<tr>
<td>3</td>
<td>Vibration frequency meter</td>
<td>![Vibration Icon]</td>
<td>This shows the vibration frequency of each drum. It is switched on with (10).</td>
</tr>
<tr>
<td>4</td>
<td>Forward/reverse lever</td>
<td></td>
<td>Move the lever to the desired direction of travel. The driving speed is proportional to the displacement of the lever from neutral. The roller is braked by moving the lever to the neutral position. Note also that the diesel engine can only be started with the lever in the neutral position.</td>
</tr>
<tr>
<td>5</td>
<td>Vibration ON/OFF</td>
<td></td>
<td>Depress this button once to start vibration, and once again to stop vibration.</td>
</tr>
<tr>
<td>6</td>
<td>Vibration mode selector</td>
<td>MAN O AUT</td>
<td>In the MAN position, the vibration is continuous. In the 0 position, vibration is switched off. In the AUTO position, vibration is switched ON/OFF automatically when driving backwards and forwards.</td>
</tr>
</tbody>
</table>
### Description of the Functions of Instruments and Controls — contd.

<table>
<thead>
<tr>
<th>No. in Fig 3</th>
<th>Description</th>
<th>Symbol</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Amplitude selectors</td>
<td></td>
<td>In the HIGH position, the amplitude will be 0.71 mm (0.028 in) and the centrifugal force 7 250 kgf (15 500 lb) per drum.</td>
</tr>
<tr>
<td>7</td>
<td>Front drum</td>
<td>![Waveform Symbol]</td>
<td>In the LOW position, the amplitude will be 0.35 mm (0.014 in) and the centrifugal force 3 600 kgf (7 800 lb) per drum.</td>
</tr>
<tr>
<td>8</td>
<td>Rear drum</td>
<td>![Waveform Symbol]</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Drum sprinkler switch (operating switch)</td>
<td>![Raindrop Symbol]</td>
<td>This controls the flow of water to the front and rear drums. In the MAN position sprinkling is continuous. In the 0 position, sprinkling is switched off. In the AUTO position, sprinkling is switched ON/OFF automatically when driving backwards and forwards.</td>
</tr>
<tr>
<td>10</td>
<td>Vibration frequency meter switch</td>
<td></td>
<td>In the ON (forward) position, (3) indicates the vibration frequency of the front drum. In the 0 position, (3) is switched off. In the ON position (towards the rear), (3) indicates the vibration frequency of the rear drum.</td>
</tr>
<tr>
<td>11</td>
<td>Throttle (diesel)</td>
<td>![Throttle Symbol]</td>
<td>This is released/locked using the central button. To increase the engine speed, pull out the control. To decrease the engine speed, push in the control. For fine adjustment, turn the handle: anti-clockwise - to increase speed clockwise - to decrease speed</td>
</tr>
</tbody>
</table>
### Description of the Functions of Instruments and Controls

- **Fig 3**

<table>
<thead>
<tr>
<th>No. in Fig 3</th>
<th>Description</th>
<th>Symbol</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Stop control (Diesel only Deutz)</td>
<td><img src="image" alt="Stop" /></td>
<td>To stop the engine, pull this out.</td>
</tr>
<tr>
<td>13</td>
<td>Direction indicator (switch)</td>
<td><img src="image" alt="Direction" /></td>
<td>This is used for indicating the direction of turning (accessory).</td>
</tr>
<tr>
<td>14</td>
<td>Working lights switch</td>
<td><img src="image" alt="Lights" /></td>
<td>ON/OFF switch for two working lights to the rear.</td>
</tr>
<tr>
<td>15</td>
<td>Rotating beacon (switch)</td>
<td></td>
<td>(Accessory)</td>
</tr>
<tr>
<td>16</td>
<td>Driving lights (switch)</td>
<td><img src="image" alt="Lights" /></td>
<td>ON/OFF switch for road lights</td>
</tr>
<tr>
<td>17</td>
<td>Hazard warning lamps (switch)</td>
<td></td>
<td>(Accessory)</td>
</tr>
<tr>
<td>18</td>
<td>Horn (button)</td>
<td><img src="image" alt="Horn" /></td>
<td>When this is depressed, the horn will sound.</td>
</tr>
</tbody>
</table>
| 19           | Handbrake switch                                  | ![Handbrake](image) | In the ON position (lamp 21 lit), the handbrake is applied (if the engine is running).  

In the OFF position (lamp 21 extinguished), the handbrake is not applied.  

Note: The brake will be applied automatically, if the engine stops or if the hydraulic pressure in the drive circuit drops to zero.
DESCRIPTION OF THE FUNCTIONS OF INSTRUMENTS AND CONTROLS — contd.

![Diagram of instrument panel]

No. in Fig 3 | Description                  | Symbol | Function                                                                                                                                 |
-------------|------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------|
20           | Switch                       | ![Circle symbol] | In the O position, the electric starter circuit is broken. In the I position, all electrical instruments and relays, except the starter motor circuit, are energized. |
21           | Starter switch               | ![Vertical bar] | Push the starter switch and the starter motor will be engaged.                                                                         |
22           | Handbrake warning lamp       | ![Circle with right-pointing arrow] | The lamp will light up when the brake is applied or if the handbrake switch (19) is on ON or if (22) is depressed. The brake will also be applied if the engine stops or if the hydraulic pressure in the drive circuit drops to zero. |
23           | EMERGENCY STOP CONTROL       | ![Triangle symbol] | The OFF (pulled-out) position is the normal one when driving. In the ON (depressed) position, the brakes are applied and the roller will stop. |
24           | Oil pressure warning lamp    | ![Oil symbol with left-pointing arrow] | A LIT warning lamp indicates that the lubricating oil pressure is too low. Stop the engine and find the fault.                           |
25           | Voltmeter                    | ![Plus and minus symbols] | This shows the voltage in the electrical system. The normal range is 12 - 15 volts.                                                  |
### Description of the Functions of Instruments and Controls — Contd.

<table>
<thead>
<tr>
<th>No. in Fig 3</th>
<th>Description</th>
<th>Symbol</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>Fuel gauge</td>
<td><img src="Image" alt="Fuel Gauge Symbol" /></td>
<td>This shows the amount of fuel in the tank.</td>
</tr>
<tr>
<td>27</td>
<td>Temperature gauge - hydraulic oil</td>
<td><img src="Image" alt="Temperature Gauge Symbol" /></td>
<td>This shows the temperature of the oil in the hydraulic system. The normal temperature is 65°C to 80°C (150°F to 175°F). Stop the engine if the gauge reading exceeds 85°C (185°F) and find the fault.</td>
</tr>
<tr>
<td>28</td>
<td>Temperature gauge</td>
<td><img src="Image" alt="Temperature Gauge Symbol" /></td>
<td>This shows the working temperature of the engine coolant. The normal temperature range is 82°C to 93°C (180°F to 200°F).</td>
</tr>
<tr>
<td></td>
<td>John Deere: Engine coolant</td>
<td><img src="Image" alt="Temperature Gauge Symbol" /></td>
<td>This shows the engine oil temperature.</td>
</tr>
<tr>
<td></td>
<td>Deutz: Engine oil</td>
<td><img src="Image" alt="Temperature Gauge Symbol" /></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Headlights beam selector (and warning lamp)</td>
<td><img src="Image" alt="Light Beam Symbol" /></td>
<td>This switches the headlamps from FULL beam to DIPPED beam or vice versa.</td>
</tr>
<tr>
<td>30</td>
<td>Air cleaner warning lamp</td>
<td><img src="Image" alt="Warning Lamp Symbol" /></td>
<td>If the lamp lights up at full speed, it indicates that the air cleaner must be washed or replaced.</td>
</tr>
<tr>
<td>31</td>
<td>Tachometer/operating hour meter</td>
<td><img src="Image" alt="Tachometer Symbol" /></td>
<td>This shows the engine speed in hundreds of rpm.</td>
</tr>
</tbody>
</table>
To adjust the seat/control console unit, lift (1) upwards. The seat/control unit console may be set in one of three positions: central, 70° to the right or 70° to the left. The lever (1) is spring-loaded to return to the locked position.

2 Adjust the operator's seat so that the controls are easy to reach.

The following adjustments may be made:

- Movement of the seat along the longitudinal axle of the machine.
- The slope of the backrest.
- The seat springing - to suit the weight of the operator.
BEFORE STARTING

1 Ensure that the daily maintenance has been carried out (see the Maintenance Instructions).

Before driving on asphalt, check that the water tanks have been filled.

2 Check that the emergency stop control (23) is pulled out.

3 Check that the battery master switch (1) is in the ON position.

GOVERNOR

The machine is equipped with an adjustable governor that may be disengaged when transport-driving the machine.

Fig 6 Instrument panel
22 Emergency stop control

Fig 7
1 Battery master switch

Fig 8 Governor
1 Disengagement knob
2 Speed-limit stops
Fig 9 Instrument panel

4 Forward/reverse lever
7 Amplitude selector
- front drum
8 Amplitude selector
- rear drum
19 Handbrake, ON/OFF
20 Switch
21 Starter switch
24 Oil pressure
- warning lamp
25 Voltmeter
26 Fuel gauge
27 Temperature gauge
- hydraulic oil
28 Temperature gauge
- engine/coolant oil
30 Air cleaner
- warning lamp
31 Tachometer/operating hour meter

1 Move the forward/reverse lever (4) to the NEUTRAL position. The diesel engine will not start in other lever position.

2 Move the amplitude selectors (7) and (8) in the NEUTRAL position. Check that the stop control (12) is depressed (only Deutz).

3 Depress the button on the throttle (11) and pull out the throttle to 1/4 speed.

Turn the switch (20) to the I position. Check that the fuel gauge (26) and voltmeter (25) give readings and that the oil pressure warning lamp (24) and air cleaner warning lamp (30) are alight.

4 Push the starter switch (21). As soon as the engine has started, release the starter knob, which will then spring back to the I position.

NOTE If the engine does not start, wait briefly before attempting to start it again.

When starting at temperatures below +4°C (40°F) a small amount of starter gas may be sprayed into the air cleaner before attempting to start.
Fig 11 Instrument panel

4 Forward/reverse lever
7 Amplitude selector
- front drum
8 Amplitude selector
- rear drum
19 Handbrake, ON/OFF
20 Switch
21 Starter switch
24 Oil pressure
warning lamp
25 Voltmeter
26 Fuel gauge
27 Temperature gauge
- hydraulic oil
28 Temperature gauge
- engine/coolant oil
30 Air cleaner
warning lamp
31 Tachometer/operating hour meter

5 Warm up the engine at a speed of 800 to 1000 rpm for 5 to 10 minutes, depending on the air temperature.

6 While warming up the engine, check that the voltmeter (25) indicates 12 to 14 V and that the warning lamps (24) and (29) have gone out.

Check that the gauges for engine coolant/oil temperature (28) and hydraulic oil temperature (27) give readings when the engine has been warmed up.
1 Open the throttle (11) until the engine speed is 2400 rpm. Make fine adjustments by turning the control: Anti-clockwise - increase. Clockwise - decrease.

2 Release the handbrake with (19) (see Fig 9).

3 Check that the steering system is in working order by turning the steering wheel once to the left and once to the right while the roller is stationary.

4 When driving on asphalt, switch on the sprinkler unit (9).

5 Carefully move the forward/reverse lever (4) forwards or backwards - depending on the required direction of travel.

The speed of the machine is proportional to the displacement of the lever from the NEUTRAL position.

NOTE The roller speed should always be regulated by the forward/reverse lever and not by the engine speed.

6 Check the condition of the brakes as directed in the Maintenance Instructions. This check should be carried out sufficiently often for you to be completely sure that the brakes are fully operative.

7 While driving check that the gauges show normal readings and that the warning lamps are not alight.

Max. hydraulic oil temperature (27) approx. 85°C (approx. 185°F).

John Deere: Max. coolant temperature (28) approx. 100°C (approx. 210°F).

Deutz: Engine oil temperature (28). At normal working temperature, the pointer will be in the green field. If the pointer moves to the red field, this indicates that the engine is too hot and must be stopped immediately.

NOTE If the horn sounds, it may indicate that the fan belt has broken. Stop the engine immediately. Find the fault and remedy it.
**BRAKING**

Braking is normally carried out by means of the forward/reverse lever. The hydrostatic transmission brakes the drums when the lever is set to the NEUTRAL position.

There is a multiple-plate brake in each of the torque hubs, which is engaged when the diesel engine stops or when the hydraulic pressure in the drive circuit drops to 0.

**Emergency brake**

⚠️ IN AN EMERGENCY, DEPRESS THE EMERGENCY STOP CONTROL (23), SEE FIG 6.

When the roller is braking, hold the steering wheel firmly: after braking reset (23).

**STOPPING**

1. Switch off vibration.
2. Stop the roller by moving the forward/reverse lever to the NEUTRAL position.
3. Push in the throttle until the engine idles (800 to 1 000 rpm). Let the engine run for a few minutes.
4. Pull out the stop control (12) only Deutz.
5. Turn the starter knob to the 0 position.

**VIBRATION/DRIVING**

Setting — high/low amplitude

Vibration must not be engaged when the machine is stationary.

Vibration of the drums can be set separately by means of switches (7) and (8), so that the front and rear drums have different amplitudes, i.e. high front - low rear or vice versa.

**NOTE** Amplitude resetting must not be carried out when the vibration motor is in operation. Wait therefore a few seconds before resetting.

Fig 15

7 Amplitude selector
   - front drum
8 Amplitude selector
   - rear drum

14  CC 21  0-10205  ENG
When the vibration mode selector (6) is in the MAN position, engagement and disengagement of vibration of the front and rear drums is achieved using the switch (5) in the forward/reverse lever.

The roller is also fitted with an automatic vibration control, which ensures that vibration is disengaged during turning (when the forward/reverse control lever passes the neutral position).

An adjustment for the engagement of vibration at various operating speeds can be carried out inside the right-hand instrument plate (1).

Fig 17 shows the adjustment mechanism.

NEVER PARK THE ROLLER WITH THE DIESEL ENGINE RUNNING WITHOUT THE HANDBRAKE SWITCH (19, FIG 2), BEING IN THE "ON" POSITION.

When parking for brief periods with the diesel engine running, the brake control (19), see Fig 2, should be in the ON position. The handbrake warning lamp (22) should be alight.

The roller is also fitted with a parking brake, which is automatically applied when the diesel engine stops or when the hydraulic pressure in the drive circuit drops to 0. When parking on an incline with the diesel engine switched off, block the drums with brake blocks (see Fig. 18).

Make sure that the roller is parked in a safe place so as to avoid traffic hazards. Also, take into account the risk of frost in cold weather. Top up the anti-freeze in the engine cooling system (refer to the Maintenance Instructions) and in the roller water tanks.
TOWING

Alt. 1
Short-distance towing with the engine running

The roller may be moved up to 300 m (1000 ft) in the following manner.

- Let the engine idle. The brakes are then dis-engaged automatically.

⚠ BLOCK THE DRUMS! THE ROLLER CAN MOVE WHEN (3) IS OPERATED.

- Remove the locking screw (2) on the flushing valve (1) and pull the lever (3) upwards.

⚠ WHEN TOWING DOWNHILL THE ROLLER MUST BE COUNTERBRAKED (SEE FIG. 20).

Do not forget to reset the towing valve lever (3) to its original position after towing.

Fig 19
1 Flushing valve
2 Locking screw
3 Lever for disengagement during towing

Fig 20
1 Direction of travel
2 Counter braking force

⚠ BLOCK THE DRUMS! THE ROLLER CAN MOVE WHEN (3) IS OPERATED.

- Remove the brakes from the torque hubs.
- Remove the screw (2) on the flushing valve (1) and pull the lever (3) upwards. See Fig 19.

⚠ WHEN TOWING DOWNHILL THE ROLLER MUST BE COUNTERBRAKED (SEE FIG 20).

- Do not forget to refit the brakes to the torque hubs after towing has been completed.
- Reset the towing valve lever (3) to its original position after towing (see Fig 19). Lock it with the screw (2).
LIFTING INSTRUCTIONS

Before lifting the roller, ensure that the articulated joint is prevented from moving, by swinging out the arm and locking it across the articulated joint (see Fig 21).

Connect the lifting chains to the lifting hooks and ensure that no parts are caught between the machine and the chains when lifting.

NOTE STEEL WIRES, CHAINS, ETC. MUST CONFORM TO RELEVANT REQUIREMENTS.

Fig 21
1 Locking device

⚠️ DO NOT WALK UNDER A SUSPENDED LOAD. ENSURE THAT THE LIFTING TACKLE HOOKS ARE SECURELY FITTED IN THE CORRECT POSITIONS.

Weight: 6,600 kg (14,550 lb)

Fig. 22

DRIVING AFTER LIFTING

Do not forget to reset the locking device (1, Fig 23), before starting the engine.

Fig 23
1 Locking device
MAINTENANCE

From Serial No 476 004

Diesel engine: John Deere 4239DF, Deutz F4L 912

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<td>Maintenance schedule: Deutz</td>
<td>2</td>
<td>19</td>
</tr>
<tr>
<td>Maintenance schedule: John Deere</td>
<td>6</td>
<td>26</td>
</tr>
<tr>
<td>Daily</td>
<td>10</td>
<td>32</td>
</tr>
<tr>
<td>Weekly</td>
<td>15</td>
<td>35</td>
</tr>
</tbody>
</table>

READ THESE INSTRUCTIONS CAREFULLY BEFORE STARTING ANY SERVICE WORK.

Correct maintenance is essential to ensure that the roller will give many years of satisfactory service and the instructions given here should therefore be carefully followed.

Use the appropriate engine instruction manual in conjunction with these instructions.

**LUBRICANTS**

A B C and D refer to the maintenance schedule.

Always use specified lubricants in the stated amounts. Excessive or insufficient grease or oil will cause parts to run hot, thus inducing rapid wear.

**A GREASE**

lithium base with EP additive (lead oleate), NLGI No. 2, Shell Alvania EP Grease 2.

**B ENGINE OIL**

for API Service CD/SE, SAE 10W/30

**B ENGINE OIL**

for API Service CD/SE, SAE 15W/40

The instructions for the diesel engine (oil change intervals, etc.) described in the manufacturer’s instruction manual should be followed, in addition to those listed here.

<table>
<thead>
<tr>
<th>Air temperature</th>
<th>Viscosity</th>
<th>Viscosity</th>
</tr>
</thead>
<tbody>
<tr>
<td>°C</td>
<td>°F</td>
<td>DEUTZ</td>
</tr>
<tr>
<td>-10 - +30</td>
<td>-14 - +86</td>
<td>SAE 10W/30</td>
</tr>
<tr>
<td>-10 - +50</td>
<td>-14 - +122</td>
<td>SAE 20W/40</td>
</tr>
<tr>
<td>+20 - +50</td>
<td>+68 - +122</td>
<td>SAE 40</td>
</tr>
</tbody>
</table>

**C HYDRAULIC OIL**

with anti-wear additive - Shell Tellus oil T 68

**D LUBRICATING OIL**

SAE 80W/90 HD (API, GL-5)

Note

Other lubrication recommendations apply if the roller is to be used under exceptionally hot or cold conditions. Refer to the "Special instructions" or contact DYNAPAC.
MAINTENANCE SCHEDULE
ROLLER WITH DEUTZ F4L 912 ENGINE

1 Water tank - strainer
2 Engine - V-belt monitor
3 Engine - V-belts
4 Engine - fuel filter
5 Air cleaner
6 Engine - valves
7 Hydraulic oil cooler
8 Water filter
9 Scrapers
10 Drum - oil level
11 Drum - oil filler plug
12 Pump drive - oil level
13 Fuel tank - drain plug
14 Hydraulic tank - oil drain plug
15 Articulated joint
16 Pump drive - oil drain
17 Engine - oil drain
18 Engine - fuel feed pump
19 Engine - oil level
20 Engine - oil filter
21 Sprinkler - strainer
22 Torque hub
23 Battery
24 Fuel tank
25 Hydraulic oil filter
26 Hydraulic oil tank
27 Engine cover - grease nipples
28 Shock absorbers

Fig 1 Service points - Deutz
### EVERY DAY (every 10 hours of operation)

<table>
<thead>
<tr>
<th>Item</th>
<th>Operation with DEUTZ engine</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>Fuel tank - replenish</td>
<td>10</td>
</tr>
<tr>
<td>19</td>
<td>Engine oil level - check</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>Air cleaner indicator lamp - check/filter element - clean</td>
<td>11</td>
</tr>
<tr>
<td>8, 21</td>
<td>Water filters and sprinklers - check</td>
<td>13</td>
</tr>
<tr>
<td>26</td>
<td>Oil level in hydraulic tank - check</td>
<td>14</td>
</tr>
<tr>
<td>9</td>
<td>Brakes - check</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Scrapers - check</td>
<td>14</td>
</tr>
</tbody>
</table>

### EVERY WEEK (every 50 hours of operation)

<table>
<thead>
<tr>
<th>Item</th>
<th>Operation with DEUTZ engine</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>Battery - check</td>
<td>15</td>
</tr>
<tr>
<td>28</td>
<td>Shock absorbers and mounting screws - check</td>
<td>15</td>
</tr>
<tr>
<td>10</td>
<td>Drum oil levels - check</td>
<td>15</td>
</tr>
<tr>
<td>15</td>
<td>Steering cylinder mountings and articulated joint bearings - grease</td>
<td>16</td>
</tr>
<tr>
<td>26</td>
<td>Hydraulic oil tank filler cap - check</td>
<td>16</td>
</tr>
<tr>
<td>6</td>
<td>Engine valve clearances - check</td>
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</tbody>
</table>

### EVERY 14 DAYS (every 100 hours of operation)

<table>
<thead>
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<th>Operation with DEUTZ engine</th>
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<tbody>
<tr>
<td>7</td>
<td>Engine cooling fins and exterior of hydraulic oil cooler - clean</td>
<td>17</td>
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### EVERY MONTH (every 200 hours of operation)

<table>
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<tbody>
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<td>Pump drive oil level - check</td>
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<tr>
<td>25</td>
<td>Hydraulic oil filter - replace</td>
<td>19</td>
</tr>
<tr>
<td>1</td>
<td>Water tank strainer - clean</td>
<td>19</td>
</tr>
<tr>
<td>2</td>
<td>V-belt monitor - check</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>Engine V-belt tension - check</td>
<td>20</td>
</tr>
<tr>
<td>17</td>
<td>Engine oil - change</td>
<td>22</td>
</tr>
<tr>
<td>20</td>
<td>Engine oil filter - replace</td>
<td>22</td>
</tr>
<tr>
<td>27</td>
<td>Controls, hinges and joints - grease</td>
<td>23</td>
</tr>
<tr>
<td>22</td>
<td>Torque hubs oil level - check</td>
<td>24</td>
</tr>
</tbody>
</table>

* See the engine instruction manual.

During running-in, change the engine oil and torque hub oil and replace the engine oil filter after 50 hours of operation.
Fig 1 Service points - Deutz

1 Water tank - strainer
2 Engine - V-belt monitor
3 Engine - V-belts
4 Engine - fuel filter
5 Air cleaner
6 Engine - valves
7 Hydraulic oil cooler
8 Water filter
9 Scrapers
10 Drum - oil level
11 Drum - oil filler plug
12 Pump drive - oil level
13 Fuel tank - drain plug
14 Hydraulic tank - oil drain plug
15 Articulated joint
16 Pump drive - oil drain
17 Engine - oil drain
18 Engine - fuel feed pump
19 Engine - oil level
20 Engine - oil filter
21 Sprinkler - strainer
22 Torque hub
23 Battery
24 Fuel tank
25 Hydraulic oil filter
26 Hydraulic oil tank
27 Engine cover - grease nipples
28 Shock absorbers
### EVERY THREE MONTHS (every 500 hours of operation)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
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<tbody>
<tr>
<td>6</td>
<td>Diesel engine valve clearance - check</td>
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### EVERY SIX MONTHS (every 1000 hours of operation)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
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</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>Torque hub oil - change</td>
<td>26 D</td>
</tr>
<tr>
<td>24</td>
<td>Fuel tank - drain</td>
<td>27</td>
</tr>
<tr>
<td>4</td>
<td>Fuel filter - replace</td>
<td>28</td>
</tr>
<tr>
<td>-</td>
<td>Fuel system - bleed</td>
<td>28</td>
</tr>
<tr>
<td>18</td>
<td>Fuel feed pump strainer - clean</td>
<td>29</td>
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### EVERY YEAR (every 2000 hours of operation)

<table>
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<tr>
<th>Item</th>
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<tbody>
<tr>
<td>12</td>
<td>Pump drive oil - change</td>
<td>32 D</td>
</tr>
<tr>
<td>10</td>
<td>Drum oil - change</td>
<td>33 D</td>
</tr>
<tr>
<td>14</td>
<td>Hydraulic tank - change oil and clean interior</td>
<td>33 C</td>
</tr>
<tr>
<td>13</td>
<td>Fuel tank - empty and clean</td>
<td>34</td>
</tr>
<tr>
<td>1</td>
<td>Water tanks - empty and clean</td>
<td>34</td>
</tr>
</tbody>
</table>

* See the engine instruction manual.

During running-in, change the engine oil and torque hub oil and replace the engine oil filter after 50 hours of operation.
Fig 2  Service points - John Deere

1 Water tank - strainer
2 Engine - V-belts
3 Cooling system - filler cap
4 Engine - air box drain tube
5 Air cleaner
6 Engine - fuel filter
7 Engine - valves
8 Engine - fuel feed pump
9 Engine - oil filler cap
10 Water filter
11 Scrapers
12 Drum - oil level plug
13 Drum - oil filler plug
14 Pump drive - oil level plug
15 Fuel tank - drain
16 Hydraulic tank - oil drain
17 Articulated joint
18 Pump drive - oil drain
19 Engine - oil drain
20 Engine - oil filter
21 Engine - oil level
22 Sprinkler - strainer
23 Torque hub
24 Battery
25 Fuel tank
26 Hydraulic oil filter
27 Hydraulic oil tank
28 Engine cover - grease nipples
29 Shock absorbers
## EVERY DAY (every 10 hours of operation)

<table>
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<th>Item</th>
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<tbody>
<tr>
<td>25</td>
<td>Fuel tank - replenish</td>
<td>10</td>
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<tr>
<td>20</td>
<td>Engine oil level - check</td>
<td>10 (B2)</td>
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<tr>
<td>5</td>
<td>Air cleaner indicator lamp - check/filter element</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>- clean</td>
<td></td>
</tr>
<tr>
<td>22, 10</td>
<td>Water filters and sprinklers - check</td>
<td>13</td>
</tr>
<tr>
<td>27</td>
<td>Oil level in hydraulic tank - check</td>
<td>13 (C)</td>
</tr>
<tr>
<td></td>
<td>- Brakes - check</td>
<td>14</td>
</tr>
<tr>
<td>3</td>
<td>Coolant level - check</td>
<td>14</td>
</tr>
<tr>
<td>11</td>
<td>Scrapers - check</td>
<td>14</td>
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</tbody>
</table>

## EVERY WEEK (every 50 hours of operation)

<table>
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<tr>
<th>Item</th>
<th>Task Description</th>
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<tbody>
<tr>
<td>24</td>
<td>Battery - check</td>
<td>15</td>
</tr>
<tr>
<td>29</td>
<td>Shock absorbers and mounting screws - check</td>
<td>15</td>
</tr>
<tr>
<td>12</td>
<td>Drum oil levels - check</td>
<td>15 (D)</td>
</tr>
<tr>
<td>17</td>
<td>Steering cylinder mountings and articulated joint bearings - grease</td>
<td>16 (A)</td>
</tr>
<tr>
<td>27</td>
<td>Hydraulic oil tank filler cap - check</td>
<td>16</td>
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</table>

## EVERY 14 DAYS (every 100 hours of operation)

<table>
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<tr>
<th>Item</th>
<th>Task Description</th>
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</thead>
<tbody>
<tr>
<td>19</td>
<td>Engine oil - change</td>
<td>18 (B2)</td>
</tr>
<tr>
<td>3</td>
<td>Radiator and oil cooler - clean the exteriors</td>
<td>18</td>
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</table>

## EVERY MONTH (every 200 hours of operation)

<table>
<thead>
<tr>
<th>Item</th>
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</thead>
<tbody>
<tr>
<td>14</td>
<td>Pump drive oil level - check</td>
<td>19 (D)</td>
</tr>
<tr>
<td>26</td>
<td>Hydraulic oil filter - replace</td>
<td>19</td>
</tr>
<tr>
<td>1</td>
<td>Water tank strainer - clean</td>
<td>19</td>
</tr>
<tr>
<td>2</td>
<td>Engine V-belt tension - check</td>
<td>21</td>
</tr>
<tr>
<td>28</td>
<td>Controls, hinges and joints - grease</td>
<td>23 (A)</td>
</tr>
<tr>
<td>20</td>
<td>Engine oil filter - replace</td>
<td>23</td>
</tr>
<tr>
<td>23</td>
<td>Torque hubs oil level</td>
<td>24 (D)</td>
</tr>
</tbody>
</table>

During running-in, change the engine oil and torque hub oil and replace the engine oil filter after 50 hours of operation.
MAINTENANCE SCHEDULE
ROLLER WITH JOHN DEERE 4239 DF ENGINE

1 Water tank - strainer 16 Hydraulic tank - oil drain
2 Engine - V-belts 17 Articulated joint
3 Cooling system - filler cap 18 Pump drive - oil drain
4 Engine - air box drain tube 19 Engine - oil drain
5 Air cleaner 20 Engine - oil filter
6 Engine - fuel filter 21 Engine - oil level
7 Engine - valves 22 Sprinkler - strainer
8 Engine - fuel feed pump 23 Torque hub
9 Engine - oil filler cap 24 Battery
10 Water filter 25 Fuel tank
11 Scrapers 26 Hydraulic oil filter
12 Drum - oil level plug 27 Hydraulic oil tank
13 Drum - oil filler plug 28 Engine cover - grease nipples
14 Pump drive - oil level plug 29 Shock absorbers
15 Fuel tank - drain

Fig 2 Service points - John Deere
### EVERY THREE MONTHS (every 500 hours of operation)

<table>
<thead>
<tr>
<th>Item</th>
<th>Task Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Engine oil filter - replace, and fuel system - bleed</td>
<td>25</td>
</tr>
<tr>
<td>8</td>
<td>Fuel feed pump strainer - clean</td>
<td>25</td>
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### EVERY SIX MONTHS (every 1000 hours of operation)

<table>
<thead>
<tr>
<th>Item</th>
<th>Task Description</th>
<th>Page</th>
</tr>
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<tbody>
<tr>
<td>23</td>
<td>Torque hub oil - change</td>
<td>26</td>
</tr>
<tr>
<td>25</td>
<td>Fuel tank - drain</td>
<td>27</td>
</tr>
<tr>
<td>7</td>
<td>Engine valve clearance - check</td>
<td>*</td>
</tr>
<tr>
<td>4</td>
<td>Air box drain tube - check</td>
<td>27</td>
</tr>
<tr>
<td>3</td>
<td>Cooling system - flush and replenish with fresh</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>corrosion inhibitor</td>
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### EVERY YEAR (every 2000 hours of operation)

<table>
<thead>
<tr>
<th>Item</th>
<th>Task Description</th>
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</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Pump drive oil - change</td>
<td>32</td>
</tr>
<tr>
<td>13</td>
<td>Drum oil - change</td>
<td>33</td>
</tr>
<tr>
<td>16</td>
<td>Hydraulic tank - change</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>change oil and clean interior</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Fuel tank - empty and clean</td>
<td>34</td>
</tr>
<tr>
<td>1</td>
<td>Water tanks - empty and clean</td>
<td>34</td>
</tr>
</tbody>
</table>

* See the engine instruction manual.

During running-in, change the engine oil and torque hub oil and replace the engine oil filter after 50 hours of operation.
EVERY DAY
(every 10 hours of operation)

Fuel tank — replenishing

Replenish the fuel tank daily to the lower edge of the filler neck. Use diesel fuel.

Fig 3 Fuel replenishing left-hand side of machine

1 Fuel filler cap

Engine — checking the oil level

1 Check that the roller is level.

2 Check the oil level using the dipstick (2).

The oil level should be between the marks. If the level is close to the lower mark - fill up Deutz engines with type B1 oil and John Deere engines with type B2 oil as recommended on page 1 under "Lubricants".

Never fill up with too much oil - you may damage the journal stuffing boxes etc.

Fig 4 Deutz engine

1 Oil filler cap
2 Oil dipstick

Fig 5 John Deere engine

1 Oil filler cap
2 Oil dipstick
Air cleaner — checking the dust indicator

The air cleaner is fitted with a pressure-drop indicator, which is connected to a warning lamp on the instrument panel.

If the air cleaner warning lamp lights up when the engine is running at full speed, clean the filter.

Air cleaner — cleaning the main filter element

1 Release the clamp (5), remove the outer cover (6), and remove the inner cover (4).

2 Unscrew the wing nut and remove the main filter (3).

3 Make sure that dust has not entered the filter during operation. Check that dust has not penetrated into the engine induction pipe. If it has, this means that the connections, hoses or element leak and must therefore be replaced.

4 Wipe clean the inside of the filter housing (1) and the induction pipes, using a clean cloth.

Check all connections between the air cleaner and engine, to be certain they are tight and do not leak.

**Note** Replace the back-up filter by a new one every third time the main filter is replaced or cleaned. The back-up element cannot be cleaned.

If the warning lamp lights up after the main filter has been replaced or cleaned, this implies that the back-up filter has become clogged. Always replace the back-up filter, it cannot be cleaned.
Main filter — cleaning with compressed air

Use compressed air at a maximum pressure of:
0.7 MPa (7 kgf/cm²) (100 psi).

Play the compressed air up and down along the folds of the paper at 45° to the inside of the filter element. Hold the nozzle at least 1 cm (0.4 in) away from the element to avoid damaging the paper.

Fig 7 Main filter

Main filter — cleaning by washing

If the filter element is sooty or oily, it should be washed in a solution of water and non-foaming detergent, such as "Donaldson D-1400".

The element should be totally immersed in a detergent solution and soaked for at least 15 minutes. Raise and lower the element in the solution from time to time to improve the cleaning effect.

Make sure that the filter element is intact before refitting it. If it has any holes or if the seals are defective, fit a new element. Shine a lamp through the filter when inspecting it, to ensure that it is clean and that there are no holes in it.

Note Do not replace a filter element that has been washed in detergent until it is completely dry.
Water filter and sprinklers — checking

1. Close the tank cock (2) and remove the filter casing (1). If the water is cloudy or viscous - clean the filter casing and element with water.

2. Check that the sprinkler nozzles are not clogged.

Fig 8 Water tank
1 Sprinkler nozzles

Fig 9 Filter casing
1 Filter casing
2 Cock

Hydraulic tank — checking the oil level

Wipe clean the sight glass (1) and check that there is sufficient hydraulic oil in the tank. If the level is more than about 2 cm (0.8 in) below the top of the sight glass, fill up with type C hydraulic oil as recommended on page 1 under "Lubricants".

If the oil level falls - check that the oil lines and connections are not leaking.

Fig 10 Hydraulic oil tank right-hand side
1 Sight glass
Brakes – checking

1. Drive the roller slowly forwards.
2. Depress the emergency stop control; the machine should then stop.
3. After checking the brakes, move the forward/reverse lever to NEUTRAL before resetting the emergency brake.

Fig 11 Instrument panel
1. Emergency stop control

Radiator – checking the coolant level
JOHN DEERE

⚠️ CAUTION! AT OPERATING TEMPERATURES THE COOLANT IS HOT AND PRESSURIZED. IF THE CAP IS REMOVED QUICKLY, COOLANT WILL BE RELEASED IN THE FORM OF STEAM AND MAY CAUSE SCALDING. USE GLOVES AND PROTECTIVE GOGGLES.

Coolant levels should be checked each day before the machine is run. If the coolant level must be checked at operating temperature, the engine should be switched off first.

1. Place a piece of cloth or the like over the filler cap and turn the cap to the first stop. When the pressure has fallen, depress the cap, turn it further and remove it. The coolant level should reach the level tab in the radiator.

2. If necessary, replenish with water and corrosion inhibitor. In winter, add anti-freeze as well.

Scrapers – checking

Check that the scrapers are undamaged and ensure that they rest against the drums.

Fig 12
1. Scraper
EVERY WEEK
(every 50 hours of operation)

Battery — checking the electrolyte level

1. Withdraw the battery and check the level of the electrolyte. The level should be about 10 mm (0.4 in) above the plates - if necessary, fill up with distilled water.

2. Check also that the cable terminals are free from oxidation. Brush them clean if necessary and apply acid-free petroleum jelly to the connectors.

Fig 13 Battery

Shock absorbers and mounting screws — checking

1. Check that the shock absorbers are free from cracks and other damage.

2. Check that the mounting screws are properly tightened.

3. Replace shock absorbers that have cracks deeper than 10 to 15 mm (0.4 to 0.6 in).

Note: The screws securing the shock absorbers to the drum are locked with Loctite.

Check the shock absorbers on both sides of the drum.

Check both drums.

Fig 14

1 Shock absorbers

Drum — checking the oil level

1. Drive the roller onto a level surface, until the plug (1) is in its uppermost position.

2. Wipe clean the area round the level plug (2) and remove it.

3. Check that the oil reaches up to the level of the bottom of the hole. If necessary, fill up with type D oil.

Note: Check both drums.

Fig 15

1 Filler/drain plug
2 Level plug
Lubricate the four nipples with 3 to 4 strokes of the grease gun. Use type A grease.

Fig 16  Articulated joint
1 Four grease nipples

Ensure that the breather holes are not clogged. If necessary, wash the cap with diesel oil and blow it clean.

Fig 18
1 Breather holes
EVERY 14 DAYS
(every 100 hours of operation)

Engine cooling fins — cleaning
DEUTZ

1 Remove the protective cover and air ducting from in front of the cooling fins (both left and right-hand sides).

2 Clean the fins carefully, preferably with compressed air.

3 At the same time, clean the exterior of the lubricating oil and hydraulic oil coolers (see the Deutz instruction manual).

4 Refit the cover and ducting.

Fig 19 Engine
1 Cooling fins
2 Lubricating oil cooler

General about diesel engine lubrication

Note Irrespective of the number of hours of operation, the engine oil and engine oil filter must be changed every six months. The oil filter must always be replaced when the engine oil is changed.

Oil change intervals depend on the grade of lubricating oil and sulphur content of the fuel used. Observe the difference in oils recommended for JOHN DEERE engines and those for DEUTZ engines (see "Lubricants" on page 1).

Changing the oil every 14 days or every 100 hours of operation is conditional on the use of engine oil of grade "API Service CD, SAE" and on the use of diesel fuel of good quality, with a sulphur content below 0.4%.

If oil of grade "API Service CC/SC, SAE" is used or if the sulphur content of the diesel fuel is 0.4% or above, the oil should be changed earlier and more frequently (see the engine manufacturer's instructions).

Warm up the engine thoroughly before draining the oil. Impurities in the lubricating system will then be well mixed with the oil and will be removed with it. Furthermore, oil flows more readily when it is hot.
Engine — changing the oil

1 Remove the filler cap (2).
2 Remove the drain plug (3) and allow the old oil to drain into a suitable vessel. The vessel should hold about 10 litres (10.5 US qt).
3 Clean the drain plug (3) and replace it.
4 Fill up with type B2 oil as recommended on page 1 under "Lubricants".

Capacities:
- 8,5 l (9 US qt) when the filter is replaced
- 7,6 l (8 US qt) when the filter is not replaced

5 Use the dipstick (1) to check the oil level. The oil should reach up to the upper mark. Fill up with more oil if necessary.
6 Replace the filler cap (2).
7 Start the engine and warm it up. Check that there is no oil leakage.

Water cooler/hydraulic oil cooler — cleaning the exterior

Ensure that air can flow freely through the radiator and oil cooler. If they are dirty, clean them by flushing with water or by blowing compressed air through them.

After cleaning, ensure that seals and sound-absorbers are not damaged.
EVERY MONTH
(every 200 hours of operation)

Torque hub — checking the oil level

1. Ensure that the roller is on a level surface.
2. Remove the chequer plates from both sides of the operator's seat.
3. Clean the area around the level plug (2) and loosen it a few turns. If the oil level is correct, oil should flow out past the plug.
4. If it is necessary to fill up with oil, clean the area around the filler plug (1) and remove it, and fill up with oil until it flows out past the level plug (2).

Use type D oil as recommended on page 1 under "Lubricants".

Note There is a level on each side of the pump drive. It is only necessary to check the oil level on one side.

Hydraulic oil filters — replacing

1. Clean the area around the filters and remove the filter elements.
2. Clean the sealing surfaces of the filter head carefully.
3. Oil the seal and screw on the new filter elements by hand until the seal seats and then screw the element a further half-turn.

Before driving, ensure that the filters do not leak.

Fig 22

1. Hydraulic oil filter

Water tank — cleaning the strainer

Check the water strainer in the water tank. If necessary, clean it with water.
V-belt monitor — checking

The belt is tensioned by a spring-loaded belt tensioner (2). If the belt breaks, the belt tensioner will be moved outwards by the spring and will actuate the pressure switch on the belt monitor (1) causing the horn to sound.

The V-belt monitor is also operative when the starter key is in the "OFF" position.

Check that the fan belt monitor operates. The horn should sound when the monitor switch (1) is depressed.

1 V-belt monitor
2 Belt tensioner

V-belt — replacing

1 Park the machine in a safe place.
2 Stop the engine.
3 Disconnect the power using the battery master switch, to stop the horn.
4 Fit a new V-belt (see the engine manufacturer's instruction manual).
5 Switch on the power using the battery master switch.

V-belt — checking/adjusting

Check the V-belt tension by depressing the belt mid-way between the alternator and engine pulleys. It should not be possible to depress the belt more than 10 to 15 mm (0.4 to 0.6 in).

1 Loosen the alternator mounting screws (1) slightly.
2 Ease the alternator outwards until the belt is again correctly tensioned (see above).
3 Retighten the screws (1).

⚠️ IF THE FAN GUARD HAS BEEN REMOVED, IT MUST BE REFITTED BEFORE THE ENGINE IS STARTED AND THE ROLLER OPERATED.
Check the tension of the fan, water pump and alternator belts by pressing the belts mid-way between the alternator pulley and the water pump pulley. It should not be possible to depress the belts by more than 19 mm (0.7 in) with a force of 89 N (20 lb).

1. Loosen the alternator mounting screws (1) slightly.
2. Ease the alternator outwards until the belt is again correctly tensioned.
3. Retighten the screws.

⚠️ IF THE FAN GUARD HAS BEEN REMOVED, IT MUST BE REFITTED BEFORE THE ENGINE IS STARTED AND THE ROLLER OPERATED.
Engine — changing the oil
DEUTZ

1. Remove the filler cap (1).
2. Remove the drain plug (2) and allow the oil to drain into a suitable receptacle to hold at least 12 litres (12.5 US qt), while changing the oil filter.
3. Replace the oil filter (see under "Replacing the oil filter, Deutz").
4. Clean the drain plug (2) and refit it.

Fig 27 Engine
1. Oil filler cap
2. Drain plug

5. Replenish with new grade B1 oil as recommended on page 1 under "Lubricants".

Oil capacity: approx. 11 litres (11.6 US qt).

6. Check the oil level using the dipstick (1). The level should be at the upper mark. If necessary, replenish with more oil.

7. Refit the filler cap (2).

8. Start and warm up the engine. Ensure that there are no oil leaks.

Engine — replacing the oil filter
DEUTZ

1. Unscrew the filter (2) by hand.

Note Ensure that the old seals are not left on the filter head since leakage will then occur between the new and old seals.

2. Clean the sealing surfaces of the filter holder.

3. Lightly oil the rubber seal (1) on the new filter.

4. Screw the filter into place by hand until the rubber seal seats correctly and then turn the filter an additional half-turn.

Note Do not tighten the filter too much, since this may damage the seal.
Controls, hinges and joints — greasing

Grease all hinges, joints and controls with type A grease as recommended on page 1 under "Lubricants".

Fig 30 Seat/control console unit
1 Grease nipple

Fig 31 Engine cover
1 Grease nipples

Engine — replacing the oil filter

1. Remove the oil filter (1) and discard it. It is of the disposable type and cannot be cleaned.

   Note Ensure that the old seal is not left on the filter head, since leakage will then occur between the new and old seals.

2. Clean the sealing surface of the filter head with a clean, lint-free cloth.

3. Apply a thin film of clean engine oil to the new filter seal.

4. Screw the filter by hand until the seal seats against the filter head. Then tighten an additional half-turn.

   Note Do not tighten the filter too much, since this may damage the seal.

5. Start and warm up the engine. Ensure that there are no oil leaks.

6. Check the oil level.

Fig 32 Engine
1 Oil filter
The torque hubs have 2 level plugs, (1) and (2). Both must be checked.

1. Drive the roller onto a level surface, so that the innermost plug (4) is at its highest position. The level plug (1) should be at the "3 o'clock" position.

2. Clean the area around the plugs.

3. Remove the level plugs (1) and (2) and check the oil level. If the oil level is correct, oil should flow out through the level plug holes.

4. If necessary, fill up with type D oil, as recommended on page 1 under "Lubricants", through plug holes (3) and (4).

5. Refit the plugs. After driving the roller to rotate the drums a few turns, check that there is no leakage.

Repeat Items 1 - 5 on the other torque hub.
Fuel filter — replacing

JOHN DEERE

If the machine is operated under difficult conditions, the fuel filter must be replaced more often.

1. Remove the retaining clip (1).
2. Remove the fuel filter (2).
3. Clean the filter head.
4. Fit a new filter and fasten the retaining clip.

The fuel system must be bled every time the filter is replaced.

5. Loosen the screw (3) a few turns and pump the lever (4) until the fuel flowing out past the screw is free from air bubbles.
6. Tighten the screw (3).
7. Push in the lever (4).

Fig 34

1. Retaining clip
2. Fuel filter
3. Screw
4. Lever

Fuel feed pump — cleaning the strainer

JOHN DEERE

1. Disconnect the fuel supply line and plug it.
2. Unscrew the screw (1) and remove the cover (2).
3. Remove the strainer (3) and clean it with diesel fuel.
4. Assemble in the reverse order.
5. Pump the lever (4) until the bowl is full of fuel.

Fig 35 Fuel feed pump

1. Screw
2. Cover
3. Strainer
4. Pump lever
EVERY SIX MONTHS
(every 1000 hours of operation)

Torque hub — changing the oil

Note that each torque hub has two oil containers:
- one in the planetary gear section
- one in the angular gear section.

Before draining the oil, warm up the torque hubs by running the roller.

1. Drive the roller onto a level surface, so that the plug (1) is at its lowest position.
2. Clean the area around the plugs.
3. Place a receptacle to hold about 5 litres (5.3 US qt) under plugs (1) and (5) and remove them. Allow the oil to drain and refit plug (5).
4. Reverse the roller so that the filler plug (4) is at its highest position.
5. Remove the level plug (2) and the filler plugs (3) and (4).
6. First fill up with oil through filler plug (4) until it flows out at level plug (1), then fill up with oil through filler plug (3) until it flows out at level plug (2) and replace the plugs.

The capacity of the torque hub is about 3 litres (3.2 US qt). Use type D oil as recommended on page 1 under "Lubricants".

Repeat the above operations on the other torque hub.

Fig 36 Torque hub
1 Level plug
2 Level plug
3 Filler plug
4 Filler plug

Fig 37 Torque hub seen from the side
1 Level plug
2 Level plug
3 Filler plug
4 Filler plug
5 Drain plug
Fuel tank — draining

The fuel tank should be drained when it is almost empty.

1. Place a receptacle under the fuel tank and remove the drain plug (1).
2. Allow the fuel to flow out, so that the tank will be free from water and any deposits of rust.
3. Replace the drain plug and fill up with diesel fuel.
4. Check that the plug seals fully.
5. Bleed the fuel system (see under "Fuel system - bleeding").

Air box — draining

When the engine is running, check that air is discharged through the air box drain tube (1).

If the drain tube is blocked:

1. Disconnect the drain tube (1) and clean it in diesel fuel.
2. Refit the tube, and ensure that the O-ring at the connector cap (2) is correctly fitted.

**Fig 38**

1. Drain plug (left-hand side)

**Fig 39**

1. Drain tube
2. Connector cap
Fuel filter — replacing

DEUTZ

1

1 Unscrew the fuel filter (1) carefully, since fuel will flow from the filter.
2 Clean the sealing surface.
3 Apply clean diesel fuel to the rubber gasket on the new filter.
4 Screw the new filter into place by hand, until the rubber gasket seats correctly, then tighten it an additional half-turn.
5 Bleed the fuel system (see below).

Start the engine and ensure that the filter does not leak.

Fuel system — bleeding

DEUTZ

1 Loosen the screw (1).
2 Manually operate the pump lever (2) on the feed pump until the fuel flowing out at the screw (1) is free from air bubbles.
3 Retighten the screw (1).

Note If no fuel flows out past the screw when the hand pump is operated, turn the engine over using a 36 mm (1 7/16 in) non-adjustable spanner fitted to the crankshaft nut.

Fig 40 Replacing the fuel filter

1 Fuel filter

Fig 41

1 Screw
2 Pump lever
4 If the pressure lines have been disconnected, they must also be bled.

5 Loosen the pressure line connection (1) a couple of turns and run the starter motor until bubble-free fuel flows out past the nut.

The throttle should be in the fully open position.

6 Tighten the pressure line connection.

7 Bleed the other pressure lines in a similar manner, if necessary.

---

**Fuel feed pump — cleaning the strainer**

**DEUTZ**

1 Loosen the retaining screw (1).

2 Remove the cover (2).

3 Remove the strainer (4) and wash it in diesel fuel.

4 Lubricate the gasket (3) with clean diesel fuel.

5 Assemble in the reverse order.

6 Bleed the fuel system (see the section "Fuel system - bleeding").

Note Start the engine and check that there is no leakage.
WARNING! AT OPERATING TEMPERATURE THE COOLANT IS HOT AND PRESSURIZED. IF THE RADIATOR CAP IS REMOVED QUICKLY, COOLANT WILL FLOW OUT IN THE FORM OF STEAM AND MAY CAUSE SCALDING. USE GLOVES AND PROTECTIVE GOGGLES.

The cooling system should be cleaned once a year, to flush out rust and sediment.

The coolant must also be changed once a year, as the corrosion inhibitor looses its effectiveness. The cooling system should be cleaned when the engine is cold.

1 Drive the roller onto a level surface.
2 Remove the radiator filler cap.
3 Open the drain cock at the bottom of the radiator.
4 Remove the plug (1) in the cylinder block.
5 Flush the cooling system with clean water. Insert a hose into the radiator filler neck and flush the system with water until the water flowing out at the drain plug holes is completely free from rust and sediment.

**Note** If there are hard deposits of lime or rust in the cooling system, the system may be cleaned using a special radiator cleansing agent. Use a good cleansing agent from a reputable manufacturer and follow the manufacturer's instructions.

6 Refit the drain plugs and close the radiator drain cock.
7 Inspect the coolant hoses. Replace hoses that are cracked or show any other signs of defect.

8 Fill up with coolant to the level tab in the radiator.

The lime content of the water should be as low as possible.

Always fill the cooling system with one of the following two coolants:

- Clean water and corrosion inhibitor
- 50% clean water and 50% anti-freeze (containing a corrosion inhibitor).

9 Refit the filler cap.

10 Start the engine and run it for 10 minutes.

11 Check the level of the coolant and, if necessary, replenish to the correct level.

12 Ensure that the cooling system does not leak. Ensure that any leaks are sealed.
EVERY YEAR
(every 2000 hours of operation)

Pump drive — changing the oil

⚠️ NEVER WORK UNDER THE ROLLER WHEN THE ENGINE IS RUNNING. PARK THE ROLLER ON A LEVEL SURFACE. BLOCK THE DRUMS.

1. Drive the roller onto a level surface and stop the engine.
2. Remove the chequer plate on the left-hand side.
3. Clean the area around the filler plug (1) and the drain plug (3).
4. Place a receptacle to hold about 2 litres (4.2 US pt) under the drain plug.
5. Remove the filler plug (1).
6. Remove the drain plug (3) and allow the oil to drain into the receptacle.
7. Clean the drain plug and, when the oil has drained, refit it.
8. Loosen the level plug (2) a few turns.
9. Fill up with oil until it flows out at the level plug hole.

Use type D oil as recommended on page 1 under "Lubricants". The capacity of the gearbox is approx. 1.5 litres (3.5 US pt).

10. Screw in the level plug (2) and refit the filler plug (1).
Drum — changing the oil

1. Drive the roller onto a slightly sideways sloping surface so that the drain plug (1) is at the lowest position.

2. Remove the plug and drain the oil.

Collect the oil in a receptacle with a capacity of about 20 litres (5.3 US gallons).

3. Drive the roller onto a level surface so that the plug (1) is at its highest position.

4. Remove the level plug (2).

5. Replenish with type D lubricating oil as recommended on page 1 under "Lubricants", until the oil reaches the lower edge of the level plug hole. The capacity of one side of the drum is about 19 litres (5.0 US gallons).

6. Refit the plugs.

7. To change the oil in the other side of the drum, repeat steps 1-6 above.

8. Check that the drum does not leak.

Hydraulic tank — cleaning

When the tank is emptied, the pumps will also be drained of oil. Before starting the engine, pay special attention to the instructions for starting the hydraulic system.

1. Place a receptacle to hold about 140 litres (37 US gallons) under the hydraulic oil tank and remove the drain plug.

2. Remove the tank cover. Clean the tank and remove any sediment. Touch up the paintwork, if necessary.

3. Refit the tank cover. Refit the drain plug and replenish with type C hydraulic oil as recommended on page 1 under "Lubricants". Check that the cover and plug seal well.
Fuel tank — cleaning

The fuel tank should be drained when it is almost empty.

1 Place a receptacle under the fuel tank and remove the drain plug (1). Allow the fuel to drain.

2 Remove the fuel tank cover plate. Clean the tank and remove any deposits.

3 Refit the tank cover.

4 Refit the drain plug.

5 Fill up with diesel fuel and check that the tank cover and plug seal fully.

5 Bleed the fuel system (see under "Fuel system - bleeding").

---

Water tank — cleaning

1 Remove the drain plug (1) and empty the tank.

2 Clean the inside of the tank with water to which a reputable cleanser has been added.

3 Refit the plug.

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Fig 47 Drain plug (left-hand side)

Fig 48 Water tank

1 Drain plug
SPECIAL INSTRUCTIONS

When it is delivered from the factory, the roller is filled with the standard oils specified in the table below. Brand names are used as examples in specifying lubricants, in all cases equivalent lubricants may be used.

STANDARD OILS SUPPLIED AND OTHER RECOMMENDED OILS

If the roller is to be used in areas where the ambient temperature may be above the "upper temperature, °C", "special oil" as specified in the table below must be used.

Before using the roller at extremely low ambient temperatures, read the explanatory notes below.

Explanatory notes

The tabulated temperature limits apply to the individual "systems" or to the individual components and refer to the limits for the lubricating properties of each oil.

The "MAXIMUM OPERATING TEMPERATURE" of the roller may be different from the ambient temperature. Contact DYNAPAC for additional recommendations before operating the roller under extremely hot or cold conditions.

The temperature limits tabulated below apply to standard models.

It may be necessary to check temperature gauges continually if the machine is working in the upper temperature ranges when fitted with accessories, such as noise-damping equipment.

Temperatures in °C (°F)

<table>
<thead>
<tr>
<th></th>
<th>&quot;Standard oil&quot;</th>
<th>&quot;Special oil&quot;</th>
<th>&quot;Standard oil&quot;</th>
<th>&quot;Special oil&quot;</th>
</tr>
</thead>
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<tr>
<td></td>
<td>SHELL TELLUS</td>
<td>SHELL TELLUS</td>
<td>SHELL SPIRAX</td>
<td>SHELL SPIRAX</td>
</tr>
<tr>
<td></td>
<td>Oil T 68</td>
<td>Oil T 100</td>
<td>SAE 90 HD</td>
<td>SAE 140 HD</td>
</tr>
<tr>
<td>Hydr. oil tank</td>
<td>-10 (14)</td>
<td>0 (32)</td>
<td>-15 (5)</td>
<td>+5 (41)</td>
</tr>
<tr>
<td></td>
<td>+35 (95)</td>
<td>+50 (122)</td>
<td>+40 (104)</td>
<td>+50 (122)</td>
</tr>
<tr>
<td>Drum</td>
<td></td>
<td></td>
<td>-15 (5)</td>
<td>+5 (41)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>+35 (95)</td>
<td>+50 (122)</td>
</tr>
<tr>
<td>Pump drive</td>
<td>-15 (5)</td>
<td>+5 (41)</td>
<td>+5 (41)</td>
<td>+50 (122)</td>
</tr>
<tr>
<td></td>
<td>+40 (104)</td>
<td></td>
<td>+5 (41)</td>
<td>+50 (122)</td>
</tr>
<tr>
<td>Torque hub</td>
<td>-15 (5)</td>
<td>+5 (41)</td>
<td>+5 (41)</td>
<td>+50 (122)</td>
</tr>
<tr>
<td></td>
<td>+40 (104)</td>
<td></td>
<td>+5 (41)</td>
<td>+50 (122)</td>
</tr>
</tbody>
</table>
DEUTZ: Engine oils in accordance with "for API Service CD/SE, SAE 10 W/30", such as Shell Rimula X Oil 10 W/30, should be used under normal conditions.

JOHN DEERE: Use CD/SE, SAE 15W/40 Shell 1306 engine oil.

Corresponding instructions issued by engine manufacturers should be regarded as having preference over the above instructions.