Service Manual

530-70, 530-110

Publication No.

9813/3850-2

World Class
Customer Support

Section 1

General Information

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Introduction

Identifying Your Machine

For information about identifying your machine and its main components, refer to ***Operator's Manual, Introduction, Identifying Your Machine***.

Safety

Introduction

In this manual and on the machine there are safety notices.

The safety notices have different signal words as follows:

- DANGER
- WARNING
- CAUTION
- Notice

For an explanation of the safety notice signal words, refer to ***Section 2, Introduction, Safety***.

For general safety notices, refer to ***Section 2, Introduction, Safety Check List***.

For maintenance safety notices, refer to ***Section 2, Routine Maintenance, Health and Safety***.

For safety notices specific to maintenance procedures, refer to the relevant procedure.

If you do not fully understand a safety notice ask your employer to explain it.

Engine

General

Clean

⚠ **Warning!** Airborne particles of light combustible material such as straw, grass, wood shavings, etc. must not be allowed to accumulate within the engine compartment or in the propshaft guards (when installed). Examine these areas frequently and clean at the beginning of each work shift or more often if required. Before opening the engine cover, make sure that the top is clear of debris.

Notice: The engine or certain components could be damaged by high pressure washing systems; special precautions must be taken if the engine is to be washed using a high pressure system. Ensure that the engine air intake, alternator, starter motor and any other electrical components are shielded and not directly cleaned by the high pressure cleaning system.

Notice: Clean the engine before you start engine maintenance. Obey the correct procedures. Contamination of the fuel system will cause damage and possible failure of the engine.

Stop the engine and allow it to cool for at least one hour. Do not attempt to clean any part of the engine while it is running.

Do not aim the water jet directly at oil seals or electrical and electronic components such as the ECU (Electronic Control Unit), alternator or fuel injectors.

Before carrying out any service procedures that require components to be removed, the engine must be properly cleaned.

Cleaning must be carried out either in the area of components to be removed or, in the case of major work, or work on the fuel system, the whole engine and surrounding machine must be cleaned.

1. Remove the undershield.

   Refer to: Maintenance > Access Apertures > Undershield (Page).

2. Make sure that the electrical system is isolated.
3. Make sure that all electrical connectors are correctly coupled. If connectors are open fit the correct caps or seal with water proof tape.
4. Cover the alternator with a plastic bag to prevent water ingress.
5. Seal the engine air intake, exhaust and breather system.
6. Make sure that the oil filler caps and dipstick are correctly installed.
7. Use a low pressure water jet and brush to soak off caked mud or dirt.
8. Apply an approved cleaning and degreasing agent with a brush. Obey the manufacturers instructions.
9. Use a pressure washer to remove the soft dirt and oil. Do not place the jet nozzle closer to any part of the engine than the distance specified.

   Distance: 600mm

10. When the pressure washing is complete move the machine away from the wash area, or alternatively, clean away the material washed from the machine.
11. Before working on specific areas of the engine use a compressed air jet to dry off any moisture. When the area is dry use a soft clean brush to remove any sand or grit particles that remain.
12. When removing components be aware of any dirt or debris that may be exposed. Cover any open ports and clean away the deposits before proceeding.

Check (Condition)

Start the engine and check for:

- Excessive smoke
- Excessive vibration
- Excessive noise
- Overheating
- Performance
- Unusual smells.

Oil

Check (Leaks)

Before you start the product, do a check for oil leaks:

1. Make the product safe.
   Refer to: Maintenance > Maintenance Positions (Page 124).
2. Get access to the engine compartment (if applicable)
   Refer to: Maintenance > Access Apertures (Page 130).
3. Check the engine and the area below for oil leaks.
4. Close the engine cover (if applicable).
5. If necessary, contact your JCB dealer.

Check (Level)

⚠ **Notice:** Do not exceed the correct level of engine oil in the sump. If there is too much engine oil, the excess must be drained to the correct level. An excess of engine oil could cause the engine speed to increase rapidly without control.

1. Make the product safe.
   Refer to: Maintenance > Maintenance Positions (Page 124).
2. Wait for the oil to drain back into the engine sump before you take a reading. If not, a false low reading may be recorded which can cause the engine to be overfilled.
3. Get access to the engine compartment (if applicable).
   Refer to: Maintenance > Access Apertures (Page 130).
4. Remove and clean the dipstick.
   Refer to: Maintenance > Service Points (Page 127).
5. Replace the dipstick.
6. Remove the dipstick.
7. Check the oil level. The oil should be between the two marks on the dipstick.
8. If necessary, add more oil:
   8.1. Remove the filler cap.
   Refer to: Maintenance > Service Points (Page 127).
   8.2. Add the recommended oil slowly through the filler point
   Refer to: Technical Data > Fluids, Lubricants and Capacities (Page 184).
   8.3. Replace the dipstick.
   8.4. Remove the dipstick.
   8.5. Check the oil level, if necessary add more oil.

8.6. Replace the dipstick

8.7. Replace the filler cap.

9. Close and secure the engine cover (if applicable).

Replace

⚠ **Notice:** Do not exceed the correct level of engine oil in the sump. If there is too much engine oil, the excess must be drained to the correct level. An excess of engine oil could cause the engine speed to increase rapidly without control.

Warning! Hot oil and engine components can burn you. Make sure the engine is cool before doing this job.

Used engine crankcase lubricants contain harmful contaminants. In laboratory tests it was shown that used engine oils can cause skin cancer.

Caution! It is illegal to pollute drains, sewers or the ground. Clean up all spilt fluids and/or lubricants.

Used fluids and/or lubricants, filters and contaminated materials must be disposed of in accordance with local regulations. Use authorised waste disposal sites.

1. Make the machine safe.
   Refer to: Maintenance > Maintenance Positions (Page 124).
2. Get access to the engine compartment.
   Refer to: Maintenance > Access Apertures (Page 130).
3. Remove the oil filler cap.
   Refer to: Maintenance > Service Points (Page 127).
4. Remove the engine oil drain plug. Drain the oil in to a suitable container.
   Refer to: Maintenance > Service Points (Page 127).
5. Clean the drain plug. Install the drain plug. Tighten the drain plug to the correct torque value.
   Refer to: Technical Data > Torque Values (Page 189).
6. Remove the cap from the oil filter housing (if applicable).
7. Remove and discard the oil filter cartridge.
8. Fit a new filter with new gaskets.
9. Fit and tighten the cover on the oil filter housing (if applicable). Tighten the cover to the correct torque value.
   Refer to: Technical Data > Torque Values (Page 189).
10. Add the correct specification and quantity of oil.
    Refer to: Technical Data > Fluids, Lubricants and Capacities (Page 184).
11. Check the oil level.
    Refer to: Maintenance > Engine > Oil > Check (Level) (Page 140).
12. Install the oil filler cap.
13. Close and secure the engine cover.
14. Operate the engine at idle speed until the oil pressure low warning light has extinguished and the new filter has primed before the engine speed is increased above idle speed.
15. Check for leaks.
16. Check the oil level when the oil has cooled.

    16.1. Fill with clean engine oil, if necessary.

Drive Belt

Check (Condition)

⚠ **Warning!** Do not try to turn the engine by pulling the fan or fan belt. This could cause injury or premature component failure.

Caution! Make sure the engine cannot be started. Disconnect the battery before doing this job, otherwise you could be injured.

The FEAD (Front End Accessory Drive) belt drives the alternator, water pump and the air conditioning compressor (if fitted).

The belt is automatically kept in tension so will not need to be adjusted.

At the recommended service interval, visually inspect the belt for damage:

1. Make the machine safe.
   Refer to: Maintenance > Maintenance Positions (Page 124).
2. Open the engine cover.
   Refer to: Maintenance > Access Apertures > Engine Compartment Cover (Page 130).
3. Remove the FEAD belt cover.
4. Inspect the belt for cracks, fraying or missing pieces. If necessary contact your JCB dealer for service requirements.
5. When maintenance is complete, make sure that the guard is installed. Do not operate the machine unless the guard is installed correctly.
   Refer to: Maintenance > Service Points (Page 127).

Air Filter

General

Check (Condition)

⚠ **Notice:** Do not modify or fit non JCB approved components to the engine induction system, otherwise the engine emissions will be compromised.

1. Make the machine safe.
   Refer to: Maintenance > Maintenance Positions (Page 124).
2. Get access to induction system.
   Refer to: Maintenance > Access Apertures (Page 130).
3. Check the system hoses for:
   3.1. Condition.
   3.2. Damage.
   3.3. Security.
4. Replace the system hoses if necessary.

Dust Valve

Check (Condition)

- Check the dust valve for rips/tears.
- Check there are no obstructions.
- Check that the dust valve is free of dirt and dust.
- Check that the dust valve securely attached to the air filter housing.

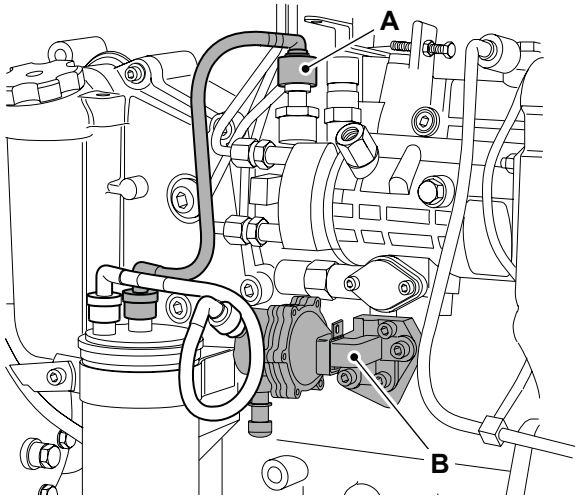
Fuel System

General

Bleed

1. Make the machine safe.
   Refer to: Maintenance > Maintenance Positions (Page 124).
2. Open the engine cover.
   Refer to: Maintenance > Access Apertures (Page 130).
3. Remove the fuel hose. Refer to Figure 97.

Figure 97.



A Fuel hose
B Lift pump

4. Operate the fuel lift pump lever until all of the air has been released.
5. If the fuel does not move when you operate the lift pump lever, make sure the pump diaphragm is in correct position.
6. When all of the air has been released, connect the fuel hose.
7. Check all the O-ring seals and connections.
8. Close the engine cover.
9. Start the engine and run it at 1400-1500 rpm.
10. Make sure the engine operates smoothly and does not stop. If necessary, repeat the steps 1 to 8 procedure again.
11. Turn the ignition key to the off position.

Check (Leaks)

1. Make the machine safe.
   Refer to: Maintenance > Maintenance Positions (Page 124).
2. Get access to the engine compartment (if applicable).
   Refer to: Maintenance > Access Apertures (Page 130).
3. Check the engine compartment (if applicable), fuel lines and the area below for leaks.
4. Start the engine.

5. While the engine is running check the engine compartment (if applicable), fuel lines and the area below for leaks.
6. If necessary, contact your JCB dealer.

Tank

Clean

Draining Fuel Tank Impurities

1. Make the machine safe.
   Refer to: Maintenance > Maintenance Positions (Page 124).
2. Get access to the fuel tank drain plug.
   Refer to: Maintenance > Service Points (Page 127).
3. Put a suitable container below the drain plug.
4. Remove the drain plug.
5. Drain the water and deposits until there is clean diesel.
6. Clean and install the drain plug.
7. Tighten the drain plug to correct torque value.
   Refer to: Technical Data > Torque Values (Page 189).

Clean the Filler Cap

1. Make the machine safe.
   Refer to: Maintenance > Maintenance Positions (Page 124).
2. Get access to the fuel filler cap.
   Refer to: Maintenance > Service Points (Page 127).
3. Clean the exterior of the cap with a clean cloth.
4. Remove the fuel filler cap.
5. Clean the interior of the fuel filler cap with a clean cloth.
6. Install the fuel filler cap.

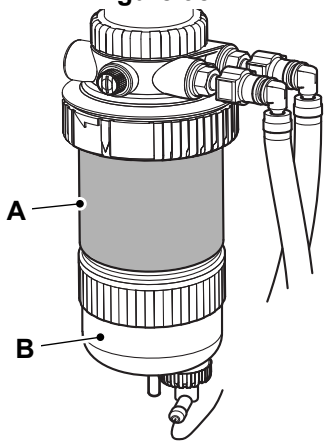
Fuel Filter

Replace

1. Make the machine safe.
   Refer to: Maintenance > Maintenance Positions (Page 124).
2. Get access to the filter.
   Refer to: Maintenance > Access Apertures (Page 130).
3. Drain and remove the separator bowl.
   Refer to: Maintenance > Fuel System > Water Separator (Page 146).
4. Replace the fuel filter.
5. Install the separator bowl.

6. Bleed the fuel system.
   Refer to: Maintenance > Fuel System > General > Bleed (Page 144).

Figure 98.



A Filter
B Bowl

Water Separator

Clean

1. Make the machine safe.
   Refer to: Maintenance > Maintenance Positions (Page 124).
2. Get access to the water separator.
   Refer to: Maintenance > Service Points (Page 127).
3. Check the water separator float position.
4. If the float has reached the red line, open the drain plug and drain the water.
5. Tighten the drain plug when all the water is drained.

Our support email:

ebooklibonline@outlook.com