Section 3

Maintenance

Service Manual - VM 1500

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Notes:

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Introduction

T3-002

Your machine has been designed and built to give maximum performance, economy and ease of use under a wide variety of operating conditions. Prior to delivery, your machine was inspected both at the Factory and by your Distributor to ensure that it reaches you in optimum condition. To maintain this condition and ensure trouble free operation it is important that the routine services, as specified in this Manual, are carried out by an approved JCB Distributor at the recommended intervals.

This section of the Manual gives full details of the service requirements necessary to maintain your JCB machine at peak efficiency.

It can be seen from the Service Schedules on the following pages that many essential service checks should only be carried out by a JCB trained specialist. Only JCB Distributor Service Engineers have been trained by JCB to carry out such specialist tasks, and only JCB Distributor Service Engineers are equipped with the necessary special tools and test equipment to perform such tasks, thoroughly, safely, accurately and efficiently.

JCB regularly updates its Distributors advising them of any product developments, changes in specifications and procedures. Therefore only a JCB Distributor is fully able to maintain and service your machine.

A Service Record Sheet or Book is provided which will enable you to plan your service requirements and keep a service history record. It should be dated, signed and stamped by your Distributor each time your machine is serviced.

Remember, if your machine has been correctly maintained, not only will it give you improved reliability but its resale value will be greatly enhanced.

Owner/Operator Support

JCB together with your Distributor wants you to be completely satisfied with your new JCB machine. If you do encounter a problem however, you should contact your Distributor's Service Department who are there to help you!

You will have been given the names of the relevant service contacts at your Distributor when the machine was installed.

To get the most from your Distributor please help them to satisfy you by:

1 Giving your name, address and telephone number.

2 Quoting your machine model and serial number.

3 Date of purchase and hours of work.

4 Nature of the problem.

Remember, only your JCB Distributor has access to the vast resources available at JCB to help support you. In addition, your Distributor is able to offer a variety of programmes covering Warranty, Fixed Price Servicing, Safety Inspections, including weight tests, covering both legal and insurance requirements.

Service/Maintenance Agreements

To help plan and spread the costs of maintaining your machine, we strongly recommend you take advantage of the many Service and Maintenance Agreements your Distributor can offer. These can be tailor made to meet your operating conditions, work schedule etc.

Please consult your JCB Distributor for details.

Obtaining Replacement Parts

T3-004_2

We recommend you fit only JCB Genuine Parts. A Parts Book will help you identify parts and order them from your JCB distributor.

Your dealer will need to know the exact model, build and serial number of your machine. See ***Identifying Your Machine*** in INTRODUCTION section.

The data plate also shows the serial numbers of the engine, transmission and axle(s), where applicable. But remember if any of these units have been changed, the serial number on the data plate may be wrong. Check on the unit itself.

Health and Safety

T3-001_3

Lubricants

Introduction

It is most important that you read and understand this information and the publications referred to. Make sure all your colleagues who are concerned with lubricants read it too.

Hygiene

JCB lubricants are not a health risk when used properly for their intended purposes.

However, excessive or prolonged skin contact can remove the natural fats from your skin, causing dryness and irritation.

Low viscosity oils are more likely to do this, so take special care when handling used oils, which might be diluted with fuel contamination.

Whenever you are handling oil products you should maintain good standards of care and personal and plant hygiene. For details of these precautions we advise you to read the relevant publications issued by your local health authority, plus the following.

Storage

Always keep lubricants out of the reach of children.

Never store lubricants in open or unlabelled containers.

Waste Disposal

⚠ 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.

INT-3-2-14

All waste products should be disposed of in accordance with all the relevant regulations.

The collection and disposal of used oil should be in accordance with any local regulations. Never pour used engine oil into sewers, drains or on the ground.

Handling

New Oil

There are no special precautions needed for the handling or use of new oil, beside the normal care and hygiene practices.

Used Oil

Used engine crankcase lubricants contain harmful contaminants.

Here are precautions to protect your health when handling used engine oil:

1. Avoid prolonged, excessive or repeated skin contact with used oil.
2. Apply a barrier cream to the skin before handling used oil. Note the following when removing engine oil from skin:
   - **a** Wash your skin thoroughly with soap and water.
   - **b** Using a nail brush will help.
   - **c** Use special hand cleansers to help clean dirty hands.
   - **d** Never use petrol, diesel fuel, or paraffin for washing.
3. Avoid skin contact with oil soaked clothing.
4. Don't keep oily rags in pockets.
5. Wash dirty clothing before re-use.
6. Throw away oil-soaked shoes.

First Aid - Oil

Eyes

In the case of eye contact, flush with water for 15 minutes. If irritation persists, get medical attention.

Swallowing

If oil is swallowed do not induce vomiting. Get medical advice.

Skin

In the case of excessive skin contact, wash with soap and water.

Spillage

Absorb on sand or a locally approved brand of absorbent granules. Scrape up and remove to a chemical disposal area.

Fires

⚠ WARNING

Do not use water to put out an oil fire. This will only spread it because oil floats on water.

Extinguish oil and lubricant fires with carbon dioxide, dry chemical or foam. Fire fighters should use self contained breathing apparatus.

7-3-1-3_1

Service Schedules

Introduction

A badly maintained machine is a danger to the operator and the people working around him. Make sure that the regular maintenance and lubrication jobs listed in the service schedules are done to keep the machine in a safe and efficient working condition.

⚠ WARNING

Maintenance must be done only by suitably qualified and competent persons. Before doing any maintenance make sure the machine is safe. It should be correctly parked on firm level ground.

If you do not take these precautions you could be killed or injured.

9-3-1-1

Apart from the daily jobs, the schedules are based on machine running hours. Do not use a machine which is due for a service. Make sure any defects found during the regular maintenance checks are rectified immediately.

Calendar equivalents:

Every 10 Hours = Daily

Every 50 Hours = Weekly

Every 250 Hours = Three Months

Every 500 Hours = Six Months

Every 1000 Hours = Yearly

Every 2000 Hours = 2 Years

Note: *Services should be carried out at either the hourly interval or calendar interval, whichever occurs first.*

Important: *The intervals given in the schedules must not be exceeded. If the machine is operated under severe conditions (high temperature, dust, water, etc.), shorten the intervals.*

How to Use the Service Schedules

T3-012_3

In the example shown, **A** shows all service requirements to be carried out every 10 hours and **B** shows the requirements to be carried out every 500 hours.

Important: *Services should be carried out at either the hourly interval or calendar interval, whichever occurs first. Refer to* ***Calendar Equivalents****.*

Pre-start Cold Checks, Service Points and Fluid Levels

	Operation	A: 10	50	100[1]	B: 500	1000	2000	8000
ENGINE								
Coolant Quality and Level	- Check	□	□	□	□	□		
Cooling System	- Drain and Refill						□	□
Oil level	- Check	□	□					
Oil and Filter[2][3][4]	- Change				□	□	□	□
Air Cleaner Dust Valve[5]	- Change				□	□	□	□
Air Cleaner Outer Element[5]	- Change					□	□	□
Air Cleaner Inner Element	- Change						□	□
Pre-Cleaner (if fitted)	- Check			□				
Water Seperator	- Check for contamination and Drain		□	□	□	□	□	□
Engine Fuel Filter	- Change					□	□	□
Front End Accessory Drive (FEAD) Belt Condition	- Check				□	□	□	□
Front End Accessory Drive (FEAD) Belt	- Change							□
Engine Mounting Bolts for Tightness	- Check			□	□	□	□	□
All Hoses - Condition	- Check			□	□	□	□	□
Radiator[5]	- Clean				□	□	□	□
Crankcase Ventilation Filter	- Change					□	□	□

795390-1

Pre-start Cold Checks, Service Points and Fluid Levels

Note: *There are additional service intervals for the KUBOTA engine at 200, 400, 800, 1500 and 3000 hours.*

	Operation	10	50	100	200	250	400	500	800	1000	1500	2000	3000
ENGINE													
Air filter[1]	Clean			☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Air filter	Change									☐		☐	☐
Oil level	Check	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Oil and filter[2]	Change				☐		☐		☐	☐		☐	☐
Fuel filler cap	Check for leaks	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Fuel filters	Clean			☐	☐		☐	☐	☐	☐	☐	☐	☐
Fuel filters	Change						☐		☐				
Fuel tank	Drain/Clean							☐		☐	☐	☐	☐
Coolant hoses and clamps	Check				☐		☐		☐	☐		☐	☐
Coolant hoses and clamps	Change											☐	
Battery acid level, condition	Check			☐	☐		☐	☐	☐	☐	☐	☐	☐
Radiator - inside	Clean							☐		☐	☐	☐	
Coolant	Level	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Coolant	Drain and Refill											☐	
Drive Belt	Check			☐	☐		☐	☐	☐	☐	☐	☐	☐
Drive Belt	Change							☐		☐	☐	☐	☐
Air Intake	Check				☐		☐	☐	☐	☐		☐	☐
Air Intake[3]	Change											☐	
Valve clearance	Check								☐				
Injector nozzle injection pressure[4]	Check										☐		
Turbo charger[4]	Check												☐
Injection pump[4]	Check												☐
Injection timer	Check												☐
Battery	Change											☐	
Fuel lines and clamps	Check		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Fuel lines and clamps[4]	Change											☐	

Service Schedules

	Operation	10	50	100	200	250	400	500	800	1000	1500	2000	3000
DRUM	Check												
Vibrator drive belt condition/ tension	Check			☐	☐		☐	☐	☐	☐	☐	☐	☐
Water sprinkler nozzles	Clean	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Water system filter	Change			☐	☐		☐	☐	☐	☐	☐	☐	☐
Water tank	Drain/Clean							☐		☐	☐	☐	☐
HYDRAULICS													
Fluid level	Check	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Fluid	Change									☐		☐	☐
Filter return element(5)	Change									☐		☐	☐
Vibrator oil	Change									☐		☐	☐

(1) Air cleaner should be changed more often in dusty conditions than in normal conditions. Change the filter if the warning light is illuminated.
(2) Change after the first 50 hours
(3) Change if necessary
(4) Jobs which should only be performed by a specialist
(5) Change after the first 250 hours

Functional Test and Final Inspection

	Operation	10	50	100	250	500	1000	2000
ENGINE								
Air Inlet System Security	Check		☐	☐	☐	☐	☐	☐
Exhaust Smoke	Check		☐	☐	☐	☐	☐	☐
Idle Speed(1)	Check and Adjust			☐		☐	☐	☐
Max. No-Load Speed(1)	Check and Adjust			☐		☐	☐	☐
Exhaust System Security(1)	Check			☐		☐	☐	☐
Throttle System and Control Cable(1)	Check			☐		☐	☐	☐
Engine for Vibration/Noise	Check			☐		☐	☐	☐
Engine Mounting Bolts for Tightness	Check				☐	☐	☐	☐
VIBRATION DRUM AND STEERING								
Forward/Reverse Operation	Check	☐	☐	☐	☐	☐	☐	☐
Propulsion and Vibration Pumps Operation	Check	☐	☐	☐	☐	☐	☐	☐
Oil Cooler and Radiator Hoses	Check	☐	☐	☐	☐	☐	☐	☐
Drum vibration speed(1)	Check				☐	☐	☐	☐
BODYWORK								
All fittings for tightness	Check	☐	☐	☐	☐	☐	☐	☐
Rebound strap condition	Check			☐		☐	☐	☐
Rebound strap tension, bolts for tightness	Check/Adjust			☐		☐	☐	☐
HYDRAULICS								
Operation of All Services	Check	☐	☐	☐	☐	☐	☐	☐
Hose Brackets/Clamps	Check		☐	☐	☐	☐	☐	☐
Propulsion Forward / Reverse Pressure(1)	Check and Adjust				☐	☐	☐	☐
Vibratior Shaft Pressure(1)	Check and Adjust				☐	☐	☐	☐
Charge Pressure(1)	Check and Adjust				☐	☐	☐	☐
Steering Pressure(1)	Check and Adjust				☐	☐	☐	☐
BRAKES								
Park Brake - Operation	Check	☐	☐	☐	☐	☐	☐	☐

Service Schedules

	Operation	10	50	100	250	500	1000	2000
ELECTRICS								
Operation of all Electrical Switches	Check	☐	☐	☐	☐	☐	☐	☐
Seat Pressure Switch Operation	Check	☐	☐	☐	☐	☐	☐	☐
Emergency Stop Lever	Check	☐	☐	☐	☐	☐	☐	☐
Beacon - Operation (if fitted)	Check	☐	☐	☐	☐	☐	☐	☐
Warning Lights/Audible Alarm	Check	☐	☐	☐	☐	☐	☐	☐
Lights and Instruments	Check	☐	☐	☐	☐	☐	☐	☐
Operational Lights	Check	☐	☐	☐	☐	☐	☐	☐
Horn - Operation	Check	☐	☐	☐	☐	☐	☐	☐
Reverse Alarm	Check	☐	☐	☐	☐	☐	☐	☐
All Other Equipment (as fitted)	Check	☐	☐	☐	☐	☐	☐	☐
REMOTE CONTROL								
Transmitter master switch - function (remote control machines only)	Check	☐	☐	☐	☐	☐	☐	☐
Charge batteries externally	Check			☐		☐	☐	☐
Rubber switch gaiters	Check	☐	☐	☐	☐	☐	☐	☐

(1) Jobs which must be carried out by a specialist.

Fluids, Lubricants and Capacities

ITEM	CAPACITY Litres (Gal)	FLUID/LUBRICANT	INTERNATIONAL SPECIFICATION
Fuel Tank	22 (4.8)	Diesel	
Engine Oil (Multigrade)	4 (0.88)	Above –10°C, SAE 15 W–40	API classification: API–CD–MIL–L–2104C
		–10 to 25°C, SAE 15 W–40	
		–20 to 20°C, SAE 10 W–30	
Engine Oil (Single–grade)	4 (0.88)	Above 25°C, SAE 40	API classification: API–CD–MIL–L–2104C
		5 to 30°C, SAE 30	
		–10 to 10°C, SAE 20 W–20	
Hydraulic Tank	70 (15.4)		HLP 46 DIN 51524
			Tropics HLP 68 DIN 51524
Vibration System	0.85 (1.9)		SAE 15W–40
Battery	As Required		Distilled Water
Coolant	5 (1.1)		Down to –24°C, 40% antifreeze, SAE J 814c
			Down to –37°C, 50% antifreeze, SAE J 814c

Cleaning the Machine

Park the machine on firm level ground, ⇨ *Stopping and Parking the Machine (🗋 1-36)*

Avoid using neat detergent - always dilute detergents as per the manufacturer's recommendations, otherwise damage to the paint finish may occur.

Always adhere to local regulations regarding the disposal of debris created from machine cleaning.

It is important to note that excessive power washing can cause damage to the seals or bearings. Take care during routine machine washing not to direct high power water jets directly at oil seals.

Use a low pressure water jet and brush to soak off caked mud or dirt.

Use a pressure washer to remove soft dirt and oil.

Note: *The machine must always be greased after pressure washing or steam cleaning.*

Clean the machine using water and or steam. Do not allow mud, debris etc. to build upon the machine, pay particular attention to the following areas:

⚠ CAUTION

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 alternator, starter motor and any other electrical components are shielded and not directly cleaned by the high pressure cleaning system.

ENG-3-3

– Engine

Do not allow mud to build up on the engine. Pay particular attention to the exhaust area, remove all combustible material.

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

Do not aim the jet wash directly at the air cleaner or exhaust.

Ensure that any electrical components are shielded and not directly cleaned by high pressure cleaning system.

Checking for Damage

1 Inspect steelwork for damage. Note damaged paintwork for future repair.

2 Check that all safety decals are in place and undamaged. Fit new decals where necessary.

3 Check the drums for wear or damage.

4 Check the throttle control lever, linkages and cable for excessive wear.

5 Check the control levers for excessive wear.

Note: *Worn or damaged items must be repaired or replaced.*

Engine

Checking the Oil Level

⚠ CAUTION

Never operate the engine with the oil level below the low mark or above the high mark, otherwise engine damage or poor engine performance can occur.

13-3-2-13

⚠ WARNING

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.

GEN-1-18

⚠ WARNING

Running the engine with insufficient oil can cause engine damage. Check the oil level with the engine stopped.

MD-1-1-14

1 Park the machine on level ground and stop the engine ⇨ *Stopping and Parking the Machine (1-36)*.

2 Ensure that the machine is parked so that the engine is level.

Note: *If the engine has been running beforehand, wait for approx. 5 minutes before checking the oil level.*

3 Open the bonnet to the engine compartment.

4 Clean the area surrounding the oil dipstick.

⚠ WARNING

Beware of the hot exhaust system even with the engine stopped.

ENG-4-3

5 Pull out the oil dipstick.

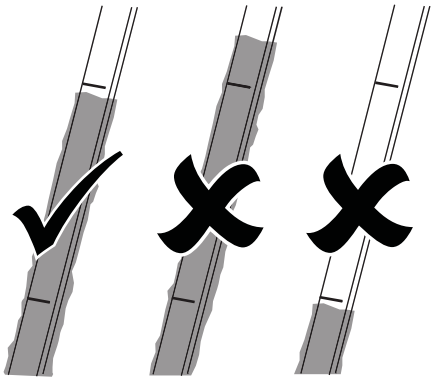


Fig 1.

6 The oil level must be between the MAXIMUM and MINIMUM mark at the end of the oil dipstick.

If the oil level is too low, replenish with oil up to the MAXIMUM mark. Do not allow the oil level to exceed the MAXIMUM mark.

7 Put the oil dipstick back in.

8 Close the bonnet.

Changing the Oil and Filter

⚠ 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.

INT-3-2-14

⚠ CAUTION

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

2-3-3-2

⚠ WARNING

Oil

Oil is toxic. If you swallow any oil, do not induce vomiting, seek medical advice. Used engine oil contains harmful contaminants which can cause skin cancer. Do not handle used engine oil more than necessary. Always use barrier cream or wear gloves to prevent skin contact. Wash skin contaminated with oil thoroughly in warm soapy water. Do not use petrol, diesel fuel or paraffin to clean your skin.

INT-3-2-3

If possible, change the oil at operating temperature. Hot oil helps remove any impurities from the lubrication system.

1 Park the machine on level ground and stop the engine ⇨ *Stopping and Parking the Machine (1-36)*.

2 Open the bonnet to the engine compartment.

3 Remove the filler cap.

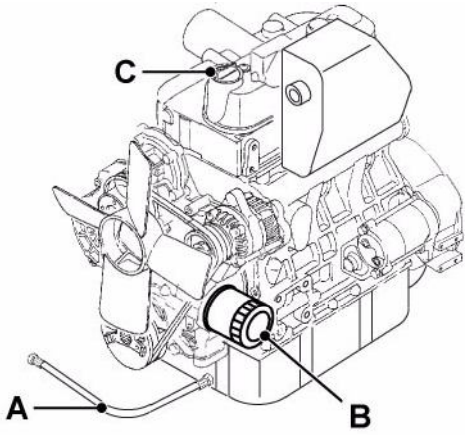


Fig 2.

4 Have a collecting tank with a capacity of approx. 10 litres ready.

5 Open the drain hose **2-A** and drain off the oil into a suitable vessel.

6 Turn the oil filter **2-B** anti-clockwise and remove it.

7 Clean the sealing surface at the filter head with a clean rag.

8 Lightly lubricate the seal of the new filter.

9 Screw in the filter up to the filter head by hand and then, also manually, tighten it by 1/2 to 3/4 turns.

10 Do not use a strap spanner to tighten the filter.

11 Close the drain hose.

Note: *Ensure the drain port is properly closed.*

12 Fill the oil into the crankcase through the filler **2-C**, ⇨ *Fluids, Lubricants and Capacities (3-10)*.

13 Put the filler cap back in place.

14 Start the engine and allow it to idle for a few minutes.

15 Stop the engine.

16 Wait for about 5 minutes, then check the level, ⇨ *Checking the Oil Level (3-13)*.

Cleaning the Fuel System

Use good quality fuel to get the correct power and performance from your engine.

⚠ CAUTION

Consult your fuel supplier or JCB distributor about the suitability of any fuel you are unsure of.

GEN-9-2

⚠ WARNING

Diesel Fuel

Diesel fuel is flammable; keep naked flames away from the fuel system. Do not smoke while refuelling or working on the fuel system. Do not refuel with the engine running. There could be a fire and injury if you do not follow these precautions.

INT-3-2-2_1

⚠ WARNING

Petrol

Do not use petrol in this machine. Do not mix petrol with the diesel fuel; in storage tanks the petrol will rise to the top and form flammable vapours.

INT-3-1-6

Filling the Tank

⚠ CAUTION

Do not allow dirt to enter the fuel system. Before disconnecting any part of the fuel system, thoroughly clean around the connection. When a component has been disconnected, for example a fuel pipe, always fit protective caps and plugs to prevent dirt ingress.

Failure to follow these instructions will lead to dirt entering the fuel system. Dirt in the fuel system will seriously damage the fuel injection equipment and could be expensive to repair.

ENG-1-7

Fill the fuel tank at the end of every working day to avoid any water condensing. The use of diesel fuel additive also serves for reducing the condensation of water.

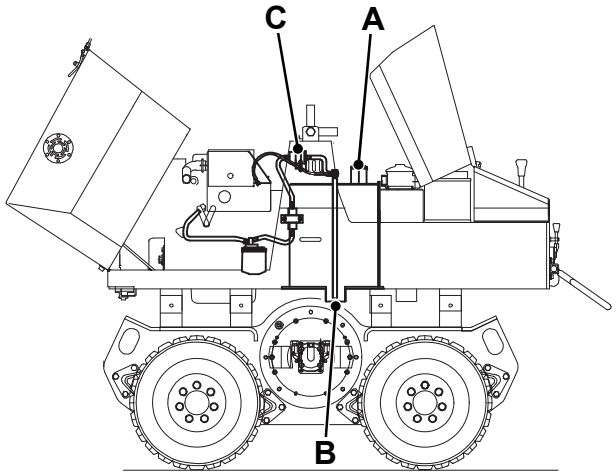


Fig 3.

1 Remove the filler cap **3-A**.

2 Remove the drain plug **3-B** of the fuel tank and drain the fuel.

3 Flush the fuel tank with diesel fuel.

4 Put the drain plug back in.

5 Remove the pre-filter **3-C**, clean it in diesel fuel and refit it.

6 Fill the fuel tank with fuel, paying attention to any leaks.

7 Screw on and lock the filler cap.

Note: *The fuel tank may contain 22 litres of diesel fuel.*

Replacing the Fuel Filters

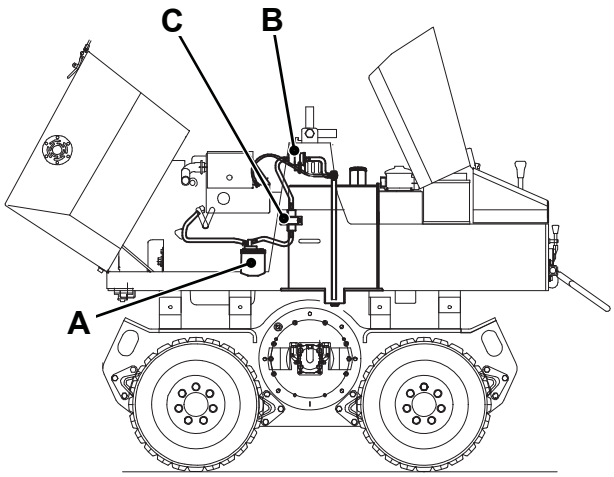


Fig 4.

A	Main Filter
B	Pre-Filter
C	Electronic Fuel Pump

Main Filter

1 Open the bonnet.

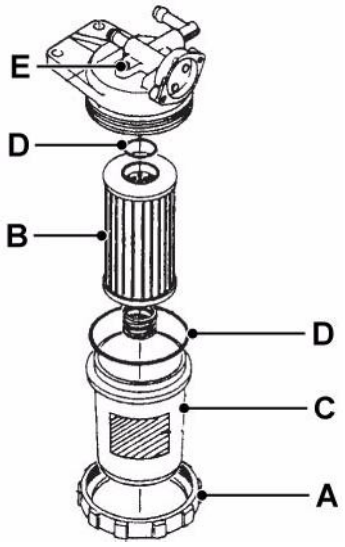


Fig 5.

2 Unscrew the ring bolt **5-A**, pull the filter element **5-B** out of the filter case **5-C** and replace it.

3 Slightly wet the O–rings **5-D** with clean oil. Reassemble the fuel filter in the reverse order of that described previously.

4 Fill the diesel tank before and vent the system using the vent screw **5-E**.

5 The electronic fuel pump **4-C** is used to press the air out of the conduits and the filter. The fuel pump runs with the glow plug starting switch in position “I”. Continue to pump until the fuel emerges at the vent screw without bubbles.

⚠ WARNING

Fuel oil is highly inflammable. Stop the engine immediately if a fuel leak is suspected. Completely wipe off any spilt fuel which could cause a fire.

8-3-4-3_1

⚠ WARNING

Hot oil and engine components can burn you. Make sure the engine is cool before doing this job. Bleeding a hot engine could cause fuel to spill on to a hot exhaust manifold creating a danger of fire.

13-3-1-16

Checking the Cooling System

⚠ WARNING

The cooling system is pressurised when the coolant is hot. When you remove the cap, hot coolant can spray out and burn you. Make sure that the engine is cool before you work on the cooling system.

9-3-3-1_2

1 Pay attention to and, if necessary, replace any damaged hoses and loose or damaged hose clips.

2 Check the radiator for leaks, damage and dirt collections. Clean and repair as needed

3 Check the antifreeze concentration. For all–year protection of the engine down to –37oC (–4oF) use ethylene glycol based antifreeze.

Changing the Coolant

1 Drain the coolant system by opening both drain cocks (on the crankcase side and on the underside of the radiator). A 10 litre collecting tank is usually sufficient.

2 To clean the system, flush it with clean water. In the event of mineral deposits, scale, rust or oil use an intensive radiator cleaning agent and proceed according to the manufacturer's instructions.

3 Fill the system with a solution of 50% water and 50% ethylene glycol based antifreeze.

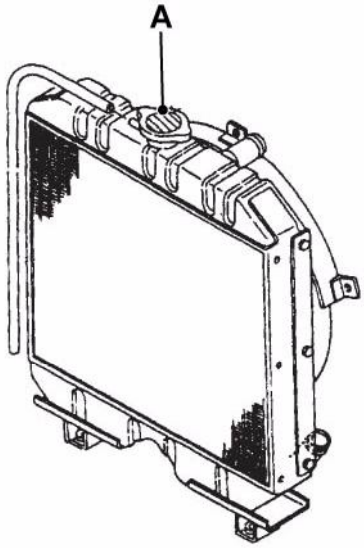


Fig 6.

a For this purpose open the filler cap **6-A**.

b Pour in the liquid until the radiator is full of water.

c Close the filler cap.

4 Let the engine run for 2 minutes so that any remaining air can escape. Then check and top up, if necessary.

5 Check the system for leaks.

Changing the Air Filter Element

⚠ WARNING

Do not run the engine with the air filter element removed.

4-6-1-4

Note: *In a dusty environment, the element may have to be changed more frequently than the service schedule recommendation.*

The engine is equipped with a dry air filter, which has to be serviced as needed, depending on the use of the machine. The air filter is accessible after opening the bonnet.

1 Stop the engine, ⇨ ***Stopping and Parking the Machine (🗋 1-36)***.

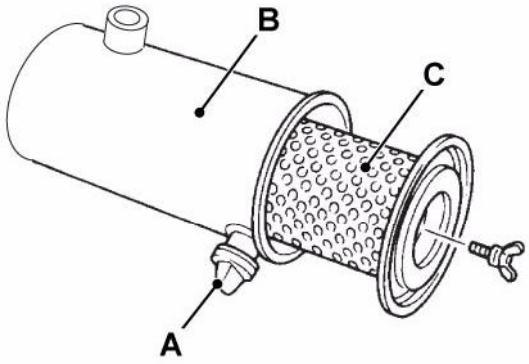


Fig 7.

2 Open the dust discharge valve **7-A** once a week under normal conditions (or daily in the event of operation in dusty environment) to remove large dust and dirt particles.

3 Clean the inside of the air filter **7-B** by wiping it with a cloth if it is dirty or wet.

4 Avoid touching the element **7-C** except for cleaning.

Fig 8.

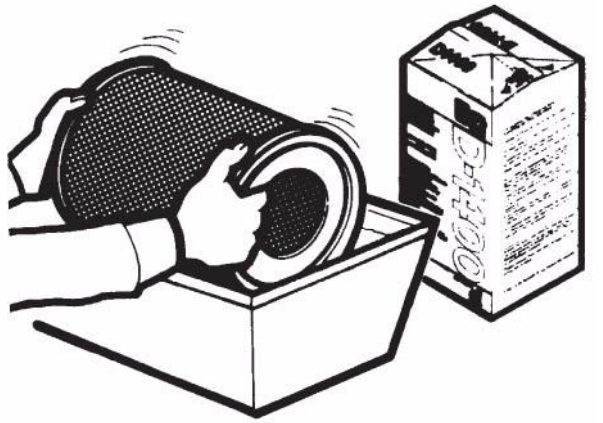
5 If dry dust adheres to the element, blow it out from the inside to the outside with compressed air while turning the element, ⇨ ***Fig 8. (🗋 3-18)***. The pressure of the compressed air should be below 2.1 bar.

6 If carbon or oil sticks to the element, put it in cleaning agent for 30 minutes, wash it out in water several times, rinse it with clear water and allow it to dry in the open air.

After it has dried completely, check the inside of the element for any damage using light (according to the instructions on the stamp).

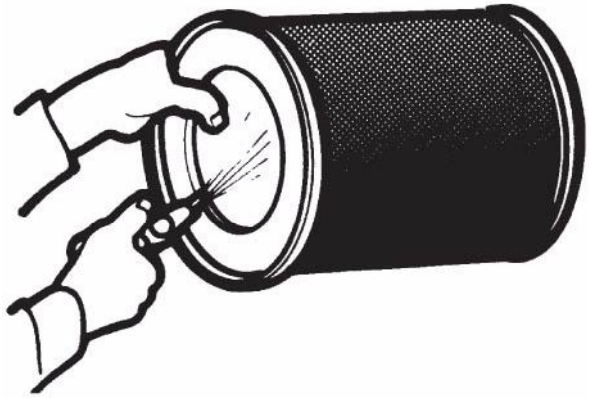
Cleaning the Air Filter Element

Washing



Washing is the best cleaning method for the main element. The main element must be dry before being refitted. Do not use compressed air for drying!

Compressed air



The pressure of compressed air used to clean the main element must not be more than 2.1 bar. Use compressed air to clean the inside from a distance of more than 25 mm. This cleaning method removes neither carbon deposits nor soot!

Important: *Check that the wing screw of the filter has been tightened sufficiently. If it loosens, dust and dirt may be sucked in, leading to wear on the cylinder and the piston rings. This will result in poor engine performance. Do not service the air filter excessively. Excessive maintenance may cause dirt to enter the engine, leading to premature wear*

Jump Starting

Before connecting a flat battery for a jump start, check why the battery is flat and whether it is in good condition.

If a shorted or faulty battery is jump started, this may cause damage to the digital electronics.

Replace the battery if in doubt about its condition.

The battery should be loaded before starting, if possible.

Never disconnect the battery with the engine running or allow the machine to run without a battery.

For jump-starting proceed as follows:

1 Open the guard cover of the machine.

2 Switch off the engine using the device with an operative battery.

3 Attach one end of the positive battery jumper cable to the positive pole of the operative battery and connect the other end of the cable to the positive pole of the flat battery.

4 Attach the negative battery jumper cable to the negative terminal post of the working battery and connect the other end of the cable to the negative pole of the flat battery.

5 Start the engine using the device with the working battery.

6 Allow the flat battery a few minutes for recharging before starting the engine

7 When disconnecting the battery jumper cables, first remove the negative cable from the flat battery and then from the negative pole of the charged battery.

First remove the positive cable from the terminal of the discharged battery and then from the positive terminal of the other battery.

Hydraulic System

Checking the Hydraulic Fluid Level

1 Park the machine on level ground and stop the engine ⇒ *Stopping and Parking the Machine (1-36)*.

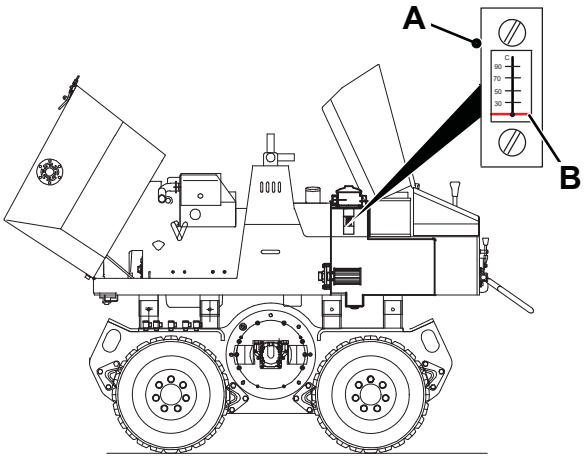


Fig 9.

2 Check the oil level in the hydraulic oil reservoir daily by means of the oil level gauge **9-A**.

3 When the machine is cold, the oil level should be just above the red mark **9-B**, however, no higher than up to the 30°C graduation mark of the temperature scale.

Changing the Hydraulic Fluid

⚠ WARNING

Hydraulic fluid at system pressure can injure you. Relieve the system pressure before changing the Hydraulic filter element.

15-1-1-7

⚠ CAUTION

If the fluid is cloudy, then water or air has contaminated the system. This could damage the hydraulic pump. Contact your JCB Distributor immediately.

12-5-1-4

⚠ CAUTION

Do not run the engine with the hydraulic tank filler cap removed.

5-3-4-1

⚠ WARNING

Fluid Under Pressure

Fine jets of fluid at high pressure can penetrate the skin. Keep face and hands well clear of fluid under pressure and wear protective glasses and gloves. Hold a piece of cardboard close to suspected leaks and then inspect the cardboard for signs of fluid. If fluid penetrates your skin, get medical help immediately.

INT-3-1-10_3

⚠ CAUTION

Ensure that dirt etc. does not enter the hydraulic system during this job.

5-3-4-4

Change the hydraulic oil every 1000 operating hours or every year or in the event of impurities in the hydraulic system.

Change the hydraulic oil at operating temperature. Hot hydraulic oil removes more dirt from the hydraulic system than cold oil.

1 Park the machine on level ground and stop the engine ⇒ *Stopping and Parking the Machine (1-36)*.

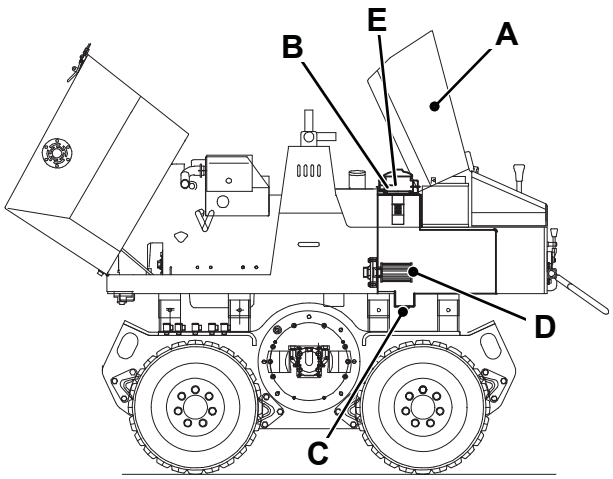


Fig 10.

2 Open the cover **10-A**.

3 Unscrew the filler plug **10-B** and cover the filling orifice.

4 Provide a collecting tank with a capacity of about 70 litres for catching the hydraulic oil.

5 Open the drain plug **10-C** under the hydraulic oil reservoir and drain the oil.

6 Remove and replace the main hydraulic filter element **10-D**.

7 Remove and replace the return hydraulic filter element **10-E**.

8 After draining and cleaning the hydraulic oil reservoir, screw the drain plug back in.

Check the edge sealing of the plug before screwing it in.

9 Check the filler plug for impurities. Check the edge sealing; replace, if necessary.

10 Fill the hydraulic oil reservoir with filtered hydraulic oil through the filler plug.

11 Close the cover.

12 Start the engine and allow it to idle for about 2 minutes. Stop the engine and check the oil level ⇒ *Checking the Hydraulic Fluid Level (3-21)*.

If necessary, add oil.

13 Check the oil filter and drain plug for leaks.

Vibration System

Checking the Vibration Fluid Level

The vibration fluid level can only be confirmed by changing fluid, ⇨ *Changing the Vibration Fluid (3-24)*.

Changing the Vibration Fluid

⚠ WARNING

Hydraulic fluid at system pressure can injure you. Relieve the system pressure before changing the Hydraulic filter element.

15-1-1-7

⚠ CAUTION

If the fluid is cloudy, then water or air has contaminated the system. This could damage the hydraulic pump. Contact your JCB Distributor immediately.

12-5-1-4

⚠ CAUTION

Do not run the engine with the hydraulic tank filler cap removed.

5-3-4-1

⚠ WARNING

Fluid Under Pressure

Fine jets of fluid at high pressure can penetrate the skin. Keep face and hands well clear of fluid under pressure and wear protective glasses and gloves. Hold a piece of cardboard close to suspected leaks and then inspect the cardboard for signs of fluid. If fluid penetrates your skin, get medical help immediately.

INT-3-1-10_3

⚠ CAUTION

Ensure that dirt etc. does not enter the hydraulic system during this job.

5-3-4-4

Change the vibration oil at room temperature. Room temperature vibration oil removes more dirt from the vibration system than cold oil.

1 Park the machine on level ground and stop the engine ⇨ *Stopping and Parking the Machine (1-36)*.

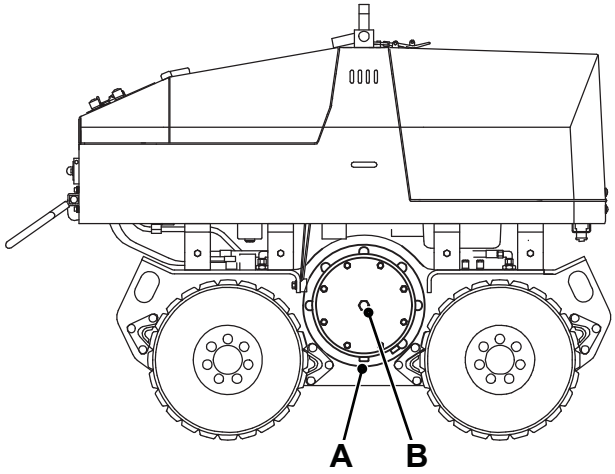


Fig 11.

2 Open the oil drain plug **11-A** on the right–hand side of the vibrator and let the oil drain out.

3 Provide a collecting tank with a capacity of about 1 litre for catching the hydraulic oil.

4 After draining the vibration oil reservoir, screw the drain plug back in.

Check the edge sealing of the plug before screwing it in.

5 Fill the vibration oil reservoir with the correction quantity of vibration oil through the filler plug **11-B**, ⇨ *Fluids, Lubricants and Capacities (3-10)*.