Product: JCB 434S Wheeled Loader Service Repair Manual
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Section 3

Routine Maintenance

Publication No.
9803/9420-02

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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

Battery

⚠ WARNING

Batteries give off an explosive gas. Do not smoke when handling or working on the battery. Keep the battery away from sparks and flames.

Battery electrolyte contains sulphuric acid. It can burn you if it touches your skin or eyes. Wear goggles. Handle the battery carefully to prevent spillage. Keep metallic items (watches, rings, zips etc) away from the battery terminals. Such items could short the terminals and burn you.

Set all switches in the cab to OFF before disconnecting and connecting the battery. When disconnecting the battery, take off the earth (-) lead first.

Re-charge the battery away from the machine, in a well ventilated area. Switch the charging circuit off before connecting or disconnecting the battery. When you have installed the battery in the machine, wait five minutes before connecting it up.

When reconnecting, fit the positive (+) lead first.

First Aid - Electrolyte

Do the following if electrolyte:

GETS INTO YOUR EYES

Immediately flush with water for 15 minutes, always get medical help.

IS SWALLOWED

Do not induce vomiting. Drink large quantities of water or milk. Then drink milk of magnesia, beaten egg or vegetable oil. Get medical help.

GETS ONTO YOUR SKIN

Flush with water, remove affected clothing. Cover burns with a sterile dressing then get medical help.

5-3-4-3_1

Warning Symbols

The following warning symbols may be found on the battery.

Symbol	Meaning
	Keep away from children.
	Shield eyes.
	No smoking, no naked flames, no sparks.
	Explosive Gas.
	Battery acid.
	Note operating instructions.

⚠ CAUTION

Do not disconnect the battery while the engine is running, otherwise the electrical circuits may be damaged.

INT-3-1-14

⚠ WARNING

Electrical Circuits

Understand the electrical circuit before connecting or disconnecting an electrical component. A wrong connection can cause injury and/or damage.

INT-3-1-4

⚠ DANGER

Electrolyte

Battery electrolyte is toxic and corrosive. Do not breathe the gases given off by the battery. Keep the electrolyte away from your clothes, skin, mouth and eyes. Wear safety glasses.

INT-3-2-1_3

⚠ CAUTION

Damaged or spent batteries and any residue from fires or spillage should be put in a closed acid proof receptacle and must be disposed of in accordance with local environmental waste regulations.

INT-3-1-12

⚠ WARNING

Battery Gases

Batteries give off explosive gases. Keep flames and sparks away from the battery. Do not smoke close to the battery. Make sure there is good ventilation in closed areas where batteries are being used or charged. Do not check the battery charge by shorting the terminals with metal; use a hydrometer or voltmeter.

INT-3-1-8

Service Schedules

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

Maintenance must be done by suitably qualified personnel. Before attempting any maintenance work, make sure the machine is safe. Park on level ground. If it is necessary to work with the loader arms raised, then the loader arm safety strut must be fitted as shown in Loader Arm Safety Strut in MAINTENANCE section.

2-3-1-1

Apart From The Daily Jobs, The Schedules Are Based On Machine Running Hours. Keep A Regular Check On The Hourmeter Readings To Correctly Gauge Service Intervals. 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 100 Hours	=	Monthly
Every 500 Hours	=	Six Months
Every 1000 Hours	=	Yearly
Every 2000 Hours	=	2 Years

✶ Owner or Operator Tasks ○ First 100 hrs only (to be completed by JCB Distributor) ● Regular Service

Table 1. Engine

Pre-start Cold Checks, Service Points and Fluid Levels	Operation	Daily 10 Hr	Weekly 50 Hr	Monthly 100 Hr	First 100 Hr	6 Monthly 500 Hr	Yearly 1000 Hr	2 Yearly 2000 Hr
Oil Level and Condition	Check	✶						
Oil and Filter	Change(1)					●		
Coolant	Change							●
Coolant Level	Check	✶						
Coolant strength and Condition	Check					●		
Air Cleaner Dust Valve	Clean(2)			✶	○	●		
Air Cleaner Outer Element	Change(3)					●		
Air Cleaner Inner Element	Change							●
Fuel System For Leaks and Contamination	Check	✶			○		●	
Fuel Filter	Drain		✶					
Fuel Filter	Change						●	
Fuel Sedimenter	Check					✶		
Fan Belt Tension/Condition	Check				○	✶	●	
Fan Belt	Change					✶		
Valve Clearances	Check/Adjust							○
External Oil Leaks	Check	✶					●	

(1) In arduous conditions change the oil and filter after every 250 Hours or three months (whichever comes first).
(2) Clean more often when working in dusty environments
(3) Change outer element more frequently in dusty operating environments.

Table 2. Transmission and Axles

Pre-start Cold Checks, Service Points and Fluid Levels	Operation	Daily 10 Hr	Weekly 50 Hr	Monthly 100 Hr	First 100 Hr	6 Monthly 500 Hr	Yearly 1000 Hr	2 Yearly 2000 Hr
Transmission Oil Level	Check	✶						
Transmission Strainer/Filter	Change						●	
Differential Oil Level	Check			✶				
Differential Oil	Change				○		●	
Hub Oil	Check			✶				
Hub Oil	Change				○		●	

Pre-start Cold Checks, Service Points and Fluid Levels	Operation	Daily 10 Hr	Weekly 50 Hr	Monthly 100 Hr	First 100 Hr	6 Monthly 500 Hr	Yearly 1000 Hr	2 Yearly 2000 Hr
Axle Breathers	Clean					●		
Tyre Pressures/Condition	Check			✶	○		●	
Wheel Nut Security	Check		✶		○		●	
Axle Mount Security	Check				○		●	
Propshaft Security	Check				○		●	
Bevel Ring Gear Deflection Plunger	Check						●	
Propshaft and Universal Joints	Grease						●	

Table 3. Hydraulics

Pre-start Cold Checks, Service Points and Fluid Levels	Operation	Daily 10 Hr	Weekly 50 Hr	Monthly 100 Hr	First 100 Hr	6 Monthly 500 Hr	Yearly 1000 Hr	2 Yearly 2000 Hr
Oil Level	Check	✶						
Oil Filter	Change					●		
Oil	Change and Sample							●
Servo Filter	Change					●		
Tank Filler Cap	Change							●
Tank Suction Strainers (2 off)	Clean							●
Hoses, Rams and Pipework for Damage or Leaks	Check				○		●	

Table 4. Brakes

Pre-start Cold Checks, Service Points and Fluid Levels	Operation	Daily 10 Hr	Weekly 50 Hr	Monthly 100 Hr	First 100 Hr	6 Monthly 500 Hr	Yearly 1000 Hr	2 Yearly 2000 Hr
Parkbrake Operation	Check		✶					

Table 5. Electrics

Pre-start Cold Checks, Service Points and Fluid Levels	Operation	Daily 10 Hr	Weekly 50 Hr	Monthly 100 Hr	First 100 Hr	6 Monthly 500 Hr	Yearly 1000 Hr	2 Yearly 2000 Hr
Instrument Panel Operation	Check	✶						
Battery Electrolyte Level (if applicable)	Check			✶	○		●	
Battery Charge and Condition	Check			✶	○		●	
Battery Terminals for Condition & Tightness	Check			✶	○		●	
Wiring for Chaffing and Routing	Check				○		●	

Table 6. Bodywork and Cab

Pre-start Cold Checks, Service Points and Fluid Levels	Operation	Daily 10 Hr	Weekly 50 Hr	Monthly 100 Hr	First 100 Hr	6 Monthly 500 Hr	Yearly 1000 Hr	2 Yearly 2000 Hr
Machine Condition Generally	Check	✶			○			
Wing Mirrors Condition & Security	Check	✶			○			
All Pivot Pins	Grease			✶	○		●	
Propshaft Joints	Grease(1)			✶	○		●	
Windscreen Washer Fluid Level	Fill	✶						
Cab Heater Intake Filter(s)	Clean(2)				○	✶	●	
Seat Belt Condition and Security	Check	✶			○		●	
Hinges	Grease					✶		
ROPS/FOPS Structure	Check						●	

(1) Grease more frequently when operating in arduous conditions.
(2) Clean more frequently in dusty operating environments.

○ First 100 hrs only (to be completed by JCB Distributor) ● Regular Service

Table 7. Engine

Functional Test and Final Inspection	Operation	Daily 10 Hr	Weekly 50 Hr	Monthly 100 Hr	First 100 Hr	6 Monthly 500 Hr	Yearly 1000 Hr	2 Yearly 2000 Hr
Idle Speed	Check and Adjust			○		●		
Torque Converter Stall Speed	Check			○		●		
Combined Stall Speed	Check					●		
Max. No Load Speed	Check and Adjust				○	●		
Throttle System	Check				○			
Exhaust Smoke	Check				○			
Fuel System for Leaks and Contamination	Check				○			
Exhaust System Security	Check				○			
Air Inlet System Security	Check				○			
Coolant System for Leaks	Drain				○	●		

Table 8. Transmission and Axles

Functional Test and Final Inspection	Operation	Daily 10 Hr	Weekly 50 Hr	Monthly 100 Hr	First 100 Hr	6 Monthly 500 Hr	Yearly 1000 Hr	2 Yearly 2000 Hr
Clutch Pack Pressures	Check				○	●		
Clutch Disconnect/Dump Button	Check				○			
Clutch Pack Calibration	Check				○		●	
Speed Change and Selection	Check				○			
Forward/Reverse Selection/ Operation	Check				○	●		
Neutral Start Operation	Check				○	●		
Reverse Alarm (if fitted)	Check				○			
Oil Cooler and Pipework	Check				○			

Table 9. Hydraulics

Functional Test and Final Inspection	Operation	Daily 10 Hr	Weekly 50 Hr	Monthly 100 Hr	First 100 Hr	6 Monthly 500 Hr	Yearly 1000 Hr	2 Yearly 2000 Hr
MRV Pressure	Check and Adjust				○	●		
Steer Circuit MRV Pressure	Check and Adjust				○	●		
ARV Pressure	Check and Adjust			●				
Operation of All Services	Check				○	●		
Hoses for Damage and Leaks	Check					●		
Pipework for Damage and Leaks	Check					●		
Piston Rods and Gland Seals	Check					●		

Table 10. Electrics

Functional Test and Final Inspection	Operation	Daily 10 Hr	Weekly 50 Hr	Monthly 100 Hr	First 100 Hr	6 Monthly 500 Hr	Yearly 1000 Hr	2 Yearly 2000 Hr
Starter Motor	Check				○			●
Alternator	Check				○			●
Gauges and Warning Lights	Check				○	●		
Proximity Sensor Function	Check				○	●		
Cab Switches	Check				○	●		
Wiper Motors	Check				○	●		
Heater	Check			●				

Table 11. Cab

Functional Test and Final Inspection	Operation	Daily 10 Hr	Weekly 50 Hr	Monthly 100 Hr	First 100 Hr	6 Monthly 500 Hr	Yearly 1000 Hr	2 Yearly 2000 Hr
Glazing for Correct Fit	Check				○			
Doors and Hinges	Check				○			
Toolkit and Handbook	Check				○			
Locks and Keys	Check				○			
Seat/Seat Belts	Check	●						

Table 12. Paintwork

Functional Test and Final Inspection	Operation	Daily 10 Hr	Weekly 50 Hr	Monthly 100 Hr	First 100 Hr	6 Monthly 500 Hr	Yearly 1000 Hr	2 Yearly 2000 Hr
Condition	Check			●				

Table 13. Attachments

Functional Test and Final Inspection	Operation	Daily 10 Hr	Weekly 50 Hr	Monthly 100 Hr	First 100 Hr	6 Monthly 500 Hr	Yearly 1000 Hr	2 Yearly 2000 Hr
Attachment Circuit Pressures	Check				○	●		
Operation	Check				○	●		

Table 14. Registration/Certification

Functional Test and Final Inspection	Operation	Daily 10 Hr	Weekly 50 Hr	Monthly 100 Hr	First 100 Hr	6 Monthly 500 Hr	Yearly 1000 Hr	2 Yearly 2000 Hr
Form 2530(F91) (UK Requirement) - Lift	Check					●		
Form 2531(F96/F97) (UK Requirement)	Check					●		
SWL Stickers (UK)	Renew as Required					●		

Lubricants and Capacities

Note: *New engines DO NOT require a running-in period. The engine/machine should be used in a normal work cycle immediately; glazing of the piston cylinder bores, resulting in excessive oil consumption, could occur if the engine is gently run-in. Under no circumstances should the engine be allowed to idle for extended periods; (e.g. warming up without load).*

Table 15. 434S Machines

ITEM	CAPACITY	FLUID/LUBRICANT	INTERNATIONAL SPECIFICATION
Engine Oil			
-10 to 50° C (1)	17.5 litres (3.9 UK gal)	JCB Extreme Performance Engine Oil 15W/40	ACEA E3/B3/A3 API CH-4A3
Gearbox	27 litres (5.9 UK gal)(2)	JCB HP Universal ATF	ZF TE-ML 06, 11, 12, 14
Axles	39 litres (8.6 UK gal)	JCB LS Gear Oil	API GL4, MIL-L-2105B(3)
Hydraulic System	210 litres (46.2 UK gal)(4)	JCB HP Hydraulic Fluid	ISO VG46
Cooling System	35 litres (7.7 UK gal)	Water/Anti-freeze (⇨ ***Coolant Mixtures (*** 3-33))	ASTM D3306-74
Fuel System (Main)	230 litres (50.6 UK gal)	Diesel Oil (⇨ ***Types of Fuel (*** 3-37))	ASTM D975-66T Nos. 1D, 2D.
Fuel System (Aux.)	140 litres (31.0 UK gal)	Diesel Oil (⇨ ***Types of Fuel (*** 3-37))	ASTM D975-66T Nos. 1D, 2D.
Grease Points		JCB HP Grease(5)	Lithium based
Autolube System (if fitted)		JCB MPL EP Grease	Lithium based

(1) If API CH-4 or ACEA E3/B3/A3 engine oil is not available, then the engine oil must be changed every 250 hours.
(2) The figure quoted is TOTAL system capacity. Use the 'MAX' and 'MIN' marks on the dipstick when refilling the system.
(3) Must be suitable for use with oil immersed brakes and limited slip differentials (LSD).
(4) The total hydraulic system capacity depends on the equipment being used. Fill the system with all rams closed and watch the level indicator.
(5) If JCB Special MPL Grease is used for normal greasing, all 100 hour greasing operations must be carried out at TEN (10) HOUR intervals.

Note: *Biodegradeable Hydraulic Fluid is a factory option ONLY. Replenish with JCB Biodegradeable Multigrade Hydraulic fluid. For further information, contact Wheeled Loader Technical Service.*

Seat Belt

Checking the Seat Belt Condition and Security

T3-008

⚠ WARNING

When a seat belt is fitted to your machine replace it with a new one if it is damaged, if the fabric is worn, or if the machine has been in an accident. Fit a new seat belt every three years.

2-3-1-7_1

Inspect the seat belt for signs of fraying and stretching. Check that the stitching is not loose or damaged. Check that the buckle assembly is undamaged and works correctly.

Check that the belt mounting bolts are undamaged, correctly fitted and tightened.

Articulation Lock

Installing the Articulation Lock

⚠ DANGER

Make sure the articulation safety lock is fitted before transporting the machine. The articulation safety lock must also be fitted if you are carrying out daily checks or doing any maintenance work in the articulation danger zone.

If the articulation lock is not fitted you could be crushed between the two parts of the chassis.

GEN-3-1_1

The articulation lock is stowed in the machine's tool box. The articulation lock is fitted, as illustrated, with the machine in the 'straight ahead' position.

1 Steer the machine to bring the front and rear wheel in a straight line.

2 Apply the park brake, put the transmission in neutral and stop the engine.

3 Remove the articulation lock bar **C** from the tool box.

4 Position the articulation lock bar. Fit pins **A** and **B** into the articulation lock positions as shown. If the pins do not fit, fit pin **A**, then turn the steering wheel slightly to align the hole for pin **B**.

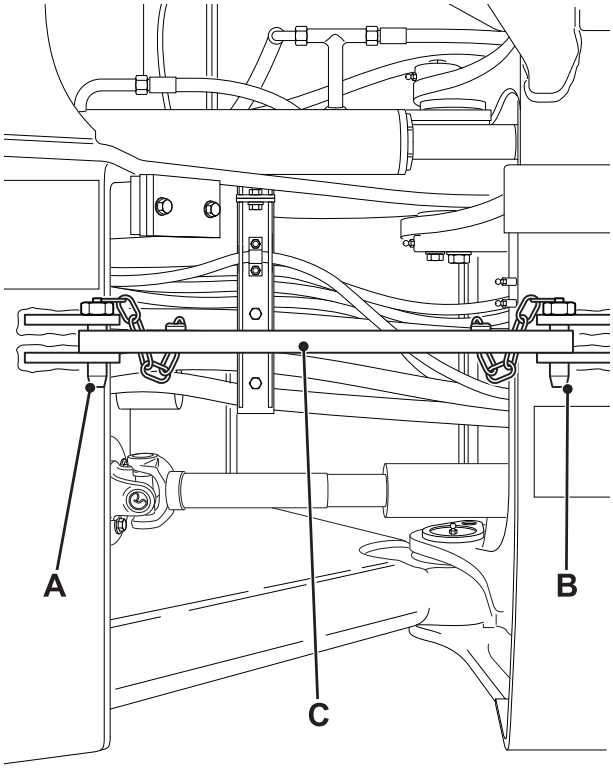

Fig 1.

Removing the Articulation Lock

⚠ WARNING

Always make sure the articulation safety lock has been removed before attempting to drive the machine. The machine cannot be steered with the articulation lock fitted.

16-3-1-4

1 Remove locking pins **A** and **B**.

2 Stow locking bar **C** in the machine's tool box.

Loader Arm Safety Strut

Installing the Safety Strut

⚠ WARNING

Never walk or work under raised equipment unless it is supported by a mechanical device. Equipment which is supported only by a hydraulic device can drop and injure you if the hydraulic system fails or if the control is operated (even with the engine stopped).

13-2-3-7

⚠ WARNING

You could be killed or seriously injured if the loader control is accidentally operated. Make sure that no-one goes near the machine whilst you fit the safety strut.

16-3-1-5

1 Empty the bucket and raise the loader arm enough to fit the safety strut **2A**.

2 Apply the parking brake, put the transmission in neutral and stop the engine.

3 Fit the strut:

a Remove the strut from its stowage position.

b Place the strut around the ram.

c Secure the strut into position using strap **2B**.

4 Start the engine.

5 Slowly lower the loader arm onto the safety strut. Stop the movement immediately the weight of the arm is supported by the strut.

Note: *Extreme care must be taken when lowering the loader arm onto the safety strut. 'Feather' the lever to lower the loader arm slowly.*

Removing the Safety Strut

⚠ WARNING

You could be killed or injured if the loader control is accidentally operated. Make sure no-one comes near the machine while you remove the safety strut.

2-3-1-3

1 Make sure the parking brake is on, and that the transmission is in neutral.

2 Raise the loader arm to take the weight off the safety strut **2A**. Stop the engine.

3 Remove the strut:

a Release securing strap **2B**.

b Remove safety strut.

c Return the safety strut to its stowage position.

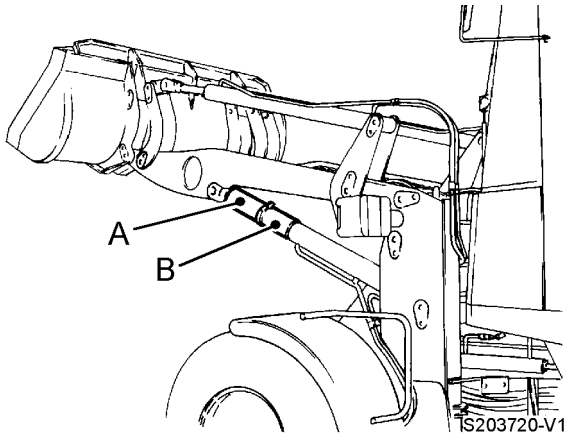

Fig 2.

Engine Covers

Opening the Engine Covers

Opening the Engine Covers

WARNING

Engine

Obsolete: Use 5-2-6-5

1 Apply the parking brake, put the transmission in neutral and stop the engine.

2 Pull handle **3D**. It is recommended that the panels are kept locked.

3 Pull handle **3E** out and up, allow the gas-strut to open the panel.

Closing the Engine Covers

1 Pull handle **3E** down and inwards.

2 Make sure the panel is latched.

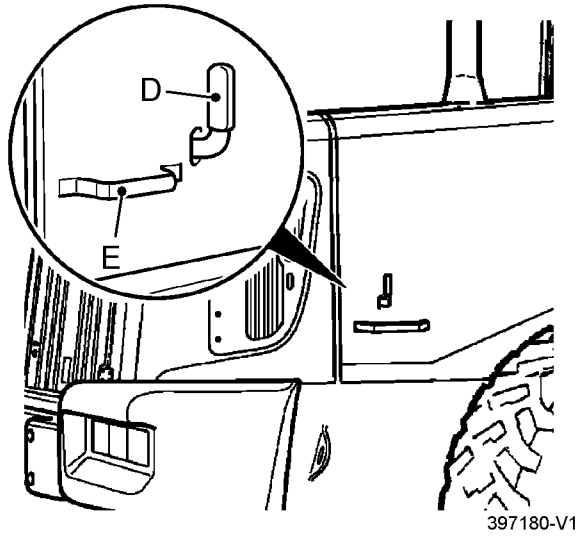

Fig 3.

Rear Grille

Opening the Rear Grille

1 Apply the parking brake, put the transmission in neutral and stop the engine.

2 Open the left side engine cover ⇨ ***Engine Covers (3-16)*** and unlatch the rear grille by pulling the release catch **A**.

3 Open the rear grille by pulling the bottom of the grille out and up, the grille will be lifted by the gas struts.

Closing the Rear Grille

1 Close the rear grille by pulling the bottom of the grille down against the pressure of the gas struts. Keep a firm hold on the grille.

2 Make sure the rear grille is latched. Close and lock the engine cover.

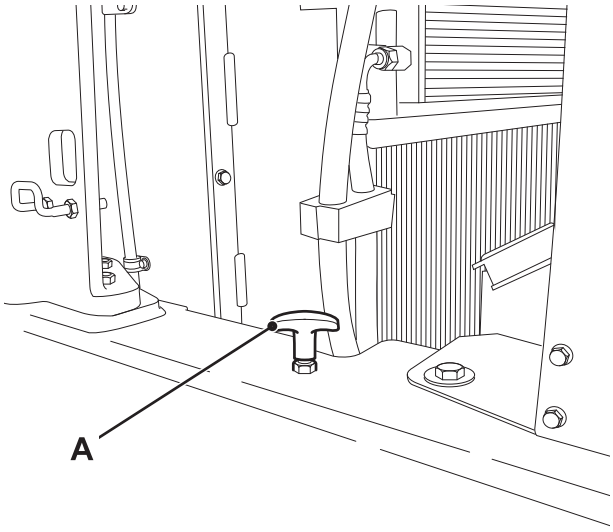

Fig 4.

Heater Door

Opening the Heater Door

1 Apply the parking brake, put the transmission in neutral and stop the engine.

2 Unlock and press catch **A**.

Closing the Heater Door

1 Close the heater door by pushing on the area surrounding the catch.

2 Make sure the heater door is latched. It is recommended that the door is kept locked.

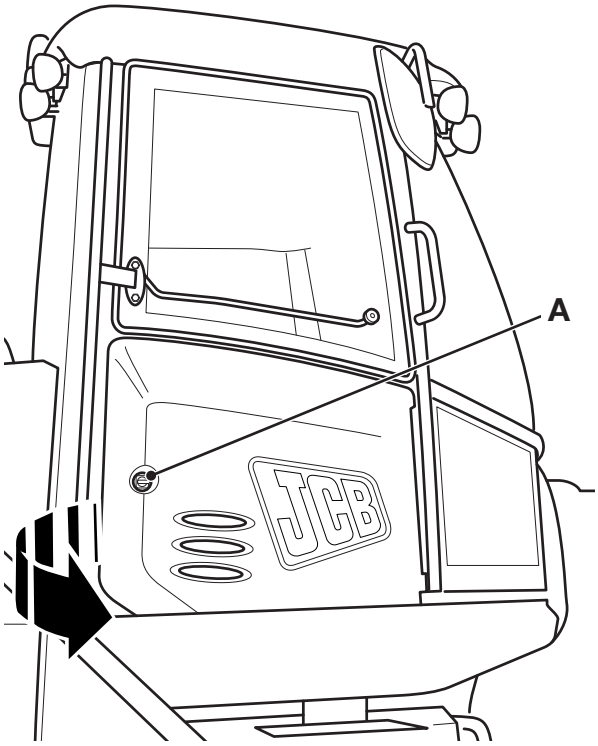

Fig 5.

Greasing

⚠ WARNING

Make the machine safe before working underneath it. Park the machine on level ground, lower the attachments to the ground. Apply the park brake, put the transmission in neutral and stop the engine. Block both sides of all four wheels.

Disconnect the battery, to prevent the engine being started while you are beneath the machine.

GEN-4-1_1

For interval ⇨ *Service Schedules (🗋 3-5)*

The machine must be greased regularly to keep it working efficiently. Regular greasing will also increase the machine's working life.

Grease should be applied with a grease gun, normally two strokes of the gun should be sufficient. Stop the greasing procedure when fresh grease appears at the joint. Use the recommended grease, ⇨ *Lubricants and Capacities (🗋 3-12)*.

In the following illustrations, the grease points are numbered. Count off the grease points as you apply grease to each one. Refit the dust caps after greasing.

Note: *In arduous conditions the shovel pivot pins should be greased at least every ten (10) hours.*

Shovel Pivot Pins (HT)

Total of 6 grease points. (**1** to **6**)

Loader Arm Pivot Points (HT)

Total of 18 grease points (**7** to **24**)

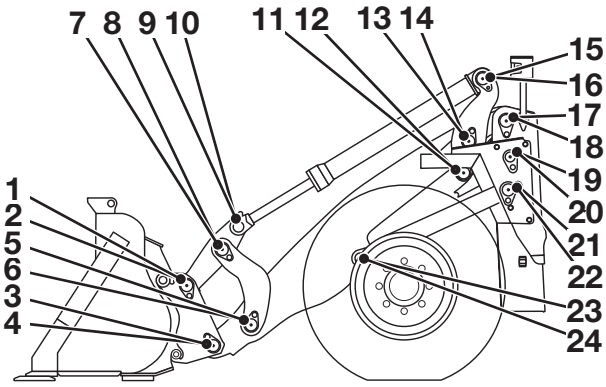

Fig 6.

Centre Pivot

Total of 3 grease points

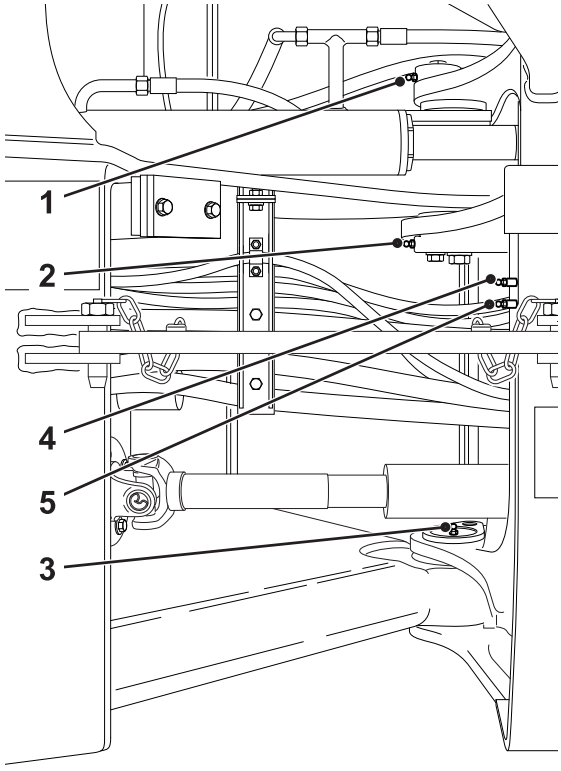

Fig 7.

Steer Rams

Total of 4 grease points (**6** to **9**)

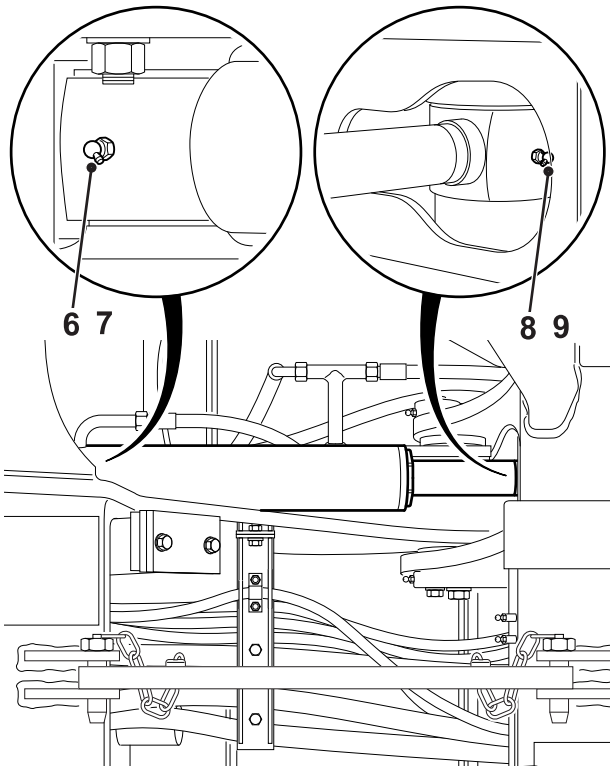

Fig 8.

Rear Axle Pivots

Total of 2 grease points (**4** and **5**)

Propshafts

Total of 7 grease points

⚠ WARNING

Make the machine safe before working underneath it. Park the machine on level ground, lower the attachments to the ground. Apply the park brake, put the transmission in neutral and stop the engine. Block both sides of all four wheels.

Disconnect the battery, to prevent the engine being started while you are beneath the machine.

GEN-4-1_1

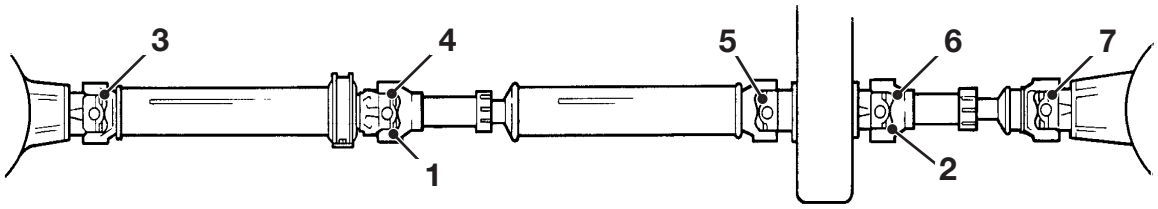

Fig 9.

Cab Door Hinges

When greasing the cab door hinges, open the door and stand as shown.

Fig 10.

Automatic Greasing System

When the ignition is ON, the greasing system performs all operations automatically.

Grease Points

The following points are greased by the automatic system (when fitted):

1 Shovel Pivot Pins

2 Loader Arm Pivot Points

3 Centre Pivot and Steering Rams

Note: *All other grease points must continue to be greased as per the Service Schedules*

Filling the Reservoir

It is essential that the correct grease is used in this system.

1 Remove the dust cap from the filler coupling **A**.

2 Carefully clean the area around the filler coupling and the coupling on the filler hose.

3 Attach the filler hose to the coupling **A**.

4 Fill the reservoir **C** until the top of the follower plate **D** (the plate on top of the grease) is level with the maximum level mark.

5 Remove the filler hose, clean the coupling and refit the dust cap.

Note: *Any air introduced during filling will exit via the reservoir vent. If large amounts of air are present, carry out a continuous greasing cycle for one minute.*

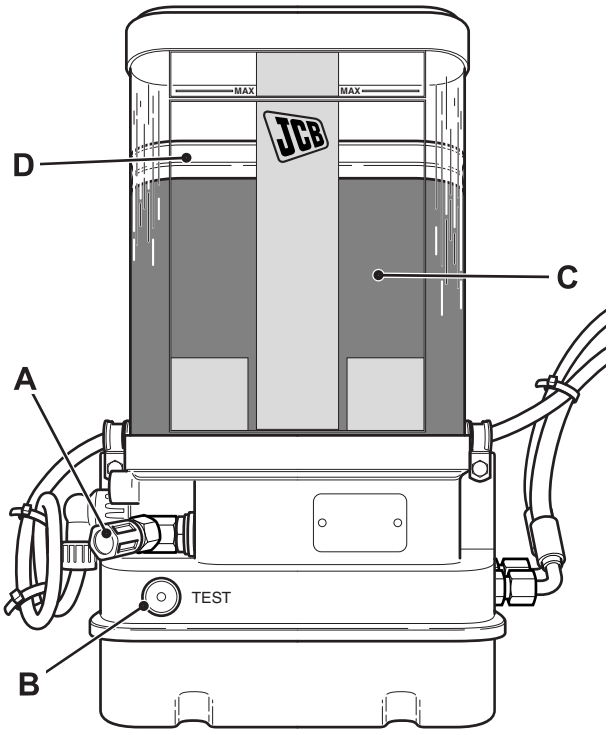

Fig 11.

Testing the System

In order to test the correct operation of the system, carry out a single greasing cycle.

Single Greasing Cycle

1 Turn starter switch to IGN.

2 Press test button **B** for 3 to 5 seconds.

3 The system will perform a single cycle test.

In order to prime the system after cleaning the machine or to vent the system; a continuous should be carried out.

Continouous Greasing Cycle

1 Turn starter switch to IGN.

2 Press test button **B** for more than 6 seconds.

3 The system will perform a continuous cycle run.

Note: *The continuous greasing cycle will continue to run until the starter switch is turned to OFF.*

Replacing the Fill Point Filter

1 Clean the area around the filler coupling **A**.

2 Remove the filler coupling **A** from the filter **F**.

3 Loosen locknut **E**.

4 Remove filter **F**.

Note: *Grease may flow from the housing **G** when the filter is removed.*

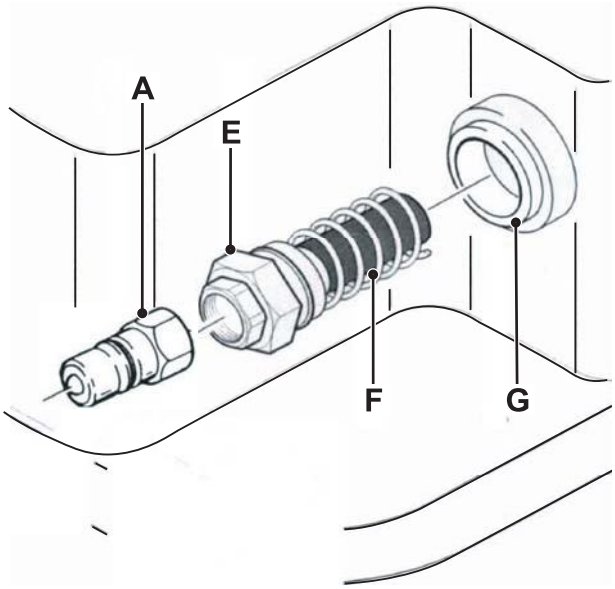

Fig 12.

⚠ CAUTION

Pressurised grease may flow from the filter housing as the filter is loosened.

4-3-5-6

5 Screw the new filter into the filter housing, hand-tight only, until the O ring contacts the filter housing **G**.

6 Tighten locknut **E** to 15Nm (133lbf in).

7 Refit the filler coupling.

System Display Unit

	Item	Indication	Description
A	Yellow Lamp	Low Level	Reservoir requires replenishing.
B	Red Lamp	Error	System not operating due to insufficient grease.
C	Green Lamp	Light Duty Greasing Mode	Long interval between grease cycles.
D	Green Lamp	Normal Duty Greasing Mode	Standard interval between grease cycles.
E	Green Lamp	Heavy Duty Greasing Cycle	Short interval between grease cycles.
F	Greasing Mode Selection Switch	-	Press the mode switch repeatedly until the desired mode lamp (C, D or E) illuminates.

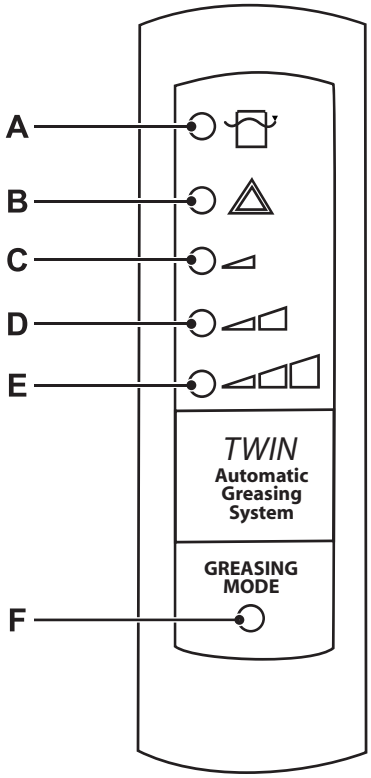

Fig 13.

Electrical System

Battery

Note: *Before commencing work on the battery you must read* ***Section c - Electrics - Service Procedures.***

Checking the Electrolyte Level

Maintenance free batteries used in normal temperate climate applications should not need topping up. However, in certain conditions (such as prolonged operation at tropical temperatures or if the alternator overcharges) the electrolyte level should be checked as described below.

⚠ CAUTION

Do not disconnect the alternator, the battery, or any part of the charging circuit with the engine running.

8-3-4-1

⚠ WARNING

Keep metal watch straps and any metal fasteners on your clothes, clear of the positive (+) battery terminal. Such items can short between the terminal and nearby metal work. If it happens you can get burned.

5-2-2-4

1 Park the machine on firm level ground, engage the parking brake and set the transmission to neutral.

2 Remove the battery cell covers and check the electrolyte level in each cell. The electrolyte should be 6 mm (0.25 in) above the plates.

⚠ WARNING

Do not top the battery up with acid. The electrolyte could boil out and burn you.

2-3-4-6

3 Top-up if necessary with distilled water or de-ionised water.

4 Check the Connections. Make sure that the terminals are tight and clean. Coat them with petroleum jelly to prevent corrosion.

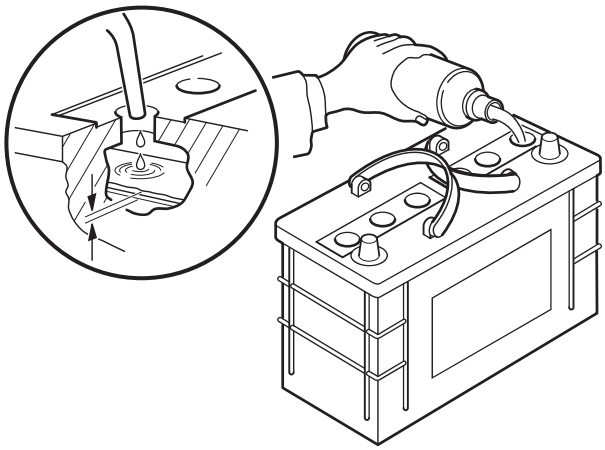

Fig 14.

Jump Starting The Engine

⚠ WARNING

Do not use a battery if its electrolyte is frozen. To prevent the battery electrolyte from freezing, keep the battery fully charged.

Do not try to charge a frozen battery or jump-start and run the engine, the battery could explode.

Batteries produce a flammable gas, which is explosive; do not smoke when checking the electrolyte levels.

When jump-starting from another vehicle, make sure that the two vehicles do not touch each other. This prevents any chance of sparks near the battery.

Set all the machine switches to their OFF positions before connecting the external power supply. Even with the starter switch set to off some circuits will be energised when the external power supply is connected.

Do not connect the booster (slave) supply directly across the starter motor. Doing this by-passes the neutral gear safety switch. If the machine is in gear, it may 'runaway' and kill or injure bystanders.

Use only sound jump leads with securely attached connectors. Connect one jump lead at a time.

The machine has a negative earth electrical system. Check which battery terminal is positive (+) before making any connections.

Keep metal watch straps and jewellery away from the jump lead connectors and the battery terminals - an accidental short could cause serious burns and damage equipment.

Make sure you know the voltage of the machine. The booster (slave) supply must not be higher than that of the machine. Using a higher voltage supply will damage your machine's electrical system.

If you do not know the voltage of your booster (slave) supply, then contact your JCB dealer for advice. Do not attempt to jump-start the engine until you are sure of the voltage of the booster (slave) supply.

4-2-2-3_1

1 The parking brake should have been engaged when the machine was last parked. If it is not engaged, engage it now.

2 Set all switches in the cab to off.

⚠ DANGER

Before lowering the attachments to the ground, make sure that the machine and the area around it are clear of other people. Anyone on or close to the machine could fall and be crushed by the attachments, or get caught in the linkages.

2-2-3-4

3 Lower the shovel to the ground, if it is not already there. It will lower itself under its own weight when you operate the lever. Operate the lever carefully to control the rate of descent. If your machine is fitted with hose burst protection valves you will not be able to lower the shovel. In this case install the safety strut.

4 Connect the positive booster cable to the positive (+) terminal on the machine battery. Connect the other end of this cable to the positive (+) terminal of the booster supply.

5 Connect the negative (-) booster cable to a suitable point on the engine. Connect the other end of this cable to the negative (-) terminal of the booster supply.

6 Start the engine.

⚠ WARNING

When the engine is running, there are rotating parts in the engine compartment. Before disconnecting the cables, make sure that you have no loose clothing (cuffs, ties etc.) which could get caught in rotating parts.

2-2-4-3

7 Disconnect the negative booster cable from the engine. Then disconnect it from the booster supply.

8 Disconnect the positive booster cable from the positive (+) terminal on the battery. Then disconnect it from the booster supply.

Fuses and Relays

For fuse, primary fuse and relay information please refer to ***Section C - Electrics - Technical Data.***

Engine

Checking the Oil Level

⚠ CAUTION

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

2-3-3-2

1 Park the machine on level ground and lower the attachments to the ground.

2 Stop the engine. Put the transmission in neutral and remove the starter key.

3 Open the right side engine cover.

4 Check that the oil level is between the two marks on the dipstick **15A**.

5 If necessary, add the recommended oil through the filler point **15B**, ⇨ *Lubricants and Capacities (3-12)*.

6 Make sure the filler cap and the dipstick are secure. Close and lock the engine cover.

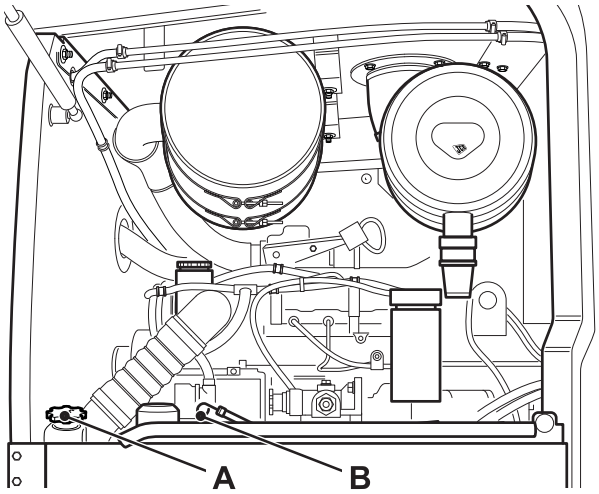

Fig 15.

Changing the Oil and Filter

⚠ WARNING

Make the machine safe before working underneath it. Park the machine on level ground, lower the attachments to the ground. Apply the park brake, put the transmission in neutral and stop the engine. Block both sides of all four wheels.

Disconnect the battery, to prevent the engine being started while you are beneath the machine.

GEN-4-1_1

⚠ CAUTION

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

2-3-3-2

1 Park the machine on level ground and lower the attachments to the ground.

2 Stop the engine. Put the transmission in neutral and remove the starter key.

3 Open the left side engine cover.

4 Place a suitable container beneath the drain plug (to catch the oil).

5 Remove the self-sealing drain plug outer threaded cover **16A**.

6 Fit the self-sealing drain kit threaded union (with attached drain pipe) and drain the sump oil.

7 Remove the self-seal drain kit, clean and refit the outer cover. (Do not over tighten the cover.)

8 Clean the area around the filter head. Unscrew the filter canister **18C**. Remember that it will be full of oil.

9 Clean filter head **18D**. Make sure that the `O' ring is removed.

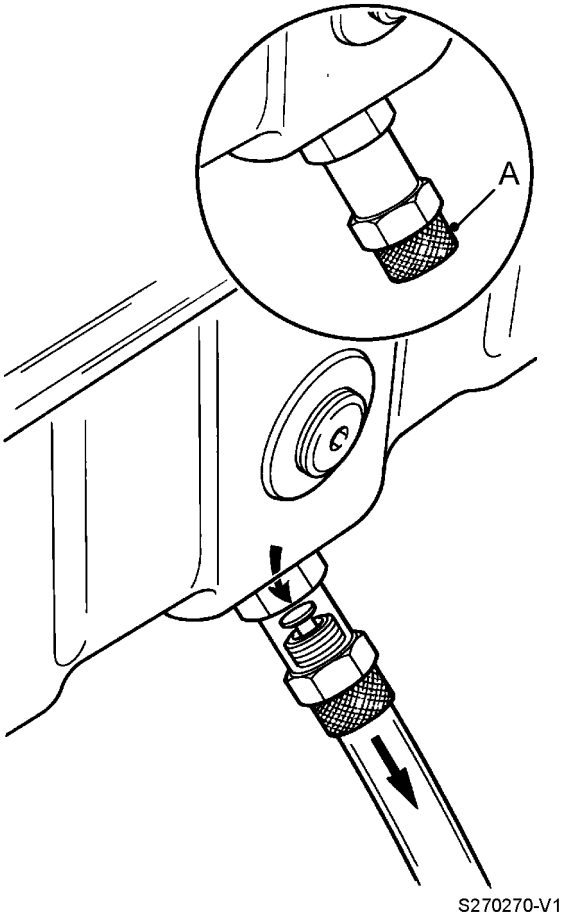

Fig 16.

10 Add clean engine oil to the new filter canister. Allow time for the oil to pass through the filter element.

11 Smear the seal **18E** on the new filter canister with clean engine oil.

12 Screw in the new filter canister until it just contacts the filter head.

13 Turn the filter a further 3/4 of a turn.

14 Fill the engine with the recommended oil, to the **MAX** mark on the dipstick, through the filler point. Wipe off any spilt oil, refit the filler cap and make sure it is secure. Close the engine covers.

15 Make sure the engine will not start and turn the engine using the starter key until the oil pressure warning light is extinguished.

Note: *To make sure the engine will not start, remove the engine shut-off solenoid fuse (see* ***Section C - Electrics****).*

16 Refit the engine shut-off solenoid fuse and start the engine. Check for leaks. When the engine has cooled, check the oil level.

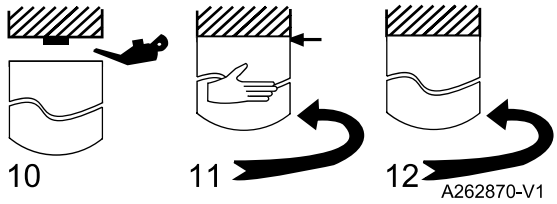

Fig 17.

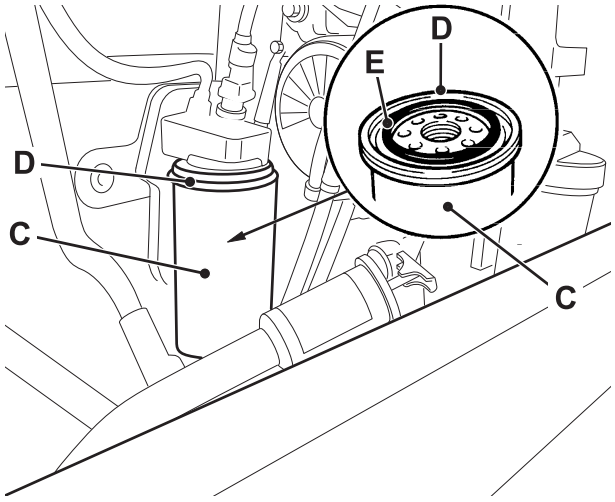

Fig 18.

Air Filter

Changing the Elements

Note: *In a dusty working environment, the outer element may have to be renewed more frequently than the service schedule recommendation. A new inner element must be fitted at latest every third time the outer element is changed. As a reminder, mark the inner element with a felt tip pen each time you change only the outer element. DO NOT attempt to wash or clean elements - they must be renewed.*

⚠ CAUTION

The outer element must be renewed immediately if the warning light on the instrument panel illuminates.

2-3-3-1

⚠ CAUTION

Do not run the engine when the outer element has been removed.

16-3-3-1

1 Apply the park brake, put the transmission in neutral and stop the engine.

2 Open the engine cover on the right side of the machine.

3 If changing the inner element, disconnect the filter induction hose **19J** to prevent dust getting into the engine. Cover the hose to prevent rain and dirt getting into the engine.

4 Release latches **19A** and remove cover **19B**. Gently remove the outer element **19C** by moving the end up and down or by twisting to disengage the seal. Take care not to tap or knock the element as you remove it. If necessary, remove the inner element **19D**.

5 Clean inside canister **19E**, particularly the outlet tube on which the elements seal. Clean dust valve **19F**.

6 Check the new elements before fitting, discard if damaged. Smear the seals **19G** and **19H** with engine oil or preferably, silicone oil then carefully install the elements into the outlet tube. Apply firm pressure to the outer ring of the element, not the soft centre.

7 Refit cover **19B** making sure it is properly located then secure latches **19A**. Make sure that the dust valve **19F** is at the bottom.

8 Connect the induction hose **19J**. Make sure the air filter blocked switch connector is fitted. Check all hoses for condition and tightness.

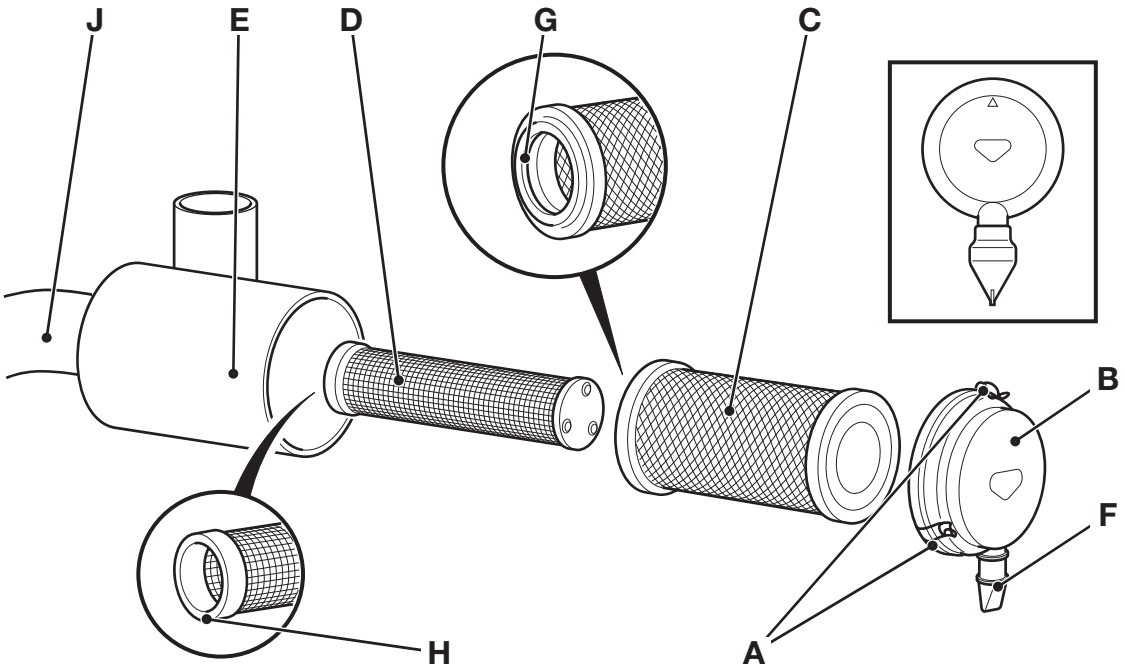

Fig 19.

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 checking the coolant level or checking the system.

9-3-3-1_1

Coolant Mixtures

To prevent the coolant freezing in cold conditions, antifreeze must be added. JCB Universal Antifreeze will give protection down to the temperatures shown in the table.

Antifreeze Solution	Starts to freeze at
55%	-36°C (-33°F)

Never use less than 50% solution otherwise there will not be enough corrosion protection.

Never use more than 60% solution otherwise the cooling system may be damaged.

Leave the antifreeze in all the year round as it gives protection against corrosion.

Check the strength of antifreeze solution at least once a year, preferably at the start of the cold period. Always renew the antifreeze every two years.

A 50% antifreeze mixture should be used even if frost protection is not needed. This gives protection against corrosion and raises the coolant's boiling point.

⚠ WARNING

Antifreeze can be harmful. Obey the manufacturer's instructions when handling full strength or diluted antifreeze.

7-3-4-4_1

Anti-Corrosion Additives

To provide sufficient corrosion protection, supplemental coolant additive (SCA) must be added to the coolant mixture. The coolant filter provides the required amount of SCA, provided the filter is replaced at regular intervals.

Checking the Coolant Level

1 Park the machine on level ground. Engage the parking brake. Put the transmission in neutral. Stop the engine and let it cool down. Open the rightside engine cover.

2 Check that the coolant is visible in the header tank **20A.** The level should be between 1/3 and 2/3 full. If not, continue with steps 3 to 5.

3 Close the engine cover. Top up the coolant system through the filler cap. Access to the filler cap is through a hole in the engine cover above the filler cap.

4 Refit the filler cap and make sure it is tight.

5 Run the engine for a while to raise the coolant to working temperature and pressure. Stop the engine and check for leaks.

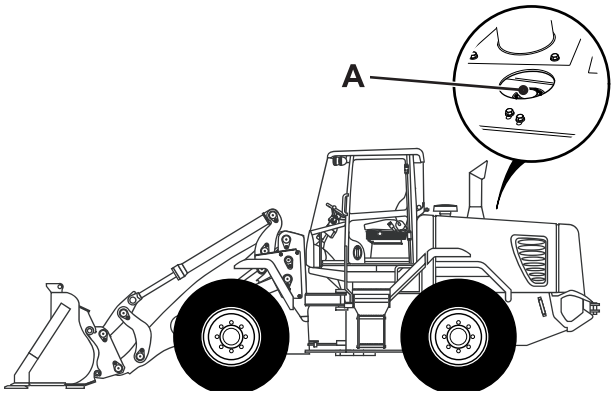

Fig 20.

Draining and Refilling the Coolant

1 Park the machine on level ground. Engage the parking brake. Put the transmission in neutral. Stop the engine and let it cool down. Open the leftside engine cover.

⚠ WARNING

Hot Coolant

The cooling system is pressurised when the engine is hot. Hot coolant can spray out when you remove the filler cap. Let the system cool before removing the filler cap. To remove the cap; turn it to the first notch and let the system pressure escape, then remove the cap.

INT-3-2-9_1

2 Access to the filler cap is through a hole in the engine cover above the filler cap. Carefully loosen cap. Let any pressure escape. Remove the cap.

⚠ CAUTION

Keep your face away from the drain hole when removing the drain plug.

2-3-3-4

3 Remove drain plug from the radiator drain extension and drain the coolant.

4 Flush the system using clean water.

5 Refit drain plug.

6 Prepare a mixture of water and sodium carbonate.

Note: *Use 1.0 lb (0.5 kg) of sodium carbonate for every 23 litre (5.0 UKGal).*

7 Fill the system slowly with the mixture to prevent air locks. Wait 2 to 3 minutes to allow air to be vented and top up the header tank to 1/3 full. **Do not** fit the filler cap at this stage.

8 Run the engine for 5 minutes at the normal running temperature. Stop the engine and allow to cool.

9 Drain the cooling system, checking that the coolant is not dirty. If it is, repeat the flushing process (steps 6 to 9).

10 Refill the system as described at step 7 but using pre-mixed water/antifreeze solution (as specified in ⇨ *Coolant Mixtures (3-33)*). Do not overfill. Fit the filler cap.

Note: *A 50% antifreeze mixture must be used even if frost protection is not needed. This gives protection against corrosion and raises the coolant's boiling point.*

11 Run the engine for a while to raise the coolant to working temperature and pressure. Stop the engine and check for leaks.

Note: *Make sure the heater control is in the hot position before running the engine. This will ensure that the coolant mixture circulates through the entire cooling system.*

Engine Drive Belt

Checking the Engine Drive Belt

Tension and Condition

⚠ WARNING

Make sure the engine cannot be started. Disconnect the battery before doing this job.

2-3-3-5

1 Park the machine on level ground.

2 Apply the park brake, put the transmission in neutral and stop the engine.

3 Open the engine cover.

4 Inspect the belt for the damage as follows:-

a Cracks across the belt width **A** are acceptable.

b Cracks across the belt which intersect those in the direction of the belt length **B** are not acceptable.

c Renew the belt if it has unacceptable cracks or if it is frayed or has pieces of material missing as at **C**.

5 Check the belt tension. The maximum deflection on the longest run of the belt as at **D** should be 9.5 to 12.7 mm (0.375 to 0.5 in). If the deflection is excessive, see your JCB distributor for drive belt replacement.

6 Close and `latch' the engine cover.

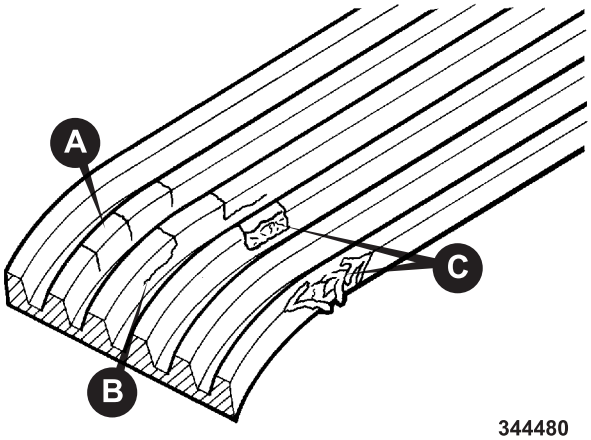

Fig 21.

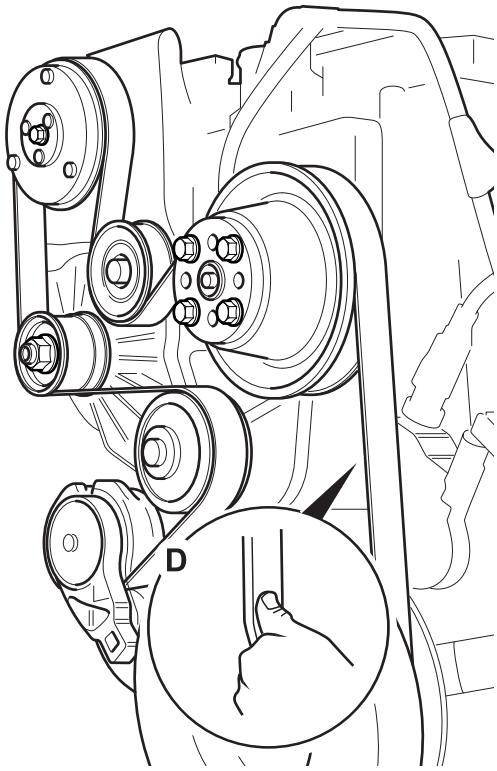

Fig 22.

Fuel System

Types of Fuel

T3-007_2

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

Recommended Fuel Specification

- EN590 Diesel Fuel Types - Auto/Co/C1/C2/C3/C4.
- BS2869 Class A2.
- ASTM D975-91 Class 2-2DA, US DF1, US DF2, US DFA.
- JIS K2204 (1992) Grades 1, 2, 3, and Special Grade 3.

Note: *Where low sulphur/low aromatic fuels are used it is important that lubricity additives are used. The additives listed below are advertised as being suitable for bringing the lubricity levels of kerosene/low sulphur fuels up to those of diesel fuels. They have not been tested or approved by the engine manufacturer. They should be added by your fuel supplier who should understand the concentration level necessary.*

1 Elf 2S 1750. Dosage 1000-1500 ppm (0.1 - 0.15%), specifically for Indian Superior Kerosene (SKO) but may be applicable to other fuels.

2 Lubrizol 539N. Dosage (on Swedish low sulphur fuel) 250 ppm.

3 Paradyne 7505 (from Infineum). Dosage 500 ppm (0.05%).

⚠ CAUTION

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

GEN-9-2

Acceptable Fuel Specification

⚠ CAUTION

The fuel specification below is acceptable, however this fuel may reduce the life of the fuel injection equipment. The use of this fuel may also affect the engine performance.

GEN-9-3

- ASTM D975-91 Class 1-1DA.
- JP7, MIL T38219 XF63.
- NATO F63.

Sulphur Content

⚠ CAUTION

A combination of water and sulphur will have a corrosive chemical effect on fuel injection equipment. It is essential that water is eradicated from the fuel system when high sulphur fuels are used.

ENG-3-2

High sulphur content can cause engine wear. (High sulphur fuel is not normally found in North America, Europe or Australia.) If you have to use high sulphur fuel you must change the engine oil more frequently.

Table 16.

Percentage of sulphur in the fuel (%)	Oil Change Interval
Less than 0.5	Normal
0.5 to 1.0	0.75 of normal
More than 1.0	0.50 of normal

Aviation Kerosene Fuels

Note: *Aviation kerosene fuels are not approved and their use may cause damage to components. Warranty will not be allowed on any component where damage is found to have been caused by the use of aviation kerosene.*

Low Temperature Fuels

Special winter fuels may be available for engine operation at temperatures below 0°C (32°F). These fuels have a lower viscosity. They also limit wax formation in the fuel at low temperatures. (Wax forming in the fuel can stop the fuel flowing through the filter.)

Fatty Acid Methyl Ester Fuels as a Replacement for diesel Fuels

Fuel resources such as Rape Methyl Ester and Soybean Methyl ester, collectively known as Fatty Acid Methyl

Esters are being used as alternatives and extenders for mineral oil.

Fatty Acid Methyl Esters must conform to certain standards to be of acceptable quality, just as mineral oils do at present.

Consult your JCB distributor for advice about the use of Fatty Acid Methyl Ester fuels, as improper application may impair engine performance.

⚠ 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

Petrol

⚠ 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

⚠ 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

At the end of every working day, fill the tank with the correct type of fuel. This will prevent overnight condensation from developing in the fuel.

We recommend that, if possible, you lock the fuel cap to prevent theft and tampering.

Draining the Fuel Filter

1 Apply the parking brake, put the transmission in neutral and stop the engine.

2 Open the right side engine cover.

3 Drain off any water in the bowl **25B** by turning valve **25A** 4 turns anti-clockwise until the valve drops down 25 mm (1.0 in).

4 Push up valve and turn clockwise until closed. Do not over tighten.

5 Close and lock the engine cover.

⚠ CAUTION

Running the engine with air in the system could damage the fuel injection pump. After maintenance, the system must be bled to remove any air.

2-3-3-11

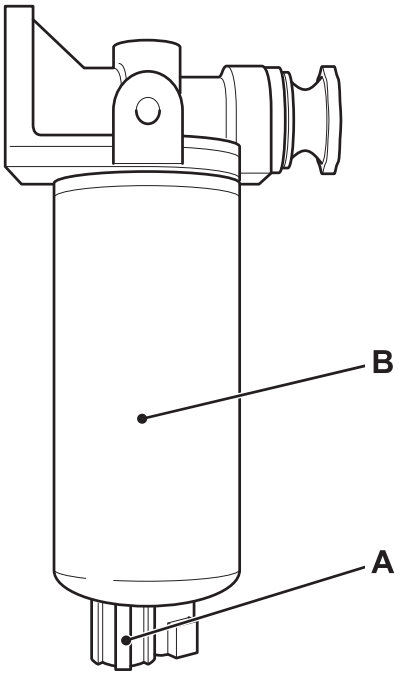

Fig 23.

Changing the Suction Side Fuel Filter Element

1 Apply the park brake, put the transmission in neutral and stop the engine.

2 Open the engine cover.

3 Disconnect the `Water in Fuel' sensor connector **C**. Disconnect the fuel heater connector (if fitted).

4 Unscrew the filter element **A**, the element is hand tight but may require a strap wrench to remove. The filter will be full of fuel.

5 To assist with priming, fill the filter element with fuel before fitting. Install filter element, hand tight only. Check for leaks.

6 Reconnect connector(s) mentioned in step 3.

7 Close and lock the engine cover.

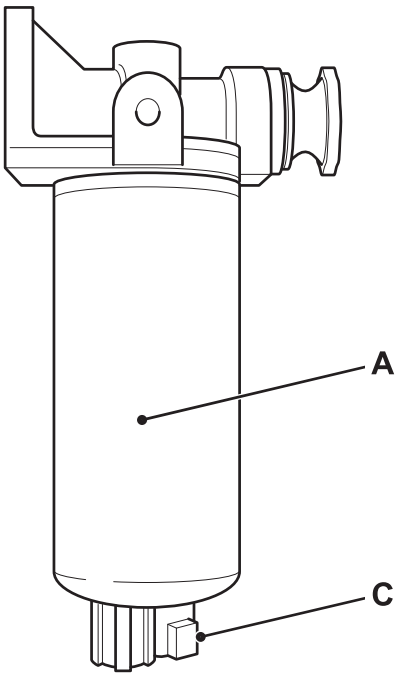

Fig 24.

Changing the Pressure Side Fuel Filter Element

1 Apply the park brake, put the transmission in neutral and stop the engine.

2 Open the engine cover.

3 Unscrew the filter element **B**, the element is hand tight but may require a strap wrench to remove. The filter will be full of fuel.

4 DO NOT fill the filter element with fuel before fitting. Install filter element, hand tight only.

5 Close and lock the engine cover.

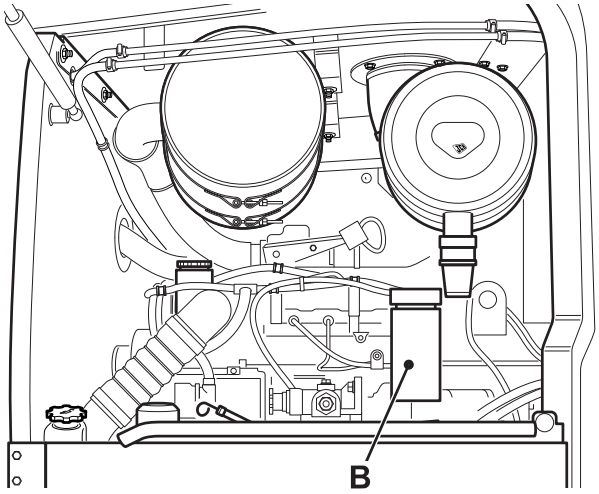

Fig 25.

Important: *This engine fuel system is self-priming, do not attempt to bleed the fuel system manually.*

⚠ WARNING

Do not open the high pressure fuel system with the engine running. Engine operation causes high fuel pressure. High pressure fuel spray can cause serious injury or death.

13-3-2-16

Priming the Fuel System

Priming the fuel system is required only after changing the fuel filter elements:

1 Apply the park brake, put the transmission in neutral and stop the engine.

2 Make sure that there is enough fuel in the fuel tank.

3 Release priming handle **A** by turning it counter-clockwise.

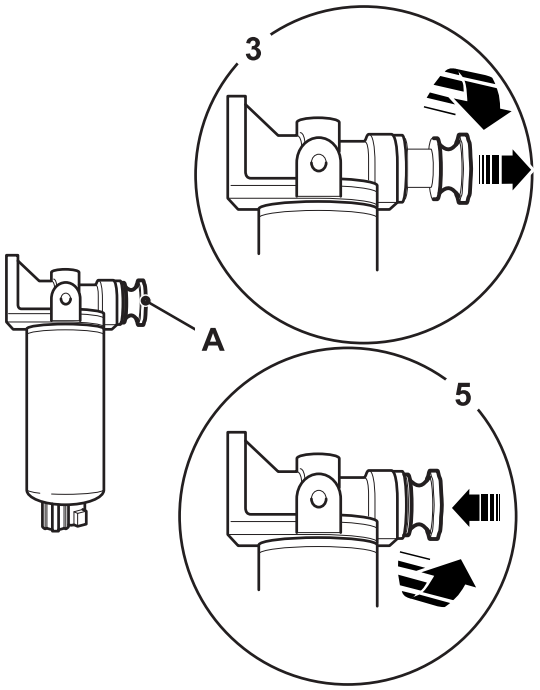

Fig 26.

4 Pump priming handle until pressure has built up in the system.

5 Lock priming handle **A** by pushing back into the filter housing and turning clockwise until secure.

6 Start the engine. Slowly increase the engine speed while any remaining air is vented from the system.

Hydraulic System

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. 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_2

Checking the Fluid Level

1 Apply the parking brake, put the transmission in neutral, lower the shovel/attachment to the ground. Make sure it is flat on the ground. Stop the engine.

2 The level should be visible in the sight glass **27A**.

3 If necessary, top up with hydraulic fluid.

4 Open the right side engine cover. Open filler cap **28B**.

5 Top up the system with hydraulic fluid, ⇨ *Lubricants and Capacities (3-12)*.

6 Refit filler cap **28B**. Make sure it is secure. Close the engine cover.

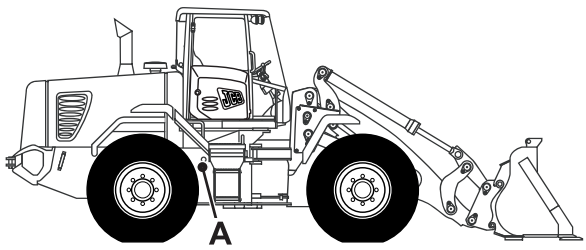

Fig 27.

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

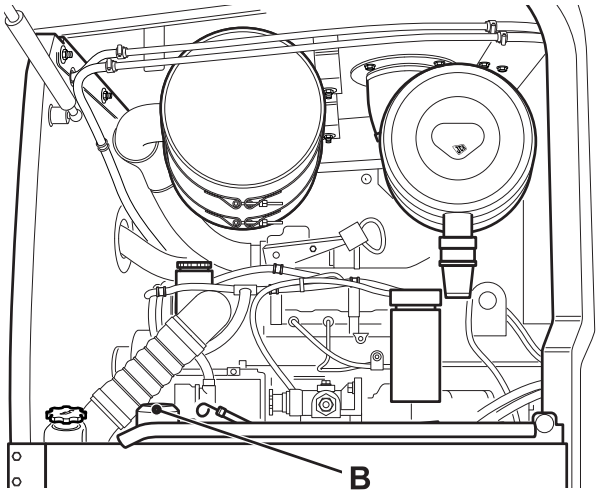

Fig 28.

Changing the Filter Element

⚠ WARNING

Make the machine safe before working underneath it. Park the machine on level ground, lower the attachments to the ground. Apply the park brake, put the transmission in neutral and stop the engine. Block both sides of all four wheels.

Disconnect the battery, to prevent the engine being started while you are beneath the machine.

GEN-4-1_1

1 Open the right side top step.

2 Remove hydraulic tank cap.

3 Unscrew and remove nuts **29C**, cover plate **29D** and seal **29E**.

4 Pull out the complete element assembly **29F** and the seal.

5 Remove the nut and spring **29K**. Remove the filter element **29L** from the spindle and clean magnets **29J**.

6 Fit the new element **29L** and the new seals **29G** and **29H**.

7 Replace the cover plate **29D** and tighten nuts **29C** to 7 Nm (5 lbf ft).

8 Top up the system with hydraulic fluid, ⇨ ***Lubricants and Capacities (🗋 3-12)***.

9 Refit filler cap. Make sure it is secure. Close the right side top step.

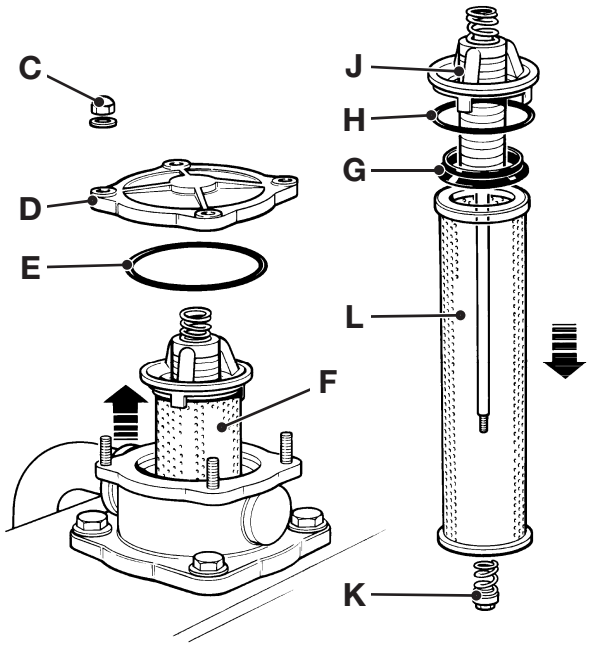

Fig 29.

Transmission

Checking the Oil Level (Engine Running)

Note: *The transmission oil level should be checked only when the oil is at the correct working temperature.*

1 Park the machine on level ground.

2 Apply the parking brake, put the transmission in neutral.

⚠ WARNING

The procedure below must be carried out with the engine running. Apply the park brake, block the wheels and ensure that no-one enters the cab.

SUS-1-1

3 Open the left side engine cover. Remove, wipe and replace the dipstick **30A**.

Note: *Turn `T' handle **30D**, two full turns anti-clockwise to release the dipstick. Turn `T' handle **30D**, two full turns clockwise to fasten in position. Check that the dipstick is secure.*

4 Make sure the oil is at the correct mark on the dipstick.

5 If necessary, add recommended oil at dipstick/filler point **30A**.

Note: *The transmission may overheat if the oil level is above the HOT mark.*

6 Close and lock the engine cover.

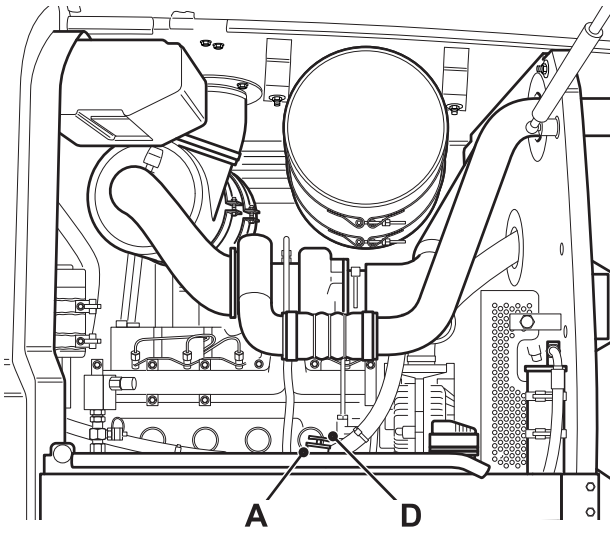

Fig 30.

Changing the Oil and Filter

⚠ WARNING

Make the machine safe before working underneath it. Park the machine on level ground, lower the attachments to the ground. Apply the park brake, put the transmission in neutral and stop the engine. Block both sides of all four wheels.

Disconnect the battery, to prevent the engine being started while you are beneath the machine.

GEN-4-1_1

1 Place a suitable container beneath the transmission (to catch the oil).

2 Remove the dipstick **30A** and drain plug **31B**.

3 Drain the oil. Clean and refit drain plug **31B**.

4 Unscrew and discard old filter **31C**. Clean the mounting face and lubricate the seal on the new filter with clean torque converter fluid.

5 Fit the new filter **31C** hand tight only.

6 Fill the system with new oil at dipstick/filler point /**30A**.

Note: *Do not fill past the top mark on the dipstick.*

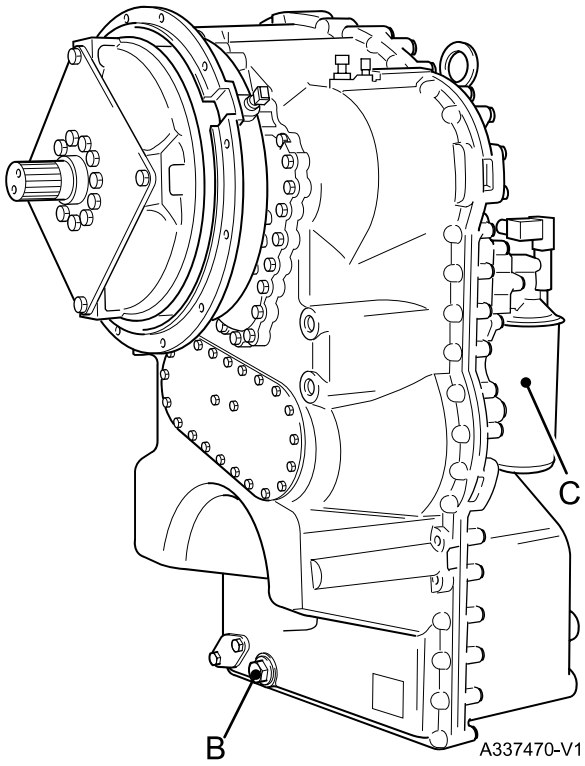

Fig 31.

Front and Rear Axles

Checking the Differential Oil Level

⚠ WARNING

Make the machine safe before working underneath it. Park the machine on level ground, lower the attachments to the ground. Apply the park brake, put the transmission in neutral and stop the engine. Block both sides of all four wheels.

Disconnect the battery, to prevent the engine being started while you are beneath the machine.

GEN-4-1_1

⚠ CAUTION

The axle oil level must be checked with the machine level, otherwise a false indication of the amount of oil in the axle will be given.

16-3-5-3

1 Clean the area around fill/level plug **32A**.

2 Remove fill/level plug **32A** and its seal, oil should be level with the bottom of the hole.

3 Top up with the recommended oil if necessary.

4 Clean and refit fill/level plug **32A** and its seal. Tighten to 85 Nm (60 lbf ft).

Note: *The 436 axle is shown, the 426 axle filler plug is at the opposite side.*

Draining and Refilling the Differential Oil

⚠ WARNING

Make the machine safe before working underneath it. Park the machine on level ground, lower the attachments to the ground. Apply the park brake, put the transmission in neutral and stop the engine. Block both sides of all four wheels.

Disconnect the battery, to prevent the engine being started while you are beneath the machine.

GEN-4-1_1

1 Clean the area around fill/level plug **32A**.

2 Remove fill/level plug **32A** and its seal.

3 Place a suitable container beneath the drain plug **32B** (to catch the oil).

4 Remove drain plug **32B**. Allow the oil to drain fully.

⚠ CAUTION

Oil will gush from the hole when the drain plug is removed. Keep to one side when you remove the plug.

2-3-4-2

5 Clean and refit drain plug **32B** and its seal. Plug **32B** is magnetic, make sure all debris is removed. Tighten to 85 Nm (60 lbf ft).

6 Fill the axle with the recommended oil through fill/level plug **32A**.

7 Clean and refit fill/level plug **32A** and its seal. Tighten to 85 Nm (60 lbf ft).

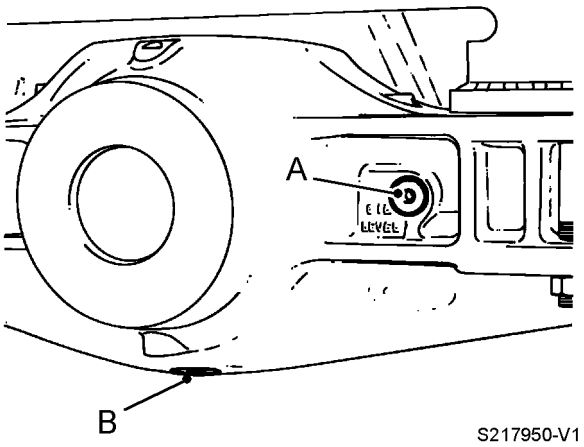

Fig 32.

Checking the Hub Oil Level

⚠ WARNING

Make the machine safe before working underneath it. Park the machine on level ground, lower the attachments to the ground. Apply the park brake, put the transmission in neutral and stop the engine. Block both sides of all four wheels.

Disconnect the battery, to prevent the engine being started while you are beneath the machine.

GEN-4-1_1

1 Make sure the **OIL LEVEL** mark on the hub is horizontal, as shown at **33B**.

2 Clean the area around fill/drain plug **33A**.

3 Remove fill/drain plug **33A** and its seal, oil should be level with the bottom of the hole.

4 Top up with the recommended oil if necessary.

5 Clean and refit fill/drain plug **33A** and its seal. Tighten to 85 Nm (60 lbf ft).

Note: *The hubs must be treated separately, a total of four hubs.*

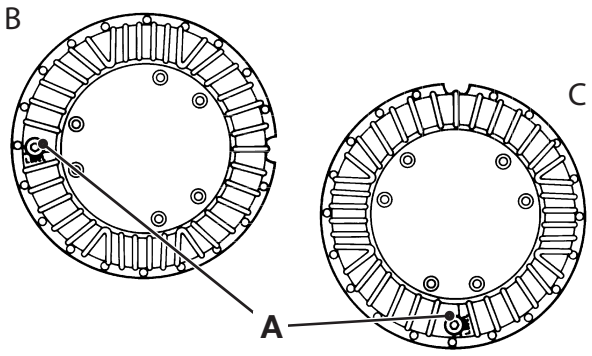

Fig 33.

Draining and Refilling the Hub Oil

⚠ WARNING

Make the machine safe before working underneath it. Park the machine on level ground, lower the attachments to the ground. Apply the park brake, put the transmission in neutral and stop the engine. Block both sides of all four wheels.

Disconnect the battery, to prevent the engine being started while you are beneath the machine.

GEN-4-1_1

1 Make sure both fill/drain plug **33A** are at the bottom, as shown at **33C**.

2 Clean the area around fill/drain plug **33A**.

3 Remove fill/drain plug **33A** and its seal, drain the oil into a suitable container. Allow the oil to drain fully.

⚠ CAUTION

There will be no oil in the hub when the machine is driven forward. Only drive the machine forward one quarter revolution of the wheel. Do not drive the machine more than is necessary.

4-3-5-1

4 Drive the machine slowly forward to bring the **OIL LEVEL** mark on the hubs into the horizontal position, as shown at **33B**.

5 Fill the hub with the recommended oil through fill/drain plug **33A**, until oil starts to dribble out.

6 Clean and refit fill/drain plug **33A** and its seal. Tighten to 85 Nm (60 lbf ft).

Note: *The hubs must be treated separately, a total of four hubs.*

Cab Heater Filters

Cleaning the Intake Filter

⚠ CAUTION

The filter may be filled with dust. Wear goggles and a face mask when removing the filter.

2-3-3-6

1 Park the machine on level ground. Engage the parking brake. Put the transmission in neutral. Lower the attachments to the ground. Stop the engine. Remove the starter key.

2 To gain access to the cab heater air filter **34A**, open heater door ⇨ *Opening the Heater Door (3-18)*.

3 Open fasteners at **34B**, remove cover **34C.**

4 Remove filter **A** and shake out the loose dust and clean using low pressure compressed air. Renew the filter if damaged.

Note: *An additional filter **D** may be fitted behind filter **A**, if applicable, remove filter **D** by pulling tag provided. Magnetic strips hold the filter in place. Refit the filter making sure it is located correctly. Renew the filter if damaged.*

5 Refit filter **A**, close heater door.

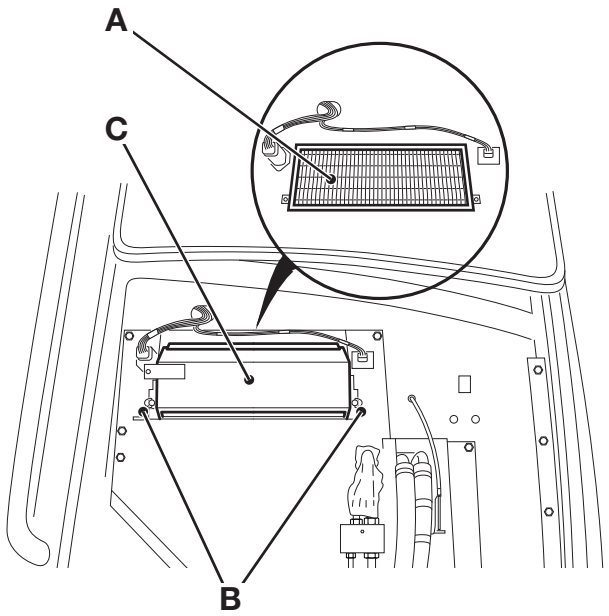

Fig 34.

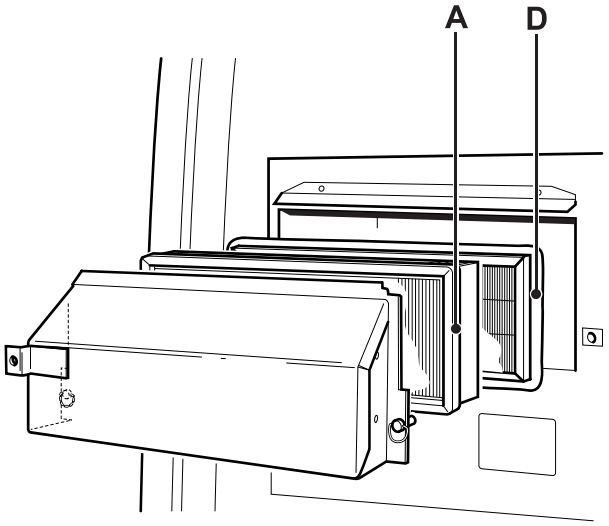

Fig 35.

Product: JCB 434S Wheeled Loader Service Repair Manual
Full Download: https://www.arepairmanual.com/downloads/jcb-434s-wheeled-loader-service-repair-manual/

Windscreen Washer

Replenishing

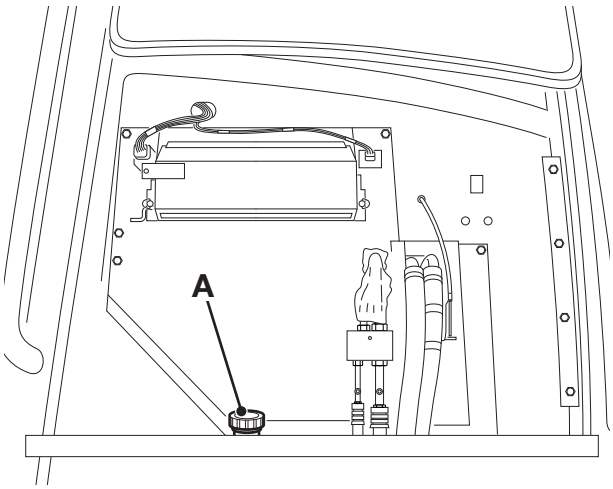

Fig 36.

To gain access to the washer bottle **A**, open the heater compartment door. ⇒ ***Opening the Heater Door (3-18)*** The washer bottle is located inside.

Fill the windscreen washer bottle with a suitable liquid. The liquid should contain a de-icing fluid to prevent it freezing. **Do not use engine coolant antifreeze**.

On completion, close and lock the access cover.

Sample manual. Download All pages at:
https://www.arepairmanual.com/downloads/jcb-434s-wheeled-loader-service-repair-manual/