Section 3

Routine Maintenance

Service Manual - Side Engine Loadalls

Publication No.

9803/3730-10

Issued by JCB Technical Publications, JCB Aftermarket Training, Woodseat, Rocester, Staffordshire, ST14 5BW, England. Tel +44 1889 591300 Fax +44 1889 591400

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Introduction

Health and Safety

Lubricants

T3-060_2

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

⚠ 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

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

T3-061

⚠ 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 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.

5-3-4-12

⚠ 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

Warning Symbols

The following warning symbols may be found on the battery.

Symbol	Meaning
 A289230-1	Keep away from children.
 A289260-1	Shield eyes.
 A289280	No smoking, no naked flames, no sparks.
 A289250	Explosive Gas.
 A289240	Battery acid.
 A289270	Note operating instructions.

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.

Service Schedules - Machines with SA, SB and SC Engines

Related Topics

Table 1. Related Topics in This Publication

The table lists other topics in the manual that contain information related to this topic. Refer to the applicable topics to complete your procedures. Where applicable the text in this section contains cross references to this page to help you find the correct information. Some machines have different systems and devices. Make sure you refer to the correct topic, refer to *Section 1 - Applications*.		
Sections	**Topic Titles**	**Sub Titles**
1	General Information	***Fuel***
2	ALL (Care and Safety)(1)	ALL

(1) You must obey all of the relevant care and safety procedures.

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 level ground.

To prevent anyone starting the engine, remove the starter key. Disconnect the battery when you are not using electrical power. If you do not take these precautions you could be killed or injured.

8-3-1-1

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.

Fuel System

Important: *B20 Biodiesel must only be used in engines built after January 2007 only.*

If Biodiesel fuel is used there are additional service procedures which must be carried out to prevent engine damage. Failure to adhere to these additional procedures may invalidate the warranty.

For these additional procedures see ⇨ ***Related Topics (3-5)***

How to Use the Service Schedules

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 (3-6)***

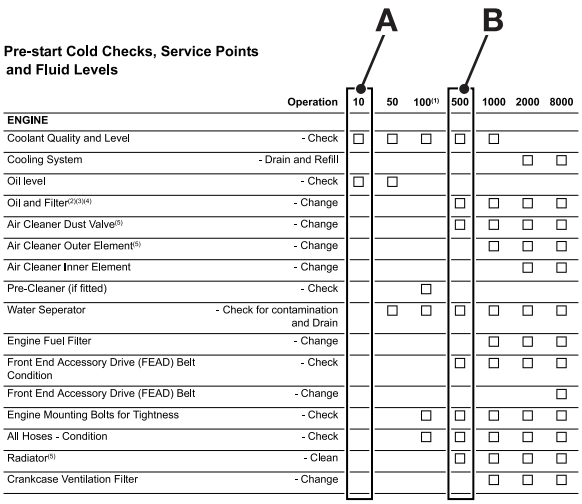

Fig 1.

Calendar Equivalents

Every 10 Hours = Daily

Every 50 Hours = Weekly

Every 500 Hours = Six Months

Every 1000 Hours = Yearly

Every 2000 Hours = 2 Years

Every 6000 Hours = 6 Years

Pre-start Cold Checks, Service Points and Fluid Levels

	Operation	10	50	100[1]	500	1000	2000	6000
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]	- Clean				☐	☐	☐	☐
Air Cleaner Outer Element[5]	- Change				☐	☐	☐	☐
Air Cleaner Inner Element	- Change						☐	☐
Pre-Cleaner (if fitted)	- Check			☐				
Water Separator and Engine Fuel Filter	- Drain		☐	☐	☐	☐	☐	☐
Water Separator Fuel Filter[6]	- Change				☐	☐	☐	☐
Engine Fuel Filter[6]	- 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 (if fitted)	- Change					☐	☐	☐
Breather Gauze (if fitted)	- Clean						☐	☐
Valve Clearances[7]	- Check and Adjust						☐	☐
Oil Filler and Dipstick Seals	- Change						☐	☐
Rocker Cover and Injector Seals[7]	- Change						☐	☐
Injectors[7]	- Change							☐
Injector(s) Leak Off Rail[7]	- Change							☐
High Pressure Fuel Lines[7]	- Change							☐
TRANSMISSION, AXLES AND STEERING								
Transmission Mount Security	- Check			☐				
Transmission Oil Level	- Check	☐	☐	☐	☐			
Transmission Oil[8]	- Change					☐	☐	☐

Pre-start Cold Checks, Service Points and Fluid Levels

	Operation	10	50	100[1]	500	1000	2000	6000
Transmission Oil Filter	- Change			☐	☐	☐	☐	☐
Axle Mount Security	- Check			☐				
Axle(s) Oil Level	- Check		☐	☐				
Axle(s) Oil	- Change				☐	☐	☐	☐
Hub Oil Level (Without Oil Immersed Brakes)	- Check			☐				
Hub Oil (Without Oil Immersed Brakes)[9]	- Change					☐	☐	☐
Hub Oil (With Oil Immersed Brakes)[9]	- Change			☐	☐	☐	☐	☐
Axle Breather(s)	- Check			☐	☐	☐	☐	☐
Trunnion Bearings[7]	- Check/Adjust			☐	☐	☐	☐	☐
Steering Stops (if fitted)	- Security			☐	☐	☐	☐	☐
Front Hub Bearings	- Check			☐	☐	☐	☐	☐
Wheel Nut Security	- Check	☐	☐	☐	☐	☐	☐	☐
Tyre Pressures/Condition	- Check	☐	☐	☐	☐	☐	☐	☐
Wheel Alignment	- Check	☐	☐	☐	☐	☐	☐	☐
Transmission Strainer	- Clean					☐	☐	☐
Drive Shafts and Universal Joints[10]	- Security and Grease			☐	☐	☐	☐	☐
Axle Pivots and Linkages[10]	- Grease		☐	☐	☐	☐	☐	☐
HYDRAULICS								
Oil Level	- Check		☐	☐	☐	☐		
Oil[7]	- Sample, Change						☐	☐
Oil Filter[11]	- Change			☐	☐	☐	☐	☐
Suction Strainer	- Clean						☐	☐
Pilot Filter (if fitted)	- Change			☐	☐	☐	☐	☐
BRAKES								
Brake System Fluid Level	- Check	☐	☐	☐	☐	☐		
Brake System Fluid	- Change						☐	☐
Brake Plate Condition	- Check					☐	☐	☐
ELECTRICS								
Battery Electrolyte Level (if applicable)	- Check				☐	☐	☐	☐
Wiring for Chafing/Routing	- Check			☐	☐	☐	☐	☐
Battery Terminals for Condition and Tightness	- Check			☐	☐	☐	☐	☐

Pre-start Cold Checks, Service Points and Fluid Levels

	Operation	10	50	100(1)	500	1000	2000	6000
BODYWORK AND CAB								
Lift/Displacement/Tilt/Steer Ram Pivot Pins	- Grease		☐		☐	☐	☐	☐
Extension Ram Piston Rod Pivot Pin	- Grease					☐	☐	☐
All Other Pivot Pins	- Grease		☐	☐	☐	☐	☐	☐
Fire Extinguisher (if fitted)	- Check	☐	☐		☐	☐	☐	☐
Wing Mirrors Condition and Security	- Check	☐	☐		☐	☐	☐	☐
ROPS/FOPS Structure	- Check	☐	☐	☐	☐	☐	☐	☐
Doors and Hinges	- Lubricate			☐	☐	☐	☐	☐
Control Lever Linkages	- Lubricate			☐	☐	☐	☐	☐
Windscreen Washer Fluid Level	- Check	☐	☐	☐	☐	☐	☐	☐
Cab Heater Fresh Air Filter (if fitted)	- Change				☐	☐	☐	☐
Cab Heater Re-Circulation Filter (if fitted)	- Change				☐	☐	☐	☐
Boom Wear Pad Runways	- Waxoyl				☐	☐	☐	☐
Inner Boom Hoses	- Grease				☐	☐	☐	☐
Boom Wear Pad Clearance (12)	- Check/Adjust				☐	☐	☐	☐
Boom Wear Pad Condition and Security (Replace if required)(12)	- Check/Adjust			☐	☐	☐	☐	☐
ATTACHMENTS								
Carriage Lock Pins	- Grease		☐		☐	☐	☐	☐
Hydraulic Tow Hitch Inner Leg (if fitted)	- Waxoyl				☐	☐	☐	☐
Hydraulic Tow Hitch Pivot Pin (if fitted)	- Grease				☐	☐	☐	☐
Hydraulic Tow Hitch Release Cable/Return Spring/Retaining Latch (if fitted)	- Check		☐		☐	☐	☐	☐
REGISTRATION/CERTIFICATION								
SWL Stickers (UK) and Flip Chart	- Renew as Required	☐	☐	☐	☐	☐	☐	☐

(1) First 100 Hours Service only, to be completed by your JCB Distributor.
(2) If operating under arduous conditions, do an engine oil flush (use the normal recommended engine oil) every 250 hours. Change the engine oil and filter every 250 hours.
(3) The oil service interval will be affected if there is a high sulphur content in the fuel. Refer to Fuel System for more information.
(4) When the engine is operated with 20% biodiesel change the engine oil and filter every 250 hours. Refer to Fuel System for more information.
(5) More frequently if operating in dusty working environments.
(6) If the engine is difficult to start or the engine has poor performance, fit new filters.
(7) Jobs which should only be done by a specialist.

(8) After a major transmission repair, the new oil should be run to operating temperature and changed again to remove any contamination which entered during the repair. Change the oil and filter after a further 100 hours if the oil was heavily contaminated because of, or from the failure (e.g. water contamination).

(9) After a hub repair, the new oil should be run to operating temperature and changed again to remove any contamination which entered during the repair. Change the oil after a further 100 hours to remove any bedding-in wear. This is particularly important if new brake plates have been fitted.

(10) The axles and driveshafts are factory greased with a high performance grease, if during service a standard grease is used, then the interval must be reduced to every 50 hours, contact your JCB Distributor for advice.

(11) An additional canister filter is fitted to machines with the variable flow pump option. You must change both filters at the intervals shown in the Service Schedule.

(12) If operating under arduous conditions, check the boom wear pads every 250 hours.

Functional Test and Final Inspection

	Operation	10	50	100(1)	500	1000	2000	6000
ENGINE								
Idle Speed(2)	- Check and Adjust			☐	☐	☐	☐	☐
Torque Converter Stall Speed(2)	- Check			☐	☐	☐	☐	☐
Max. No-Load Speed(2)	- Check and Adjust			☐	☐	☐	☐	☐
Exhaust Smoke	- Check		☐	☐	☐	☐	☐	☐
Exhaust System Security(2)	- Check			☐	☐	☐	☐	☐
Air Inlet System Security	- Check			☐	☐	☐	☐	☐
Throttle System and Control Cable(2)	- Check			☐	☐	☐	☐	☐
Engine for Vibration/Noise								
TRANSMISSION, AXLES AND STEERING								
Steering - Operation/Phasing	- Check	☐	☐	☐	☐	☐	☐	☐
2WD/4WD Selection (if fitted)	- Check			☐	☐	☐	☐	☐
Transmission Operation	- Check	☐	☐	☐	☐	☐	☐	☐
Forward/Reverse/Gear - Selection/ Operation	- Check			☐	☐	☐	☐	☐
Torque Converter Main Line Pressure(2)	- Check			☐	☐	☐	☐	☐
Neutral Start Operation	- Check			☐	☐	☐	☐	☐
Clutch Disconnect/Dump Pedal/Button	- Check			☐	☐	☐	☐	☐
HYDRAULICS								
MRV Pressure at Max RPM(2)	- Check and Adjust			☐	☐	☐	☐	☐
Operation of All Services	- Check	☐	☐	☐	☐	☐	☐	☐
Hose Burst Protection Valves (if fitted)	- Check			☐	☐	☐	☐	☐
ARV Pressure at 750 RPM(2)	- Check and Adjust			☐	☐	☐	☐	☐
Steer Circuit MRV Pressure(2)	- Check and Adjust			☐	☐	☐	☐	☐
Fan Motor Speed (If fitted)(2)	- Check				☐	☐	☐	☐
Attachment Operation/Remote Servo (if fitted)	- Check			☐	☐	☐	☐	☐
Piston Rods Chrome	- Check			☐	☐	☐	☐	☐
Boom Extension/Phasing (3 stage boom)(2)	- Check	☐	☐	☐	☐	☐	☐	☐
Parallel Lift/Lower	- Check			☐	☐	☐	☐	☐
Stabilizer Leg Cut-out (if fitted)(2)	- Check			☐	☐	☐	☐	☐

Functional Test and Final Inspection

	Operation	10	50	100(1)	500	1000	2000	6000
Chassis Levelling (Sway) Cut-out (if fitted)(2)	- Check			☐	☐	☐	☐	☐
BRAKES								
Foot Brake - Operation	- Check	☐	☐	☐	☐	☐	☐	☐
Park Brake	- Check/Adjust	☐	☐	☐	☐	☐	☐	☐
ELECTRICS								
Starter Motor(2)	- Check			☐	☐	☐	☐	☐
Alternator - Output(2)	- Check			☐	☐	☐	☐	☐
All Electrical Equipment Operation, (warning lights, beacon, alarms, horn, wipers etc.)	- Check	☐	☐	☐	☐	☐	☐	☐
Load Moment Indicator(2)	- Check/Calibrate	☐	☐	☐	☐	☐	☐	☐
Stabilizer Indicators	- Check	☐	☐	☐	☐	☐	☐	☐
BODYWORK AND CAB								
Inclinometer (if fitted)(2)	- Check			☐	☐	☐	☐	☐
Glazing for Correct Fit/Leaks	- Check			☐				
Seat/Seat Belts	- Check	☐	☐	☐	☐	☐	☐	☐
Air Conditioning (if fitted)	- Check			☐	☐	☐	☐	☐
Forks	- Fit and Check Security	☐	☐	☐	☐	☐	☐	☐
Generally for damage, leaks and wear	- Check	☐	☐	☐	☐	☐	☐	☐

(1) First 100 Hours Service only, to be completed by your JCB Distributor.
(2) Jobs which should only be done by a specialist.

Service Schedules - Machines with SE Engines

Related Topics

Table 2. Related Topics in This Publication

The table lists other topics in the manual that contain information related to this topic. Refer to the applicable topics to complete your procedures. Where applicable the text in this section contains cross references to this page to help you find the correct information. Some machines have different systems and devices. Make sure you refer to the correct topic, refer to *Section 1 - Applications*.		
Sections	**Topic Titles**	**Sub Titles**
1	General Information	***Fuel***
2	ALL (Care and Safety)(1)	ALL
2	***Safety Check List***	***Common Rail (SE Engine) Specific***

(1) You must obey all of the relevant care and safety procedures.

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 level ground.

To prevent anyone starting the engine, remove the starter key. Disconnect the battery when you are not using electrical power. If you do not take these precautions you could be killed or injured.

8-3-1-1

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

Calendar equivalents:

Every 10 Hours = Daily

Every 50 Hours = Weekly

Every 500 Hours = Six Months

Every 1000 Hours = Yearly

Every 2000 Hours = 2 Years

Every 8000 Hours = 8 Years

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

How to Use the Service Schedules

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 (3-14)***

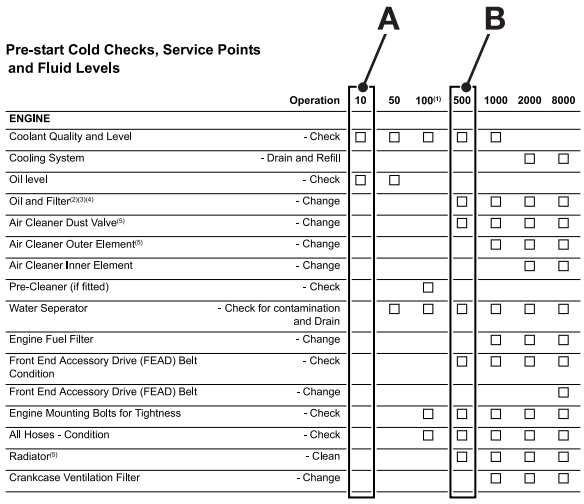

Fig 2.

Fuel System

Important: *B20 Biodiesel must only be used in engines built after January 2007 only.*

If Biodiesel fuel is used there are additional service procedures which must be carried out to prevent engine damage. Failure to adhere to these additional procedures may invalidate the warranty.

For these additional procedures see ***⇨ Related Topics (3-13)***

SE Engines

In addition to the general safety notices and general good workshop practices issued in this section and throughout the manual, there are specific points to note when completing maintenance on SE engine equipment. Refer to ***⇨ Related Topics (3-13)***

Pre-start Cold Checks, Service Points and Fluid Levels

	Operation	10	50	100(1)	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)	- Clean				☐	☐	☐	☐
Air Cleaner Outer Element(5)	- Change					☐	☐	☐
Air Cleaner Inner Element	- Change						☐	☐
Pre-Cleaner (if fitted)	- Check			☐				
Water Separator	- Check for contamination and Drain		☐	☐	☐	☐	☐	☐
Water Separator Fuel Filter(6)	- Change				☐	☐	☐	☐
Engine Fuel Filter(6)	- Change					☐	☐	☐
Front End Accessory Drive (FEAD) Belt Condition	- Check				☐	☐	☐	☐
Front End Accessory Drive (FEAD) Belt	- Change							☐
Powertrain Mounting Bolts for Tightness	- Check			☐	☐	☐	☐	☐
All Hoses - Condition	- Check			☐	☐	☐	☐	☐
Radiator(5)	- Clean				☐	☐	☐	☐
Crankcase Ventilation Filter (if fitted)	- Change					☐	☐	☐
Valve Clearances(7)	- Check and Adjust						☐	☐
Oil Filler and Dipstick Seals	- Change						☐	☐
Injectors(7)	- Change							☐
Injector(s) Leak Off Rail(7)	- Change							☐
High Pressure Fuel Lines(7)	- Change							☐
TRANSMISSION, AXLES AND STEERING								
Transmission Mount Security	- Check			☐				
Transmission Oil Level	- Check	☐	☐	☐	☐			
Transmission Oil(8)	- Change					☐	☐	☐
Transmission Oil Filter	- Change			☐	☐	☐	☐	☐
Axle Mount Security	- Check			☐				

	Operation	10	50	100[1]	500	1000	2000	8000
Axle(s) Oil Level	- Check		☐	☐				
Axle(s) Oil	- Change				☐	☐	☐	☐
Hub Oil Level (Without Oil Immersed Brakes)	- Check			☐				
Hub Oil (Without Oil Immersed Brakes)[9]	- Change					☐	☐	☐
Hub Oil (With Oil Immersed Brakes)[9]	- Change			☐	☐	☐	☐	☐
Axle Breather(s)	- Check			☐	☐	☐	☐	☐
Steering Stops (if fitted)	- Security			☐	☐	☐	☐	☐
Wheel Nut Security	- Check	☐	☐	☐	☐	☐	☐	☐
Tyre Pressures/Condition	- Check	☐	☐	☐	☐	☐	☐	☐
Wheel Alignment	- Check	☐	☐	☐	☐	☐	☐	☐
Transmission Strainer	- Clean					☐	☐	☐
Drive Shafts and Universal Joints[10]	- Security and Grease			☐	☐	☐	☐	☐
Axle Pivots and Linkages[10]	- Grease		☐	☐	☐	☐	☐	☐
HYDRAULICS								
Oil Level	- Check		☐	☐	☐	☐		
Oil[7]	- Sample, Change						☐	☐
Oil Filter[11]	- Change			☐	☐	☐	☐	☐
Suction Strainer	- Clean						☐	☐
Pilot Filter (if fitted)	- Change			☐	☐	☐	☐	☐
BRAKES								
Brake System Fluid Level	- Check	☐	☐	☐	☐	☐		
Brake System Fluid	- Change						☐	☐
ELECTRICS								
Battery Electrolyte Level (if applicable)	- Check				☐	☐	☐	☐
Battery Terminals for Condition and Tightness	- Check			☐	☐	☐	☐	☐
BODYWORK AND CAB								
Lift/Displacement/Tilt/Steer Ram Pivot Pins	- Grease		☐		☐	☐	☐	☐
Extension Ram Piston Rod Pivot Pin	- Grease					☐	☐	☐
All Other Pivot Pins	- Grease		☐	☐	☐	☐	☐	☐
Fire Extinguisher (if fitted)	- Check	☐	☐		☐	☐	☐	☐
Wing Mirrors Condition and Security	- Check	☐	☐		☐	☐	☐	☐

	Operation	10	50	100(1)	500	1000	2000	8000
ROPS/FOPS Structure	- Check	☐	☐	☐	☐	☐	☐	☐
Doors and Hinges	- Lubricate			☐	☐	☐	☐	☐
Control Lever Linkages	- Lubricate			☐	☐	☐	☐	☐
Windscreen Washer Fluid Level	- Check	☐	☐	☐	☐	☐	☐	☐
Cab Heater Fresh Air Filter (if fitted)	- Change				☐	☐	☐	☐
Boom Wear Pad Runways	- Waxoyl				☐	☐	☐	☐
Inner Boom Hoses	- Grease				☐	☐	☐	☐
Boom Wear Pad Clearance (12)	- Check/Adjust				☐	☐	☐	☐
Boom Wear Pad Condition and Security (Replace if required)(12)	- Check/Adjust			☐	☐	☐	☐	☐
ATTACHMENTS								
Carriage Lock Pins	- Grease		☐		☐	☐	☐	☐
Hydraulic Tow Hitch Inner Leg (if fitted)	- Waxoyl				☐	☐	☐	☐
Hydraulic Tow Hitch Pivot Pin (if fitted)	- Grease				☐	☐	☐	☐
Hydraulic Tow Hitch Release Cable/ Return Spring/Retaining Latch (if fitted)	- Check		☐		☐	☐	☐	☐
REGISTRATION/CERTIFICATION								
SWL Stickers (UK) and Flip Chart	- Renew as Required	☐	☐	☐	☐	☐	☐	☐

(1) First 100 Hours Service only, to be completed by your JCB Distributor.
(2) If operating under arduous conditions, do an engine oil flush (use the normal recommended engine oil) every 250 hours. Change the engine oil and filter every 250 hours.
(3) The oil service interval will be affected if there is a high sulphur content in the fuel. Refer to Fuel System for more information.
(4) When the engine is operated with 20% biodiesel change the engine oil and filter every 250 hours. Refer to Fuel System for more information.
(5) More frequently if operating in dusty working environments.
(6) If the engine is difficult to start or the engine has poor performance, fit new filters.
(7) Jobs which should only be done by a specialist.
(8) After a major transmission repair, the new oil should be run to operating temperature and changed again to remove any contamination which entered during the repair. Change the oil and filter after a further 100 hours if the oil was heavily contaminated because of, or from the failure (e.g. water contamination).
(9) After a hub repair, the new oil should be run to operating temperature and changed again to remove any contamination which entered during the repair. Change the oil after a further 100 hours to remove any bedding-in wear. This is particularly important if new brake plates have been fitted.
(10) The axles and driveshafts are factory greased with a high performance grease, if during service a standard grease is used, then the interval must be reduced to every 50 hours, contact your JCB Distributor for advice.
(11) An additional canister filter is fitted to machines with the variable flow pump option. You must change both filters at the intervals shown in the Service Schedule.
(12) If operating under arduous conditions, check the boom wear pads every 250 hours.

Functional Test and Final Inspection

	Operation	10	50	100(1)	500	1000	2000	8000
ENGINE								
Idle Speed(2)	- Check and Adjust			☐	☐	☐	☐	☐
Torque Converter Stall Speed(2)	- Check			☐	☐	☐	☐	☐
Max. No-Load Speed(2)	- Check and Adjust			☐	☐	☐	☐	☐
Exhaust System Security(2)	- Check			☐	☐	☐	☐	☐
Air Inlet System Security	- Check			☐	☐	☐	☐	☐
TRANSMISSION, AXLES AND STEERING								
Steering - Operation/Phasing	- Check	☐	☐	☐	☐	☐	☐	☐
2WD/4WD Selection (if fitted)	- Check			☐	☐	☐	☐	☐
Transmission Operation	- Check	☐	☐	☐	☐	☐	☐	☐
Forward/Reverse/Gear - Selection/ Operation	- Check			☐	☐	☐	☐	☐
Torque Converter Main Line Pressure(2)	- Check			☐	☐	☐	☐	☐
Neutral Start Operation	- Check			☐	☐	☐	☐	☐
Clutch Disconnect/Dump Button	- Check			☐	☐	☐	☐	☐
HYDRAULICS								
MRV Pressure at Max RPM(2)	- Check and Adjust			☐	☐	☐	☐	☐
Operation of All Services	- Check	☐	☐	☐	☐	☐	☐	☐
Hose Burst Protection Valves (if fitted)	- Check			☐	☐	☐	☐	☐
ARV Pressure at 750 RPM(2)	- Check and Adjust			☐	☐	☐	☐	☐
Steer Circuit MRV Pressure(2)	- Check and Adjust			☐	☐	☐	☐	☐
Fan Motor Speed (If fitted)(2)	- Check				☐	☐	☐	☐
Attachment Operation/Remote Servo (if fitted)	- Check			☐	☐	☐	☐	☐
Piston Rods Chrome	- Check			☐	☐	☐	☐	☐
Boom Extension/Phasing (3 stage boom)(2)	- Check	☐	☐	☐	☐	☐	☐	☐
Parallel Lift/Lower	- Check			☐	☐	☐	☐	☐
Stabiliser Leg Cut-out (if fitted)(2)	- Check			☐	☐	☐	☐	☐
Chassis Levelling (Sway) Cut-out (if fitted)(2)	- Check			☐	☐	☐	☐	☐
BRAKES								

	Operation	10	50	100(1)	500	1000	2000	8000
Foot Brake - Operation	- Check	☐	☐	☐	☐	☐	☐	☐
Park Brake	- Check/Adjust	☐	☐	☐	☐	☐	☐	☐
ELECTRICS								
Alternator - Output(2)	- Check			☐	☐	☐	☐	☐
All Electrical Equipment Operation, (warning lights, beacon, alarms, horn, wipers etc.)	- Check	☐	☐	☐	☐	☐	☐	☐
Load Moment Indicator(2)	- Check	☐	☐	☐	☐	☐	☐	☐
Stabiliser Indicators	- Check	☐	☐	☐	☐	☐	☐	☐
BODYWORK AND CAB								
Inclinometer (if fitted)(2)	- Check			☐	☐	☐	☐	☐
Glazing for Correct Fit/Leaks	- Check			☐				
Seat/Seat Belts	- Check	☐	☐	☐	☐	☐	☐	☐
Air Conditioning (if fitted)	- Check			☐	☐	☐	☐	☐
Forks	- Fit and Check Security	☐	☐	☐	☐	☐	☐	☐
Generally for damage, leaks and wear	- Check	☐	☐	☐	☐	☐	☐	☐

(1) First 100 Hours Service only, to be completed by your JCB Distributor.
(2) Jobs which should only be done by a specialist.

Fluids, Lubricants and Capacities

Related Topics

Table 3. Related Topics in This Publication

The table lists other topics in the manual that contain information related to this topic. Refer to the applicable topics to complete your procedures. Where applicable the text in this section contains cross references to this page to help you find the correct information. Some machines have different systems and devices. Make sure you refer to the correct topic, refer to *Section 1 - Applications*.		
Sections	**Topic Titles**	**Sub Titles**
1	General Information	***Fuel***
2	ALL (Care and Safety)(1)	ALL

(1) You must obey all of the relevant care and safety procedures.

Specifications

Table 4.

ITEM	CAPACITY Litres (Gal)	FLUID/LUBRICANT	INTERNATIONAL SPECIFICATION
Fuel Tank 526-56 531-70, 533-105, 535-95, 536-60, 536-70, 541-70 535-125 HiViz, 535-140 HiViz, 540-140, 540-170, 535-125, 535-140	 120 (26.4) 148 (32.5) 125 (27.5)	Diesel Oil	⇨ *Related Topics (3-20)*
Engine (Oil) SA,SB and SC Engines. - MIN - MAX	 12 (2.64) 15 (3.3)	 JCB Extreme Performance -15°C to 50°C (-5°F to 122°F)(1) JCB High Performance -20°C to 40°C (-4°F to 104°F)(1)	 SAE15W/40, ACEA E5/B3/A3, API CH-4/SJ SAE10W/30, ACEA E2/B2/A2, API CF-4/SJ
Engine SD and SF Engines - MIN - MAX	 12 (2.64) 15 (3.3)	JCB Extreme Performance -10°C to 50°C (14°F to 122°F)(2) JCB Cold Climate Engine Oil -20°C to +50°C (-4°F to 122°F)(1)	SAE15W/40, ACEA E5/B3/A3, API CH-4/SJ EP 5W-40, SAE 5W-40, ACEA E5/B3/A3, API CH-4/SJ
Engine (Oil) SE Engines. - MIN - MAX	 11.5 (2.5) 14 (3.1)	 JCB Extreme Performance -15°C to 50°C (-5°F to 122°F)(1)(3)	 SAE15W/40, ACEA E5/B3/A3, API CH-4/SJ
Engine (Coolant) All Engines	 22 (4.4)	JCB High Performance Antifreeze and Inhibitor/Water. ⇨ *Coolant Mixtures (3-23)*.	ASTM D6210
Transmission Machines with SC type engine and 4 speed gearbox or 526-56 machines with Powershift transmission.		JCB Extreme Performance Transmission Fluid(4) -32°C to 40°C (-25°F to 104°F) -5°C to 40°C (-25°F to 104°F)	 10W, EL4117 SAE30, EL4118

ITEM	CAPACITY Litres (Gal)	FLUID/LUBRICANT	INTERNATIONAL SPECIFICATION
- Wet fill	17 (3.7)		
- Dry fill	19 (4.2)		
Machines with Syncro Shuttle (SS700) Gearbox			
- Wet fill	11.5 (2.5)		
- Dry fill	13.5 (3.0)		
All other machines			
- Wet fill	21 (4.6)		
- Dry fill	23 (5.0)		
Front Axle			
Housing	17.7 (4.7)	JCB Special Gear Fluid Plus	API-GL-4(5)
Hubs (x2)	1.9 (0.5)		
Rear Axle			
Housing		JCB Special Gear Fluid Plus	API-GL-4
531-70, 533-105, 535-95, 536-60, 536-70, 541-70, 526-56	10 (2.6)		
535-125 HiViz, 535-140 HiViz	17.7 (4.7)		
540-140, 540-170, 535-125, 535-140	19 (4.2)		
Hubs (x2)	2 (0.5)		
Brake System		JCB Light Hydraulic Fluid(6)	ISO VG15
Hydraulic Tank(7)		JCB High Performance Hydraulic Oil	
		- Above 100 °F, 38 °C	ISO VG46
		- Below 100 °F, 38 °C	ISO VG32
531-70, 536-70, 541-70	115 (25.3)		
526-56	116 (25.5)		
533-105, 535-95	125 (27.4)		
535-125 HiViz, 535-140 Hiviz	127 (27.9)		
536-60	113 (24.8)		
540-140, 535-125, 535-140	131 (28.8)		
540-170	180 (39)		
Grease Points		JCB Special HP or MPL-EP Grease(8)	Lithium based, No. 2 consistency(9)
Wear Pad Runways		JCB Waxoyl	
Boom Hoses		JCB Special Slide Lubricant	

(1) !CAUTION: Do not use ordinary engine oil.
(2) !CAUTION: Do not use ordinary engine oil.

(3) Superior grade oils may be more appropriate for heavy duty applications (such as sustained loads and operation at elevated temperatures.)
(4) Friction modified oils must not be used (e.g. Dexron ATF type).
(5) Must be suitable for use with oil immersed brakes and limited slip differentials (LSD).
(6) !CAUTION: Do not use ordinary brake fluid.
(7) This is nominal tank capacity. The total hydraulic system capacity depends on the equipment being used. Fill with all cylinders closed. Watch level sight glass when filling.
(8) JCB HP Grease is the recommended specification grease. If JCB MPL Grease is used, all 50 hour greasing operations must be carried out at ten (10) hour intervals; all 500 hour greasing operations must be carried out at 50 hour intervals.
(9) Includes extreme performance additives.

Coolant Mixtures

T3-009_3

Check the strength of the coolant mixture at least once a year, preferably at the start of the cold period.

Replace the coolant mixture according to the intervals shown in the machine's Service Schedule.

⚠ WARNING

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

7-3-4-4_1

You must dilute full strength antifreeze with clean water before use. Use clean water of no more than a moderate hardness (pH value 8.5). If this cannot be obtained, use de-ionized water. For further information advice on water hardness, contact your local water authority.

The correct concentration of antifreeze protects the engine against frost damage in winter and provides year round protection against corrosion.

The protection provided by JCB High Performance Antifreeze and Inhibitor is shown below.

50% Concentration (Standard)

Protects against damage down to -40 °C (-39 °F)

60% Concentration (Extreme Conditions Only)

Protects against damage down to -56 °C (-68 °F)

Important: *Do not exceed a 60% concentration, as the freezing protection provided reduces beyond this point.*

If you use any other brand of antifreeze:

– Ensure that the antifreeze complies with International Specification ASTM D6210.
– Always read and understand the manufacturer's instructions.
– Ensure that a corrosion inhibitor is included. Serious damage to the cooling system can occur if corrosion inhibitors are not used.
– Ensure that the antifreeze is ethylene glycol based and does not use Organic Acid Technology (OAT).

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Cleaning the Machine

Related Topics

Table 5. Related Topics in This Publication

The table lists other topics in the manual that contain information related to this topic. Refer to the applicable topics to complete your procedures. Where applicable the text in this section contains cross references to this page to help you find the correct information. Some machines have different systems and devices. Make sure you refer to the correct topic, refer to *Section 1 - Applications*.		
Sections	**Topic Titles**	**Sub Titles**
1	General Information	ALL
2	ALL (Care and Safety)(1)	ALL
3	***Greasing***	***⇨ Every 50 Hours (3-37)***
3	***⇨ Access Panels (3-115)***	ALL

(1) You must obey all of the relevant care and safety procedures.

Introduction

T3-024

Clean the machine using water and or steam. Do not allow mud, debris etc. to build upon the machine.

Before carrying out any service procedures that require components to be removed:

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

2 When cleaning is complete move the machine away from the wash area, or alternatively, clean away the material washed from the machine.

Important: *When removing components be aware of any dirt or debris that may be exposed. Cover any open ports and clean away the deposits before proceeding.*

Detergents

Avoid using full strength 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.

Pressure Washing and Steam Cleaning

⚠ CAUTION

Never use water or steam to clean inside the cab. The use of water or steam could damage the on-board computer and render the machine inoperable. Remove dirt using a brush or damp cloth.

8-3-4-8

⚠ 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

Important: *Do not aim the water jet directly at bearings, oil seals or electrical and electronic components such as the engine electronic control unit (ECU), alternator or fuel injectors.*

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.*

Preparing the Machine for Cleaning

1 Park the Machine and make it safe. Lower the boom. Refer to ⇒ ***Related Topics (3-25)***.

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

2 Make sure that the electrical system is isolated.

3 Make sure that all electrical connectors are correctly coupled. If connectors are open fit the correct caps or seal with water proof tape.

Cleaning the Machine

⚠ WARNING

To avoid burning, wear protective gloves when handling hot components. To protect your eyes, wear goggles when using a brush to clean components.

HYD-1-3_2

⚠ WARNING

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

5-3-1-12_3

1 Park the Machine and make it safe. Lower the boom. Refer to ⇨ ***Preparing the Machine for Cleaning (3-27)***

2 If the radiator tubes/fins get clogged the radiator will be less efficient.

Open the engine cover and remove the undershields. ⇨ ***Undershield (3-119)***.

Clean both sides of radiator **A**. Brush off all debris from the tubes and fins using a soft bristle brush **Y**. Make sure the loosened material is brushed out of the cooling enclosure. ⇨ ***Fig 6. (3-30)***.

On machines with air conditioning but no hydraulic cooler, release fastener **B** and hinge condenser **C** away from the radiator. Clean both sides of condenser **C**, push it back into position and close the fastener.

On machines with air conditioning and hydraulic cooler, release fastener **D** and pull the condenser **E** away from the cooler **F**. Clean both sides of condenser **E** and the front of the cooler **F**. Then push back the condenser and pull forward the cooler and condenser together as at **G**. Clean the back of the cooler and the front of the radiator **H** then push them back into position and close the fasteners **D**.

Note: *If the machine is fitted with a roof mounted air conditioning condenser, read step 4.*

3 Engine

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

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.

Important: *Do not place the jet nozzle closer than 600mm (24 in) to any part of the engine.*

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.

a Disconnect the battery.

b Do not aim the jet wash directly at the fuel injector seals **F**. ⇨ ***Fig 3. (3-29)***.

c Seal the engine air intake, exhaust and breather system.

d Make sure that the oil filler caps and dipstick are correctly installed.

e Do not wash any part of the:

i Fuel injection pump.

ii Cold start device.

iii Electrical shut off solenoid (ESOS).

iv Electrical connections.

v Engine ECU.

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

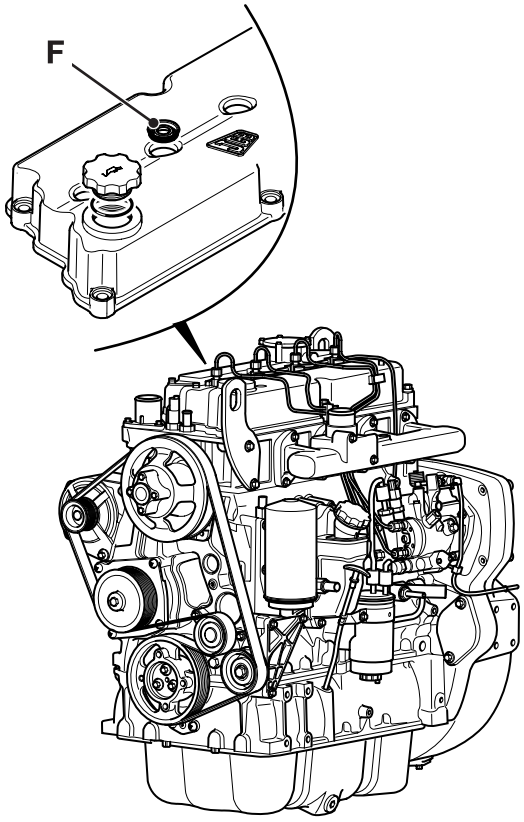

Fig 3.

Refit the undershields.

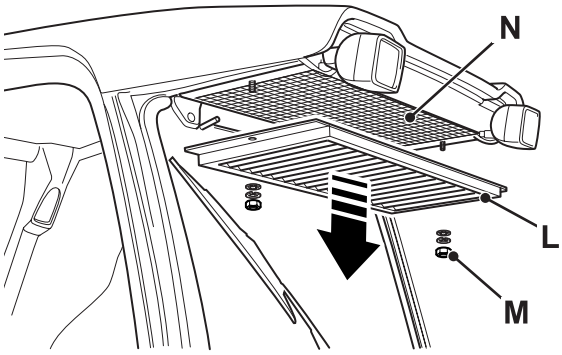

Fig 4.

4 If the machine is fitted with a roof mounted air conditioning condenser:

a Support the protective cover **L** and remove fasteners **M**. Lower the cover to the ground.

b Clean the condenser **N**, using a soft bristle brush.

c Refit the cover **L**. Retain using fasteners **M**.

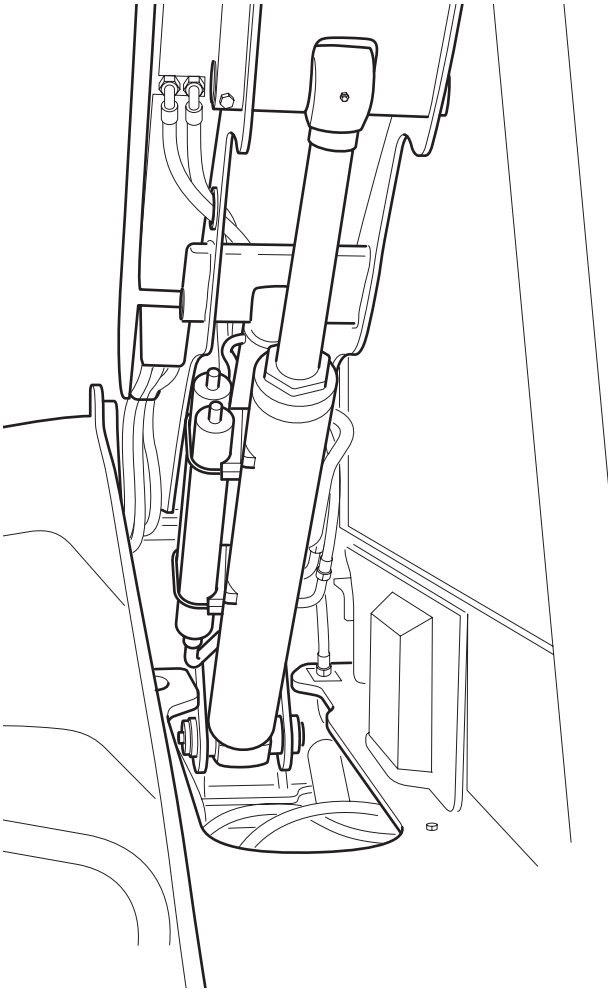

Fig 5.

5 Debris can collect under the boom. ⇒ *Fig 5. (3-29)*. Remove especially all combustible material.

6 Do not allow debris to accumulate in the cavity **K** at the end of the boom on 531-70, 536-70 and 541-70 machines. ⇒ *Fig 6. (3-30)*. Remove and clean away all debris that may have built up around the tilt ram.

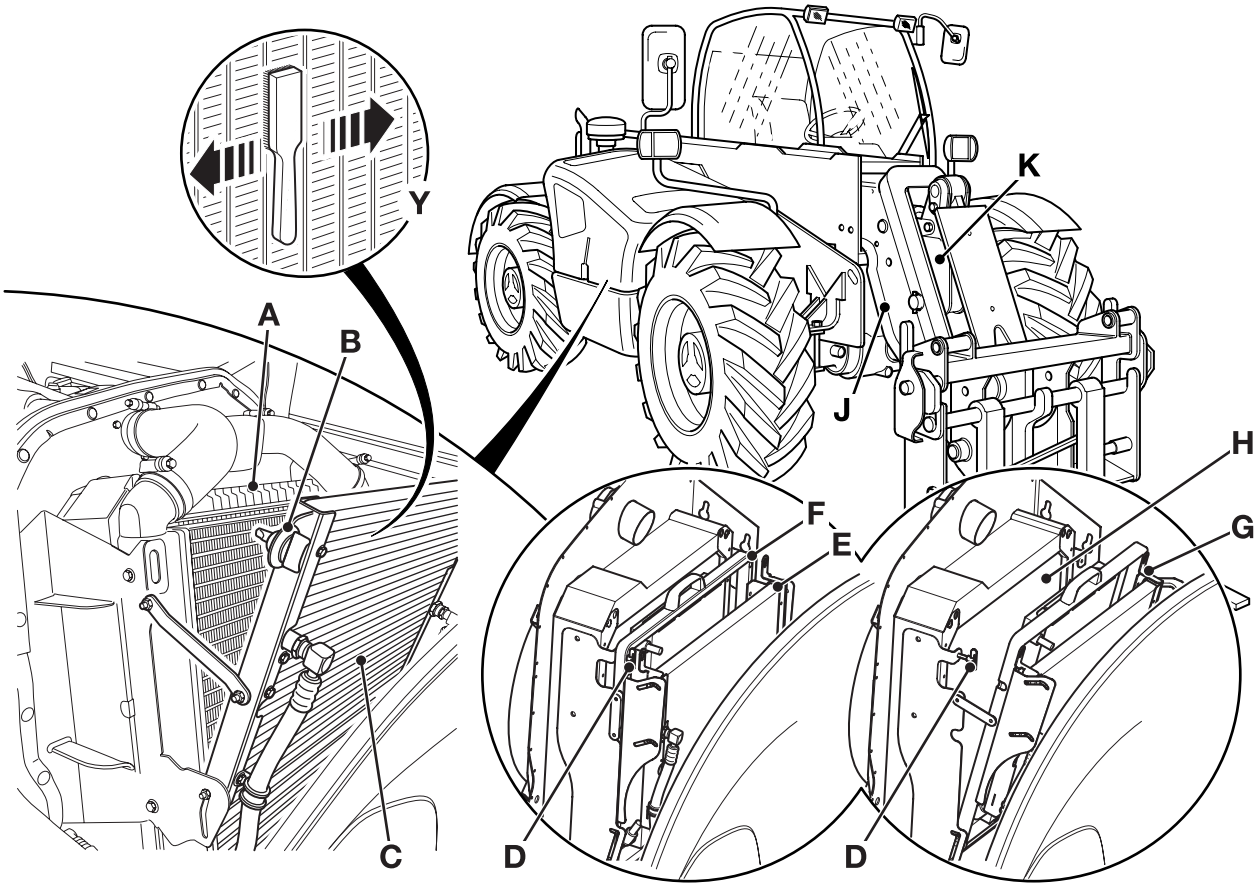

Fig 6.

Inspection

Checking for Damage

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

2 Make sure all pivot pins are correctly in place and secured by their locking devices.

3 Ensure that the steps and handrails are undamaged and secure.

4 Check for broken or cracked window glass. Replace damaged items.

5 Check all bucket teeth for damage and security.

6 Check all lamp lenses for damage.

7 Inspect the tires for damage and penetration by sharp objects.

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

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Seat Belts

Checking the Seat Belt Condition and Security

⚠ 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.

ROPS/FOPS (and OECD) Structure

Checking the ROPS/FOPS (and OECD) Structure

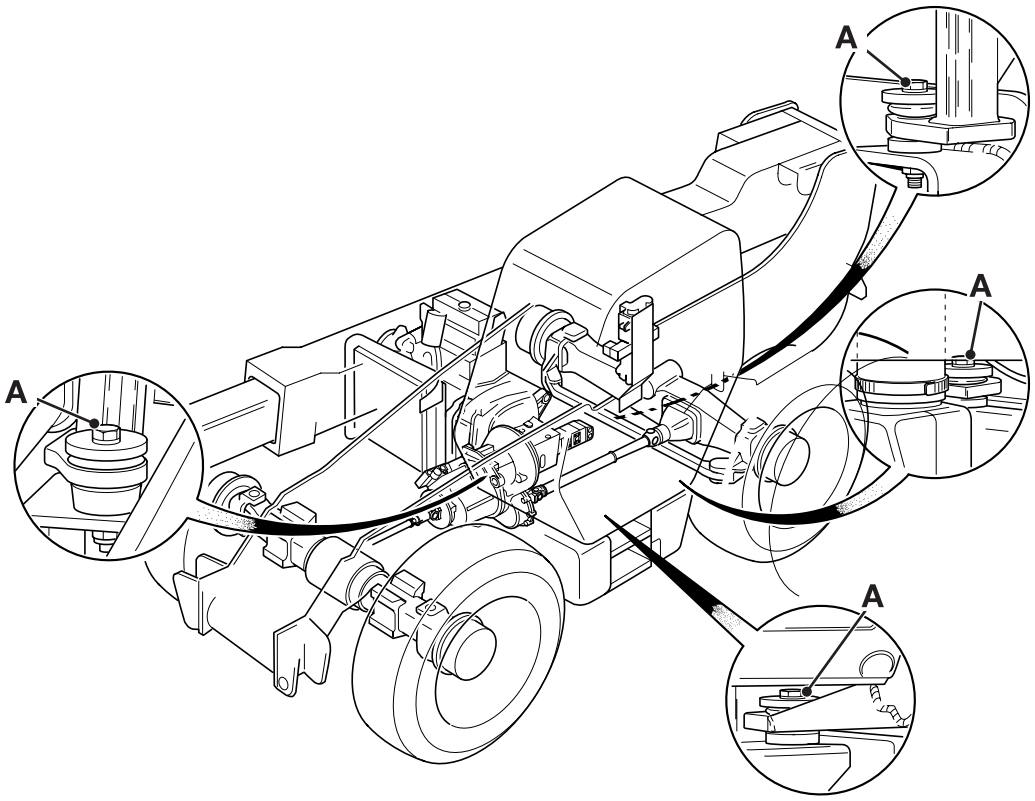

Fig 7.

⚠ WARNING

You could be killed or seriously injured if you operate a machine with a damaged or missing ROPS/FOPS. If the Roll Over Protection Structure (ROPS)/Falling Objects Protection Structure (FOPS) has been in an accident, do not use the machine until the structure has been renewed. Modifications and repairs that are not approved by the manufacturer may be dangerous and will invalidate the ROPS/FOPS certification.

INT-2-1-9_6

For assistance, contact your JCB distributor. Failure to take these precautions could result in death or injury to the operator.

Check the structure for damage. Check that the mounting bolts **A** are installed and undamaged. Check the bolt torques. ⇨ *Table 6. Torque Settings (3-34)*. Tighten them to the correct torque if necessary.

Table 6. Torque Settings

Item	Nm	lbf ft
A	244	180
A (1)	190	140

(1) 526-56 Machines

Greasing

Related Topics

Table 7. Related Topics in This Publication

The table lists other topics in the manual that contain information related to this topic. Refer to the applicable topics to complete your procedures. Where applicable the text in this section contains cross references to this page to help you find the correct information. Some machines have different systems and devices. Make sure you refer to the correct topic, refer to *Section 1 - Applications*.		
Sections	**Topic Titles**	**Sub Titles**
1	General Information	ALL
2	ALL (Care and Safety)(1)	ALL
3	⇨ ***Access Panels (3-115)***	ALL

(1) You must obey all of the relevant care and safety procedures.

Greasing

You must grease the machine regularly to keep it working efficiently. Regular greasing will also lengthen the machine's working life. Refer to Service Schedules for correct intervals.

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

⚠ WARNING

You will be working close into the machine for these jobs. Lower the attachments if possible. Remove the starter key and disconnect the battery. This will prevent the engine being started. Make sure the park brake is engaged.

Block all four wheels before getting under the machine.

2-3-2-1

⚠ WARNING

Boom Safety Strut

A raised boom can drop suddenly and cause serious injury. Before working under a raised boom, fit the boom safety strut. See Boom Safety Strut, MAINTENANCE section.

5-1-5-7

Greasing should be done with a grease gun. Normally, two strokes of the gun should be sufficient. Stop greasing when fresh grease appears at the joint.

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

Note: *Some optional attachments may need greasing more often. Refer to the operator handbook.*

All 50 hour greasing operations must be carried out at 10 hour intervals if JCB MPL Grease is used.

All 500 hour greasing operations must be carried out at 50 hour intervals if JCB MPL Grease is used.

Preparing the Machine for Greasing

Park the machine and make it safe. Obey the care and safety procedures. ⇨ ***Related Topics (3-5)***

Important: *You can complete most of the greasing procedures with the boom lowered. If you lift the boom to get access for greasing, you must install the maintenance strut on the boom.*

Every 50 Hours

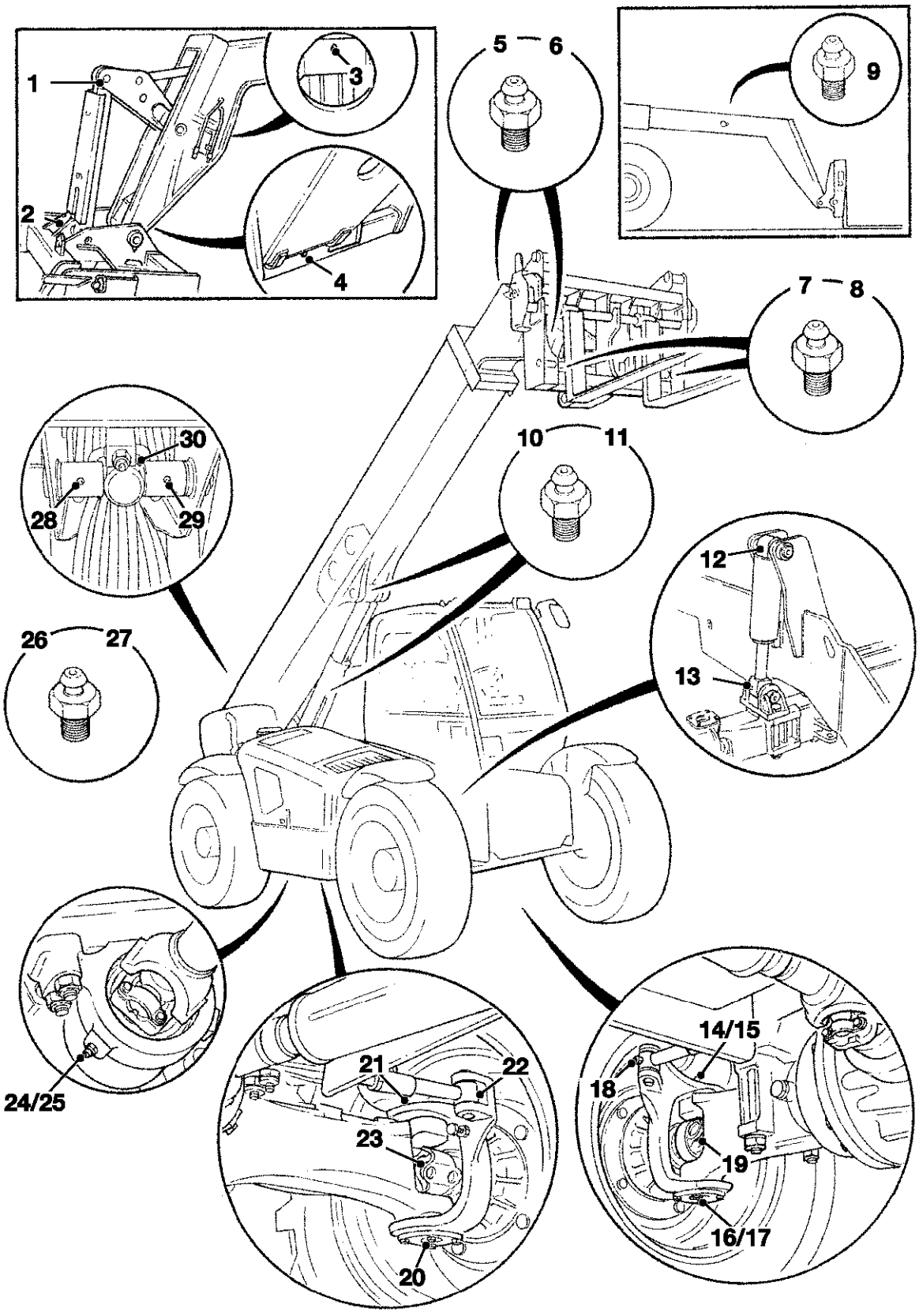

Fig 8. 531-70, 536-70, 541-70

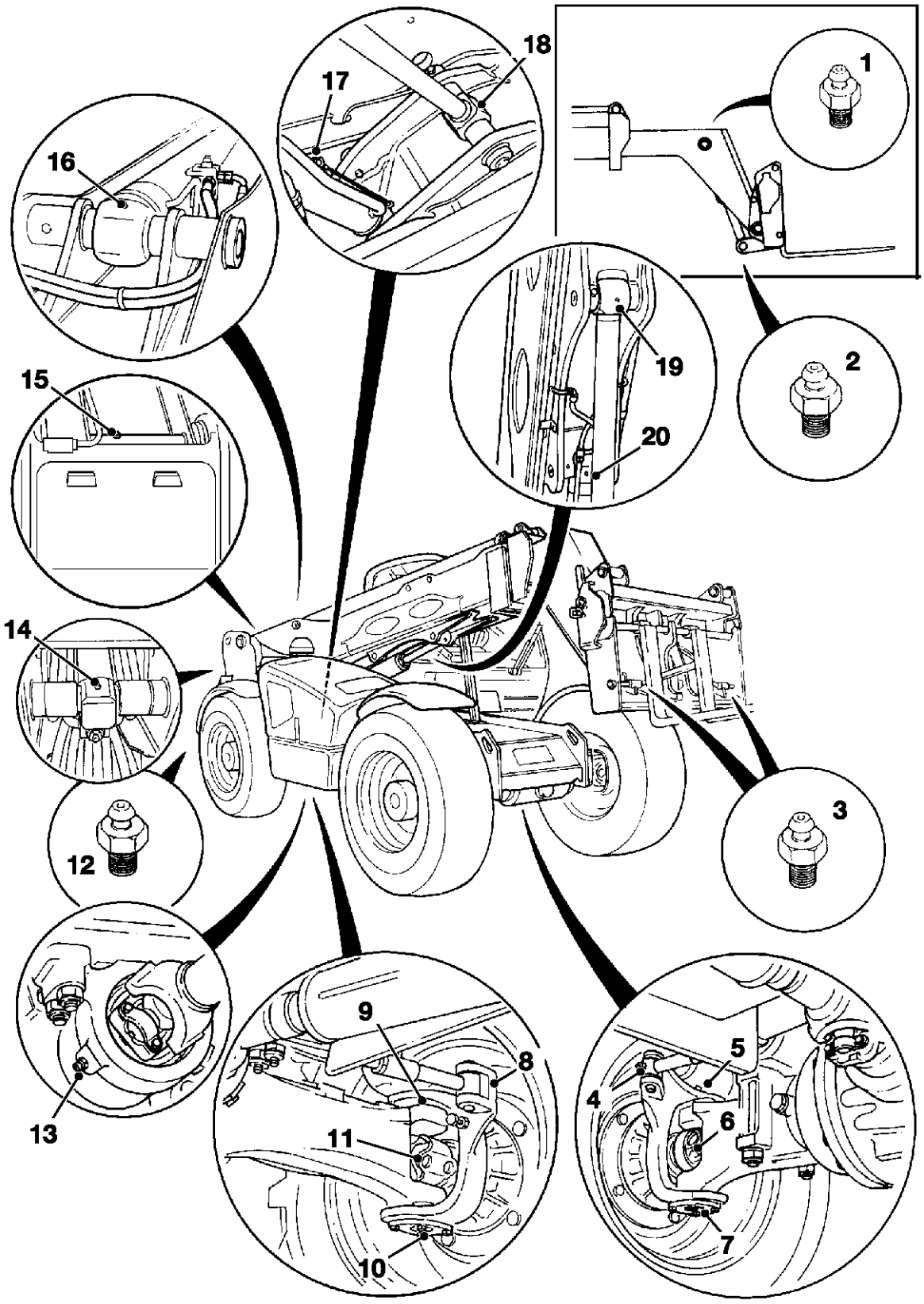

Fig 9. 533-105, 535-95

Note: *533-105:* ***⇒ Fig 10. (🗋 3-39)***.

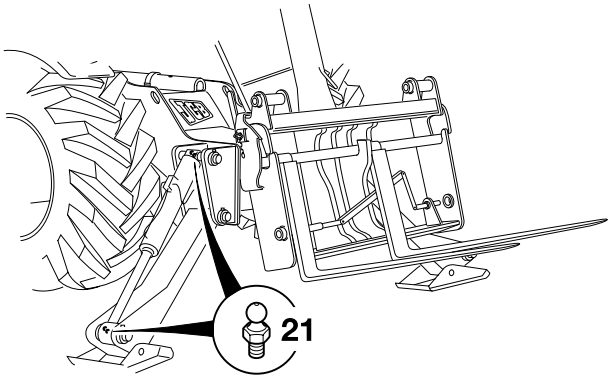

Fig 10. 533-105 only (both sides)

Note: *⇨ Fig 9. (🗋 3-38)*.

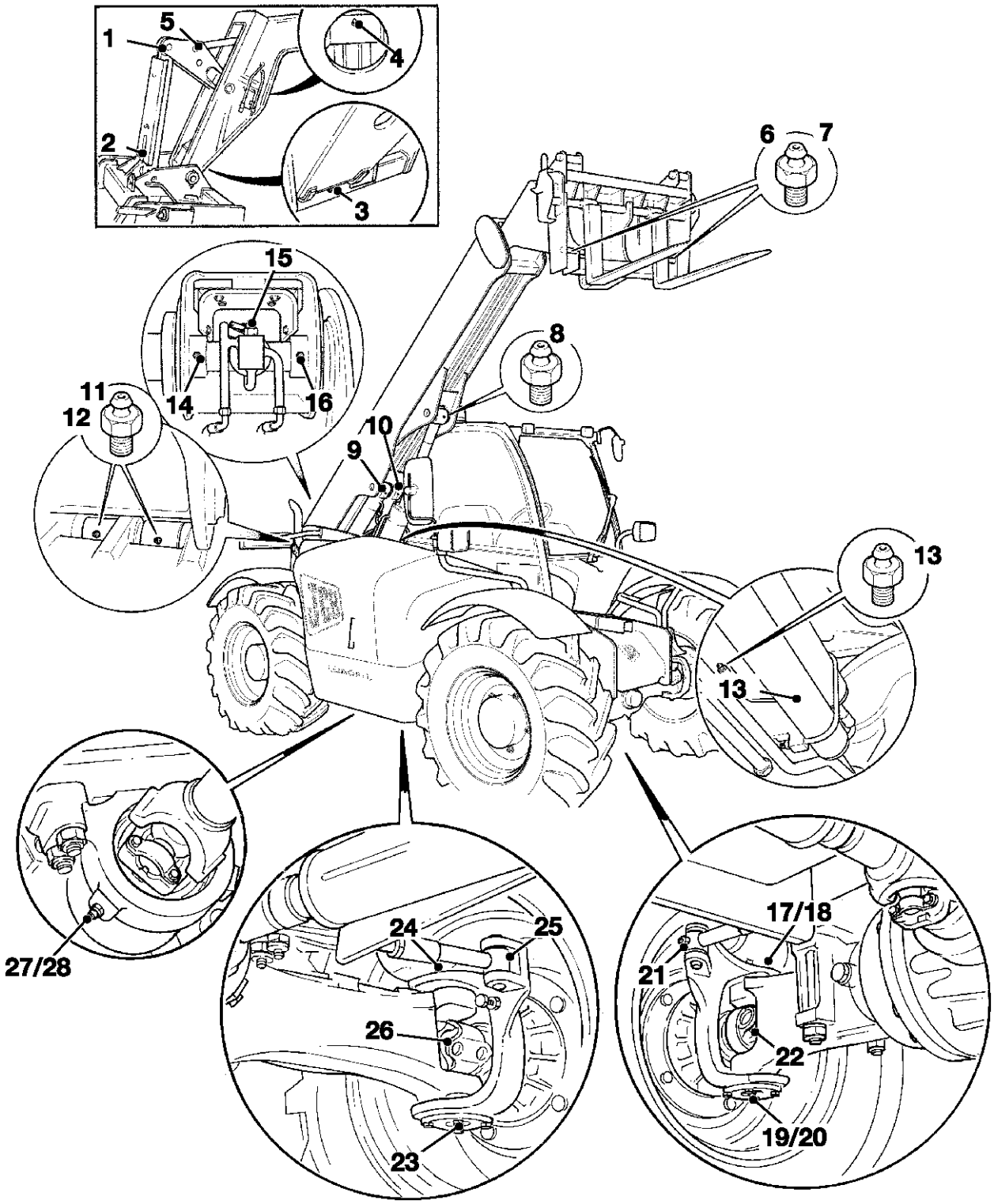

Fig 11. 536-60

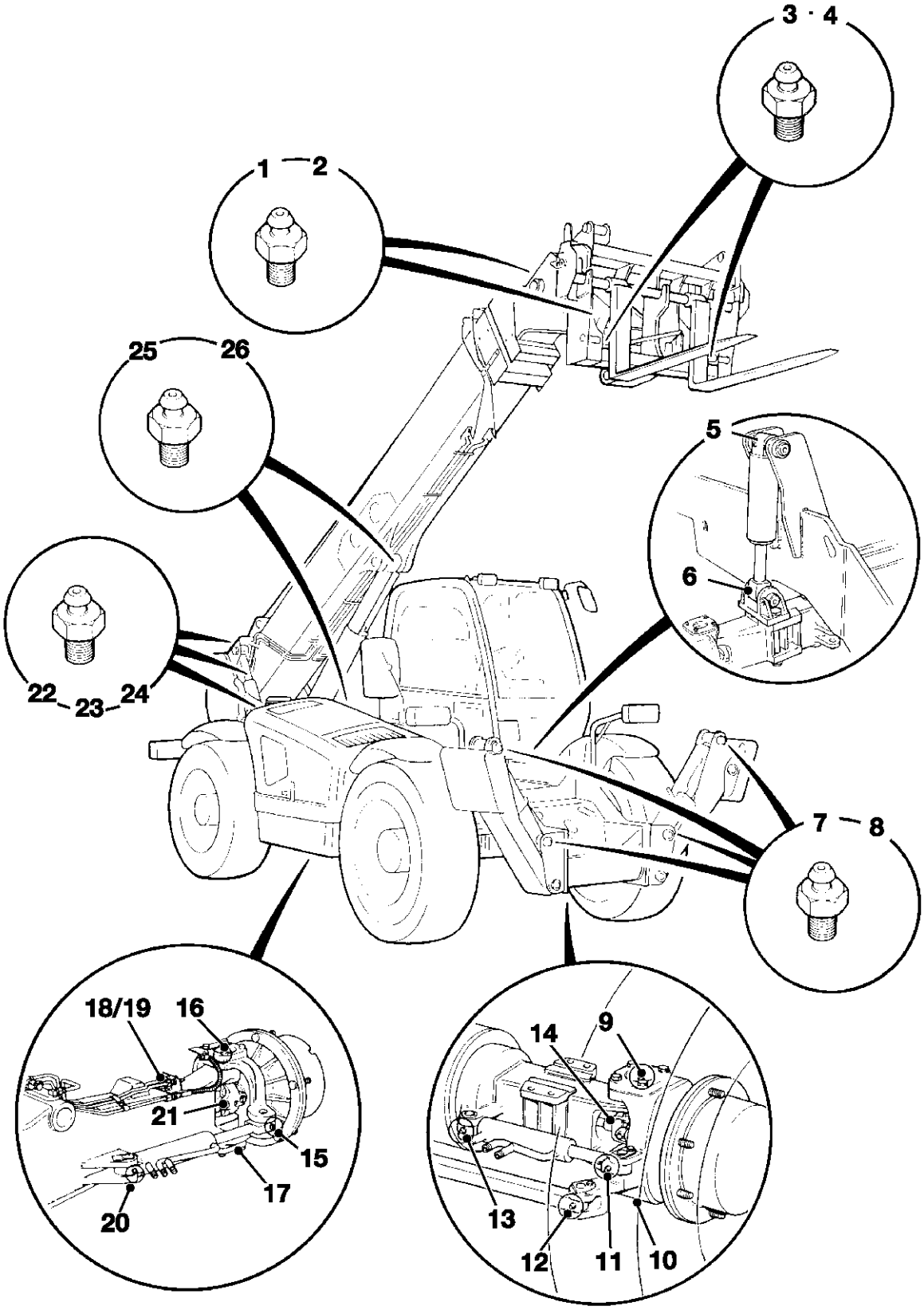

Fig 12. 535-125, 535-140, 540-140, 540-170

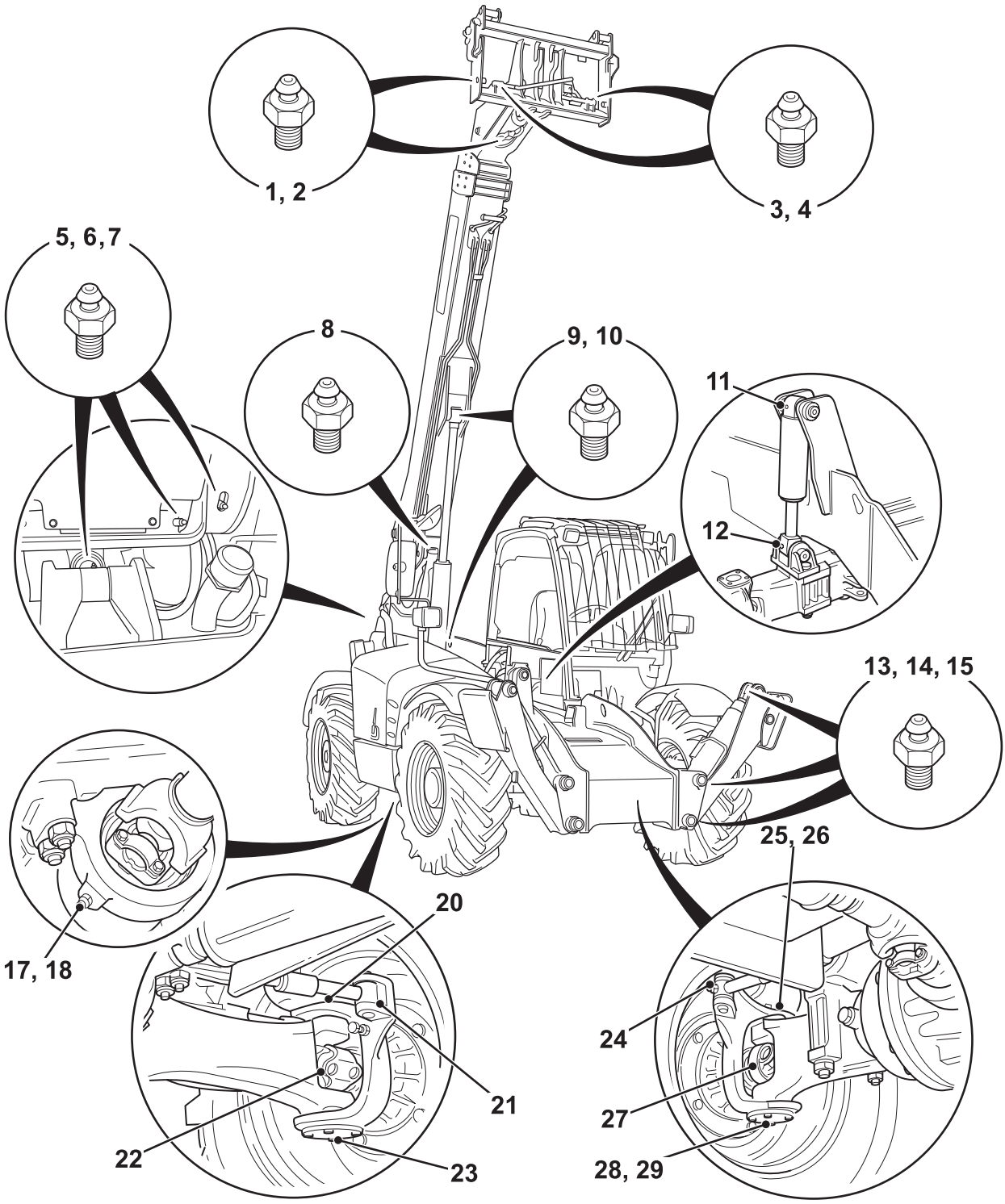

Fig 13. 535-125 Hi Viz, 535-140 Hi Viz

Every 500 Hours

Boom

CAUTION

Waxoyl contains turpentine substitute which is flammable. Keep flames away when applying Waxoyl. Waxoyl can take a few weeks to dry completely. Keep flames away during the drying period.

Do not weld near the affected area during the drying period. Take the same precautions as for oil to keep Waxoyl off your skin. Do not breathe the fumes. Apply in a well-ventilated area.

5-3-1-9

⇨ *Greasing (3-35)*.

Park the Machine and make it safe. Refer to ⇨ *Related Topics (3-5)*

Extend the boom fully. Spray Waxoyl evenly over all the sliding surfaces of the inner and outer boom sections **A** and **B** as shown. Allow 2-3 hours drying time before retracting the boom.

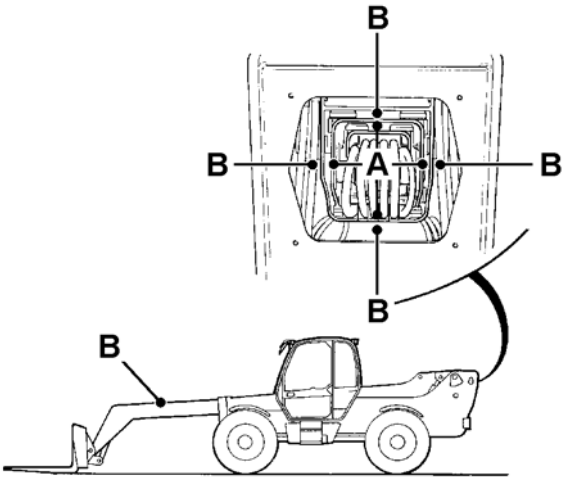

Fig 14.

Drive Shafts

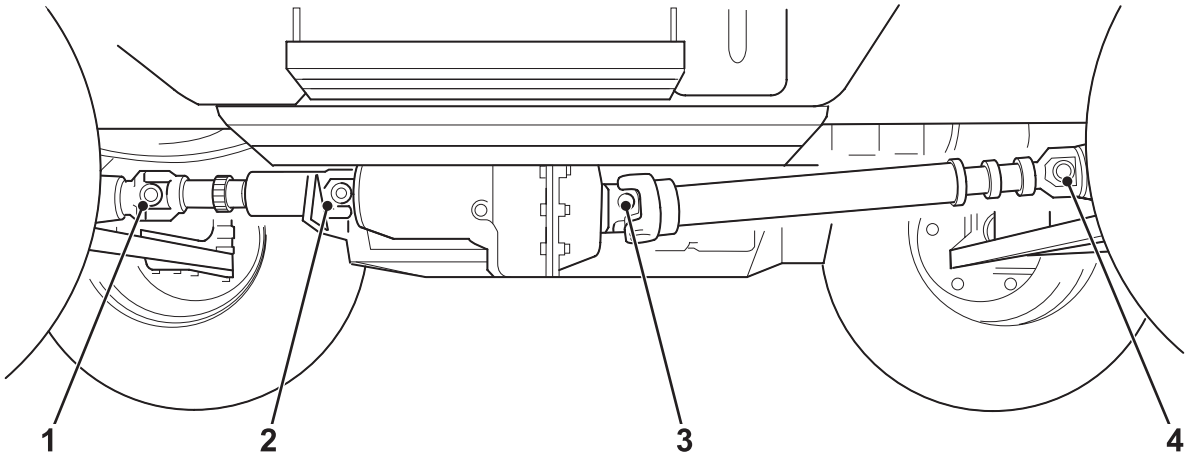

Fig 15.

Greasing the Hydraulic Tow Hitch

⚠ CAUTION

Waxoyl contains turpentine substitute which is flammable. Keep flames away when applying Waxoyl. Waxoyl can take a few weeks to dry completely. Keep flames away during the drying period.

Do not weld near the affected area during the drying period. Take the same precautions as for oil to keep Waxoyl off your skin. Do not breathe the fumes. Apply in a well-ventilated area.

5-3-1-9

⇨ *Greasing (🗋 3-35)*.

Park the Machine and make it safe. Lower the boom. Refer to ⇨ *Related Topics (🗋 3-5)*

Extend the hydraulic tow hitch fully. Spray Waxoyl evenly over the surfaces **A**, **B** and **C** as shown. Allow 2-3 hours drying time before retracting the hitch.

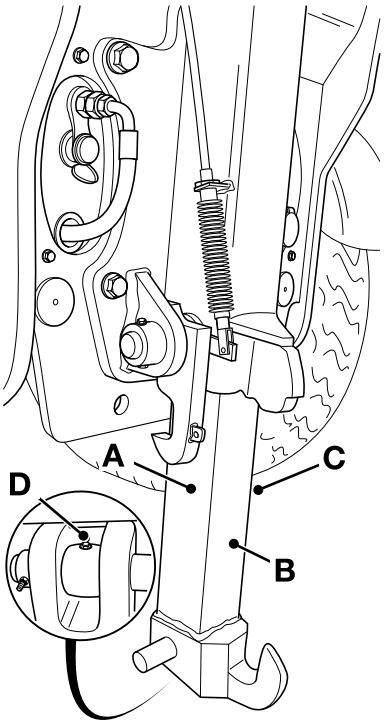

Fig 16.

Grease the hitch pivot pin at grease nipple **D**. Use JCB HP Grease or equivalent.

Every 1000 Hours

⚠ CAUTION

Waxoyl contains turpentine substitute which is flammable. Keep flames away when applying Waxoyl. Waxoyl can take a few weeks to dry completely. Keep flames away during the drying period.

Do not weld near the affected area during the drying period. Take the same precautions as for oil to keep Waxoyl off your skin. Do not breathe the fumes. Apply in a well-ventilated area.

5-3-1-9

Note: *Use another pivot pin to support the ram while greasing the other pivot pin.*

Park the Machine and make it safe. Refer to ⇨ ***Related Topics (3-5)***

Position the machine as shown with carriage on the ground. Remove inner extension ram pivot pin **E** and coat with Waxoyl. Refit pivot pin.

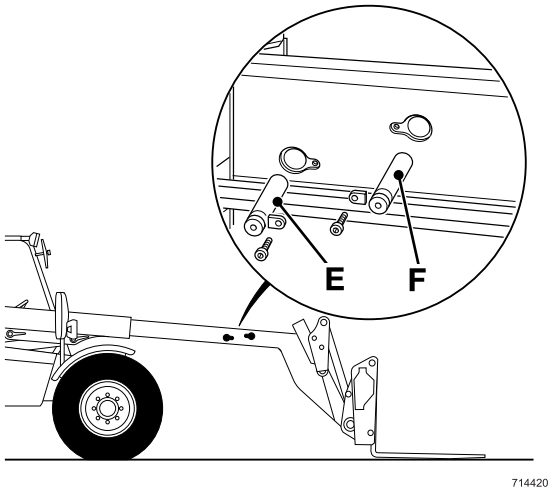

Fig 17.

Remove tilt ram pivot pin **F** and coat with Waxoyl. Refit pivot pin.

⇨ ***Greasing (3-35)***

Oiling

The following points should be lightly oiled with engine oil at the periods stated in the Service Schedules:

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

Park Brake Cable

WARNING

Oil on the brake disc will reduce brake effectiveness. Keep oil away from the brake disc. Remove any oil from the disc with a suitable solvent. Read and understand the solvent manufacturer's safety instructions. If the pads are oily, new ones must be fitted.

2-3-2-3_3

Park the Machine and make it safe. Lower the boom. Refer to *Related Topics (3-5)*

Oil the clevis **A** at the brake end of the cable.

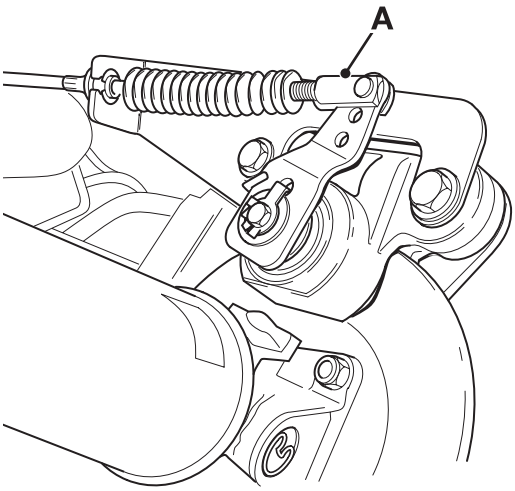

Fig 18.

Control Levers

1 Park the Machine and make it safe. Refer to ⇨ *Related Topics (🗋 3-5)*

2 Raise the boom and fit the Safety Strut.

3 Remove the valve block cover (if fitted).

4 Oil the clevis at the bottom of each control lever. ⇨ *Fig 19. (🗋 3-48)*.

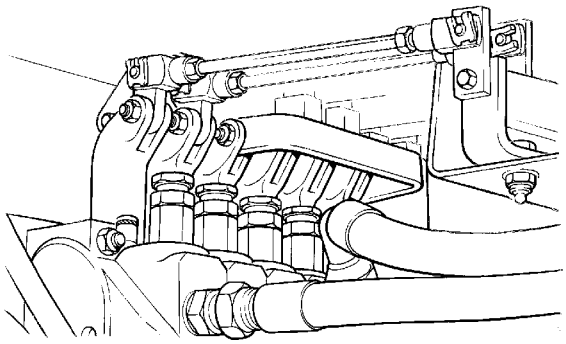

Fig 19.

Heater and Air Conditioning

Related Topics

Table 8. Related Topics in This Publication

The table lists other topics in the manual that contain information related to this topic. Refer to the applicable topics to complete your procedures. Where applicable the text in this section contains cross references to this page to help you find the correct information. Some machines have different systems and devices. Make sure you refer to the correct topic, refer to *Section 1 - Applications*.		
Sections	**Topic Titles**	**Sub Titles**
1	General Information	ALL
2	ALL (Care and Safety)(1)	ALL

(1) You must obey all of the relevant care and safety procedures.

Changing the Air Intake Filter

P5-3014

Important: *In dusty conditions the filter will require cleaning/changing more often than detailed in the service schedule.*

⚠ WARNING

Boom Safety Strut

A raised boom can drop suddenly and cause serious injury. Before working under a raised boom, fit the boom safety strut. See Boom Safety Strut, MAINTENANCE section.

5-1-5-7

⚠ 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 and make it safe. Raise the boom. Obey the care and safety procedures. ⇨ ***Related Topics (3-5)***

2 Remove screw **A** and cover **B** to gain access to filter **C**.

3 Remove the filter **C**.

Note: *Do not try to clean the filter. If the filter was clogged, change it more often.*

4 Carefully fit the new filter into its housing. Ensure that the tab **D** locates behind the edge of panel **E** before fitting screw **A**.

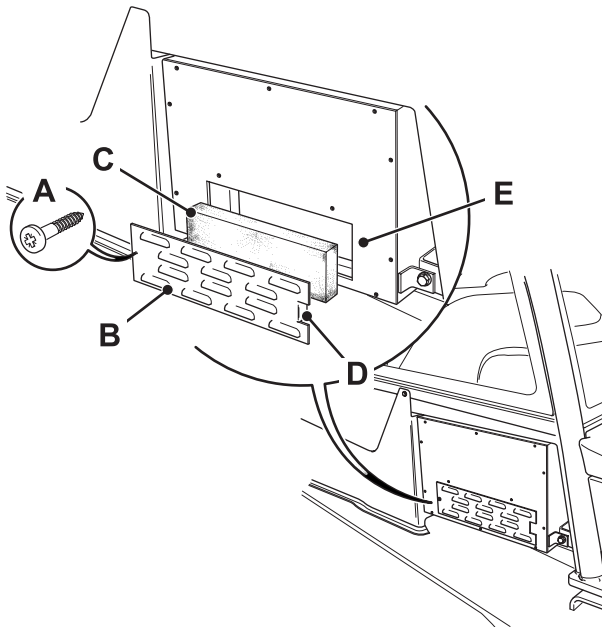

Fig 20.

Brakes

Related Topics

Table 9. Related Topics in This Publication

The table lists other topics in the manual that contain information related to this topic. Refer to the applicable topics to complete your procedures. Where applicable the text in this section contains cross references to this page to help you find the correct information. Some machines have different systems and devices. Make sure you refer to the correct topic, refer to *Section 1 - Applications*.		
Sections	**Topic Titles**	**Sub Titles**
1	General Information	ALL
2	ALL (Care and Safety)(1)	ALL
3	⇨ *Fluids, Lubricants and Capacities (3-20)*	ALL

(1) You must obey all of the relevant care and safety procedures.

Checking the Foot Brake Fluid Level

⚠ WARNING

Faulty brakes can kill. If you have to top up the brake reservoir frequently, get the brake system checked by your JCB Dealer. Do not use the machine until the fault has been put right.

2-3-2-5_1

The brake fluid reservoir **22-B** is in the panel in front of the cab. To fill the reservoir, pull release knob **21-C** to open the panel.

Note: *On 526-56 machines the brake fluid reservoir **23-B** is mounted within the cab. Open the cab door to get access to the reservoir.*

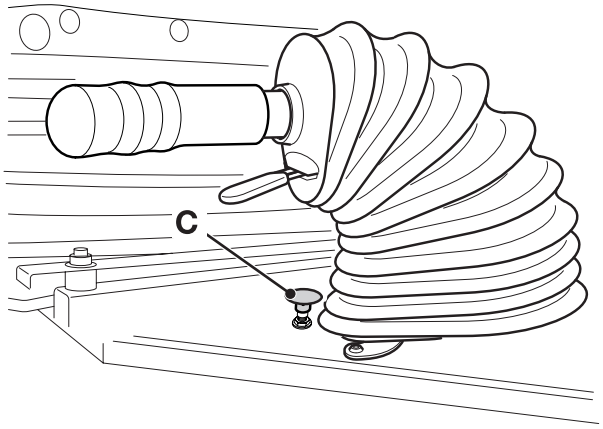

Fig 21.

1 Park the machine and make it safe. Obey the care and safety procedures. ⇨ ***Related Topics (🗋 3-5)***

2 The correct fluid level is marked on the reservoir. If necessary, add fluid as in Step 3.

⚠ CAUTION

Using incorrect fluid could damage the system. See Fluids, Capacities and Lubricants for the correct fluid. The fluid can harm your skin. Wear rubber gloves. Cover cuts or grazes.

2-3-5-1_2

3 Remove the reservoir cap **D**. Do not use ordinary brake fluid. Carefully pour in the fluid until it reaches the FLUID LEVEL mark. Avoid spilling it. Wipe up any spillage.

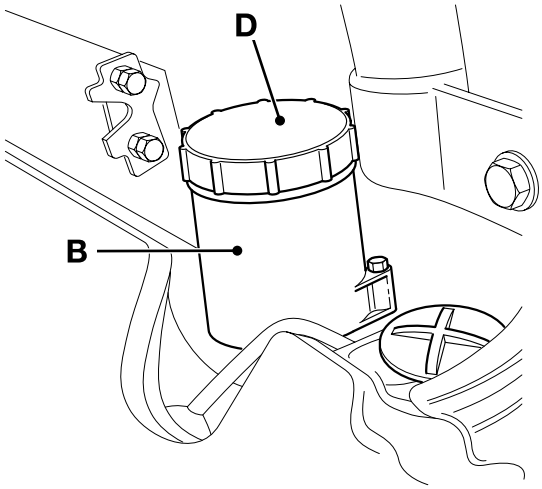

Fig 22.

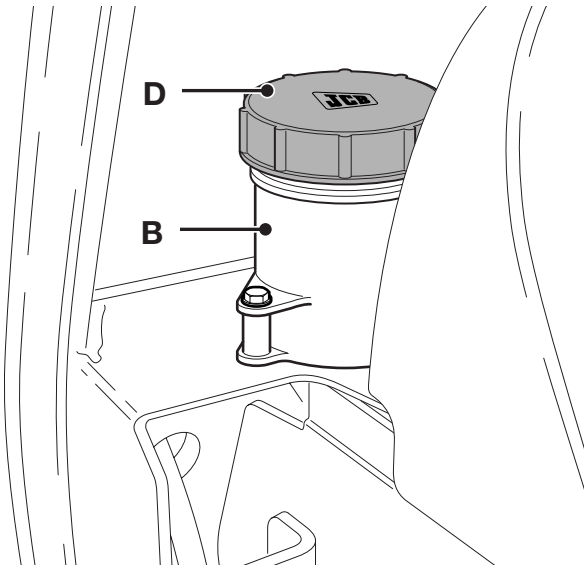

Fig 23.

Electrical System

Related Topics

Table 10. Related Topics in This Publication

The table lists other topics in the manual that contain information related to this topic. Refer to the applicable topics to complete your procedures. Where applicable the text in this section contains cross references to this page to help you find the correct information. Some machines have different systems and devices. Make sure you refer to the correct topic, refer to *Section 1 - Applications*.		
Sections	**Topic Titles**	**Sub Titles**
1	General Information	ALL
2	ALL (Care and Safety)(1)	ALL
3	⇒ ***Access Panels (3-115)***	ALL
C	***Battery***	ALL
C	**Technical Data**	**Fuses and Relays**

(1) You must obey all of the relevant care and safety procedures.

Battery

Battery Disconnection/Connection

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

Disconnection

1 Park the Machine and make it safe. Lower the boom. Refer to ⇨ *Related Topics (3-5)*

2 Get access to the battery. See ⇨ *Battery Cover (3-116)*

3 Remove the leads. Disconnect the earth (-) terminal first.

Connection

1 Check the battery.

a If the terminal is dirty, clean the post.

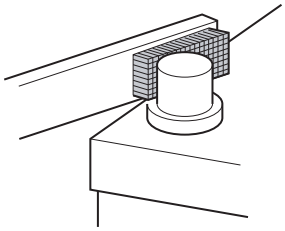

Fig 24.

b If the terminal post is corroded and generates white powder wash the terminal with hot water. If considerable corrosion is detected, clean with a wire brush or abrasive paper.

c After cleaning, apply a thin coat of petroleum jelly to the terminal.

2 Re-connect the leads. Connect the earth (-) terminal last.

3 Close and lock the access panels.

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.

1 Park the Machine and make it safe. Lower the boom. Refer to ⇨ *Related Topics (3-5)*

2 Get access to the battery. See ⇨ *Battery Cover (3-116)*

3 Disconnect and remove battery. See ⇨ *Battery Disconnection/Connection (3-54)*

WARNING

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

2-3-4-6

4 Remove covers **A**. Look at the level in each cell. The electrolyte should be 6 mm (1/4 in) above the plates. Top up if necessary with distilled water or de-ionized water.

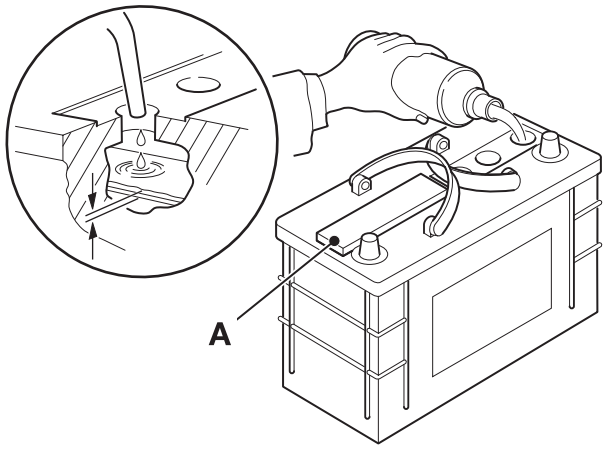

Fig 25.

5 Refit battery.

6 Close and lock the access panels.

Battery Isolator

To disconnect the battery from the machine electrics a battery isolator has been fitted.

⚠ CAUTION

Except in an emergency, do not use the battery isolator to switch OFF the engine. Failure to comply may result in damage to the electrical circuits.

INT-3-2-13

⚠ CAUTION

Before carrying out arc welding on the machine, disconnect the battery and alternator to protect the circuits and components. The battery must still be disconnected even if a battery isolator is fitted.

INT-3-1-13

At the end of a working cycle or if the machine is being left unattended, provided the lights are not required, the battery must be isolated. Before attempting to start the engine or use the machine electrics the battery isolator key must be fitted and switched on.

Note: *If the battery is isolated, the radio/cassette player may lose its preset memories.*

1 Park the Machine and make it safe. Lower the boom. Refer to ⇨ ***Related Topics (3-5)***

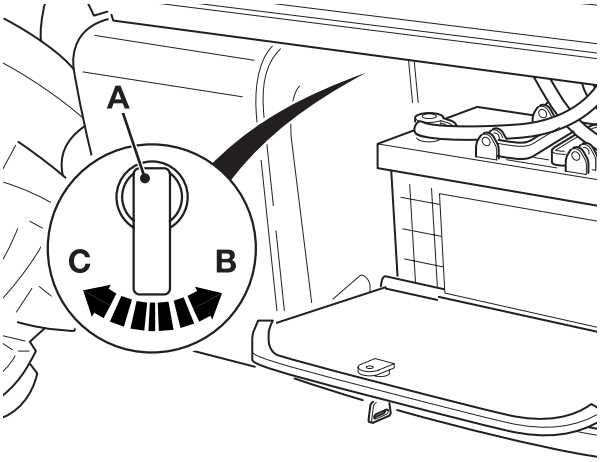

Fig 26.

2 Get access to the battery isolator. Refer to ***Access Panels - Battery Cover***. ⇨ ***Related Topics (3-5)***

3 Machines with a SE Engine: To allow the engine ECU to shutdown correctly, you must wait 30 seconds (**X**) before you isolate the battery. The 30 second period starts when you switch OFF the machine ignition.

4 Disconnect the battery.

a Turn the battery isolator key **A** in an anti-clockwise direction and remove.

b Keep the key in a safe place and available for when the machine is next required.

5 To connect the battery insert the key **A** and turn in a clockwise direction.

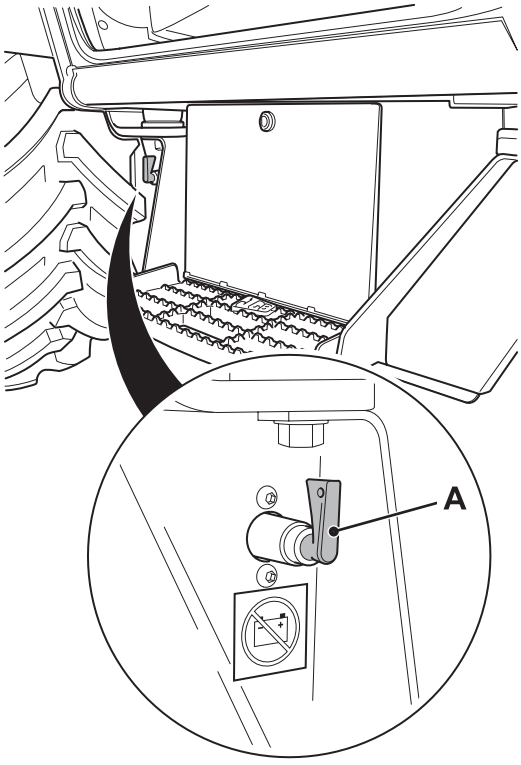

Fig 27. 526-56 Machines

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

Important: *The machine has a 12 Volt electrical system. Using a booster (slave) supply with a higher voltage will damage the machine's electrical system.*

1 The park brake should have been engaged when the machine was last parked. If it is not engaged, engage it now. The engine will not start unless the park brake is on.

2 Set all switches in the cab to off.

3 Connect the booster cables as follows:

a Unlock and open the battery cover.

b 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.

c Connect the negative (-) booster cable to a good frame earth on the machine, away from and below the battery.

Note: *A good frame earth is part of the main frame, free from paint and dirt. Do not use a pivot pin for an earth.*

d Connect the other end of this cable to the negative (-) terminal on the booster supply.

4 Do the Pre-Start Checks.

5 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

6 Disconnect the negative booster cable from the machine frame earth. Then disconnect it from the booster supply.

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

7 Close and lock the battery cover.

Fuses and Relays

Fuses

For information about fuses see ⇨ *Related Topics (3-5)*

Link Box Fuses

For information about fuses see ⇨ *Related Topics (3-5)*

Relays

For information about fuses see ⇨ *Related Topics (3-5)*

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Engine Air Filter

Related Topics

Table 11. Related Topics in This Publication

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Sections	**Topic Titles**	**Sub Titles**
1	General Information	ALL
2	ALL (Care and Safety)(1)	ALL
3	⇨ ***Access Panels (3-115)***	ALL

(1) You must obey all of the relevant care and safety procedures.

Cleaning the Air Filter Dust Valve

Important: *Do not run the engine with the dust valve **K** removed.* ***⇨ Fig 28. (🗋 3-63)***.

1 Park the Machine and make it safe. Lower the boom. Refer to ***⇨ Related Topics (🗋 3-5)***

2 Check the dust valve **K** is not blocked.

3 Inspect the rubber flaps for cuts and nicks and check that the rubber is not perished. Renew if necessary.

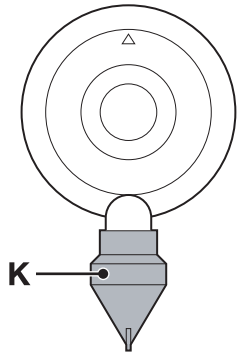

Fig 28.

Changing the Elements

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

Note: *Do not attempt to wash or clean the elements - they must only be renewed.*

Note: *Do not run the engine with the dust valve* ***K*** *removed.*

Note: *In a dusty environment, the outer element may have to be changed more frequently than the service schedule recommendation. A new inner element must be fitted at least every other time the outer element is changed. As a reminder, mark the inner element with a felt tipped pen each time the outer element is changed.*

1 Park the Machine and make it safe. Lower the boom. Refer to ⇨ ***Related Topics (3-5)***

2 Get access to the engine. Refer to ⇨ ***Engine Cover (3-118)***.

3 Release clips **A** and lift off cover **B**. Remove outer element **C**. If the inner element is to be changed, pull handle **D** and remove inner element **E**.

Note: *Take care not to tap or knock the element.*

4 Clean the inside of cover **B** and canister **G**.

5 Carefully insert the new inner element **E** into the canister. Make sure it seats correctly. check seal **H** is fully seated.

6 Insert a new outer element into the canister, check seal **J** is fully seated. Fit cover **B** with dust valve **K** at the bottom. Push the cover firmly into position and make sure it is secured by clips **A**.

7 Make sure that the wire is connected to the Air Filter Blocked switch **L**.

8 Remove and check hoses **M** for damage. Clean hose bores and then replace.

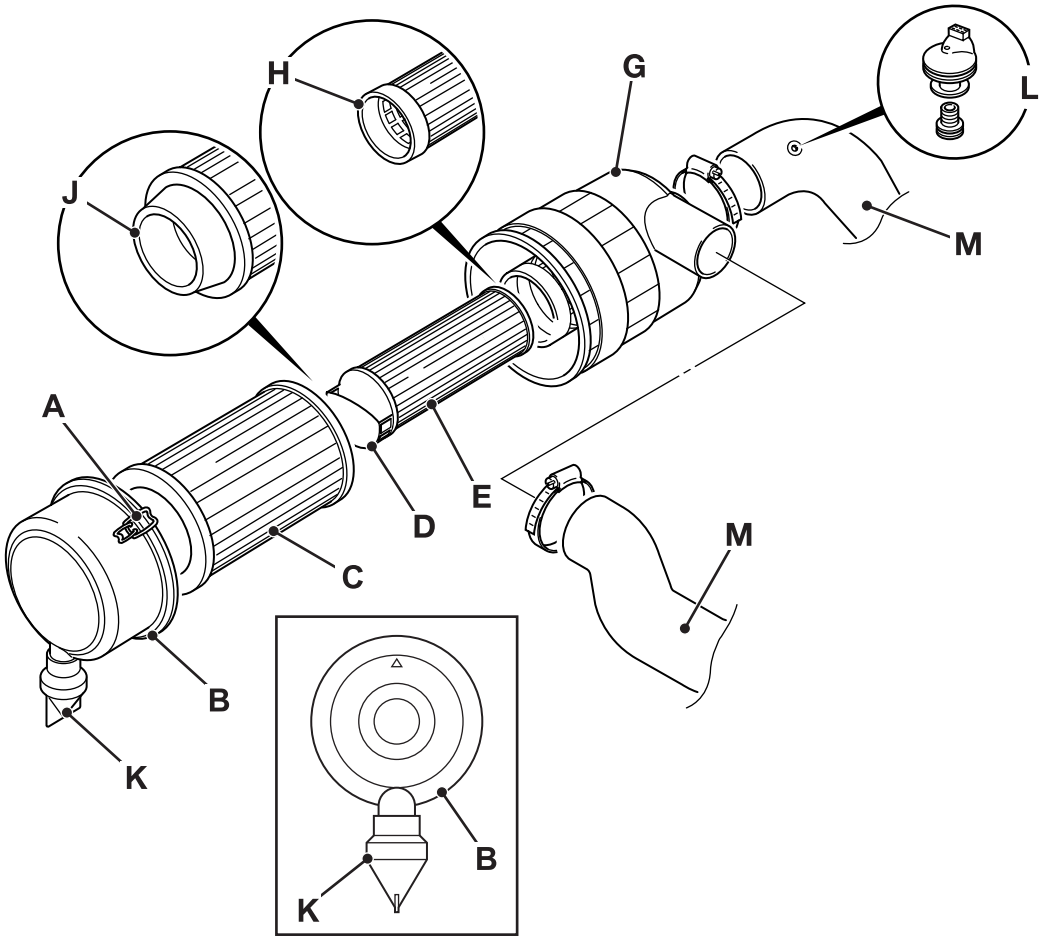

Fig 29.

Engine

Related Topics

Table 12. Related Topics in This Publication

The table lists other topics in the manual that contain information related to this topic. Refer to the applicable topics to complete your procedures. Where applicable the text in this section contains cross references to this page to help you find the correct information. Some machines have different systems and devices. Make sure you refer to the correct topic, refer to *Section 1 - Applications*.		
Sections	**Topic Titles**	**Sub Titles**
1	General Information	ALL
2	ALL (Care and Safety)(1)	ALL
3	⇨ ***Access Panels (3-115)***	ALL
3	⇨ ***Fluids, Lubricants and Capacities (3-20)***	ALL

(1) You must obey all of the relevant care and safety procedures.

Checking the Oil Level

P5-3015

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

1 Park the Machine and make it safe. Lower the boom. Refer to ⇨ *Related Topics (🗋 3-5)*

2 Get access to the engine. Refer to ⇨ *Engine Cover (🗋 3-118)*

3 Check that the oil level is between the maximum and minimum marks on the dipstick **A**.

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

4 If necessary, add the recommended oil through filler **B** to the maximum level. ⇨ *Fluids, Lubricants and Capacities (🗋 3-20)*

5 Fit filler cap and dipstick, make sure that they are fully inserted and tightened.

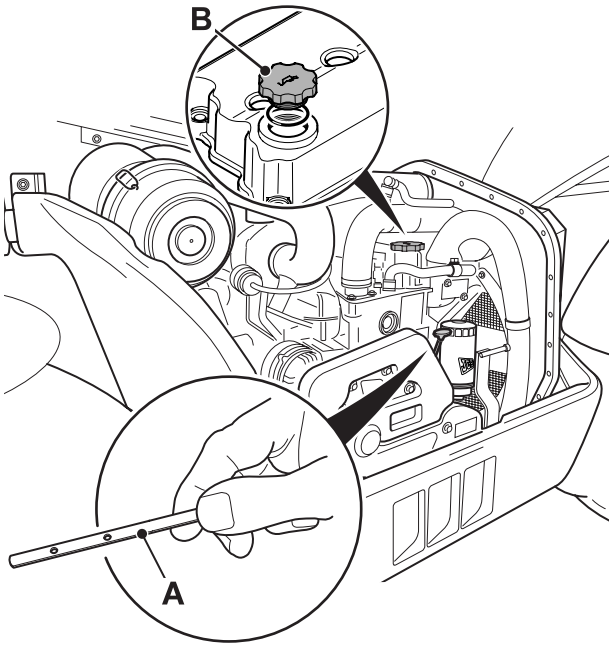

Fig 30.

Changing the Oil and Filter

Drain the oil when the engine is warm as contaminants held in suspension will then be drained with the oil.

1 Park the Machine and make it safe. Lower the boom. Refer to ⇨ ***Related Topics (3-5)***

2 Get access to the engine. Refer to ⇨ ***Engine Cover (3-118)***

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

3 Place a container of suitable size beneath the sump drain plug **C**.

CAUTION

Oil will gush from the hole when the drain plug is removed. Hot oil and engine components can burn you. Keep to one side when you remove the plug.

13-3-1-15

4 Drain the engine oil.

a Machine with a sump plug, remove the sump drain plug **C** and its 'O' ring **D**. Let the oil drain out, then clean and refit the drain plug with a new 'O' ring. Torque the drain plug to 40-60Nm (30-44lbf ft).

b Machines with a drain valve, remove the dust cap **K** from the sump drain port. Attach drain tube **L**. With the free end of the tube in an oil container, screw in the drain tube assembly to open the valve.

When all the oil has drained, unscrew the drain tube assembly and fit the dust cap **K**.

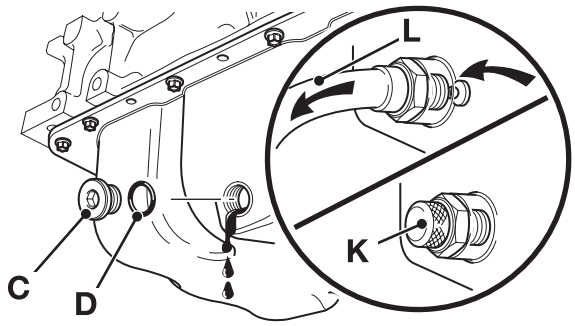

Fig 31.

5 Place a container of suitable size under drain plug **E** to catch the oil. ⇨ ***Fig 32. (3-69)***.

6 Loosen and remove the filter housing drain plug **E** and its 'O' ring **J**. Let the oil fully drain, then clean and refit the drain plug with a new 'O' ring. Torque the drain plug to 40-60Nm (30-44lbf ft).

7 Unscrew the filter canister **F**, use a chain wrench if necessary.

8 Clean the seal face of the filter head **G**.

9 Smear the seal **H** on the new filter canister **F** with clean engine oil.

10 Screw the filter on until it just contacts the filter head.

11 Turn the filter at least a further 3/4 of a turn.

12 Through the top filler point, fill the engine with the recommended oil to the MAX mark on the dipstick. Refer to ⇨ ***Checking the Oil Level (3-67)***.Wipe off any spilt oil, refit the filler cap and make sure it is secure.

13 Operate the engine until the oil pressure low warning light has extinguished. Check for oil leakage. When the oil has cooled, check the oil level again, and if necessary top up with clean engine oil.

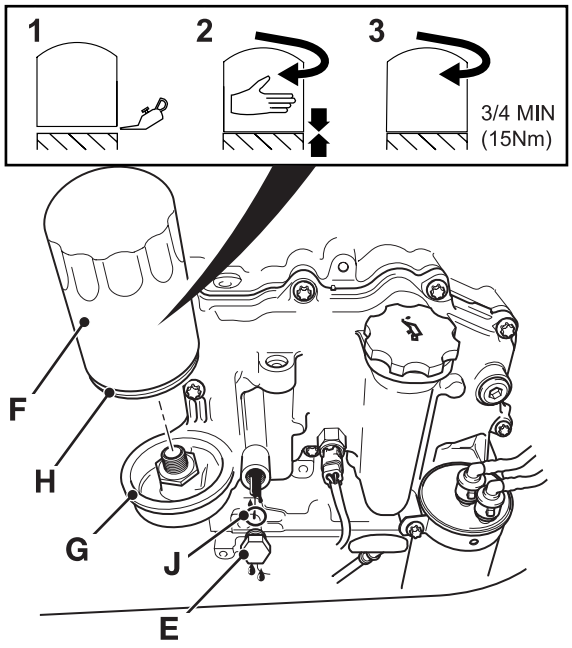

Fig 32.

Cooling System

Checking the Coolant Level

Visually check the coolant level daily.

Check the quality of the antifreeze mixture every year - before the cold weather starts. Change it every two years.

⚠ 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

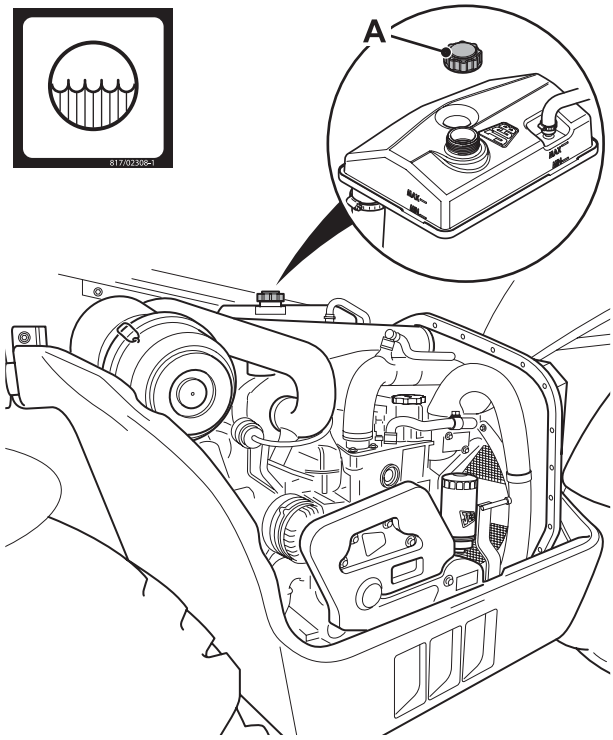

Fig 33.

⇨ *Fig 33. (🗋 3-70)*

1 Park the Machine and make it safe. Lower the boom. Refer to ⇨ *Related Topics (🗋 3-5)*

2 Get access to the engine. Refer to ⇨ *Engine Cover (🗋 3-118)*

3 The coolant level should be between the **MIN** and the **MAX** marks on coolant reservoir.

Note: *If the level in the expansion bottle is low, then continue with steps 4 to 5.*

4 Carefully loosen cap **A** on the coolant reservoir. Let any pressure escape before removing the cap. Fill with pre-mixed water/antifreeze until it reaches the correct level. ⇨ *Fluids, Lubricants and Capacities (🗋 3-20)*

Note: *It is recommended that the cooling system be filled at a maximum rate of 6 litres per minute. If the fill rate is any higher than this there is a possibility of air becoming trapped in the system.*

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

Changing the Coolant

⚠ 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

⇨ *Fig 34. (3-71)*

1 Park the Machine and make it safe. Lower the boom. Refer to ⇨ *Related Topics (3-5)*

2 Get access to the engine. Refer to ⇨ *Engine Cover (3-118)*

3 Carefully loosen cap **A** on the coolant reservoir. ⇨ *Fig 34. (3-71)*. Let any pressure escape before removing the cap.

4 Place a container of suitable size beneath the radiator.

5 Disconnect the bottom hose from the radiator.

6 Flush the system using clean water. After flushing, reconnect the bottom hose to the radiator.

7 Use the recommended mix of clean, soft water and antifreeze. Fill to the **MIN** level on coolant reservoir.

Note: *It is recommended that the cooling system be filled at a maximum rate of 6 litres per minute. If the fill rate is any higher than this there is a possibility of air becoming trapped in the system.*

8 Refit the filler cap. Make sure it is tight.

9 Run the engine for a while, to raise the coolant to working temperature and pressure.

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

10 Stop the engine. Check for leaks. Check the coolant level and top up if necessary.

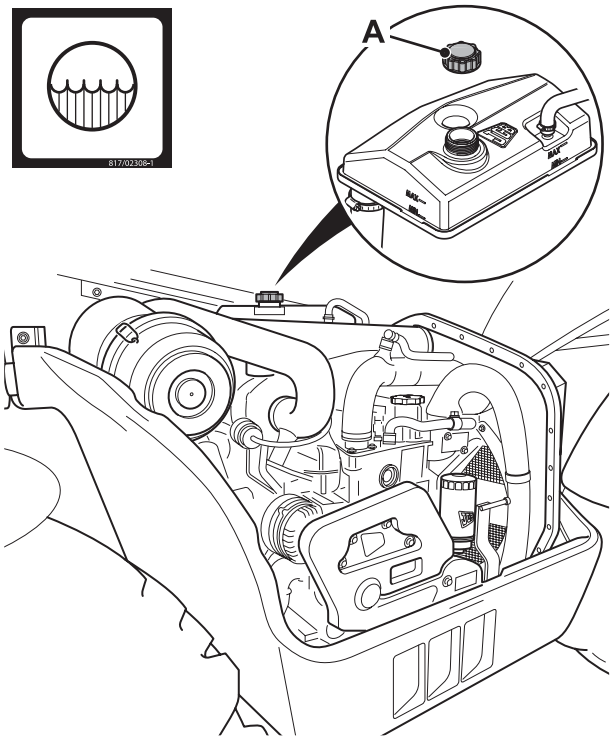

Fig 34.

Front End Accessory Drive Belt

Introduction

P5-3009

The front end accessory drive belt (FEAD) drives the alternator, water pump and the air conditioning compressor (if fitted).

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

WARNING

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

2-3-3-5

WARNING

Turning the Engine

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

0094

To get access to the drive belt for maintenance:

1 Park the Machine and make it safe. Lower the boom. Refer to ⇨ ***Related Topics (3-5)***

2 Get access to the engine. Refer to ⇨ ***Engine Cover (3-118)***

3 Remove the drive belt guard **G**. ⇨ ***Fig 35. (3-72)***.

Important: *When maintenance is complete, make sure that the guard is installed. Do not operate the machine unless the guard is installed correctly.*

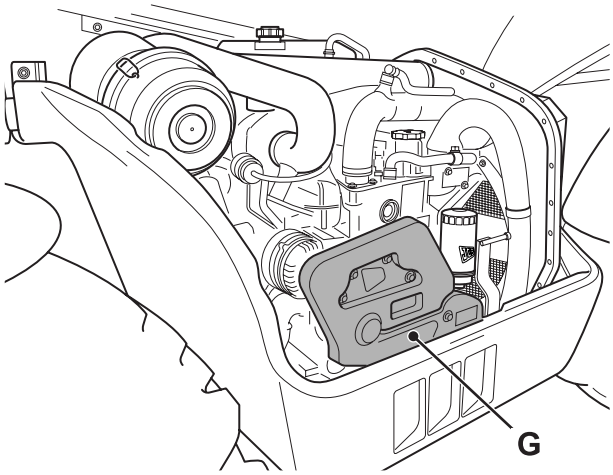

Fig 35.

Inspecting the Drive Belt

T3-029

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

1 Park the Machine and make it safe. Lower the boom. Refer to ⇨ ***Related Topics (3-5)***

2 Get access to the engine. Refer to ⇨ ***Engine Cover (3-118)***

3 Inspect the belt for cracks **A**, fraying **B** or missing pieces **C**. ⇨ ***Fig 36. (3-73)***.

Fit a new belt as required. Refer to ⇨ ***Changing the Drive Belt (3-73)***

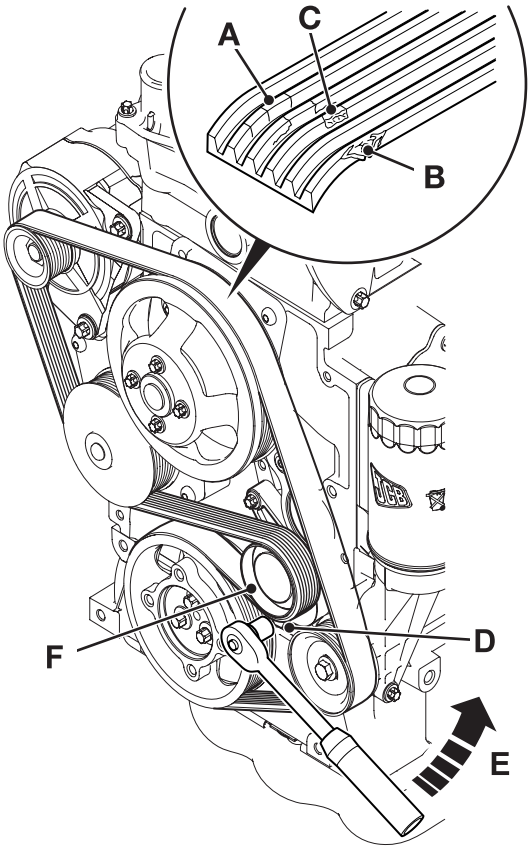

Fig 36.

Changing the Drive Belt

1 Get access to the drive belt. Refer to ⇨ *Front End Accessory Drive Belt (🗋 3-72)*

2 Use a 16mm (5/8 in.) socket located on the hexagon spigot nut **D**, carefully rotate the tensioner against the spring force in direction **E**. Do not use excessive force or the tensioner will be damaged.

3 Keep holding the tensioner against the spring force and lift the belt off the tensioner pulley **F**.

4 Slowly release the spring force by rotating the tensioner unit in the opposite direction.

5 Before fitting a new belt, check that the tensioner roller and fan pulley rotate smoothly and that there is no play in the bearings.

6 Fit the new drive belt around the pulleys. ⇨ *Fig 36. (🗋 3-73)*.

7 Use a 16mm (5/8 in.) socket located on the hexagon spigot nut **D**, carefully rotate the tensioner against the spring force in direction **E**. Do not use excessive force or the tensioner will be damaged.

8 Keep holding the tensioner against the spring force and lift the belt around the tensioner pulley **F**.

9 Refit the drive belt guard **G**. ⇨ *Fig 35. (🗋 3-72)*

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Fuel System

Related Topics

Table 13. Related Topics in This Publication

The table lists other topics in the manual that contain information related to this topic. Refer to the applicable topics to complete your procedures. Where applicable the text in this section contains cross references to this page to help you find the correct information. Some machines have different systems and devices. Make sure you refer to the correct topic, refer to *Section 1 - Applications*.		
Sections	**Topic Titles**	**Sub Titles**
1	General Information	***Fuel***
2	ALL (Care and Safety)(1)	ALL
3	***Access Panels***	***⇒ Engine Cover (3-118)***

(1) You must obey all of the relevant care and safety procedures.

Fuel

Important: *USE THE CORRECT FUEL.*

For information about fuel types and cleanliness requirements refer to ⇨ ***Related Topics (3-5)***

⚠ 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

⚠ CAUTION

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

GEN-9-2

Filling the Tank

Important: *Before you add the fuel to the machine, refer to* ***Related Topics (3-5)****. If you use the incorrect type of fuel or fuel which is contaminated, then damage to the fuel injection system can occur.*

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

WARNING

Mobile Phones

Switch off your mobile phone before entering an area with a potentially explosive atmosphere. Sparks in such an area could cause an explosion or fire resulting in death or serious injury.

Switch off and do not use your mobile phone when refuelling the machine.

INT-3-3-9

CAUTION

Spilt fuel may cause skidding and therefore accidents. Clean any spilt fuel immediately.

Do not use fuel to clean the machine.

When filling with fuel, choose a well aired and ventilated area.

INT-2-2-12

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 you lock the fuel cap **A** to prevent theft and tampering.***Fig 37. (3-77)***

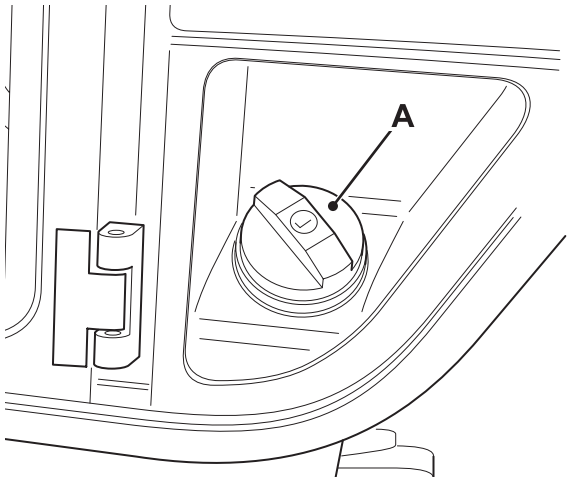

Fig 37.

Water Separator and Engine Fuel Filter

Introduction

WARNING

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

2-3-3-5

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

To get access to the water separator **A** and engine fuel filter **B** for maintenance:

1 Open the engine cover. Refer to ⇨ ***Engine Cover (3-118)***

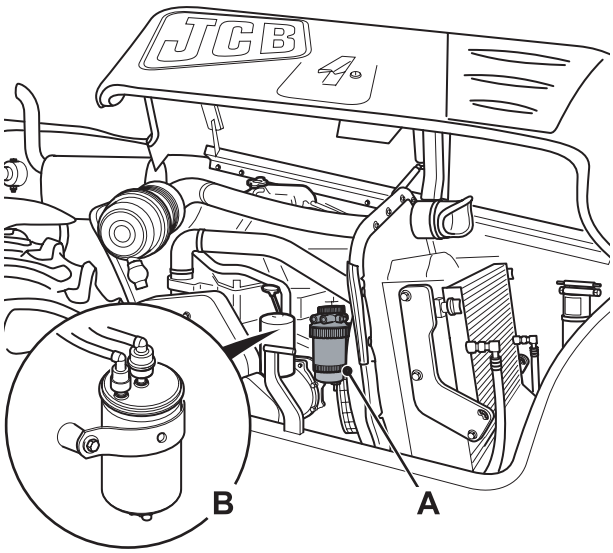

Fig 38.

Draining the Water Separator and Engine Fuel 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

If there is water in the fuel or if the cab warning light illuminates, drain the water separator and engine filter as detailed.

1 Park the Machine and make it safe. Lower the boom. Refer to ⇨ *Related Topics (3-5)*

2 Get access to the Water Separator and Engine Fuel Filter. Refer to ⇨ *Introduction (3-78)*

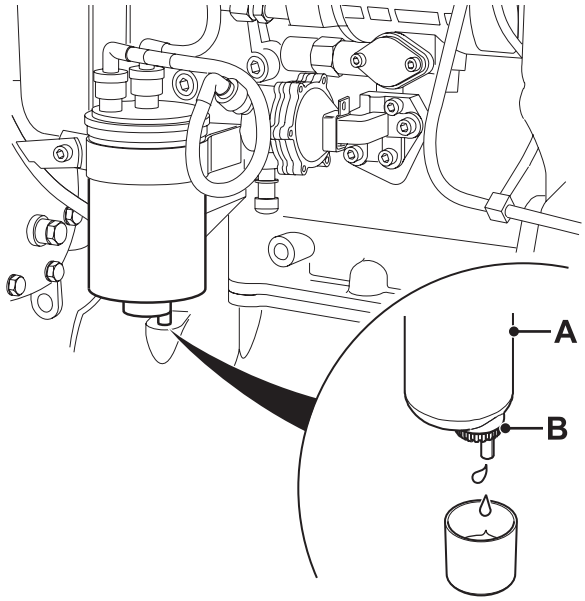

Fig 39.

3 Drain off any water in the element **A** by turning tap **B**.

4 Drain off any water in the water separator bowl **C** by turning tap **D**. Do not disconnect the water in fuel electrical connector **E** (if fitted).

5 If there is sediment in the bowl after draining, support the bowl and release the locking ring **F**.

6 Wash the bowl in clean fuel.

7 Refit the bowl, secure in position with locking ring **F**.

Important: *Ensure the seal is seat correctly before refitting the bowl.*

8 Make sure that the water in fuel electrical connector **E** is correctly fitted.

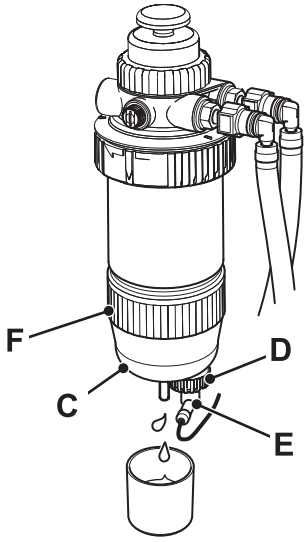

Fig 40.

Changing the Engine Fuel Filter Element

⇨ *Fig 41. (3-80)* and ⇨ *Fig 42. (3-81)*

1 Park the Machine and make it safe. Lower the boom. Refer to ⇨ *Related Topics (3-5)*

2 Get access to the Engine Fuel Filter. Refer to ⇨ *Introduction (3-78)*

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

3 Thoroughly clean the outside of the filter housing and around the filter head.

4 Loosen the drain tap **B** and allow the fuel to drain into a suitable container.

5 Remove the low pressure fuel lines **C** and **E**. Mark the pipes prior to removal to ensure they are refitted in the correct position.

6 Release the filter strap retaining screw **D** and lift the filter clear.

7 On machines with SE engines:

- **a** Install new filter element **41-A**. Make sure that the filter is in the correct position to enable connection of the fuel lines. Torque tighten the filter strap retaining screw **41-D** to 24 Nm (17.7 lbf ft).

8 On machines with SA,SB,SC,SD and SF engines:

- **a** Fit new filter element **42-A**. Make sure that the filter is in the correct position to enable connection of the fuel lines. Torque tighten the filter strap retaining screw **42-D** to 24 Nm (17.7 lbf ft).

9 Reconnect the fuel lines **C** and **E**.

10 Bleed the fuel system. Refer to ⇨ *Bleeding the System (3-83)*

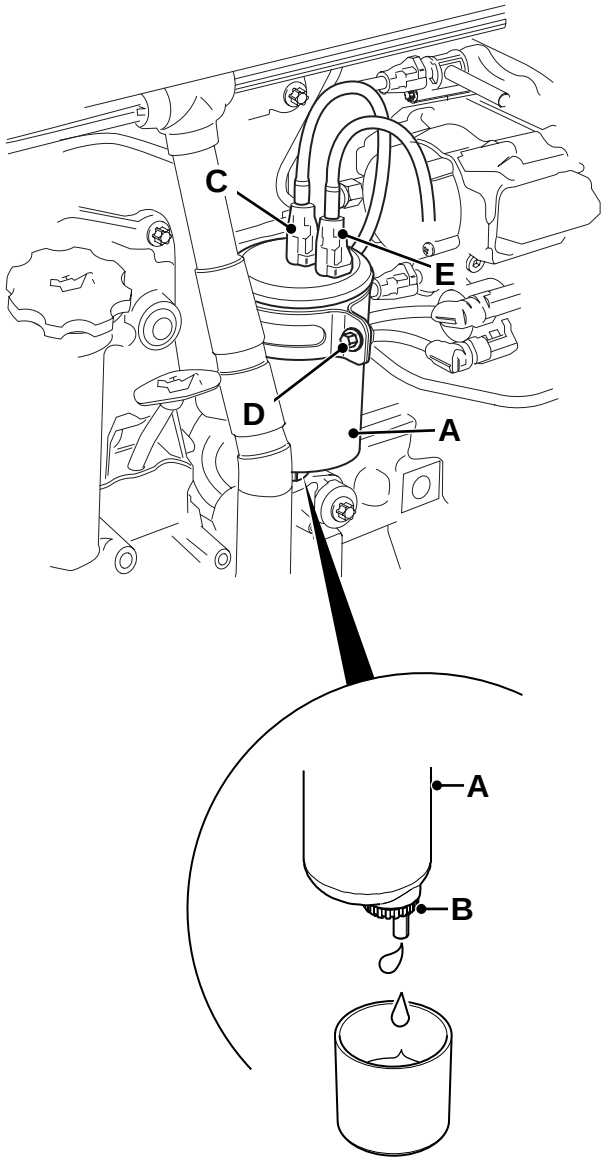

Fig 41. SE Engines

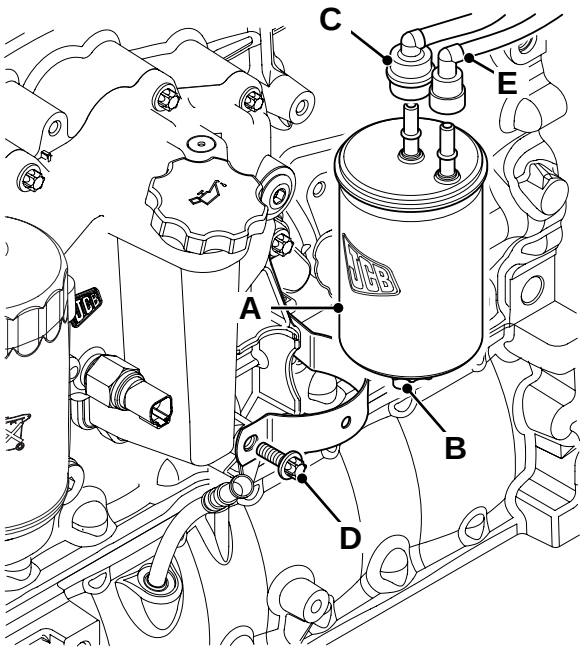

Fig 42. SA,SB,SC,SD and SF Engines

Cleaning Water Separator Pump (if fitted)

If the priming pump does not operate or if a fuel blockage is suspected, the hand priming pump can be removed and the pump and sedimenter cleaned.

Note: *To carry out this procedure you will need a strap wrench to loosen and tighten locking ring* ***A****.*

1 Park the Machine and make it safe. Lower the boom. Refer to ⇨ ***Related Topics (*** 3-5)

2 Get access to the Water Separator and Engine Fuel Filter. Refer to ⇨ ***Introduction (*** 3-78)

⚠ 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

3 Thoroughly clean the outside of the filter housing and around the filter head.

4 To remove the pump assembly, using a suitable strap wrench release locking ring **A**, keep the assembly pressed down to contain the spring once the locking ring is free.

5 Carefully remove the pump assembly, take care not to lose spring **B**.

6 Pull out diaphragm **C** and clean as required using clean fuel.

7 Remove any debris in the water sedimenter and inlet connectors as required.

8 Make sure seal **D** is positioned correctly, lubricate diaphragm **C** with clean engine oil. Taking care not to damage diaphragm **C**, refit diaphragm and spring **B**.

9 Secure assembly in position, taking care not to cross thread locking ring **A**, tighten to finger tight.

10 With strap wrench, tighten locking ring **A** a further 1/4 of a turn.

11 Bleed the system and check for leaks. Refer to ⇨ ***Bleeding the System (*** 3-83)

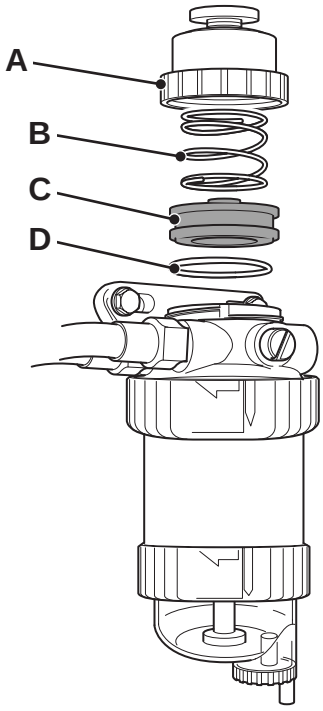

Fig 43.

Bleeding the System

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

WARNING

Fuel

Fuel is flammable; keep naked flames away from the fuel system. Stop the engine immediately if a fuel leak is suspected. Do not smoke while refuelling or working on the fuel system. Do not refuel with the engine running. Completely wipe off any spilt fuel which could cause a fire. There could be a fire and injury if you do not follow these precautions.

INT-3-2-2_3

To bleed the engine fuel filter **A** carry out the following:

1 Park the Machine and make it safe. Lower the boom. Refer to ⇨ *Related Topics (3-5)*

2 Get access to the Water Separator and Engine Fuel Filter. Refer to ⇨ *Introduction (3-78)*

3 Disconnect the fuel line **B** at the injection pump.

4 Operate the fuel lift pump priming button **45-C** (if fitted) or lever **44-C** until air free fuel exits from the fuel line.

WARNING

Fine jets of fluid at high pressure can penetrate the skin. Keep face and hands well clear of pressurised fluid and wear protective glasses. If fluid penetrates your skin, get medical help immediately.

0177

Note: *If no fuel is moved when the lift pump priming lever **45-C** is operated, then the pump diaphragm may have reset in a `maximum lift' position. To move the diaphragm, use the starter key to turn the engine, then try the priming lever again.*

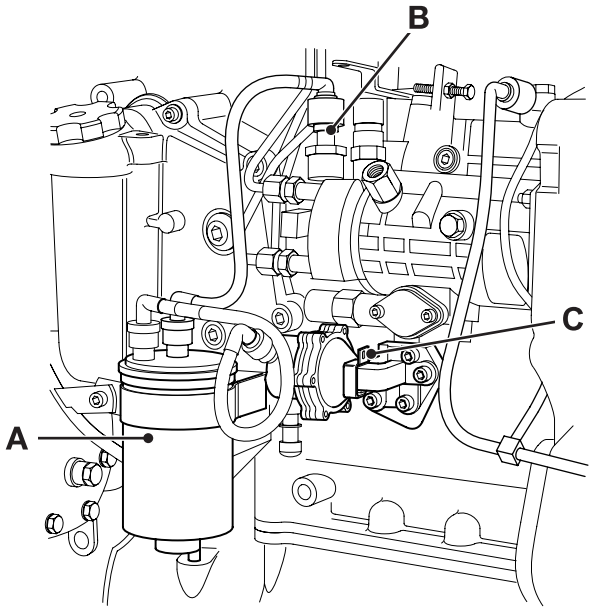

Fig 44.

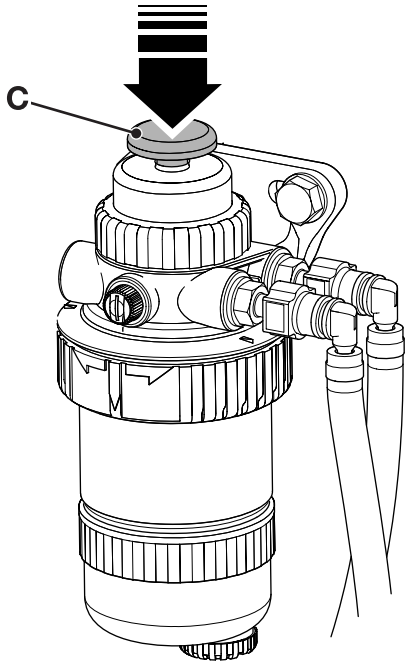

Fig 45.

5 Reconnect fuel line **B**.

6 The engine is now ready to start. If the engine runs smoothly for a short time and then begins to run roughly, leave at idle until it runs smoothly.

If the engine continues to run roughly, check again for air in the fuel system.

If the fault persists contact your nearest JCB dealer.

Hydraulic System

Related Topics

Table 14. Related Topics in This Publication

The table lists other topics in the manual that contain information related to this topic. Refer to the applicable topics to complete your procedures. Where applicable the text in this section contains cross references to this page to help you find the correct information. Some machines have different systems and devices. Make sure you refer to the correct topic, refer to *Section 1 - Applications*.		
Sections	**Topic Titles**	**Sub Titles**
1	***Applications***	ALL
2	ALL (Care and Safety)(1)	ALL
3	***⇨ Access Panels (3-115)***	ALL
3	***⇨ Fluids, Lubricants and Capacities (3-20)***	ALL
3	Electrics	***⇨ Battery Isolator (3-56)***

(1) You must obey all of the relevant care and safety procedures.

Oil and Filters

Checking the Hydraulic Fluid Level

⚠ 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

Machines with External Sight Gauge

1 Park the machine and make it safe. Obey the care and safety procedures. ⇨ *Related Topics (🗋 3-5)*

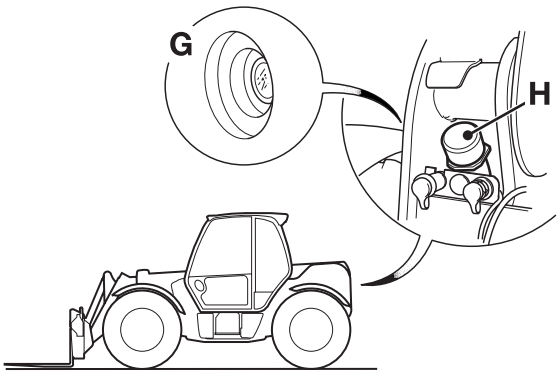

Fig 46.

⚠ CAUTION

Allow the hydraulic fluid temperature to cool before removing the hydraulic tank filler cap. Open the cap slowly to prevent oil being forced out of the filler neck.

5-3-4-8

⚠ CAUTION

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

5-3-4-1

⚠ 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

2 The fluid should be visible in the sight gauge **G**. If necessary, add recommended fluid through the filler **H**. ⇨ *Fluids, Lubricants and Capacities (🗋 3-20)*.

Machines without External Sight Gauge

1 Park the machine and make it safe. Obey the care and safety procedures. ⇨ *Related Topics (🗋 3-5)*

⚠ 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

2 Open rear cover **B**, use key **A** to unlock and pull open carefully to avoid damage. The fluid level should be visible in sight gauge **J**.

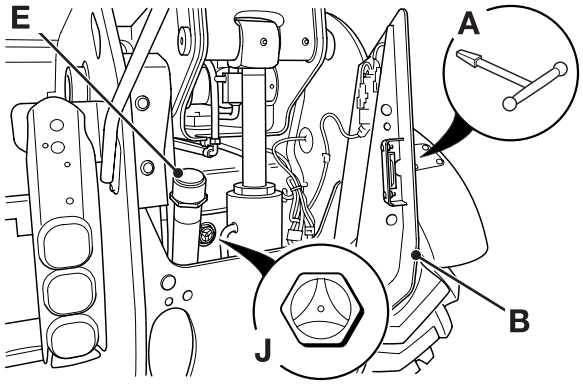

Fig 47.

CAUTION

Allow the hydraulic fluid temperature to cool before removing the hydraulic tank filler cap. Open the cap slowly to prevent oil being forced out of the filler neck.

5-3-4-8

CAUTION

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

5-3-4-1

If no sight gauge is fitted, Slowly remove filler cap **E** to allow the system to vent fully and prevent oil being forced out of the filler neck. The fluid level should be between the two marks on dipstick **F**.

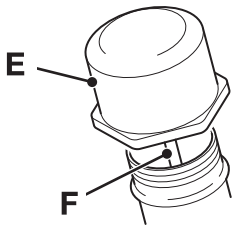

Fig 48.

If necessary, add recommended fluid through the filler **E**. ⇨ *Fluids, Lubricants and Capacities (3-20)*.

3 Refit filler cap **E**, close rear cover **B** and secure with key **A**.

Changing the Filter Element

There are two types of hydraulic filter, one is mounted on the top of the hydraulic tank while the other is a canister type in the tank return. Carry out the procedure that is applicable to your machine.

CAUTION

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

5-3-4-4

Canister Filter

The canister filter **A** is mounted under the chassis. It is located to the rear of the front axle.

Note: *On 535-125 HiViz and 535-140 HiViz machines, the canister filter **A** is located to the front of the rear axle.*

An additional canister filter **B** is fitted to machines with the variable flow pump option. The additional filter is located behind the operator cab.

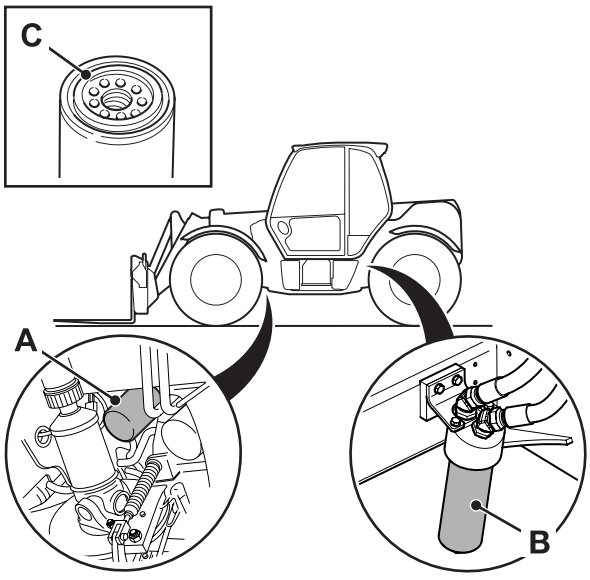

Fig 49.

WARNING

You will be working close into the machine for these jobs. Lower the attachments if possible. Remove the starter key and disconnect the battery. This will prevent the engine being started. Make sure the park brake is engaged.

Block all four wheels before getting under the machine.

2-3-2-1

1 Park the machine and make it safe. Obey the care and safety procedures. ⇨ ***Related Topics (3-5)***

2 Operate the controls and remove the tank cap to vent residual pressure.

3 Clean the area around the filter body.

4 Place a container of suitable size beneath the machine to catch the oil.

5 From under the machine, unscrew and remove the element. The element will contain hydraulic fluid; keep your face clear of spilling fluid.

CAUTION

When the strainer is removed, oil will gush out. Keep to one side when you remove the strainer.

2-3-4-1

6 Fit the new element:

- **a** Clean the mating faces on the new element and filter holder.
- **b** Smear the seal **C** with hydraulic fluid.
- **c** Screw the new element in place, hand-tight only.

7 Add hydraulic fluid. ⇨ ***Checking the Hydraulic Fluid Level (3-86)***.

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

8 Check for leaks:

- **a** Make sure the filler cap is replaced, then run the engine for a few minutes.
- **b** Make the machine safe.
- **c** Check for leaks at the filter.

Tank Mounted Filter

1 Park the machine and make it safe. Obey the care and safety procedures. ⇨ *Related Topics (3-5)*

2 Operate the controls and remove the tank cap to vent residual pressure.

3 Open the rear cover (526-56 machines), clean the top of the tank around the filter. ⇨ *Checking the Hydraulic Fluid Level (3-86)*.

4 Either disconnect hose **K** or undo clip to enable cover plate removal.

5 Remove the element assembly:

- **a** Remove screws **A**. Remove the cover plate **B** and gasket **C**, discard the gasket.
- **b** Remove spring **D**.
- **c** Hold handle **E** and pull the element assembly from the hydraulic tank.

6 Remove the element from its canister:

- **a** Hold canister **F**.
- **b** Hold handle **E** and rotate the element **G** 90° anti-clockwise.
- **c** Pull on handle **E**, the element **G** should separate from its canister **F**. Discard the old element.
- **d** Remove and discard seal **H**.
- **e** Clean the inside of canister **F**.

7 Fit the new element.

- **a** Fit a new seal **H**.
- **b** Make sure that seal **J** is fitted in the new element.
- **c** Push the element **G** into its canister **F** and rotate the element 90° to lock it into position. Check that the element has locked into position by pulling on handle **E**.
- **d** Install the element assembly in the hydraulic tank.
- **e** Fit spring **D** and gasket **C**.
- **f** Fit cover plate **B** and tighten screws **A**.
- **g** Check oil level and replenish as required through filler. Fit and tighten the filler cap.

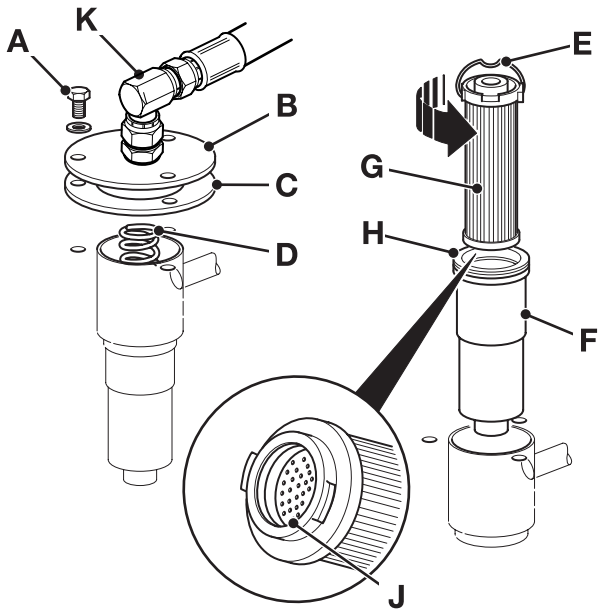

Fig 50.

Changing the Pilot Filter Element (If Fitted)

Machines with Single Lever Controls (Thumb Wheel Type)

WARNING

You could be killed or injured if the boom drops while you are working under it. Fit the safety strut as instructed before doing any maintenance work with the boom raised.

Keep people away from the machine while you fit or remove the strut.

5-3-1-2_1

WARNING

Make sure the steps, handrails, and your footwear soles are clean and dry before climbing onto the machine. Always face the machine when climbing on and off it.

7-3-6-2

1 Park the machine and make it safe. Obey the care and safety procedures. ⇨ *Related Topics (3-5)*

Note: *Do not disconnect the battery.*

2 With the engine stopped, turn the starter switch to ON.

3 Operate the auxiliary switch to vent residual pressure.

4 Turn the starter switch to OFF, remove the starter key and battery isolator key. ⇨ *Battery Isolator (3-56)*.

5 Remove the chaff guard **A** to expose the chassis access hole.

Note: *The Pilot Filter is located at the front of the chassis access hole.*

6 Unscrew end cap **B**.

7 Remove element with associated seals and discard.

8 Fit new element, together with new seals.

9 Replace the lift ram pocket **A**.

10 Refit cap **B**, torque tighten to 25Nm (18 lbf ft).

11 Run the engine and check for leaks.

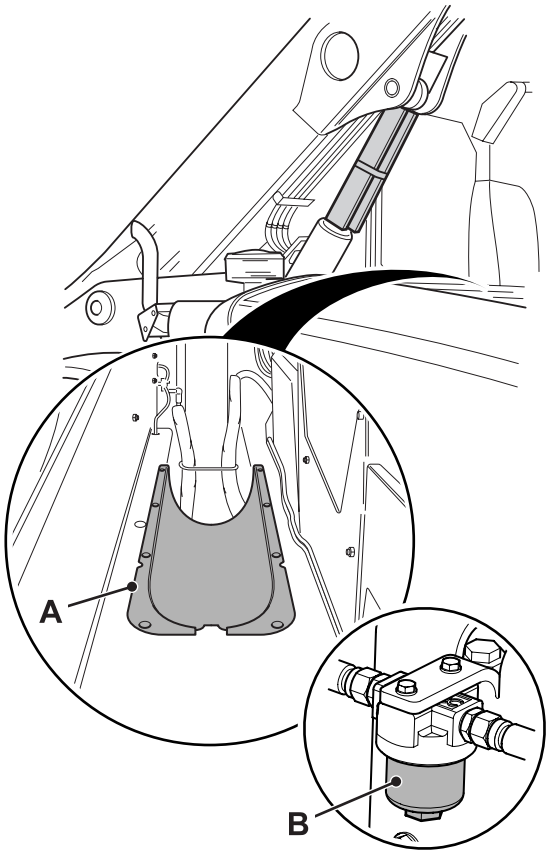

Fig 51.

Other Machines (if fitted)

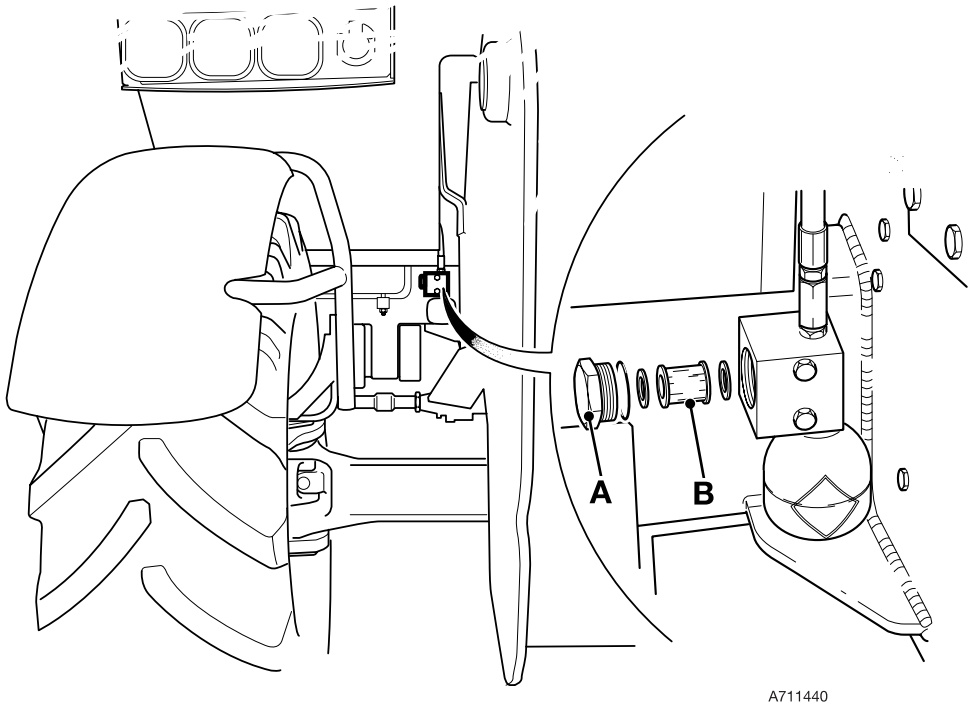

Fig 52.

⚠ WARNING

Make the machine safe before getting beneath it. Park the machine on level ground and lower the attachments. Stop the engine and remove the starter key. Make sure the park brake is engaged. Disconnect the battery to prevent the engine being started. Block all four wheels before getting under the machine.

3-3-1-1

1 Park the machine and make it safe. Obey the care and safety procedures. ⇨ ***Related Topics (🗋 3-5)***

Note: *Do not disconnect the battery.*

2 With the engine stopped, turn the starter switch to ON.

3 Operate the auxiliary switch to vent residual pressure.

4 Turn the starter switch to OFF, remove the starter key and battery isolator key. ⇨ ***Battery Isolator (🗋 3-56)***.

5 Unscrew end cap **A**.

6 Remove element **B**, with associated seals. Discard the old seals.

7 Fit new element **B**, together with new seals.

8 Refit cap **A**.

9 Run the engine and check for leaks.

Hose Burst Protection Valves

Checking the Hose Burst Protection Valves

Introduction

P5-3001_2

The hose burst protection valves 'lock' to prevent uncontrolled movement of the ram pistons if hydraulic pressure fails or a hose bursts. The valves are mounted directly on the rams.

⚠ WARNING

Keep people clear of the machine while you do these checks.

5-3-4-2

Check each movement in turn.

Important: *Ensure the machine is parked on firm level ground before carrying out the following procedures.*

Boom Lift Rams

P5-3002_2

1 Start the engine. Make sure the park brake is engaged, the transmission is in neutral and the Smooth Ride System (if fitted) is switched off.

2 Raise the boom to about 45°.

3 With the engine running at mid speed, operate the control lever to lower the boom. While the boom is moving, switch off the engine. Boom movement should slow as the engine slows and stop as the engine stops.

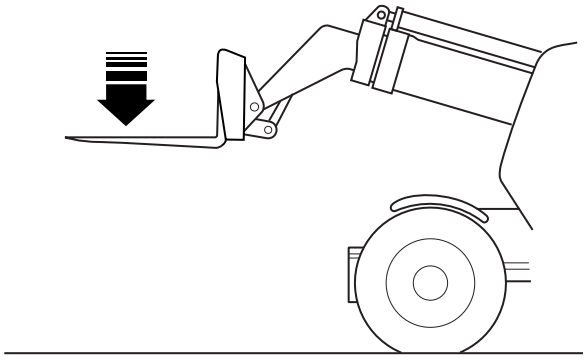

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Fig 53.

If the boom continues moving after the engine has stopped, both boom hose burst protection valves are faulty. Do not use the machine until the fault has been put right.

Boom Extension Ram

1 Start the engine. Make sure the park brake is engaged and the transmission is in neutral.

2 Raise the boom fully. Extend the boom fully.

3 With the engine running at mid speed, operate the control lever to retract the boom. While the boom is retracting, switch off the engine. Boom movement should slow as the engine slows and stop as the engine stops.

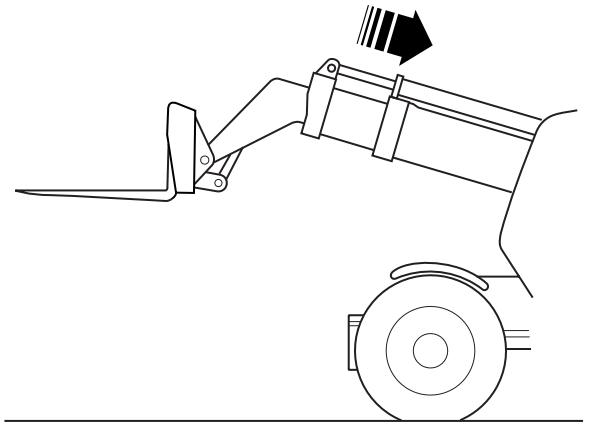


Fig 54.

If the boom continues moving after the engine has stopped, the hose burst protection valve is faulty. Do not use the machine until the fault has been put right.

Carriage Tilt Ram

1 Pick up a load on the forks. (For example a pack of bricks or some hay bales.) Tilt the carriage fully back. Make sure the park brake is engaged and the transmission is in neutral.

2 Position the boom clear of the ground, just far enough to allow the carriage to be tilted forward.

3 With the engine running at mid speed, operate the control lever to tilt the carriage forward. While the carriage is moving, switch off the engine. Carriage movement should slow as the engine slows and stop as the engine stops.

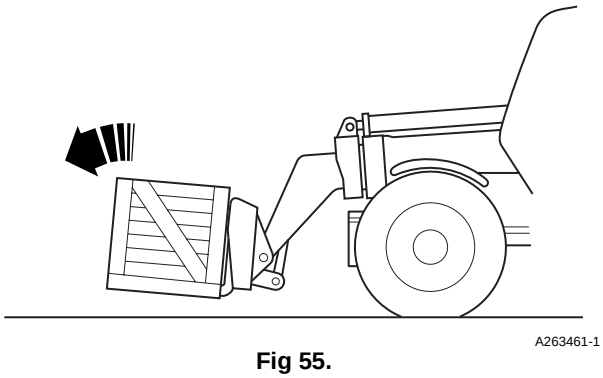


Fig 55.

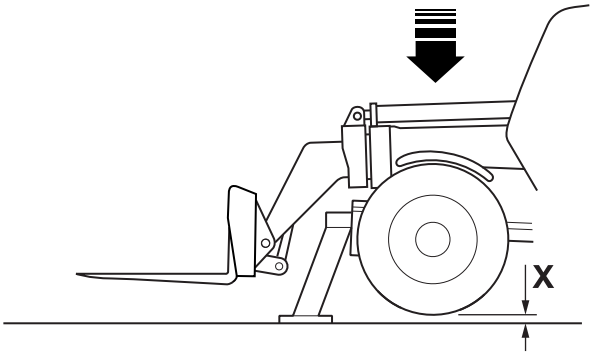
If the carriage continues moving after the engine has stopped, the hose burst protection valve is faulty. Do not use the machine until the fault has been put right.

Stabiliser Ram (if fitted)

P5-3003_2

1 Start the engine. Make sure the park brake is engaged and the transmission is in neutral.

2 Lower the stabilisers. Ensure the stabiliser legs are in the down position and the weight of the machine is supported (i.e. the front wheels are clear of the ground **X**).



797600

Fig 56.

3 Stop the engine. Operate the stabiliser controls. Check that the front wheels of the machine do not lower to the ground.

If the machine moves when the stabiliser controls are moved with the engine stopped, the hose burst protection valves are faulty. Do not use the machine until the fault has been put right.

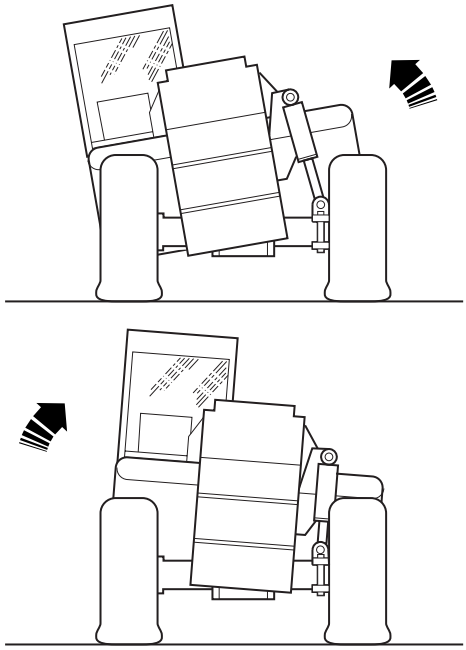
Sway Ram (if fitted)

P5-3004_2

1 Start the engine. Make sure the park brake is engaged and the transmission is in neutral.

2 Sway the machine body approximately halfway to the left and release the sway control.

3 Stop the engine. Operate the sway control to the left. Check that the machine does not sway.



113470

Fig 57.

4 Repeat steps 1 - 3 for right sway.

5 If the body moves when the sway control is moved with the engine stopped, the hose burst protection valves are faulty. Do not use the machine until the fault has been put right.

Transmission

Related Topics

Table 15. Related Topics in This Publication

The table lists other topics in the manual that contain information related to this topic. Refer to the applicable topics to complete your procedures. Where applicable the text in this section contains cross references to this page to help you find the correct information. Some machines have different systems and devices. Make sure you refer to the correct topic, refer to *Section 1 - Applications*.		
Sections	**Topic Titles**	**Sub Titles**
1	***Applications***	ALL
2	ALL (Care and Safety)(1)	ALL
3	***⇨ Access Panels (3-115)***	ALL
3	***⇨ Fluids, Lubricants and Capacities (3-20)***	ALL

(1) You must obey all of the relevant care and safety procedures.

Gearbox

Checking the Oil Level

1 Start then operate the engine at low idle for four minutes. The delay allows the oil to fill the filter, pump, torque converter, oil cooler and hoses.

2 Switch OFF the engine and remove the starter key.

3 Open the engine cover. Refer to ⇨ *Engine Cover (3-118)*

Before you complete a check of the oil level you must wait as shown on the decal. ⇨ *Fig 58. (3-96)*

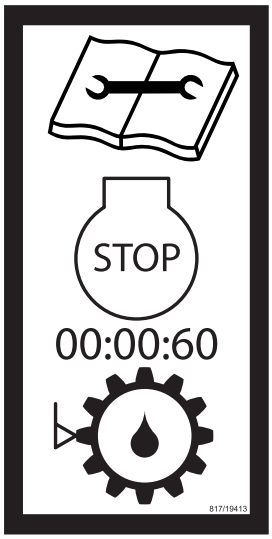


Fig 58.

4 Check that the oil level is between the end of the dipstick and maximum mark on the dipstick **A**.

5 Add oil as necessary. Fill through the dipstick tube to maximum dipstick level. Use only the recommended oil. ⇨ *Fluids, Lubricants and Capacities (3-20)*

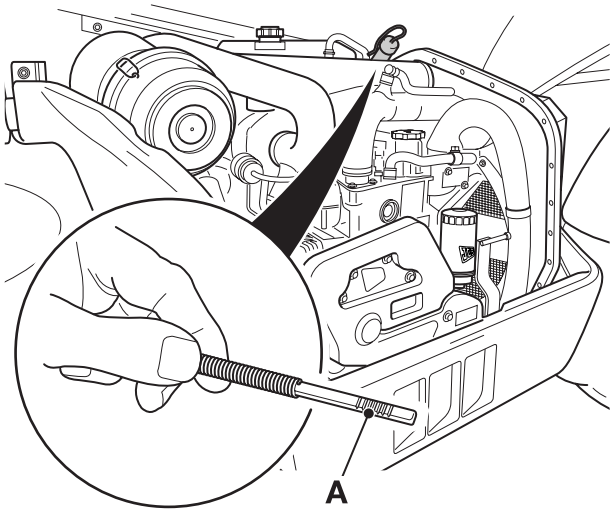


Fig 59.

Changing the Oil and Filter

4-Speed Powershift Transmission

The transmission oil should be drained through the suction strainer aperture to flush out any particles which fall off the strainer during its removal.

⚠ 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 Park the machine and make it safe. Obey the care and safety procedures. ⇨ *Related Topics (3-5)*

⚠ CAUTION

When the strainer is removed, oil will gush out. Keep to one side when you remove the strainer.

2-3-4-1

2 Place a container, of suitable size beneath the suction strainer. Remove bolts **D**. Pull out the strainer **E** and its gasket **F**. Allow the oil to drain into the container. Be aware that the oil may be hot.

3 Clean the strainer with a suitable solvent. Follow the solvent manufacturer's instructions on safety.

4 Fit the strainer **E** and a new gasket **F**. Apply JCB Threadlocker and Sealer to bolts **D** before fitting and tightening them. Torque tighten the bolts to 10 Nm (7 lbf ft).

5 Unscrew and remove the filter **B**. Some machines feature a remote chassis mounted filter as shown at **X**. Fit the new filter:

- **a** Smear seal **C** with transmission oil.
- **b** Screw the filter on until it just contacts the filter head.
- **c** Turn the filter at least another 3/4 of a turn.

6 Fill the system with new oil through the dipstick/filler. Do not fill past the top mark on the dipstick. ⇨ *Fluids, Lubricants and Capacities (3-20)*

Note: *Fit only a genuine supplied JCB filter, otherwise damage to the system may be incurred through contamination.*

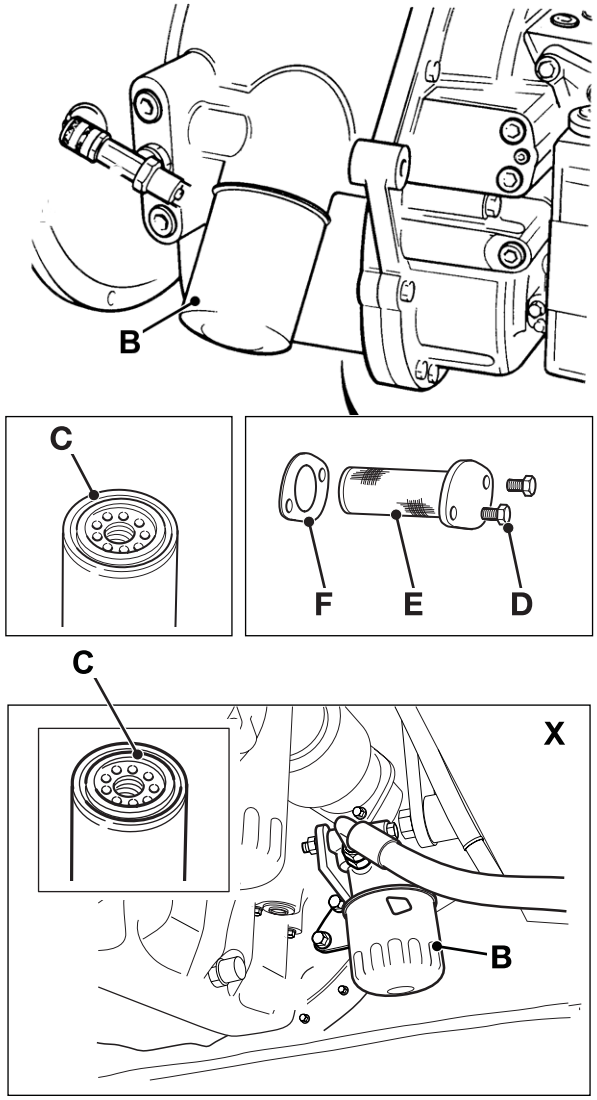


Fig 60.

6-Speed Powershift Transmission

The transmission oil should be drained through the suction strainer aperture to flush out any particles which fall off the strainer during its removal.

⚠ 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 Park the machine and make it safe. Obey the care and safety procedures. ⇨ *Related Topics (3-5)*

⚠ CAUTION

When the strainer is removed, oil will gush out. Keep to one side when you remove the strainer.

2-3-4-1

2 Place a container, of suitable size beneath the suction strainer. Remove bolts **D**. Pull out the strainer **E** and its gasket **F**. Allow the oil to drain into the container. Be aware that the oil may be hot.

3 Clean the strainer with a suitable solvent. Follow the solvent manufacturer's instructions on safety.

4 Fit the strainer **E** and a new gasket **F**. Apply JCB Threadlocker and Sealer to bolts **D** before fitting and tightening them. Torque tighten the bolts to 10 Nm (7 lbf ft).

5 Unscrew and remove the filter **B**. Some machines feature a remote chassis mounted filter as shown at **X**. Fit the new filter:

- **a** Smear seal **C** with transmission oil.
- **b** Screw the filter on until it just contacts the filter head.
- **c** Turn the filter at least another 3/4 of a turn.

6 Fill the system with new oil through the dipstick/filler. Do not fill past the top mark on the dipstick. ⇨ *Fluids, Lubricants and Capacities (3-20)*

Note: *Fit only a genuine supplied JCB filter, otherwise damage to the system may be incurred through contamination.*

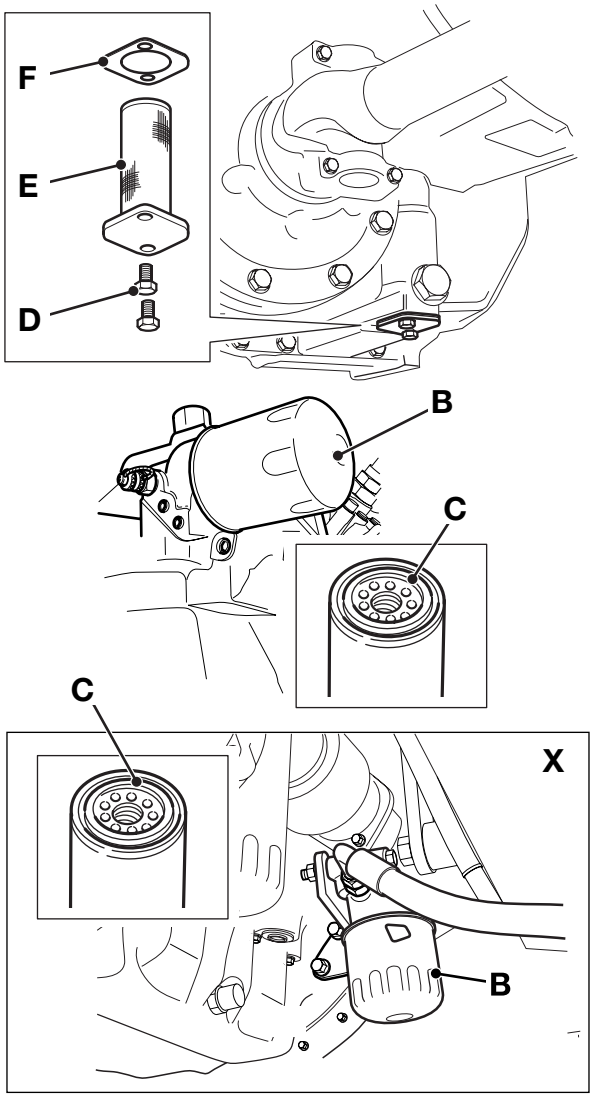


Fig 61.

4-Speed Syncro Shuttle Transmission

The transmission oil should be drained through the suction strainer aperture to flush out any particles which fall off the strainer during its removal.

⚠ 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 Park the machine and make it safe. Obey the care and safety procedures. ⇨ ***Related Topics (3-5)***

⚠ CAUTION

When the strainer is removed, oil will gush out. Keep to one side when you remove the strainer.

2-3-4-1

2 Place a container, of suitable size beneath the suction strainer. Remove bolts **D**. Pull out the strainer **E** and its gasket **F**. Allow the oil to drain into the container. Be aware that the oil may be hot.

3 Clean the strainer with a suitable solvent. Follow the solvent manufacturer's instructions on safety.

4 Fit the strainer **E** and a new gasket **F**. Apply JCB Threadlocker and Sealer to bolts **D** before fitting and tightening them. Torque tighten the bolts to 10 Nm (7 lbf ft).

5 Unscrew and remove the filter **B**. Fit the new filter:

- **a** Smear seal **C** with transmission oil.
- **b** Screw the filter on until it just contacts the filter head.
- **c** Turn the filter at least another 3/4 of a turn.

6 Fill the system with new oil through the dipstick/filler. Do not fill past the top mark on the dipstick. ⇨ ***Fluids, Lubricants and Capacities (3-20)***

Note: *Fit only a genuine supplied JCB filter, otherwise damage to the system may be incurred through contamination.*

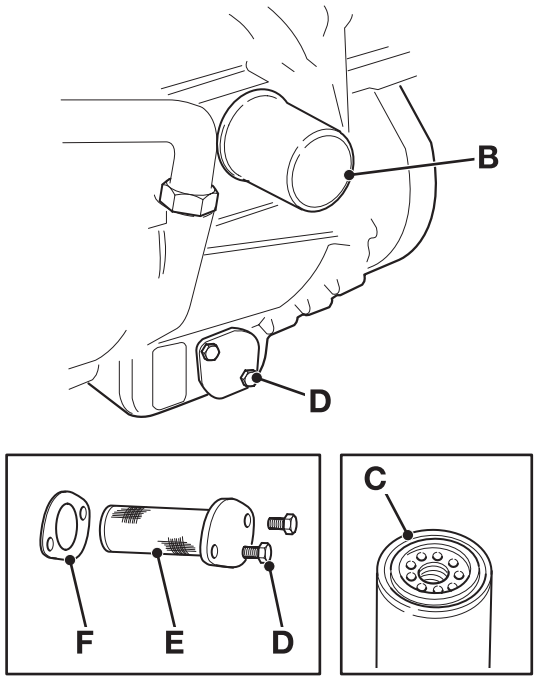


Fig 62.

Front and Rear Axle

Refer to the illustrations which show the axles on your machine:

Machines with Powered Track Rods	
535-125 HiViz, 535-140 HiViz:	⇨ *Fig 63. (3-101)*
Other models:	⇨ *Fig 64. (3-101)*
Machines with Double Acting Cylinders:	⇨ *Fig 65. (3-101)*

Checking the Axle 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

CAUTION

It is not recommended that the machine be driven with the axle partially filled with oil.

2-3-4-7

1 Park the machine and make it safe. Obey the care and safety procedures. ⇨ *Related Topics (3-5)*

2 Clean the area around fill/level plug **A**, then remove the plug and its sealing washer. Oil should be level with the bottom of the hole. Add recommended oil if necessary. ⇨ *Fluids, Lubricants and Capacities (3-20)*

3 Clean and refit the plug and its washer. Tighten plugs to 79 Nm (60 lbf ft).

Changing the Axle 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 Park the machine and make it safe. Obey the care and safety procedures. ⇨ *Related Topics (3-5)*

2 Place a container of suitable size beneath plug **B** to catch the oil. Remove the drain plug **B** and its seal. Allow oil to drain out. The drain plug is magnetic. Wipe it clean. (Metallic particles should be carefully removed). Fit drain plug **B** and its washer.

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

3 Fill with recommended oil through fill/level hole **A**. Clean and refit plug **A** and its seal. Tighten plugs to 79 Nm (60 lbf ft). ⇨ *Fluids, Lubricants and Capacities (3-20)*

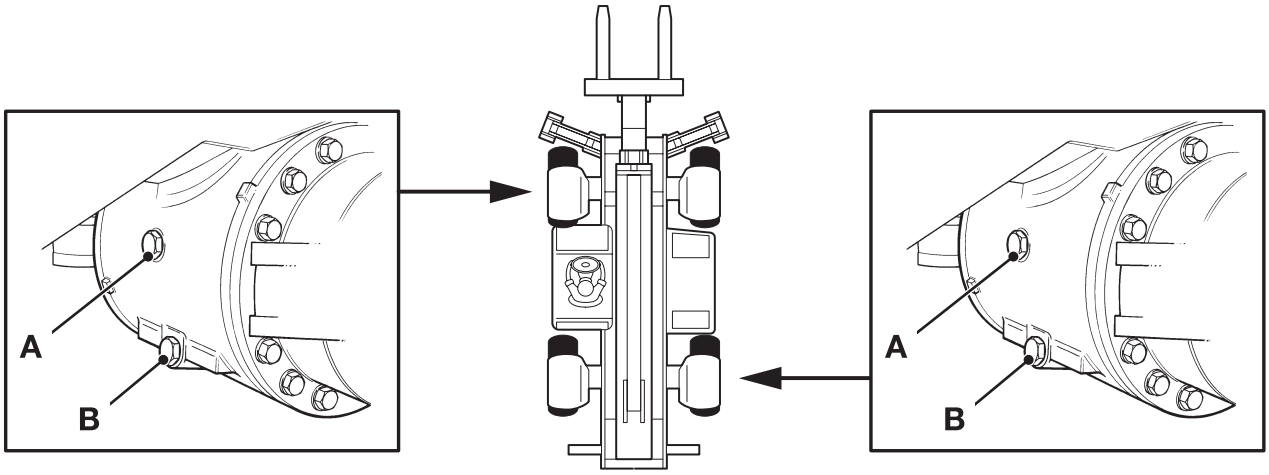


Fig 63. Machines with Powered Track Rods (535-125 HiViz, 535-140 HiViz)

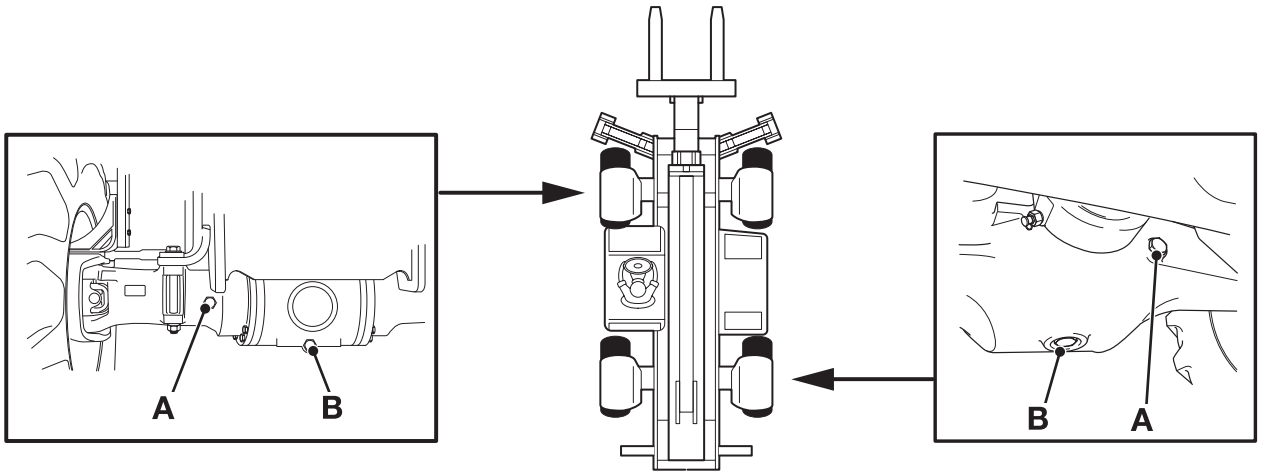


Fig 64. Machines with Powered Track Rods (Other models)

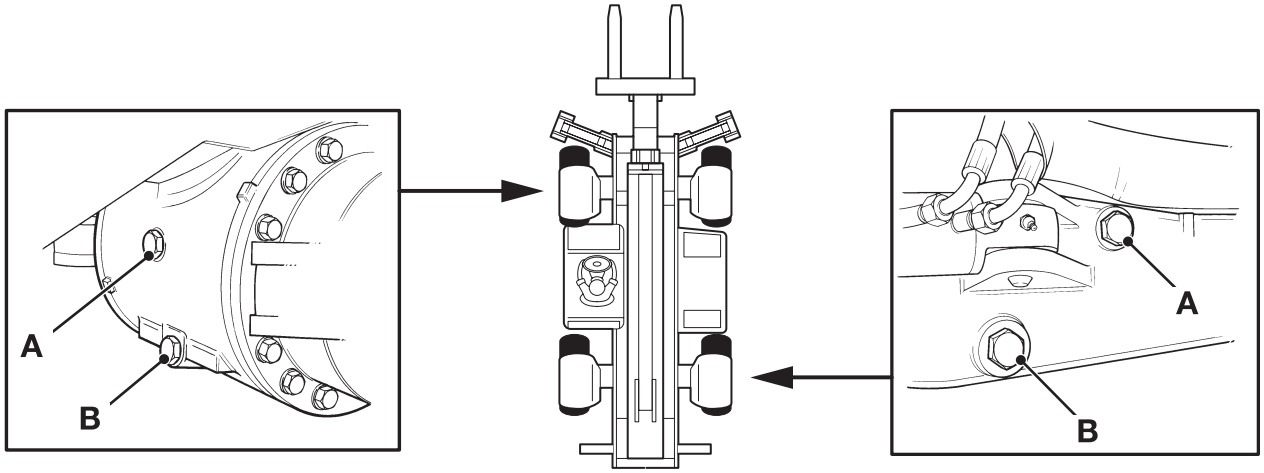


Fig 65. Machines with Double Acting Cylinders

Oil Immersed Brakes

The axle oil is used to lubricate the brake components, and to cool the brake plates.

It is important that the oil is changed regularly as specified in the service schedule - the lubricating properties of the oil will reduce as a result of brake wear.

Consult your JCB Distributor for advice if necessary.

Checking the Hub Oil Levels

T3-011_2

Check each hub separately.

1 Park the machine on level ground with the OIL LEVEL mark horizontal. There is a tolerance of 5 mm (0.2 in) above or below the horizontal.

2 Engage the park brake. Set the transmission to neutral. Lower the attachments to the ground. Stop the engine and remove the starter key.

3 Clean the area around the fill/level plug **66-C**. Remove the plug. Oil should be level with the bottom of the hole. If necessary, add the recommended oil. Clean the plug before refitting it.

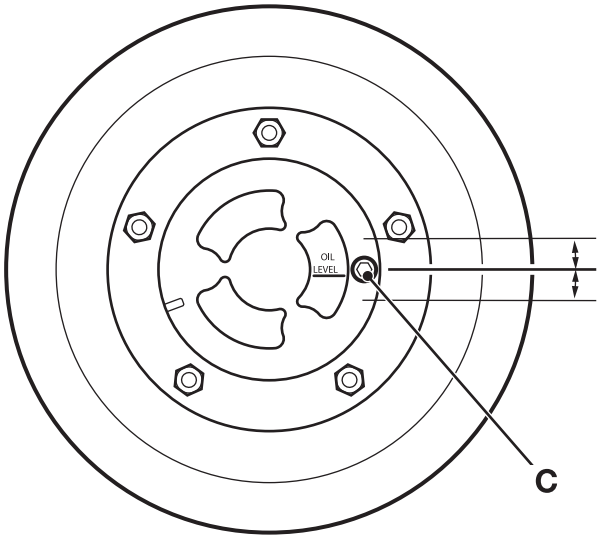


Fig 66.

Changing the Hub Oil

Change the oil in each hub separately

1 Set the machine level, with the wheels just clear of the ground. Manually rotate the wheels to bring the OIL LEVEL mark on the hubs to the vertical position, with the fill/level plugs **67-C** at the bottom.

2 Drain the oil:

a Place a container of suitable size beneath plug **67-C** to catch the oil.

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

b Remove fill/level plugs **67-C**. Allow time for the oil to drain out.

3 Set OIL LEVEL marks to the horizontal.

a Fill the hubs with recommended axle oil, through the fill/level holes **67-C**. Oil should be level with the bottom of the fill/level hole.

b Clean and refit fill/level plugs **67-C**.

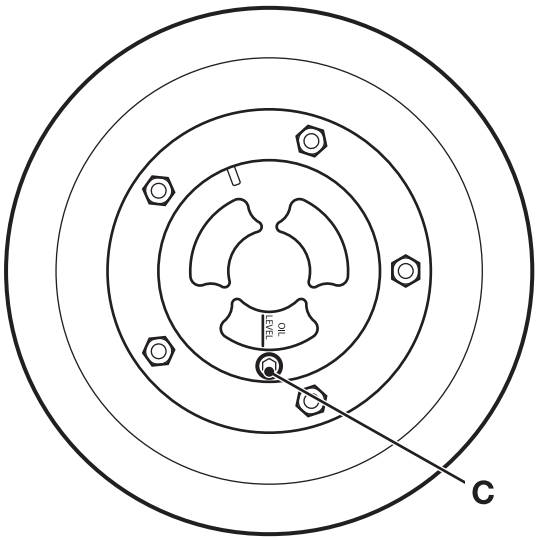


Fig 67.

Checking the Front Axle Breather

Axles with inboard brakes are fitted with a breather which allows pressure within the axle to vent to atmosphere. Pressure within the axle can affect braking efficiency if the breather is blocked.

1 Park the machine and make it safe. Obey the care and safety procedures. ⇨ *Related Topics (3-5)*

2 Check breather **A** is not damaged and that cap **B** is in place and free to rotate.

3 Position hole **C** towards the road wheel before fitting a new breather.

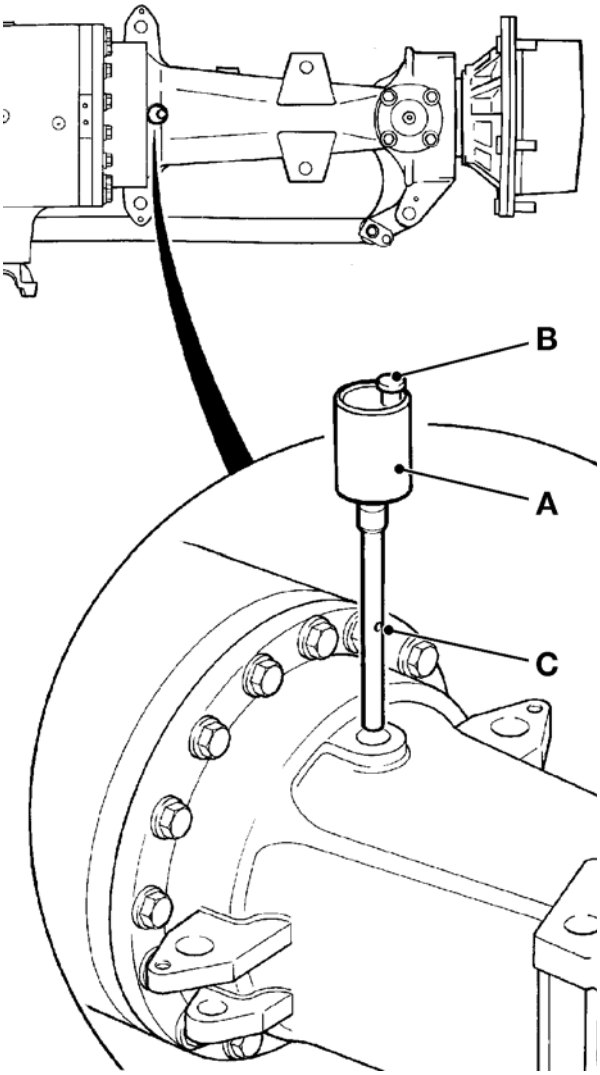


Fig 68.

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Tyres and Wheels

Tyre Inflation

These instructions are for adding air to a tyre which is already inflated. If the tyre has lost all its air pressure, call in a qualified tyre mechanic. The tyre mechanic should use a tyre inflation cage and the correct equipment to do the job.

For tyre pressures refer to the machine operator handbook.

⚠ WARNING

An exploding tyre can kill. Inflated tyres can explode if over-heated or over-inflated. Follow the instructions given when inflating the tyres. Do not cut or weld the rims. Use a tyre/wheel specialist for all repair work.

2-3-2-7_2

⚠ WARNING

Wheels and tyres are heavy. Take care when lifting or moving them.

Store with care to ensure that they cannot fall and cause injury.

13-3-1-7_1

1 Prepare the wheel.

Before you add air to the tyre, make sure it is correctly fitted on the machine or installed in a tyre inflation cage. ⇨ *Fig 69. (3-105)*.

2 Prepare the equipment.

a Use only an air supply system which includes a pressure regulator. Set the regulator no higher than 1.38 bar (20 psi) above the recommended tyre pressure. For recommended tyres and pressures for your machine, see the machine handbook.

b Use an air hose fitted with a self-locking air chuck and remote shut-off valve.

3 Add the air.

a Make sure that the air hose is correctly connected to the tyre valve. Clear other people from the area. Stand behind the tread of the tyre while adding the air.

b Inflate the tyre to the recommended pressure. Do not over-inflate.

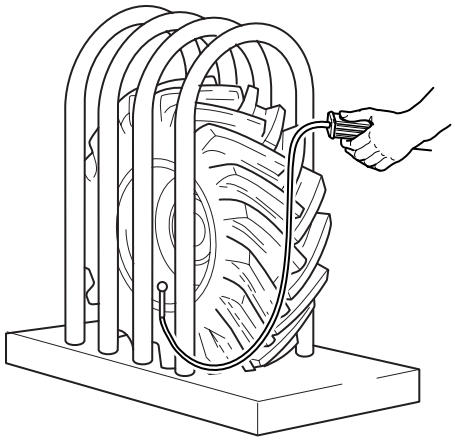


Fig 69.

Checking the Wheel Nut Torques

WARNING

If, for whatever reason, a wheel stud is renewed, all the studs for that wheel must be changed as a set, since the remaining studs may have been damaged.

2-3-2-8

On new machines, and whenever a wheel has been removed, check the wheel nut torques every two hours until they stay correct.

Every day, before starting work, check that the wheel nuts are tight.

The correct torques are shown in the table below.

Table 16.

Front		Rear	
Nm	**lbf ft**	**Nm**	**lbf ft**
680	500	680	500

Wheel Nut Torque Indicators (if fitted)

If wheel nut torque indicators **A** are fitted, check each day that they have not moved.

Tighten wheel nuts to specified torque before fitting the torque indicators as shown. ⇨ ***Checking the Wheel Nut Torques (3-106)***. Note the torque indicators orientation in relationship to wheel's direction of travel **X**.

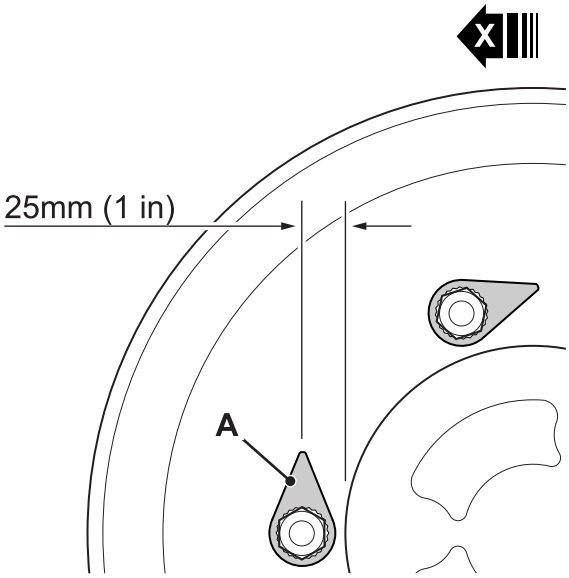


Fig 70.

Wheel Alignment

Introduction

T3-038

⚠ DANGER

Failure to align the steering before selecting the required steer mode will cause the machine to steer incorrectly.

5-2-6-7

⚠ WARNING

Failure to phase 4-wheel steer at least once per day may mean a reduction in steering effectiveness.

5-2-1-6

The steering must be re-phased:

1 At least once per day.

2 If having difficulty in steering.

3 After traveling for 15 miles (24 km) or more on the road (in 2-wheel steer).

Manual Steer Mode Selector

1 Stop the machine. Select the neutral position on the forward/reverse lever.

2 Use the lever **A** to select 4-wheel steer **B**.

3 Turn the steering wheel until the indicator light comes ON. This means that the rear wheels are pointing in the straight ahead position.

If the machine is not fitted with the indicator light turn the steering wheel until all of the wheels are in the straight ahead position.

4 Use the lever **A** to select 2-wheel steer **C**.

5 Turn the steering wheel until the indicator light comes ON. This means that the front wheels are pointing in the straight ahead position.

If the machine is not fitted with the indicator light turn the steering wheel until all of the wheels are in the straight ahead position.

6 All wheels are now pointing straight ahead, select the steer mode required and continue in the normal manner.

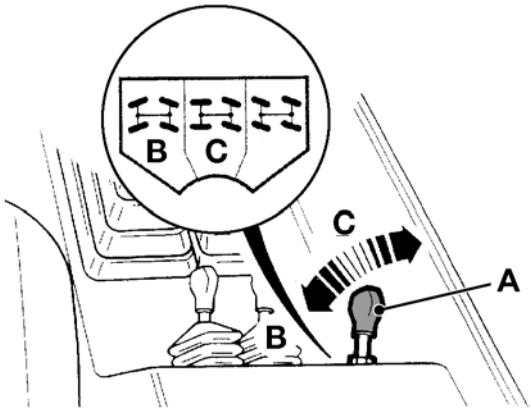
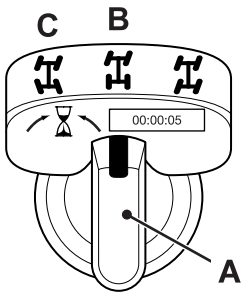


Fig 71.

Electronic Steer Mode Selector

1 Stop the machine. Select the neutral position on the forward/reverse lever.

2 Use the switch **A** to select 2-wheel steer **B**.



432710c-4

Fig 72.

Sensors on the axles prevent the steer mode from changing until the wheels straighten up or pass through the 'straight ahead' position. Because of this, there will be a short period when the indicator lights do not agree with the switch position.

The indicator lights will still show 4-wheel steer.

3 Operate the machine until the rear wheels straighten up.

When the rear wheels straighten up the machine will go into 2-wheel steer. The indicator lights will show when 2-wheel steer has engaged.

4 Use the switch **A** to select 4-wheel steer **C**.

The front and rear wheels are now back in phase.

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Wear Pads

Related Topics

Table 17. Related Topics in This Publication

The table lists other topics in the manual that contain information related to this topic. Refer to the applicable topics to complete your procedures. Where applicable the text in this section contains cross references to this page to help you find the correct information. Some machines have different systems and devices. Make sure you refer to the correct topic, refer to *Section 1 - Applications*.		
Sections	**Topic Titles**	**Sub Titles**
B	Boom	***Boom Shimming***

Wear Pads

Boom Wear Pad Clearance

Check the boom wear pad clearances every 500 hours.

Contact your JCB Distributor if the wear pad clearances exceed the maximum stated dimensions.

To measure/replace boom wear pads refer to ***Section B - Boom.***

Windscreen Washer

Related Topics

Table 18. Related Topics in This Publication

The table lists other topics in the manual that contain information related to this topic. Refer to the applicable topics to complete your procedures. Where applicable the text in this section contains cross references to this page to help you find the correct information. Some machines have different systems and devices. Make sure you refer to the correct topic, refer to *Section 1 - Applications*.		
Sections	**Topic Titles**	**Sub Titles**
1	***Applications***	ALL
2	ALL (Care and Safety)(1)	ALL

(1) You must obey all of the relevant care and safety procedures.

Checking the Level

The washer bottle is mounted in different locations depending on machine model.

The washer bottle **A** is found to the left of the operator seat.

The washer bottle filler **B** is in the panel in front of the cab. To gain access, pull release knob **C** to open the panel.

1 Park the machine and make it safe. Obey the care and safety procedures. ⇨ *Related Topics (3-5)*

2 Get access to the washer bottle.

3 Remove the washer bottle cap **D**.

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

5 Install the washer bottle cap.

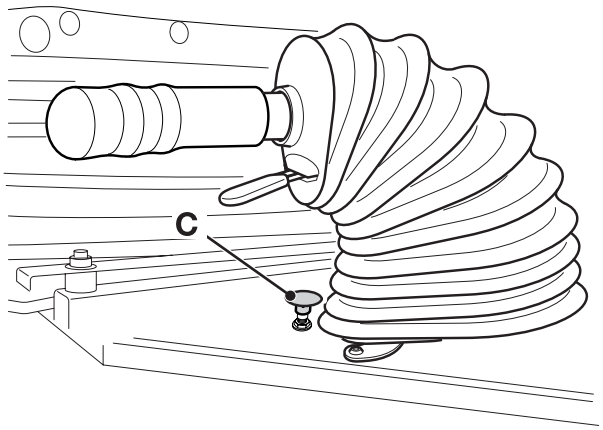

Fig 73.

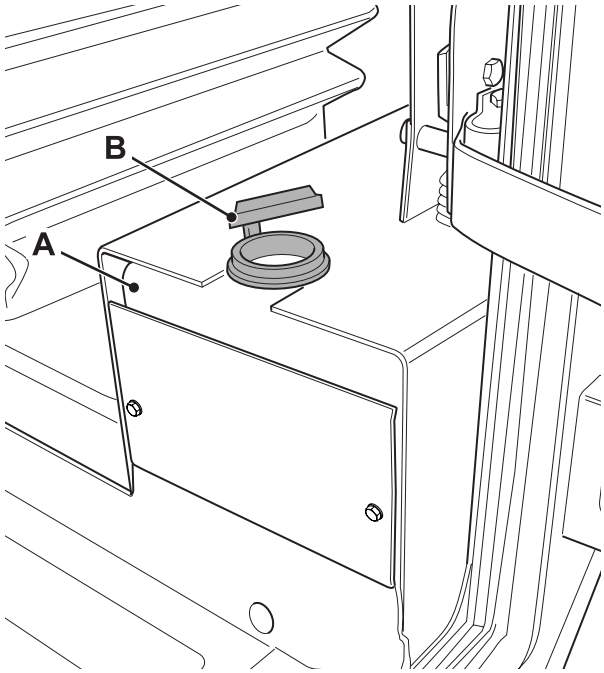

Fig 74.

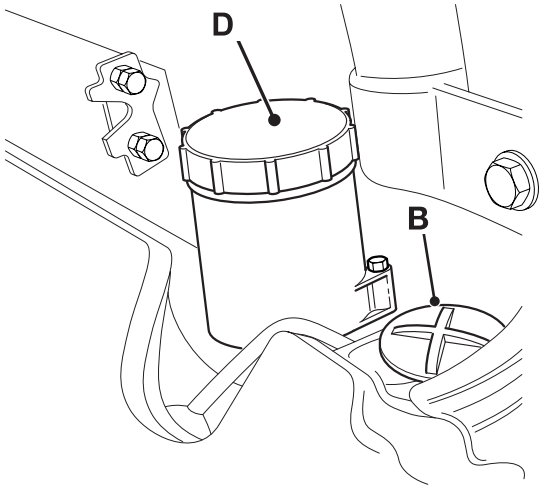

Fig 75.

Access Panels

Related Topics

Table 19. Related Topics in This Publication

The table lists other topics in the manual that contain information related to this topic. Refer to the applicable topics to complete your procedures. Where applicable the text in this section contains cross references to this page to help you find the correct information. Some machines have different systems and devices. Make sure you refer to the correct topic, refer to *Section 1 - Applications*.		
Sections	**Topic Titles**	**Sub Titles**
1	***Applications***	ALL
2	ALL (Care and Safety)(1)	ALL

(1) You must obey all of the relevant care and safety procedures.

Battery Cover

Opening and Closing

To get access to the battery and primary fuses by opening the battery cover **D**.

Single Step Installation

1 Park the machine and make it safe. Obey the care and safety procedures. ⇨ ***Related Topics (🗋 3-5)***

2 With key **76-B** unlock and open the battery compartment cover **76-A**.

3 Close and lock the battery compartment.

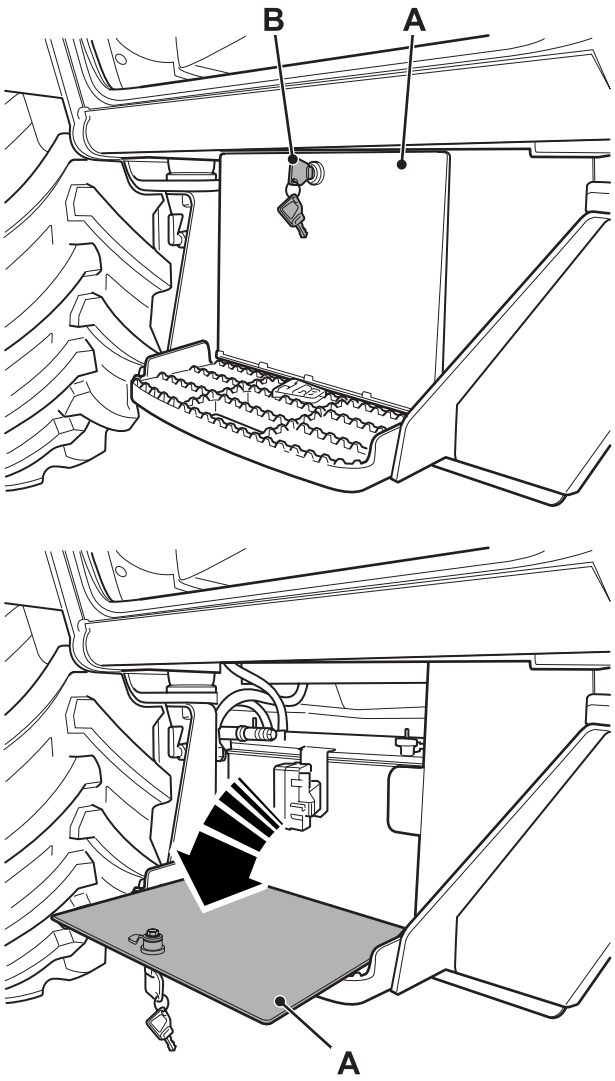

Fig 76.

Note: *We recommend that you lock the battery compartment cover to prevent theft and tampering.*

Twin Step Installation

1 Park the machine and make it safe. Obey the care and safety procedures. ⇨ *Related Topics (3-5)*

2 Remove bolts **77-C** (and washers).

Note: *Machines up to and including SN 1188684 are fitted with a single bolt.*

3 Lift the battery compartment cover **77-D** slightly and allow the cover to pivot forward.

4 To close the cover, repeat steps 1 to 3 in reverse.

5 Torque tighten bolts **77-C** to 25Nm (17.7 lbf ft).

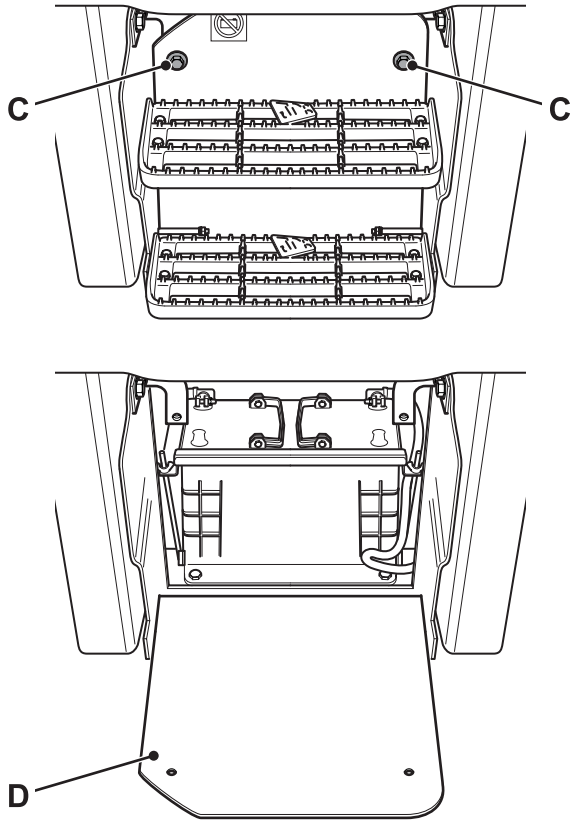

Fig 77.

Engine Cover

Opening and Closing

Get access to the engine by opening the engine cover **A**.

⚠ WARNING

The engine has exposed rotating parts. Switch OFF the engine before working in the engine compartment. Do not use the machine with the engine cover open.

5-2-6-5

⚠ WARNING

Touching hot surfaces can burn skin. The engine and machine components will be hot after the unit has been running. Allow the engine and components to cool before servicing the unit.

10-1-1-40

Note: *Before you stop the engine, you must allow the engine to operate at low idle for four minutes. The delay allows the coolant temperature to stabilise before you open the engine cover.*

1 Park the machine and make it safe. Lower the boom. Obey the care and safety procedures. ⇨ ***Related Topics (3-5)***

2 Unlock and release catch **B**. Allow the cover to raise on its gas strut. Keep hold of the cover while it rises.

3 Pull the cover down and engage catch **B**. We recommend you lock the engine cover.

Note: *We recommend that you lock the engine cover to prevent theft and tampering.*

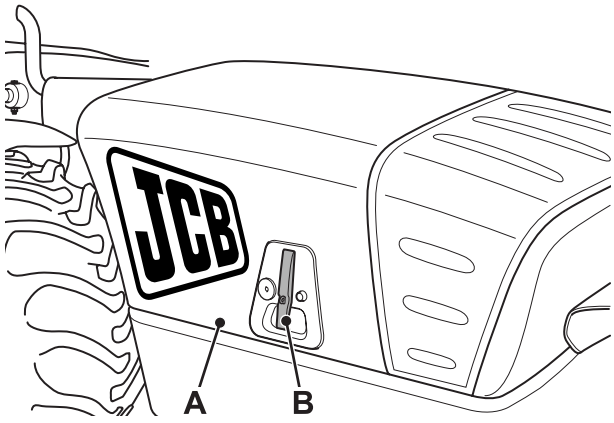

Fig 78.

Undershield

Removal and Replacement

When cleaning around the engine and radiator, debris will be released more easily if the undershields are removed.

⚠ WARNING

You will be working close into the machine for these jobs. Lower the attachments if possible. Remove the starter key and disconnect the battery. This will prevent the engine being started. Make sure the park brake is engaged.

Block all four wheels before getting under the machine.

2-3-2-1

1 Park the machine and make it safe. Lower the boom. Obey the care and safety procedures. ⇨ *Related Topics (📄 3-5)*

2 Working under the engine compartment, support each of the three undershields **A** in turn and remove the bolts **B**. Lower the undershields to the ground.

3 Refit the undershields, ensuring that lips **C** on the two smaller undershields are located above the frame before fitting bolts **B**.

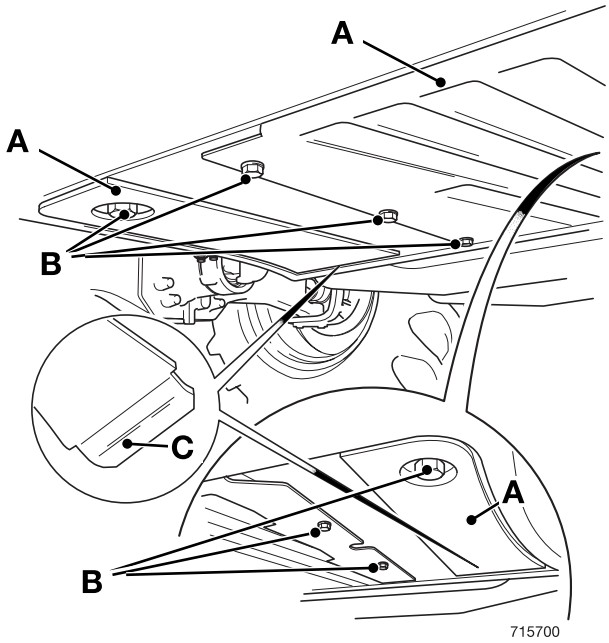

Fig 79.

Fire Extinguisher (if fitted)

Checking the Fire Extinguisher

Check the fire extinguisher for damage, security and signs of leaking.

Check that the gauge **A** indicates that the extinguisher is charged i.e. the needle is in the GREEN segment.

Note: *If the needle is in or very near the RED segment at either end of the gauge, the extinguisher must be serviced or replaced.*

Make sure the safety pin **B** is fitted and secure.

The extinguisher should be serviced every 12 months by a suitably qualified person.

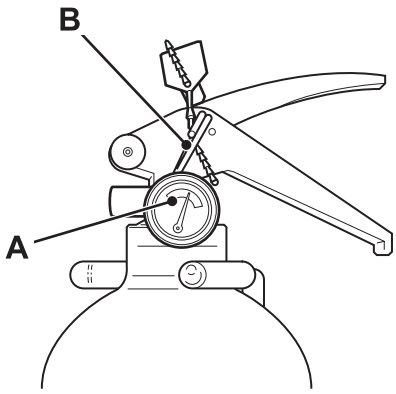

Fig 80.