



Section 3

Routine Maintenance

Service Manual - 527-58

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Publication No.
9813/0200-2



World Class
Customer Support



Notes:

3-0



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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
2	General Procedures	ALL

Service Requirements

Introduction

T3-095

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

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

A Service Manual for your machine is available from your JCB Distributor. The Service Manual contains information on how to repair, dismantle and assemble your machine correctly.

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

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

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

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

Owner/Operator Support

JCB together with your Distributor wants you to be completely satisfied with your new JCB machine. If you do

encounter a problem however, you should contact your Distributor's Service Department who are there to help you!

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

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

- 1 Giving your name, address and telephone number.
- 2 Quoting your machine model and serial number.
- 3 Date of purchase and hours of work.
- 4 Nature of the problem.

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

Service/Maintenance Agreements

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

Please consult your JCB Distributor for details.

Initial Service and Inspection (100 Hours)

T3-005

To further protect your machine's performance it is essential your JCB Distributor carries out an initial service and inspection when the machine is one month old or when it has completed 100 hours of operation (whichever occurs first). You should notify your Distributor in advance to allow the necessary arrangements to be made.

Fit for Purpose Tests for Lifting Equipment

T3-097

All lifting equipment (for example forks, lifting hooks and shackles) need regular inspection and testing by a competent person to ensure they are fit for purpose.

This may be needed every six months or at least annually in some countries to meet and comply with legislation and for insurance purposes.

Check with your local JCB distributor for further advice.

Obtaining Replacement Parts

T3-096

If you use non-genuine JCB parts or consumables, then you can compromise the health and safety of the operator and cause machine failure

A Parts Book for your machine is available from your JCB Distributor. The Parts Book will help you identify parts and order them from your JCB distributor.

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

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

Health and Safety

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

WARNING

T3-061

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.



Section 3-1 - Routine Maintenance

Routine Maintenance

Service Schedules

Service Schedules

Introduction

T3-036-2

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.

How to Use the Service Schedules

T3-012_3

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

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

Pre-start Cold Checks, Service Points and Fluid Levels		Operation						
		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⁾	- Change				☐	☐	☐	☐
Air Cleaner Outer Element ⁽⁶⁾	- Change					☐	☐	☐
Air Cleaner Inner Element	- Change						☐	☐
Pre-Cleaner (if fitted)	- Check			☐				
Water Separator	- Check for contamination and Drain		☐	☐	☐	☐	☐	☐
Engine Fuel Filter	- Change					☐	☐	☐
Front End Accessory Drive (FEAD) Belt Condition	- Check				☐	☐	☐	☐
Front End Accessory Drive (FEAD) Belt	- Change							☐
Engine Mounting Bolts for Tightness	- Check			☐	☐	☐	☐	☐
All Hoses - Condition	- Check		☐	☐	☐	☐	☐	☐
Radiator ⁽⁵⁾	- Clean			☐	☐	☐	☐	☐
Crankcase Ventilation Filter	- Change					☐	☐	☐

795390-1

Calendar Equivalents

T3-051

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



Section 3-1 - Routine Maintenance

Routine Maintenance

Service Schedules

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	- 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 Motor Gear Train Oil Level	- Check	☐	☐	☐	☐			
Transmission Motor Gear Train Oil ⁽⁸⁾	- Change			☐	☐	☐	☐	☐
Axle Mount Security	- Check			☐				
Axle(s) Oil Level	- Check		☐	☐				



Section 3-1 - Routine Maintenance

Routine Maintenance

Service Schedules

	Operation	10	50	100 ⁽¹⁾	500	1000	2000	6000
Axle(s) Oil	- Change				☐	☐	☐	☐
Hub Oil Level (Without Oil Immersed Brakes)	- Check			☐				
Hub Oil (Without Oil Immersed Brakes) ⁽⁹⁾	- Change					☐	☐	☐
Axle Breather	- Check			☐	☐	☐	☐	☐
Steering Stops (if fitted)	- Security			☐	☐	☐	☐	☐
Wheel Nut Security	- Check	☐	☐	☐	☐	☐	☐	☐
Tyre Pressures/Condition	- Check	☐	☐	☐	☐	☐	☐	☐
Wheel Alignment	- Check	☐	☐	☐	☐	☐	☐	☐
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	- Change			☐	☐	☐	☐	☐
Suction Strainer	- Clean						☐	☐
Control Valve Pilot Filter	- Change						☐	☐
BRAKES								
Brake System Fluid Level	- Check	☐	☐	☐	☐	☐		
Brake System Fluid	- Change						☐	☐
ELECTRICS								
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	☐	☐		☐	☐	☐	☐
ROPS/FOPS Structure	- Check	☐	☐	☐	☐	☐	☐	☐
Doors and Hinges	- Lubricate			☐	☐	☐	☐	☐
Windscreen Washer Fluid Level	- Check	☐	☐	☐	☐	☐	☐	☐
Cab Heater Fresh Air Filter (if fitted)	- Change				☐	☐	☐	☐



Section 3-1 - Routine Maintenance

Routine Maintenance

Service Schedules

	Operation	10	50	100 ⁽¹⁾	500	1000	2000	6000
Boom Wear Pad Runways	- Waxoyl				☐	☐	☐	☐
Inner Boom Hoses	- Grease				☐	☐	☐	☐
Boom Wear Pad Clearance ⁽¹¹⁾	- Check/Adjust				☐	☐	☐	☐
Boom Wear Pad Condition and Security (Replace if required) ⁽¹¹⁾	- 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 performance is poor, 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 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 propshafts 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) If operating under arduous conditions, check the boom wear pads every 250 hours.



Section 3-1 - Routine Maintenance

Routine Maintenance

Service Schedules

Functional Test and Final Inspection

	Operation	10	50	100 ⁽¹⁾	500	1000	2000	6000
ENGINE								
Idle Speed ⁽²⁾	- Check and Adjust			☐	☐	☐	☐	☐
Max. No-Load Speed ⁽²⁾	- Check and Adjust			☐	☐	☐	☐	☐
Exhaust System Security ⁽²⁾	- Check			☐	☐	☐	☐	☐
Air Inlet System Security	- Check			☐	☐	☐	☐	☐
Hand Throttle Operation	- Check			☐	☐	☐	☐	☐
TRANSMISSION, AXLES AND STEERING								
Steering - Operation/Phasing	- Check	☐	☐	☐	☐	☐	☐	☐
Transmission Operation	- Check	☐	☐	☐	☐	☐	☐	☐
Forward/Reverse/Gear - Selection/Operation	- Check			☐	☐	☐	☐	☐
High/Low Speed Operation	- Check			☐	☐	☐	☐	☐
Neutral Start Operation	- Check			☐	☐	☐	☐	☐
Varispeed Control Knob	- Check			☐	☐	☐	☐	☐
Inching Pedal Operation	- 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			☐	☐	☐	☐	☐
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			☐	☐	☐	☐	☐
Parallel Lift/Lower	- Check			☐	☐	☐	☐	☐
BRAKES								
Foot Brake - Operation	- Check	☐	☐	☐	☐	☐	☐	☐
Park Brake	- Check/Adjust/Lubricate	☐	☐	☐	☐	☐	☐	☐
ELECTRICS								
Alternator - Output ⁽²⁾	- Check			☐	☐	☐	☐	☐



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Service Schedules

	Operation	10	50	100 ⁽¹⁾	500	1000	2000	6000
All Electrical Equipment Operation, (warning lights, beacon, alarms, horn, wipers etc.)	- Check	☐	☐	☐	☐	☐	☐	☐
Load Moment Indicator ⁽²⁾	- 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

Table 2.

ITEM	CAPACITY	FLUID/LUBRICANT	JCB Part Number	Container Size ⁽¹⁾
	Litres (UK Gal)			
Fuel Tank	70 (15.4)	Diesel Oil (Refer to Fuels)	-	-
Engine (Oil)		JCB Engine Oil EP 15W40 -10°C to +50°C (14°F to 122°F)	4001/1805	20 litres
- MIN	12.5 (2.75)			
- MAX	15 (3.3)	JCB Cold Climate Engine Oil EP 5W40 -20°C to +50°C (-4°F to 122°F)	4001/2705	20 litres
Engine (Coolant) ⁽²⁾	22 (4.4)	JCB Antifreeze HP/Coolant + Water (Refer to Coolant Mixtures)	4006/1120	20 litres
Transmission:				
Motor Gear Train	3.5 (0.77)	JCB HP gear oil 90	4000/0305	20 litres
Front Axle				
Housing	13 (2.8)	JCB Special Gear Fluid Plus	4000/2205 ⁽³⁾	20 litres
Hubs (x2)	2 (0.4)			
Rear Axle				
Housing	10.4 (2.3)	JCB Special Gear Fluid Plus	4000/2205 ⁽³⁾	20 litres
Hubs (x2)	2 (0.4)			
Brake System (machines with non Boosted braking system)		JCB Hydraulic Fluid HP15 ⁽⁴⁾	4002/0503	5 Litres
Hydraulic Tank ⁽⁵⁾	51 (11.2)	JCB Optimum Performance Hydraulic Fluid 68 -12°C to 46°C (-10°F to 115°F)	4002/2705 4002/2703	20 Litres 200 Litres
		JCB Optimum Performance Hydraulic Fluid 46 -20°C to 27°C (-4°F to 80°F)	4002/2005 4002/2003	20 Litres 200 Litres
Grease Points		JCB Special HP Grease ⁽⁶⁾	4003/2017	400g
		JCB Special MPL-EP Grease ⁽⁶⁾	4003/1501	400g
Wear Pad Runways		JCB Waxoyl	4004/0502	5 litres
Boom Hoses		JCB Special Slide Lubricant	4003/1115	400g

- (1) For information about the different container sizes that are available (and their part numbers), contact your JCB Dealer.
- (2) 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 then there is a possibility of air becoming trapped in the system.
- (3) Must be suitable for use with oil immersed brakes and limited slip differentials (LSD).
- (4) !CAUTION: Do not use ordinary brake fluid.



Section 3-1 - Routine Maintenance

Routine Maintenance

Fluids, Lubricants and Capacities

- (5) *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.*
- (6) *JCB Special HP Grease is the recommended specification grease. If JCB Special MPL-EP 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.*

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).

Fuel



Acceptable and Unacceptable Fuels

T3-031

Important: No warranty liability whatsoever will be accepted for failure of fuel injection equipment where the failure is attributed to the quality and grade of the fuel used.

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

GEN-9-2

Table 3.

Fuel Specification	Applicable Engines	Service Requirements
EN590 Diesel fuel types - Auto/C0/C1/C2/C3/C4	All Dieselmex engines.	Obey the usual routine maintenance schedules and procedures.
BS2869 Class A2		
ASTM D975-91 Class 2, US DF1, US DF2, US DFA		
JIS K2204 (1992) Grades 1, 2, 3 and Special Grade 3		
ASTM D975-91 Class 1DA	All Dieselmex engines.	Obey the usual routine maintenance schedules and procedures. Fuel additives are recommended for use with low sulphur fuels. ➔ Additives (□ 3-1-18) .
MIL T38219 XF63	Important: Engines operated with these fuels may have a reduced service life.	
NATO F63		
French EN590 (RME5) with 5% maximum		
AVTURFSII, NATO F34, JP8, MIL T83133, DERD 2463, DEF STAN 91-87	All Dieselmex engines.	Obey the usual routine maintenance schedules and procedures. Fuel additives must be used. ➔ Additives (□ 3-1-18) .
AVCAT FSII, NATO F44, JP5, MIL T5624, DERD 2452, AVTOR	Important: Engines operated with these fuels may have a reduced service life.	
NATO F35, JET A1, DEF STAN 91-91, DERD 2494, JP7		
AVCAT, NATO F43 (obsolete), JP5 without additives		
JET A (ASTM D1655)		
ASTM D3699 Kerosene		
B20 Biodiesel - RME content blended with mineral derived diesel (20% maximum) - ASTM D6751, DIN 51606, ISO 14214	Dieselmex engines manufactured from 2007 on only ⁽¹⁾ .	You must obey special routine maintenance schedules and procedures. ➔ Warranty (□ 3-1-18) .
AVTAG (obsolete)	These fuels are not acceptable with or without additives. Engines must not be operated with these fuels.	
AVTAG FSII (obsolete), NATO F40, JP4, DERD 2454		
JET B (ASTM D1655)		
BS MA100		
JIS K2203 No.2		
Unmodified vegetable oils		

(1) The year of manufacture is part of the engine serial number. Refer to Typical Engine Identification Number.

Additives

The additives listed below are advertised as being suitable for bringing the lubricity levels of kerosene/low sulphur fuels up to those of diesel fuels. They must be used as specified by your fuel supplier who will understand the concentration level necessary.

- Elf 2S 1750. Dosage 1000-1500 ppm (0.1 - 0.15%), specifically for Indian Superior Kerosene (SKO) but may be applicable to other fuels.
- Lubrizol 539N. Dosage (on Swedish low sulphur fuel) 250 ppm.
- Paradyne 7505 (from Infineum). Dosage 500 ppm (0.05%).

Note: These products are given as examples only. The information is derived from the manufacturers data. The products are not recommended or endorsed by JCB.

Service Requirements for use of B20 Biodiesel

- The engine oil must be a grade CH4 as minimum specification.
- Do not leave unused B20 biodiesel in the fuel tank for extended periods (top up each day).
- Make sure that 1 in 5 fuel tank fills use standard diesel to EN590 specification, this will help to prevent 'gumming'.
- Make sure regular oil sampling is completed (look for excessive unburnt fuel content, water or wear particles).
- Change the engine oil and filter more frequently (as a minimum half the recommended intervals), or as indicated by oil sampling.
- Change the fuel filters more frequently (as a minimum half the recommended intervals), or if there are engine performance related issues.
- Make sure the fuel is stored correctly, care must be taken to make sure no water enters the machine fuel tank (or the storage tank). Water will encourage micro-bacterial growth.
- Make sure that the fuel pre-filter is drained daily (not every week as currently advised).
- Only JCB engines built after Jan. 2007 are applicable (i.e. engines with 07 on the end of their serial number

and factory filled with CH4 oil) - this is not approved with other manufacturers.

- Use heater kits in low ambient temperature territories.
- The biodiesel must meet the following standards: ASTM D6751, DIN 51606, ISO 14214

Note: If necessary use a test kit to confirm the fuel specification. Testing kits are available (not from JCB currently), use the internet as a source for the kits.

Note: If performance related issues are to be reported to JCB Service, and the engine has been run on biodiesel, then the fuel system must be filled with standard diesel (at least 2 x tank fills) to EN590 specification and relevant stall speeds recorded prior to making the report.

Warranty

JCB have shown a commitment to support the environment by approving the use of biodiesel blended fuels.

Using a B20 blend of biodiesel requires caution and additional servicing of the engine is required. → [Service Requirements for use of B20 Biodiesel \(□ 3-1-18\)](#).

Failure to follow the additional recommended service requirements may lead to a warranty claim being declined.

Failures resulting by the incorrect use of biodiesels or other fuel additives are not defects of the JCB Dieselmax engine workmanship and therefore will not be supported by JCB Warranty.

Sulphur Content

T3-032

High sulphur content can cause engine wear. (High sulphur fuel is not normally found in North America, Europe or Australia.) If you have to use high sulphur fuel you must change the engine oil more frequently.
⇒ [Table 4. Sulphur Content](#) ([3-1-19](#)).

Low sulphur fuels must have the appropriate fuel lubricity additives, these lubricity improvers must not create residual deposits that block the fuel system, e.g. injectors, filters etc. Contact your fuel Supplier.

CAUTION

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

ENG-3-2

Table 4. Sulphur Content

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

Effects of Fuel Contaminates

T3-033

The effect of dirt, water and other contaminants in diesel can be disastrous for injection equipment:

- **Dirt** - A severely damaging contaminant. Finely machined and mated surfaces such as delivery valves and distributor rotors are susceptible to the abrasive nature of dirt particles - increased wear will almost inevitably lead to greater leakage, uneven running and poor fuel delivery.
- **Water** - Water can enter fuel through poor storage or careless handling, and will almost inevitably condense in fuel tanks. The smallest amounts of water can result in effects that are just as disastrous to the fuel injection pump as dirt, causing rapid wear, corrosion and in severe cases, even seizure. It is vitally important that water is prevented from reaching the fuel injection equipment. The filter/water trap must be drained regularly.
- **Wax** - Wax is precipitated from diesel when the ambient temperature falls below that of the fuel's cloud point, causing a restriction in fuel flow resulting in rough engine running. Special winter fuels may be available for engine operation at temperatures below 0°C (32°F). These fuels have a lower viscosity and limit wax formation.



Section 3-1 - Routine Maintenance

Routine Maintenance

Prepare the Machine for Maintenance

Prepare the Machine for Maintenance

Park the machine on firm level ground and engage the parking brake, see **Section 2 - General Procedures**.

⇒ [Related Topics \(□ 3-1-1\)](#)

If the boom is to be raised, fit the safety strut, see **Section 2 - General Procedures**. ⇒ [Related Topics \(□ 3-1-1\)](#)

Cleaning the Machine

Introduction

T3-062_2

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

WARNING

When using a steam cleaner, wear safety glasses or a face shield as well as protective clothing. Steam can cause serious personal injury.

13-3-2-10_2

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 Make the machine safe with the boom lowered. Refer to **Prepare the Machine for Maintenance**.

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 all electrical connectors are correctly coupled. If connectors are open fit the correct caps or seal with water proof tape.
- 3 Remove the undershield.

When cleaning around the engine and radiator, debris will be released more easily if the undershields are removed. Refer to **Access Panels, Undershield**.

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

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

Note: The cooling fan rotation can be reversed to help clear debris from the grilles. Refer to **Fan Reverse (if fitted)**.

Pay particular attention to:

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

Open the engine cover. Refer to **Access Panels, Engine Cover**.

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 1. \(3-1-23\)](#).

- 2 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.

- a Cover the alternator with a plastic bag to prevent water ingress.
- b Seal the engine air intake, exhaust and breather system.

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

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

Note: Do not aim the jet wash directly at the fuel injector seals **B**.

Refit the undershields.

- 3 If the machine is fitted with a roof mounted air conditioning condenser:
 - a Support the protective cover **D** and remove fasteners **E**. Lower the cover to the ground.
 - b Clean the condenser **C**, using a soft bristle brush.
 - c Refit the cover **D**. Retain using fasteners **E**.
- 4 Debris can collect under the boom. Remove especially all combustible material.

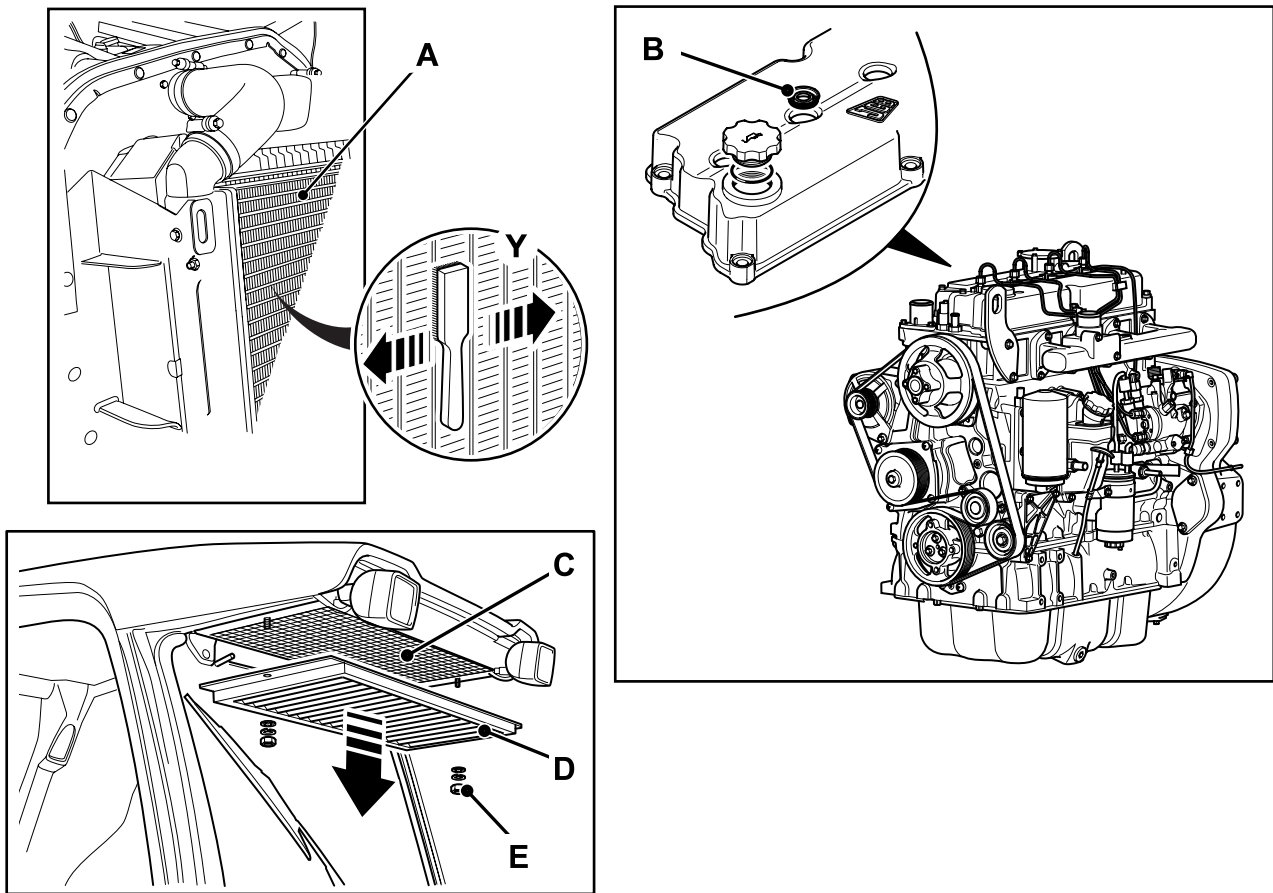


Fig 1.

717010-3-C1

Fan Reverse (if fitted)

P5-3028

The cooling fan rotation can be reversed to help clear debris from the grilles.

Note: Always position the machine in a relatively clean area before reversing the fan to make sure that other debris (chaff, silage, etc.) is not drawn in.

Note: An ECU prevents the fan rotation being changed when the engine speed is above 1000rpm.

- 1 Allow the engine to idle.
- 2 Press down and hold switch **A**.

Note: An audible alarm will sound during reverse fan operation.

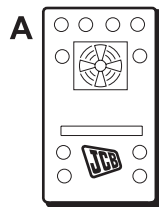


Fig 2.

A340181-4

- 3 If necessary, increase the engine speed when the fan is reversed to help to clear the grilles.
- 4 Allow the engine to idle.
- 5 Release switch **A** to revert to normal fan operation.

Checking for Damage

Check the Machine Body and Structure

T3-063_4

Make sure that all guards and protective devices are in place, attached by their locking devices and free from damage.

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

Check pivot pins are correctly in place and secured by their locking devices.

Check steps and handrails are undamaged and secure.

Check for broken, cracked or crazed window glass and mirrors. Replace damaged items.

Check all lamp lenses for damage.

Check all attachment teeth are undamaged and secure.

Check all safety and instructional labels are in place and undamaged. Fit new labels where necessary.

Check the Tyres

T3-065_2

WARNING

You could be killed or injured if a machine tyre bursts. Do not use the machine with damaged, incorrectly inflated or excessively worn tyres. Recognise the speed limitation of the tyres fitted and do not operate at more than their recommended maximum speed.

13-2-1-2

Always drive with consideration for the condition of the tyres. Incorrect tyre pressures will affect the stability of the machine. Check the tyres daily for the correct tyre pressure and signs of damage. For example:

- Signs of distortion (bulges)
- Cuts or wear
- Embedded objects (nails, etc.)

Install the valve caps firmly to prevent dirt from entering the valve. Inspect for leaks when you check the tyre pressures.

Inspect the tyre valve for leaks, when you check the tyre pressures.

Check the Seat and Seat Belt

T3-008_2

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.

Check seats are undamaged and secure. Check seat adjustments for correct operation.

Check the Hydraulic Hoses and Fittings

T3-072

WARNING

Hydraulic Hoses

Damaged hoses can cause fatal accidents. Inspect the hoses regularly. Do not use the machine if a hose or hose fitting is damaged.

INT-3-3-2_4

Inspect the hoses regularly for:

- Damaged hose ends
- Chafed outer covers
- Ballooned outer covers
- Kinked or crushed hoses
- Embedded armouring in outer covers
- Displaced end fittings

Do not use the machine if a hose or hose fitting is damaged. Replace damaged hoses before you use the machine again.

Replacement hoses must be of the same size and standard.

Checking the ROPS/FOPS Structure

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.

- 1 Check the structure for damage.
- 2 Make sure that all the ROPS/FOPS mounting bolts **A** are in place and are undamaged.
- 3 Make sure that the ROPS/FOPS mounting bolts **A** are tightened to the correct torque setting.

Note: Remove the deck plate to get access to the inner cab mounts. → [Deck Plate \(□ 3-1-38\)](#)

Table 5. Torque Settings

Item	Nm	lbf ft
A	205	151

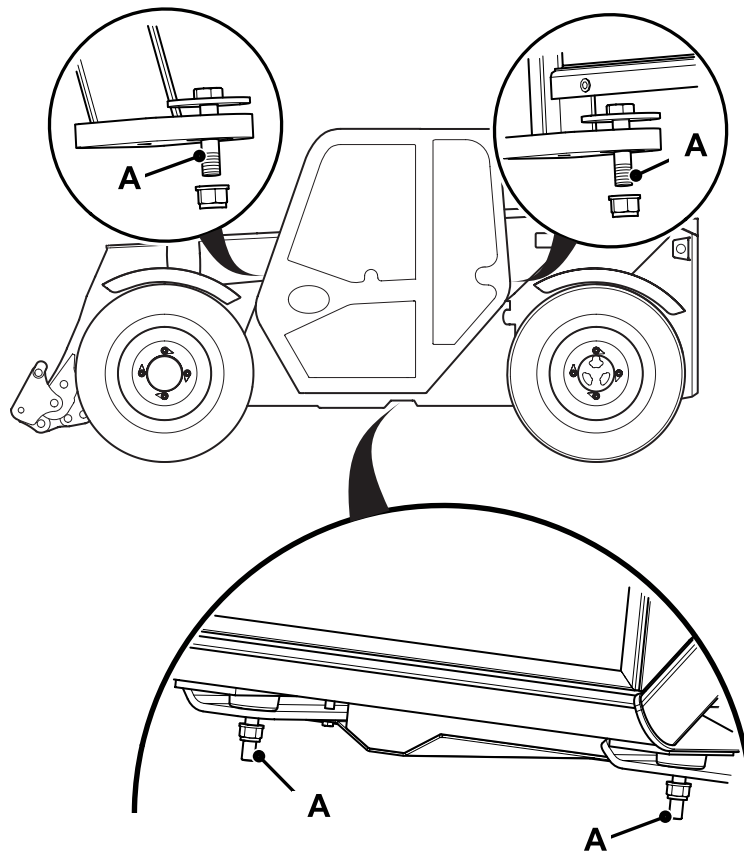


Fig 3.

C094970



Greasing

Introduction

T3-028_2

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

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

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. Use only the recommended type of grease. Do not mix different types of grease, keep them separate.

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: *Where applicable, refer to the manufacturers manual for instructions on the maintenance of optional attachments.*

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

Preparing the Machine for Greasing

Make the machine safe before you start a greasing procedure. Refer to **Prepare the Machine for Maintenance**.

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

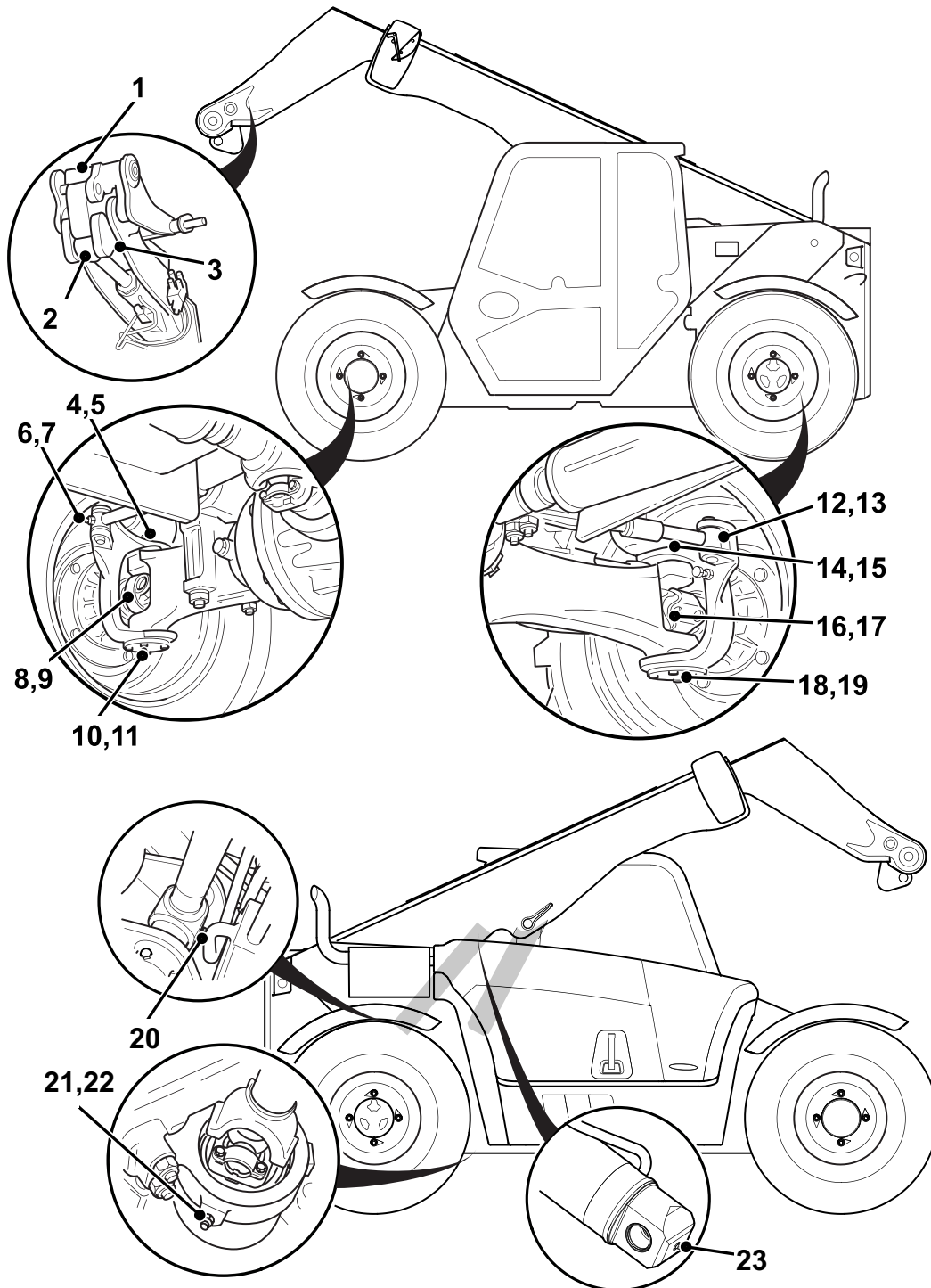


Fig 4.

C093720

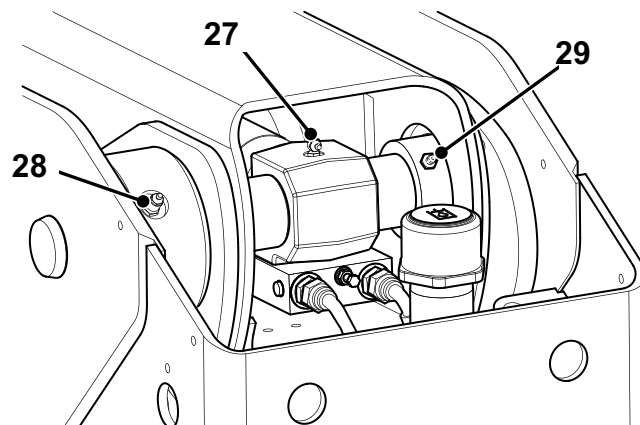
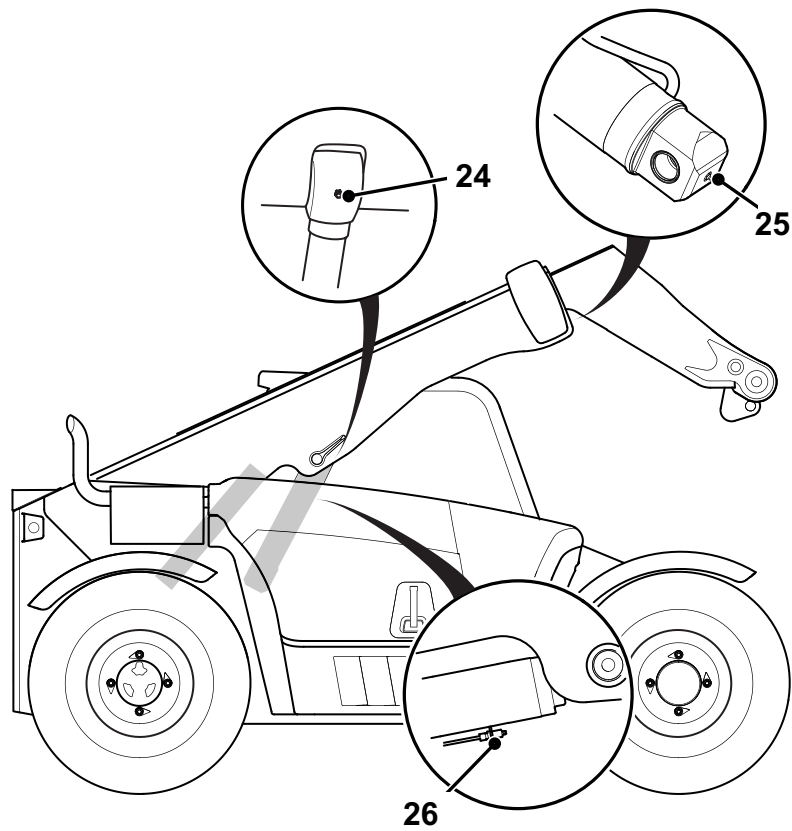


Fig 5.

C093720-C1

Every 500 Hours

Boom

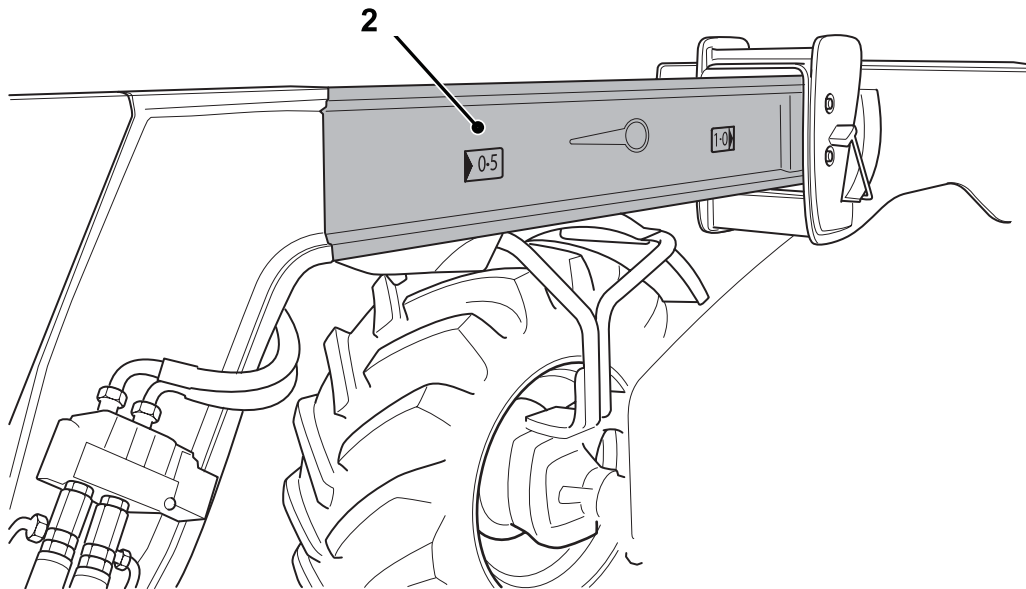


Fig 6.

T022930-1-C1

- 1 Extend the boom fully.
- 2 Spray Waxoyl evenly over the boom wear pad runways 1 and 2.
- 3 Apply slide lubricant to inner hoses and hose runs.
- 4 Allow 2-3 hours drying time before retracting the boom.

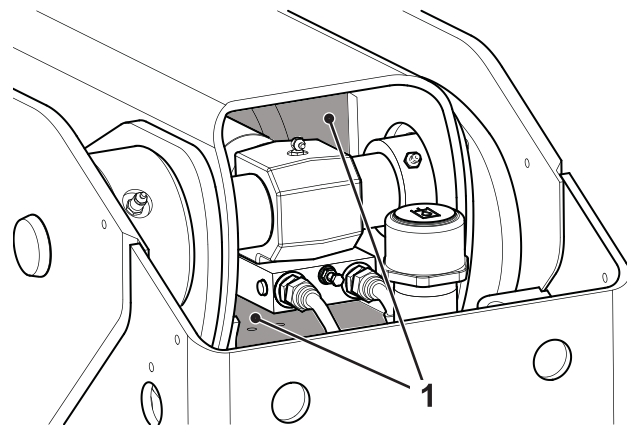


Fig 7.

T022940-1-C1

Propshafts

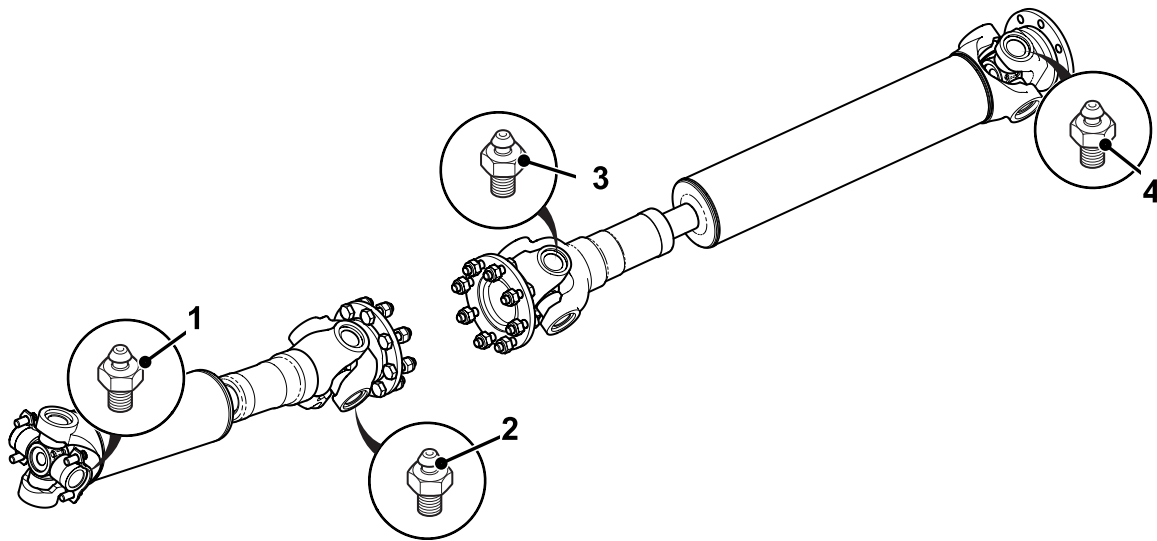


Fig 8.

C094790-C1

Hydraulic Tow Hitch

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.

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

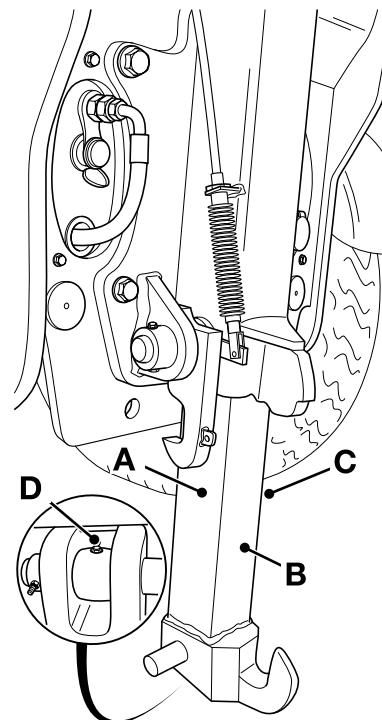


Fig 9.

385080-B1

Every 1000 Hours

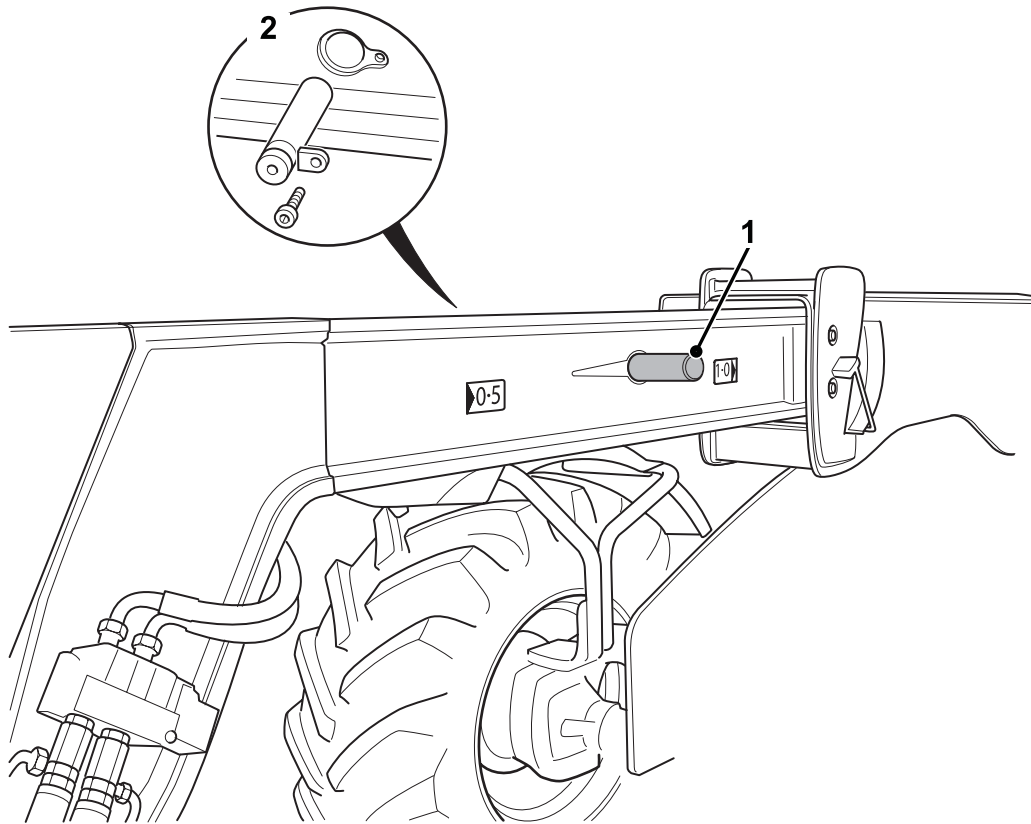


Fig 10.

T022930-2-C1

Note: Use another pivot pin **1** to support the ram while greasing the other pivot pin **2**.

- 1** Position the machine as shown with carriage on the ground.
- 2** Remove inner extension ram pivot pin **2** and coat with Waxoyl.
- 3** Refit pivot pin.

Oiling

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

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

- 1 Make the machine safe with the boom lowered. Refer to ***Prepare the Machine for Maintenance***.
- 2 Oil the clevis **A** at the brake end of the cable.

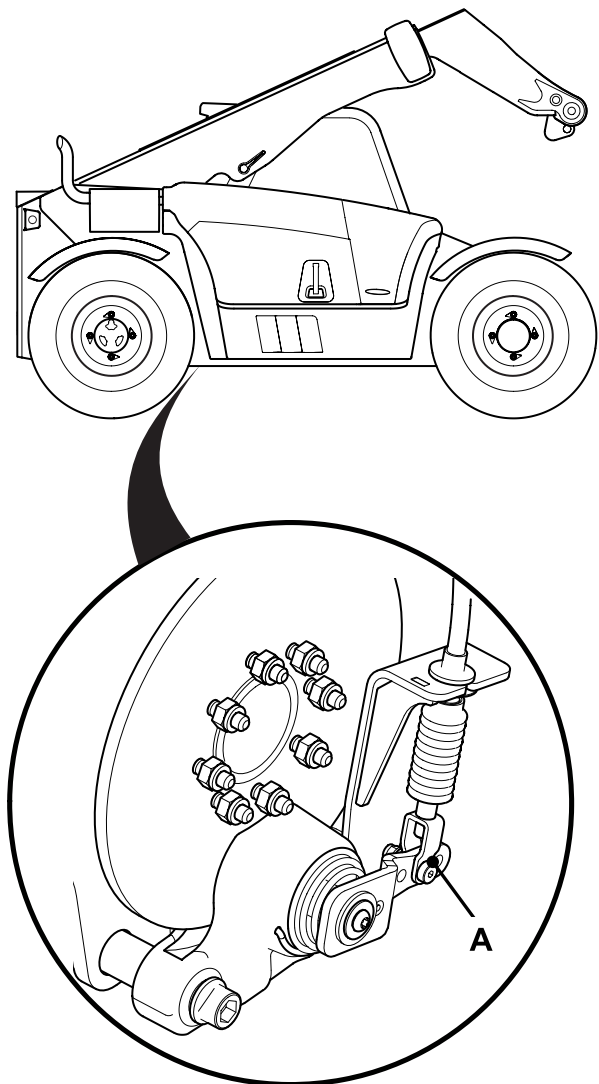


Fig 11.

C094730

Access Panels

Battery Covers

Removal

Get access to the battery and the primary fuses by removing the battery covers.

- 1 Make the machine safe with the boom lowered. Refer to **Prepare the Machine for Maintenance**.
- 2 Support the outer covers **A**.
- 3 Remove the bolts **B**.
- 4 Remove the covers **A** from the machine.
- 5 If the battery is to be removed or disconnected the inner cover **D** must be removed.
 - a Remove the hand nuts **E** from the battery stays **F**.
 - b Remove the inner cover **D** from the machine.

Replacement

Replacement is the opposite of the removal procedure.

During the replacement procedure do this work also:

- Make sure that the battery cables are routed correctly through the cut outs in the inner cover **D**.
- Make sure that the seal **C** is correctly positioned.

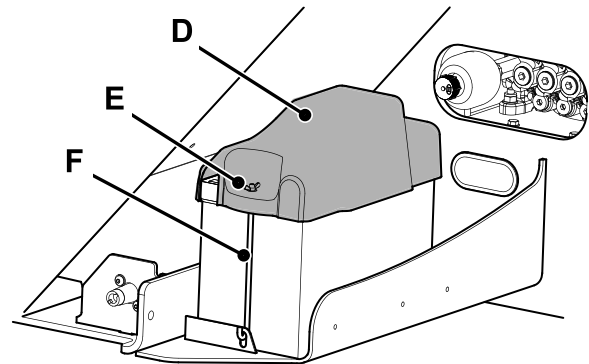
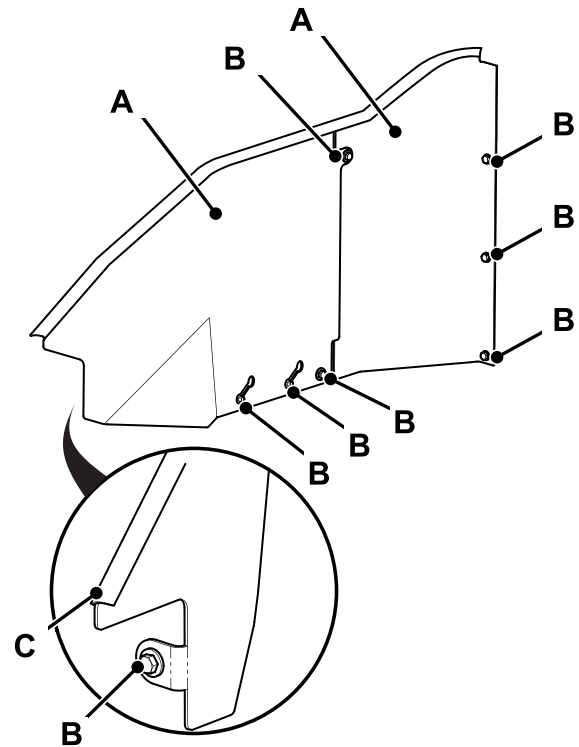


Fig 12.

C093690-C7

Engine Cover

Opening and Closing

P5-3012_2

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

Important: 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 Make the machine safe with the boom lowered. Refer to **Prepare the Machine for Maintenance**.
- 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.

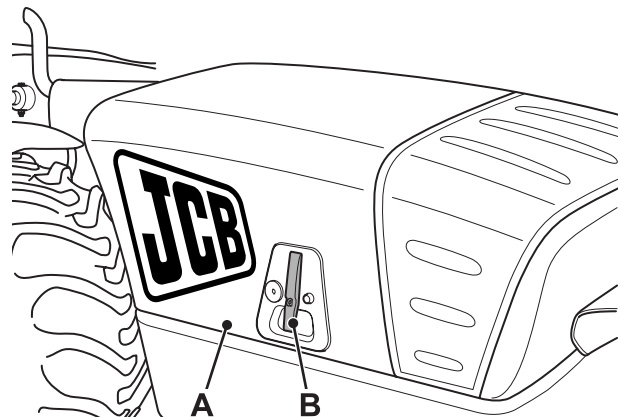


Fig 13.

263500-3

Rear Cover

Opening and Closing

WARNING

The exhaust pipe becomes extremely hot when the engine is running and will remain so for some time after the engine is stopped. If you touch the hot pipe you could be severely burned.

13-2-4-11

- 1 Make the machine safe with the boom lowered. Refer to ***Prepare the Machine for Maintenance***.
- 2 Using the key unlock the cover.
- 3 Open the cover **A** by lifting the right side and opening it towards the left side of the machine.
- 4 Closing is the opposite of the opening procedure.

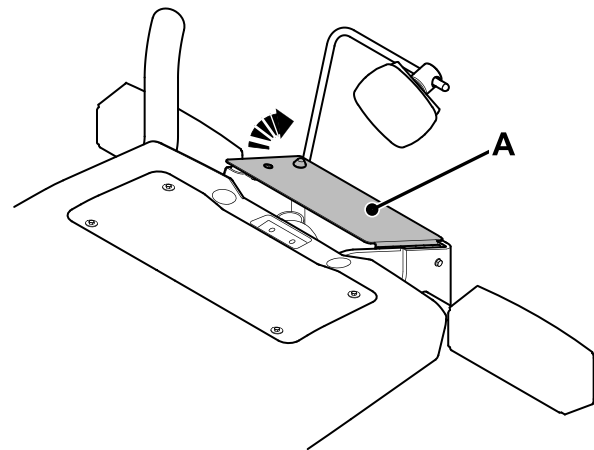


Fig 14.

C093870-C1

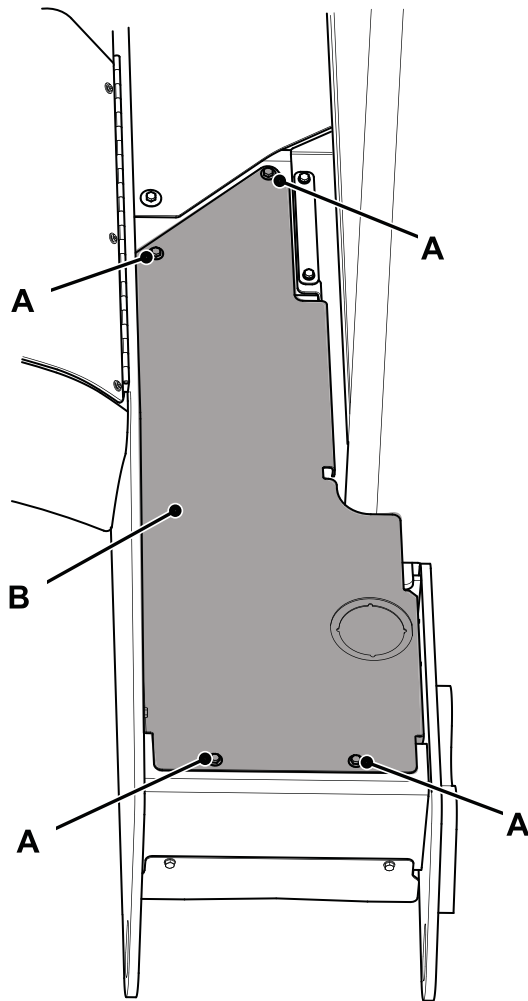
Deck Plate

Removal

- 1 Make the machine safe with the boom raised. Refer to ***Prepare the Machine for Maintenance.***
- 2 Remove the bolts and washers **A**.
- 3 Remove the plate **B** from the machine.

Replacement

Replacement is the opposite of the removal procedure.



C094950

Fig 15.

Chaff Guard

Removal

- 1 Make the machine safe with the boom raised. Refer to ***Prepare the Machine for Maintenance.***
- 2 Remove the bolts and washers **C**.
- 3 Support the clamping plate **A** and remove the bolts and washers **B**.
- 4 Remove the clamping plate **A**.
- 5 Remove the bolts and washers **E**.
- 6 Remove the clamping plate **F**.
- 7 Remove the chaff guard **D** from the machine.

Replacement

Replacement is the opposite of the removal procedure.

During the replacement procedure do this work also:

- Torque tighten the bolts **B** to 12 Nm (8.85 lbf ft)

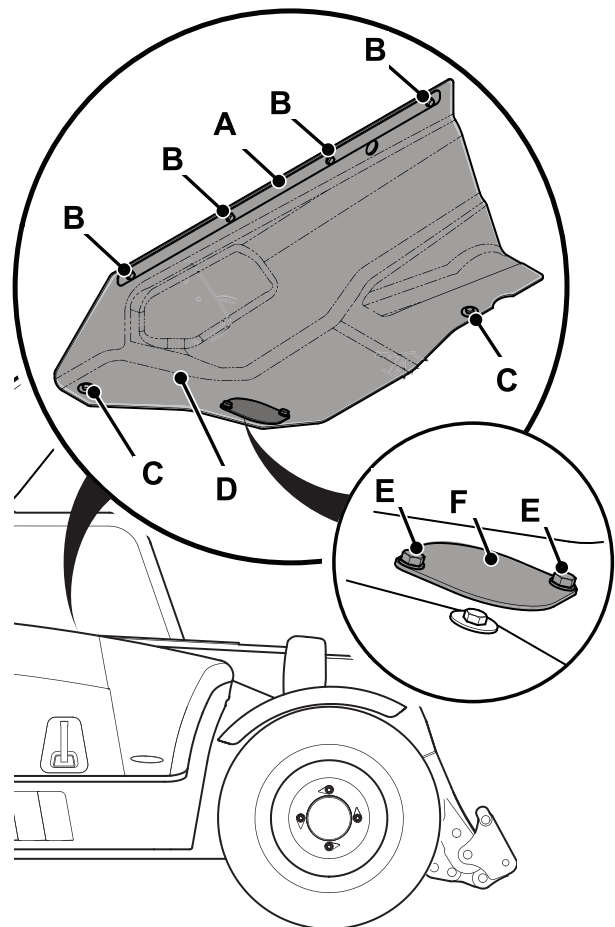


Fig 16.

C094940

Engine Compartment Undershield

Removal

When cleaning around the engine and radiator, debris will be released more easily if the undershield **A** is 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 Make the machine safe with the boom lowered. Refer to ***Prepare the Machine for Maintenance***.
- 2 Working under the engine compartment, support the undershield **A** and loosen the bolts **B**. Slide and lower the undershield to the ground.
- 3 Remove all unwanted material from the inside of the engine pod.

Replacement

Replacement is the opposite of the removal procedure.

During the replacement procedure do this work also:

- Make sure that the outlet **X** faces the outside of the machine.

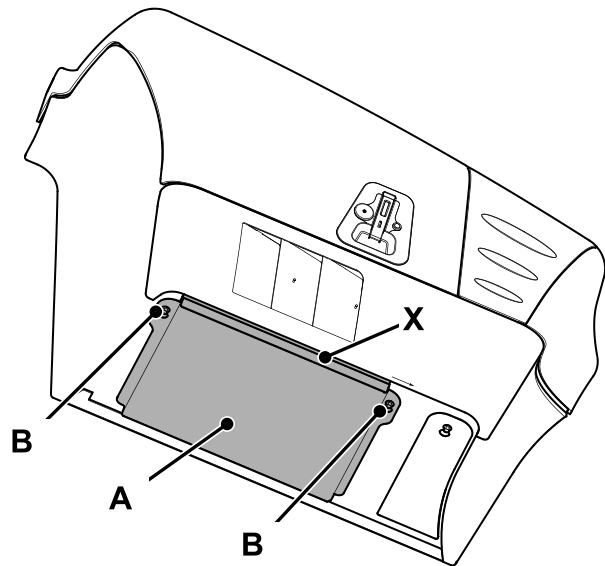


Fig 17.

C094780

Front Undershield

Removal

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 Make the machine safe with the boom lowered. Refer to **Prepare the Machine for Maintenance**.
- 2 Working below the front of the machine, support the undershield **A** and remove the bolts **B**. Lower the undershield to the ground.

Replacement

Replacement is the opposite of the removal procedure.

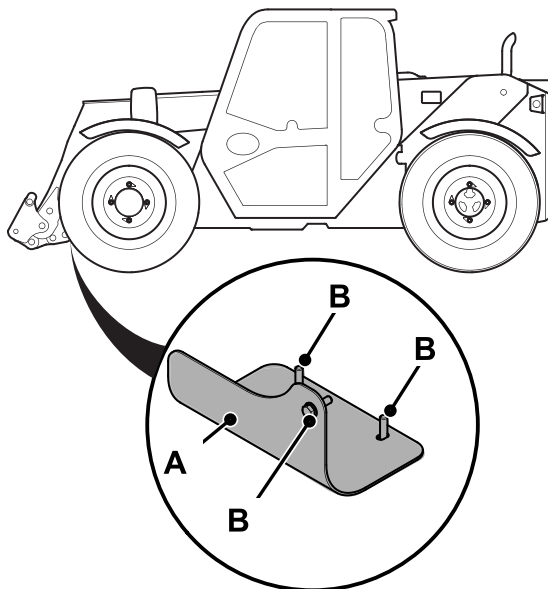


Fig 18.

C094960

Centre Undershield

Removal

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 Make the machine safe with the boom lowered. Refer to **Prepare the Machine for Maintenance**.
- 2 Working below the machine, support the undershield **A** and remove the bolts **B**. Lower the undershield to the ground.

Replacement

Replacement is the opposite of the removal procedure.

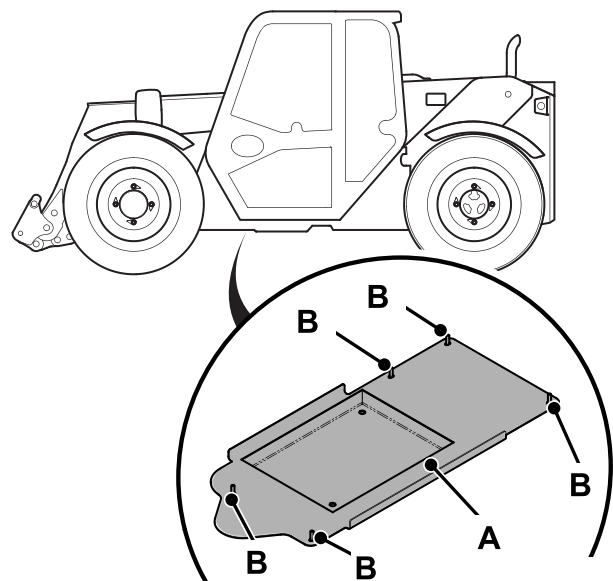


Fig 19.

C094960-C1

Rear Undershield

Removal

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 Make the machine safe with the boom lowered. Refer to ***Prepare the Machine for Maintenance***.
- 2 Working below the rear of the machine, support the undershield **A** and remove the bolts **B**. Lower the undershield to the ground.

Replacement

Replacement is the opposite of the removal procedure.

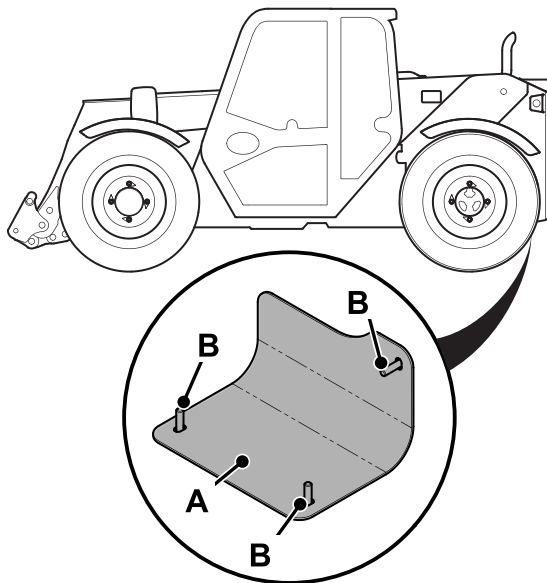


Fig 20.

C094960-C2

Cab Undershield

Removal

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 Make the machine safe with the boom lowered. Refer to ***Prepare the Machine for Maintenance***.
- 2 Working below the rear of the machine, support the undershield **A** and remove the bolts **B**. Lower the undershield to the ground.

Replacement

Replacement is the opposite of the removal procedure.

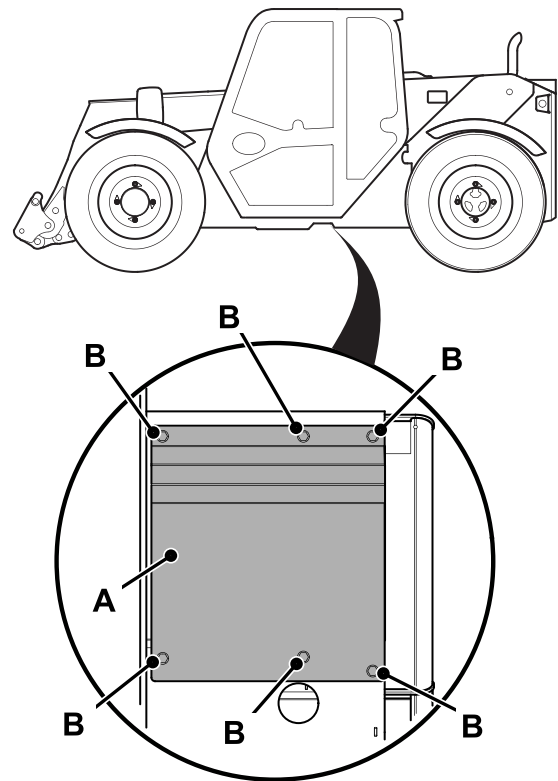


Fig 21.

C094960-C3

Cab Heater and Air Conditioning

Changing the Air Intake Filter

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

WARNING

Boom Maintenance Strut

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

5-1-5-7_2

CAUTION

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

2-3-3-6

- 1 Make the machine safe with the boom lifted. Refer to **Prepare the Machine for Maintenance**.
- 2 Remove screw **A** and cover **B** to get access to the filter.
- 3 Remove the filter.

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 **C** before fitting screw **A**.

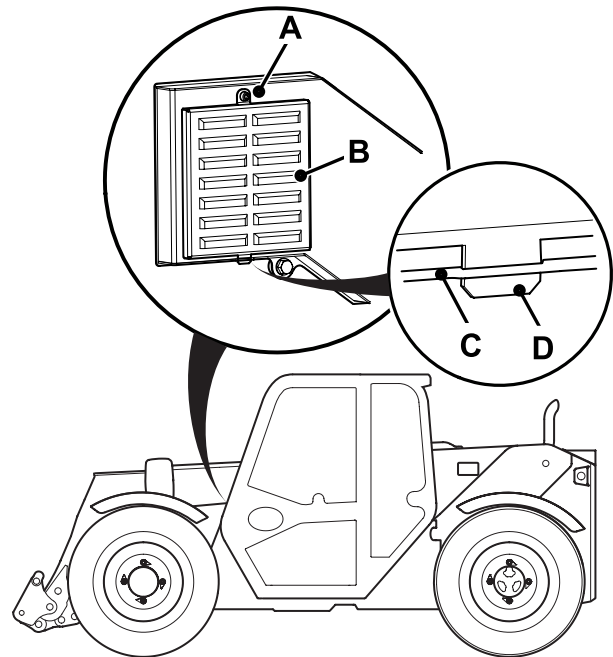


Fig 22.

C093700-C1

Brakes

Park Brake

Introduction

WARNING

T3-071

Do not use a machine with a faulty park brake.

3-2-3-10_2

WARNING

Non approved modifications to drive ratios, machine weight or wheel and tyre sizes may adversely affect the performance of the park brake.

3-2-3-11

Make sure that you obey all health and safety precautions before you test or adjust the park brake.

If you have any queries concerning the park brake test or adjustment procedures, consult your local JCB distributor.

Testing the Park Brake

WARNING

Before testing the park brake make sure the area around the machine is clear of people.

2-2-4-5



A339340

- The park brake must be fully engaged when the lever is vertical.
- The park brake warning light must come on when the park brake is engaged and forward or reverse is selected (starter switch at I).

- 1 Enter the machine. Fasten your seat belt (if fitted) and park the machine on a level dry surface.
- 2 Fully apply park brake.
- 3 Start the engine and raise the attachments to the appropriate travel position.
- 4 Select Hare Mode.
- 5 Push down hard on foot brake pedal.
- 6 Select forward drive. The park brake warning light must illuminate.

WARNING

If the machine starts to move during the following test, immediately apply the foot brake and reduce the engine speed.

2-2-5-1

- 7 Test the park brake as follows:
 - a Move the park brake lever fractionally forward until the park brake warning light is just extinguished.
 - b Slowly release the foot brake pedal.
 - c If the machine has not moved, use the accelerator to gradually increase the engine speed to approximately 1700 RPM. The machine should not move.

Note: Do not do this test for longer than 20 seconds.

- d Reduce engine speed to idle and select neutral.
 - e Return the park brake lever to the fully on position.
 - f Lower attachments and stop the engine.
- 8 If the machine moved during the test, adjust the park brake and repeat the test. Refer to **Park Brake Adjustment**.

Park Brake Adjustment

WARNING

Over adjustment of the park brake could result in the park brake not fully releasing.

0011

- 1 Disengage the park brake (lever horizontal).

Failure to disengage the park brake fully will result in excessive wear of the park brake mechanism.
- 2 Pull and turn handle grip **A** clockwise, half a turn.
- 3 Test the park brake. Refer to **Testing the Park Brake**.
- 4 If the brake fails the test, repeat steps 1, 2 and 3.

If there is no more adjustment and pin **B** is at the end of its travel get the brake checked by your JCB dealer.

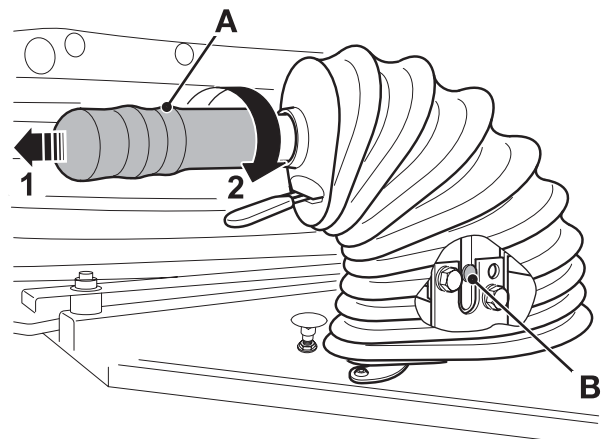


Fig 23.

A347580A-8

Foot Brake

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

- 1 Make the machine safe with the boom lowered. Refer to **Prepare the Machine for Maintenance**.
- 2 Open the cab door to get access to the brake fluid reservoir **A**.
- 3 The correct fluid level is marked on the reservoir. If necessary, add fluid as in Step 4.

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

- 4 Remove the reservoir cap **B**. 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.

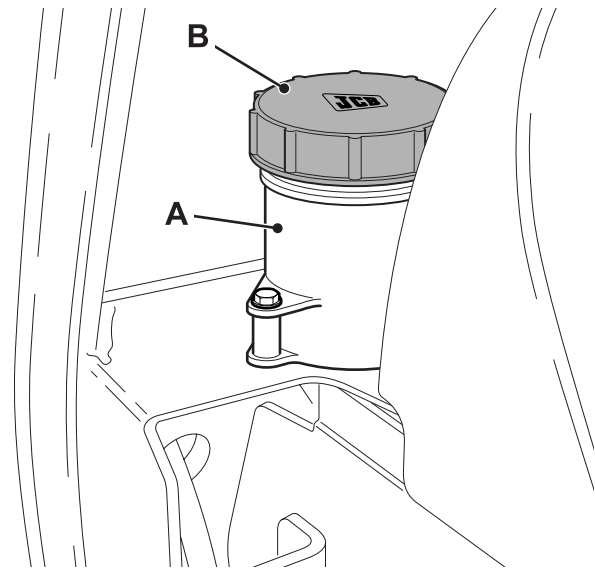


Fig 24.

T014630-1

Electrical System

Battery

Battery Disconnection/Connection

T3-019_3

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 Get access to the battery. See **Access Panels**.
- 2 Remove the leads. Disconnect the earth (-) terminal first.

Connection

- 1 Check the battery.
 - a If the terminal is dirty, clean the post.

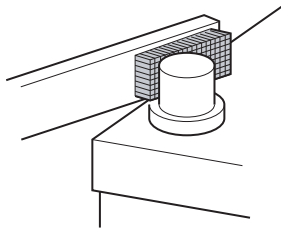


Fig 25.

- 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.

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 Make the machine safe. Refer to **Prepare the Machine for Maintenance**.
- 2 Disconnect the battery.
 - a Turn the battery isolator key **A** in a counter-clockwise direction and remove.
 - b Keep the key in a safe place and available for when the machine is next required.
- 3 To connect the battery insert the key **A** and turn in a clockwise direction.

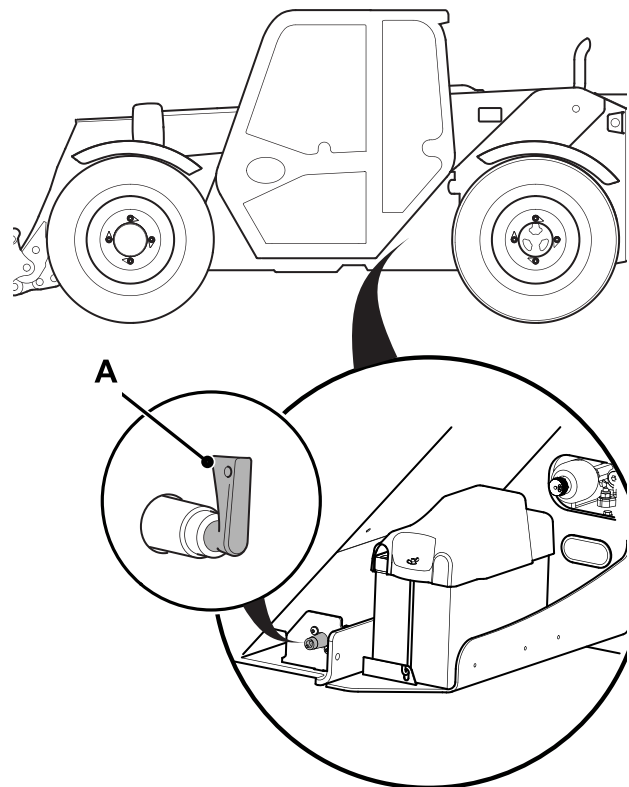


Fig 26.

C093690-C3

Jump Starting the Engine

T3-023

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.

Secondary Fuses

Introduction

CAUTION

Fuses

Always replace fuses with ones of correct ampere rating to avoid electrical system damage.

8-3-3-5

The electrical circuits are protected by fuses **A**. The fuses are located in a fuse box inside the door. They are separated into banks. Each fuse position in each bank is numbered. If a fuse ruptures, find out why and rectify the fault before fitting a new one.

Note: Additional fuse links are fitted in the battery compartment. [⇒ Primary Fuses \(3-1-53\)](#).

To get access to the fuses:

- 1 Make the machine safe with the boom lowered. Refer to **Prepare the Machine for Maintenance**.
- 2 Open the cab door.
- 3 Hold the cover **B** then remove the three screws **C**.
- 4 Remove the cover **B**.

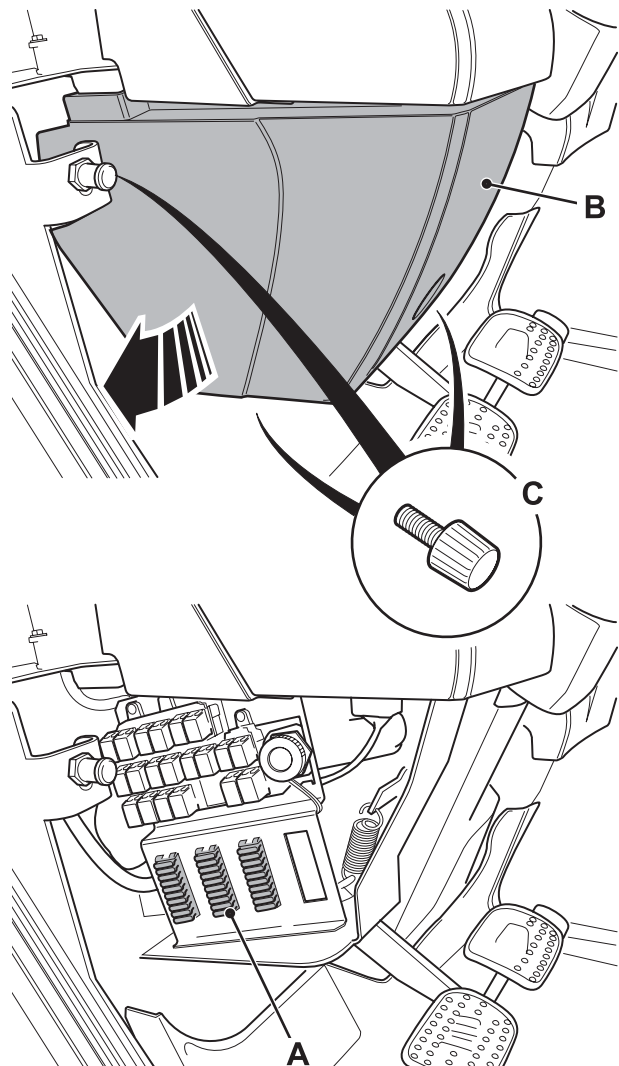


Fig 27.

T014660-1-C2

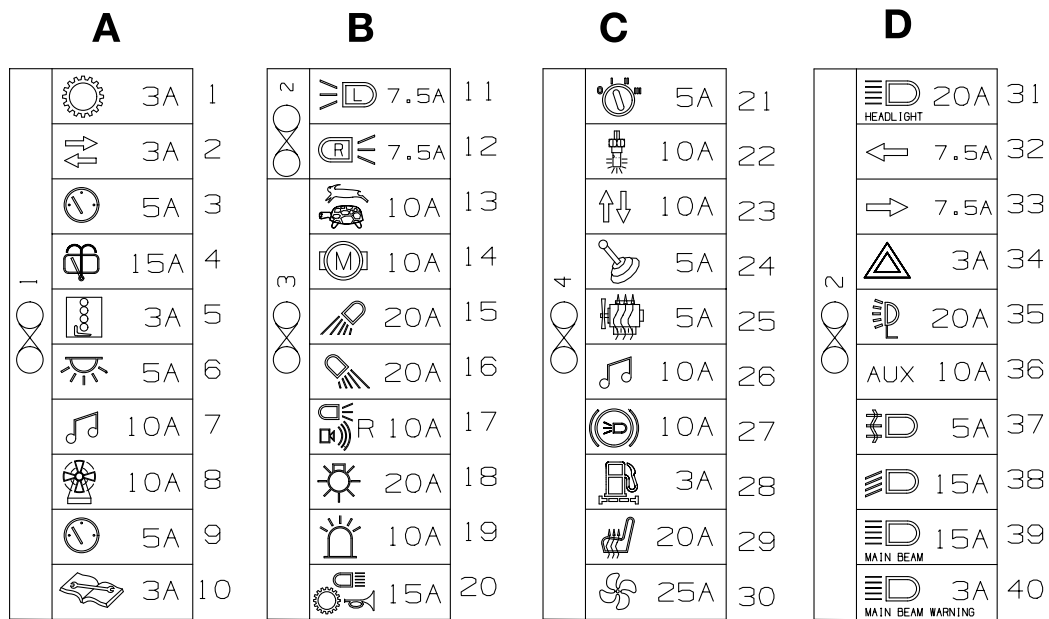


Fig 28.

817-h4910-1-sheet1F

Table 6.

Fuse No.	Circuit	Rating (Amps)
1	Transmission ECU	3
2	Direction Indicators	3
3	Instruments	5
4	Rear/Roof Wiper/Washer ⁽¹⁾	15
5	Load Moment Indicator (LMI)	3
6	Interior Light	5
7	Radio	10
8	Face Level Fan	10
9	Instruments	5
10	Diagnostic Socket	3
11	Left Hand Side Lights	7.5
12	Right Hand Side Lights	7.5
13	Speed Range Selection	10
14	Hand Throttle	10
15	Front Worklights	20
16	Rear Worklights	20
17	Reverse Alarm/Lights	10
18	Roadlights	20
19	Beacon ⁽¹⁾	10
20	Column Switches	15
21	Starter Relay	5
22	Cold Start	10
23	Auxiliary/Hitch Hydraulics	10
24	Single Lever Control	5

Fuse No.	Circuit	Rating (Amps)
25	Cold Start	5
26	Radio	10
27	Brake Lights	10
28	Water in Fuel Sensor	3
29	Heated Seat	20
30	Heater/Air Conditioning Fan	25
31	Main Lights	20
32	Left Hand Direction Indicator	7.5
33	Right Hand Direction Indicator	7.5
34	Hazard lights	3
35	Boom Worklight	20
36	Auxiliary 10 amp Outlet	10
37	Fog Lights	5
38	Dipped Headlights	15
39	Main Beam	15
40	Main Beam Warning light	3

(1) On machines built before August 2010 fuses 4 and 19 swap places.

Note: All the fuses are shown (including optional equipment fuses). Your machine may not be equipped with all the fuses shown.

Primary Fuses

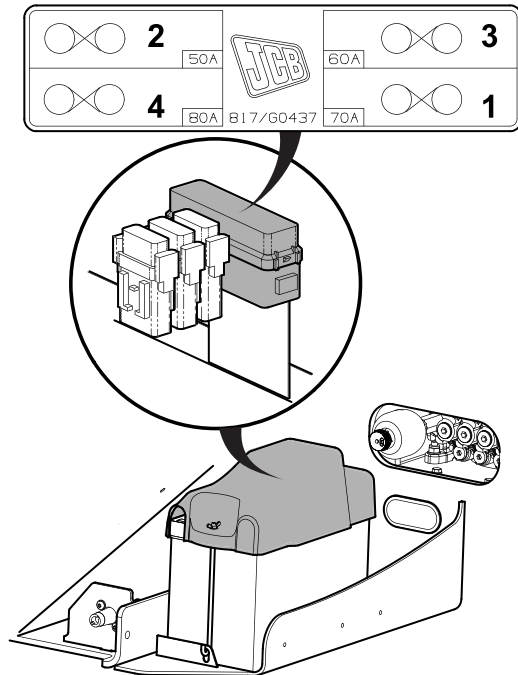


Fig 29.

C093690-C6

Each primary fuse protects the main supply to the secondary fuse boxes. → [Secondary Fuses \(3-1-51\)](#)

Additional fuses are installed next to the fuse link box. → [Additional Fuses \(3-1-54\)](#)

Table 7.

Primary Fuse Number:	Supplies Secondary Fuse Number:	Rating (Amps)
1	1	70
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	

Primary Fuse Number:	Supplies Secondary Fuse Number:	Rating (Amps)
2	11	50
	12	
	31	
	32	
	33	
	34	
	35	
	36	
	37	
	38	
3	39	60
	40	
	13	
	14	
	15	
	16	
	17	
	18	
	19	
	20	
4	21	80
	22	
	23	
	24	
	25	
	26	
	27	
	28	
	29	
	30	

Additional Fuses

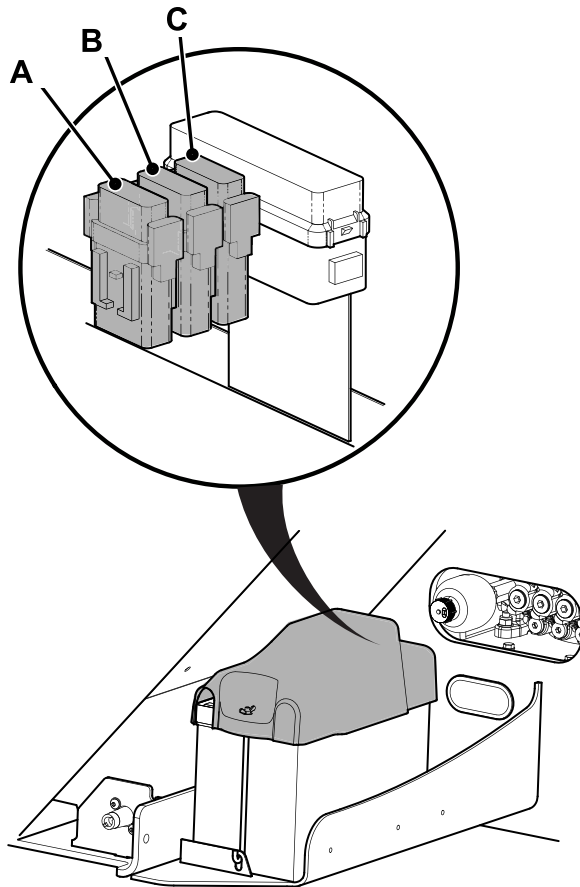


Fig 30.

C093690-C5

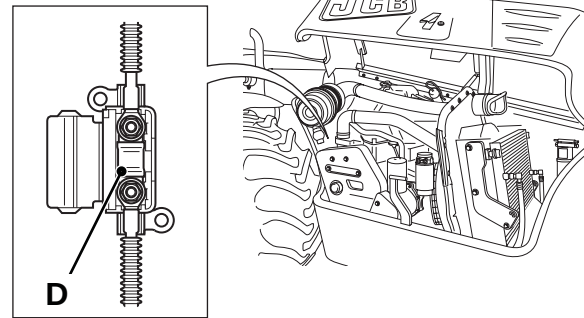


Fig 31.

C024910-C4

Table 8.

Fuse	Circuit	Rating (Amps)
A	Auxiliary Socket	15
B	Transmission ECU	10
C	Hydraulic ECU	10
D	Cold start grid heater ⁽¹⁾	150

- (1) The fuse is located to the left hand side of the engine. Remove two nuts to release the fuse.

Relays

Introduction

The relays **A** are located in a fuse box inside the door. They are separated into banks. Each relay position in each bank is numbered.

To get access to the relays:

- 1 Make the machine safe with the boom lowered. Refer to ***Prepare the Machine for Maintenance.***
- 2 Open the cab door.
- 3 Hold the cover **B** then remove the three screws **C**.
- 4 Remove the cover **B**.

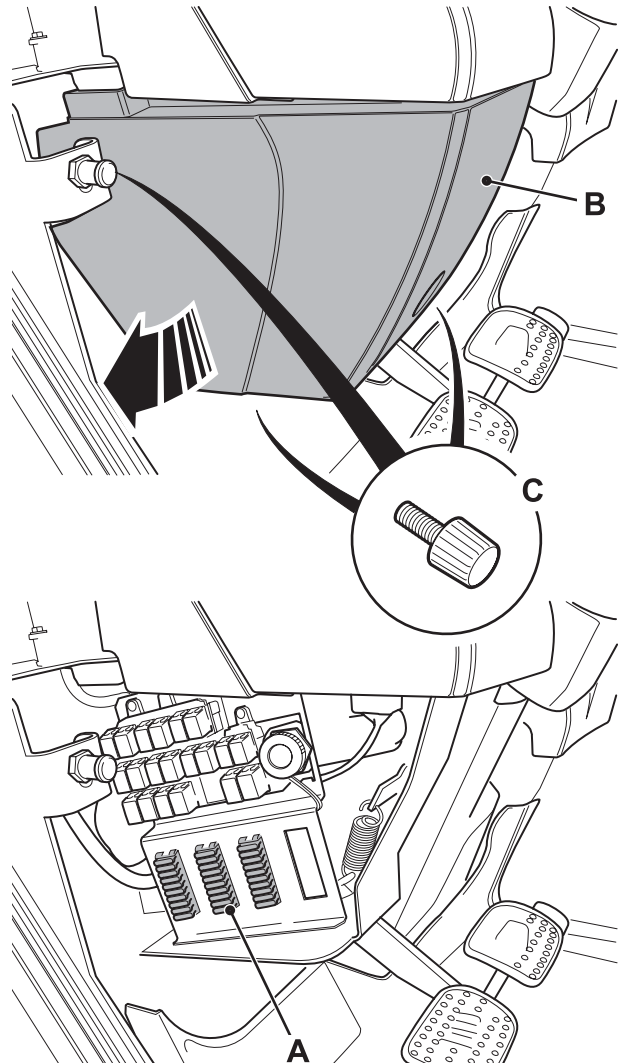


Fig 32.

T014660-1-C2

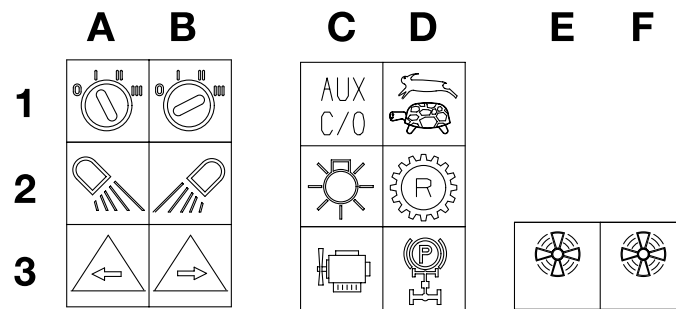


Fig 33.

817-h4910-1-sheet1R

Table 9.

Relay No.	Circuit
A1	Ignition
A2	Rear Worklights
A3	Direction Indicators
B1	Neutral Start
B2	Front Worklights
B3	Direction Indicators
C1	Auxiliary Change over
C2	Road Lights
C3	Engine Running
D1	Speed Range Selection
D2	Reverse
D3	Brake Lights
E1	Air Conditioning Condenser Fan 2
F1	Air Conditioning Condenser Fan 1

Engine

Oil and Filter

Checking the Oil Level

- 1 Get access to the engine. Refer to **Access Panels, Engine Cover**.
- 2 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

- 3 If necessary, add the recommended oil through filler **B** to the maximum level.
- 4 Fit filler cap and dipstick, make sure that they are fully inserted and tightened.

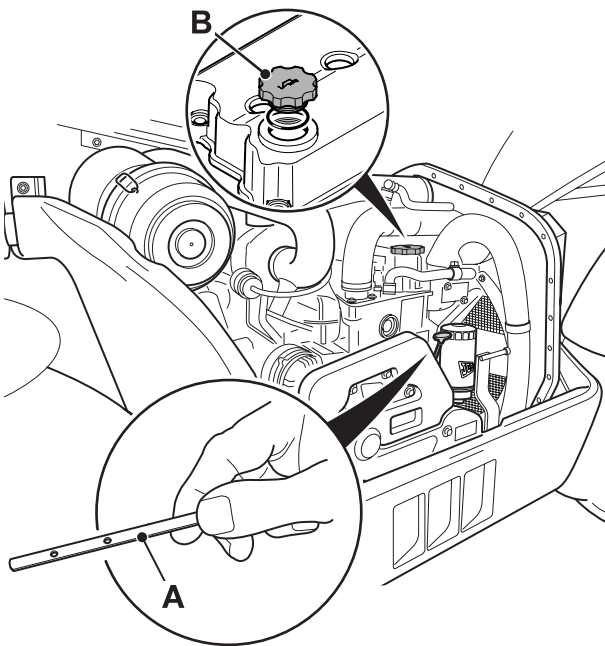


Fig 34.

803062-2

Changing the Oil and Filter

T3-030_2

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

- 1 Get access to the engine. Refer to **Access Panels, Engine Cover**.
- 2 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

- 3 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.

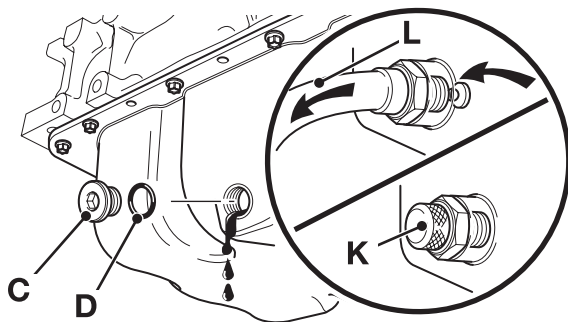


Fig 35.

C012110-1

- 4 Place a container of suitable size under drain plug E to catch the oil. [⇒ Fig 36. \(□ 3-1-58\)](#).

- 5 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).
- 6 Unscrew the filter canister F, use a chain wrench if necessary.
- 7 Clean the seal face of the filter head G.
- 8 Smear the seal H on the new filter canister F with clean engine oil.
- 9 Screw the filter on until it just contacts the filter head.
- 10 Turn the filter at least a further 3/4 of a turn.
- 11 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**. Wipe off any spilt oil, refit the filler cap and make sure it is secure.
- 12 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.

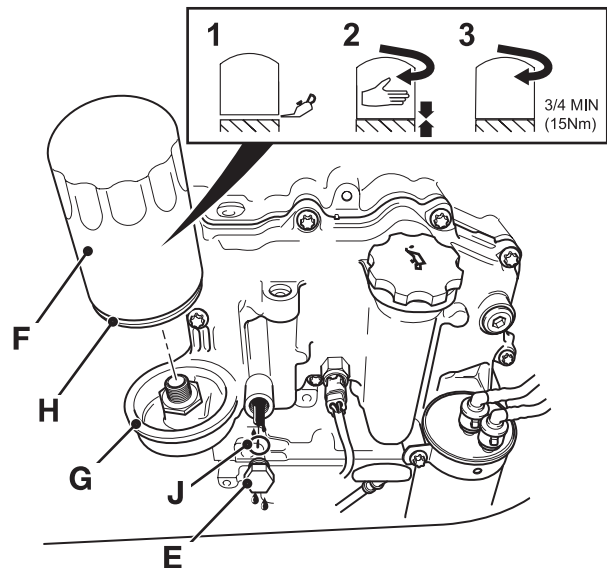


Fig 36.

C012110-5

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

- 1 Get access to the engine. Refer to **Access Panels, Engine Cover**.
- 2 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 3 to 4.

- 3 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.

Note: To prevent air becoming trapped in the cooling system, do not exceed the maximum fill-rate shown. Refer to **Fluids, Lubricants and Capacities**.

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

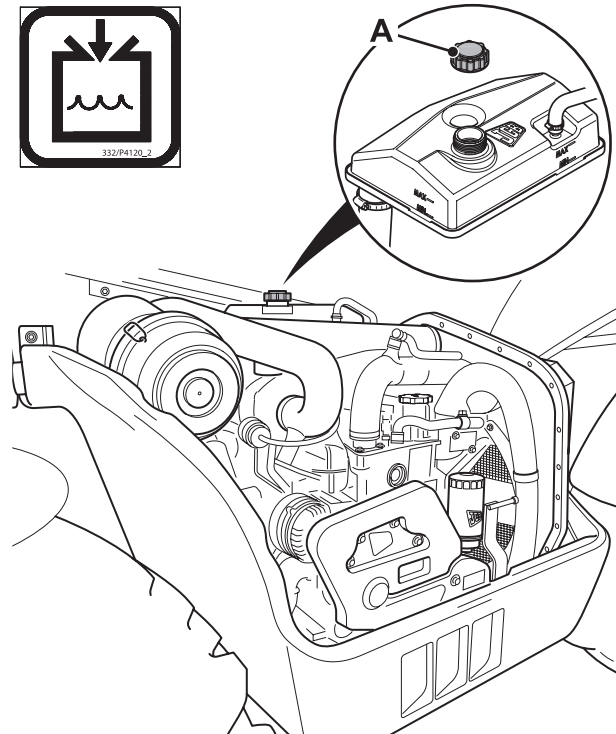


Fig 37.

803342-4

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

- 1 Get access to the engine. Refer to **Access Panels, Engine Cover**.
- 2 Carefully loosen cap **A** on the coolant reservoir. Let any pressure escape before removing the cap.
- 3 Place a container of suitable size beneath the radiator.
- 4 Disconnect the bottom hose from the radiator.
- 5 Flush the system using clean water. After flushing, reconnect the bottom hose to the radiator.
- 6 Use the recommended mix of clean, soft water and antifreeze. Fill to the **MIN** level on coolant reservoir.

Note: To prevent air becoming trapped in the cooling system, do not exceed the maximum fill-rate shown. Refer to **Fluids, Lubricants and Capacities**.

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

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

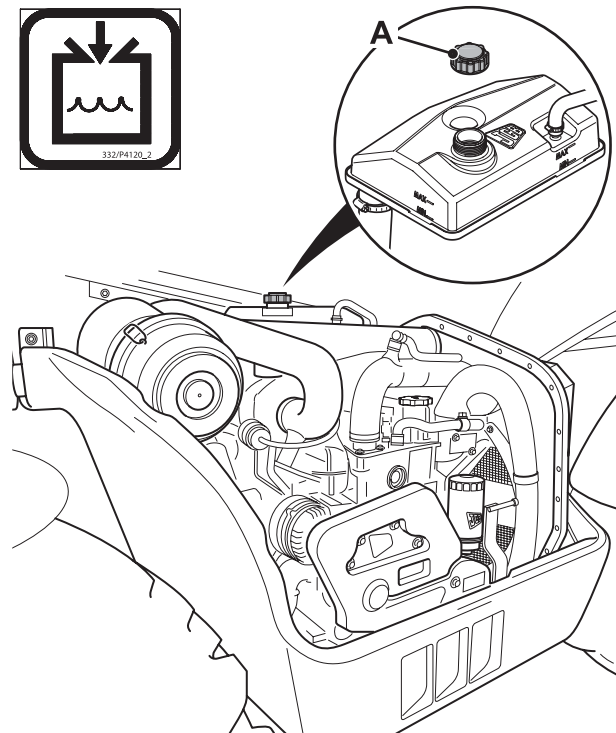


Fig 38.

803342-4

Front End Accessory Drive Belt

Introduction

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 Open the engine cover. Refer to **Access Panels, Engine Cover**.
- 2 Remove the drive belt guard G. [⇒ Fig 39. \(3-1-61\)](#).

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

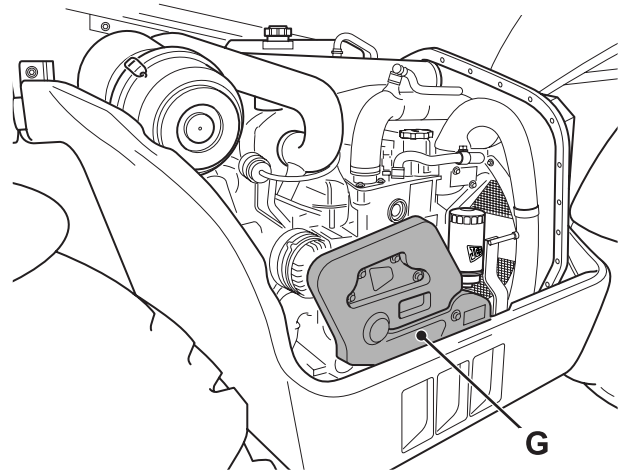


Fig 39.

803062-1

Inspecting the Drive Belt

T3-029

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

- 1 Get access to the drive belt. Refer to **Front End Accessory Drive Belt, Introduction**.
- 2 Inspect the belt for cracks **A**, fraying **B** or missing pieces **C**. [⇒ Fig 40. \(□ 3-1-62\)](#).

Fit a new belt as required. Refer to **Changing the Drive Belt**.

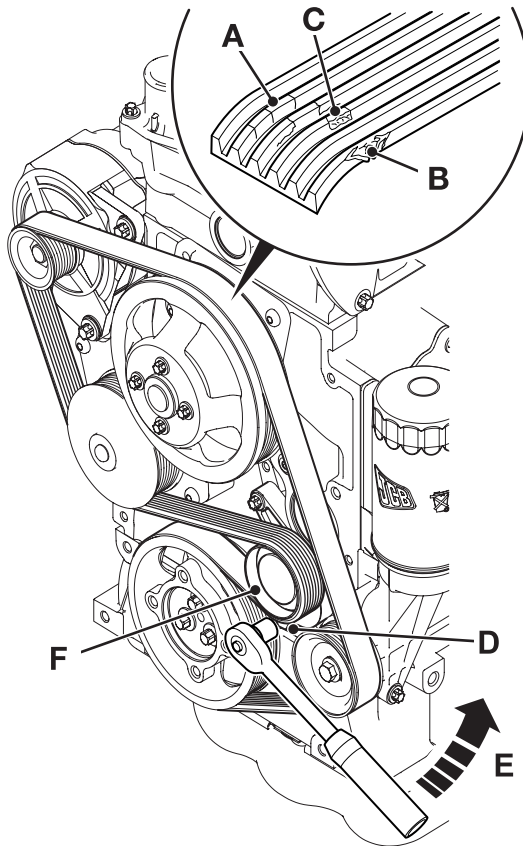


Fig 40.

763440-2

Changing the Drive Belt

- 1 Get access to the drive belt. Refer to **Front End Accessory Drive Belt, Introduction**.
- 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 40. \(□ 3-1-62\)](#).
- 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**.

Air Filter

Cleaning the Air Filter Dust Valve

T3-034

Important: Do not run the engine with the dust valve **K** removed. → Fig 41. (□ 3-1-63).

- 1 Check the dust valve **K** is not blocked.
- 2 Inspect the rubber flaps for cuts and nicks and check that the rubber is not perished. Renew if necessary.

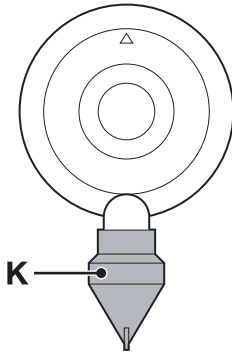


Fig 41.

332260-1

Changing the Elements

T3-035_3

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. → Fig 42. (□ 3-1-64).

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 Get access to the engine. Refer to **Access Panels, Engine**.
- 2 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.

- 3 Clean the inside of cover **B** and canister **G**.
- 4 Carefully insert the new inner element **E** into the canister. Make sure it seats correctly. check seal **H** is fully seated.
- 5 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**.
- 6 Make sure that the wire is connected to the Air Filter Blocked switch **L**.
- 7 Remove and check hoses **M** for damage. Clean hose bores and then replace.

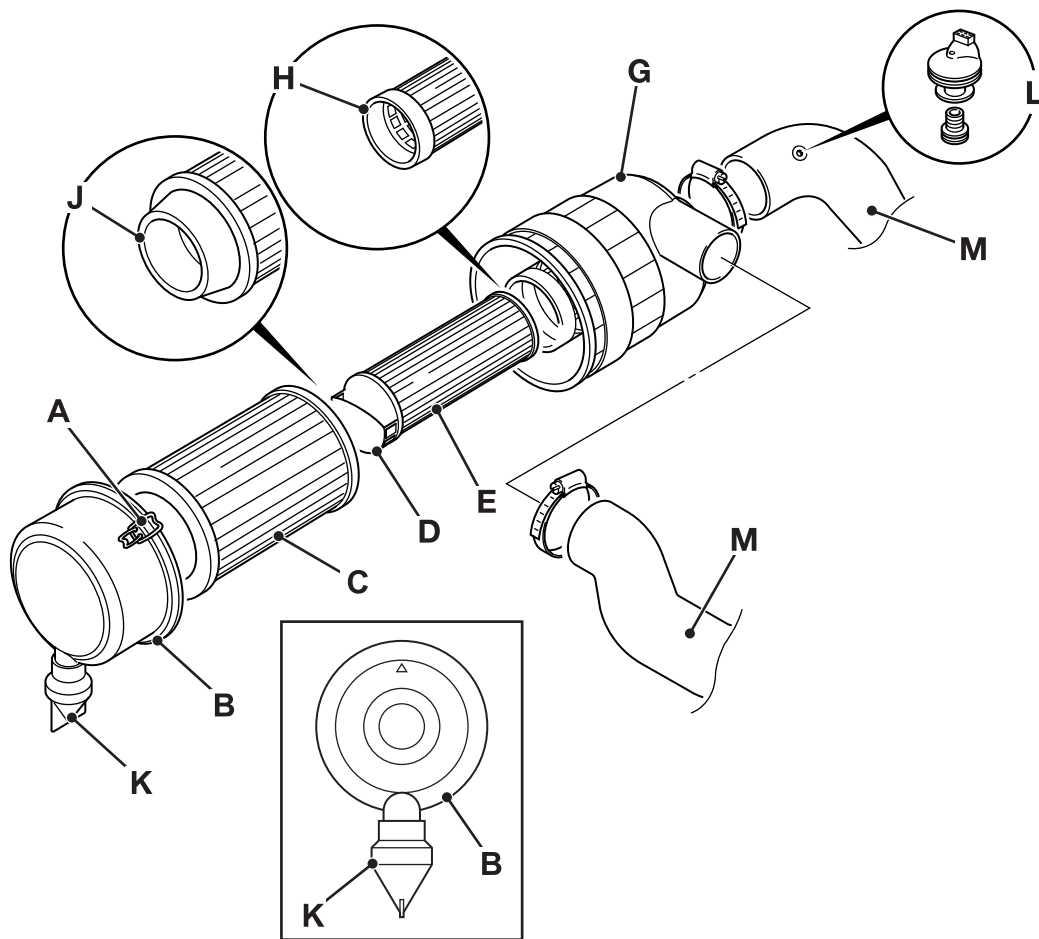


Fig 42.

760090-3

Fuel System

Introduction

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

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

CAUTION

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

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

INT-3-3-12

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

Water Separator and Engine Fuel Filter

Introduction

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

- 1 Open the engine cover. Refer to **Access Panels, Engine Cover**.

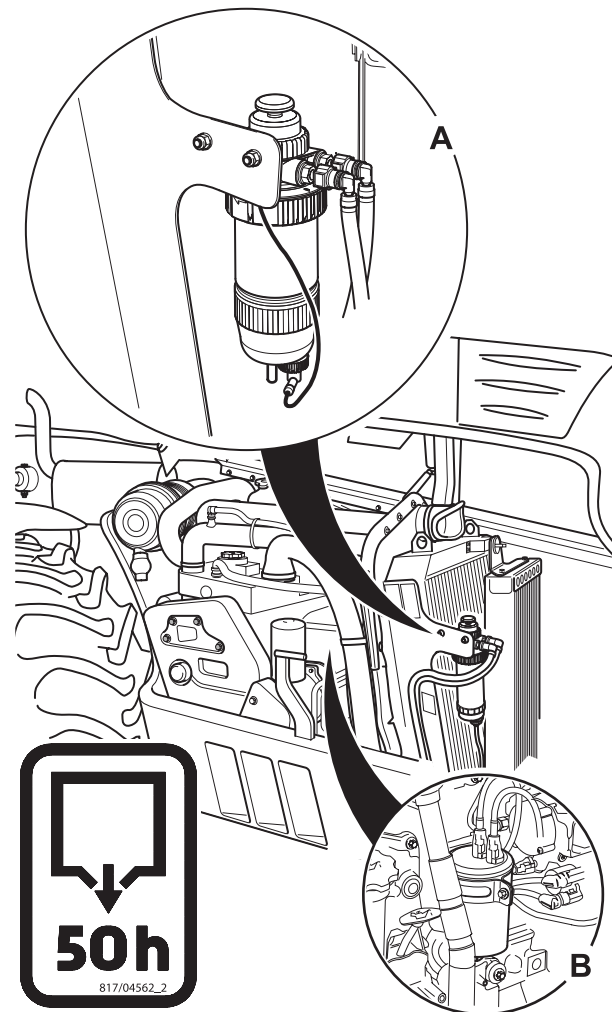


Fig 43.

803061-14

Draining the Water Separator and Engine Fuel Filter

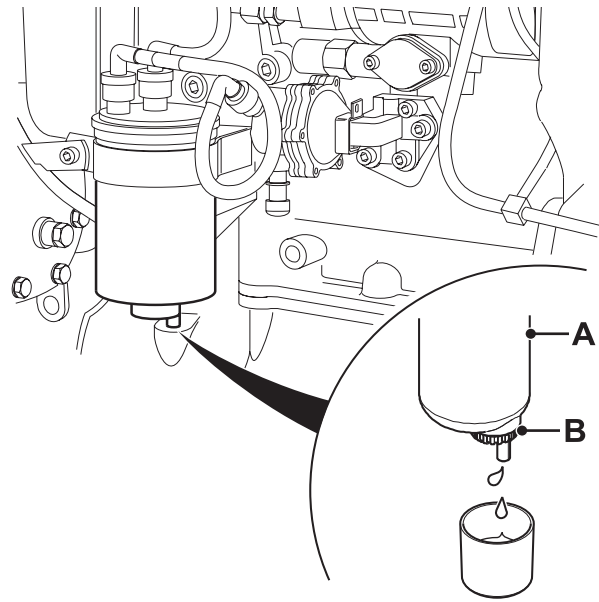
T3-075

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

- 1 Get access to the Water Separator and Engine Fuel Filter. Refer to **Water Separator and Engine Fuel Filter, Introduction**.
- 2 Drain off any water in the element **A** by turning tap **B**.
- 3 Drain off any water in the water separator bowl **C** by turning tap **D**. Do not disconnect the electrical connector **E** (if fitted).
- 4 If there is sediment in the bowl after draining, support the bowl and release the locking ring **F**.
- 5 Wash the bowl in clean fuel.
- 6 Refit the bowl, secure in position with locking ring **F**.

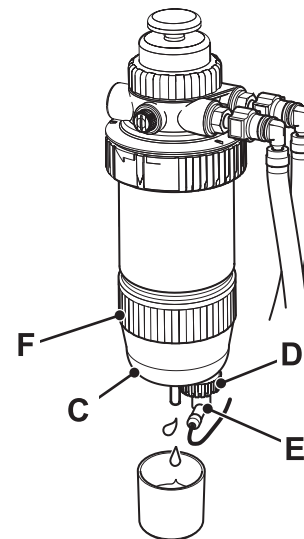
Important: Ensure the seal is seated correctly before refitting the bowl. Refer to **Changing the Water Separator Pre-Filter**.

- 7 Make sure that the electrical connector **E** is correctly fitted.



C040110-1

Fig 44.



C048590-1

Fig 45.

Changing the Water Separator Pre-Filter

T3-076

- 1 Get access to the Water Separator. Refer to **Water Separator and Engine Fuel Filter, Introduction**.
- 2 Drain and remove the water separator bowl **C**. Refer to **Draining the Water Separator and Engine Fuel Filter**.
- 3 To remove the filter element **A**, release locking ring **B** and discard element.
- 4 Fit new element and secure in position with locking ring **B**.
- 5 Refit the bowl, secure in position with locking ring **B**.

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

- 6 Make sure that the electrical connector **E** is correctly fitted.

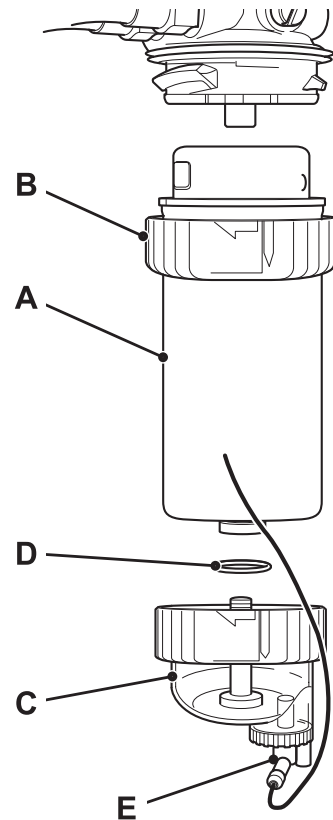


Fig 46.

C007030-5

Cleaning Water Separator Pump (if fitted)

T3-077

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 Get access to the Water Separator. Refer to **Water Separator and Engine Fuel Filter, Introduction**.
- 2 Thoroughly clean the outside of the filter housing and around the filter head.
- 3 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.
- 4 Carefully remove the pump assembly, take care not to lose spring **B**.
- 5 Pull out diaphragm **C** and clean as required using clean fuel.
- 6 Remove any debris in the water sedimenter and inlet connectors as required.
- 7 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**.
- 8 Secure assembly in position, taking care not to cross thread locking ring **A**, tighten to finger tight.
- 9 With strap wrench, tighten locking ring **A** a further 1/4 of a turn.
- 10 Bleed the system and check for leaks. Refer to **Bleeding the System**.

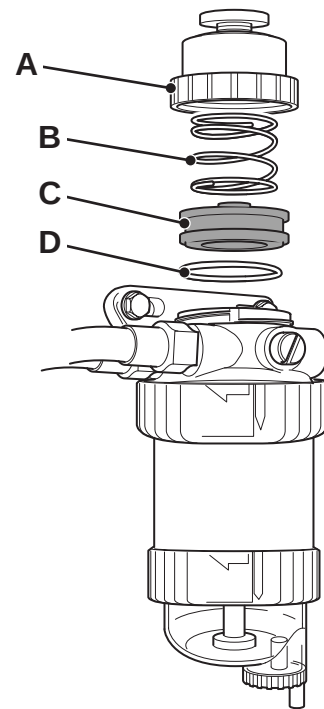


Fig 47.

812300

Changing the Engine Fuel Filter Element

Mechanical Fuel Injection System

T3-078

- 1 Get access to the Engine Fuel Filter. Refer to **Water Separator and Engine Fuel Filter, Introduction**.
- 2 Thoroughly clean the outside of the filter housing and around the filter head.
- 3 Loosen the drain tap **A** and allow the fuel to drain into a suitable container.
- 4 Mark the pipes prior to removal to ensure they are refitted in the correct position. Press fuel coupling release button **B** and disconnect fuel lines **C** and **D**.
- 5 Release the filter strap retaining screw **E** and lift the filter clear.
- 6 Install new filter element **F**. Make sure that the black dot **G** is aligned with the locating hole **H** in the strap. Torque tighten the filter strap retaining screw **E** to 24 Nm (17.7 lbf ft).
- 7 Reconnect the fuel lines **C** and **D**.
- 8 Bleed the fuel system. Refer to **Bleeding the System**.

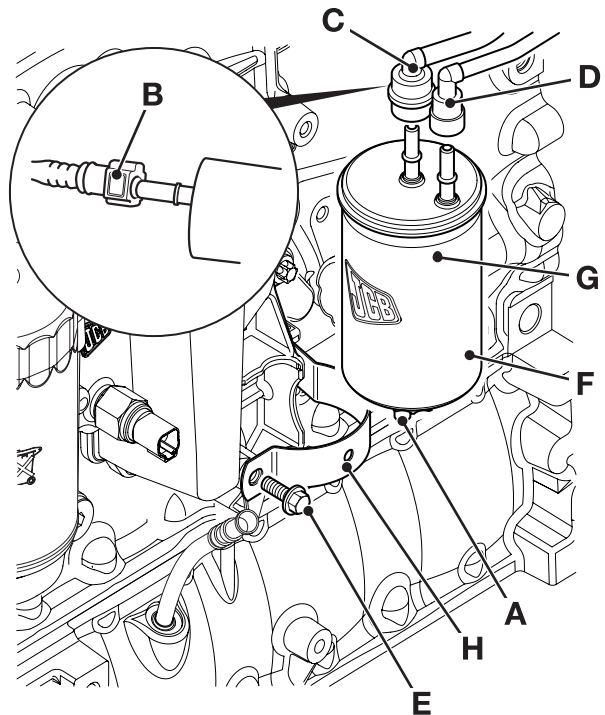


Fig 48.

C007090

Bleeding the System

Mechanical Fuel Injection System

T3-079

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

- 1 Disconnect the fuel line **B** at the injection pump.
- 2 Operate the fuel lift pump priming button **C** until air free fuel exits from the fuel line.
- 3 Reconnect fuel line **B**.
- 4 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.

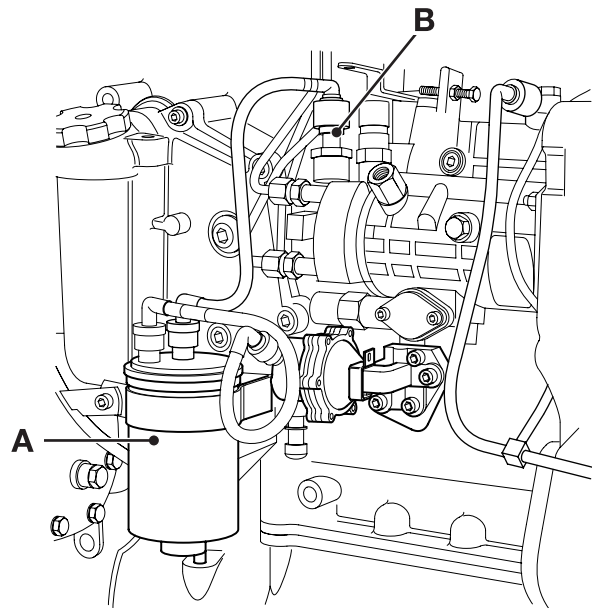


Fig 49.

763991-2

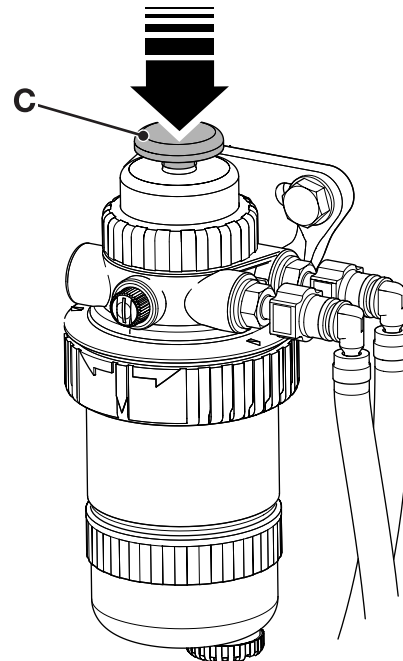


Fig 50.

763990-2

Hydraulic System

Introduction

WARNING

The temperature of the hydraulic oil will be high soon after stopping the engine. Wait until it cools (less than 40°C) before beginning maintenance.

8-3-4-10

WARNING

Fluid Under Pressure

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

INT-3-1-10_3

WARNING

Hydraulic Pressure

Hydraulic fluid at system pressure can injure you. Before connecting or removing any hydraulic hose, residual hydraulic pressure trapped in the service hose line must be vented. Make sure the hose service line has been vented before connecting or removing hoses. Make sure the engine cannot be started while the hoses are open.

INT-3-1-11_2

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

CAUTION

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

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

INT-3-3-12

Releasing the Hydraulic Pressure

- 1 Make the machine safe with the boom lowered. Refer to **Prepare the Machine for Maintenance**.
- 2 Turn the starter key to the ON position.

Note: Make sure that the hydraulic isolation switches are not active.

- 3 Operate the controls to remove the hydraulic pressure from the service hose lines.

Important: To release the hydraulic pressure battery must be connected while you operate the controls.

- 4 Open the rear cover. Refer to **Access Panels, Rear Cover**.

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

- 5 Slowly remove filler cap **B** to allow the system to vent fully and prevent oil being forced out of the filler neck.

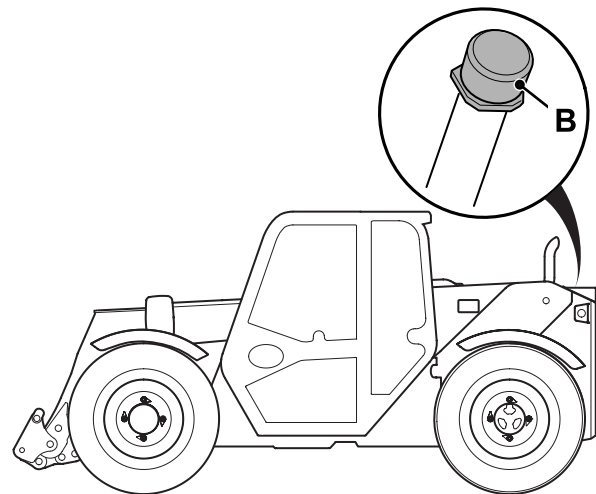


Fig 51.

C093710-C2

Oil and Filter

Checking the Oil Level

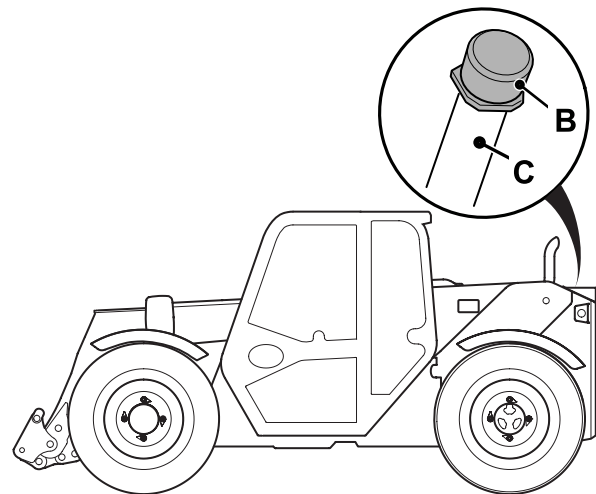
- 1 Make the machine safe with the boom lowered. Refer to *Prepare the Machine for Maintenance*.

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.

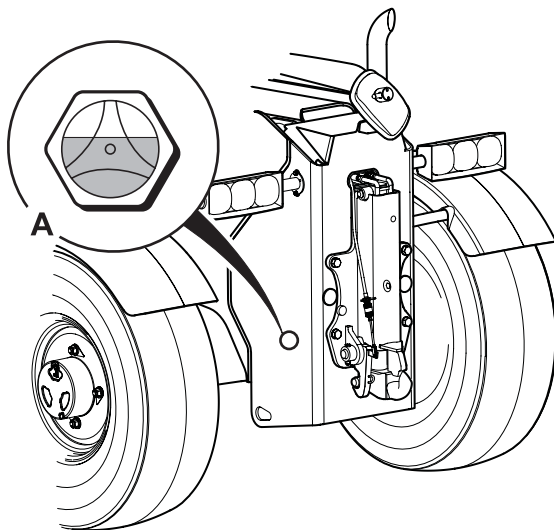
12-5-1-4

- 2 The fluid must be visible in the sight gauge A.
If the fluid is not visible, continue to step 3.
- 3 Vent the hydraulic system. Refer to *Releasing the Hydraulic Pressure*.
- 4 Add recommended fluid through the filler neck C.
- 5 Install the filler cap B.



C093710-C1

Fig 53.



C093630-C1

Fig 52.

Changing the Filter Element

- 1 Make the machine safe with the boom raised. Refer to **Prepare the Machine for Maintenance**.
- 2 Open the rear cover. Refer to **Access Panels, Rear Cover**.
- 3 Vent the hydraulic system. Refer to **Releasing the Hydraulic Pressure**.
- 4 Working at the rear of the boom, undo the filter assembly cover **A**.
- 5 Lift the handle attached to the top of the filter **B** and pull the filter straight upwards from its housing. Discard the old element.
- 6 Replace the "O" ring **C** on the cap, insert a new filter element into its tube and make sure it is fully inserted.

Note: The torque setting for the filter cap must not be exceeded.

- 7 Fold over the lifting handle and screw on the cover. Torque tighten the cap to 20 Nm (14.7 lbf ft).
- 8 Check the hydraulic fluid level and top up if necessary. → [Checking the Oil Level \(□ 3-1-73\)](#).
- 9 Close the rear cover. Refer to **Access Panels, Rear Cover**.

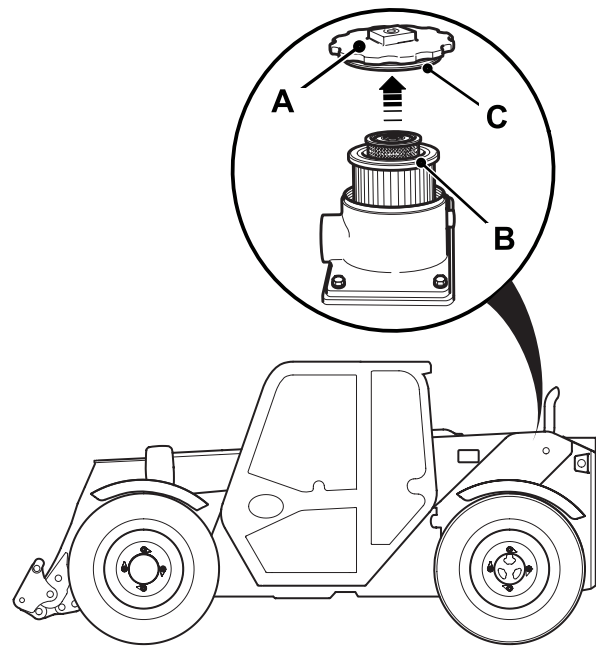


Fig 54.

C093710

Changing the Pilot Filter and Check Valve Mesh Filter

The control valve accumulator check valve contains a mesh filter which is not serviceable. Install a new check valve and filter.

Removal

- 1 Make the machine safe with the boom lowered. Refer to **Prepare the Machine for Maintenance**.
- 2 Vent the hydraulic system. Refer to **Releasing the Hydraulic Pressure**.
- 3 Remove the battery cover. [⇒ Battery Covers \(□ 3-1-35\)](#)
- 4 Remove the accumulator **D** and valve assembly **C** from the valve block outlet section **A**.

Discard the valve assembly **C**.

- 5 Remove and discard the filter **B**.

Replacement

Replacement is the opposite of the removal procedure.

During the replacement procedure do this work also:

- 1 Lubricate the parts with JCB Hydraulic Fluid before assembling.
- 2 Install a new filter **B**.
- 3 Install a new check valve assembly **C**.
- 4 Torque tighten the check valve. [⇒ Table 10. Torque Settings \(□ 3-1-75\)](#)

Table 10. Torque Settings

Item	Nm	kgf m	lbf ft
C	65	6.6	48

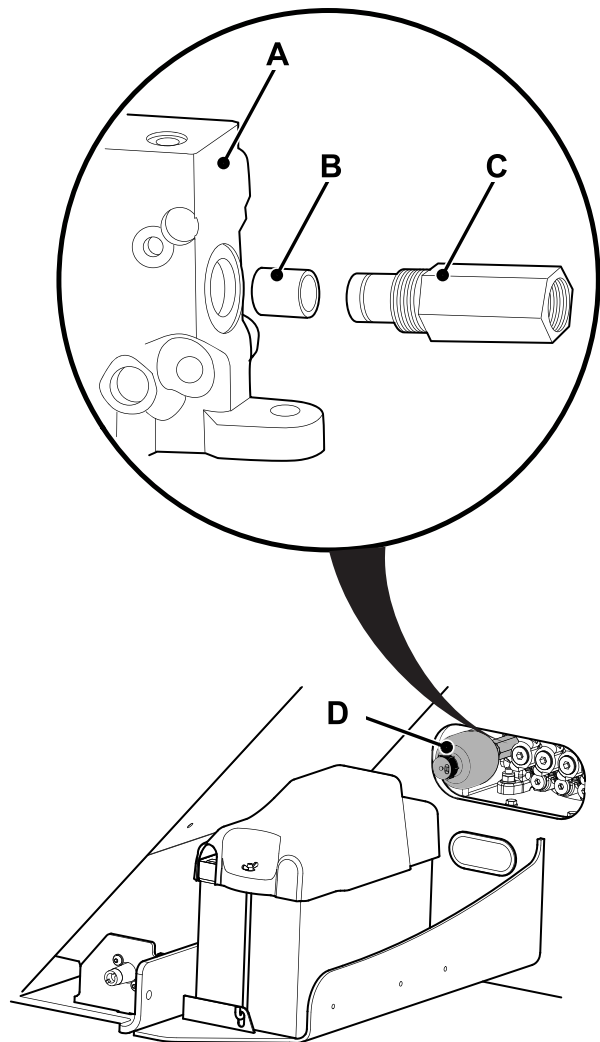


Fig 55.

C094500

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

- 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, turn the ignition switch to position I. Boom movement should slow as the engine slows and stop as the engine stops.

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 lower the boom. While the boom is moving, turn the ignition switch to position I. Boom

movement should slow as the engine slows and stop as the engine stops.

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 lower the boom. While the boom is moving, turn the ignition switch to position I. Boom movement should slow as the engine slows and stop as the engine stops.

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.

Transmission

Axles

Checking the Axle Oil Level

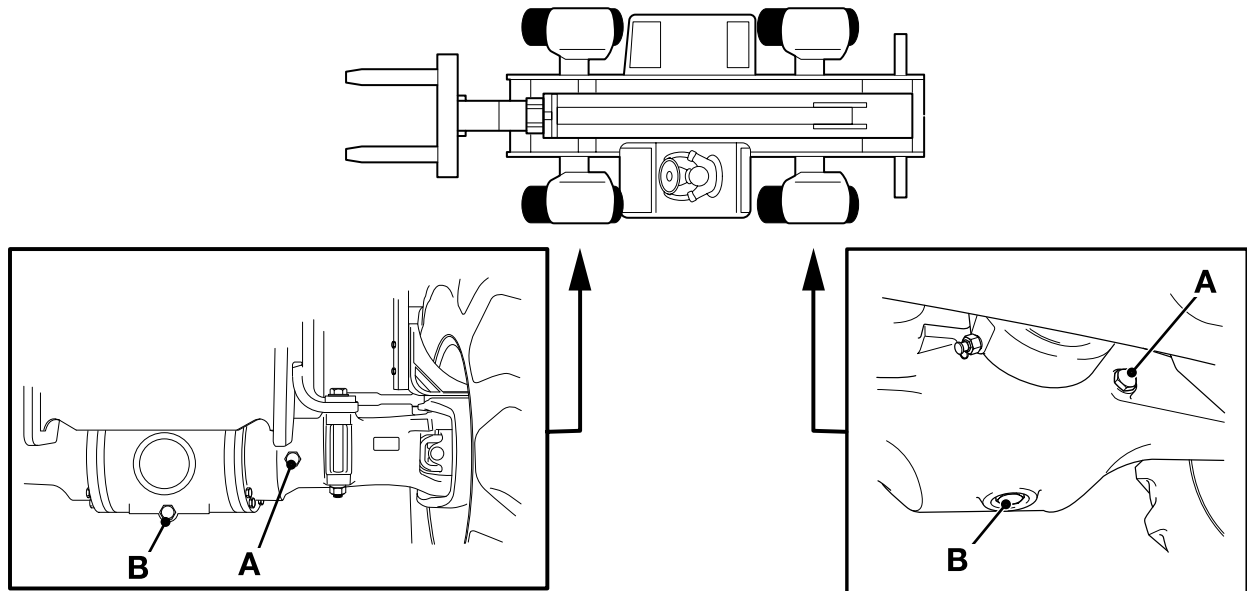


Fig 56.

795220-3-C1

CAUTION

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

16-3-5-3_2

CAUTION

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

2-3-4-7

- 1 Make the machine safe with the boom lowered. Refer to **Prepare the Machine for Maintenance**.
- 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.

- 3 Clean and refit the plug and its washer.

Changing the Axle Oil

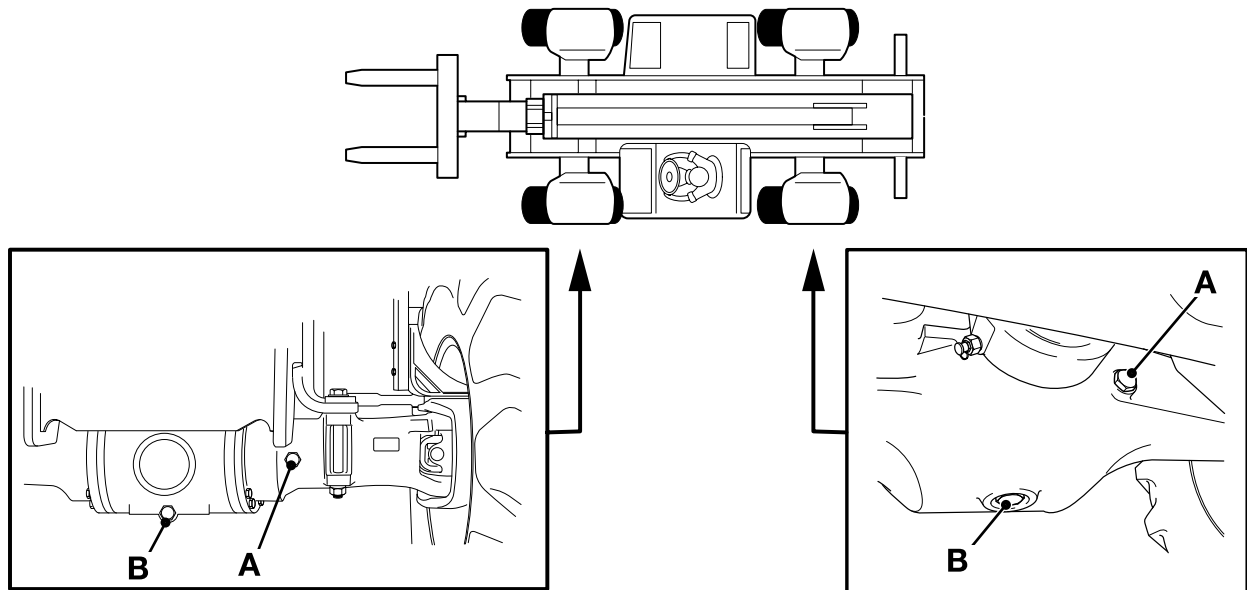


Fig 57.

795220-3-C1

- 1 Make the machine safe with the boom lowered. Refer to **Prepare the Machine for Maintenance**.
- 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.

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 **58-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.

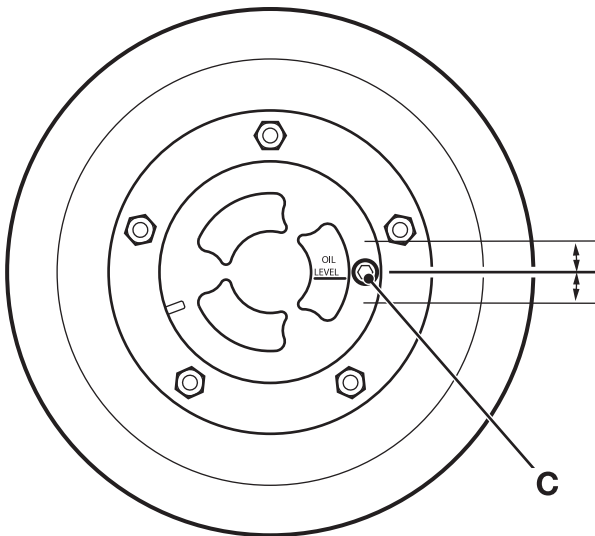


Fig 58.

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 **59-C** at the bottom.

- 2 Drain the oil:
 - a Place a container of suitable size beneath plug **59-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 **59-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 **59-C**. Oil should be level with the bottom of the fill/level hole.
 - b Clean and refit fill/level plugs **59-C**.

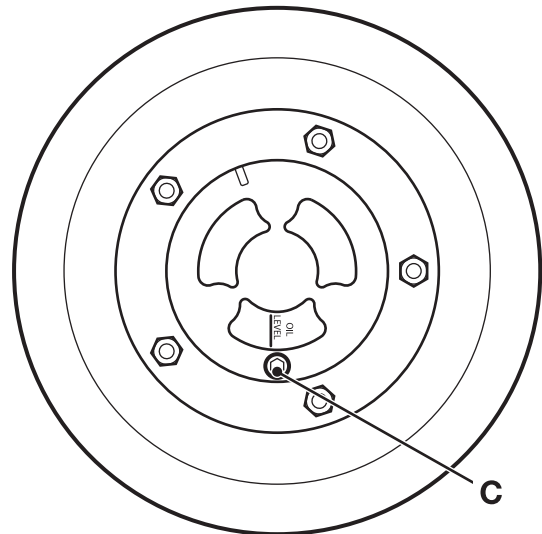


Fig 59.

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 Make the machine safe with the boom raised. Refer to ***Prepare the Machine for Maintenance.***
- 2 Remove the deck plate. [⇒ Deck Plate \(□ 3-1-38\)](#)
- 3 Make sure that the breather **A** is not damaged and that it is free from dirt.
- 4 Make sure that the hose **B** is not damaged - replace as necessary.
- 5 Replace the deck plate. [⇒ Deck Plate \(□ 3-1-38\)](#)

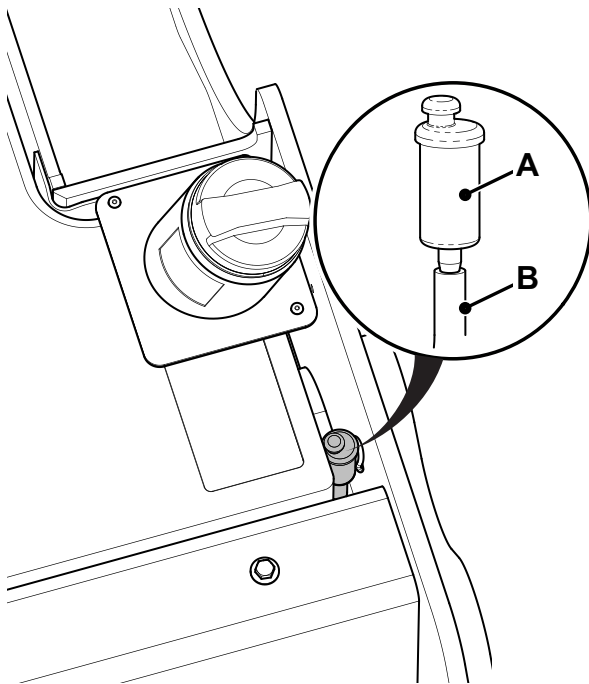


Fig 60.

C095730

Transmission Motor Gear Train

Checking the Gear Train Oil Level

CAUTION

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

16-3-5-3_2

- 1 Start then operate the engine at low idle for four minutes. The delay allows the oil to fill the pump, motor, oil cooler and hoses.
- 2 Switch OFF the engine and remove the starter key.
- 3 Remove the chassis undershield. Refer to **Access Panels, Undershields**.
- 4 Clean the area around 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.
- 5 Clean and install the plug and its washer.

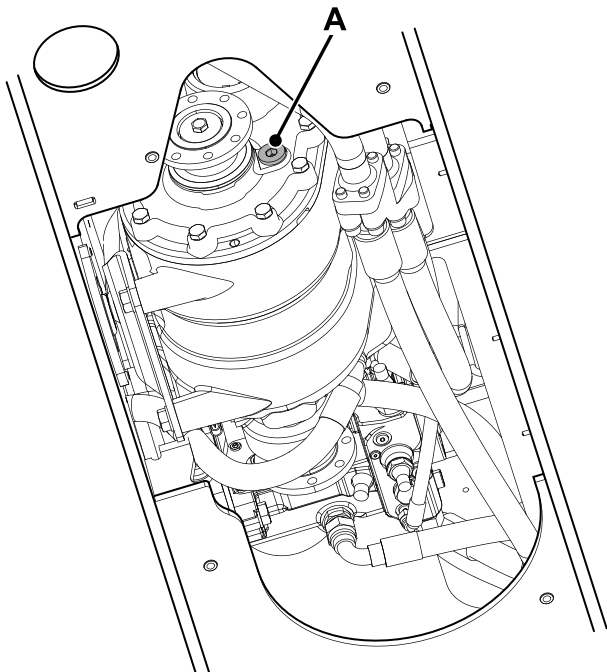


Fig 61.

C094900

Changing the Gear Train Oil

- 1 Make the machine safe with the boom lowered. Refer to **Prepare the Machine for Maintenance**.
- 2 Remove the chassis undershield. Refer to **Access Panels, Undershields**.
- 3 Place a container of suitable size beneath plug **B** to catch the oil.
- 4 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).
- 5 Install 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

- 6 Fill with recommended oil through level hole.
[⇒ Checking the Gear Train Oil Level \(3-1-81\)](#)

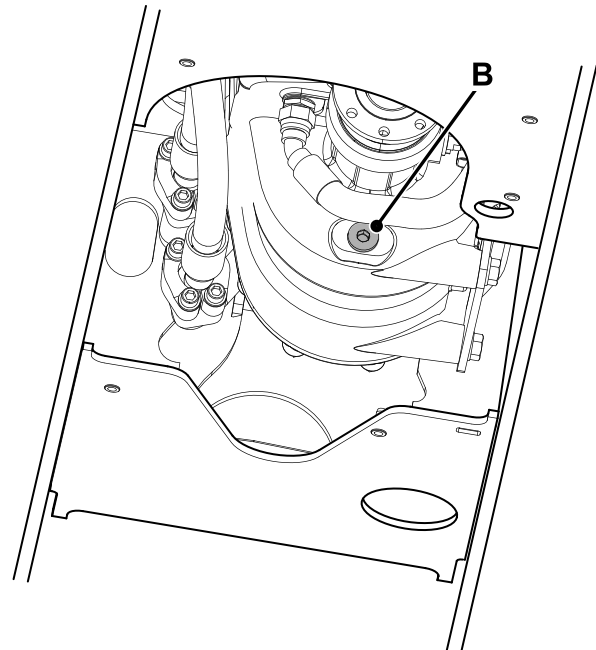


Fig 62.

C094910

Tyres and Wheels

Tyre Inflation

Introduction

WARNING

T3-066

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

Always try to maintain your tyre pressure to the recommended settings. Using your machine with under-inflated tyres means:

- Decreasing the machines stability
- Higher tyre temperatures
- Excessive strain of the tyre fabric
- More bulging of the sidewalls
- Shortens the tyres life.

Using the machine with over inflated tyres is dangerous:

- It causes excessive tensile loads in the fabric: this makes a tyre more susceptible to cuts and punctures.

Do not cut or weld on the rim of an inflated tyre.

After checking or amending the tyre pressure always replace and secure the valve cap.

Always deflate the tyre before removing foreign obstacles from the tread.

Procedure

T3-067_2

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.

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 63.](#) ([□ 3-1-82](#)).

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 **Specifications, Tyre Sizes and Pressures.**

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.

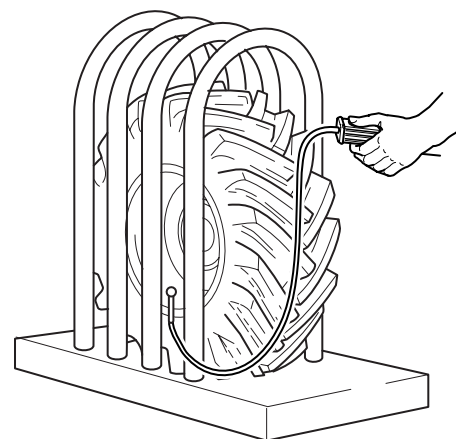


Fig 63.

A089570-1

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.

Tighten the wheel nuts (in a diagonal sequence) to the torque value shown.

Table 11. Torque Settings

Item	Nm	lbf ft
B	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 \(□ 3-1-83\)](#). Note the torque indicators orientation in relationship to wheel's direction of travel **X**.

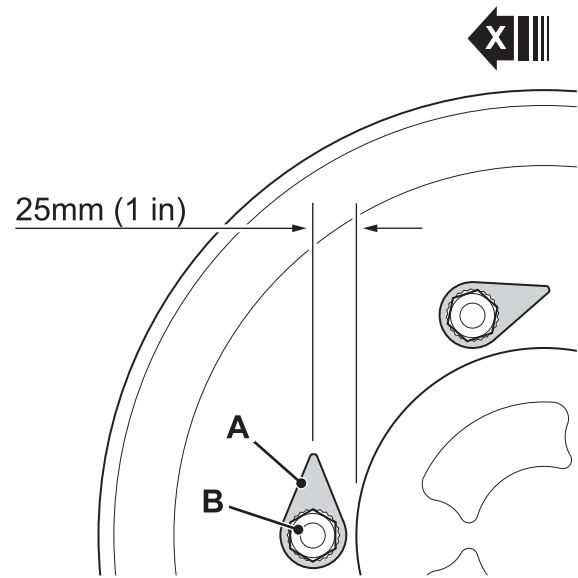


Fig 64.

805200-1-C1

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

Variations

This procedure is different for each machine variant. Make sure to select the applicable procedure for your machine.

⇒ [Permanent 4-Wheel Steer Machines \(□ 3-1-85\)](#)

⇒ [Non Indicated Manual Steer Mode Selector \(□ 3-1-86\)](#)

⇒ [Indicated Manual Steer Mode Selector \(□ 3-1-86\)](#)

⇒ [Electronic Steer Mode Selector \(□ 3-1-87\)](#)

Permanent 4-Wheel Steer Machines

- 1 Start the engine.
- 2 Turn the steering wheel to align the rear wheels with the chassis in a straight ahead position.

Note: A straight edge or steer alignment board will assist in the alignment.

- 3 Switch OFF the engine.
- 4 Move the setting lever **A** to the unlocked position **U**.
- 5 Start the engine and turn the front wheels until they are aligned with the chassis and the rear wheels. Switch OFF the engine.
- 6 Move the setting lever **A** to the lock position **L**.

DANGER

The steering setting lever must be in the FULLY LOCK position before driving the machine, failure to do so will result in a loss of steering. The setting lever must not be removed or modified.

5-2-6-6

- 7 Operate the steering from lock to lock.
- 8 Check the steering is aligned in the straight ahead position.

Note: A straight edge or steer alignment board will assist in the alignment.

- 9 If the steering is not aligned repeat steps 1 to 9.
- 10 If steering does not align inspect the steering linkage for wear.

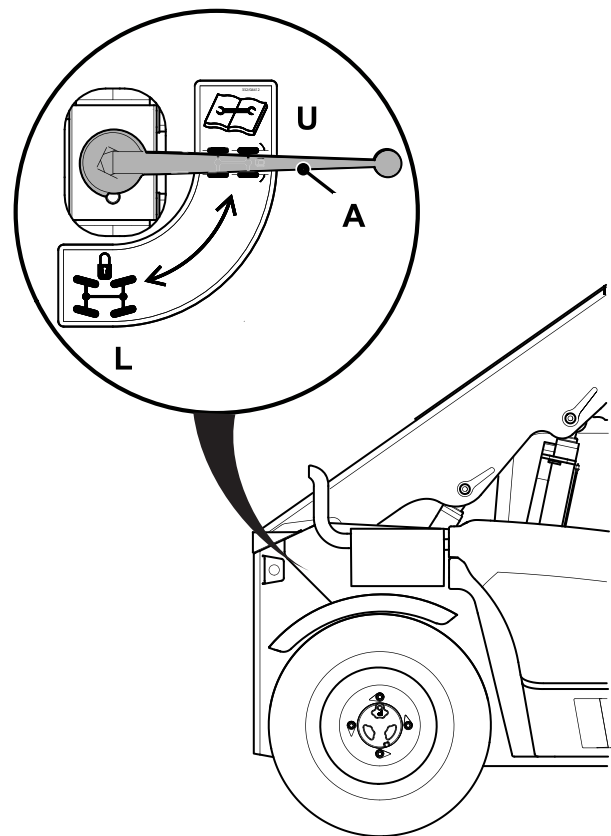


Fig 65.

C094630

Non Indicated Manual Steer Mode Selector

- 1 Start the engine.
- 2 Select 4-wheel steer **B**. Turn the steering wheel until the rear wheels are pointing in the straight ahead position.
- 3 Select 2-wheel steer **C**. Turn the steering wheel until the front wheels are pointing in the straight ahead position.
- 4 All wheels are now pointing straight ahead, select the steer mode required and continue in the normal manner.

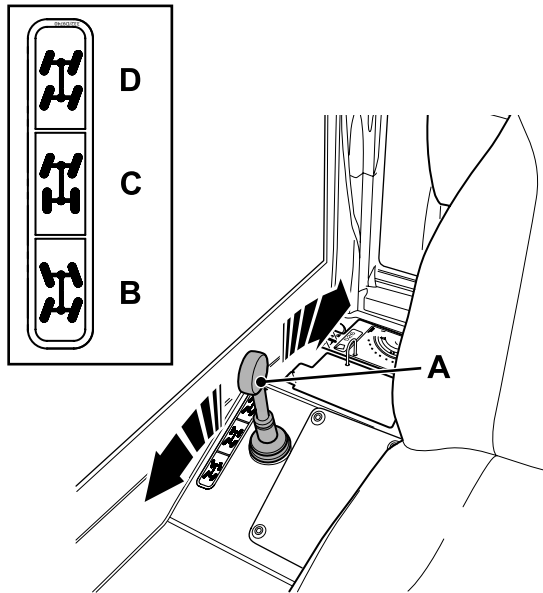


Fig 66.

T016780-7-C3

Indicated 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 **F** comes ON. This means that the rear wheels are pointing 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 **E** comes ON. This means that the front wheels are pointing in the straight ahead position.
- 6 All wheels are now pointing straight ahead, select the steer mode required and continue in the normal manner.

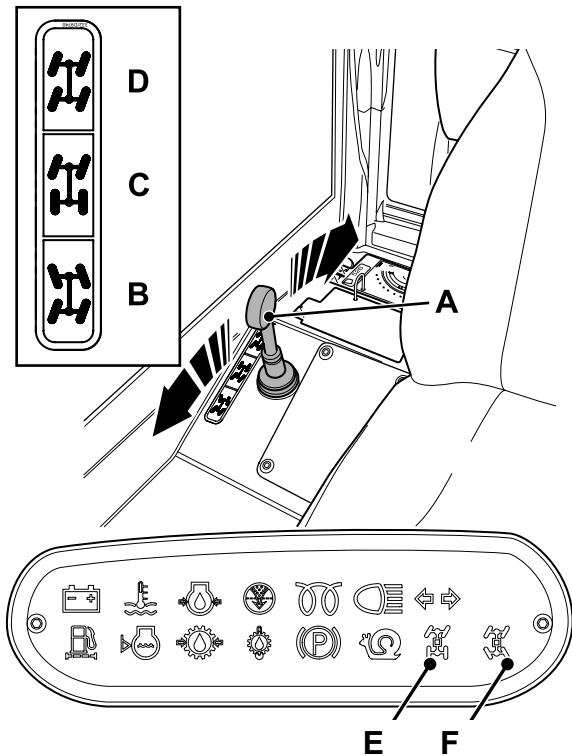


Fig 67.

T016780-7-C5

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**.

Sensors on the axles prevent the steer mode from changing until the wheels 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**.

Turn the steering wheel left then right until the indicator light shows that 4-wheel steer has engaged.

The front and rear wheels are now back in phase.

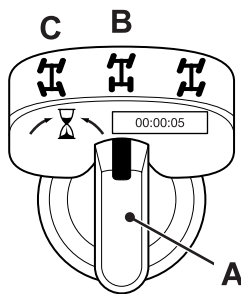


Fig 68.

432710c-4

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.

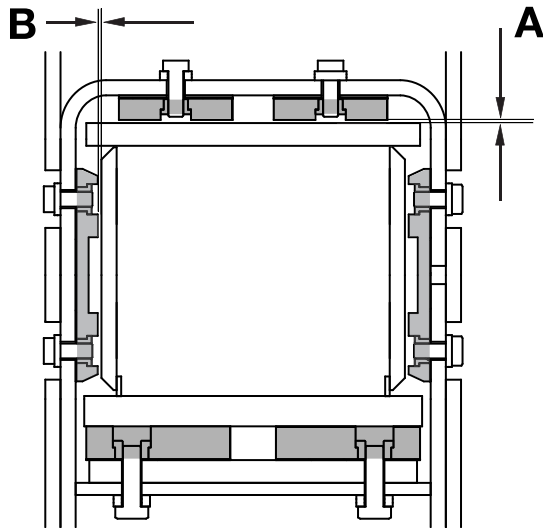


Fig 69.

C094520-C1

Table 12. Maximum Gap

Dimension	Maximum Gap
A	1.5 mm (0.06 in)
B	1.5 mm (0.06 in)

Windscreen Washer

Checking the Level

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

- 1 Make the machine safe with the boom lowered. Refer to ***Prepare the Machine for Maintenance***.
- 2 Get access to the washer bottle **A**.
- 3 Remove the washer bottle cap **B**.
- 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 **B**.

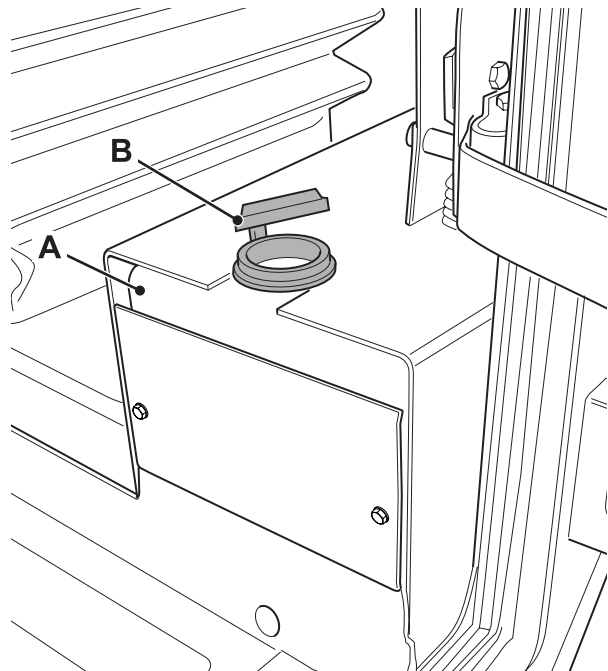


Fig 70.

T014700-1

Fire Extinguisher (if fitted)

T3-022

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.

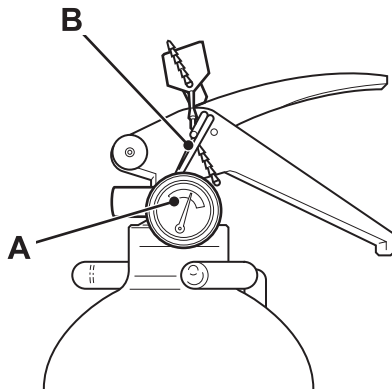


Fig 71.